

ADMINISTRATIVE TOPICS OUTLINE FORM ES-301-1

Facility: Columbia Generating Station		Date of examination: October 2002
Examination level: SRO		Operating test number:
Administrative Topic/Subject Description		Describe the method of evaluation: 1. ONE admin JPM, OR 2. TWO Administrative questions
A.1	Fuel Handling	2.1.20 4.3/4.2 – Ability to execute procedure steps. Given PPM 1.3.40, ATT. 7.5 of 1.3.40, and LCS 1.9.2, determine allowable movement of heavy load over the spent fuel pool.
	JPM	
A.1	Shift Turnover	2.1.3 3.0/3.4 – Knowledge of shift turnover practices. Given a frozen simulator with out of service equipment, complete a shift turnover sheet for the on-coming Shift Manager.
	JPM	
A.2	Use of Piping and Instrumentation Drawings	2.1.24 2.8/3.1 – Ability to obtain and interpret station electrical and mechanical drawings. Use EWDs to explain the override function of LPCS-RMS-S21 for LPCS-V-5.
	JPM	
A.3	Radiation Exposure Limits	2.3.4 2.5/3.1 – Knowledge of radiation exposure limits and contamination control, including permissible levels in excess of those authorized. Complete the paperwork for Planned Special Exposure. 2001 NRC EXAM
	JPM	
A.4	Emergency Action Levels and Classifications	2.4.41 2.3/4.1 – Knowledge of Emergency Plan action level thresholds and classifications. Given a table top scenario with a security event, complete a CNF form with the correct EAL based on the security event.
	JPM	

ADMINISTRATIVE TOPICS OUTLINE FORM ES-301-1

Facility: Columbia Generating Station		Date of examination: October 2002
Examination level: RO		Operating test number:
Administrative Topic/Subject Description		Describe the method of evaluation: 1. ONE admin JPM, OR 2. TWO Administrative questions
A.1	Plant Parameter Verification JPM	2.1.7 3.7/4.4 – Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation. Using the graph in PPM 3.1.2, determine minimum feedwater temperature prior to entry into the Area of Increased Awareness.
	Shift Turnover JPM	2.1.3 3.0/3.4 – Knowledge of shift turnover practices. Given a frozen simulator with out of service equipment, complete a shift turnover sheet for the on-coming Reactor Operator.
A.2	Use of Piping and Instrumentation Drawings JPM	2.1.24 2.8/3.1 – Ability to obtain and interpret station electrical and mechanical drawings. Use EWDs to explain the override function of LPCS-RMS-S21 for LPCS-V-5.
A.3	Radiation Control 2 Questions	2.3.1 2.6/3.0 – Knowledge of 10CFR20 and related facility radiation control requirements. Given a scenario with projected dose exceeding the Admin Hold point, determine and justify actions. CLOSED REFERENCE Given a scenario with an entry into a high radiation area, determine dosimetry requirements. CLOSED REFERENCE 2000 NRC Exam
A.4	Emergency facilities 2 questions	2.4.29 2.6/4.0 – Knowledge of the Emergency Plan. At what Emergency Action Level are the Columbia Administrative Exposure Hold points automatically waived? CLOSED REFERENCE Given a scenario with the Shift Manager out of the control room, determine who the Emergency Director is. CLOSED REFERENCE

Facility: Columbia Generating Station	Task No: SRO-0066 RO-0559
Task Title: Comply with Conduct of Operations – Complete Shift Turnover forms for Simulator Scenario	Job Performance Measure No: BA.1-2JPMr2
K/A Reference: 2.1.3 3.0/3.4	
Examinee:	NRC Examiner:
Facility Evaluator:	Date: 02/22/01

Method of testing:

Admin - Perform

JPM SETUP INFORMATION

Initial Conditions:	<p>A reactor startup is in progress. The following conditions exist:</p> <p>Control rods are being withdrawn to bring the reactor critical.</p> <p>IRM C is out of service and bypassed.</p> <p>SGT-V-2B was just found closed with no control power.</p> <p>The Plant Logging System is inoperable.</p>
Task Standard:	<p>Shift Turnover forms must be completed with the information shown on the attached copies. Information on the attached forms is the minimum required for credit.</p>
Required Materials:	N/A
General References:	<p>PPM 1.3.1 rev. 56, Operating Policies, Programs, and Practices, attachments 6.8.2 and 6.8.6.</p>
Initiating Cue:	<p>Given the Initial Conditions and the frozen simulator, conduct a Shift Turnover for the oncoming Shift. Include the required documentation for the turnover. Limit the turnover to the conditions given in the Initial conditions.</p> <p>When you are finished, hand the completed documentation to the examiner.</p> <p>NOTE TO THE EXAMINER: ENSURE THE RO CANDIDATES COMPLETE THE SHIFT TURNOVER FORM FOR CRO-3.</p>
Time Critical Task:	NO
Validation Time:	10 minutes
Simulator ICs:	N/A
Malfunctions/Remote Triggers:	N/A
Overrides:	N/A
Special Setup Instructions:	<p>This JPM is to be performed in conjunction with and prior to Dynamic Scenario #1</p>

PERFORMANCE INFORMATION

START TIME:

Critical Step: YES	
Performance Step: 1 Complete the appropriate Shift Turnover Sheet using the Initial Conditions given and the frozen simulator.	
CUE:	
Standard:	Shift Turnover forms must be completed with the information shown on the attached copies. Information on the attached forms is the minimum required for credit.
Comment: SAT / UNSAT	

THE EXAMINEE SHOULD HAND THE JPM TO THE EXAMINER AT THIS POINT.

JPM TERMINATION TIME: JPM START TIME: - JPM COMPLETION TIME:	_____
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VERIFICATION OF COMPLETION

JPM Number: Ba.1-2.JPM

Examinee's Name:

Examiner's Name:

Date Performed:

Facility Evaluator:

Number of
Attempts:

Time to Complete:

JPM INFORMATION CARD

HAND THE STUDENT INFORMATION CARD TO THE EXAMINEE

READ TO THE EXAMINEE:

I will explain the initial conditions, which steps to simulate or discuss, and provide initiation cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Task Standard: Shift Turnover forms must be completed with the information shown on the attached copies. Information on the attached forms is the minimum required for credit.

Required Materials: N/A

Safety Equipment: N/A

General References: PPM 1.3.1 rev. 56, Operating Policies, Programs, and Practices, attachments 6.8.2 and 6.8.6.

Time Critical Task: NO

Initial Conditions: A reactor startup is in progress. The following conditions exist:
Control rods are being withdrawn to bring the reactor critical.
IRM C is out of service and bypassed.
SGT-V-2B was just found closed with no control power.
The Plant Logging System is inoperable.

INITIATING CUE

Given the Initial Conditions and the frozen simulator, conduct a Shift Turnover for the oncoming Shift. Include the required documentation for the turnover. Limit the turnover to the conditions given in the Initial conditions.

When you are finished, hand the completed documentation to the examiner.

NOTE TO THE EXAMINER: ENSURE THE RO CANDIDATES COMPLETE THE SHIFT TURNOVER FORM FOR CRO-3.

INFORMATION BELOW THIS LINE NOT SHARED WITH EXAMINEE

Task Number: SRO-0066 RO-0559

Validation Time: 10 minutes

NUREG 1123 Reference: 2.1.3 3.0/3.4

Time Critical: NO

Location: Simulator

Performance Method: Perform

Prepared/Revised by: S Hutchison

Revision Date: 7/23/02

STUDENT INFORMATION

Initial Conditions: A reactor startup is in progress. The following conditions exist:
Control rods are being withdrawn to bring the reactor critical.
IRM C is out of service and bypassed.
SGT-V-2B was just found closed with no control power.
The Plant Logging System is inoperable.

INITIATING CUE

Given the Initial Conditions and the frozen simulator, conduct a Shift Turnover for the oncoming Shift. Include the required documentation for the turnover. Limit the turnover to the conditions given in the Initial conditions.

When you are finished, hand the completed documentation to the examiner.

Facility: Columbia Generating Station	Task No: N/A
Task Title: Use EWD to Explain Override Switch for LPCS-V-5	Job Performance Measure No: BA.2JPMr1
K/A Reference: 2.1.24 2.8/3.1	
Examinee:	NRC Examiner:
Facility Evaluator:	Date:

Method of testing:

Admin – Perform (Any location with
reference material.)

JPM SETUP INFORMATION

Initial Conditions: N/A

Task Standard: The task is completed successfully when the candidate explains the effects of LPCS-RMS-S22 on the operation of LPCS-V-5.

Required Materials: N/A

General References: EWD 8E-006

Initiating Cue: Using EWDs explain the purpose of LPCS-RMS-S21 Override switch for LPCS-V-5. Include in your discussion all the expected effects this switch has on the operation of LPCS-V-5 and an explanation of how this is accomplished.
Indicate when you are finished with your explanation.

Time Critical Task: N/A

Validation Time: 10 minutes

Simulator ICs: N/A

Malfunctions/Remote Triggers: N/A

Overrides: N/A

Special Setup Instructions: N/A

PERFORMANCE INFORMATION

START TIME:

Critical Step: **YES**

Performance Step: 1 Must indicate each of the following:

LPCS-RMS-S21 contacts 7 - 8 close to energize LPCS-
RLY-K22.LPCS-RLY-K22 contacts 2 – 1, 12 – 11, and LPCS-RMS-
S21 contact 2 – 1 , all open.

This allows LPCS-RMS-V/5 to be throttled.

CUE:

Standard:

Credit is given when the candidate has explained the
above using EWD 8E-006**NOTE:**

Comment:

SAT / UNSAT

THE EXAMINEE SHOULD ANNOUNCE THE END OF THE JPM WHEN HE HAS
COMPLETED THE EXPLANATION..

JPM TERMINATION

TIME:

JPM START TIME:

-

JPM COMPLETION

TIME:

VERIFICATION OF COMPLETION

JPM Number: BA.2JPMr0

Examinee's Name:

Examiner's Name:

Date Performed:

Facility Evaluator:

Number of
Attempts:

Time to Complete:

JPM INFORMATION CARD

HAND THE STUDENT INFORMATION CARD TO THE EXAMINEE

READ TO THE EXAMINEE:

I will explain the initial conditions, which steps to simulate or discuss, and provide initiation cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Task Standard: The task is completed successfully when the candidate explains the effects of LPCS-RMS-S22 on the operation of LPCS-V-5.

Required Materials: N/A

Safety Equipment: N/A

General References: EWD 8E-006

Time Critical Task: NO

Initial Conditions: N/A

INITIATING CUE

Using EWDs explain the purpose of LPCS-RMS-S21 Override switch for LPCS-V-5. Include in your discussion all the expected effects this switch has on the operation of LPCS-V-5 and an explanation of how this is accomplished.

Indicate when you are finished with your explanation.

INFORMATION BELOW THIS LINE NOT SHARED WITH EXAMINEE

Task Number: N/A

Validation Time: 10 minutes

NUREG 1123 Reference: 2.1.24

Time Critical: NO

2.8/3.1

Location: Any location with references.

Performance Method: Perform

Prepared/Revised by: S Hutchison

Revision Date: 6/26/02

STUDENT INFORMATION

Initial Conditions: N/A

INITIATING CUE

Using EWDs explain the purpose of LPCS-RMS-S21 Override switch for LPCS-V-5. Include in your discussion all the expected effects this switch has on the operation of LPCS-V-5 and an explanation of how this is accomplished.

Indicate when you are finished with your explanation.

Facility: Columbia Generating Station	Task No: RO-0498-N-CR-HVAC
Task Title: Start Control Room Ventilation – Faulted JPM	Job Performance Measure No: JPMB.1.ar1
K/A Reference: 290003A4.01 3.2/3.2	
Examinee:	NRC Examiner:
Facility Evaluator:	Date:

Method of testing:

Simulator - Perform

JPM SETUP INFORMATION

Initial Conditions:	Control Room HVAC is shutdown following brief maintenance on a section of common ductwork. Valve and power supply checklists are complete. Prerequisites are met for Control Room HVAC system start.
Task Standard:	Control room ventilation is started per PPM 2.10.3 rev. 37. section 5.1
Required Materials:	N/A
General References:	2.10.3 Rev. 37
Initiating Cue:	The CRS has directed you to start the "A" Train of Control Room HVAC. Notify the CRS when WMA-AH-51 equipment is operating satisfactorily.
Time Critical Task:	NO
Validation Time:	6 minutes
Simulator ICs:	199
Malfunctions/Remote Triggers:	Setup in IC-199.
Overrides:	Setup in IC-199.
Special Setup Instructions:	Setup in IC-199.

PERFORMANCE INFORMATION

START TIME:

Critical Step: NO	
Performance Step: 1	5.1.1: Place the control switches for the following dampers in AUTO: <ol style="list-style-type: none"> 1. WMA-AD-54A2, Emergency Filter Recirc Damper 2. WMA-AD-54A1, Emergency Filter Inlet Damper 3. WMA-AD-51A1, Outside air supply Damper
CUE:	
Standard:	All three listed dampers placed in AUTO as required by procedure.
Comment: SAT / UNSAT	

Critical Step: YES	
Performance Step: 2	5.1.2: Start Recirc Fan WMA-FN-51A1 by placing its control switch to ON.
CUE:	
Standard:	WMA-FN-51A1 control switch is placed in the ON position.
Comment: SAT / UNSAT	

Critical Step: YES*	
Performance Step: 3 5.1.3: Ensure WMA-AD-51A1 opens	
CUE: If informed as CRS that WMA-AD-51A1 is closed, tell examinee to open WMA-AD-51A1.	
Open WMA-AD-51A1 .*	
Standard:	WMA-AD-51A1 is opened.
Comment: SAT / UNSAT	

Critical Step: NO	
Performance Step: 4 5.1.4: Place the control switch for standby Recirc Fan, WMA-FN-54B1 in AUTO.	
Standard:	Control switch for WMA-FN-54B1 is placed in AUTO.
Comment: SAT / UNSAT	

Critical Step: NO	
Performance Step: 5 5.1.5: Ensure WMA-AD-51B1 remains closed.	
CUE:	
Standard:	Verifies WMA-AD-51B1 remains closed.
Comment: SAT / UNSAT	

THE EXAMINEE SHOULD ANNOUNCE THE TERMINATION POINT OF THE JPM AT THIS POINT.

JPM TERMINATION TIME: JPM START TIME: -	_____
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JPM COMPLETION
TIME:

VERIFICATION OF COMPLETION

JPM Number: JPMB.1.ar1

Examinee's Name:

Examiner's Name:

Date Performed:

Facility Evaluator:

Number of
Attempts:

Time to Complete:

JPM INFORMATION CARD

HAND THE STUDENT INFORMATION CARD TO THE EXAMINEE

READ TO THE EXAMINEE:

I will explain the initial conditions, which steps to simulate or discuss, and provide initiation cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Task Standard: Control room ventilation is started per PPM 2.10.3 rev. 37.

