

Draft Submittal

(Pink Paper)

1. Administrative Questions/JPMs
2. In-plant JPMs
3. Control Room JPMs (simulator JPMs)
4. Administrative Topics Outline ES-301-1
5. Control Room Systems and Facility Walk-Through
Test Outline ES-301-2

MCGUIRE EXAM

**50-369, 370/2002-301
FEBRUARY 11 - 15, 2002**

Reviewed By _____

Approved By _____

TASK: **Calculate the Boric Acid Addition for a specified Rod Change**

POSITION: **RO**

Operator's Name _____

Validation Time: 20 minutes

Location: **Simulator/Plant**

Method: **Perform**

The JPM Operator's performance was evaluated against the standards of this JPM and is determined to be:

SATISFACTORY/UNSATISFACTORY (circle one)

Evaluator's Signature _____ Date / /

References: OP/1/A/6100/22 (Rev. 475) Unit 1 Data Book

JPM verified current with references by _____

Date / /

Rev. 01/01-31-02

INITIAL CONDITIONS

The following conditions exist:

Unit #1 Reactor Power is at 100%

Core burnup is 123 EFPD

NC Boron Concentration = 950 PPM

Present Control Rods Bank "D" at 165 steps

Desired Rod Height is Control Rods Bank "D" at 210 steps

The Control Room SRO directs you to calculate the Desired NC Boron Concentration and the Boric Acid Change required (utilizing the Data Book) while maintaining the present power level.

JPM OVERALL STANDARD: Boric Acid Addition of approximately 252.9 gallons is calculated within ± 10 gallons.

NOTES: Unit #1 Data Book should be available for reference.

START TIME _____

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
*1	Operator determines 165 steps integral rod worth using the 101-200 EFPD column of Table 6.3.3 HFP, Equilibrium Xe	Initial inserted reactivity worth = <u>178 pcm</u>		
*2	Operator determines 210 steps integral rod worth using the 101-200 EFPD column of Table 6.3.3 HFP, Equilibrium Xe	Desired Rod height inserted reactivity worth = <u>25 pcm</u>		
*3	Operator determines the change in reactivity required for the rod withdrawal	Change in reactivity to be compensated to rod withdrawal = <u>-153 pcm</u>		
4	Using Graph 6.2 Differential Boron Worth, determines the Differential Boron Worth for present conditions	Operator determines the Differential Boron Worth from the graph to be = <u>-6.75 pcm/ppm</u>		
5	Using the Differential Boron Worth and the Change in reactivity, determines the change in Boron Concentration	Operator determines the change in Boron Concentration to be = <u>-153 / -6.75 pcm/ppm</u> = <u>22.67 ppm</u>		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
6	Operator determines Boron Concentration change required	Change in Boron = <u>950 +22.67 ppm</u> <u>= 972.67 ppm</u>		
*7	Using Enclosure 4.3 Section 5.1 Boron and Dilution Tables, determines the Desired Boric Acid addition	Using Present Boron Conc 950 ppm and the Desired Boron Conc of 972.67 ppm, determines the boric acid addition = <u>~252.9 gallons</u> <u>(+ or – 10 gallons)</u>		
8	Operator determines an addition of Boric Acid is necessary.	<div style="border: 1px solid black; padding: 5px;"> <p>Cue:</p> <p>The SRO has directed another operator to complete the Boric Acid change.</p> </div>		

STOP TIME _____

* DENOTES CRITICAL

INITIAL CONDITIONS

The following conditions exist:

Unit #1 Reactor Power is at 100%

Core burnup is 123 EFPD

NC Boron Concentration = 950 PPM

Present Control Rods Bank "D" at 165 steps

Desired Rod Height is Control Rods Bank "D" at 210 steps

The Control Room SRO directs you to calculate the Desired NC Boron Concentration and the Boric Acid Change required (utilizing the Data Book) while maintaining the present power level.

Reviewed By_____

Approved By_____

TASK: **Calculate QPTR with an Inoperable Power Range Instrument**

POSITION: **RO**

Operator's Name_____

Validation Time: 20 minutes

Location: **Control Room**

Method: **Perform**

The JPM Operator's performance was evaluated against the standards of this JPM and is determined to be:

SATISFACTORY/UNSATISFACTORY (circle one)

Evaluator's Signature_____ Date __/__/__

References: See Attachments

Attachments: PT/1/A/4600/021A Loss of Operator Aid Computer while in Mode 1
MNS Unit #1 Data Book – Table 2.2

INITIAL CONDITIONS

At 0000 the Unit 1 OAC failed and is not operating. The vendor is being consulted concerning repairs. It is estimated it will take approximately 15 hours to complete repairs. Repairs should be complete at approximately 1500.

On unit 1 at 0600 Power Range N41 upper detector failed.

In order to determine QPTR an attempt to use the Moveable Incore Detector System has failed due to a failure of the main incoming breaker. A breaker is on order and will not be on site for seven to ten days.

As a result power was reduced on the unit to 74%. Power Range N41 has been declared inoperable and removed from service by procedure.

The Control Room SRO directs you to calculate QPTR per PT/1/A/4600/21A Loss of Operator Aid Computer while in Mode 1, Section 12.9 for current plant conditions.

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
1	Operator determines they need a copy of PT/1/A/4600/021A enclosure 13.5	Provide operator with a working copy of PT after they pull PT.		
2	Operator obtains Measured currents from NI cabinet's current meters.	Cue candidate with each detector data: NI-41 detector: A (left) 0 B (right) 0 NI-42 detector: A (left) 296 B (right) 312 NI-43 detector: A (left) 299 B (right) 315 NI-44 detector: A (left) 299 B (right) 308		
3	Operator obtains calibration data from Data Book Table 2.2	Cue: Provide operator with data book table after they locate table		
*4	Operator determines Average RF of A detectors	Operator correctly calculates average RF		

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
*5	Operator determines Average RF of B detectors	Operator correctly calculates average RF		
*6	Operator determines tilt for each detector	Operator correctly calculates tilt		
*7	Operator determines that a quadrant is >1.02 and <ul style="list-style-type: none"> Refers to ITS OR <ul style="list-style-type: none"> Informs the Control Room SRO of the condition. 	Operator determines that a quadrant is >1.02 and <ul style="list-style-type: none"> Refers to ITS OR <ul style="list-style-type: none"> Informs the Control Room SRO of the condition. 		

INITIAL CONDITIONS

At 0000 the Unit 1 OAC failed and is not operating. The vendor is being consulted concerning repairs. It is estimated it will take approximately 15 hours to complete repairs. Repairs should be complete at approximately 1500.

On unit 1 at 0600 Power Range N41 upper detector failed.

In order to determine QPTR an attempt to use the Moveable Incore Detector System has failed due to a failure of the main incoming breaker. A breaker is on order and will not be on site for seven to ten days.

As a result power was reduced on the unit to 74%. Power Range N41 has been declared inoperable and removed from service by procedure.

The Control Room SRO directs you to calculate QPTR per PT/1/A/4600/21A Loss of Operator Aid Computer while in Mode 1, Section 12.9 for current plant conditions.

Reviewed By_____

Approved By_____

TASK: **Determine acceptable Main Generator MegaVars for specified conditions.**

POSITION: **RO**

Operator's Name_____

Validation Time: 15 minutes

Location: **Control Room**

Method: **Perform**

The JPM Operator's performance was evaluated against the standards of this JPM and is determined to be:

SATISFACTORY/UNSATISFACTORY (circle one)

Evaluator's Signature_____ Date / /

References: Data Book Section #3

Attachments:

Rev. 04/01-31-02

INITIAL CONDITIONS

Unit #1 is at 74% reactor power with the following conditions:

- Generator load is 840 MWE
- Power factor is 0.85 lagging
- Generator Hydrogen pressure is 75 psig
- Generator voltage is 24.02 KV

Power increase to 100% is imminent.

The OSM has directed you to determine the following assuming a power factor of 0.85 is maintained constant during the power increase:

- **the maximum permissible generator load**
- **the maximum reactive load (ASSUME NO VIBRATION LIMITATIONS)**
- **the desired voltage per the Generator Voltage Operating Schedule**

JPM OVERALL STANDARD: The examinee should select the correct Generator Capability Curve (Curve 3.1.2) and use it to determine the maximum permissible generator load and reactive load. Once completed, the candidate should determine the desired voltage per the Generator Voltage Operating Schedule.

NOTES: The operator should be given the attached Data Book Curves and Data Sheets for review and use.

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
1	The candidate should retrieve the MNS Data Book and find the Generator Capability curves in Section #3.	<p>Candidate finds the MNS Data Book and turns to Section #3.</p> <p>When the candidate finds the MNS Data Book, Section #3,</p> <p>the examiner may provide the candidate with a Working Copy of OP/1/A/6100/22 Encl. 4.3;</p> <p>Curves <u>3.1.1</u> & # <u>3.1.2</u></p> <p>and</p> <p>Tables <u>3.1.3</u> & <u>3.1.4</u></p> <p>(Total of 4 documents)</p>		
2	Using Table 3.1.4, determine the appropriate Generator Limits Curve.	Candidate uses Curve 3.1.2 to determine limits.		
*3	<p>Using 0.85 power factor and 75 psig H2 pressure, candidate determines the maximum permissible generator load to be:</p> <p>1140 Mw</p>	<p>Using 0.85 power factor and 75 psig H2 pressure, candidate determines the maximum permissible generator load to be:</p> <p>1140 Mw</p> <p>NOTE: If candidate uses wrong curve, an incorrect answer will be derived.</p> <p>1125 to 1150 acceptable range</p>		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
*4	Using 0.85 power factor and 75 psig H2 pressure, candidate determines the maximum permissible reactive load to be: 710 MVARs	Using 0.85 power factor and 75 psig H2 pressure, candidate determines the maximum permissible reactive load to be: 710 MVARs 700 to 725 acceptable range		
5	Uses the Generator Voltage Operating Schedule to determine the Desired Generator Voltage for Unit #1 Generator.	Candidate uses Table 3.1.3 to determine limits.		
6	Using todays Date and Time, determines the Desired Voltage to be 23.5 KV for Unit #1.	Using todays Date and Time, determines the Desired Voltage to be 23.5 KV for Unit #1.		

* DENOTES CRITICAL

INITIAL CONDITIONS

Unit #1 is at 74% reactor power with the following conditions:

- Generator load is 840 MWE
- Power factor is 0.85 lagging
- Generator Hydrogen pressure is 75 psig
- Generator voltage is 24.02 KV

Power increase to 100% is imminent.

The OSM has directed you to determine the following assuming a power factor of 0.85 is maintained constant during the power increase:

- **the maximum permissible generator load**
- **the maximum reactive load (ASSUME NO VIBRATION LIMITATIONS)**
- **the desired voltage per the Generator Voltage Operating Schedule**

Reviewed By_____

Approved By_____

TASK: Utilizing a Survey Map, calculate the maximum permissible Stay Time within Duke Power Basic Administrative limits.

POSITION: RO

Operator's Name_____

Validation Time: 10 minutes

Location: **Control Room**

Method: **Perform**

The JPM Operator's performance was evaluated against the standards of this JPM and is determined to be:

SATISFACTORY/UNSATISFACTORY (circle one)

Evaluator's Signature_____ Date ____/____/____

References: Duke Power Company, Radiation Worker Training Student Guide

Attachments:

INITIAL CONDITIONS

A SGTR in conjunction with a LOCA has occurred. Due to previous amounts of failed fuel, the radiation levels in the Auxiliary Building are abnormally high.

An individual has been assigned the task of performing a valve lineup in the NM Lab (see attached Survey Map). Assume that all areas in the room must be accessed, but valves on the S/G lines are the only required manipulations.

The individual has previously received 1435 mrem total dose this year.

Determine the maximum permissible time an individual can work in the area without violating the Duke Power Basic Administrative limit.

JPM OVERALL STANDARD:

Stay Time is correctly calculated and the Duke Power Basic Administrative limit is not violated.

NOTES:

DPC Admin limit:	2000 mrem
Dose history	<u>-1435 mrem</u>

Maximum Permissible dose: 565 mrem

Maximum Stay Time: 565 mrem / 150 mrem/hr = 3.77 hours or less

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
*1	Determines the remaining permissible dose within the DPC Basic limit.	Permissible dose is determined to be: 565 mrem		
*2	Determines the maximum permissible Stay Time within the DPC Basic limit.	Maximum Stay Time is determined to be: <= 3.77 hours		

* DENOTES CRITICAL

INITIAL CONDITIONS

A SGTR in conjunction with a LOCA has occurred. Due to previous amounts of failed fuel, the radiation levels in the Auxiliary Building are abnormally high.

An individual has been assigned the task of performing a valve lineup in the NM Lab (see attached Survey Map). Assume that all areas in the room must be accessed, but valves on the S/G lines are the only required manipulations.

The individual has previously received 1435 mrem total dose this year.

Determine the maximum permissible time an individual can work in the area without violating the Duke Power Basic Administrative limit.

Prepared By _____

Reviewed By _____

Approved By _____

TASK: **Make Initial Notification to State and Counties**

POSITION: **RO**

Operator's Name _____

Location: **Plant/Simulator**

Method: **Perform**

Estimated JPM Completion Time: 12 Minutes

Actual JPM Completion Time: _____ Minutes

Required Time Critical Completion Time 5 Minutes

Actual Time Critical Completion Time _____ Minutes

The JPM Operator's performance was evaluated against the standards of this JPM and is determined to be:

SATISFACTORY/UNSATISFACTORY (circle one)

Evaluator's Signature _____ Date / /

References: RP/0/A/5700/002 (Rev. 015)
RP/0/A/5700/000 (Rev. 007)

Notification of Unusual Event
Classification of Emergency

JPM verified current with references by _____

Date / /

Rev. 09/01-31-02

FOR TRAINING PURPOSES ONLY

INITIAL CONDITIONS

Both Units are at 100% power.

Security has found and confirmed a bomb device in the Machine Shop by the Railroad tracks. Security is taking actions to secure the area per their procedures.

A Notification of Unusual Event has just been declared by the OSM. An SRO has completed the Enclosure 4.1 (Emergency Notification Form) in accordance with Enclosure 4.2, Section 1 of RP/0/A/5700/001 (Notification of Unusual Event).

The OSM has directed you to make the initial notification to State and County authorities using the Emergency Notification Form in accordance with Enclosure 4.2, Section 2 of RP/0/A/5700/001 (Notification of Unusual Event).

The Notification of Unusual Event was declared 10 minutes ago.

This is a TIME CRITICAL JPM.

JPM OVERALL STANDARD: The ENS Notification form is completed and contact with the counties and/or State is established within 15 minutes. (Contact with State/Counties will be simulated.)

NOTES: The evaluator should begin the JPM by giving the examinee the following:

- Initial Conditions
- The completed Enclosure 4.1 (Emergency Notification Form)
- RP/0/A/5700/014 Emergency Telephone Directory
- RP/0/A/5700/001 Notification of Unusual Event, Enclosure 4.2, Section 2

*** DENOTES CRITICAL**

START TIME _____

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
1.1	Make initial notification to State and County authorities using the Emergency Notification Form in accordance with Enclosure 4.2, section 2.	Same		
2.1	<p>Continuing with step 2.1 of Enclosure 4.2 of RP/0/A/5700/001 (Notification of Unusual Event):</p> <p><u>TRANSMISSION OF THE EMERGENCY NOTIFICATION FORM</u></p> <p>Use the Selective Signaling telephone by dialing *1 and depressing the push to talk button.</p>	<p>Operator <u>simulates</u> dialing *1 on Selective Signaling phone and pressing the push to talk button as needed in following steps.</p>		
2.2	<u>IF</u> selective signaling fails, <u>THEN</u> go to RP/0/A/5700/014, Tab 1 for manual selective signaling numbers.	Same		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
2.3	As the State and Counties answer, check them off on the back of the notification form. At least one attempt using the individual selective signaling code must be made for any missing agencies. Proceed with the notification promptly following an attempt to get missing agencies on the line.	<p>Operator listens to the Selective Signaling phone and checks off each agency on the back of the Notification form as they come on the line. Operator <u>may or may not</u> respond after each agency comes on line.</p> <p>Cue:</p> <p>This is North Carolina Emergency Response Organization.</p> <p>Operator holds down the push to talk button, responds "This is McGuire Nuclear Station, Hold please".</p> <p>Cue:</p> <p>This is Iredell County Emergency Response Organization.</p> <p>Operator holds down the push to talk button, responds "This is McGuire Nuclear Station, Hold please".</p>		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
2.3	Continued	<p>Cue:</p> <p>This is Catawba County Emergency Response Organization.</p> <p>Operator holds down the push to talk button, responds "This is McGuire Nuclear Station, Hold please".</p> <p>Cue:</p> <p>This is Gaston County Emergency Response Organization.</p> <p>Operator holds down the push to talk button, responds "This is McGuire Nuclear Station, Hold please".</p> <p>Cue:</p> <p>This is Cabarrus County Emergency Response Organization.</p> <p>Operator holds down the push to talk button, responds "This is McGuire Nuclear Station, Hold please".</p>		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
2.3	Continued	<p>Cue:</p> <p>This is Mecklenburg County Emergency Response Organization.</p> <p>Operator holds down the push to talk button, responds "This is McGuire Nuclear Station, Hold please".</p> <p><u>Note to evaluator:</u></p> <p>There is NO RESPONSE from Lincoln County. Operator should use RP/0/A5700/014 Emergency Telephone Directory, Enclosure 4.1 (Emergency Response Numbers) to manually use the individual selective signal code for Lincoln County. Operator should use "113" to individually call Lincoln County.</p> <p><u>When operator dials 113,</u></p> <p>Cue:</p> <p>This is Lincoln County Emergency Response Organization.</p> <p>Operator holds down the push to talk button, responds "This is McGuire Nuclear Station, Hold please".</p>		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
*2.4	Verify the State and Counties are on the line, document this time in item #3 on the form. This time should not exceed <u>15 minutes</u> from the time of declaration (Item # 6).	Operator verifies the State and Counties are on the line, documents current time and date on line # 3 of the Notification form.		
		Time State/Counties are on the line: <hr/> <p>This is the Stop Time for the Time Critical Task</p>		
2.5	Tell them you have an emergency notification from the McGuire Control Room and to get out the Emergency Notification Form.	Same. (No response is expected from agencies.)		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
2.6	Read the message <u>slowly</u> beginning with Item # 1, allowing ample time to copy.	<p>Operator holds down the press to talk button and reads from Enclosure 4.1 (Emergency Notification Form) provided:</p> <p><u>Item 1</u>-This is an actual emergency.</p> <p>This is an initial notification, message # 1.</p> <p><u>Item 2</u>-The site is McGuire Nuclear Site, Unit #1&2.</p> <p>Reported by _____ (the operator's name making the transmission)</p> <p><u>Item 3</u>-The transmittal time/date is _____ (as listed on line #3).</p> <p>Confirmation phone number is 704-875-6044."</p>		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
2.7	<p>NOTE: Refer to page 6 of 8 of this Enclosure for the authentication codeword list.</p> <p>When you reach item #4, ask the State or County to authenticate the message. The agency should give you a number and you should provide the appropriate codeword. Write the number and codeword on the form.</p>	<p>Note to evaluator: When the operator turns to page 6 of the Enclosure (which is blank), give him/her <u>Attachment #1</u> of this JPM. Instruct them to use Attachment #1 for authentication purposes.</p> <p>Operator asks <u>any one</u> of the agencies to authenticate. The Operator references Attachment #1 of this JPM and finds the corresponding codeword. Both code number and codeword are written in on line 4 of Enclosure 4.1.</p> <p>Operator holds down the push to talk button, "_____ County, please authenticate this message." then releases the button on the receiver.</p> <p>Cue:</p> <p>This is <u>(same as above)</u> County, the authentication number is # 17.</p> <p>Operator holds down the push to talk button, "Item 4-_____ County, the codeword for # 17 is Nascar", then releases the button on the receiver.</p>		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
2.8	After communicating the initial message, ask if there are any questions. Record individuals' names and times on the back of the form. The time is the same time as Item #3.	<p>Operator continues reading the initial message as follows:</p> <p>"Item 5-The Emergency Classification is 'A'- Notification of Unusual Event.</p> <p>"Item 6-'A'-The Emergency was declared at _____" (time/date listed on form)</p> <p>"Item 7-: "Security confirmed bomb device in the Protected Area."</p> <p>"Item 8-'B' and/or Plant conditions are Stable."</p> <p>"Item 9-'B'-Both Reactors are at ____100%____."</p> <p>"Item 10- Emergency Releases-'A'-None are happening at this time."</p> <p>"Item 15-'A'-No recommended protective actions at this time."</p>		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
2.8	Continued	<p>"Item 16-This Emergency Notification was approved by the Emergency Coordinator, John Doe at _____</p> <p>(time/date listed on form)</p> <p>Are there any questions?"</p> <p>PAUSE...NO QUESTIONS.</p> <p>Operator records names, dates and times on back of form.</p> <p>"I need to verify the name of each agency representative. When I call out the agency, please give your name..."</p> <p>North Carolina State,"</p> <p>Cue: Alex Brown</p> <p>"Mecklenburg County,"</p> <p>Cue: Sam Cline</p> <p>"Gaston County,"</p> <p>Cue: Water Booth</p> <p>"Lincoln County,"</p> <p>Cue: Paul Graham</p> <p>"Iredell County,"</p> <p>Cue: Linda Oakley</p> <p>"Catawba County,"</p> <p>Cue: Stewart Gaines</p> <p>"Cabarrus County."</p> <p>Cue: Donald Bentley</p>		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
2.9	After verbally transmitting the message, FAX a copy (front page only) to the agencies. Refer to pages 7 of 8 and 8 of 8 of this enclosure for FAX operation.	Operator refers to page 7 of Enc. 4.2, <u>simulates</u> placing the Emergency Notification Form face down into the FAX and depressing the "Group Fax" button.		
	<u>OPERATION OF THE FAX</u> (from page 7 of Enc. 4.2)	Note to evaluator: Ensure FAX transmission is ONLY SIMULATED .		
	Insert the Emergency Notification Form face down into the FAX. Press – Group FAX.	Cue: Form inserted face down, Group FAX pushbutton depressed, FAX is transmitting.		
2.10	Continuous attempts to contact missing agencies must be made if unable to complete the notification per step 2.3. Document the time these agencies were contacted on the back of the notification form.	Cue: All agencies have been notified.		