Required Materials: N/A

Safety Equipment: N/A

General
References: 2.10.3 Rev. 37

Time Critical Task: NO

Initial Conditions: Control Room HVAC is shutdown following brief maintenance on a section of common ductwork. Valve and power supply checklists are complete. Prerequisites are met for Control Room HVAC system start.

INITIATING CUE

The CRS has directed you to start the "A" Train of Control Room HVAC.

Notify the CRS when WMA-AH-51 equipment is operating satisfactorily.

INFORMATION BELOW THIS LINE NOT SHARED WITH EXAMINEE

Task Number: RO-0498-N-CR-HVAC

Validation Time: 6 minutes

NUREG 1123 Reference: 290003A4.01

Time Critical: NO

3.2/3.2

Location: SIMULATOR

Performance Method: PERFORM

Prepared/Revised by: S Hutchison

Revision Date: 9/21/02

STUDENT INFORMATION

Initial Conditions: Control Room HVAC is shutdown following brief maintenance on a section of common ductwork. Valve and power supply checklists are complete. Prerequisites are met for Control Room HVAC system start.

INITIATING CUE

The CRS has directed you to start the "A" Train of Control Room HVAC.

Notify the CRS when WMA-AH-51 equipment is operating satisfactorily.

Facility: Columbia Generating Station	Task No: RO-0327-N-TG
Task Title: Generator Capability Curve Interpretation – Faulted JPM – Respond to loss of H ₂ in Main Generator	Job Performance Measure No: JPMB.1.br1
K/A Reference: 245000K1.01 (3.1/3.3) 245000A4.05 (2.7/2.7)	
Examinee:	NRC Examiner:
Facility Evaluator:	Date:

Method of testing:

Simulator - Perform

JPM SETUP INFORMATION

Initial Conditions: Reactor power is 97%. The Plant is operating normally.

Task Standard: Respond to the loss of H₂ by reducing Main Generator output to less than the capability curve.

Required Materials: PPM 4.820.B3 drop 2-3, PPM 2.5.7 att. 6.6

General References: PPM 4.820.B3 drop 2-3, PPM 2.5.7 att. 6.6

Initiating Cue: The CRS has directed you to increase reactor power to 100% with Recirculation Flow at the rate of 5 MWe/min. Notify the CRS when Reactor Power is 100%.

Time Critical Task: NO

Validation Time: 10 minutes

Simulator ICs: 199

Malfunctions /Remote Triggers: Loaded in IC-199

Overrides: Loaded in IC-199

Special Setup Instructions: Loaded in IC-199

PERFORMANCE INFORMATION

START TIME:

Critical Step: NO	
Performance Step: 1 Increase reactor power as directed to 100% power.	
Standard:	Increase reactor power with recirc flow as directed
NOTE:	When the CRO approaches the board, insert the H ₂ leak causing H ₂ pressure to decrease. Stop the leak when H ₂ pressure is 69 psig on the computer panel. It takes about 2 ½ minutes for the leak to cause the GEN H2 PRESS LOW annunciator.
CUE:	The candidate will have to be cued that this alarm is his.
Comment: SAT / UNSAT	

Critical Step: YES	
Performance Step: 2 At H13-P620 (BD B) check hydrogen pressure on H ₂ -PI-1.	
Standard:	CRO checks pressure as directed and verifies pressure less than 72 psig.
Comment: SAT / UNSAT	

Appendix C	Job Performance Measure Worksheet JPMB.1.Br1	Form ES-C-1
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Critical Step: NO	
Performance Step: 3	CRO dispatches an operator to check hydrogen pressure at the Generator H ₂ Control Station on H2-PI-3.
Standard:	CRO either dispatches or asks CRS to dispatch operator as directed by the procedure.
CUE:	If asked by the CRO to dispatch an operator, acknowledge the operator has been dispatched to check the H₂ and seal oil systems.
Comment: SAT / UNSAT	

NOTE: It is possible to reduce reactive load by the use of the voltage regulator to maintain the generator within the capability curve. If needed use the following cue to direct reduction of generator load by the reduction of Recirculation Flow.

CUE: Reduce generator output with Recirc Flow to maintain operation of the generator within the capability curve.

NOTE: STOP THE H2 LEAK AT 69# INDICATED ON THE COMPUTER PANEL.

Critical Step: YES	
Performance Step: 4 Maintain the Main Generator within the limits of the Generator Capability Curve in PPM 2.5.7 H ₂ /CO ₂ System.	
Standard:	Reduce Main Generator load by recirculation flow to less than the value in the table in att. 6.6 of 2.5.7. A reduction of load to the range of 930 to 1162 MW for 68 psig hydrogen pressure is acceptable.
CUE:	If directed by the CRO to add H₂ to the generator, cue that there is no hydrogen available. A truck is on the way but will not be on site for at least 4 hours.
Comment: SAT / UNSAT	

TERMINATION CUE: When generator load has been reduced to a value in the range given in the standard, announce to the CRO, "THE TERMINATION POINT OF THIS JPM HAS BEEN REACHED."

JPM TERMINATION TIME:	
JPM START TIME:	
-	_____
JPM COMPLETION TIME:	

VERIFICATION OF COMPLETION

JPM Number: JPMB.1.br1

Examinee's Name:

Examiner's Name:

Date Performed:

Facility Evaluator:

Number of
Attempts:

Time to Complete:

JPM INFORMATION CARD

HAND THE STUDENT INFORMATION CARD TO THE EXAMINEE

READ TO THE EXAMINEE:

I will explain the initial conditions, which steps to simulate or discuss, and provide initiation cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Task Standard: Respond to the loss of H₂ by reducing Main Generator output to less than the capability curve.

Required Materials: PPM 4.820.B3 drop 2-3, PPM 2.5.7 att. 6.6

Safety Equipment: NA

General References: PPM 4.820.B3 drop 2-3, PPM 2.5.7 att. 6.6

Time Critical Task: NO

Initial Conditions: Reactor power is 97%. The Plant is operating normally.

INITIATING CUE

The CRS has directed you to increase reactor power to 100% with Recirculation Flow at the rate of 5 MWe/min. Notify the CRS when Reactor Power is 100%.

INFORMATION BELOW THIS LINE NOT SHARED WITH EXAMINEE

Task Number: RO-0327-N-TG

Validation Time: 10 minutes

NUREG 1123 Reference: 245000K1.01
(3.1/3.3)

Time Critical: NO

245000A4.05 (2.7/2.7)

Location: Simulator

Performance Method: Perform

Prepared/Revised by: S Hutchison

Revision Date: 7/23/02

STUDENT INFORMATION

Initial Conditions: Reactor power is 97%. The Plant is operating normally.

INITIATING CUE

The CRS has directed you to increase reactor power to 100% with Recirculation Flow at the rate of 5 MWe/min. Notify the CRS when Reactor Power is 100%.

Facility: Columbia Generating Station	Task No: RO-0048-A-RCC
Task Title: Change RCC Pumps – Alternate Path JPM – Respond to loss of RCC Pump	Job Performance Measure No: JPMB.1.Cr7
K/A Reference: 400000K1.02 (3.2/3.4)	
Examinee:	NRC Examiner:
Facility Evaluator:	Date:

Method of testing:

Simulator - Perform

JPM SETUP INFORMATION

Initial Conditions:	The reactor is shutdown following a scram. All equipment is normal. Maintenance needs to tag out RCC-P-1A for breaker maintenance.
Task Standard:	Respond the loss of an RCC pump and the subsequent closure of RCC-V-6 in accordance with ABN-RCC.
Required Materials:	NA
General References:	PPM 2.8.3, rev. 19 page 13, ABN-RCC rev 2, pages3-6, and PPM 4.820.B1 rev. 15, drop 4-1
Initiating Cue:	The CRS has directed you change RCC Pumps per PPM 2.8.3, section 5.4 Reactor and Radwaste Building Close Cooling Water System. After RCC-P-1A has been stopped, Place the control switch in Pull to Lock in preparation for hanging the tag for maintenance. Notify the CRS when RCC-P-1A is in PTL and RCC-P-1C is in operation with all system parameters normal.
Time Critical Task:	NO
Validation Time:	10 minutes
Simulator ICs:	198
Malfunctions/Remote Triggers:	Loaded in IC-198
Overrides:	Loaded in IC-198
Special Setup Instructions:	Loaded in IC-198

PERFORMANCE INFORMATION

START TIME:

Critical Step: NO	
Performance Step: 1	5.4.1: Ensure suction valve is open for RCC-P-1C. (RCC-V-1C)
CUE:	Suction valve for RCC-P-1C is open. (RCC-V-1C)
Standard:	Verifies suction valve is open for RCC-P-1C (RCC-V-1C).
Comment: SAT / UNSAT	

Critical Step: NO	
Performance Step: 2	5.4.2: Ensure discharge valve is open for RCC-P-1C. (RCC-V-2C)
CUE:	Discharge valve for RCC-P-1C is open. (RCC-V-2C)
Standard:	Verifies discharge valve is open for RCC-P-1C (RCC-V-2A).
Comment: SAT / UNSAT	

Critical Step: NO	
Performance Step: 3	5.4.3: Start RCC-P-1C.
Standard:	Place the control switch for RCC-P-1C in start and releases when the pump starts.
NOTE: May announce the start of RCC-P-1C.	
Comment: SAT / UNSAT	

Critical Step: NO	
Performance Step: 4	5.4.4: Stop RCC-P-1A and place the control switch in PTL.
CUE:	IF CALLED AS OPS2, VERIFY THE DISCHARGE CHECK VALVE IS CLOSED.
Standard:	Stops RCC-P-1A and places the control switch in PTL.
NOTE:	When the control switch for RCC-P-1A is placed in the PTL position, RCC-P-1C trips.
Comment: SAT / UNSAT	

Critical Step: NO	
Performance Step: 5	Refers to PPM 4.820.B1 drop 4-1, RCC PUMP C MOTOR OL TRIP. May attempt to restart RCC-P-1A. Refers to ABN-RCC Loss of RCC
CUE:	If needed cue operator to respond to the Board N annunciator indication on Board S. NOTE: The trip causes RCC-V-6 to close which gives an annunciator in BD N. The BD N annunciator is a back panel annunciator which causes BD S to annunciate for indication to the front panels.
Standard:	As stated above.
Comment: SAT / UNSAT	

Critical Step: NO	
Performance Step: 6	4.2.2: Verifies RCC-V-6 has closed.
Standard:	At BD N, verifies RCC-V-6 has closed.
Comment: SAT / UNSAT	

Critical Step: **YES***

Performance Step: 7 4.2.3:

1. Trip RWCU-P-1A (1B)
2. **Close RWCU-V-4***
3. **Throttle open RWCU-V-104***

Standard:

1. Trips RWCU-P-1A (1B)
2. Closes RWCU-V-4
3. Throttles open RWCU-V-4 until dual indication is received (both red and green lights illuminated).

Comment:

SAT / UNSAT

TERMINATION CUE: THE TERMINATION POINT OF THIS JPM HAS BEEN REACHED.

JPM TERMINATION

TIME:

JPM START TIME:

-

JPM COMPLETION

TIME:

VERIFICATION OF COMPLETION

JPM Number: JPMB.1.Cr6

Examinee's Name:

Examiner's Name:

Date Performed:

Facility Evaluator:

Number of
Attempts:

Time to Complete:

JPM INFORMATION CARD

HAND THE STUDENT INFORMATION CARD TO THE EXAMINEE

READ TO THE EXAMINEE:

I will explain the initial conditions, which steps to simulate or discuss, and provide initiation cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Task Standard: Respond the loss of an RCC pump and the subsequent closure of RCC-V-6 in accordance with ABN-RCC.

Required Materials: NA

Safety Equipment: NA

General References: PPM 2.8.3, rev. 19 page 13, ABN-RCC rev 2, pages3-6, and PPM 4.820.B1 rev. 15, drop 4-1

Time Critical Task: NO

Initial Conditions: The reactor is shutdown following a scram. All equipment is normal. Maintenance needs to tag out RCC-P-1A for breaker maintenance.

INITIATING CUE

The CRS has directed you change RCC Pumps per PPM 2.8.3, section 5.4 Reactor and Radwaste Building Close Cooling Water System. After RCC-P-1A has been stopped, Place the control switch in Pull to Lock in preparation for hanging the tag for maintenance.
Notify the CRS when RCC-P-1A is in PTL and RCC-P-1C is in operation with all system parameters normal.

INFORMATION BELOW THIS LINE NOT SHARED WITH EXAMINEE

Task Number: RO-0048-A-RCC
NUREG 1123 Reference: :
400000K1.02 (3.2/3.4)
Location: Simulator

Validation Time: 10 minutes
Time Critical: NO

Performance Method: Perform

Prepared/Revised by: S Hutchison

Revision Date: 7/21/02

STUDENT INFORMATION

Initial Conditions: The reactor is shutdown following a scram. All equipment is normal. Maintenance needs to tag out RCC-P-1A for breaker maintenance.

INITIATING CUE

The CRS has directed you change RCC Pumps per PPM 2.8.3, section 5.4 Reactor and Radwaste Building Close Cooling Water System. After RCC-P-1A has been stopped, Place the control switch in Pull to Lock in preparation for hanging the tag for maintenance.

Notify the CRS when RCC-P-1A is in PTL and RCC-P-1C is in operation with all system parameters normal.

Facility: Columbia Generating Station	Task No: RO-0269
Task Title: Start RCIC with the Arm and Depress Pushbutton – faulted – Recover from RCIC Electrical Overspeed Trip.	Job Performance Measure No: JPMB.1.Dr1
K/A Reference: 217000A4.02 3.9/3.9	
Examinee:	NRC Examiner:
Facility Evaluator:	Date:

Method of testing:

Simulator - Perform

JPM SETUP INFORMATION

Initial Conditions:	The plant was operating at 100% power when a transient occurred causing a loss of feedwater.
Task Standard:	Recovery of the RCIC System is completed per PPM 2.4.6 following RCIC Turbine Trip.
Required Materials:	N/A
General References:	PPM 2.4.6 rev.34, sections 5.2 and 5.10 PPM 4.601.A4 rev 20, drop 1-5
Initiating Cue:	You have been directed by the CRS to start RCIC for level control using the Arm and Depress Pushbutton per PPM 2.4.6 section 5.2. Notify the CRS when RCIC is injecting and level is stable in the band of +13 inches to +54 inches.
Time Critical Task:	NO
Validation Time:	7 min
Simulator ICs:	198
Malfunctions/Remote Triggers:	All loaded in IC-198
Overrides:	All loaded in IC-198
Special Setup Instructions:	All loaded in IC-198

PERFORMANCE INFORMATION

START TIME:

Critical Step: YES	
Performance Step: 1	5.2.2: Rotate collar and push the RCIC MANUAL INITIATION PUSHBUTTON. (RCIC-RMS-S36 ARM and DEPRESS pushbutton).
CUE:	
Standard:	Rotate collar and push the RCIC MANUAL INITIATION PUSHBUTTON.
Note:	As the RCIC Turbine accelerates to speed, it will trip on an electrical Overspeed. The examinee will note the failure and respond as follows.
Comment: SAT / UNSAT	

Critical Step: NO	
Performance Step: 2	4.601.A4: 1. Confirm RCIC-V-1 is closed. 2. Ensure RCIC-V-46 is closed. 3. Refer to PPM 2.4.6 for recovery.
CUE: Direct the candidate to restart RCIC if asked.	
Standard:	
Comment: SAT / UNSAT	

Critical Step: NO	
Performance Step: 3	5.10.1, 2, and 3: For these steps cue the following if asked
CUE:	5.10.1 RCIC is operable. 5.10.2 RCIC will not be inop for GT 10 minutes. 5.10.3 The cause of the trip has been corrected and the system is to be restored to service.
Standard:	
Comment: SAT / UNSAT	

Critical Step: YES	
Performance Step: 4	5.10.4: N/A 5.10.5: Close or check close RCIC-V-45 isolation valve.
CUE:	
Standard:	RCIC-V-45 is closed or verified to be close.
Comment: SAT / UNSAT	

Critical Step: YES	
Performance Step: 5	5.10.6: Hold the control switch for RCIC-V-1 in the CLOSE position until both the valve stem and valve actuator indicate fully close.
CUE:	
Standard:	The control switch must be held in the CLOSE position until both the stem and the actuator indicate full closed.
Comment: SAT / UNSAT	

Critical Step: NO	
Performance Step: 6	5.10.7: Ensure both RCIC-V-63 and RCIC-V-8 (inboard and outboard isolation valves) are open.
CUE:	
Standard:	Both RCIC-V-63 and RCIC-V-8 must be verified open.
Comment: SAT / UNSAT	

Critical Step: NO	
Performance Step: 7	5.10.8: N/A – No initiation signal present.
CUE:	
Standard:	
Comment: SAT / UNSAT	

NOTE: Clear malfunction for the turbine trip to allow reset of RCIC Turbine.

Critical Step: YES	
Performance Step: 8	5.10.9: a. Open RCIC-V-45. b. Slowly jog open RCIC-V-1. c. Ensure the valve stem and actuator indicate open.
CUE:	
Standard:	Valve manipulations performed per PPM 2.4.6
Comment: SAT / UNSAT	

ANNOUNCE TO THE EXAMINEE THAT THE TERMINATION POINT OF THE JPM HAS BEEN REACHED.

JPM TERMINATION TIME: JPM START TIME: - _____ JPM COMPLETION
--

TIME:

VERIFICATION OF COMPLETION

JPM Number: JPMB.1.dr1

Examinee's Name:

Examiner's Name:

Date Performed:

Facility Evaluator:

Number of
Attempts:

Time to Complete:

JPM INFORMATION CARD

HAND THE STUDENT INFORMATION CARD TO THE EXAMINEE

READ TO THE EXAMINEE:

I will explain the initial conditions, which steps to simulate or discuss, and provide initiation cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Task Standard: Recovery of the RCIC System is completed per PPM 2.4.6 following RCIC Turbine Trip.

Required Materials: N/A

Safety Equipment: N/A

General References: PPM 2.4.6 rev.34, sections 5.2 and 5.10 PPM 4.601.A4 rev 20, drop 1-5

Time Critical Task: NO

Initial Conditions: The plant was operating at 100% power when a transient occurred causing a loss of feedwater.

INITIATING CUE

You have been directed by the CRS to start RCIC for level control using the Arm and Depress Pushbutton per PPM 2.4.6 section 5.2.

Notify the CRS when RCIC is injecting and level is stable in the band of +13 inches to +54 inches.

INFORMATION BELOW THIS LINE NOT SHARED WITH EXAMINEE

Task Number: RO-0269

Validation Time: 7 min

NUREG 1123 Reference: 217000A4.02

Time Critical: NO

3.9/3.9

Location: Simulator

Performance Method: Perform

Prepared/Revised by: S Hutchison

Revision Date: 7/30/02

STUDENT INFORMATION

Initial Conditions: The plant was operating at 100% power when a transient occurred causing a loss of feedwater.

INITIATING CUE

You have been directed by the CRS to start RCIC for level control using the Arm and Depress Pushbutton per PPM 2.4.6 section 5.2.

Notify the CRS when RCIC is injecting and level is stable in the band of +13 inches to +54 inches.

Facility: WNP-2	Task No: RO-0390-N-AC
Task Title: Transfer SL-31 480V Bus Power Supply From Alternate to Normal.	Job Performance Measure No: JPMB.1.er3
K/A Reference: 262001A4.04 3.6/3.7	
Examinee:	NRC Examiner:
Facility Evaluator:	Date:

Method of testing:

Simulator – Perform

JPM SETUP INFORMATION

Initial Conditions:	Bus SL-31 is currently powered from the alternate power supply through circuit SM-21.
Task Standard:	Bus SL-31 is transferred from the alternate power supply to the normal power supply, in accordance with plant procedures.
Required Materials:	N/A
General References:	PPM 2.7.1B rev 15, section 5.8
Initiating Cue:	The CRS has directed you to transfer the SL-31 power source from the alternate source, CB 31/21, to the normal source, CB 3-31. Inform the CRS when the transfer of SL-31 to SM-3 is completed.
Time Critical Task:	NO
Validation Time:	5 minutes
Simulator ICs:	198
Malfunctions/ Remote Triggers:	Loaded in IC-198
Overrides:	Loaded in IC-198
Special Setup Instructions:	Loaded in IC-198

PERFORMANCE INFORMATION

START TIME:

Critical Step: NO	
Performance Step: 1	5.8.1: Ensure the CB-3/31 white LOCKOUT CIRCUIT AVAIL light and CB-3/31 red closed lights are illuminated.
Standard:	Verifies white LOCKOUT CIRCUIT AVAIL light and CB-3/31 red closed lights are illuminated.
Comment: SAT / UNSAT	

Critical Step: NO	
Performance Step: 2	5.8.2: STEP IS N/A – CB 3/31 IS OPEN.
Standard:	
Comment: SAT / UNSAT	

Critical Step: NO

Performance Step: 3 5.8.3:
Ensure the CB-31/3 green tripped light is illuminated and the green position flag is being displayed in the CB-31/3 control switch window.

Standard: Ensure breaker 31/3 is tripped.

Comment:
SAT / UNSAT

Critical Step: YES

Performance Step: 4 5.8.4:
Place and hold the control switch for CB-31/3 in the CLOSE position.

Standard: Place the CS for CB-31/3 in the close position.

Comment:
SAT / UNSAT

Critical Step: YES*

Performance Step: 5 5.8.5:
Place the CB-31/21 control switch to the TRIP position* and ensure the green tripped light illuminates and red closed light extinguishes.

Standard: Verifies indications and *trips CB-31/21.

Comment:
SAT / UNSAT

Critical Step: NO	
Performance Step: 6	5.8.6: Ensure the CB-31/3 red closed light illuminates and green tripped light extinguishes.
Standard:	Verifies indications.
Comment: SAT / UNSAT	

Critical Step: NO	
Performance Step: 7	5.8.7: Release the control switch for CB-31/3.
Standard:	Control switch is released.
Comment: SAT / UNSAT	

THE EXAMINEE SHOULD ANNOUNCE THE TERMINATION POINT OF THE JPM AT THIS POINT.

JPM TERMINATION TIME:	
JPM START TIME:	
-	_____
JPM COMPLETION TIME:	

VERIFICATION OF COMPLETION

JPM Number: JPMB.1.er3

Examinee's Name:

Examiner's Name:

Date Performed:

Facility Evaluator:

Number of
Attempts:

Time to Complete:

JPM INFORMATION CARD

HAND THE STUDENT INFORMATION CARD TO THE EXAMINEE

READ TO THE EXAMINEE:

I will explain the initial conditions, which steps to simulate or discuss, and provide initiation cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Task Standard: Bus SL-31 is transferred from the alternate power supply to the normal power supply, in accordance with plant procedures.

Required Materials: N/A

Safety Equipment: N/A

General References: PPM 2.7.1B rev 115, section 5.8

Time Critical Task: NO

Initial Conditions: Bus SL-31 is currently powered from the alternate power supply through circuit SM-21.

INITIATING CUE

The CRS has directed you to transfer the SL-31 power source from the alternate source, CB 31/21, to the normal source, CB 3-31.
Inform the CRS when the transfer of SL-31 to SM-3 is completed.

INFORMATION BELOW THIS LINE NOT SHARED WITH EXAMINEE

Task Number: RO-0390-N-AC

Validation Time: 5 minutes

NUREG 1123 Reference: 262001A4.04
3.6/3.7

Time Critical: NO

Location: Simulator

Performance Method: Perform

Prepared/Revised by: S Hutchison

Revision Date: 9/21/02

STUDENT INFORMATION

Initial Conditions: Bus SL-31 is currently powered from the alternate power supply through circuit SM-21.

INITIATING CUE

The CRS has directed you to transfer the SL-31 power source from the alternate source, CB 31/21, to the normal source, CB 3-31.

Inform the CRS when the transfer of SL-31 to SM-3 is completed.

Facility: Columbia Generating Station	Task No: RO-659
Task Title: Shift Control Rod Drive Pumps	Job Performance Measure No: JPMB.1.fr1
K/A Reference: 201001A4.01 3.1/3.1	
Examinee:	NRC Examiner:
Facility Evaluator:	Date:

Method of testing:

Control room - Simulate

JPM SETUP INFORMATION

Initial Conditions: The plant is at shutdown following a scram. All systems are normal for this condition.

Task Standard: The operating CRD pump will be changed per PPM 2.1.1.

Required Materials: N/A

General References: PPM 2.1.1 rev. 30 Control Rod Drive System

Initiating Cue: You have been directed to Change the operating CRD pump per PPM 2.1.1 section 5.6. Notify the CRS when the task is completed and the CRD System is stable.

THE PERFORMANCE OF THIS JPM WILL BE SIMULATED. CONTROL MANIPULATIONS WILL NOT BE PERFORMED.

Time Critical Task: NO

Validation Time: 4 minutes

Simulator ICs: 199

Malfunctions/Remote Triggers: Loaded in 199

Overrides: Loaded in 199

Special Setup Instructions: Loaded in 199

PERFORMANCE INFORMATION

THE PERFORMANCE OF THIS JPM WILL BE SIMULATED. CONTROL MANIPULATIONS WILL NOT BE PERFORMED.

START TIME:

Critical Step: NO	
Performance Step: 1	5.6.1: Request an Equipment Operator to check the CRD pumps locally for a start.
CUE:	Report as OPS-2 that the pump is ready for a start.
Standard:	
Comment: SAT / UNSAT	

Critical Step: NO	
Performance Step: 2	5.6.2: Place CRD-FC-600 in manual.
CUE:	CRD-FC-600 is in manual.
Standard:	CRD-FC-600 is placed in manual.
Note:	Step 5.6.3 is N/A.
Comment: SAT / UNSAT	

Critical Step: YES	
Performance Step: 3	5.6.4: Start CRD-P-1B
CUE:	CRD-P-1B is running.
Standard:	CRD-P-1B is started.
Comment: SAT / UNSAT	

Critical Step: YES	
Performance Step: 4	5.6.5: Stop CRD-P-1A
CUE:	CRD-P-1A is stopped.
Standard:	CRD-P-1A is stopped.
Comment: SAT / UNSAT	

Critical Step: NO	
Performance Step: 5	5.6.6: Null controller CRD-FC-600 and transfer to AUTO .
CUE:	Controller is nulled.
Standard:	Controller is nulled prior to returning to automatic.
Comment: SAT / UNSAT	

Critical Step: NO	
Performance Step: 6	5.6.7: Slowly adjust CRD-V-3 to establish a drive water differential pressure of 260 psid on CRD-DPI-602.
CUE:	Drive water differential pressure is 260 psid.
Standard:	
Comment: SAT / UNSAT	

THE EXAMINEE SHOULD ANNOUNCE THE TERMINATION POINT OF THE JPM AT THIS POINT.

JPM TERMINATION TIME: JPM START TIME: - JPM COMPLETION TIME:	_____
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VERIFICATION OF COMPLETION

JPM Number: JPMB.1.r1

Examinee's Name:

Examiner's Name:

Date Performed:

Facility Evaluator:

Number of
Attempts:

Time to Complete:

JPM INFORMATION CARD

HAND THE STUDENT INFORMATION CARD TO THE EXAMINEE

READ TO THE EXAMINEE:

I will explain the initial conditions, which steps to simulate or discuss, and provide initiation cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Task Standard: The operating CRD pump will be changed per PPM 2.1.1.

Required Materials: N/A

Safety Equipment: N/A

General References: PPM 2.1.1 rev. 30 Control Rod Drive System

Time Critical Task: NO

Initial Conditions: The plant is at shutdown following a scram. All systems are normal for this condition.

INITIATING CUE

You have been directed to Change the operating CRD pump per PPM 2.1.1 section 5.6. Notify the CRS when the task is completed and the CRD System is stable.

THE PERFORMANCE OF THIS JPM WILL BE SIMULATED. CONTROL MANIPULATIONS WILL NOT BE PERFORMED.

INFORMATION BELOW THIS LINE NOT SHARED WITH EXAMINEE

Task Number: RO-659

Validation Time: 4 minutes

NUREG 1123 Reference: 201001A4.01
3.1/3.1

Time Critical: NO

Location: Plant

Performance Method: Simulate

Prepared/Revised by: S Hutchison

Revision Date: 7/24/02

STUDENT INFORMATION

Initial Conditions: The plant is at shutdown following a scram. All systems are normal for this condition.

INITIATING CUE

You have been directed to Change the operating CRD pump per PPM 2.1.1 section 5.6. Notify the CRS when the task is completed and the CRD System is stable.