STOP TIME_____

* DENOTES CRITICAL

Attachment 1

(For Training Use Only)

Excerpt From Authentication Codes List (RP/0/A/5700/xxx)

Theme: Sports

Effective 12/18/96-12/31/98

- | | | |
|------------------|-----------------|-----------------|
| 1. Fishing | 43. Camping | 85. Strike |
| 2. Lacrosse | 44. Aerobics | 86. Grip |
| 3. Ice Hockey | 45. Uniform | 87. Somersault |
| 4. Roller blades | 46. Spirit | 88. Wheel |
| 5. Wrestling | 47. Huddle | 89. Skis |
| 6. Sweatshirt | 48. Referees | 90. Tournament |
| 7. Pool | 49. Tackle | 91. Fairway |
| 8. Hurdle | 50. Yacht | 92. Handball |
| 9. Equestrian | 51. Baseball | 93. Stadium |
| 10. Net | 52. Gymnastics | 94. Fitness |
| 11. Putt | 53. Tennis | 95. Baton |
| 12. Bowling | 54. Driver | 96. Fans |
| 13. Cricket | 55. Surfing | 97. Timeout |
| 14. Iron | 56. Jersey | 98. Touchdown |
| 15. Arrow | 57. Pool | 99. League |
| 16. Jai alai | 58. Marathon | 100. Bulls eye |
| 17. Nascar | 59. Backpack | 101. Catcher |
| 18. Tent | 60. Race car | 102. Rifle |
| 19. Stance | 61. Puck | 103. Rod |
| 20. Officials | 62. Waterskiing | 104. Cleats |
| 21. Karate | 63. Jogging | 105. Shinguard |
| 22. freestyle | 64. Sandtrap | 106. Team |
| 23. Pitcher | 65. Goal | 107. Rugby |
| 24. Rodeo | 66. End zone | 108. Glove |
| 25. Raft | 67. Sneakers | 109. Bullet |
| 26. Walking | 68. Coach | 110. Volleyball |
| 27. Nautilus | 69. Basket | 111. Etc..... |
| 28. Baseball | 70. Shotgun | |
| 29. Arena | 71. Mask | |
| 30. Jumpshot | 72. Paddle | |
| 31. Kneepads | 73. Bow | |
| 32. Football | 74. Sailing | |
| 33. Hunting | 75. Bunt | |
| 34. Court | 76. Winner | |
| 35. Skating | 77. Exercise | |
| 36. Canoe | 78. Winston cup | |
| 37. Match | 79. Parachute | |
| 38. Defense | 80. Loser | |
| 39. Competition | 81. Jockey | |
| 40. Snorkeling | 82. Bronco | |
| 41. Bobsled | 83. Archery | |
| 42. Pigskin | 84. Track | |

INITIAL CONDITIONS

Both Units are at 100% power.

Security has found and confirmed a bomb device in the Machine Shop by the Railroad tracks. Security is taking actions to secure the area per their procedures.

A Notification of Unusual Event has just been declared by the OSM. An SRO has completed the Enclosure 4.1 (Emergency Notification Form) in accordance with Enclosure 4.2, Section 1 of RP/0/A/5700/001 (Notification of Unusual Event).

The OSM has directed you to make the initial notification to State and County authorities using the Emergency Notification Form in accordance with Enclosure 4.2, Section 2 of RP/0/A/5700/001 (Notification of Unusual Event).

The Notification of Unusual Event was declared 10 minutes ago.

This is a TIME CRITICAL JPM.

Reviewed By _____

Approved By _____

TASK: **Perform an Estimated Critical Rod Position Calculation**

POSITION: **SRO**

Operator's Name _____

Validation Time: 25 minutes

Location: **Simulator/Plant**

Method: **Perform**

The JPM Operator's performance was evaluated against the standards of this JPM and is determined to be:

SATISFACTORY/UNSATISFACTORY (circle one)

Evaluator's Signature _____ Date ____/____/____

References: OP/0/A/6100/06 Reactivity Balance Calculation (Rev. #055)
 OP/1/A/6100/022 MNS Unit #1 Data Book (Rev. #475)

JPM verified current with references by _____

Date ____/____/____

Rev. 01/01-31-02

* DENOTES CRITICAL

INITIAL CONDITIONS

Four (4) days ago Unit 1 tripped following a continuous run from Refueling. After minor plant trip list repairs, Unit 1 startup in progress. All steps in the procedure are complete up to determining the Estimated Critical Rod height. Anticipated criticality is approximately 1.5 hours from now.

The following conditions exist:

- Cycle 15 Core burnup = 101 EFPD
- NC Boron concentration = 1426.5 PPM
- Samarium = 154 PCM greater than equilibrium
- REACT is inoperable

The SRO has directed you to perform an Estimated Critical Rod Position (ECP) Calculation per OP/0/A/6100/006 (Reactivity Balance Calculation).

JPM OVERALL STANDARD: The Estimated Critical Rod Position Bank at time of Criticality agrees with the evaluator calculated ECP \pm 10 steps.

NOTES: The examinee should be provided with:

- OP/0/A/6100/006 Reactivity Balance Calculation. Enclosure 4.2 ECP
- MNS Unit #1 Data Book (Cycle 15 Curves/Tables)
- Calculator

*** DENOTES CRITICAL**

START TIME _____

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
3.1.1	Unit__1__ Cycle__15__	SRO will obtain these values from the Initial Conditions		
3.12	Contact Reactor Unit for recent trends on ECP Reactor Unit Engineer Contacted _Joe Smith __ Date____(present)____	CUE: There have been no unusual trends on ECP's. Engineer contacted is Joe Smith.		
3.1.3.1	Date/Time of Shutdown _(present minus 4 days)_	SRO will obtain these values from the Initial Conditions		
3.1.3.2	Anticipated date and time of Criticality _(present + 1.5 hours)___	SRO uses today's date and 1.5 hours from the time he starts		
3.1.4	Burnup __101__ EFPD	SRO will obtain these values from the Initial Conditions		
3.1.5	NC System Boron Concentration ____1426.5____ ppm	SRO determines boron concentration to be 1426.5 ppm from initial conditions		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
3.1.6	Xenon worth at anticipated time of criticality - ____0____ pcm	SRO should come up with this value based on the amount of time the Reactor has been shutdown (<u>Xe free</u> due to 4 days of shutdown)		
3.1.7	Difference between Equilibrium and present Samarium worth (circle correct sign) - ____154____ pcm	SRO determines this value to be -154 pcm from initial conditions		
3.1.8	Case performed ____1____ Shutdown FP worth correction ____38.25 ppm____ Hrs shutdown ____97 hrs____	SRO determines these values from Case 1 Burnup > 12 EFPD (Burnup = 101 EFPD)		
3.2	N/A the REACT utilization Section of procedure	SRO N/A's Steps 3.2.1 thru 3.2.3.		
*3.3.1	All Rods Out (ARO), Hot Zero Power (HZP), no Xenon, Equilibrium Samarium, Boron Concentration (from Data Book Graph 6.1) ____1603____ ppm	SRO determines this value to be: ____ 1603 ppm ____		
*3.3.2	ARO Differential Boron Worth for present Burnup Step 2.4 above (from Data Book Graph 6.8) - ____6.51____ pcm/ppm	SRO determines this value to be: ____ - 6.51 pcm/ppm ____		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
3.3.3	Peak Xenon worth for present burnup (from Data Book Table 6.9) - ____3848____pcm	SRO determines this value to be: ____3848 pcm____		
*3.3.4	Calculates difference between present and ARO Boron (circle correct sign) - ____176.5____ppm	SRO determines this value to be: ____ - 176.5 ppm ____		
*3.3.5	Calculates reactivity equivalent of Boron difference (circle correct sign) + ____1149____pcm	SRO determines this value to be: ____ + 1149 pcm ____		
*3.3.6	Calculates reactivity equivalent of shutdown fission product correction - ____249____pcm	SRO determines this value to be: ____ - 249 pcm ____		
*3.3.7	Reactivity worth of Rods to be inserted (circle correct sign) + ____1244____ pcm	SRO determines this value to be: ____ + 1244 pcm ____		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
*3.3.8	No Xenon Rod Position for step 3.3.7 above (from data book curve 6.3A) Bank _____ _____ steps w/d	SRO determines this value to be: Bank __C__ __113 +/- 3__ steps w/d		
3.3.9	Peak Xenon Rod Position for step 3.3.7 above (from data book curve 6.3B) Bank _____ _____ steps w/d	SRO determines this value to be: Bank __D__ __24 +/- 3__ steps w/d OR Bank __C__ __140 +/- 3__ steps w/d		
*3.3.10	Rod position for Xenon at time of Criticality Bank _____ _____ steps w/d	SRO determines this value to be: Bank __C__ __113 +/- 3__ steps w/d (same as 3.3.8 above)		
3.3.11	Calculates Estimated Critical Position Band: Worth of step 3.3.7 above – 750 pcm ____494____ pcm Worth of step 3.3.7 above + 750 pcm ____1994____ pcm	Same Same		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
	<p>No Xenon Rod Position (from Data Book Curve 6.3A)</p> <p>Bank____D____ ____98 +/- 3 ____steps w/d</p> <p>No Xenon Rod Position (from Data Book Curve 6.3A)</p> <p>Bank____C____ ____25 +/- 3 ____steps w/d</p> <p>Peak Xenon Rod Position (from Data Book Curve 6.3B)</p> <p>Bank____D____ ____117 +/- 3 ____steps w/d</p> <p>Peak Xenon Rod Position (from Data Book Curve 6.3B)</p> <p>Bank____C____ ____45 +/- 3 ____steps w/d</p>	<p>Same</p> <p>Same</p> <p>Same</p> <p>Same</p>		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
*3.3.12	<p>Determines Actual Estimate Critical Rod Position Band for Xenon at time of Criticality</p> <p><u>Upper Limit of Band:</u></p> <p>Rod Position (-750 pcm)</p> <p>Bank____</p> <p>_____steps w/d</p> <p><u>ECP:</u></p> <p>Rod Position at time of Criticality</p> <p>Bank____C____</p> <p>___113___steps w/d</p> <p><u>Lower Limit of Band:</u></p> <p>Rod Position +750 pcm</p> <p>Bank____</p> <p>_____steps w/d</p>	<p>SRO determines this value to be:</p> <p><u>Upper Limit of Band:</u></p> <p>Rod Position (-750 pcm)</p> <p>Bank __D__</p> <p>___98 +/- 3__steps w/d</p> <p><u>ECP:</u></p> <p>Rod Position at time of Criticality</p> <p>Bank __C__</p> <p>___113___steps w/d</p> <p>(Accept +/- 10 steps)</p> <p><u>Lower Limit of Band:</u></p> <p>Rod Position + 750 pcm</p> <p>Bank __C__</p> <p>___25 +/- 3__steps w/d</p>		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
3.4	Verify all above rod positions above are greater than insertion limits per Data Book Graph 1.2. If not, contact the Reactor Engineer.	SRO determines that the Lower Window is <u>BELOW</u> the Insertion <u>Limit</u> and notifies the Reactor Engineer.		
3.5	Verify all above rod positions below the rod withdrawal limits per Data Book Table/Curve 2.8.	SRO determines that the positions are below the rod withdrawal limits due to NO Withdrawal Limit imposed.		
Last	<p>Signs and Dates the</p> <p>"Calculations Performed By: _____"</p> <p>and</p> <p>"Date _____"</p> <p>blanks.</p> <p>Then turns paperwork over to a QRE (Qualified Reactor Engineer) to perform a Separate Verification calculation.</p>	<p><u>When :</u> SRO is ready to turnover the paperwork to a Qualified Reactor Engineer (QRE) to perform a Separate Verification calculation,</p> <p><u>Then;</u></p> <p>CUE: As a QRE, you can turnover the paperwork to me.</p>		

STOP TIME _____

* DENOTES CRITICAL

INITIAL CONDITIONS

Four (4) days ago Unit 1 tripped following a continuous run from Refueling. After minor plant trip list repairs, Unit 1 startup in progress. All steps in the procedure are complete up to determining the Estimated Critical Rod height. Anticipated criticality is approximately 1.5 hours from now.

The following conditions exist:

- Cycle 15 Core burnup = 101 EFPD
- NC Boron concentration = 1426.5 PPM
- Samarium = 154 PCM greater than equilibrium
- REACT is inoperable

The SRO has directed you to perform an Estimated Critical Rod Position (ECP) Calculation per OP/0/A/6100/006 (Reactivity Balance Calculation).

Reviewed By _____

Approved By_____

TASK: Calculate Reactor Vessel Head Venting Time

POSITION: SRO

Operator's Name _____

Validation Time: 15 minutes

Location: Simulator/Plant

Method: **Perform**

The JPM Operator's performance was evaluated against the standards of this JPM and is determined to be:

SATISFACTORY/UNSATISFACTORY (circle one)

Evaluator's Signature

_____/_____/_____
Date

References: EP/1/A/5000/FR-I.3 Response to Voids in the Reactor Vessel

JPM verified current with references by _____

Date / /

Rev. 01/01-31-02

INITIAL CONDITIONS

EP/1/A/5000/FR-I.3 (Response to Void in Reactor Vessel) has been implemented and completed through subsequent step 20 a. The following conditions exist:

- Containment Pressure 8.3 psig
- Lower Containment Temp 140 °F
- H₂ Concentration 1.8%
- NC Pressure 290 psig

The SRO has directed you to complete step 20 b. by calculating maximum venting time per Enclosure 1 (Allowable H2 Venting Time).

JPM OVERALL STANDARD: Reactor Vessel Head venting time calculated to fall between 43.0 – 45.7 minutes

NOTES: Provide examinee with a working copy of Enclosure 1 of EP/1/A/5000/FR-I.3 Response to Voids in Reactor Vessel.

START TIME _____

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
1	<p>Calculate A</p> $A = 9,500 \times \frac{(P+14.7)}{14.7} \times \frac{492}{(T+460)}$ <p>Where:</p> <p>P = Containment pressure (PSIG)</p> <p>T = Lower containment Ave temp (°F)</p> <p>A = _____</p>	<p>RO calculates A</p> $9,500 \times \frac{(8.3+14.7)}{14.7} \times \frac{492}{(140+460)}$ <p>This equals</p> $9,500 \times 1.56 \times 0.82$ <p>and this equals</p> <p>12188.4</p>		
2	<p>Calculate B</p> $B = (3 - H) \times A$ <p>where</p> <p>H = Containment H-2 Concentration. (%)</p> <p>B = _____</p>	<p>RO calculates B</p> $(3 - 1.8) \times 12188.4 =$ <p>14626.1</p>		
3	<p>Determine C from the curve for the current NC system pressure</p>	<p>RO determines C to equal 330 +/- 10 using curve</p>		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
*4	Calculate T $T = B/C =$ Venting Time in minutes $T = \underline{\hspace{2cm}} / \underline{\hspace{2cm}}$ $T = \underline{\hspace{2cm}}$ minutes	RO calculates T $\frac{14626.1}{330} =$ 44.3 minutes (Acceptable Range of 43.0 – 45.7 minutes)		

STOP TIME _____

* DENOTES CRITICAL

INITIAL CONDITIONS

EP/1/A/5000/FR-I.3 (Response to Void in Reactor Vessel) has been implemented and completed through subsequent step 20 a. The following conditions exist:

- Containment Pressure 8.3 psig
- Lower Containment Temp 140 °F
- H₂ Concentration 1.8%
- NC Pressure 290 psig

The SRO has directed you to complete step 20 b. by calculating maximum venting time per Enclosure 1 (Allowable H₂ Venting Time).

Reviewed By_____

Approved By_____

TASK: **Perform a Review of a Tagout Procedure**

POSITION: **SRO**

Operator's Name_____

Validation Time: 15 minutes

Location: **Control Room**

Method: **Perform**

The JPM Operator's performance was evaluated against the standards of this JPM and is determined to be:

SATISFACTORY/UNSATISFACTORY (circle one)

Evaluator's Signature_____ Date / /

References: OMP 7-1 (Removal and Restoration (R&R) Requirements)
MC-1575 Flow Diagram of RL System

Attachments:

Rev. 03/01-31-02

INITIAL CONDITIONS

Unit 1 is operating at 100% power.

"B" and "C" RL pumps are in service.

"A" was secured due to pump inboard seal problems and will have to be repaired.

An NLO has been directed to tagout the pump to allow maintenance to inspect the pump seal. The Red Tag Computer was out of service. The manually generated R&R has been completed by the NLO and is ready for review.

Review the R&R that will be used to tagout the "A" RL pump for accuracy.

JPM OVERALL STANDARD: The R&R is reviewed for technical correctness. The NLO is directed to correct the sequence (Pump breaker first, then the isolation valves, then the drain and vents). The Vent valve outside of the isolation boundary is identified and corrected using a vent inside of the boundary.

NOTES: The operator should be given:

- Attachment R&R sheet for review
- Attachment of Partial RL Flow Diagram

The steps within the JPM can be performed in any order.