**THE PERFORMANCE OF THIS JPM WILL BE SIMULATED.
CONTROL MANIPULATIONS WILL NOT BE PERFORMED.**

Facility: Columbia Generating Station	Task No: RO-0298-N-PC
Task Title: Purge the Drywell	Job Performance Measure No: JPMB.2.ar2
K/A Reference: 223001A4.07 4.2/4.1	
Examinee:	NRC Examiner:
Facility Evaluator:	Date:

Method of testing:

Plant - Simulate

JPM SETUP INFORMATION

Initial Conditions:	A plant shutdown is in progress in MODE 4 with the following conditions: <ol style="list-style-type: none"> 1. A wetwell purge has been completed. 2. "B" SGT is in operation for support of the purge. 3. A Fire Protection Impairment has been opened for the Primary Containment due to the loss of Nitrogen inerting. 4. Chemistry sampled Containment Atmosphere 2 hours ago and approve the purge. 5. Sections 5.1 and 5.2 of PPM 2.3.1 Primary Containment Venting, Purging, and Inerting are complete.
Task Standard:	Simulate the lineup and purging of the Drywell per PPM 2.3.1 section 5.3.
Required Materials:	N/A
General References:	PPM 2.3.1 rev. 39, section 5.3
Initiating Cue:	The CRS has directed you to purge the Drywell per PPM 2.3.1 starting at step 5.3.8. Inform the CRS when the drywell purge is in progress and the pressure control has been established. NO CONTROL MANIPULATIONS ARE TO BE PERFORMED. THIS IS A SIMULATE ONLY JPM.
Time Critical Task:	NO
Validation Time:	15 minutes
Simulator ICs:	N/A
Malfunctions/Remote Triggers:	N/A
Overrides:	N/A
Special Setup Instructions:	N/A

PERFORMANCE INFORMATION

START TIME:

NO CONTROL MANIPULATIONS ARE TO BE PERFORMED. THIS IS A SIMULATE ONLY JPM.

Critical Step: NO	
Performance Step: 1	5.3.8: At H13-P813 (Bd H) ensure ROA-FIC-A in MANUAL and adjust the controller output to zero.
CUE:	ROA-FIC-A in MANUAL and the controller output is adjusted to zero
Standard:	Simulate ROA-FIC-A in MANUAL and adjusted to zero output.
Comment: SAT / UNSAT	

Critical Step: NO	
Performance Step: 2	5.3.10 and 11 1. Ensure SGT is operating per section 5.1. 2. The plant is in MODE 4 so the SGT train does not have to be logged as inoperable.
CUE:	Cue that SGT is in operation per section 5.1 and the plant is in MODE 4..
Standard:	
Comment: SAT / UNSAT	

Critical Step: YES	
Performance Step: 3	5.3.12: At H13-P813 (Bd H), open CEP-V-1A and CEP-V-2A.
CUE:	CEP-V-1A and 2a are open.
Standard:	Correctly indicate CEP-V-1A and 2A OPEN. NOTE: Valve opening does not have to be logged in MODE 4.
Comment: SAT / UNSAT	

Critical Step: YES	
Performance Step: 4	5.3.13: Open SGT-V-1B
CUE:	SGT-V-1B is open.
Standard:	Correctly indicates SGT-V-1B open.
Comment: SAT / UNSAT	

Critical Step: YES	
Performance Step: 5	5.3.14: At H13-P813 (Bd H) open CSP-V-1 and CSP-V-2.
CUE:	CSP-V-1 and 2 are open.
Standard:	Correctly indicates CSP-V-1 and CSP-V-2 are open.
Comment: SAT / UNSAT	

Critical Step: YES	
Performance Step: 6	5.3.15: At H13-P813 (Bd H) open CSP-V-11.
CUE:	CSP-V-11 is open.
Standard:	Correctly indicates CSP-V-11 is open.
Comment: SAT / UNSAT	

Critical Step: NO	
Performance Step: 7	5.3.16: Record the purge start time in OSP-INST-H101.
CUE:	Start time has been recorded.
Standard:	
Comment: SAT / UNSAT	

Critical Step: YES	
Performance Step: 8	5.3.17: At H13-P813 (Bd H) slowly increase ROA-FIC-1 controller output. Monitor drywell pressure on CMS-PR-1 (2) at H13-P601.
CUE:	ROA-FIC-1 output is increasing. Drywell pressure is increasing slowly on CMS-PR-1.
Standard:	Simulates controller output increase on ROA-FIC-1.
Comment: SAT / UNSAT	

Critical Step: YES	
Performance Step: 9	5.3.18: Close SGT-V-2B.
CUE:	SGT-V-2B is closed.
Standard:	Simulate SGT-V-2B closed.
Comment: SAT / UNSAT	

Critical Step: YES	
Performance Step: 10	5.3.19: Place SGT-DPIC-1B2 in MANUAL and adjust ROA purge supply and SGT flow rates, indicated on ROA-FIC-1 and SGT-DPIC-1B2 respectively as required to control drywell pressure Less Than or equal to 1.0 psig.
CUE:	Drywell pressure is 0.5 psig and stable. This cue should be given when the candidate demonstrates the adjustment of the controllers.
Standard:	Simulate adjusting controllers as directed.
	NOTE: The purge supply has to be higher than SGT flowrate to increase drywell pressure and conversely, it must be lower than SGT flowrate for pressure to decrease.
Comment: SAT / UNSAT	

THE EXAMINEE SHOULD ANNOUNCE THE TERMINATION POINT OF THE JPM AT THIS POINT.

JPM TERMINATION TIME: JPM START TIME: - JPM COMPLETION TIME:	_____
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VERIFICATION OF COMPLETION

JPM Number: JPMB.1.gr2

Examinee's Name:

Examiner's Name:

Date Performed:

Facility Evaluator:

Number of
Attempts:

Time to Complete:

JPM INFORMATION CARD

HAND THE STUDENT INFORMATION CARD TO THE EXAMINEE

READ TO THE EXAMINEE:

I will explain the initial conditions, which steps to simulate or discuss, and provide initiation cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Task Standard: Simulate the lineup and purging of the Drywell per PPM 2.3.1 section 5.3.

Required Materials: N/A

Safety Equipment: N/A

General References: PPM 2.3.1 rev. 39, section 5.3.

Time Critical Task: NO

Initial Conditions: A plant shutdown is in progress in MODE 4 with the following conditions:

1. A wetwell purge has been completed.
2. "B" SGT is in operation for support of the purge.
3. A Fire Protection Impairment has been opened for the Primary Containment due to the loss of Nitrogen inerting.
4. Chemistry sampled Containment Atmosphere 2 hours ago and approve the purge.
5. Sections 5.1 and 5.2 of PPM 2.3.1 Primary Containment Venting, Purging, and Inerting are complete.

INITIATING CUE

The CRS has directed you to purge the Drywell per PPM 2.3.1 starting at step 5.3.8. Inform the CRS when the drywell purge is in progress and the pressure control has been established.

NO CONTROL MANIPULATIONS ARE TO BE PERFORMED. THIS IS A

SIMULATE ONLY JPM.

INFORMATION BELOW THIS LINE NOT SHARED WITH EXAMINEE

Task Number: RO-0298-N-PC

Validation Time: 15 minutes

NUREG 1123 Reference: 223001A4.07

Time Critical: NO

4.2/4.1

Location: Main Control Room

Performance Method: Simulate

Prepared/Revised by: S Hutchison

Revision Date: 7/21/02

STUDENT INFORMATION

Initial Conditions: A plant shutdown is in progress in MODE 4 with the following conditions:

1. A wetwell purge has been completed.
2. "B" SGT is in operation for support of the purge.
3. A Fire Protection Impairment has been opened for the Primary Containment due to the loss of Nitrogen inerting.
4. Chemistry sampled Containment Atmosphere 2 hours ago and approve the purge.
5. Sections 5.1 and 5.2 of PPM 2.3.1 Primary Containment Venting, Purging, and Inerting are complete.

INITIATING CUE

The CRS has directed you to purge the Drywell per PPM 2.3.1 starting at step 5.3.8. Inform the CRS when the drywell purge is in progress and the pressure control has been established.

NO CONTROL MANIPULATIONS ARE TO BE PERFORMED. THIS IS A SIMULATE ONLY JPM.

Facility: Columbia Generating Station	Task No: RO-0117 (SRO Upgrade Task) SRO-0251-A-RSP
Task Title: Control Room Evacuation – Preparations for ED	Job Performance Measure No: JPMB.2.ar9
K/A Reference: 295016AA1.08 (4.04.0)	
Examinee:	NRC Examiner:
Facility Evaluator:	Date:

Method of testing:

Plant - Simulate

JPM SETUP INFORMATION

Initial Conditions:	<p>The Control Room has been evacuated at the Shift Managers direction due to a fire.</p> <p>The immediate and subsequent operator actions for the control room have been successfully completed.</p> <p>Operators have been dispatched to perform all actions outside the Remote and Alternate Remote Shutdown Panels and have started on ATT. 7.2, 7.3, and 7.4 of ABN-CR-EVAC.</p> <p>SM-8 is powered from the Backup Transformer.</p>
Task Standard:	Preparations for opening SRVs from the Remote Shutdown Panel are complete in accordance with ABN-CR-EVAC section 4.2.
Required Materials:	N/A
General	ABN-CR-EVAC rev. 2, section 4.2
References:	
Initiating Cue:	<p>The CRS has directed you to initiate Section 4.2, of ABN-CR-EVAC to emergency depressurize the reactor. Notify the CRS when MS-RV-4C, 4B and 4A are energized and ready for operation.</p> <p>THE PERFORMANCE OF THIS JPM WILL BE SIMULATED. NO CONTROL MANIPULATIONS WILL BE PERFORMED.</p> <p>NOTE TO EXAMINER: Do not provide a copy of the procedure to the candidate until the candidate has indicated the location of the procedure.</p>
Time Critical Task:	NO
Validation Time:	10 Minutes
Simulator ICs:	N/A
Malfunctions/Remote Triggers:	N/A
Overrides:	N/A
Special Setup	N/A
Instructions:	

PERFORMANCE INFORMATION

START TIME:

THE PERFORMANCE OF THIS JPM WILL BE SIMULATED. NO CONTROL MANIPULATIONS WILL BE PERFORMED.

Critical Step: YES	
Performance Step: 1	4.2.1: Place the following switches in EMERG: RHR-RPV INSTRUMENTATION POWER TRANSFER – no switch number. RCIC FLOW CONTROL RCIC-FIC-1R POWER TRANSFER – RSTS-7
CUE:	Both switches in EMERG.
Standard:	Control manipulations simulated correctly.
Comment: SAT / UNSAT	

Critical Step: NO	
Performance Step: 2	4.2.2: Monitor the following: RCIC flow rate: RCIC-FI-1R/1 = 600 gpm RPV pressure: MS-PI-2 = 992 psig RPV water level: MS-LI-10 = -141 inches and down slow RHR-P-2B flow rate: RHR-FI-5 = 0 – Flow indicator is downstream of the minimum flow line. SW-P-1B discharge pressure: SW-PI-32BR = 198 psig
CUE:	Cue as required.
Standard:	
Comment: SAT / UNSAT	

Critical Step: NO	
Performance Step: 3	4.2.3, 4, 5, and 6:
CUE:	These steps are in progress.
Standard:	
Comment: SAT / UNSAT	

Critical Step: YES	
Performance Step: 4	4.2.7: At E-CP-FRTP, place the following switches in the EMERG position: - FRTS-1 - FRTS-2 - FRTS-5 - FRTS-6 - E-RMS-FRTS7
CUE:	All switches in EMERG.
Standard:	Control manipulations simulated correctly.
Comment: SAT / UNSAT	

Critical Step: NO	
Performance Step: 5	4.2.8: Establish communications between DG-2, and SM-8 Operators.
CUE:	Communications are established.
Standard:	
Comment: SAT / UNSAT	

Critical Step: NO	
Performance Step: 6	4.2.9: If evacuating the control room because of fire, enter and perform ABN-FIRE concurrently.
CUE:	ABN-FIRE HAS BEEN ENTERED
Standard:	
Comment: SAT / UNSAT	

Critical Step: NO	
Performance Step: 7	4.2.10: If not already performed, classify the event.
CUE:	The event has been classified.
Standard:	
Comment: SAT / UNSAT	

Critical Step: NO	
Performance Step: 8	4.2.11: N/A this step.
CUE:	
Standard:	
NOTE: SM-8 is powered from the Backup Transformer.	
Comment: SAT / UNSAT	

Critical Step: NO	
Performance Step: 9	4.2.12: Place RHR-P-2B and SW-P-1B in service.
CUE:	RHR-P-2B and SW-P-1B are in operation. If asked, the panel lights are energized.
Standard:	
Comment: SAT / UNSAT	

Critical Step: YES	
Performance Step: 10	4.2.13: Ensure the following relief valve control switches are in the CLOSE position at the Remote Shutdown Panel: MS-RV-4C MS-RV-4B MS-RV-4A
CUE:	Switches are in CLOSE.
Standard:	The relief valves are indicated correctly.
Comment: SAT / UNSAT	

Critical Step: YES	
Performance Step: 11	4.2.14: Place the MS-RV-4A, 4B, & 4C POWER TRANSFER switch to the EMERG position.
CUE:	Switch is in EMERG. Green lights are illuminated.
Standard:	Correct Power Transfer switch is indicated.
Comment: SAT / UNSAT	

THE EXAMINEE SHOULD ANNOUNCE THE TERMINATION POINT OF THE JPM AT THIS POINT.

JPM TERMINATION TIME:	
JPM START TIME:	
-	_____
JPM COMPLETION TIME:	

VERIFICATION OF COMPLETION

JPM Number: JPMB.2.ar9

Examinee's Name:

Examiner's Name:

Date Performed:

Facility Evaluator:

Number of
Attempts:

Time to Complete:

JPM INFORMATION CARD

HAND THE STUDENT INFORMATION CARD TO THE EXAMINEE

READ TO THE EXAMINEE:

I will explain the initial conditions, which steps to simulate or discuss, and provide initiation cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Task Standard: Preparations for opening SRVs from the Remote Shutdown Panel are complete in accordance with ABN-CR-EVAC section 4.2.

Required Materials: N/A

Safety Equipment: N/A

General References: ABN-CR-EVAC rev. 2, section 4.2

Time Critical Task: NO

Initial Conditions: The Control Room has been evacuated at the Shift Managers direction due to a fire.

The immediate and subsequent operator actions for the control room have been successfully completed.

Operators have been dispatched to perform all actions outside the Remote and Alternate Remote Shutdown Panels and have started on ATT. 7.2, 7.3, and 7.4 of ABN-CR-EVAC.

SM-8 is powered from the Backup Transformer.

INITIATING CUE

The CRS has directed you to initiate Section 4.2, of ABN-CR-EVAC to emergency depressurize the reactor. Notify the CRS when MS-RV-4C, 4B and 4A are energized and ready for operation.

THE PERFORMANCE OF THIS JPM WILL BE SIMULATED. NO CONTROL MANIPULATIONS WILL BE PERFORMED.

NOTE TO EXAMINER: Do not provide a copy of the procedure to the candidate until the candidate has indicated the location of the procedure.

INFORMATION BELOW THIS LINE NOT SHARED WITH EXAMINEE

Task Number: RO-0117 (SRO Upgrade Task) Validation Time: 10 min.

SRO-0251-A-RSP

NUREG 1123 Reference:
295016AA1.08 (4.04.0)

Time Critical: NO

Location: Plant

Performance Method: Simulate7/30/02

Prepared/Revised by: S Hutchison

Revision Date:

STUDENT INFORMATION

Initial Conditions: The Control Room has been evacuated at the Shift Managers direction due to a fire.

The immediate and subsequent operator actions for the control room have been successfully completed.

Operators have been dispatched to perform all actions outside the Remote and Alternate Remote Shutdown Panels and have started on ATT. 7.2, 7.3, and 7.4 of ABN-CR-EVAC.

SM-8 is powered from the Backup Transformer.

INITIATING CUE

The CRS has directed you to initiate Section 4.2, of ABN-CR-EVAC to emergency depressurize the reactor. Notify the CRS when MS-RV-4C, 4B and 4A are energized and ready for operation.

THE PERFORMANCE OF THIS JPM WILL BE SIMULATED. NO CONTROL MANIPULATIONS WILL BE PERFORMED.

Facility: Columbia Generating Station	Task No: RO-0247
Task Title: Close RPS EPA Breakers	Job Performance Measure No: JPMB.2.br4
K/A Reference: 212000A.02 3.7/3.9	
Examinee:	NRC Examiner:
Facility Evaluator:	Date: 02/22/01

Method of testing:

Plant - Simulate

JPM SETUP INFORMATION

Initial Conditions:	RPS Division A has been de-energized due to operator error. PPM 2.7.6 section 5.1 has been completed.
Task Standard:	Actions taken to close RPS-EPA-3A are in accordance with PPM 2.7.6.
Required Materials:	N/A
General References:	PPM 2.7.6 rev. 16, section 5.3
Initiating Cue:	The CRS has directed you to close EPA breaker RPS-EPA-3A. Inform the CRS when RPS-EPA-3A is closed.
	THE PERFORMANCE OF THIS JPM WILL BE SIMULATED. CONTROL MANIPULATIONS WILL NOT BE PERFORMED.
Time Critical Task:	NO
Validation Time:	8 minutes
Simulator ICs:	N/A
Malfunctions/Remote Triggers:	N/A
Overrides:	N/A
Special Setup Instructions:	N/A

PERFORMANCE INFORMATION

START TIME:

Critical Step: NO	
Performance Step: 1	5.3.1: Ensure Section 5.1 has been completed.
CUE:	This was given in the initial conditions and should not have to be cued.
Standard:	
Comment: SAT / UNSAT	

Critical Step: YES	
Performance Step: 2	5.3.2: Obtain keys 166 and 168 from the control room.
CUE:	When the candidate identifies the need to go to the control room for the keys, cue – “You have the necessary keys”.
Standard:	
Comment: SAT / UNSAT	

Critical Step: **YES***

Performance Step: 3 5.3.3: In RPS-MG2 Room, close EPA breaker RPS-EPA-3A as follows:

- a. Ensure keylock switch S1 is in the NORMAL position.
- b. Ensure keylock switch S2 in the OPER position.
- c. Ensure the POWER IN indicator is illuminated.
- d. Ensure the following indicators are extinguished;
 1. OVERVOLTAGE
 2. UNDERVOLTAGE
 3. UNDERFREQUENCY
 4. POWER OUT

CUE: The **UNDERVOLTAGE** and **UNDERFREQUENCY** lights are illuminated. The other lights are extinguished.

- e. Rotate keylock switch S2 to the RESET position and return to OPERATE.*

All 4 lights are now extinguished.

CUE:

- f. Reset EPA breaker RPS-EPA-3A by opening it fully.*
- g. Close RPS-EPA-3A. *
- h. Ensure POWER OUT light is illuminated.

CUE: The **POWER OUT** light is illuminated.

Standard: Steps are completed in accordance with PPM 2.7.6.

Comment:
SAT / UNSAT

THE EXAMINEE SHOULD ANNOUNCE THE TERMINATION POINT OF THE JPM AT THIS POINT.

JPM TERMINATION

TIME:

JPM START TIME:

-

JPM COMPLETION

TIME:

VERIFICATION OF COMPLETION

JPM Number: JPMB.2.br4

Examinee's Name:

Examiner's Name:

Date Performed:

Facility Evaluator:

Number of
Attempts:

Time to Complete:

JPM INFORMATION CARD

HAND THE STUDENT INFORMATION CARD TO THE EXAMINEE

READ TO THE EXAMINEE:

I will explain the initial conditions, which steps to simulate or discuss, and provide initiation cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Task Standard: Actions taken to close RPS-EPA-3A are in accordance with PPM 2.7.6.

Required Materials: N/A

Safety Equipment: N/A

General References: PPM 2.7.6 rev. 16, section 5.3

Time Critical Task: NO

Initial Conditions: RPS Division A has been de-energized due to operator error. PPM 2.7.6 section 5.1 has been completed.

INITIATING CUE

The CRS has directed you to close EPA breaker RPS-EPA-3A. Inform the CRS when RPS-EPA-3A is closed.

THE PERFORMANCE OF THIS JPM WILL BE SIMULATED. CONTROL MANIPULATIONS WILL NOT BE PERFORMED.

INFORMATION BELOW THIS LINE NOT SHARED WITH EXAMINEE

Task Number: RO-0247

Validation Time: 8 minutes

NUREG 1123 Reference: 212000A.02

Time Critical: NO

3.7/3.9

Location: Plant

Performance Method: Simulate

Prepared/Revised by: S Hutchison

Revision Date: 7/30/02

STUDENT INFORMATION

Initial Conditions: RPS Division A has been de-energized due to operator error. PPM 2.7.6 section 5.1 has been completed.

INITIATING CUE

The CRS has directed you to close EPA breaker RPS-EPA-3A. Inform the CRS when RPS-EPA-3A is closed.

**THE PERFORMANCE OF THIS JPM WILL BE SIMULATED.
CONTROL MANIPULATIONS WILL NOT BE PERFORMED.**

Facility: Columbia Generating Station	Task No: RO-0706-N-DGHP
Task Title: Perform Manual Start of the HPCS DG from Local Panel	Job Performance Measure No: JPMB.2.cr4
K/A Reference: 264000A4.04 3.7/3.7	
Examinee:	NRC Examiner:
Facility Evaluator:	Date:

Method of testing:

PLANT - Simulate

JPM SETUP INFORMATION

Initial Conditions:	A fast start of DG-3 is in progress. The procedure is in progress and all steps up to 5.1.5 are complete.
Task Standard:	The task will be completed when the candidate has simulated the start of DG-3 per SOP-SG3-START section 5.1.
Required Materials:	N/A
General References:	SOP-DG3-START rev. 1
Initiating Cue:	The CRS has directed you to continue the local, fast start of DG-3 at step 5.1.5, SOP-DG3-START. Notify the CRS when DG-3 is operating at 900 rpm. CONTROL MANIPULATIONS WILL <u>NOT</u> BE PERFORMED. ALL ACTIONS AND STEPS WILL BE SIMULATED.
Time Critical Task:	NO
Validation Time:	15 min.
Overrides:	N/A
Special Setup Instructions:	N/A

PERFORMANCE INFORMATION

CONTROL MANIPULATIONS WILL NOT BE PERFORMED. ALL ACTIONS AND STEPS WILL BE SIMULATED.

START TIME:

Critical Step: NO	
Performance Step: 1	5.1.5: Place the Unit Mode Select Switch to the AUTO position. a. Ensure the red light illuminates (E-CP-DG/EP3). b. Enter in the Plant Tracking Log as Operable.
CUE:	Red light on. DG-3 is logged as operable.
Standard:	
Comment: SAT / UNSAT	

Critical Step: NO	
Performance Step: 2	5.1.6: Verify HPCS-P-2 is running.
CUE:	HPCS-P-2 is running.
Standard:	
Comment: SAT / UNSAT	

Critical Step: NO	
Performance Step: 3	5.1.7: Verify SW flow to the Diesel Engine Greater Than 780 GPM (SW-FIS-9 local).
CUE:	Flow is greater than 799 gpm.
Standard:	Verifies flow on SW-FIS-9.
Comment: SAT / UNSAT	

Critical Step: NO	
Performance Step: 4	5.1.8: Verify the annunciator alarms are clear on E-CP-DG-RP3, except drop 1.1 (NOT READY FOR AUTO START) and 3.1 (POWER ON).
CUE:	All annunciators are clear except those indicated.
Standard:	Alarms indicated on E-CP-DG-RP3.
Comment: SAT / UNSAT	

Critical Step: NO	
Performance Step: 5	5.1.9: Verify HPCS Diesel Generator annunciators are clear except drop 6.8 HPCS SYSTEM OUT OF SERVICE at H13-P601.
CUE:	All annunciators are clear except the one indicated.
Standard:	Calls control room for verification.
Comment: SAT / UNSAT	

Critical Step: NO	
Performance Step: 6	5.1.10: At E-CP-DG/CP3, verifies the Generator Space Heater, breaker 1, is open
CUE:	Breaker is open.
Standard:	Indicates breaker at E-CP-DG-CP3
Comment: SAT / UNSAT	

Critical Step: NO	
Performance Step: 7	5.1.11: N/A step 5.1.11
CUE:	AS REQUIRED
Standard:	
Comment:	

SAT / UNSAT	
Critical Step: YES	
Performance Step: 8	5.1.12: Place the Diesel Generator Mode Selector switch to the LOCAL position. (Located in the control room) Depress the UNIT START pushbutton at E-CP-DG/EP3.
CUE:	DG Mode Selector Switch is in the Local position.
NOTE: IF THE OPERATOR PRESSES THE <u>ENGINE START</u> PB (INSTEAD OF THE <u>UNIT START</u> PB), THE DIESEL FAILS TO START.	
Standard:	At E-CP-DG/EP3, depress the UNIT START pushbutton
Comment: SAT / UNSAT	

Critical Step: YES	
Performance Step: 9	5.1.13: Verify the air start motors disengaged after engine start.
CUE:	Air start motors have disengaged.
Standard:	Indicate location of at least 1 air start motor.
NOTE: If an air start motor did not disengage, there would be loud grinding noise.	
Comment: SAT / UNSAT	

Critical Step: NO	
Performance Step: 10	5.1.14: Verify adequate oil in the starting air in-line lubricators within approximately 2 minutes of the diesel start.
CUE:	CUE AS REQUIRED
Standard:	Indicate the location of at least 1 in-line lubricator.
Comment: SAT / UNSAT	

Critical Step: NO	
Performance Step: 11	5.1.15: Classify and log the start in the Plant Logging System.
CUE:	CUE AS REQUIRED
Standard:	
Comment: SAT / UNSAT	

Critical Step: NO	
Performance Step: 12	5.1.16: N/A this step.
CUE:	CUE AS REQUIRED
Standard:	
Comment: SAT / UNSAT	

Critical Step: NO	
Performance Step: 13	5.1.17: Verify engine speed is approximately 900 RPM.
CUE:	CUE AS REQUIRED
Standard:	Indicate speed on HPCS-SI-DG3.
Comment: SAT / UNSAT	

THE EXAMINEE SHOULD ANNOUNCE THE TERMINATION POINT OF THE JPM AT THIS POINT.

JPM TERMINATION TIME:	
JPM START TIME:	
-	_____
JPM COMPLETION TIME:	

VERIFICATION OF COMPLETION

JPM Number: JPMB.2.cr3

Examinee's Name:

Examiner's Name:

Date Performed:

Facility Evaluator:

Number of
Attempts:

Time to Complete:

JPM INFORMATION CARD

HAND THE STUDENT INFORMATION CARD TO THE EXAMINEE

READ TO THE EXAMINEE:

I will explain the initial conditions, which steps to simulate or discuss, and provide initiation cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Task Standard: The task will be completed when the candidate has simulated the start of DG-3 per SOP-SG3-START section 5.1.

Required Materials: N/A

Safety Equipment: N/A

General References: SOP-SG3-START rev. 0

Time Critical Task: NO

Initial Conditions: A fast start of DG-3 is in progress. The procedure is in progress and all steps up to 5.1.5 are complete.

INITIATING CUE

The CRS has directed you to continue the local, fast start of DG-3 at step 5.1.5, SOP-DG3-START. Notify the CRS when DG-3 is operating at 900 rpm.

CONTROL MANIPULATIONS WILL NOT BE PERFORMED. ALL ACTIONS AND STEPS WILL BE SIMULATED.

INFORMATION BELOW THIS LINE NOT SHARED WITH EXAMINEE

Task Number: RO-0706-N-DGHP

Validation Time: 10 min.

NUREG 1123 Reference: 264000A4.04
3.7/3.7

Time Critical: NO

Location: PLANT

Performance Method: SIMULATE

Prepared/Revised by: S Hutchison

Revision Date: 7/29/02

STUDENT INFORMATION

Initial Conditions: A fast start of DG-3 is in progress. The procedure is in progress and all steps up to 5.1.5 are complete.

INITIATING CUE

The CRS has directed you to continue the local, fast start of DG-3 at step 5.1.5, SOP-DG3-START. Notify the CRS when DG-3 is operating at 900 rpm.

CONTROL MANIPULATIONS WILL NOT BE PERFORMED. ALL ACTIONS AND STEPS WILL BE SIMULATED.

Facility: Columbia Generating Station	Task No: N/A
Task Title: Determination of Adequate Feedwater Temperature Prior to AIA	Job Performance Measure No: RA.1-1JPMr1
K/A Reference: 2.1.7 3.7/4.4	
Examinee:	NRC Examiner:
Facility Evaluator:	Date:

Method of testing:

Admin – Perform (Any location with reference material.)