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
1	Verify all required blanks for Removal on page one of the R&R completed	Component tagged, Applicable procedure, Reason for removal, Supervisor Responsible for work, Applicable work orders		
2	Verify all required blanks for Removal on additional pages of the R&R completed	Equip/Nomenclature, Seq#, Removed position, I/V Required, SW LBL sections filled in		
*3	Component verified to be completely isolated and that all components are tagged in the proper position	The pump is verified to be completely isolated. However, the Operator should identify that the vent valve is outside of the tagging boundary. Instructions should be given to change the vent valve utilized to the vent inside the boundary. All other components are tagged in the proper position.		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
*4	Verify proper sequence	Operator determines that the sequence is incorrect and should be reordered to include - the pump breaker opened first, and the isolation valves closed second, and the drains and vents opened last - and directs the NLO to change the sequence Cue: The recommended corrections have been made and the R&R is ready to be signed		
5	Sign the Reviewed By blank	Same		
6	Log the R&R in the Unit 1 & 2 Reactor Operators Logbooks	Operator states that he/she would have the OAC record the R&R in the RO Log Books for Both Unit 1 & 2.		
7	SRO determines the tagout not to be Tech Spec related and N/A's the Unit 1 & 2 Tech Spec blanks.	Same Cue: The NLO will complete the rest of the R&R.		

* DENOTES CRITICAL

INITIAL CONDITIONS

Unit 1 is operating at 100% power.

"B" and "C" RL pumps are in service.

"A" was secured due to pump inboard seal problems and will have to be repaired.

An NLO has been directed to tagout the pump to allow maintenance to inspect the pump seal. The Red Tag Computer was out of service. The manually generated R&R has been completed by the NLO and is ready for review.

Review the R&R that will be used to tagout the "A" RL pump for accuracy.

Reviewed By Steve Heller

Approved By [Signature]

TASK: Determine dose rates with airborne activity present

POSITION: SRO

Operator's Name _____

Location: Control Room

Method: Perform

The JPM Operator's performance was evaluated against the standards of this JPM and is determined to be:

SATISFACTORY/UNSATISFACTORY (circle one)

Evaluator's Signature _____ Date ____/____/____

References: Duke Power Company, Radiation Worker Training Student Guide

Attachments:

INITIAL CONDITIONS

An individual has been assigned the task of performing a valve lineup in the Auxiliary Building. The area where the valves are located has a dose rate of 76 mrem/hr and also has some airborne radioactivity.

From experience with this task, the individual knows it will take roughly 2 hours to perform this evolution with a respirator or only 90 minutes without a respirator. However, if the job is done without a respirator, the individual will receive 14 DAC hours of internal exposure.

Determine whether or not a respirator should be worn to minimize dose. (Be sure to show all work.)

JPM OVERALL STANDARD:

Dose is correctly calculated both with and without a respirator.

NOTES:

Dose **with** a respirator will be 152 mrem.

$$(76 \text{ mrem/hr}) \times (2.0 \text{ hrs}) = 152.0 \text{ mrem}$$

Dose **without** a respirator will be 149 mrem.

$$(76 \text{ mrem/hr}) \times (1.5 \text{ hrs}) + (14 \text{ DAC hours}) \times (2.5 \text{ mrem/DAC hour}) = 149.0 \text{ mrem}$$

Method with less dose would be performing job without respirator.

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
*1	Determines the dose the individual will receive while wearing a respirator.	Dose is determined to be 152.0 mrem while wearing a respirator. $(76 \text{ mrem/hr}) \times (20 \text{ hrs})$ = 152.0 mrem		
*2	Determines the dose the individual will receive without a respirator.	Dose is determined to be 149.0 mrem <u>WITHOUT</u> wearing a respirator. $(76 \text{ mrem/hr}) \times (1.5 \text{ hrs})$ + (14 DAC hours) x (2.5 mrem/DAC hour) = 149.0 mrem		
*3	Compares the results and determines which method would require less dose.	Determines method with <u>less dose</u> would be performing job WITHOUT a respirator.		

* DENOTES CRITICAL

INITIAL CONDITIONS

An individual has been assigned the task of performing a valve lineup in the Auxiliary Building. The area where the valves are located has a dose rate of 76 mrem/hr and also has some airborne radioactivity.

From experience with this task, the individual knows it will take roughly 2 hours to perform this evolution with a respirator or only 90 minutes without a respirator. However, if the job is done without a respirator, the individual will receive 14 DAC hours of internal exposure.

Determine whether or not a respirator should be worn to minimize dose. (Be sure to show all work.)

Prepared By _____
Reviewed By _____
Approved By _____

TASK: **Complete the ENS Form and Make Initial Notification to State and Counties**
POSITION: **SRO**

Operator's Name _____

Location:	Plant/Simulator	Method:	Perform
Estimated JPM Completion Time:	<u> 12 </u>	Minutes	
Actual JPM Completion Time:	<u> </u>	Minutes	
Required Time Critical Completion Time	<u> 15 </u>	Minutes	
Actual Time Critical Completion Time	<u> </u>	Minutes	

The JPM Operator's performance was evaluated against the standards of this JPM and is determined to be:

SATISFACTORY/UNSATISFACTORY (circle one)

Evaluator's Signature _____ Date / /

References: RP/0/A/5700/002 (Rev. 015)	Alert
RP/0/A/5700/000 (Rev. 007)	Classification of Emergency

JPM verified current with references by _____

Date / /

Rev. 07/01-31-02

INITIAL CONDITIONS

You are the WCC SRO/Off-site Communicator.

Both Units are at 100% power.

An earthquake has occurred. IAE has validated and confirmed the "OBE Exceeded" alarm on 1 AD-13, E-7 annunciator panel. An Alert has just been declared on Unit #1 and Unit #2.

This is an actual emergency.

No release is in progress or has occurred.

The OSM has directed you to complete Enclosure 4.8 (WCC SRO Immediate and Subsequent Actions) of RP/0/A/5700/002 (Alert).

Event declaration time/date is now (current time/date).

This is a TIME CRITICAL JPM.

JPM OVERALL STANDARD: The ENS Notification form is completed and contact with some of the counties and/or State is established within 15 minutes. (Contact with State/Counties will be simulated.)

NOTES: The evaluator should begin the JPM by giving the examinee the initial conditions and RP/0/A/5700/000 (Classification of Emergency) to use for reference while filling out the ENS form. Give the examinee Attachment 1 (Authentication Codes List) as noted in JPM step #10.

The Time Critical **start** time is the declaration time listed in the initial conditions. The evaluator should write in the declaration time (on the initial conditions sheet) as soon as the JPM initial conditions have been read. The Time Critical **stop** time is the time recorded in step #7 of this JPM. Ensure the same source (clock or watch) is used for all documented times.

Copies of RP/0/A/5700/002 (Alert) and RP/0/A/5700/000 (Classification of Emergency) shall be provided for this JPM. The Notification portion of this task may be done as a "Walkthrough" in the Simulator **OR** as a "Walkthrough" in the Control Room. Inform the examinee prior to beginning that the evaluator(s) will provide all feedback and **NO ACTUAL CALL OR FAX TO THE STATE/COUNTIES WILL BE MADE.**

*** DENOTES CRITICAL**

START TIME _____

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
1	<p>WCC SRO Immediate and Subsequent Actions (Enc. 4.8)</p> <p>Complete items 1 - 10, 15 and 16 on Enclosure 4.1 - Emergency Notification Form in accordance with Enclosure 4.2, section 1</p>	Operator uses guidance in Enc. 4.2 to fill out the Emergency Notification Form (Enc. 4.1)		
2	<p><u>COMPLETION OF THE EMERGENCY NOTIFICATION FORM</u></p> <p>Complete Enclosure 4.1- Emergency Notification Form as follows:</p> <p>Check A for Drill <u>OR</u> B for Emergency</p> <p><u>AND</u></p> <p>Check INITIAL</p> <p><u>AND</u></p> <p>Write in message number.</p> <p>Write in the unit(s)</p> <p><u>AND</u></p> <p>Communicator's name</p>	<p>Same</p> <p><u>Item 1</u> - Operator checks "B" – Actual Emergency</p> <p>Checks "INITIAL"</p> <p>Operator writes message number 1</p> <p><u>Item 2</u> - Operator writes in Unit #1 and Unit #2</p> <p>Operator writes in his or her own name.</p>		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
2	<p>Continued</p> <p>NOTE: Information for items 3 and 4 will be completed during transmission of the Emergency Notification Form</p> <p>Write in the transmittal time AND date</p> <p>Write in the appropriate number AND code word</p> <p>Check "B" for Alert</p> <p>Check A for Emergency Declaration At:</p> <p style="text-align: center;"><u>AND</u></p> <p>Write the time AND date the classification was declared</p>	<p>Item 3 - Operator will not enter a time and date until they are actually making the transmission.</p> <p>Item 4 - Operator will not enter number and codeword until they are actually making the transmission.</p> <p>Item 5 - Checks "B" for Alert</p> <p>Item 6 - Checks "A" for Emergency Declaration At:</p> <p>The Declaration Time is <u>that time listed in the initial conditions of the JPM</u> and designates the start of the Time Critical portion of this JPM.</p>		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
2	<p>Continued</p> <p>Note: Reference RP/0/A/5700/000, (Classification of Emergency)</p> <p>Enter a brief description for declaring the classification (in layman's terms, if possible).</p> <p>Check the appropriate plant condition:</p> <p>A-IMPROVING B-STABLE C-DEGRADING</p> <p><u>Check B AND write in the Reactor Power level</u></p> <p>Check the appropriate box, for emergency release</p> <p>A-NONE B-POTENTIAL C-IS OCCURRING D-HAS OCCURRED</p>	<p>Item 7 - Operator enters information from initial conditions or RP/000 in layman's terms. Expected to include the following: Valid "OBE Exceeded" Alarm on 1AD-13, E-7. (Note: Does not have to be exact wording.)</p> <p>Item 8 - Checks "A" or "B"</p> <p>Item 9 - 'B' - Both Reactors are at ____ 100% ____."</p> <p>Item 10 - Checks "A"</p> <p>Note: <u>If</u> the operator requests Meteorological information give the following cue:</p> <p>Cue:</p> <p>Meteorological information is not available at this time.</p>		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
2	<p>Check A, NO RECOMMENDED PROTECTIVE ACTIONS</p> <p>Have the Emergency Coordinator approve the message</p> <p style="text-align: center;"><u>AND</u></p> <p>Write in the time <u>AND</u> date the message was approved</p>	<p><u>Item 15</u> - Checks "A", NO RECOMMENDED PROTECTIVE ACTIONS</p> <p><u>Item 16</u> -</p> <p>Cue: The Emergency Coordinator, John Doe, just approved the message</p> <p>Operator writes in current time and date</p>		
3	<p>WCC SRO Immediate and Subsequent Actions (Enc. 4.8)</p> <p>Make initial notification to State and County authorities using the Emergency Notification Form in accordance with Enclosure 4.2, section 2.</p>	Same		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
4	Continuing with step 2.1 of Enclosure 4.2 of RP/0/A/5700/002 (Alert): <u>TRANSMISSION OF THE EMERGENCY NOTIFICATION FORM</u>	Operator dials *1 on Selective Signaling phone, presses the push to talk button as needed in following steps.		
*	Use the Selective Signaling telephone by dialing *1 and depressing the push to talk button.			
5	<u>IF</u> selective signaling fails, <u>THEN</u> go to RP/0/A/5700/014, Tab 1 for manual selective signaling numbers.	Same		
6	As the State and Counties answer, check them off on the back of the notification form. At least one attempt using the individual selective signaling code must be made for any missing agencies.	Operator listens to the Selective Signaling phone and checks off each agency on the back of the Notification form as they come on the line. Operator <u>may or may not</u> respond after each agency comes on line.		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
	<p>Proceeds with the notification promptly following an attempt to get missing agencies on the line.</p>	<p>Cue:</p> <p>This is North Carolina Emergency Response Organization.</p> <p>Operator holds down the push to talk button, responds "This is McGuire Nuclear Station, Hold please".</p> <p>Cue:</p> <p>This is Gaston County Emergency Response Organization.</p> <p>Operator holds down the push to talk button, responds "This is McGuire Nuclear Station, Hold please".</p> <p>Cue:</p> <p>This is Lincoln County Emergency Response Organization.</p> <p>Operator holds down the push to talk button, responds "This is McGuire Nuclear Station, Hold please".</p>		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
6	Continued	<p>Cue:</p> <p>This is Iredell County Emergency Response Organization.</p> <p>Operator holds down the push to talk button, responds "This is McGuire Nuclear Station, Hold please".</p> <p>Cue:</p> <p>This is Catawba County Emergency Response Organization.</p> <p>Operator holds down the push to talk button, responds "This is McGuire Nuclear Station, Hold please".</p> <p>Cue:</p> <p>This is Cabarrus County Emergency Response Organization.</p> <p>Operator holds down the push to talk button, responds "This is McGuire Nuclear Station, Hold please".</p>		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
6	Continued	<p>Cue:</p> <p>This is Mecklenburg County Emergency Response Organization.</p> <p>Operator holds down the push to talk button, responds "This is McGuire Nuclear Station, Hold please".</p>		
*7	Verify the State and Counties are on the line, document this time in item #3 on the form. This time should not exceed <u>15 minutes</u> from the time of declaration (Item # 6).	<p>Operator verifies the State and Counties are on the line, documents current time and date on line # 3 of the Notification form.</p> <hr/> <p>Time State/Counties are on the line:</p> <hr/> <p>This is the Stop Time for the Time Critical Task</p>		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
8	Tell them you have an emergency notification from the McGuire Control Room and to get out the Emergency Notification Form.	Same. (No response is expected from agencies.)		
9	Read the message <u>slowly</u> beginning with Item # 1, allowing ample time to copy.	<p>Operator holds down the press to talk button and reads from Enclosure 4.1 (Emergency Notification Form) provided:</p> <p><u>Item 1</u>-This is a actual emergency</p> <p>This is an initial notification, message # 1.</p> <p><u>Item 2</u>-The site is McGuire Nuclear Site, Unit #1 & #2.</p> <p>Reported by _____ (the operator's name making the transmission)</p> <p><u>Item 3</u>-The transmittal time/date is _____ (as listed on line #3).</p> <p>Confirmation phone number is 704-875-6044."</p>		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
10	<p>NOTE: Refer to page 6 of 8 of this Enclosure for the authentication codeword list.</p> <p>When you reach item #4, ask the State or County to authenticate the message. The agency should give you a number and you should provide the appropriate codeword. Write the number and codeword on the form.</p>	<p>Note to evaluator: When the operator turns to page 6 of the Enclosure (which is blank), give him/her <u>Attachment #1</u> of this JPM. Instruct them to use Attachment #1 for authentication purposes.</p> <p>Operator asks <u>any one</u> of the agencies to authenticate. The Operator references Attachment #1 of this JPM and finds the corresponding codeword. Both code number and codeword are written in on line 4 of Enclosure 4.1.</p> <p>Operator holds down the push to talk button, "_____ County, please authenticate this message." then releases the button on the receiver.</p> <p>Cue:</p> <p>This is <u>(same as above)</u> County, the authentication number is # 95.</p> <p>Operator holds down the push to talk button, "Item 4-_____ County, the codeword for # 95 is Baton", then releases the button on the</p>		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
		receiver.		
11	After communicating the initial message, ask if there are any questions. Record individuals' names and times on the back of the form. The time is the same time as Item #3.	<p>Operator continues reading the initial message as follows:</p> <p>"Item 5-The Emergency Classification is 'B'- Alert.</p> <p>"Item 6-'A'-The Emergency was declared at _____" (time/date listed on form)</p> <p>"Item 7- "Valid "OBE Exceeded" Alarm on 1AD-13, E-7.</p> <p>"Item 8-'B'-Plant conditions are Stable."</p> <p>"Item 9-'B'-Both Reactors are at ____100%____."</p> <p>"Item 10- Emergency Releases-'A'-None are happening at this time." "No meteorological data is available at this time."</p> <p>"Item 15-'A'-No recommended protective actions at this time."</p>		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
11	Continued	<p>"Item 16-This Emergency Notification was approved by the Emergency Coordinator, John Doe, at _____ (time/date listed on form) Are there any questions?"</p> <p>PAUSE...NO QUESTIONS.</p> <p>Operator records names, dates and times on back of form.</p> <p>"I need to verify the name of each agency representative. When I call out the agency, please give your name..."</p> <p>North Carolina State,"</p> <p>Cue: Jerry Boone</p> <p>"Mecklenburg County,"</p> <p>Cue: Sally Adams</p> <p>"Gaston County,"</p> <p>Cue: Mike Clancy</p> <p>"Lincoln County,"</p> <p>Cue: Patricia Denton</p> <p>"Iredell County,"</p> <p>Cue: Clay Raines</p> <p>"Catawba County,"</p> <p>Cue: Jonathon Hayes</p> <p>"Cabarrus County."</p> <p>Cue: David Knight</p>		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
12	<p>After verbally transmitting the message, FAX a copy (front page only) to the agencies. Refer to pages 7 of 8 and 8 of 8 of this enclosure for FAX operation.</p> <p><u>OPERATION OF THE FAX</u> (from page 7 of Enc. 4.2)</p> <p>Insert the Emergency Notification Form face down into the FAX. Press – Group FAX.</p>	<p>Operator refers to page 7 of Enc. 4.2, <u>simulates</u> placing the Emergency Notification Form face down into the FAX and depressing the “Group Fax” button.</p> <p><u>Note to evaluator:</u> Ensure FAX transmission is ONLY SIMULATED.</p> <p>Cue: Form inserted face down, Group FAX pushbutton depressed, FAX is transmitting.</p>		
13	<p>Continuous attempts to contact missing agencies must be made if unable to complete the notification per step 2.3. Document the time these agencies were contacted on the back of the notification form.</p>	<p>Cue: All agencies have been notified.</p>		
14	<p>WCC SRO Subsequent Actions (Enc. 4.8)</p> <p>Notify the NRC Operations Center by completing Enclosure 4.3 and transmitting immediately but no later than 1 hour of the event declaration using RP/0/A/5700/014, Tab2.</p>	<p>Operator returns to Enclosure 4.8 after the notification transmission is complete.</p> <p>Cue: Another operator will make the NRC notification and complete Enclosure 4.8.</p>		

STOP TIME _____

* DENOTES CRITICAL

Attachment 1

(For Training Use Only)

Excerpt From Authentication Codes List (RP/0/A/5700/xxx)

Theme: Sports

Effective 12/18/96-12/31/98

- | | | |
|------------------|-----------------|-----------------|
| 1. Fishing | 43. Camping | 85. Strike |
| 2. Lacrosse | 44. Aerobics | 86. Grip |
| 3. Ice Hockey | 45. Uniform | 87. Somersault |
| 4. Roller blades | 46. Spirit | 88. Wheel |
| 5. Wrestling | 47. Huddle | 89. Skis |
| 6. Sweatshirt | 48. Referees | 90. Tournament |
| 7. Pool | 49. Tackle | 91. Fairway |
| 8. Hurdle | 50. Yacht | 92. Handball |
| 9. Equestrian | 51. Baseball | 93. Stadium |
| 10. Net | 52. Gymnastics | 94. Fitness |
| 11. Putt | 53. Tennis | 95. Baton |
| 12. Bowling | 54. Driver | 96. Fans |
| 13. Cricket | 55. Surfing | 97. Timeout |
| 14. Iron | 56. Jersey | 98. Touchdown |
| 15. Arrow | 57. Pool | 99. League |
| 16. Jai alai | 58. Marathon | 100. Bulls eye |
| 17. Nascar | 59. Backpack | 101. Catcher |
| 18. Tent | 60. Race car | 102. Rifle |
| 19. Stance | 61. Puck | 103. Rod |
| 20. Officials | 62. Waterskiing | 104. Cleats |
| 21. Karate | 63. Jogging | 105. Shinguard |
| 22. freestyle | 64. Sandtrap | 106. Team |
| 23. Pitcher | 65. Goal | 107. Rugby |
| 24. Rodeo | 66. End zone | 108. Glove |
| 25. Raft | 67. Sneakers | 109. Bullet |
| 26. Walking | 68. Coach | 110. Volleyball |
| 27. Nautilus | 69. Basket | 111. Etc..... |
| 28. Baseball | 70. Shotgun | |
| 29. Arena | 71. Mask | |
| 30. Jumpshot | 72. Paddle | |
| 31. Kneepads | 73. Bow | |
| 32. Football | 74. Sailing | |
| 33. Hunting | 75. Bunt | |
| 34. Court | 76. Winner | |
| 35. Skating | 77. Exercise | |
| 36. Canoe | 78. Winston cup | |
| 37. Match | 79. Parachute | |
| 38. Defense | 80. Loser | |
| 39. Competition | 81. Jockey | |
| 40. Snorkeling | 82. Bronco | |
| 41. Bobsled | 83. Archery | |
| 42. Pigskin | 84. Track | |

INITIAL CONDITIONS

You are the WCC SRO/Off-site Communicator.