JPM SETUP INFORMATION

Initial Conditions:	<p>A plant startup is in progress with RRC-P-1A tagged out for repair. The following conditions exist:</p> <p>RFW-TI5 (average feedwater temp.) = 296° F</p> <p>RRC Loop B flow = 22500 gpm</p> <p>Rod Line = 54%</p> <p>A voluntary entry into the Area of Increased Awareness needs to be made.</p>
Task Standard:	Correctly determines action regarding entering AIA per PPM 3.1.2.
Required Materials:	N/A
General References:	PPM 3.1.2 rev. 57
Initiating Cue:	<p>Using the above information, PPM 3.1.2 Reactor Plant Startup, step 5.8.16, and the Single Loop Power to flow map, determine if it is allowable to enter the Area of Increased Awareness. Justify your answer.</p> <p>Inform the CRS when you have completed this determination.</p>
Time Critical Task:	N/A
Validation Time:	8 minutes
Simulator ICs:	N/A
Malfunctions/Remote Triggers:	N/A
Overrides:	N/A
Special Setup	N/A

Instructions:

PERFORMANCE INFORMATION

START TIME:

Critical Step: YES	
Performance Step: 1	Determines reactor power from Single Loop Power to Flow Map.
CUE:	
Standard:	Using the 22500 gpm loop flow rate and 54% control rod line given in the initial conditions, determines that power is 30% (+ or – 2%).
NOTE:	
Comment: SAT / UNSAT	

Critical Step: YES	
Performance Step: 2	Determines feedwater temperature is satisfactory for entering AIA
CUE:	
Standard:	Using the 30% power from the above step and attachment 7.3 of PPM 3.1.2, determines that 296° F feedwater temperature is to the left of the line and is satisfactory.
NOTE:	
Comment: SAT / UNSAT	

THE EXAMINEE SHOULD INFORM THE CRS OF HIS COMPLETED DETERMINATION.

JPM TERMINATION

TIME:

JPM START TIME:

-

JPM COMPLETION
TIME:

VERIFICATION OF COMPLETION

JPM Number: RA.1-1JPMr0

Examinee's Name:

Examiner's Name:

Date Performed:

Facility Evaluator:

Number of
Attempts:

Time to Complete:

JPM INFORMATION CARD

HAND THE STUDENT INFORMATION CARD TO THE EXAMINEE

READ TO THE EXAMINEE:

I will explain the initial conditions, which steps to simulate or discuss, and provide initiation cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Task Standard: Correctly determines action regarding entering AIA per PPM 3.1.2.

Required Materials: N/A

Safety Equipment: N/A

General References: PPM 3.1.2 rev. 57

Time Critical Task: NO

Initial Conditions: A plant startup is in progress with RRC-P-1A tagged out for repair. The following conditions exist:

RFW-TI5 (average feedwater temp.) = 296° F

RRC Loop B flow = 22500 gpm

Rod Line = 54%

A voluntary entry into the Area of Increased Awareness needs to be made.

INITIATING CUE

Using the above information, PPM 3.1.2 Reactor Plant Startup, step 5.8.16, and the Single Loop Power to flow map, determine if it is allowable to enter the Area of Increased Awareness. Justify your answer.

Inform the CRS when you have completed this determination.

INFORMATION BELOW THIS LINE NOT SHARED WITH EXAMINEE

Task Number: N/A

NUREG 1123 Reference: 2.1.7 3.7/4.

Location: Any location with references.

Prepared/Revised by: S Hutchison

Validation Time: 8 minutes

Time Critical: NO

Performance Method: Perform

Revision Date: 6/26/02

STUDENT INFORMATION

Initial Conditions: A plant startup is in progress with RRC-P-1A tagged out for repair. The following conditions exist:

RFW-TI5 (average feedwater temp.) = 296° F

RRC Loop B flow = 22500 gpm

Rod Line = 54%

A voluntary entry into the Area of Increased Awareness needs to be made.

INITIATING CUE

Using the above information, PPM 3.1.2 Reactor Plant Startup, step 5.8.16, and the Single Loop Power to flow map, determine if it is allowable to enter the Area of Increased Awareness. Justify your answer.

Inform the CRS when you have completed this determination.

ADMINISTRATIVE TOPICS RO SECTION A3

Columbia Generating Station

RA.3-1 and RA.3-2

OCTOBER 2002

Question No. RA.3-1:	<p>During the outage you have been assigned a task to close a valve with a radioactive hot spot. The expected dose for this task is 350 mrem TEDE. Your dose for the current year includes 900 mrem TEDE received while working an outage at another plant and 850 mrem TEDE received at Columbia Generating Station.</p> <p>What action is required for this situation? Justify your answer.</p> <p>CLOSED REFERENCE</p> <p>ANSWER: Any one of the following answers is acceptable:</p> <ol style="list-style-type: none">1. Do not perform the task,2. Notify your supervisor, <p style="text-align: center;">or</p> <ol style="list-style-type: none">3. Complete a Planned Special Exposure Request. <p style="text-align: center;">And, your yearly TEDE administrative hold point will be exceeded if the task is performed.</p>	
Response:		
SAT / UNSAT		
2.3.1 (2.6/3.0)	6025	GEN-RPP-07 rev 3, pages 7 & 8

ADMINISTRATIVE TOPICS RO SECTION A3

Columbia Generating Station

RA.3-1 and RA.3-2

OCTOBER 2002

Question No. RA.3-2	<p>You have been directed to enter a radiation area with a general area dose rate of 245 mrem/hr.</p> <p>What are the dosimetry requirements for entering this area?</p> <p>CLOSED REFERENCE</p> <p>ANSWER: Any ONE of the following is correct;</p> <ul style="list-style-type: none">• A radiation monitoring device that continuously indicates the radiation dose rate in the area (e.g., survey instrument) • A radiation monitoring device that continuously integrates the radiation dose rate in the area and alarms when a preset integrated dose is received (e.g., an alarming electronic dosimeter), with an appropriate alarm setpoint. • A radiation monitoring device that continuously transmits dose rate and cumulative dose to a remote receiver monitored by Health Physics personnel responsible for controlling personnel radiation exposure within the area (e.g., an electronic dosimeter used in conjunction with a remote monitoring system) • A self-reading dosimeter and,<ul style="list-style-type: none">- Be under the surveillance (as specified in the RWP), while in the area of and individual at the work site who is qualified in radiation protection procedures and who is equipped with a radiation dose rate monitoring and indicating device and is responsible for controlling personnel radiation exposure within the area- Be under the surveillance (as specified in the RWP), by means of close circuit television, of an individual qualified in radiation protection procedures who is responsible for controlling personnel radiation exposure in the area.	
Response:		
SAT / UNSAT		
2.3.1 (2.6/3.0)	6036	PPM 11.2.7.3 rev 18, pages 4 and 5

ADMINISTRATIVE TOPICS RO SECTION A3

Columbia Generating Station

RA.3-1 and RA.3-2

OCTOBER 2002

Question No.
RA.3-1:

During the outage you have been assigned a task to close a valve with a radioactive hot spot. The expected dose for this task is 350 mrem TEDE. Your dose for the current year includes 900 mrem TEDE received while working an outage at another plant and 850 mrem TEDE received at Columbia Generating Station.

What action is required for this situation? Justify your answer.

CLOSED REFERENCE

ADMINISTRATIVE TOPICS RO SECTION A3

Columbia Generating Station

RA.3-1 and RA.3-2

OCTOBER 2002

Question No. RA.3-2	You have been directed to enter a radiation area with a general area dose rate of 245 mrem/hr.
------------------------	--

What are the dosimetry requirements for entering this area?

CLOSED REFERENCE

ADMINISTRATIVE TOPICS RO SECTION A4

Columbia Generating Station

RA.4-1 and RA.4-2

OCTOBER 2002

Question No. RA.4-1:	At which Emergency Action Level are the Columbia Administrative Exposure Hold points automatically waived? CLOSED REFERENCE ANSWER: Alert	
Response:		
SAT / UNSAT		
2.4.29 (2.6/4.0)	6019	PPM 13.2.1 rev. 15, page 2

ADMINISTRATIVE TOPICS RO SECTION A4

Columbia Generating Station

RA.4-1 and RA.4-2

OCTOBER 2002

Question No. RA.4-2	The plant was operating at 100% power on Sunday morning when a transient occurred which required an emergency to be declared. The Shift manager is in the plant but cannot be contacted and his exact whereabouts are not known to the control room staff.	
	Who is the Emergency Director?	
	CLOSED REFERENCE	
	ANSWER: The Control Room Supervisor	
Response:		
SAT / UNSAT		
2.4.29 (2.6/4.0)	6132	PPM 13.1.1 rev. 31 page 7

ADMINISTRATIVE TOPICS RO SECTION A4

Columbia Generating Station

RA.4-1 and RA.4-2

OCTOBER 2002

Question No. RA.4-1:	At which Emergency Action Level are the Columbia Administrative Exposure Hold points automatically waived?
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CLOSED REFERENCE

ADMINISTRATIVE TOPICS RO SECTION A4

Columbia Generating Station

RA.4-1 and RA.4-2

OCTOBER 2002

Question No.
RA.4-2

The plant was operating at 100% power on Sunday morning when a transient occurred which required an emergency to be declared. The Shift manager is in the plant but cannot be contacted and his exact whereabouts are not known to the control room staff.

Who is the Emergency Director?

CLOSED REFERENCE

Facility: Columbia Generating Station	Task No:
Task Title: DETERMINATION OF HEAVY LOAD OVER THE SPENT FUEL POOL	Job Performance Measure No: SA1.1-1JPMr2
K/A Reference: 2.1.20 4.3/4.2	
Examinee:	NRC Examiner:
Facility Evaluator:	Date:

Method of testing:

Admin – Perform (Any location with reference material.)

JPM SETUP INFORMATION

Initial Conditions:	The plant has been operating at 99% power since the last refueling outage. Preparations are in progress for the next biannual refuel outage, which is to start in 6 weeks. All plant systems are normal for 99% power. The water level in the Spent Fuel Pool is 1 foot below the level of the refuel floor.
Task Standard:	The maximum height permitted will be determined to be 4 feet above the Refuel Floor + or – 2 inches.
Required Materials:	N/A
General References:	LCS 1.9.2
Initiating Cue:	A load of 1210 pounds must be transported across the Spent Fuel pool. Determine the maximum height the load can be lifted above the Refuel Floor and still be transported at that height across the Spent Fuel pool.
Time Critical Task:	NO
Validation Time:	10 minutes
Simulator ICs:	N/A
Malfunctions/Remote Triggers:	N/A
Overrides:	N/A
Special Setup Instructions:	N/A

PERFORMANCE INFORMATION

START TIME:

Critical Step: YES	
Performance Step:	Using LCS 1.9.2, determine the following: 1210 pounds can only be lifted a maximum of 4 feet above the refuel floor.
CUE:	
Standard:	Determination is made that 1210 pounds can only be lifted a maximum of 4 feet above the refuel floor.

THE EXAMINEE SHOULD HAND THE JPM TO THE EXAMINER AT THIS POINT.

JPM TERMINATION TIME:	
JPM START TIME:	
-	_____
JPM COMPLETION TIME:	

VERIFICATION OF COMPLETION

JPM Number: SA.1-1JPMr2

Examinee's Name:

Examiner's Name:

Date Performed:

Facility Evaluator:

Number of
Attempts:

Time to Complete:

JPM INFORMATION CARD

HAND THE STUDENT INFORMATION CARD TO THE EXAMINEE

READ TO THE EXAMINEE:

I will explain the initial conditions, which steps to simulate or discuss, and provide initiation cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Task Standard: The maximum height permitted will be determined to be 4 feet above the Refuel Floor + or – 2 inches.

Required Materials: N/A

Safety Equipment: N/A

General References: PPM 1.3.40 and LCS 1.9.2

Time Critical Task: NO

Initial Conditions: The plant has been operating at 99% power since the last refueling outage. Preparations are in progress for the next biannual refuel outage, which is to start in 6 weeks. All plant systems are normal for 99% power. The water level in the Spent Fuel Pool is 1 foot below the level of the refuel floor.

INITIATING CUE

A load of 1210 pounds must be transported across the Spent Fuel pool. Determine the maximum height the load can be lifted above the **Refuel Floor** and still be transported at that height across the Spent Fuel pool.

INFORMATION BELOW THIS LINE NOT SHARED WITH EXAMINEE

Task Number:

Validation Time: 10 minutes

NUREG 1123 Reference: 2.1.20

Time Critical: NO

4.3/4.2

Location: Any with reference material

Performance Method: Perform

Prepared/Revised by: S Hutchison

Revision Date: 6/26/02

STUDENT INFORMATION

Initial Conditions: The plant has been operating at 99% power since the last refueling outage. Preparations are in progress for the next biannual refuel outage, which is to start in 6 weeks. All plant systems are normal for 99% power. The water level in the Spent Fuel Pool is 1 foot below the level of the refuel floor.

INITIATING CUE

A load of 1210 pounds must be transported across the Spent Fuel pool. Determine the maximum height the load can be lifted above the **Refuel Floor** and still be transported at that height across the Spent Fuel pool.

Facility: Columbia Generating Station	Task No:
Task Title: Calculate Projected dose.	Job Performance Measure No: SA.3JPRMreplacement
K/A Reference: 2.3.11 2.7/3.2	
Examinee:	NRC Examiner:
Facility Evaluator:	Date:

Method of testing:

Perform - Simulator

JPM SETUP INFORMATION

Initial Conditions: The plant was operating at 100% power when a transient occurred. The reactor scrammed 30 minutes ago. The following conditions exist:

- Wind Speed – 14 mph
- Wind Direction – from 62°
- A release is underway from the Radwaste Building with Radwaste HVAC flowrate of 83,000 scfm.
- WEA-RIS-14 indicates 1.92E5 cpm.
- The release is expected to last 3 hours.

Task Standard: Projected dose is calculated to correctly using QEDPS.

Required Materials: A computer terminal with QEDPS

General
References: PPM 13.8.1 rev. 23 pages 5, 6, & 7

Initiating Cue: The plant was operating at 100% power when a transient occurred. The reactor scrammed 30 minutes ago. The following conditions exist:

- Wind Speed – 14 mph
- Wind Direction – from 62°
- A release is underway from the Radwaste Building with Radwaste HVAC flowrate of 83,000 scfm.
- WEA-RIS-14 indicates 1.92E5 cpm.
- The release is expected to last 3 hours.
- Stability class = E

You are directed to calculate a projected dose using QEDPS.

Notify the CRS when you have completed the dose projection with the results.

Time Critical Task:	NO
Validation Time:	15 minutes
Simulator ICs:	N/A
Malfunctions/Remote Triggers:	N/A
Overrides:	N/A
Special Setup Instructions:	N/A

PERFORMANCE INFORMATION

START TIME:

Critical Step: Yes	
Performance Step: 1 4.2.1: Turn on computer equipment as needed.	
Standard: Equipment is on and ready for software start.	
Comment: SAT / UNSAT	

Critical Step: Yes	
Performance Step: 2 4.2.2: Start QEDPS by double clicking on QEDPS icon.	
Standard: Double click on the icon.	
Comment: SAT / UNSAT	

Critical Step: Yes	
Performance Step: 3 4.2.2.b: Select Radwaste Building Low Range Monitor, WEA-RIS-14..	
Standard: Radwaste Low Range (WEA-RIS-14) Monitor selected.	
Comment: SAT / UNSAT	

Critical Step: Yes	
Performance Step: 4 4.2.2.b: Enter 1.92E5 for the monitor reading.	
Standard:	Enter 1.92E5 for the monitor reading.
Comment: SAT / UNSAT	

Critical Step: Yes	
Performance Step: 5 4.2.3.a: Enter 3 hours for the release duration.	
Standard:	Enter 3 hours for the release duration.
Comment: SAT / UNSAT	

Critical Step: Yes	
Performance Step: 6 4.2.3.b: Enter 30 min for time since reactor shutdown.	
Standard:	Enter 30 min for time since reactor shutdown.
Comment: SAT / UNSAT	

Critical Step: Yes	
Performance Step: 7 4.2.4: Enter meteorological data:	
Wind Speed – 14 mph Wind Direction – 62° Stability Class - E	
Standard:	Enters correctly as above.
Comment: SAT / UNSAT	

Critical Step: YES	
Performance Step: 8 4.2.5: Select RUN.	
Standard:	Run selected to run the program.
Comment: SAT / UNSAT	

Critical Step: No	
Performance Step: 9 4.2.6: Select Print for paper output.	
CUE:	If candidate give the results verbally, instruct him to print the output.
Standard:	Results printed.
Comment: SAT / UNSAT	

THE EXAMINEE SHOULD ANNOUNCE THE TERMINATION POINT OF THE JPM AT THIS POINT.

JPM TERMINATION TIME:	
JPM START TIME:	
-	_____
JPM COMPLETION TIME:	

VERIFICATION OF COMPLETION

JPM Number: SA.3JPM replacement

Examinee's Name:

Examiner's Name:

Date Performed:

Facility Evaluator:

Number of
Attempts:

Time to Complete:

JPM INFORMATION CARD

HAND THE STUDENT INFORMATION CARD TO THE EXAMINEE

READ TO THE EXAMINEE:

I will explain the initial conditions, which steps to simulate or discuss, and provide initiation cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Task Standard: Projected dose is calculated to correctly using QEDPS.

Required Materials: A computer terminal with QEDPS

Safety Equipment: N/A

General References: PPM 13.8.1 rev. 23 pages 5, 6, & 7

Time Critical Task: No

Initial Conditions: The plant was operating at 100% power when a transient occurred. The reactor scrammed 30 minutes ago. The following conditions exist:

- Wind Speed – 14 mph
- Wind Direction – from 62°
- A release is underway from the Radwaste Building with Radwaste HVAC flowrate of 83,000 scfm.
- WEA-RIS-14 indicates 1.92E5 cpm.
- The release is expected to last 3 hours.

INITIATING CUE

The plant was operating at 100% power when a transient occurred. The reactor scrammed 30 minutes ago. The following conditions exist:

- Wind Speed – 14 mph
- Wind Direction – from 62°
- A release is underway from the Radwaste Building with Radwaste HVAC flowrate of 83,000 scfm.
- WEA-RIS-14 indicates 1.92E5 cpm.
- The release is expected to last 3 hours.
- Stability class = E

You are directed to calculate a projected dose using QEDPS.

Notify the CRS when you have completed the dose projection with the results.

INFORMATION BELOW THIS LINE NOT SHARED WITH EXAMINEE

Task Number:

NUREG 1123 Reference: 2.3.11
2.7/3.2

Location: Simulator

Prepared/Revised by: S Hutchison

Validation Time: 15 minutes

Time Critical: No

Performance Method: Perform

Revision Date: 9/21/02

STUDENT INFORMATION

Initial Conditions: The plant was operating at 100% power when a transient occurred. The reactor scrammed 30 minutes ago. The following conditions exist:

- Wind Speed – 14 mph
- Wind Direction – from 62°
- A release is underway from the Radwaste Building with Radwaste HVAC flowrate of 83,000 scfm.
- WEA-RIS-14 indicates 1.92E5 cpm.
- The release is expected to last 3 hours.

INITIATING CUE

The plant was operating at 100% power when a transient occurred. The reactor scrammed 30 minutes ago. The following conditions exist:

- Wind Speed – 14 mph
- Wind Direction – from 62°
- A release is underway from the Radwaste Building with Radwaste HVAC flowrate of 83,000 scfm.
- WEA-RIS-14 indicates 1.92E5 cpm.
- The release is expected to last 3 hours.
- Stability class = E

You are directed to calculate a projected dose using QEDPS.

Notify the CRS when you have completed the dose projection with the results.

Facility: Columbia Generating Station	Task No: SRO-0529
Task Title: CLASSIFY A SECURITY EVENT	Job Performance Measure No: SA.4JPMr1
K/A Reference: 2.4.41 2.3/4.1	
Examinee:	NRC Examiner:
Facility Evaluator:	Date:

Method of testing:

Admin – Perform (Any location with reference material.)

JPM SETUP INFORMATION

Initial Conditions: The plant is operating at 100% power. One (1) hour ago, the FBI notified security and plant management that a mid-eastern terrorist group has threatened to interfere with the operation of Columbia Generating Station. The FBI considers this a credible threat. An Unusual Event was declared 50 minutes ago.

Task Standard: The security event is classified correctly per PPM 13.1.1.

Required Materials: N/A

General References: PPM 13.1.1 rev. 31, page 27

Initiating Cue: Five (5) minutes ago, security called and notified you that an explosive device has been discovered in Service Water Pump house A. All personnel have been evacuated from the immediate area.

Meteorological data:
Stability class E
Wind direction 245
Wind speed 4 mph
No precipitation

Determine if an EAL change is required. Complete any needed form (s).

THIS IS A TIME CRITICAL JPM

Time Critical Task: YES – 15 MINUTES
Validation Time: 10 minutes
Simulator ICs: N/A
Malfunctions/Remote Triggers: N/A
Overrides: N/A
Special Setup Instructions: N/A

PERFORMANCE INFORMATION

START TIME:

Critical Step: **YES**

Performance Step: 1 Complete the CNF Form for this condition.

CUE:

Standard:

CNF Form is completed as attached.

Grading standard: The Form must be completed as a reclassification and as a Site area Emergency. Description of the event (box 7) must meet the intent of the reference CNF Form.

Candidate is allowed 15 minutes to determine if change is needed and 15 minutes to complete CNF form. 30 minutes total.

NOTE:

Comment:
SAT / UNSAT

THE EXAMINEE SHOULD HAND THE CNF FORM TO THE EXAMINER AT THIS POINT.

JPM TERMINATION

TIME:

JPM START TIME:

-

JPM COMPLETION

TIME:

VERIFICATION OF COMPLETION

JPM Number: SA.4JPMr1

Examinee's Name:

Examiner's Name:

Date Performed:

Facility Evaluator:

Number of
Attempts:

Time to Complete:

JPM INFORMATION CARD

HAND THE STUDENT INFORMATION CARD TO THE EXAMINEE

READ TO THE EXAMINEE:

I will explain the initial conditions, which steps to simulate or discuss, and provide initiation cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Task Standard: The security event is classified correctly per PPM 13.1.1.

Required Materials: N/A

Safety Equipment: N/A

General References: PPM 13.1.1 rev. 31, page 27

Time Critical Task: YES

Initial Conditions: The plant is operating at 100% power. One (1) hour ago, the FBI notified security and plant management that a mid-eastern terrorist group has threatened to interfere with the operation of Columbia Generating Station. The FBI considers this a credible threat. An Unusual Event was declared 50 minutes ago.

INITIATING CUE

Five (5) minutes ago, security called and notified you that an explosive device has been discovered in Service Water Pump house A. All personnel have been evacuated from the immediate area.

Meteorological data:

Stability class E

Wind direction 245

Wind speed 4 mph

No precipitation

Determine if an EAL change is required. Complete any needed form (s).

THIS IS A TIME CRITICAL JPM

INFORMATION BELOW THIS LINE NOT SHARED WITH EXAMINEE

Task Number: SRO-0529

NUREG 1123 Reference: 2.4.41
2.3/4.1Location: Any with reference material
Prepared/Revised by: S Hutchison

Validation Time: 10 minutes

Time Critical: **YES 15 MINUTES FOR
DETERMINATION OF CHANGE AND
15 MINUTES FOR COMPLETION OF
THE CNF FORM.**Performance Method: Perform
Revision Date: 6/26/02

STUDENT INFORMATION

Initial Conditions: The plant is operating at 100% power. One (1) hour ago, the FBI notified security and plant management that a mid-eastern terrorist group has threatened to interfere with the operation of Columbia Generating Station. The FBI considers this a credible threat. An Unusual Event was declared 50 minutes ago.

INITIATING CUE

Five (5) minutes ago, security called and notified you that an explosive device has been discovered in Service Water Pump house A. All personnel have been evacuated from the immediate area.

Meteorological data:

Stability class E

Wind direction 245

Wind speed 4 mph

No precipitation

Determine if an EAL change is required. Complete any needed form (s).

THIS IS A TIME CRITICAL JPM

Facility: COLUMBIA**Scenario No.:** 1**Op-Test No.:** 1

Examiners: _____ **Operators:** _____

Initial conditions: IC-191 (batch file NRC02.1.txt). The reactor is approaching criticality. IRM "B" is out of service and bypassed. SGT-V-2B has lost control power and is shut.

Turnover: A plant startup is in progress. The reactor is approaching criticality. The off-going shift pulled rods up through RWM group 12. The "B" IRM failed downscale 4 hours ago and the associated bypass switch is caution tagged. As the startup continues, RWCU will need to be lined up for reactor water level control. The off-going shift just found SGT-V-2B in the closed position. Upon attempting to open the valve from the control room, the valve lost control power.

Event No.	Malf. No.	Event Type*	Event Description
1.	Initiated by turnover T= 0 min	N (BOP)	Establish Reactor Water Cleanup blow-down flow for Reactor Water Level control.
2.	Initiated by turnover T=8 min	R (RO)	Withdraw control rods to bring the reactor critical.
3.	Trigger 3 T= 18 min	C (BOP)	Loss of REA-FN-1B resulting in a high reactor building pressure and entry into EOP Secondary Containment Control, 5.3.1.
4.	Trigger 4 T= 30 min	I (RO)	IRM 'A' fails upscale resulting in a half scram on the 'A' side of RPS.

5.	Trigger 5 T= 40 min	M (All)	An earthquake results in a Loss of All Offsite Power and a LOCA. (Columbia IPE)
6.	Initiated as part of Trigger 5 T= 40 min	C	The Division 1 emergency bus, SM-7, locks-out resulting in a loss of power to the bus and its loads.
7.	Initiated as part of Trigger 5 T= 40 min	C	The output breaker of the HPCS diesel generator fails to auto close requiring the operator to manually close the breaker in order to operate HPCS.
8.	Initiated as part of Trigger 5 T= 40 min	C	The injection valve for the 'C' loop of RHR, RHR-V-42C, fails to auto open on an injection signal.

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Event No. 1

Description: Withdraw control rods to bring the reactor critical.

This event is initiated by the turnover sheet and is terminated when criticality is achieved.

NOTE: Criticality is achieved in approximately 7 minutes from the start of rod movement

Time	Position	Applicants Actions or Behavior
T=0 when crew assumes shift	SRO	Directs RO to continue pulling control rods to achieve criticality.
	RO	<p>Withdraws control rods to continue startup (PPM 3.1.2, Reactor Plant Startup):</p> <ul style="list-style-type: none"> - closely monitors flux levels during rod withdrawal - verifies prior to each rod withdrawal: <ul style="list-style-type: none"> ➤ correct rod selected ➤ correct start/stop position - for each rod that is fully withdrawn: <ul style="list-style-type: none"> ➤ checks coupling integrity - initials sequence sheet (PPM 9.3.9) ➤ ensures position 48 corresponds to FULL OUT light

		<p>Upon reaching criticality, logs the following on page 24 of PPM 3.1.2:</p> <ul style="list-style-type: none">➤ time➤ neutron level➤ period➤ control rod number➤ control rod position➤ coolant temperature
	BOP	Monitors plant conditions
COMMENTS: Rod pull starts at RWM group 13.		

Event No. 2

Description: Establish Reactor Water Cleanup blow-down flow for Reactor Water Level control.

This event is initiated by the turnover sheet. Should the crew hold off, there is enough heat addition occurring to cause reactor water level to rise slowly with a resultant Hi Reactor Water Level alarm. This event's termination point is when blow-down flow has been established and reactor water level is returning to its normal setpoint.

Time	Position	Applicants Actions or Behavior
	RO	Reports that Reactor Water Level is on an increasing trend
	SRO	Directs BOP to establish level control using RWCU blowdown to the condenser
	BOP	Initiates RWCU reject flow to maintain reactor water level at setpoint per PPM 3.1.2 <ul style="list-style-type: none"> • step 5.3.9 – adjust RWCU flow as necessary to maintain RPV level

NOTE: The operator may use skill of the craft to perform this step, or they may go to procedure 2.2.3, section 5.3 for further direction:

- ensures RWCU-FCV-33, Blowdown Control Valve, is closed by observing that RWCU-RMC-606 output signal is 0%

- opens RWCU-V-34

- notifies HP of possible radiation condition changes

- slowly opens RWCU-FCV-33 with RWCU-RMC-606 until the desired flow rate is reached (the flow rate is a judgment call based on the current level trend. Flow rate may be required to be changed several times during the scenario.

COMMENTS:

Event No. 3

Description: Loss of REA-FN-1B resulting in a high reactor building pressure and entry into EOP Secondary Containment Control, 5.3.1.