Both Units are at 100% power.

An earthquake has occurred. IAE has validated and confirmed the "OBE Exceeded" alarm on 1 AD-13, E-7 annunciator panel. An Alert has just been declared on Unit #1 and Unit #2.

This is an actual emergency.

No release is in progress or has occurred.

The OSM has directed you to complete Enclosure 4.8 (WCC SRO Immediate and Subsequent Actions) of RP/0/A/5700/002 (Alert).

Event declaration time/date is now (current time/date).

This is a TIME CRITICAL JPM.

Prepared By_____

Reviewed By_____

Approved By_____

TASK: **Respond To A Leak On The ND System While At Mid Loop**POSITION: **RO**

Operator's Name_____

Location: **Simulator**Method: **Perform**Estimated JPM Completion Time: 30 MinutesActual JPM Completion Time: Minutes

The JPM Operator's performance was evaluated against the standards of this JPM and is determined to be:

SATISFACTORY/UNSATISFACTORY (circle one)

Evaluator's Signature_____ Date / /

References: AP/1/A/5500/19 (Rev 13) Loss of ND or ND System Leakage

JPM verified current with references by _____

Date / /

Rev. 10/12-10-01

FOR TRAINING PURPOSES ONLY

INITIAL CONDITIONS

Unit one is in mode 5. The following conditions exist:

1A ND Pump has been secured due to a leak

1ND-35 is closed

B Train ND is available

No air entrainment or voiding has occurred

A loss of ND has occurred due to a small leak. When NC level decreased to less than 4 inches the "A" ND pump was secured. The balance of plant operator has made up to greater than 20 inches and level is stable. AP/1/A/5500/19 (Loss of ND or ND System Leak) has been implemented and completed through step 12. The SRO directs the RO to restore ND cooling by completing AP/1/A/5500/19 starting with step 13.

JPM OVERALL STANDARD: B Train ND in service with Flow to NCS established.

NOTES:

This JPM is designed to be performed as a **SIMULATION** or as a **WALKTHROUGH**. Cues found in shaded boxes should be given to the trainee for either setting.

KA 000 025 G.6 3.7/3.6

TASK:MO-7317

START TIME _____

STEP	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
1	<p>Check if immediate restart of ND is available as follows:</p> <p>NC subcooling based on core exit T/C's – GREATER THAN 0 DEGREES.</p> <p>NC level – STABLE OR GOING UP</p> <p>Suction flowpath for ND pump - ALIGNED</p> <p>Train of ND – IMMEDIATELY AVAILABLE TO RESTART</p> <p>Check if air entrainment – KNOWN TO HAVE OCCURRED</p> <p>If at any time it appears that NC subcooling based on core exit T/Cs may be lost prior to restarting ND pump then go to step 14.</p> <p>Restart ND per enclosure 14.</p>	<p>Operator determines from initial conditions B train ND is available</p> <p>Cue: Subcooling is > 0</p> <p>Cue: NC level is stable</p> <p>NO- go to step 13.d</p>		

* DENOTES CRITICAL

STEP	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
2	Check VI - AVAILABLE	RO determines that VI is available and continues Cue: VI System header pressure is 105 psig		
3	Check 1ND-35 (ND to FWST Isol) - CLOSED	Operator determines from initial conditions that 1ND-35 is already closed		
4	<p>Check if ND letdown valves should be closed:</p> <p>Check Pzr level – less than 96%</p> <ul style="list-style-type: none"> • Close 1NV-121 (ND Letdown Control) • 1ND-32 (A ND Hx to Letdown Hx) • 1ND-17 (B ND HX to Letdown Hx) <p>Go to step 5</p>	<p>Same</p> <p>Cue: Pzr. Level indicates 0%</p> <p>Cue: Needles at 0%</p> <p>Green light lit</p> <p>Green light lit</p>		

* DENOTES CRITICAL

STEP	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
5	Check S/I – HAS OCCURRED	Cue: SI actuated stat light is dark		
6	Start desired ND pump PER one of the following: 1A ND Pump - <u>GO TO</u> Step 7 OR 1B ND Pump - <u>GO TO</u> Step 48	Operator proceeds to step 48 to start B ND pump		
7	Dispatch 2 operators to perform the following on 1ND-9 (B ND Pump Discharge Isol) (aux bldg, 695 + 12, FF-54, room 500, ND Pump room 1B on north wall): Unlock valve Close valve Open valve 2 turns	Same Cue: An NLO has been dispatched and the valve has been positioned to 2 turns open		

* DENOTES CRITICAL

STEP	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
8	Dispatch operator to open breaker 1EMXB1-2C (1B ND Pump and 1B Hx Miniflow Stop Vlv 1ND-67B) (aux bldg, 733, GG-55-56)	Same Cue: Operator has been dispatched and reports that the breaker is open		
9	Check 1B RN pump - AVAILABLE	Same		
* 10	Start 1B RN pump	Same Cue: Pushbutton depressed, red light lit		
11	Start KC pump as follows: <ul style="list-style-type: none"> • select "Auto" on 1KC-54B (Train B Recirc Isol) 	Same Cue: Switch rotated clockwise		
*	<ul style="list-style-type: none"> • Start 1B1 and 1B2 KC PUMPS 	Cue: Pushbuttons depressed, red lights lit		

* DENOTES CRITICAL

STEP	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
12	Ensure RN flow established to KC Hx in operation.	Same Cue: Flow meter indicates 4000 gpm		
13	Establish KC flow to 1B ND HX as follows: <ul style="list-style-type: none"> • Close 1KC-56A (KC to A ND HX) • If adequate KC flow can not be established the throttle closed as follows 1KC-149 or 1KC-156 • Throttle open 1KC-81B (KC to B ND Hx) to establish 2000 to 5000 gpm flow to 1B ND Hx. 	Same Cue: Pushbutton depressed, green light lit N/A Cue: Pushbutton depressed, red and green lights lit, Flow at 3000 gpm		
14	Check 1ND-35 (ND to FWST Isol) – CLOSED	Operator realizes valve is closed per JPM initial conditions.		

* DENOTES CRITICAL

STEP	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
15	<p>Check the following valves:</p> <p>1ND-1B (C NC Loops to ND Pumps)</p> <p>1ND-2AC (C NC Loops To ND Pumps)</p> <p>1ND-4B (B ND Pump Suct From FWST or NC)</p> <p>Go to step 59</p>	<p>Note: Operator uses OAC graphics to determine position of 1ND-1 and 1ND-2</p> <p>Cue: Red light lit on OAC</p> <p>Cue: Red light lit on OAC</p> <p>Cue: Red light lit</p>		
16	<p>Close the following:</p> <p>* 1ND-30A (Train A ND To Hot Leg Isol)</p> <p>1ND-33 (A ND Hx Bypass)</p> <p>1ND-14(B ND Hx Outlet)</p> <p>1NI-183B (ND to B & C Hot Legs Isol).</p>	<p>Same</p> <p>Cue: Pushbutton depressed, lamp illuminated</p> <p>Cue: Pushbutton depressed, lamp illuminated</p> <p>Cue: Manual loader at 0%</p> <p>Cue: Green light lit on OAC</p>		

* DENOTES CRITICAL

STEP	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
17	Open the following:	Same		
	1ND-18 (B ND Hx Bypass)	Cue: Pushbutton depressed, lamp illuminated		
*	1ND-34 (A & B ND Hx Bypass)	Cue: Control knob rotated clockwise		
*	1NI-178B (Train B ND To C & D CL)	Cue: Pushbutton depressed, lamp illuminated		
	1ND-15B (Train B ND To Hot Leg Isol)	Cue: Pushbutton depressed, lamp illuminated		
18	Check if either of the following are believed to have occurred: <ul style="list-style-type: none"> Air entrainment in ND system Voiding of NC system Go to step 64	NO, operator proceeds to RNO.		
19	Check core exit T/C AVAILABLE	Same Cue: ICCM indicates CET readings		

* DENOTES CRITICAL

STEP	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
20	Check subcooling based on core exit T/Cs – GREATER THAN 0 DEGREES	Same Cue: ICCM indicates CET readings 76 degrees subcooling.		
21	Check 1FW-27A (FWST Supply To ND) - CLOSED.	Same Cue: Green light lit		
22	Do not continue until 1ND-9 throttled 2 turns open.	Cue: 1ND-9 has been opened 2 turns.		
23	Establish communications with operator at 1ND-9 (B ND Pump Discharge Isol)	RO will communicate with Simulator Runner to perform the next step Cue: Communications have been established with the NLO at valve 1ND-9		
24	Check NC level – GREATER THAN 10 INCHES.	Same Cue: Level indicates 15 inches		

* DENOTES CRITICAL

STEP	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
25	Check 1ND-17 (B ND Hx to Letdown HX) - CLOSED	Same Cue: Green light lit		
* 26	Start 1B ND Pump	Same Cue: Pushbutton depressed, lamp illuminated		
27	Have operator <u>slowly</u> open 1ND-9 (B ND Pump Discharge Isol) until ND Flow is 1000 GPM to 1500 GPM	Operator monitors the C&D ND to NC Loop flow gauges until the desired flow is obtained then directs the operator to stop opening the valve Cue: ND flow to loops C&D indicates 1350 gpm		
28	Check 1FW-27A (FWST Supply to ND)- CLOSED	Same Cue: Green light lit		
29	Check NC level – GREATER THAN 4 INCHES	Same Cue: Level indicates 15 inches		

* DENOTES CRITICAL

STEP	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
30	Slowly throttle close 1ND-34 (A & B ND Hx Bypass) until a drop in ND flow is observed	Same Cue: Control knob rotated counterclockwise and ND flow to loops A&B indicates 1250 gpm		
31	Have operators open, backseat, and lock 1ND-9 (B ND pump Discharge Isol).	RO directs Simulator Runner to fully open 1ND-9 Cue: Operator at 1ND-9 reports that the valve is fully open and locked		
*32	Throttle the following as necessary to maintain stable NC system temperature: 1ND-14 (B ND Hx Outlet) 1ND-34 (A & B ND Hx Bypass)	Same Cue: Control knob rotated clockwise (counterclockwise) and NC System temperatures are stable		
33	Check NC temperature based on core exit T/Cs – LESS THAN 200 DEGREES	Same Cue: CET's read 147 degrees		

* DENOTES CRITICAL

STEP	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
34	Reduce KC flow to 1B ND HX as required to control NC temperature	Same		
35	If at any time cooldown is required then refer to Unit 1 Data Book Curve 1.6 b.	Same		
36	Check feed and bleed cooling - INITIATED Go to step 82	Operator determines that feed and bleed has not been initiated		
37	Ensure ND flow greater than 1500 gpm	Operator throttles open 1ND-34 and/or 1ND-14 to obtain > 1500 gpm flow Cue: Flow indicates 1800 gpm		
38	Dispatch operator to reclose breaker 1EMXB1- 2C (1B ND Pump and 1B Hx Mini flow Stop Vlv 1ND-67B)	Cue: Operator has been dispatched to reclose breaker.		
39	Ensure 1ND-67B (B ND Pump & B Hx Miniflow) remains closed	Same Cue: Green light is illuminated		

* DENOTES CRITICAL

STEP	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
40	<p><u>IF</u> air entrainment may have occurred on the idle train, <u>THEN</u></p> <p>Remove noncondensable gases from the idle ND Hx <u>PER</u> Enclosure 15 (Idle ND Train Hx Flush)</p> <p>Ensure idle train vented <u>PER</u> enclosure 2 (Venting of ND Pumps and Suction Piping)</p>	Same		
		<p>Cue:</p> <p>The Operations Shift Manager has already assigned these tasks to NLO's</p>		
41	<p><u>RETURN TO</u> step in effect in body of procedure</p>	<p>Cue:</p> <p>Another operator will continue in the procedure.</p>		

STOP TIME _____

* DENOTES CRITICAL

INITIAL CONDITIONS

Unit one is in mode 5. The following conditions exist:

1A ND Pump has been secured due to a leak

1ND-35 is closed

B Train ND is available

No air entrainment or voiding has occurred

A loss of ND has occurred due to a small leak. When NC level decreased to less than 4 inches the "A" ND pump was secured. The balance of plant operator has made up to greater than 20 inches and level is stable. AP/1/A/5500/19 (Loss of ND or ND System Leak) has been implemented and completed through step 12. The SRO directs the RO to restore ND cooling by completing AP/1/A/5500/19 starting with step 13.

SIMULATOR OPERATOR GUIDELINES (ND-103)

1. Snap 132
2. Slightly open FW27 to raise NCS level > 10 inches.
When NCS > 20 inches close FW27.
3. Stop B ND Pump
4. Freeze Simulator
5. During the JPM Performance
 - a. When dispatched as NLO to position ND9, 2 turns open insert LOA ND018 (B ND Pump Disch) select new value = .001.
 - b. When dispatched as NLO to de-energize ND67B, insert LOA ND009 (ND67B rackout) select one value = F (racked out).
 - c. When directed as NLO to throttle ND9 to establish 1000 - 1500 gpm Flow, insert **LOA ND018** (B ND Pump Disch). select new value = .15, ramp time = 60 seconds. **DO IN STAGES PER RO REQUEST**
 - d. When directed as NLO to fully open ND9, insert **LOA ND018** (B ND Pump Disch), select new value = 1.0, ramp time = 60 seconds.
 - e. When directed as NLO to re-energized ND67B, insert LOA ND009 (ND67B rackout) select new value = T (racked in).

Prepared By: _____

Reviewed By: _____

Approved By: _____

TASK: **Establish Feedwater Flow to the S/G's following a Reactor Trip**

POSITION: **RO/SRO**

Operator's Name _____

Location: **Simulator**

Method: **Perform**

Estimated JPM Completion Time: 20 Minutes

Actual JPM Completion Time: _____ Minutes

The JPM Operator's performance was evaluated against the standards of this JPM and is determined to be:

SATISFACTORY/UNSATISFACTORY (circle one)

Evaluator's Signature _____ Date / /

References: EP/1/A/5000/ES-0.1 (Rev. 17) Reactor Trip Response

JPM verified current with references by _____

Date / /

Rev. 14/11-09-01

FOR TRAINING PURPOSES ONLY

INITIAL CONDITIONS

Reactor Trip Response is in progress per EP/1/A/5000/ES-0.1 (Reactor Trip Response) and completed through subsequent step 10. Total feed flow to S/G's is < 450 GPM and no CA Pumps are running. CF Isolation has not occurred.

The SRO instructs you to remove the 1A CF Pump from Rollback Hold, place it in service, and establish CF to the S/G's per Enclosure 3 (Reestablishing CF Flow) of EP/1/A/5000/ES-0.1.

JPM OVERALL STANDARD: 1A CF Pump is in service and capable of providing feedwater flow to all four S/G's. If flow is not needed (due to S/G levels being greater than 11% N/R level), the examinee explains why flow is not required.

NOTES:

KA 000 054 EA2.05 3.5/3.7

TASK: MO-7301

FOR TRAINING PURPOSES ONLY

START TIME _____

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
1	Place the following in manual and close manual loaders:	Same		
*	S/G CF control valves	Cue: Pushbuttons depressed Pushbuttons depressed and needles are down		
	S/G CF control bypass valves	Cue: Amber "manual" lamps are lit, Needles are down		
2	Close the following CF Control isolation valves:	NOTE: Closing either the Inlet OR the Outlet for each S/G CF Cntrl valve satisfies the critical element of this step.		
*	1CF-31 (A S/G CF Cntrl Inlet Isol)	Cue: Pushbutton depressed, Green lamp illuminated.		
*	1CF-33 (A S/G CF Cntrl Outlet Isol)	Cue: Pushbutton depressed, Green lamp illuminated.		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
2	CONTINUED			
*	1CF-22 (B S/G CF Cntrl Inlet Isol)	Cue: Pushbutton depressed, Green lamp illuminated.		
*	1CF-24 (B S/G CF Cntrl Outlet Isol)	Cue: Pushbutton depressed, Green lamp illuminated.		
*	1CF-19 (C S/G CF Cntrl Inlet Isol)	Cue: Pushbutton depressed, Green lamp illuminated.		
*	1CF-21 (C S/G CF Cntrl Outlet Isol)	Cue: Pushbutton depressed, Green lamp illuminated.		
*	1CF-16 (D S/G CF Cntrl Inlet Isol)	Cue: Pushbutton depressed, Green lamp illuminated.		
*	1CF-18 (D S/G CF Cntrl Outlet Isol)	Cue: Pushbutton depressed, Green lamp illuminated.		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
3	<p>Check the following alarms – DARK</p> <p>Inner Doghouse Level Hi (1AD-5, G-6)</p> <p>Outer Doghouse Level Hi (1AD-5, H-6)</p>	<p>Same</p> <p>Cue:</p> <p>Lamp is DARK</p> <p>Cue:</p> <p>Lamp is DARK</p>		
4	<p>Check all S/G N/R levels – HAVE REMAINED LESS THAN 83% (P-14 setpoint)</p>	<p>RO determines that no Feedwater isolation has occurred due to P-14.</p> <p>Cue:</p> <p>There is no feedwater isolation signal present.</p>		
*5	<p>Reset Feedwater Isolation</p>	<p>Same</p> <p>Cue:</p> <p>Pushbuttons depressed and lights are illuminated</p>		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
6	<p>Open the following:</p> <p>1CF-35AB (A S/G CF Cont Outside Isol)</p> <p>1CF-30AB (B S/G CF Cont Outside Isol)</p> <p>1CF-28AB (C S/G CF Cont Outside Isol)</p> <p>1CF-26AB (D S/G CF Cont Outside Isol)</p>	<p>Same</p> <p>Cue:</p> <p>Red light is illuminated</p> <p>Cue:</p> <p>Red light is illuminated</p> <p>Cue:</p> <p>Red light is illuminated</p> <p>Cue:</p> <p>Red light is illuminated</p>		
7	Check both CF Pumps - RESET	RO determines that both CF Pumps are reset and proceeds to step 8		
8	<p>Isolate steam flow to the CF pump not being placed in service as follows:</p> <p>Ensure the "CF Pump Turbine Speed controller is in manual and at 0%.</p>	<p>Operator places "B" CF pump turbine speed controller in manual , decreases output to 0%, then resets toggle switch.</p> <p>Cue:</p> <p>Pushbutton depressed, output decreased to 0%.</p>		

* DENOTES CRITICAL

*** DENOTES CRITICAL**

*** DENOTES CRITICAL**

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
		is dark		
12	<p>Perform the following on CF Pump to be placed in service:</p> <p>Use the "CF PUMP TURB SPEED" controller to match "% FEEDWATER" and "% HOLD" signals (25%)</p>	<p>Operator selects "1A" CF pump per initial conditions of the JPM.</p> <p>Cue:</p> <p>Pushbutton depressed and needle moving up</p> <p>Value on controller matches value in % HOLD window</p>		
*12	<p>Reset the hold mode using the "HOLD RESET" toggle switch</p>	<p>Same</p> <p>Cue:</p> <p>Switch pushed up, value in % HOLD window is out, feedwater "IS" light illuminated</p>		
13	<p>Check CF flow - has been lost for over one hour, THEN perform the following....</p> <p><u>GO TO</u> Step 16.</p>	<p>Operator proceeds to RNO <u>after</u> receiving the following cue:</p> <p>Cue:</p> <p>CF flow was lost 20 minutes ago.</p> <p>Same</p>		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
14	Establish desired feed flow to S/Gs by performing the following:	Operator throttles open each S/G CF control bypass valve and increases CF pump speed until discharge pressure is adequate to provide flow, or explains why flow is not required at this time.		
*	Slowly throttle open S/G CF control bypass valves	Cue: Pushbuttons depressed and needles are moving up		
*	Raise CF pump discharge pressure as required	Cue: CF pump speed and pressure are going up Feedwater flow indicated on each S/G		

STOP TIME _____

* DENOTES CRITICAL

INITIAL CONDITIONS

Reactor Trip Response is in progress per EP/1/A/5000/ES-0.1 (Reactor Trip Response) and completed through subsequent step 10. Total feed flow to S/G's is < 450 GPM and CA Pumps 1A and 1B are not running. CF Isolation has not occurred.

The SRO instructs you to remove the 1A CF Pump from Rollback Hold, place it in service, and establish CF to the S/G's per Enclosure 3 (Reestablishing CF Flow) of EP/1/A/5000/ES-0.1.

SIMULATOR OPERATIONAL GUIDELINES (CF-36)

1. Snap 140
2. Reset 1B CF pump
3. Insert MAL CA004A Failure of CA Pump A to Start AUTO
Insert MAL CA004B Failure of CA Pump B to Start AUTO
Insert MAL CA003A CA Turbine Fails to Start
Insert MAL CA003B CA Turbine Fails to Start
4. Manually trip the Reactor
5. Allow simulator to run until negative power mismatch and temp. mismatch clear.
6. Freeze the simulator.

Prepared By: _____

Reviewed By: _____

Approved By: _____

TASK: **Start and Load 1B D/G Then Separate From the Grid**

POSITION: **RO/SRO**

Operator's Name _____

Location: **Simulator/ Plant**

Method: **Perform/Walkthrough**

Estimated JPM Completion Time: 15 Minutes

Actual JPM Completion Time: _____ Minutes

The JPM Operator's performance was evaluated against the standards of this JPM and is determined to be:

SATISFACTORY/UNSATISFACTORY (circle one)

Evaluator's Signature _____ Date / /

References: OP/1/A/6350/002 (Rev.90) Diesel Generator

Revision numbers of references provided to the examinee have been verified to match those listed above by: (Evaluator initials and dates)

_____ Date / /

Rev. 00/02-01-02

FOR TRAINING PURPOSES ONLY

INITIAL CONDITIONS

Unit 1 is at 100 % power. You are the Unit 1 Balance of Plant Operator. The WCC SRO has just been notified that the NORMAL SUPPLY breaker to 1ETB from 1ATD needs to be removed for inspection by IAE. The OSM has decided not to swap to the other train due to problems with the "A" RN pump. To facilitate this request, OP/1/A/6350/002, DIESEL GENERATOR, Enclosure 4.2 (1B D/G Startup) has been implemented and completed up to step 3.8.

The C/R SRO directs you to complete the procedure by performing a normal start from the Control Room. An NLO has a copy of the procedure and is in the 1B D/G room to monitor the equipment during startup.

JPM OVERALL STANDARD: Power to 4160V Bus 1ETB is being supplied from 1B D/G with Normal supply breaker from 1ATD open.

NOTES: This JPM is designed to be performed as a **SIMULATION** or as a **WALKTHROUGH**. Cues found in shaded boxes should be given to the trainee for either setting.

KA 064000 A4.01 4.0/4.3

TASK:MO-5003

START TIME _____

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
1	Place Control Room "1B D/G Mode Select" to positions where D/G will be started: <ul style="list-style-type: none"> • "LOCAL" to allow D/G to start from local panel. * • "C/R" to start D/G from Control Room 	Same N/A Cue: Switch rotated to "C/R " position.		
2	IF performing start other than "Slow Start", perform one of the following: <ul style="list-style-type: none"> * • <input type="checkbox"/> Depress "START" on "1B Diesel Generator" <p style="text-align: center;">OR</p> <ul style="list-style-type: none"> • <input type="checkbox"/> Manually pull and then release plunger on front of relay "CD(SAB)" located lower left inside 1B Sequencer Control Cabinet (1DGLSB) <p style="text-align: center;">OR</p> <ul style="list-style-type: none"> • Start D/G per PT/1/A/4350/055 A (1B D/G Slave Start 	Based on the JPM initial conditions the operator chooses to perform a normal start from the C/R. Cue: Pushbutton depressed, red and green lights lit for 10 seconds. Red light lit, green light is dark. N/A N/A		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
2	Test) Continued OR <ul style="list-style-type: none"> <input type="checkbox"/> Start D/G per PT/1/A/4350/004 A (D/G 1B Load Sequencer Test) 	N/A		
3	IF D/G started by pulling plunger on front of relay "CD(SAB)", check 95% speed light lit on front of 1B Sequencer Control Cabinet (1DGLSB).	Operator N/A's the step and continues.		
4	Record D/G start time: _____	Operator uses OAC to determine start time. Cue: Start time indicates 9.5 seconds.		
5	Check governor oil level visible in sightglass while engine is idling.	This step is checked locally. Operator simulates communicating with the NLO at the D/G. Cue: The NLO reports oil is visible in the sightglass.		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
6	<p>IF D/G idles more than 7 minutes, check the following: (may NOT be visible from floor at no load)</p> <p>Oil splashing on turbocharger intake side bearing sightglass</p> <p>Oil splashing on turbocharger exhaust side bearing sightglass</p>	<p>This step is checked locally. Operator simulates communicating with the NLO at the D/G.</p> <p>Note: Operator may N/A this step if D/G idles less than seven minutes</p> <p>Cue: The NLO reports oil is splashing on both sightglasses.</p>		
7	Check 1KDPG5050 (Jacket Water Pressure) greater than 24 psig.	<p>This step is checked locally. Operator simulates communicating with the NLO at the D/G.</p> <p>Cue: The NLO reports Jacket Water pressure is 36 psig.</p>		
8	Check 1LDP5130 (Lube Oil Pressure) greater than 36 psig.	<p>This step is checked locally. Operator simulates communicating with the NLO at the D/G.</p> <p>Cue: The NLO reports lube oil pressure is 48 psig.</p>		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
9	Place "Before & After Lube Oil Pump" in "AUTO".	This step is performed locally. Operator simulates communicating with the NLO at the D/G.		
		Cue: The NLO reports the Before and After Lube Oil pump has been placed in Auto.		
10	<u>IF</u> 1LD-113B (Lube Oil Filter Bypass Valve) indicates "OPEN", notify SWM immediately. Person Contacted _____/_____ Date Time	This step is checked locally. Operator simulates communicating with the NLO at the D/G.		
		Cue: The NLO reports 1LD-113B is closed.		
11	<u>WHEN</u> D/G running <u>AND</u> Fuel Oil Booster Pump "OFF", check 1FDPG5010 (Fuel Oil Pressure) greater than 32 psig.	This step is checked locally. Operator simulates communicating with the NLO at the D/G		
		Cue: The NLO reports that Fuel Oil Pressure is 44 psig.		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
12	<p>Check the following on OAC (Turn-on Code RNESS1B):</p> <p>1RN-171B (1B KD Hx Supply Isol) indicates "OPEN"</p> <p>RN flow indicated through D/G Heat Exchanger</p>	<p>Operator checks OAC.</p> <p>Cue:</p> <p>Red light on OAC lit.</p> <p>Cue:</p> <p>OAC indicates 1500 gpm RN flow through 1B D/G heat exchanger.</p>		
13	<p>Check the following:</p> <p>Steady-state D/G Volts 3740 - 4580V</p> <p>Steady-state D/G Frequency 58.8 - 61.2 Hz</p>	<p>Same</p> <p>Cue:</p> <p>Meter reads 4100 volts.</p> <p>Cue:</p> <p>Meter reads 60 hertz.</p>		
14	<p>IF requested by Engineering or Maintenance for specific D/G voltage and frequency, perform the following:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Adjust D/G voltage using "1B D/G Voltage Adjust" <input type="checkbox"/> Adjust D/G frequency using "1B D/G Gov Control" 	<p>Operator receives the following cue and continues to the next step.</p> <p>Cue:</p> <p>No specific adjustments have been requested.</p>		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
15	IF D/G is to remain unloaded, exit this enclosure.	Operator N/A's the step and continues.		
16	Ensure frequency 60 Hz using "1B D/G Gov Control".	Same Cue: Meter reads 60 hertz		
17	Check "Line Volts" 3960 - 4360 V.	Same Cue: Meter reads 4100 volts.		
18	Adjust D/G voltage 100 - 200 V higher than line voltage using "1B D/G Volt Adjust".	Operator adjusts D/G voltage 100-200 volts higher than line volts.		
* 19	Place "1B D/G Sync Switch" to "ON".	Same Cue: Switch rotated clockwise.		
* 20	Using "1B D/G Gov Control", adjust D/G speed to allow synchroscope to move slowly in "FAST" (clockwise) direction.	Same Cue: Pushbutton depressed, synchroscope moving slowly in "FAST" (clockwise) direction		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
* 21	WHEN synchroscope pointer within 3 minutes before 12 o'clock position, firmly depress and promptly release "CLOSE" for "1ETB Emergency Breaker".	Same Cue: Synchroscope at 3 minutes before 12 o'clock, pushbutton depressed, red light lit.		
22 * *	Perform the following concurrently: • <input type="checkbox"/> Quickly raise D/G load to 1000 KW using "1B D/G Gov Control" • <input type="checkbox"/> Maintain power factor 0.90 - 0.92 lagging using "1B D/G Voltage Adjust"	Same Cue: Pushbutton depressed, KW meter increasing, Meter reads 1000 KW, Pushbutton released. Cue: Handle rotated counter clockwise, Power Factor at 0.9 lagging, handle released.		
23	Place "1B D/G Sync Switch" to "OFF".	Same Cue: Switch rotated counter clockwise.		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
24	<p>Check the following: (may NOT be visible from floor at low load)</p> <p>Oil splashing on turbocharger intake side bearing sightglass</p> <p>Oil splashing on turbocharger exhaust side bearing sightglass</p>	<p>This step is checked locally. Operator simulates communicating with the NLO at the D/G.</p> <p>Cue:</p> <p>The NLO reports oil is splashing on both sightglasses</p>		
25	<p>IF 1LD-113B (Lube Oil Filter Bypass Valve) indicates "OPEN"</p> <p>OR</p> <p>1LDPG5370 (1B D/G Lube Oil Filter D/P) greater than 12 psid, notify SWM immediately.</p>	<p>This step is checked locally. Operator simulates communicating with the NLO at the D/G.</p> <p>Cue:</p> <p>The NLO reports 1LD-113B is closed and filter D/P is 4 psid.</p>		
26	Operate D/G at 1000 KW for 5 minutes.	<p>Same</p> <p>Cue:</p> <p>Five minutes have elapsed.</p>		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
27	<p>IF desired to operate D/G carrying 1ETB separated from Duke grid, perform the following:</p> <ul style="list-style-type: none"> Log Off Site Power in TSAIL. Adjust D/G load to indicate 0 amps on supply transformer using "1B D/G Gov Control". IF 1ETB aligned to normal supply (1ATD), open "1ETB Normal Breaker". IF 1ETB aligned to standby supply (SATB), open "1ETB Standby Breaker". 	Operator increases D/G load until 1ATD amp meter reads approximately "0" amps, then opens 1ETB Normal Supply breaker.		
		Cue: The C/R SRO has logged OFF Site Power In TSAIL		
		Cue: Pushbutton depressed, amp meter decreasing, Meter reads "0" amps, Pushbutton released.		
		Cue: Pushbutton depressed, Green light lit.		
		N/A		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
27	Continued			
*	<ul style="list-style-type: none"> Ensure D/G voltage 4160 V using "1B D/G Voltage Adjust". 	Cue: Handle rotated clockwise/counter clockwise, Meter reads 4160 volts.		
*	<ul style="list-style-type: none"> Ensure frequency 60 Hz using "1B D/G Gov Control". 	Cue: Pushbutton depressed, Frequency reads 60 hertz.		
28	IF desired to operate D/G carrying 1ETB paralleled with Duke grid, perform the following....	Operator N/A's the step and continues.		
29	Ensure all D/G starts logged in D/G Logbook.	Same Cue: Another Operator will complete the logbook entries.		

STOP TIME _____

* DENOTES CRITICAL

D/G SIMULATOR OPERATIONAL GUIDELINES (DG-198)

1. Reset D/G Simulator to IC-39.
2. Go to RUN.

INITIAL CONDITIONS

Unit 1 is at 100 % power. You are the Unit 1 Balance of Plant Operator. The WCC SRO has just been notified that the NORMAL SUPPLY breaker to 1ETB from 1ATD needs to be removed for inspection by IAE. The OSM has decided not to swap to the other train due to problems with the "A" RN pump. To facilitate this request, OP/1/A/6350/002, DIESEL GENERATOR, Enclosure 4.2 (1B D/G Startup) has been implemented and completed up to step 3.8.

The C/R SRO directs you to complete the procedure by performing a normal start from the Control Room. An NLO has a copy of the procedure and is in the 1B D/G room to monitor the equipment during startup.

Prepared By _____

Reviewed By _____

Approved By _____

TASK: **Restore Normal Letdown from Excess Letdown**POSITION: **RO**

Operator's Name _____

Location: **Simulator**Method: **Perform**Estimated JPM Completion Time: 15 Minutes

Actual JPM Completion Time: _____ Minutes

The JPM Operator's performance was evaluated against the standards of this JPM and is determined to be:

SATISFACTORY/UNSATISFACTORY (circle one)

Evaluator's Signature _____ Date / /

References: AP/1/A/5500/12 (Rev.12) Loss of Letdown, Charging, or Seal Injection

JPM verified current with references by _____

Date / /

Rev. 09/02-5-02

FOR TRAINING PURPOSES ONLY

INITIAL CONDITIONS

You are the Unit 1 Balance of Plant (BOP) Operator.

Unit 1 is operating at 100% Full Power with normal letdown isolated due to valve 1NV-1A (NC L/D Isol To Regen Hx) failing closed due to a loss of air. Excess Letdown has been placed in service. IAE reports that 1NV-1A has been repaired allowing normal letdown to be re-established. The Letdown header has been locally pressurized as per step 45 of AP/1/A/5500/12 (Loss of Letdown, Charging or Seal Injection) and all personnel have exited containment.

The Control Room SRO directs you to re-establish Normal Letdown of 75 gpm and place 1NV-458A in service and Isolate Excess Letdown per AP/1/A/5500/12 (Loss of Letdown, Charging, or Seal Injection) step 46.

JPM OVERALL STANDARD: Normal Letdown re-established and Excess Letdown isolated.

NOTES: This JPM is designed to be performed as a **SIMULATION** or as a **WALKTHROUGH**. Cues found in shaded boxes should be given to the trainee for either setting.

KA 004 000 A2.07 3.4/3.7

TASK:MO-7311

START TIME _____

STEP	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
1	Establish normal letdown: Ensure 1NV-459 (Variable L/D Orifice Outlet Flow Cntrl) is closed	Same Cue: Needles indicate at 0%		
*2	Place 1NV-124 (Letdown Pressure Control) in manual between 10-20% open	Same Cue: Light is illuminated Controller indication is at 15%		
3	Check the following – OPEN • 1NV-1A (NC L/D Isol To Regen HX) • 1NV-2A (NC L/D Isol To Regen HX)	Cue: Green light is lit. Green light is lit.		
*4	Establish cooling to Regenerative Hx as follows: Throttle open 1NV-238 (Charging Line Flow Control) OR raise PD pump speed control to establish at least 65 gpm charging flow.	Same Cue: Pushbutton depressed and seal injection flow is indicated		

* DENOTES CRITICAL

STEP	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
4	Continued Throttle 1NV-241 (Seal Inj Flow Control) to establish approximately 8 GPM seal injection flow to each NC pump.	Cue: Control knob rotated clockwise and approximately 8 GPM seal injection flow is indicated to each NC pump.		
5	Open letdown line Isolation valves: 1NV-7B (Letdown Cont Outside Isolation) * 1NV-1A (NC L/D Isol To Regen Hx) * 1NV-2A (NC L/D Isol To Regen Hx) * 1NV-35A (Variable L/D Orifice Outlet Cont Isol)	Same Cue: Red light is lit Cue: Switch rotated clockwise, red lamp is illuminated Cue: Switch is rotated clockwise, red lamp is illuminated Cue: Switch is rotated clockwise, red lamp is illuminated		

* DENOTES CRITICAL

STEP	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
6	Establish desired letdown flowrate (45 GPM or 75 GPM) by completing the following concurrently:	Operator determines from initial conditions that it is desired to have 75 GPM letdown flow.		
*	<u>Slowly</u> throttle open 1NV-459 to desired flow rate	Cue: Control knob rotated clockwise and needles are rising		
*	As letdown pressure rises, adjust 1NV-124 to maintain letdown pressure between 250 PSIG and 350 PSIG	No flashing is observed to occur in the letdown line (No gross oscillations occur on 1NVP-5530 (L/D Flow gauge) or 1NVP-5570 (L/D Pressure gauge)) Cue: Open(close) pushbutton(s) depressed, meter indication is up		
	Do not continue until desired flow rate is established.			

* DENOTES CRITICAL

STEP	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
7	Adjust charging flow as desired while maintaining: <ul style="list-style-type: none"> • NC pump seal injection flow greater than 6 gpm • Regenerative Hx letdown temperature less than 380 degrees. • Pzr level at program level. 	Same Cue: Flow meters indicate 7 gpm to each NC pump Cue: Temperature indicates 320 degrees F Cue: Pzr level at program level		
*8	<u>IF</u> desire to leave 1NV-459 in service, <u>THEN GO TO</u> Step 46.I.	Cue: It is not desired to leave 1NV-459 in service. Place 1NV-458 in service.		
9	Adjust 1NV-124 (Letdown Pressure Control) to obtain letdown pressure of 250 PSIG	1NV-124 adjusted to obtain letdown pressure of approximately 250 psig Cue: Pushbutton depressed and meter indicates 250 PSIG		

* DENOTES CRITICAL

STEP	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
10	NOTE The following step may require 2 operators. Valve switches must be held until desired indication is obtained	Cue: An additional operator is not available at this time		
11	Perform the following concurrently:			
*	Select and hold "CLOSE" on 1NV-35A	Same Cue: Switch rotated counterclockwise light is illuminated		
	Select and hold "OPEN" on selected letdown orifice isolation valve:	Operator selects and holds open 1NV-458A		
	For 45 GPM, 1NV-457A	N/A		
	OR			
*	For 75 GPM, 1NV-458A	Cue: Switch rotated clockwise		

* DENOTES CRITICAL

STEP	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
11	Continued			
*	Adjust 1NV-124 as required to maintain letdown pressure between 250 PSIG and 350 PSIG	<p>No flashing is observed to occur in the letdown line (No gross oscillations occur on 1NVP-5530 (L/D Flow gauge) or 1NVP-5570 (L/D Pressure gauge))</p> <p>Cue:</p> <p>Pushbutton depressed, meter indicates 300 PSIG</p>		
12	Return valves to normal as follows:			
	Ensure pot setting for 1NV-124 is set at approximately 5.8	<p>Same</p> <p>Cue:</p> <p>Pot is set at 5.8</p>		
*	Manually adjust 1NV-124 to obtain letdown pressure of 350 PSIG	<p>1NV-124 adjusted to obtain letdown pressure of approximately 350 psig</p> <p>Cue:</p> <p>Pushbutton depressed, meter indicates 350 PSIG</p>		

* DENOTES CRITICAL

STEP	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
12 *	Continued Place 1NV-124 in AUTO Ensure letdown pressure controlled at 350 PSIG	Same Cue: Pushbutton depressed and lamp is illuminated Same Cue: Pressure indicates 350 PSIG		
13	Check 1NV-35A – OPEN RNO – Place 1NV-459 manual loaded in closed position.	Cue: Lamp is green Cue: Control knob rotated counterclockwise and needle is down		
14	IF more letdown flow is required, <u>THEN:</u>	Cue: No more letdown is required		

* DENOTES CRITICAL

STEP	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
15	<p>When Pzr level matches program level, then perform the following:</p> <ul style="list-style-type: none"> Place "PZR LEVEL MASTER" in "MAN" Place "PZR LEVEL MASTER" demand to approximately 45% * Place 1NV-238 in "AUTO" Place "PZR LEVEL MASTER" in "AUTO" Adjust 1NV-241 as necessary to maintain approximately 8 gpm seal injection flow to each NC pump. 	<p>Cue: Manual pushbutton depressed.</p> <p>Cue: Needle at 45%</p> <p>Cue: Auto pushbutton depressed</p> <p>Cue: Auto pushbutton depressed</p> <p>Cue: Controller adjusted. Flow = 8 gpm to each NC pump.</p>		
16	Notify Chemistry that normal letdown in service	<p>Same</p> <p>Cue: Chemistry has been notified</p>		

* DENOTES CRITICAL

STEP	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
17	Check position of 1NV-127A (L/D Hx Outlet 3 Way Temp Cntrl)- ALIGNED to "DEMIN"	Cue: Red Lamp is lit		
18	Operate Pzr heaters as desired.	Same		
19	WHEN time allows, THEN notify Reactor Engineer to document the following transients...	Cue: The Reactor Engineer has been notified		
20	Check excess letdown isolated. Go to step 47.q.2	Operator proceeds to RNO.		

* DENOTES CRITICAL

STEP	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
21	Isolate excess letdown:	Same		
*	Close 1NV-26 (Excess L/D Hx Outlet Cntrl)	Cue: Control knob rotated counterclockwise and needle is down		
*	Close 1NV-24 (C NC Loop to EXS L/D Hx Isol)	Cue: Pushbutton depressed and light is illuminated		
*	Close 1NV-25B (C NC Loop to EXS L/D HX)	Cue: Pushbutton depressed and light is illuminated		
*	Close 1KC-305B (Excess Letdn HX sup Otsd Isol)	Cue: Pushbutton depressed and light is illuminated		
*	Close 1KC-315B (Excess L/D Hx Ret Hdr C/I Otsd)	Cue: Pushbutton depressed and light is illuminated		

STOP TIME _____

* DENOTES CRITICAL

INITIAL CONDITIONS

You are the Unit 1 Balance of Plant (BOP) Operator.

Unit 1 is operating at 100% Full Power with normal letdown isolated due to valve 1NV-1A (NC L/D Isol To Regen Hx) failing closed due to a loss of air. Excess Letdown has been placed in service. IAE reports that 1NV-1A has been repaired allowing normal letdown to be re-established. The Letdown header has been locally pressurized as per step 45 of AP/1/A/5500/12 (Loss of Letdown, Charging or Seal Injection) and all personnel have exited containment.

The Control Room SRO directs you to re-establish Normal Letdown of 75 gpm and place 1NV-458A in service and Isolate Excess Letdown per AP/1/A/5500/12 (Loss of Letdown, Charging, or Seal Injection) step 46.

SIMULATOR OPERATIONAL GUIDELINES

1. Reset Simulator to IC-138
2. Close the following valves:
 - A. 1NV-1A
 - B. 1NV-2A
 - C. 1NV-457A
 - D. 1NV-458A
 - E. 1NV-35A
 - F. Run manual loader for 1NV-459 to 0%
3. Establish excess letdown per AP/1/A/5500/12 Case I step 15.
4. Allow the plant to stabilize
5. Ensure AP 12 steps are properly checked off.
6. Ensure 1NV-241 is throttled open (approx. 10% open) to provide seal flow and 1NV-238 is in manual (approx. 20% - 25% open). **The “NCP Seal Injection Lo Flow” alarm should NOT BE LIT.**
7. **Instructor should ensure the control room copy of AP 12 is properly marked as per attached copy.**
8. Freeze the Simulator

Prepared By: _____

Reviewed By: _____

Approved By: _____

TASK: **Emergency Borate the Reactor Coolant System Using the PD Pump**

POSITION: **RO/SRO**

Operator's Name _____

Location: **Simulator**

Method: **Perform**

Estimated JPM Completion Time: 15 Minutes

Actual JPM Completion Time: Minutes

The JPM Operator's performance was evaluated against the standards of this JPM and is determined to be:

SATISFACTORY/UNSATISFACTORY (circle one)

Evaluator's Signature _____ Date / /

References: EP/1/A/5000/FR-S.1 (Rev.06) Response To Nuclear Generation/ATWS
 EP/1A/5000/G-1 (Rev.13) Generic Enclosure - 17

JPM verified current with references by _____

Date / /

Rev. 00/02-01-02

FOR TRAINING PURPOSES ONLY

INITIAL CONDITIONS

Unit 1 was at 100% power with "A" NV pump tagged for maintenance.

A Zone "1B" lockout occurred.

The "B" Diesel Generator started and loaded the bus.

Due to a relaying failure, the reactor coolant pumps failed to swap to their alternate source and tripped.

An automatic reactor trip FAILED to occur. EP/1/A/5000/FR-S.1 (Response To Nuclear Generator/ATWS) has been implemented and completed through Step 4.

Letdown has been isolated per AP/1/A/5500/12 Loss of Letdown, Charging or Seal Injection

15 seconds into the event the "B" NV pump trips on over current.

The Control Room SRO instructs YOU to emergency borate the NC System per Step 5 of EP/1/A/5000/FR-S.1 (Response To Nuclear Generator/ATWS). Establish 65 to 75 GPM charging flow.

JPM OVERALL STANDARD: PD Pump running and both Boric Acid Transfer Pumps running with 30 gpm or greater emergency boration flow indicated.

NOTES: This JPM is designed to be performed as a **SIMULATION** or as a **WALKTHROUGH**. Cues found in shaded boxes should be given to the trainee for either setting.

KA 000 024 AK3.02 4.2/4.4

TASK:MO-8310

FOR TRAINING PURPOSES ONLY

START TIME _____

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
1	<p>Initiate emergency boration of the NC System:</p> <p>Ensure one NV Pump - ON</p> <p>Place PD pump in service PER Generic Enclosure 17.</p>	<p>Same</p> <p>Cue: No NV pumps – ON</p>		
2	<p>The following actions are taken per Generic Enclosure 17.</p> <p>Check power available to PD pump</p>	<p>Same</p> <p>Cue: Green light lit</p>		
3	<p>Reset the following:</p> <ul style="list-style-type: none"> • S/I • Sequencers • Phase B Isolation • If at anytime a B/O signal occurs then start S/I equipment previously on, 	<p>Operator ensures resets are lit.</p>		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
* 4	<p>Close the following:</p> <ul style="list-style-type: none"> • 1RN-279B • 1RN-299A • 1RV-79A • 1RV-101A • 1RV-32A • 1RV-76A • 1RV-80B • 1RV-102B • 1RV-33B • 1RV-77B 	<p>Operator closes each valve. Cue repeats as needed.</p> <p>Cue: Pushbutton depressed, green light lit.</p> <p>Note: It is critical for each flowpath to be isolated by closing the supply and/or the return valve on each header.</p>		
5	<p>Check any NC pump ON</p> <p>Close the following:</p> <p>* 1RN-252B (RB Non Ess Sup Cont Outside Isol)</p> <p>* 1RN-277B (RB Non Ess Ret Cont Outside Isol)</p>	<p>Operator verifies no NC pumps are on and proceeds to RNO.</p> <p>Cue: Pushbutton depressed, green light lit.</p> <p>Cue: Pushbutton depressed, green light lit.</p>		
6	<p>Place the following RF pumps in "MAN" and ensure they are off:</p> <ul style="list-style-type: none"> • A Jockey pump • B Jockey pump 	<p>Same</p> <p>Cue: Switches placed to "MAN" and off.</p>		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
7	Dispatch operator to close 2RL-267	Cue: An operator has been dispatched to close 2RL-267		
8	Align RN to "AB Non Essential Header" as follows: Ensure 1A RN pump – ON Check at least one of the following valves closed: • 1RN-41B or • 1RN-43A Check the following valves OPEN •1RN-40A •1RN-42A •1RN-63B •1RN-64A Perform the following: * Open valve(s)	Same Cue: Red light lit Cue: Green light lit Cue: Red light lit Cue: Red light lit Cue: Red light lit Cue: Green light lit Cue: Green light lit Operator proceeds to the RNO. Cue: Pushbuttons for 1RN-63B and 1RN-64A depressed, red lights lit		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
8	Continued Check 1A RN pump flow as follows: <ul style="list-style-type: none"> If RN pump suction aligned to LLI then RN pump flow less than 16,000 gpm. Go to step 8 	Cue: Flow is 6500 gpm		
9	Check if NV S/I flow path is open as follows: <ul style="list-style-type: none"> 1NI-9A OPEN or 1NI-10B OPEN <u>GO TO</u> step 10	Operator checks valves and proceeds to RNO. Cue: Green light lit Cue: Green light lit		
10	Place "PD pump speed control" in "MAN" and set for minimum speed.	Same Cue: Amber light is lit, output at 0%		
* 11	Open 1NV-1047A (PD PUMP Recirculation)	Same Cue: Pushbutton depressed, Red light lit		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
* 12	Start PD pump.	Same Cue: Pushbutton depressed, Red light lit		
13	Ensure 1NV-1047A closes after 2 minutes.	Same Cue: Two minutes have elapsed, green light lit.		
* 14	When 1NV-1047A is closed then raise "PD pump speed control" to establish charging flow.	Same Cue: Pushbutton depressed charging flow is increasing.		
15	Notify station management to monitor temperature in both units 6900v switchgear room, turbine bldg, and service bldg areas.	Cue: Station Management has been notified.		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
16	The following steps are from FR-S.1			
	Align boration flowpath:			
*	Open 1NV-265B (Boric Acid To NV Pumps)	Same Cue: Pushbutton depressed, red lamp is illuminated		
*	Start both boric acid transfer pumps	Same Cue: Switches rotated Clockwise, red lamps are illuminated		
	Check emergency boration flow - GREATER THAN 30 GPM	Same Cue: Gage indicates 110 GPM		
	Check if NV flowpath aligned to NC System	Same		
	• 1NV-244A (Charging Line Cont Isol Otsd) - OPEN	Cue: Red lamp is illuminated		
	• 1NV-245B (Charging Line Cont Isol Otsd) - OPEN	Cue: Red lamp is illuminated		
	Check Pzr pressure - LESS THAN 2335 PSIG	Same Cue: Meter indicates 2100 PSIG and is decreasing		

STOP TIME _____

* DENOTES CRITICAL

INITIAL CONDITIONS

Unit 1 was at 100% power with "A" NV pump tagged for maintenance.

A Zone "1B" lockout occurred.

The "B" Diesel Generator started and loaded the bus.

Due to a relaying failure, the reactor coolant pumps failed to swap to their alternate source and tripped.

An automatic reactor trip FAILED to occur. EP/1/A/5000/FR-S.1 (Response To Nuclear Generator/ATWS) has been implemented and completed through Step 4.

Letdown has been isolated per AP/1/A/5500/12 Loss of Letdown, Charging or Seal Injection

15 second into the event the "B" NV pump trips on over current.

The Control Room SRO instructs YOU to emergency borate the NC System per Step 5 of EP/1/A/5000/FR-S.1 (Response To Nuclear Generator/ATWS). Establish 65 to 75 GPM charging flow.

SIMULATOR OPERATORS GUIDELINES (NV-200)

1. Reset to Snap 148, 100% Power, MOL.
2. Insert Malfunctions
 - a. IPE001A Failure of Auto Reactor Trips – Train A
IPE001B Failure of Auto Reactor Trips – Train B
 - b. IPE002A Failure of Manual Reactor Trips – Train A
IPE002B Failure of Manual Reactor Trips – Train B
 - c. LOA Rack out 1A NV pump
 - d. MALF NV029B NV pump trips on over current set to **trigger 1 delay of 15 seconds.**
 - e. MALF EP003C Zone 1B Lockout **set to trigger 1.**
 - f. EP006B Failure of 1TB to auto swap
EP006D Failure of 1TD to auto swap
4. Manually exercise A/B Reactor Trip Switches.
5. Drive Control Rods in until Reactor Power is ~ 90%.
6. Perform steps 1 through 4 of EP/1/A/5000/FR-S.1
7. Freeze Simulator.

NOTE: During the performance of this JPM, the simulator runner will function as the RO and will be inserting rods in manual while operator performs emergency boration.

Prepared By _____

Reviewed By _____

Approved By _____

TASK: **Realign Cooling to the NCP's After a Spurious SI**

POSITION: **RO**

Operator's Name _____

Location: **Simulator**

Method: **Perform**

Estimated JPM Completion Time: 15 Minutes

Actual JPM Completion Time: _____ Minutes

The JPM Operator's performance was evaluated against the standards of this JPM and is determined to be:

SATISFACTORY/UNSATISFACTORY (circle one)

Evaluator's Signature _____ Date / /

References: EP/1/A/5000/ES-1.1 (Rev. 14) Safety Injection Termination
 EP/1/A/5000/G-1 (Rev. 13) Generic Enclosures

JPM verified current with references by _____

Date / /

Rev. 04/02-01-02

FOR TRAINING PURPOSES ONLY

INITIAL CONDITIONS

You are the Unit 1 Balance of Plant Operator (BOP).

An IAE induced Safety Injection has occurred on Unit 1. All responses have been verified and realignment is in progress per EP/1/A/5000/ES-1.1 (Safety Injection Termination). KC has been realigned to the AB Non Essential Header.

The Control Room SRO directs you to establish NC pump cooling per step 22 of EP/1/A/5000/ES-1.1 (Safety Injection Termination).

JPM OVERALL STANDARD: The Reactor Building Non-Essential Header is aligned from A Train KC and the NCP thermal barrier isolation valves are open.

NOTES: This JPM is designed to be performed as a **SIMULATION** or as a **WALKTHROUGH**. Cues found in shaded boxes should be given to the trainee for either setting.

KA 008 000 A4.01 3.3/3.1

TASK:MO-8301

START TIME _____

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
1	<p>Check NC pump cooling:</p> <p>Check KC aligned to reactor bldg non essential header from one of the following trains:</p> <p>A train:</p> <p>1KC-230A (Trn A Rx Bldg Non Ess Sup Isol) – OPEN</p> <p>1KC-3A (Trn A Rx Bldg Non Ess Ret Isol) - OPEN</p> <p>A train KC pumps - ON</p> <p><u>OR</u></p> <p>B train:</p> <p>1KC-228B (Trn B Rx Bldg Non Ess Sup Isol) - OPEN</p> <p>1KC-18B (Rx Bldg Non Ess Return Isol) - OPEN</p>	<p>Same</p> <p>Cue: GREEN light is illuminated</p> <p>Cue: GREEN light is illuminated</p> <p>Cue: Red lights are illuminated</p> <p>Cue: GREEN light is illuminated</p> <p>Cue: GREEN light is illuminated</p>		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
1	Continued B train KC pumps - ON	Same Cue: Red lights are illuminated Operator determines KC is NOT aligned to the Rx Bldg Non Ess Header and proceeds to the RNO		
2	Perform one of the following based on seal injection status: <u>IF</u> NC pump seal injection established, <u>THEN</u> : Align KC <u>PER</u> EP/1/A/5000/G-1 (Generic Enclosures), Enclosure 14 (Reestablishing KC To Thermal Barriers) <u>OR</u> <u>IF</u> NC pump seal injection has also been lost, <u>THEN</u> : 1. Maintain NC pump seal injection and thermal barrier cooling isolated. 2. <u>GO TO</u> Step 23	Same Cue: NCP seal injection flow indicates 8 GPM per pump Operator goes to Generic Enclosure 14 to reestablish thermal barrier flow		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
3	Check both KC trains - IN SERVICE	Same Cue: All four red lights are illuminated		
4	Open the following valves on one operating train while ensuring KC flow remains less than 4000 GPM per pump:	A Train valves are aligned and KC flow is maintained less than 4000 GPM per pump Cue: The SRO requests you to align "A" Train KC		
*	A train: 1KC-3A (Trn A Rx Bldg Non Ess Ret Isol)	Cue: Pushbutton depressed, red light is illuminated		
*	1KC-230A (Trn A Rx Bldg Non Ess Sup Isol) OR B train: 1KC-18B (Rx Bldg Non Ess Return Isol) 1KC-228B (Trn 1B To RB non Ess Sup Isol)	Cue: Pushbutton depressed, red light is illuminated N/A N/A		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
5	Open the following:	Same Note: The following valves may be opened in any order. The Thermal Barrier Isol valves will open, then reclose, due to hi flow, if all of the NC pump KC hdr isol valves are opened.		
*	1KC-394A (A NC Pump Therm Bar Otlr)	Cue: Pushbutton depressed, red light is illuminated momentarily, then green light illuminates		
*	1KC-345A (C NC Pump Therm Bar Otlr)	Cue: Pushbutton depressed, red light is illuminated momentarily, then green light illuminates		
	1KC-425A (NC Pumps Ret Hdr Outside Isol)	Cue: Red light is illuminated		
*	1KC-364B (B NC Pump Therm Bar Otlr)	Cue: Pushbutton depressed, red light is illuminated momentarily, then green light illuminates		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
5	Continued			
*	1KC-413B (D NC Pump Therm Bar Otlit)	Same Cue: Pushbutton depressed, red light is illuminated momentarily, then green light illuminates		
	1KC-338B (NC Pump Sup Hdr Outside Isol)	Cue: Red light is illuminated		
	1KC-424B (NC Pumps Ret Hdr Inside Isol)	Cue: Red light is illuminated Note: When one or more of the Thermal Barrier Isol valves re-close, the operator should proceed to the RNO.		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
6	<p><u>IF</u> valve(s) will not stay open due to high KC discharge pressure, <u>AND</u> KC has been previously aligned to aux bldg non essential header, <u>THEN</u>:</p> <p>* Raise KC flow to the KF HX's</p> <p>* Re-open valves</p>	<p>Operator increases KC flow to the KF Hx's to decrease KC discharge pressure and then opens the Thermal Barrier Isolation valves</p> <p>Cue:</p> <p>KC pump discharge pressure is 110 PSIG</p> <p>Cue:</p> <p>Knob(s) rotated counterclockwise, KC flow indication is increasing, and discharge pressure of the KC pumps is decreasing</p> <p>Cue:</p> <p>Pushbuttons depressed on all closed valves, and all valves indicate open</p>		
7	<u>GO TO</u> step 23	<p>Same</p> <p>Cue:</p> <p>Another RO will complete ES-1.1</p> <p><u>Note:</u> N/A this step if operator terminates JPM after step 6.</p>		

STOP TIME _____

* DENOTES CRITICAL

INITIAL CONDITIONS

You are the Unit 1 Balance of Plant Operator (BOP).

An IAE induced Safety Injection has occurred on Unit 1. All responses have been verified and realignment is in progress per EP/1/A/5000/ES-1.1 (Safety Injection Termination). KC has been realigned to the AB Non Essential Header.

The Control Room SRO directs you to establish NC pump cooling per step 22 of EP/1/A/5000/ES-1.1 (Safety Injection Termination).

SIMULATOR OPERATIONAL GUIDELINES (KC-150A)

1. Reset Simulator to IC-39 100% MOL
2. Manually initiate Trn A & B SI
3. Perform the actions of EP/E-0, transition to EP/ES-1.1 and complete up through subsequent step 22.
4. Insert MAL KC008C, value = 0 and MAL KC007D, value = 0 to fail closed 1KC-228 and 1KC-18.
5. Open B train KC to KF control valve to 10% open
6. Open A train KC to KF control valve to 0% open
7. Close all NCP thermal barrier isolation valves
8. Place two PZR heater groups to manual and off
9. Verify the plant is stable
10. Freeze the Simulator
11. Go to RUN after initial conditions have been covered

TEMP SNAP # 125

Prepared By: _____

Reviewed By: _____

Approved By: _____

TASK: **Align the Unit 2 Containment Spray System to Cold Leg Recirculation**

POSITION: **RO/SRO**

Operator's Name _____

Location: **Plant**

Method: **Walkthrough**

Estimated JPM Completion Time: 15 Minutes

Actual JPM Completion Time: _____ Minutes

The JPM Operator's performance was evaluated against the standards of this JPM and is determined to be:

SATISFACTORY/UNSATISFACTORY (circle one)

Evaluator's Signature _____ Date / /

References: EP/2/A/5000/ES-1.3 (Rev. 15) Transfer to Cold Leg Recirc

JPM verified current with references by _____

Date / /

Rev. 00/11-09-01

FOR TRAINING PURPOSES ONLY

INITIAL CONDITIONS

You are the Unit 2 Balance of Plant (BOP) Operator. One hour ago, the Unit 2 reactor tripped due to a LOCA inside of containment.

EP/2/A/5000/ES-1.3 (Transfer To Cold Leg Recirc) has been implemented and completed through step # 7. Containment pressure is approximately 5 psig. The "FWST Level Lo-Lo" Alarm has just been received.

The SRO instructs you to perform Steps 8 and 9 of EP/2/A/5000/ES-1.3 (Transfer To Cold Leg Recirc).

JPM OVERALL STANDARD: 2A NS Pump is in operation with suction aligned to the Containment Sump and RN flow established to the 2A NS Hx. One train of ND is aligned to the Containment Aux Spray Header.

NOTES: This JPM will be done in the Unit 2 Control Room.

START TIME _____

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
1	Check if NS should be aligned for recirc as follows: Check "FWST LEVEL LO-LO" alarm – LIT.	Operator determines from JPM initial conditions or annunciator panel that the alarm is LIT.		
*2	Reset Containment Spray	Operator resets both trains of Containment Spray Cue: Pushbuttons depressed and lights are illuminated		
3	Stop both NS Pumps:	Same		
*	• A Train	Cue:		
*	• B Train	Pushbuttons depressed, green lights are illuminated		
4	Check 2A NS Pump – AVAILABLE TO RUN.	Operator determines that the pump is available to run.		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
5	<p>Align A Train NS to containment sump as follows:</p> <ul style="list-style-type: none"> • Check 2NI-185A (RB Sump To Train A ND & NS) - OPEN • Close 2NS-20A (A NS Pump Suct From FWST) • Wait for 2NS-20A to close. • Open 2NS-18A (A NS Pump Suct From Cont Sump) <p><u>GO TO</u> Step 8.f</p>	<p>Same</p> <p>Cue:</p> <p>Red light is illuminated</p> <p>Same</p> <p>Cue:</p> <p>Pushbutton depressed</p> <p>Cue:</p> <p>Green light is illuminated</p> <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <p>Operator attempts to open valve, realizes it will not open, and then proceeds to RNO.</p> </div> <p>Cue:</p> <p>Pushbutton depressed, <u>green</u> light is illuminated, red light is dark</p> <p>Same</p>		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
6	Align B Train NS to containment sump as follows:			
	<ul style="list-style-type: none"> Check 2NI-184B (RB Sump To Train B ND & NS) - OPEN 	<p>Same</p> <p>Cue:</p> <p>Red light is illuminated</p>		
*	<ul style="list-style-type: none"> Close 2NS-3B (B NS Pump Suct From FWST) 	<p>Same</p> <p>Cue:</p> <p>Pushbutton depressed</p>		
	<ul style="list-style-type: none"> Wait for 2NS-3B to close. 	<p>Cue:</p> <p>Green light is illuminated</p>		
*	<ul style="list-style-type: none"> Open 2NS-1B (B NS Pump Suct From Cont Sump) 	<p>Same</p> <p>Cue:</p> <p>Pushbutton depressed, Red light is illuminated</p>		
	<ul style="list-style-type: none"> Check "NS SYS CPCS TRAIN B INHIBIT" status light (2SI-12) - DARK 	<p>Same</p> <p>Cue:</p> <p>Light is dark</p>		
*	<ul style="list-style-type: none"> Start 2B NS Pump 	<p>Same</p> <p>Cue:</p> <p>Pushbutton depressed Red light is illuminated</p>		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
6 *	CONTINUED <ul style="list-style-type: none"> Open 2RN-235B (B NS Hx Inlet Isol) Throttle open 2RN-238B (B NS Hx Outlet Isol) to establish 3000 GPM to 2B NS Hx. 	<p>Same</p> <p>Cue:</p> <p>Pushbutton depressed, Red light is illuminated</p> <p>Operator throttles open valve to get 3000 GPM (+/- 400 GPM) RN flow to 2B NS Hx.</p> <p>Cue:</p> <p>Pushbutton depressed, red and green lights are illuminated, indicated flow increases to 3000 GPM</p>		
7	Check both NS pumps – ON.	<p>Operator determines that 2A NS pump is <u>not ON</u> and proceeds to RNO.</p> <p>Cue:</p> <p>Green light lit for 2A NS pump. Red light lit for 2B NS pump.</p>		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
8	<p>Perform the following:</p> <ul style="list-style-type: none"> • <u>IF</u> any NS pump is isolated from containment sump, <u>THEN</u> dispatch operator to pull control power fuses on affected NS pump to prevent it from starting with inadequate suction. • <u>IF AT ANY TIME</u> the idle NS pump(s) can be started, <u>THEN</u> ensure proper alignment <u>PER</u> Step 8.e or 8.f as required. 	<p>Operator determines 2A NS pump is isolated from containment sump and dispatches operator to pull fuses.</p> <p>Cue:</p> <p>An operator has been dispatched to pull control power fuses on 2A NS pump.</p> <p>Operator reads step and continues to procedure step 9.</p>		
9	<p>Check if ND aux spray is required:</p> <ul style="list-style-type: none"> • Containment pressure – GREATER THAN 3 PSIG. 	<p>Operator checks Post Accident Containment pressure gages on Main control board and verifies Containment pressure is GREATER THAN 3 PSIG.</p> <p>Cue:</p> <p>Containment pressure gages indicate 4.5 PSIG.</p>		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
9	<p>Continued</p> <p>Check the following:</p> <ul style="list-style-type: none"> Time after reactor trip – GREATER THAN 50 MINUTES At least one of the following – ENERGIZED: <p>2NI-173A (Train A ND To A & B CL)</p> <p><u>OR</u></p> <p>2NI-178B (Train B ND To C & D CL)</p> Check if core cooling can be maintained with minimum S/I flow: <p>At least one NV pump – ON</p> <p>At least one NI pump – ON</p>	<p>Operator determines from initial conditions that the Reactor tripped 60 minutes ago.</p> <p>Cue: The Reactor tripped 60 minutes ago.</p> <p>Operator checks main control board indicating lights to see if at least one valve is energized.</p> <p>Cue: Red light illuminated.</p> <p>Cue: Red light illuminated.</p> <p>Same</p> <p>Cue: Red lights illuminated.</p> <p>Cue: Red lights illuminated.</p>		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
9	<p>Continued</p> <p>At least one of the following valves – OPEN</p> <p>2NI-9A (NC Cold Leg Inj From NV)</p> <p><u>OR</u></p> <p>2NI-10B (NC Cold Leg Inj From NV)</p> <ul style="list-style-type: none"> Establish ND aux spray from one train that is in Cold Leg Recirc mode: <p>For A train:</p> <p>Close 2NI-173A (Train A ND To A & B CL)</p> <p>Open 2NS-43A (A Train ND To NS Cont Outside Isol)</p> <p><u>OR</u></p>	<p>Operator checks at least one valve open.</p> <p>Cue:</p> <p>Red light illuminated.</p> <p>Cue:</p> <p>Red light illuminated.</p> <p><u>Note to evaluator:</u> It is Critical that <u>only one</u> train is aligned per the following steps. Either train can be used. N/A the steps for the unused train.</p> <p>Same</p> <p>Cue:</p> <p>Pushbutton depressed, green light illuminated.</p> <p>Same</p> <p>Cue:</p> <p>Pushbutton depressed, red light illuminated.</p>		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
9	Continued For B train: * Close 2NI-178B (Train B ND To C & D CL) * Open 2NS-38B (B Train ND To NS Cont Outside Isol)	Same Cue: Pushbutton depressed, green light illuminated. Same Cue: Pushbutton depressed, red light illuminated.		
10	WHEN time allows, THEN place INFO tag on ND Pump control switch PER Enclosure 3 (ND Pump Restart Requirement If Aux Spray Is Open).	Cue: Another operator has been directed to place the info tag per Enclosure 3.		
11	WHEN containment pressure less than 1 PSIG, THEN stop ND aux spray PER Enclosure 4 (Securing ND Aux Containment Spray).	Cue: Another operator has been directed to monitor containment pressure and complete this procedure.		

STOP TIME _____

* DENOTES CRITICAL

INITIAL CONDITIONS

You are the Unit 2 Balance of Plant (BOP) Operator. One hour ago, the Unit 2 reactor tripped due to a LOCA inside of containment.

EP/2/A/5000/ES-1.3 (Transfer To Cold Leg Recirc) has been implemented and completed through step # 7. Containment pressure is approximately 5 psig. The "FWST Level Lo-Lo" Alarm has just been received.

The SRO instructs you to perform Steps 8 and 9 of EP/2/A/5000/ES-1.3 (Transfer To Cold Leg Recirc).

Prepared By: _____

Reviewed By: _____

Approved By: _____

TASK: Aligning Control Air from Backup Cylinders To F VI Compressor

POSITION: NLO

Operator's Name _____

Location: **Plant**

Method: Walkthrough

Estimated JPM Completion Time: 15 Minutes

Actual JPM Completion Time: _____ Minutes

The JPM Operator's performance was evaluated against the standards of this JPM and is determined to be:

SATISFACTORY/UNSATISFACTORY (circle one)

Evaluator's Signature _____ Date / /

References: AP/1/A/5500/22 (Rev. 18) Loss of VI

Revision numbers of references provided to the examinee have been verified to match those listed above by: (Evaluator initials and dates)

Date / /

Rev. 15/12-06-01

FOR TRAINING PURPOSES ONLY

INITIAL CONDITIONS

You are the Unit 1 Service Building Rounds person.

A flexible coupling rupture on the Instrument Air System Header has caused all Instrument Air Compressors previously in service to trip. AP/1/A/5500/22 (Loss of VI) has been implemented. The C/R SRO has dispatched you to locally check the Air Compressors. You discover that D, E, and F Compressors have all tripped and report this to the Control Room. The C/R SRO checks Instrument Air header pressure and discovers that pressure is less than 20 PSIG. A, B, and C VI Compressors are all out of service for a major modification.

The C/R SRO directs you to perform AP/1/A/5500/22 (Loss of VI), Enclosure 6 (Starting D, E, and F VI Compressors With Low Control Air).

JPM OVERALL STANDARD: Control air from backup cylinders is aligned to D, E, and F VI compressors, then re-aligned to normal.

NOTES:

KA: APE065 AK3.08 3.7/3.9

TASK: MO-5012

START TIME _____

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
1	Check VI pressure as read on "0MVIPT5090 INSTRUMENT AIR PRESS" (Unit 2 TB, 739, column 2N-32) – LESS THAN 80 PSIG.	Same Cue: Gage is indicating 15 PSIG.		
2	Check D, E, and F VI compressors - ALL OFF	Operator determines from initial conditions that D, E and F VI compressors are off.		
3	Check VB compressor - RUNNING	Operator receives cue, then proceeds to RNO. Cue: Both Breathing Air Compressors are tagged out for maintenance		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
4	<p>Perform the following:</p> <p>Start VB compressor(s) as follows:</p> <p>Depress "START" on both VB compressors</p> <p>WHEN VB pressure reaches 80 PSIG, THEN open 1VB-162 (A &A VB Compressors Discharge Isol) (service bldg, 739+10, Q-30, 6 ft from F VI Compressor panel)</p> <p>IF both VB compressors off, THEN observe Notes prior to Step 10 and GO TO Step 10.</p>	<p>Operator receives cue, determines VB Compressors are not available and proceeds to RNO step 3.b.</p> <p>Cue:</p> <p>Both Breathing Air Compressors are tagged out for maintenance.</p> <p>Operator proceeds to step 10</p>		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
5	Check F VI compressor- AVAILABLE FOR RESTART	Same Cue: F VI compressor is available for restart		
6	Align VI control air backup cylinders to supply control air to F VI compressor:			
*	Close 1VI-836 (Control Air Backup Cylinders To VI Compressors D and E Isol) (service bldg, 739+9, Q-30, above F VI Compressor)	Same Cue: Handwheel rotated clockwise		
*	Open 1VI-837 (Control Air Backup Cylinders To VI Compressors D, E, and F) (service bldg, 739, above F VI Compressor)	Same Cue: Handwheel rotated counterclockwise		
*	Open valves on top of all VI control air backup cylinders.	Same Cue: Handwheels rotated counterclockwise		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
7	<p>Start F VI compressor as follows:</p> <p>On F VI compressor's microcontroller panel, check the "FUNCTION" window indicating – COMPRESSOR READY.</p> <p>Place the "UNLOAD/MODULATE/A UTODUAL" SWITCH IN "UNLOAD"</p> <p>Press compressor "START" pushbutton.</p> <p>Observe the following parameters as compressor reaches rated speed:</p> <ul style="list-style-type: none"> Oil pressure – greater than or equal to 24 psig Vibration First Stage – Less than 0.7 MILS Vibration Second stage – Less than 0.7 MILS 	<p>Same</p> <p>Cue: COMPRESSOR READY light is on.</p> <p>Cue: Switch moved counterclockwise to the "UNLOAD" position.</p> <p>Cue: Start pushbutton depressed</p> <p>Cue:</p> <ul style="list-style-type: none"> Oil pressure is 25 psig First stage vibration is 0.2 MILS Second stage vibrations is .15 MILS 		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
7	<p>Continued</p> <p>On the microcontroller panel, turn keyswitch to "PROGRAM"</p> <p>Depress "RAISE" or "LOWER" pushbutton until "SYS PRESS SETPT" is displayed on "FUNCTION" window.</p> <p>Depress "CYCLE" pushbutton</p> <p>Depress "RAISE" or "LOWER" pushbutton until value in "ACTUAL" window is 95 psig.</p> <p>Depress "SETPOINTS" pushbutton and ensure "SETPOINTS" light comes on.</p>	<p>Cue: Switch turned counterclockwise</p> <p>Cue: "Sys Press Setpt" is displayed</p> <p>Cue: Cycle pushbutton depressed</p> <p>Cue: 95 psig is displayed in ACTUAL window.</p> <p>Cue: SETPOINTS light is on.</p>		
*	Turn keyswitch to "RUN"	<p>Cue: Switch turned clockwise to RUN.</p>		
*	Place the "UNLOAD/MODULATE/ACTUAL" SWITCH to "MODULATE".	<p>Cue: Switch turned clockwise to MODULATE.</p>		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
8	<p>WHEN VI pressure is greater than 80 PSIG, as read on 0MVIPT5090 INSTRUMENT AIR PRESS" (Unit 2 TB, 739, column 2N-32), THEN start D and E VI compressors as follows.....</p>	<p>Operator receives cue, then proceeds to step 14.</p> <p>Cue:</p> <p>VI Header Pressure is 90 psig,</p> <p>Cue:</p> <p>Another operator has now started D and E VI</p>		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
9	<p>WHEN VI pressure is greater than 80 PSIG, as read on 0MVIPT5090 INSTRUMENT AIR PRESS" (Unit 2 TB, 739, column 2N-32), THEN realign F VI compressor control air to VI header as follows:</p> <p>IF control air backup cylinder air has been in service less than 1 hour, THEN allow VI header pressure to return as close as possible to control air cylinder pressure (regulator outlet gauge indication), prior to continuing</p>	<p>Same</p> <p>Cue:</p> <p>VI Header Pressure is 90 psig.</p>		
*	<p>Very slowly open 1VI-836 (Control Air Backup Cylinders To VI Compressors D and E Isol) (service bldg, 739+9, Q-30, above F VI Compressor)</p>	<p>Same</p> <p>Cue:</p> <p>Bottled air has been in service for 20 minutes,</p> <p>VI Header pressure indicates approximately the same as air cylinder pressure.</p>		
*	<p>Very slowly close 1VI-837 (Control Air Backup Cylinders To VI Compressors D, E, and F) (service bldg, 739, above VI compressor F)</p>	<p>Same</p> <p>Cue:</p> <p>Handwheel rotated counterclockwise</p> <p>Handwheel rotated clockwise</p>		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
9	Continued Close valves on top of VI control air backup cylinders	Same Cue: Handwheels rotated clockwise		
10	WHEN time allows, THEN perform the following for each running compressor: On microcontroller panel, push "CYCLE" pushbutton. Check displayed parameters against their associated setpoints.	Same Cue: Another operator will check the running compressors.		
11	RETURN TO step in effect in body of procedure	Same Cue: The C/R SRO will implement the step in effect in the body of the procedure		

STOP TIME _____

* DENOTES CRITICAL

INITIAL CONDITIONS

You are the Unit 1 Service Building Rounds person.

A flexible coupling rupture on the Instrument Air System Header has caused all Instrument Air Compressors previously in service to trip. AP/1/A/5500/22 (Loss of VI) has been implemented. The C/R SRO has dispatched you to locally check the Air Compressors. You discover that D, E, and F Compressors have all tripped and report this to the Control Room. The C/R SRO checks Instrument Air header pressure and discovers that pressure is less than 20 PSIG. A, B, and C VI Compressors are all out of service for a major modification.

The C/R SRO directs you to start D, E, and F VI Compressors by performing AP/1/A/5500/22 (Loss of VI), Enclosure 6 (Starting D, E, and F VI Compressors With Low Control Air).

Prepared By: _____

Reviewed By: _____

Approved By: _____

TASK: **Start the Hydrogen Recombiner**

POSITION: **NLO**

Operator's Name _____

Location: **Plant**

Method: **Walkthrough**

Estimated JPM Completion Time: 10 Minutes

Actual JPM Completion Time: Minutes

The JPM Operator's performance was evaluated against the standards of this JPM and is determined to be:

SATISFACTORY/UNSATISFACTORY (circle one)

Evaluator's Signature _____ Date / /

References: EP/2/A/5000/G-1
 Unit 2 Data Book

Generic Enclosures (Rev. 17)
Curve 1.8

Revision numbers of references provided to the examinee have been verified to match those listed above by: (Evaluator initials and dates)

_____ Date / /

Rev. 2/12-06-01

FOR TRAINING PURPOSES ONLY

INITIAL CONDITIONS

You are the Unit 2 Turbine Building Rounds person.

A Unit 2 LOCA has occurred and EP/2/A/5000/E-1 (Loss of Reactor or Secondary Coolant) has been implemented. The procedure is complete through Subsequent Step 12.d.. The BOP checks Hydrogen concentration and reports that hydrogen concentration is greater than .5% but less than 6% to the C/R SRO.

The C/R SRO dispatches you to place the Hydrogen Recombiners in service by completing EP/2/A/5000/G-1 (Generic Enclosures), Enclosure 4 (Placing H₂ Recombiners in Service). Containment Pressure is 3.25 PSIG.

JPM OVERALL STANDARD: 2A and 2B Hydrogen Recombiners are started and loaded to the appropriate KW value in accordance with EP/2/A/5000/G-1, Enclosure 4.

NOTES: Evaluator shall provide EP/2/A/5000/G-1, Enclosure 4, Unit 1 Data Book curve 1.8 and a calculator upon request.

KA 028 000 A4.01 4.0/4.0

TASK:MO-4018

START TIME _____

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
1	Determine the "PRESSURE FACTOR CP" from Data Book Curve 1.8.	Operator uses curve 1.8 to determine the CP for "A" and "B" Recombiner to be 1.34 Note to examiner: Evaluator should provide Data Book curve 1.8 upon request.		
2	Determine Hydrogen Recombiner Power Settings as follows: Multiply the "2A REFERENCE POWER" listed on Data Book Curve 1.8 by "PRESSURE FACTOR, CP" to determine 2A Hydrogen Recombiner Power Setting 1A: <u>"2A REFERENCE POWER"</u> X <u>"PRESSURE FACTOR, CP"</u> = <u>2A Power Setting</u> Record "2A POWER SETTING"	Operator determines the power setting for "A" and "B" Recombiners to be <u>48 +/- 2 KW.</u> (POWER SETTING for 2A = $38.41 \times 1.34 = 51.5$) $38.41 \times 1.34 = 51.5$ Value calculated from step above is recorded.		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
2	<p>Continued</p> <p>Multiply the "2B REFERENCE POWER" listed on Data Book Curve 1.8 by "PRESSURE FACTOR, CP" to determine 2B Hydrogen Recombiner Power Setting</p> <p>1B: <u>"2B REFERENCE POWER"</u> X <u>"PRESSURE FACTOR, CP"</u> = <u>2B Power Setting</u></p> <p>Record "2B POWER SETTING"</p>	<p>(POWER SETTING for $2B = 35.70 \times 1.34 = 47.84$)</p> <p>$35.70 \times 1.34 = 47.84$</p> <p>Value calculated from step above is recorded.</p>		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
3	At the "UNIT 2 TRAIN A ELEC HYDROGEN RECOMB CONTROL PANEL: (MG set room, BB- 61), place 2A Hydrogen Recombiner in service as follows:	SAME		
	Check "POWER AVAILABLE" light - ON	Cue: Light is illuminated		
*	Ensure "POWER ADJUST" is set to zero (000)	Operator simulates adjusting control knob to (000) after receiving the following cue. Cue: "POWER ADJUST" dial indicates 20 KW Cue: Control Knob rotated counterclockwise and dial indicates 000		
	Perform the following:			
*	Place the "POWER OUT SWITCH" in the "ON" position	Cue: Switch is moved up		
	Check the "POWER OUT SWITCH" red light - ON	Cue: Red light is illuminated		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
3	CONTINUED			
*	Turn "POWER ADJUST" dial until 5 KW is obtained on the "POWER OUT" meter	Cue: Control knob rotated clockwise and meter indicates 5 KW		
	Hold this setting for 10 minutes	Cue: 10 minutes have elapsed		
*	Turn "POWER ADJUST" dial until 10 KW is obtained on the "POWER OUT" meter	Cue: Control knob rotated clockwise and meter indicates 10KW		
	Hold this setting for 10 minutes	Cue: 10 minutes have elapsed		
*	Turn "POWER ADJUST" dial until 20 KW is obtained on the "POWER OUT" meter	Cue: Control knob rotated clockwise and meter indicates 20KW		
	Hold this setting for 5 minutes	Cue: 5 minutes have elapsed		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
3 *	CONTINUED Turn "POWER ADJUST" dial until the 2A power setting recorded in Step 2.b is obtained on the "POWER OUT" meter	Note to examiner: "Power Adjust" dial should end up being set to 48 +/- 2 KW in order to successfully complete the following critical step. A calculation error in JPM step #2 could result in an overall JPM failure here. Cue: Control knob rotated clockwise and meter indication is at value recorded in step 2.b		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
4	<p>At the "UNIT 2 TRAIN B ELEC HYDROGEN RECOMB CONTROL PANEL: (MG set room, BB- 61), place 2B Hydrogen Recombiner in service as follows:</p> <p>Check "POWER AVAILABLE" light - ON</p>	<p>SAME</p> <p>Cue: Light is illuminated</p>		
4	<p>Continued</p> <p>Ensure "POWER ADJUST" is set to zero (000)</p> <p>Perform the following:</p> <p>Place the "POWER</p>	<p>Operator simulates adjusting control knob to (000) after receiving the following cue.</p> <p>Cue: "POWER ADJUST" dial indicates 5 KW</p> <p>Cue: Control Knob rotated counterclockwise and dial indicates 000</p> <p>Cue:</p>		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
*	OUT SWITCH" in the "ON" position	Switch is moved up		
	Check the "POWER OUT SWITCH" red light - ON	Cue: Red light is illuminated		
*	Turn "POWER ADJUST" dial until 5 KW is obtained on the "POWER OUT" meter	Cue: Control knob rotated clockwise and meter indicates 5 KW		
	Hold this setting for 10 minutes	Cue: 10 minutes have elapsed		
4	Continued			
*	Turn "POWER ADJUST" dial until 10 KW is obtained on the "POWER OUT" meter	Cue: Control knob rotated clockwise and meter indicates 10KW		
	Hold this setting for 10 minutes	Cue: 10 minutes have elapsed		
*	Turn "POWER ADJUST" dial until 20 KW is obtained on the "POWER OUT" meter	Cue: Control knob rotated clockwise and meter indicates 20KW		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
	Hold this setting for 5 minutes	Cue: 5 minutes have elapsed		
4	CONTINUED			
*	Turn "POWER ADJUST" dial until the 2B power setting recorded in Step 2.b is obtained on the "POWER OUT" meter	Note to examiner: "Power Adjust" dial should end up being set to 48 +/- 2 KW in order to successfully complete the following critical step. A calculation error in JPM step #2 could result in an overall JPM failure here. Cue: Control knob rotated clockwise and meter indication is at value recorded in step 2.b		

STOP TIME _____

* DENOTES CRITICAL

INITIAL CONDITIONS

You are the Unit 2 Turbine Building Rounds person.

A Unit 2 LOCA has occurred and EP/2/A/5000/E-1 (Loss of Reactor or Secondary Coolant) has been implemented. The procedure is complete through Subsequent Step 12.d.. The BOP checks Hydrogen concentration and reports that hydrogen concentration is greater than .5% but less than 6% to the C/R SRO.

The C/R SRO dispatches you to place the Hydrogen Recombiners in service by completing EP/2/A/5000/G-1 (Generic Enclosures), Enclosure 4 (Placing H₂ Recombiners in Service). Containment Pressure is 2.0 PSIG.

Prepared By: _____

Reviewed By: _____

Approved By: _____

TASK: **Restore Power to KXB Power Panel Board Using Inverter SKX**POSITION: **NLO**

Operator's Name _____

Location: **Plant**Method: **Walkthrough**Estimated JPM Completion Time: 15 Minutes

Actual JPM Completion Time: _____ Minutes

The JPM Operator's performance was evaluated against the standards of this JPM and is determined to be:

SATISFACTORY/UNSATISFACTORY (circle one)

Evaluator's Signature _____ Date / /

References: AP/1/A/5500/15 (Rev. 09)

Loss of Vital or Aux Control Power

Revision numbers of references provided to the examinee have been verified to match those listed above by: (Evaluator initials and dates)

_____ Date / /

Rev. 00/11-29-01

FOR TRAINING PURPOSES ONLY

INITIAL CONDITIONS

Unit 2 has tripped due to loss of Aux Control Power Panel Board KXB. AP/1/A/5500/15 (Loss of Vital or Aux Control Power) has been implemented. Prior to the event, all electrical systems were aligned in their normal operating configurations.

The C/R SRO has dispatched you to energize KXB using inverter SKX per Enclosure 25 of AP/1/A/5500/15 (Loss of Vital or Aux Control Power).

JPM OVERALL STANDARD: Inverter SKX aligned to provide power to KXB power panel board.

NOTES:

KA APE 057 AA 1.01 3.7/3.7

TASK:MO-5005

START TIME _____

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
1	CAUTION <ul style="list-style-type: none"> Visibly damaged breakers shall not be operated without IAE approval. One attempt at closing a "TRIPPED" breaker is allowed when restoring power to KXB. If a tripped breaker re-opens after being closed, IAE should investigate prior to further operation of the breaker. When closing a tripped breaker, the operator should not stand directly in front of the breaker cubicle. 	Operator reads cautions before performing task.		
2	<u>IF AT ANY TIME</u> during performance of this enclosure a breaker trips after being closed, <u>THEN</u> perform the following: <ul style="list-style-type: none"> Notify IAE to investigate cause of breaker tripping. Have station management evaluate whether plant conditions warrant continuation of this enclosure prior to completion of IAE's investigation. 	Operator proceeds to next step.		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
3	<p>Select method of restoring power to KXB panelboard:</p> <ul style="list-style-type: none"> • To energize KXB using SKX Inverter, <u>GO TO</u> Step 3. • To energize KXB using KXB Inverter, <u>GO TO</u> Step 4. • To energize KXB from MKB through the KXB Inverter Bypass Panel, <u>GO TO</u> Step 5. • To energize KXB from MKB through the SKX Inverter Bypass Panel, <u>GO TO</u> Step 7. 	<p>Operator proceeds to step 3 per initial conditions of the JPM.</p> <p>Same</p> <p>N/A</p> <p>N/A</p> <p>N/A</p>		
4	<p>Align SKX Inverter to KXB panelboard as follows:</p> <p>On SKX Breaker Alignment Panel, check the following breakers – OPEN</p> <ul style="list-style-type: none"> • SKX BAP Bkr 1 (SKX AC Output to KXA) 	<p>Same</p> <p>Same</p> <p>Cue:</p> <p>Breaker handle is in the down position.</p>		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
4	<p>Continued</p> <ul style="list-style-type: none"> • SKX BAP Bkr 2 (SKX AC Output to 1KU) • SKX BAP Bkr 4 (SKX AC Output to 2KU) 	<p>Cue:</p> <p>Breaker handle is in the down position.</p> <p>Cue:</p> <p>Breaker handle is in the down position.</p>		
5	<p>On SKX Static Inverter, perform the following:</p> <ul style="list-style-type: none"> • Ensure SKX Inv Bkr 3 (SKX Inv AC Output) is open. • Ensure SKX Inv Bkr 2 (DCB to SKX DC Supply) is open. • Ensure SKX Inv Bkr 1 (DCA to SKX DC Supply) is open. 	<p>Same</p> <p>Cue:</p> <p>Breaker handle is in the down position.</p> <p>Cue:</p> <p>Breaker handle is in the down position.</p> <p>Cue:</p> <p>Breaker handle is in the down position.</p>		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
6	<p>On SKX Static Inverter Bypass Panel, perform the following:</p> <ul style="list-style-type: none"> • Ensure SKX Byp Pnl Bkr 4 (MKA Alt AC Source Supply) is open. • Ensure SKX Byp Pnl Bkr 5 (MKB Alt AC Source Supply) is open. 	<p>Same</p> <p>Cue:</p> <p>Breaker handle is in the down position.</p> <p>Cue:</p> <p>Breaker handle is in the down position.</p>		
* 7	<p>Ensure "2 EPF SX DISC KXB DISC SWITCH" (Battery Room, Column BB58) is open.</p>	<p>Operator opens the disconnect switch.</p> <p>Cue:</p> <p>Disconnect moved into the down position.</p>		
* 8	<p>On SKX Breaker Alignment Panel, use Kirk key to close SKX BAP Bkr 3 (SKX AC Output to KXB)</p>	<p>Same</p> <p>Cue:</p> <p>Key inserted and rotated, breaker moved into the up position.</p>		
9	<p>Check kirk key in DCB-1D (Static Inverter No. SKX) – INSTALLED</p>	<p>Same</p> <p>Cue:</p> <p>Key is installed.</p>		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
* 10	Using kirk key close DCB-1D (Static Inverter No. SKX)	Same Cue: Key inserted, breaker moved into the up position.		
11	On SKX Static Inverter, perform the following:	Operator proceeds to SKX inverter panel:		
	<ul style="list-style-type: none"> • Ensure Kirk key installed in SKX Inv Bkr 2 (DCB to SKX DC Supply) 	Cue: Key is installed.		
*	<ul style="list-style-type: none"> • Place "PRECHARGE" switch to "DCB" position and hold. 	Cue: Switch rotated clockwise and held.		
	<ul style="list-style-type: none"> • WHEN "PRECHARGE" light has been lit for 10 seconds, THEN perform the following in rapid succession: 	Cue: Light has been lit for 10 seconds.		
	<ul style="list-style-type: none"> <input type="checkbox"/> Release "PRECHARGE" switch 	Cue: Switch released.		
*	<ul style="list-style-type: none"> <input type="checkbox"/> Close SKX Inv Bkr 2 (DCB to SKX DC Supply) 	Cue: Breaker moved into the up position.		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
11	Continued <ul style="list-style-type: none"> Check the following indications: <ul style="list-style-type: none"> INVERTER OUTPUT VOLTAGE – 116 - 124 VOLTS INVERTER OUTPUT FREQUENCY – 59.7- 60.3 HZ Close SKX Inv Bkr 3 (SKX Inv AC Output) 	<p>Same</p> <p>Cue:</p> <p>Meter indicates 120 volts</p> <p>Cue:</p> <p>Meter indicates 60 HZ</p> <p>Same</p> <p>Cue:</p> <p>Breaker moved into the up position.</p>		
12	<p>On SKX Static Inverter Bypass Panel, perform the following:</p> <ul style="list-style-type: none"> Ensure “MANUAL BYPASS SWITCH” selected to “NORMAL OPERATION” 	<p>Same</p> <p>Operator repositions switch after receiving the following cue:</p> <p>Cue:</p> <p>Switch is in the “ALTERNATE AC SOURCE TO LOAD” position.</p> <p>(PAUSE)</p> <p>Cue:</p> <p>Switch rotated counter clockwise to “NORMAL”</p>		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
12	<p>Continued</p> <ul style="list-style-type: none"> • Check "INVERTER SUPPLYING LOAD" light - LIT 	<p>Cue:</p> <p>Lamp is LIT</p>		
*	<ul style="list-style-type: none"> • Ensure SKX Byp Pnl Bkr (SKX Byp Pnl AC Output) is closed. 	<p>Cue:</p> <p>Breaker moved into the up position.</p>		
	<ul style="list-style-type: none"> • Check the following indications: 	<p>Same</p>		
	<ul style="list-style-type: none"> <ul style="list-style-type: none"> □ "SYSTEM OUTPUT VOLTAGE – 116 -124 VOLTS 	<p>Cue:</p> <p>Meter indicates 120 volts</p>		
	<ul style="list-style-type: none"> <ul style="list-style-type: none"> □ SYSTEM OUTPUT FREQUENCY – 59.7-60.3 HZ 	<p>Cue:</p> <p>Meter indicates 60 HZ</p>		
	<ul style="list-style-type: none"> <ul style="list-style-type: none"> □ SYSTEM OUTPUT CURRENT – LESS THAN 292 AMPS 	<p>Cue:</p> <p>Meter indicates 150 amps</p>		

* DENOTES CRITICAL

STEPS	ELEMENTS	STANDARD	S/U	COMMENTS REQUIRED FOR UNSAT
13	On SKX Static Inverter, ensure "ALARM CIRCUIT" is "ON".	<p>Same</p> <p>Cue:</p> <p>Switch is in the "OFF" position.</p> <p>Cue:</p> <p>Switch rotated to the "ON" position.</p>		
14	Notify Control Room that KXB is energized.	<p>Same</p> <p>Cue:</p> <p>Control Room acknowledges message.</p>		
15	Contact station management to evaluate closing the following breakers to restore backup power to SKX Static Inverter.....	<p>Cue:</p> <p>Management does <u>NOT</u> desire backup power to be aligned until the cause of the event can be determined.</p>		
16	Exit this procedure.	Same		

STOP TIME _____

* DENOTES CRITICAL

INITIAL CONDITIONS

Unit 2 has tripped due to loss of Aux Control Power Panel Board KXB. AP/1/A/5500/15 (Loss of Vital or Aux Control Power) has been implemented. Prior to the event, all electrical systems were aligned in their normal operating configurations.

The C/R SRO has dispatched you to energize KXB using inverter SKX per Enclosure 25 of AP/1/A/5500/15 (Loss of Vital or Aux Control Power).

Facility: <u>McGuire</u>		Date of Examination: : <u>Feb 11, 2002</u>
Examination Level (circle one): RO / SRO Operating Test Number: _____		
Administrative Topic/Subject Description		Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions
A.1	Reactivity Management K/A 2.1.7 3.7/4.4	JPM: Calculate Boron Addition for Rod Change
	Conduct of Operations K/A 2.5.25 2.8/3.1	JPM: Calculate Quadrant Power Tilt Ratio
A.2	Equipment Control K/A 2.2.22 3.4/4.1	JPM: Determine acceptable Main Generator MegaVars for specified conditions.
		Repeat but different conditions.
A.3	Radiation Control K/A 2.3.2 2.5/2.9	JPM: Using a survey map determine dose time calculations
A.4	Emergency Plan K/A 2.4.43 2.8/3.5	JPM: Make initial notification to the state/Counties.
		Repeat but different conditions.

Facility: <u>McGuire</u>		Date of Examination: <u>Feb 11, 2002</u>
Examination Level (circle one): RO / SRO		Operating Test Number: _____
Administrative Topic/Subject Description		Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions
A.1	Reactivity Management K/A 2.1.7 3.7/4.4	JPM: Perform an Estimated Critical Position Calculation
	Conduct of Operations K/A 2.1.25 2.8/3.1	JPM: Based on plant conditions calculate head vent time.
A.2	Equipment Control K/A 2.2.13 3.6/3.8	JPM: Evaluate a tagout for correctness prior to signing.
A.3	Radiation Control K/A 2.3.2 2.5/2.9	JPM: Calculate stay time with and without a respirator
A.4	Emergency Plan K/A 2.4.43 2.8/3.5	JPM: Complete the ENS Form and make initial notifications to the State/Counties
		Repeat but different conditions.

ES-301 Control Room Systems and Facility Walk-Through Test Outline Form ES-301-2

Facility: McGuire		Date of Examination: Feb.11, 2002	
Exam Level (circle one):		<div style="border: 1px solid black; padding: 2px; display: inline-block;"> RO / SRO(I) / SRO(U) </div> Operating Test	
B.1 Control Room Systems			
System/JPM Title	Type Codes*	Safety Function	
a. 005/ Respond to a Leak on the ND System while at Mid Loop (ND-103) {005-A4.01-3.6/3.4} (SROU)	D,S,L, (P)	SF-4P	
b.059/ Establish Feedwater Control to BIG's following a reactor trip (CF-36) {054-EA2 .05-3.5/3. 7}	D,S	SF-4S	
c. 064/ Start and Load IB Diesel Generator (DG-198) {064-A4.01-4.0/4.3}	N,S	SF-6	
d. 004/ Establish normal letdown from excess letdown (NV-30) {004-A3.11-3.6/3.4}	D,S	SF-2	
e. 004/ Emergency Borate the Reactor Coolant system using the PD pump (NV-200A) {024-AK3.02 4.2/4.4} (SROU)	N,S,A	SF-1	
f. 073/ Realign Cooling TO NCPs After Spurious S/I (KC-150A) {073-K4.01-3.3/3.6}	D,C,A	SF-8	
g. 008/ Align Containment Spray to Cold Leg Recirc (NS-201A) {008-A3.08-3.6/3.7} (SROU)	C,A,D Repeat	SF-5	
B.2 Facility Walk-Through			
a. 078/ Align Control Air from Backup Cylinder to F VI Compressor (VI-110A) {078-K4.02-3.2/3.5} (SROU)	D,A	SF-8	
b. 028/ Start the Hydrogen Recombiner (VX-20) {028-A4 .01-4.0/4. 0}	D	SF-5	
c. 062/ SKX start up (EPL-199) {057-AA1.01 3.7/3.7} (New plant equipment) (SROU)	N,R	SF-6	
* Type Codes: (D)irect from bank, (M)odified from bank, (N)ew, (A)lternate path, (C)ontrol room, (S)imulator, (L)ow-Power, (R)CA, (P)SA			

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(P) — Indicates this JPM is associated with a Risk Significant System or Period as reflected in the MI~S Probabilistic Safety Assessment.