*This event is **MANUALLY initiated with TRIGGER 3** after the RO brings the reactor to criticality, or by direction of the lead examiner. The event endpoint occurs when Standby Gas Treatment has been started and Reactor Building pressure is returning to a negative state.*

Critical Task for this event: Directs or takes action to maintain Secondary Containment Pressure negative with regards to outside pressure

Time	Position	Applicants Actions or Behavior
	BOP	<p>Reports the receipt of the Secondary Containment ? P High alarm and notes that it is a possible EOP entry.</p> <p>Goes to the back panel (P812) to investigate the cause of the abnormal condition in secondary containment.</p> <p>Reports that REA-FN-1B has tripped and that Reactor Bldg. pressure is positive.</p>
	SRO	<p>If Reactor Bldg. pressure is positive, enters EOP 5.3.1, Secondary Containment Control, based on Reactor Bldg. pressure at or above 0” H₂O</p>

	BOP	<p>Refers to the annunciator response procedures (PPM 4.812.R2, 9-1)</p> <ul style="list-style-type: none">➤ attempts to start REA-FN-1A, Rx Bldg. Exhaust Fan (<i>fan will not start</i>) ➤ if neither reactor bldg. exhaust fan can be started:<ul style="list-style-type: none">▪ immediately secures Rx Bldg. Inlet Fan (ROA-FN-1B) ▪ closes ROA-V-1 & 2, REA-V-1 & 2 (Inlet and outlet dampers) ▪ starts a train of Standby Gas Treatment(SGT) to maintain Rx Bldg. pressure negative ▪ refers to PPM 2.3.5, SGT System, to verify steps taken to start SGT. ▪ notifies Chemistry to monitor Rx Bldg ▪ refers to ODCM 6.1.2.1 and LCS 1.3.3.1 (the examinee should inform the SRO that this procedure makes reference to these, it is not expected for the RO/BOP to enter these) ➤ refers to ABN-HVAC, HVAC Trouble Procedure, (all
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		<p>applicable actions have already been carried out in the Annunciator Response Procedure)</p> <p>➤ ensures Rx Bldg. pressure is maintained negative (monitors back panel or Secondary Containment ? P High annunciator on P602)</p> <p>May send an equipment operator to investigate the loss of fan 1B and check the start of fan 1A</p> <p><u>OPS-2 CUE:</u> If asked to investigate the loss of REA-FN-1B, report that there is no apparent cause identified in your visual inspection. If requested to do pre or post fan start checks on REA-FN-1A or SGT, report that the checks are satisfactory.</p>
	RO	<p>Monitors plant</p> <p>Continues with plant startup (see event 1)</p>
	SRO	<p>Exits EOP 5.3.1, Secondary Containment Control when Rx Bldg. Pressure is restored and with shift manager permission</p> <p><u>SHIFT MANAGER CUE:</u> When asked for permission to exit the EOP 5.3.1, provide permission to exit since the entry condition has cleared and no emergency exists.</p>
COMMENTS:		

Event No. 4

Description: IRM 'A' fails upscale resulting in a half scram on the 'A' side of RPS.

*This event is **MANUALLY initiated** by **TRIGGER 4** after the crew has exited EOP 5.3.1, Secondary Containment Control, or at the direction of the lead examiner. The event endpoint is when IRM 'A' has been bypassed and RPS 'A' has been reset.*

Time	Position	Applicants Actions or Behavior
	RO	<p>Reports half scram on RPS 'A'</p> <p>Reports that IRM 'A' has failed upscale and caused the RPS actuation</p> <p>Refers to the Half Scram System A annunciator response procedure:</p> <ul style="list-style-type: none"> ➤ checks full core display for individual controls rods that might have scrammed ➤ directs or performs a PA announcement to stop all maintenance or surveillance testing that has the potential for generating a trip in the unaffected RPS channel ➤ when half scram has been reset, ensures scram group solenoid lights for Groups 1,2,3 and 4 are energized and that backup scram system lights have extinguished

		<p>Refers to IRM annunciator response procedures:</p> <ul style="list-style-type: none"> ➤ determines which IRM is upscale ➤ attempts to range the 'A' IRM up to bring on scale ➤ considers bypassing the inoperable IRM channel ➤ resets the half scram ➤ informs CRS that the procedure references tech specs and license control specs for instrument operability
	SRO	<p>When IRM 'A' is determined to be the problem, directs bypassing of IRM 'A'</p> <p>Refers to Tech Specs and License Control Specs for IRM 'A':</p> <ul style="list-style-type: none"> ➤ TS 3.3.1.1 ➤ LCS 1.3.2.1 ➤ LCS 1.3.3.1 ➤ Determines that none of the specs are applicable with just one IRM inoperable in both divisions. <p>May make PA announcement regarding stopping maintenance/ surveillance</p>

		that could result in the trip of the other division of RPS Directs that the half scram be reset
	BOP	Monitors plant
COMMENTS:		

Event No. 5

Description: An earthquake results in a Loss of All Offsite Power and a LOCA.

*This event is **MANUALLY initiated** by **TRIGGER 5** after the SRO has completed the Tech Spec determination in event 4, or by direction of the lead examiner. This event endpoint is the scenario endpoint.*

Critical Task for this event:

1. Directs or takes action to maintain adequate core cooling by performing EOP level control actions.
2. Directs or takes action to trip emergency diesel generator #1 upon loss of cooling water

Time	Position	Applicants Actions or Behavior
<p>SEISMIC SIM: Preset Seismic CD player on track 4 with a volume level of 0. Start CD player approx. 3 seconds <u>before initiating TRIGGER 5</u>. Allow CD to play approx. 40 seconds before securing. After securing, set volume level to -10 and randomly run 10-15 second aftershocks over the remainder of the scenario.</p>		
<p>CUE: As OPS1, report that you felt seismic activity in the radwaste building; there is a lot of dust in the air.</p>		
	RO/BOP	<p>Recognize/report "Operating Basis Earthquake Exceeded" alarm</p> <p>Performs actions of ARP:</p> <ul style="list-style-type: none"> • verifies alarm on Board L, numerous red indicators are illuminated

		<ul style="list-style-type: none">• initiates a reactor shutdown • Monitors control room instrumentation for evidence of increases in:<ul style="list-style-type: none">• Drywell leakage • Drywell pressure • Drywell gaseous or particulate activity • Leak detection temperature changes
	SRO	<ul style="list-style-type: none">• Announces OBE • Directs a walk-down of the plant by equipment operators to determine damage caused by the seismic activity • Directs the reactor be shutdown

	RO	<p>Performs immediate scram actions</p> <ul style="list-style-type: none"> • Places mode switch to shutdown • Reports power/pressure/level (reports level below +13"-EOP entry condition) • Reports all rods in • Inserts SRMs/IRMs
	RO/BOP	Reports high drywell pressure >1.68 psig, EOP entry condition
	SRO	<p>Enters EOP 5.1.1, RPV Control, based on low RPV level and enters EOP 5.2.1, Primary Containment Control, based on high DW pressure:</p> <ul style="list-style-type: none"> • Directs RO/BOP to verify isolation, initiations, and DG starts • Directs RO to maintain RPV level between -161" and +54" (will give a band within these limits) with Table 1 systems.

		<ul style="list-style-type: none"> • At -50" RPV level, directs verification of expected isolations and initiations • At -129", if ADS timer has started, direct inhibition of ADS • At TAF, determines that LP ECCS is available and that current trend will drop level below -192"; determines Emergency RPV depressurization is required; enters EOP 5.1.3, Emergency RPV Depressurization (remains in 5.1.1 for level control). • Directs RO/BOP to open 7 SRVs, ADS preferred.
	BOP	<p>Operates SRVs to maintain reactor pressure in the prescribed band.</p> <p>Verifies that Main Turbine and Main Generator have tripped per PPM, 3.3.1, Reactor Scram Procedure.</p> <p>If directed, starts RCIC to aid in pressure/level control.</p>

	BOP	<p>Reports electric plant status (Board C):</p> <ul style="list-style-type: none"> ➤ loss of the start-up and back-up transformers (loss of off-site power) ➤ lockout on SM-7, Div 1 Emergency Bus (see event 6) ➤ SM-8, Div 2 Emergency Bus, is powered from DG #2 ➤ Determines that SW-P-1B, Emergency Service Water pump, auto starts ➤ Due to the loss of SM-7, SW-P-1A is not running thereby requiring the emergency trip of DG #1 <ul style="list-style-type: none"> • Depresses the emergency trip pushbutton for DG #1 within 6 minutes of DG #1 start.
	RO/BOP	Starts RCC-P-1C and trips RCC-P-1A (which lost power when SM-7 was lost).

	SRO	May refer to ABN-ELEC-LOOP, Loss of all Off-site Electrical Power, for guidance on restoration of electrical power
	RO/BOP	<p>When directed to carry out actions of ABN-ELEC-LOOP:</p> <ul style="list-style-type: none"> ➤ Ensures fire protection headers are pressurized from diesel fire pumps (panel FCP-3) ➤ Directs an EO to reset local trips on CAS compressors SIM CUE: When requested as the EO to reset the local trips on CAS compressors, initiate TRIGGER 23. ➤ Starts CAS compressors ➤ Ensures that Main and Feedpump Turbine DC lube oil systems are operating

	RO/BOP	<p>Reports that expected initiations, isolations, and DG starts have occurred except that HPCS DG output breaker failed to close automatically and DG #1 was tripped due to no service water available (lockout on SM-7)</p> <p>Uses RCIC, CRD, and HPCS systems to maintain RPV level</p> <p>Opens 7 SRVs (ADS preferred) to emergency depressurize the RPV.</p>
	RO/BOP	<p>Contacts the load dispatcher (Munro Control Center) to find out status of off-site power supplies</p> <p>CUE: As the load dispatcher, if asked status of off-site power supplies, inform the control room that crews are out inspecting the transmission lines; time for power return is unknown.</p>
	SRO	<p>Directs restoration of RPV level to band of +13" to +54" with low pressure ECCS systems</p>

	RO/BOP	Controls injection systems to restore RPV level to new band.
COMMENTS:		

Event No. 6

Description: The Division 1 emergency bus, SM-7, locks-out resulting in a loss of power to the bus and its loads.

This event is automatically initiated 5 seconds after the earthquake in Event 5 is initiated. The event termination point occurs upon completion of the applicable subsequent actions (listed below) for ABN-ELEC-SM1/SM7 or when the scenario is terminated, whichever occurs first.

Time	Position	Applicants Actions or Behavior
	BOP	<p>Reports lockout on SM-7, Div 1 Emergency Bus</p> <p>Reports start of DG-1</p>
	SRO	<p>Refers to ABN-ELEC-SM1/SM7, SM1/SM7 Distribution System Failures, for guidance on restoration of power and loads on SM-7</p> <p>Requests work group assistance in determining problem with SM-7</p>

	RO/BOP	<p>When directed, carries out actions of ABN-ELEC-SM1/SM7:</p> <ul style="list-style-type: none">➤ restores CRD Hydraulics by starting CRD-P-1B ➤ emergency trips DG #1 due to no service water cooling available ➤ restores TSW (Plant Service Water) by placing TSW-P-1A in PTL (Pull to Lock) and starting TSW-P-1B ➤ ensures that RCC-P-1B & 1C (Reactor Closed Cooling Water) are operating ➤ starts SGT-FN-1B2 to maintain reactor building pressure negative ➤ ensures power is available to the selected Hotwell Level Controller
--	--------	--

- places CB-B7 in PTL

- places CB-1/7 in PTL

COMMENTS: This event runs during the Earthquake/LOCA/LOOP (event 5)

Event No. 7

Description: The output breaker of the HPCS diesel generator fails to auto close requiring the operator to manually close the breaker in order to operate HPCS.

This event is self-initiated upon the receipt of a HPCS initiation signal. The event endpoint occurs when the operator manually closes the output breaker of the HPCS DG.

Critical Task for this event: Directs or takes action to restore electrical power to the High Pressure Core Spray system.

Time	Position	Applicants Actions or Behavior
	RO/BOP	<p>Reports that the HPCS DG output breaker failed to close automatically</p> <p>Manually closes the output breaker of the HPCS DG to SM-4:</p> <ul style="list-style-type: none"> ➤ takes synch selector switch to D GEN./BUS position ➤ shuts CB4 DG3 Breaker

	SRO	If the operator has not attempted to manually shut the DG output breaker, directs the RO/BOP to manually shut the breaker.
COMMENTS: This event runs during the Earthquake/LOCA/LOOP (event 5)		

Event No. 8

Description: The injection valve for the 'C' loop of RHR, RHR-V-42C, fails to auto open on an injection signal.

This event is preset and will be evident when RHR has an initiation signal and reactor pressure is <470 psig. The event endpoint will occur when the operator manually opens RHR-V-2C with the previously mentioned conditions existing.

Critical Task for this event: Directs or takes action to manually establishes an injection flowpath for RHR loop 'C' after a failure of the system to automatically align for injection.

Time	Position	Applicants Actions or Behavior
	RO/BOP	<p>Reports the failure of RHR-V-2C to open on an injection signal</p> <p>Manually opens RHR-V-2C</p>
	SRO	<p>If operator fails to attempt to manually open RHR-V-2C, directs RO/BOP to open the valve</p>

COMMENTS: This event runs during the Earthquake/LOCA/LOOP (event 5)

SCENARIO ENDPOINT – When the reactor has been emergency depressurized and reactor water level has been returned to the band of +13” to +54”, the scenario may be terminated.

SRO TURNOVER INFORMATION

A plant startup is in progress. The reactor is approaching criticality. The off-going shift pulled rods up through RWM group 12.

The "B" IRM failed downscale 4 hours ago and the associated bypass switch is caution tagged. The previous shift determined that Tech Specs and LCS were not applicable. An INOP sheet was done.

As the startup continues, RWCU will need to be lined up for reactor water level control.

The off-going shift just found SGT-V-2B in the closed position. Upon attempting to open the valve from the control room, the valve lost control power.

Facility: COLUMBIA**Scenario No.:** 2**Op-Test No.:** 1**Examiners:** _____ **Operators:** _____

Initial conditions: IC-171 (batch file NRC02.2.txt). The reactor is at 100% power on a beginning of life core. Diesel Generator #1 is operating at full load for its monthly operability check. RHR-V-24B is tagged out while the motor operator is being replaced.

Turnover: The plant is at 100% power. DG-1 is fully loaded for OSP-ELEC-M701 (currently at step 7.5.62). There are 20 minutes left on the one-hour diesel run. Suppression Pool temperature is slowly rising due to two SRVs that are leaking by. The off-going shift recommends that suppression pool cooling be initiated as soon as you take the shift. RHR-V-24B is tagged out while the motor operator is being replaced (job completion is expected in two hours).

Event No.	Malf. No.	Event Type	Event Description
1.	Initiated by turnover T=0	N (BOP)	Place RHR loop 'A' into the suppression pool cooling mode.
2.	Trigger 2 T= 10 min	C (BOP)	High-pressure feedwater heater '6A' level controller fails high resulting in the trip of feedwater heater '6A'.
3.	Initiated by procedure carried out in Event 2 T≈13 min	R (RO)	Reduces reactor power with recirc flow in accordance with the subsequent actions of ABN-POWER.
4.	Trigger 4 T≈15 min	C (RO)	The 'A' recirc pump fails to follow the automatic controller and must be taken to manual for reduction and balance of recirc flow.

5.	AUTO Trigger 5 at 95% power T=19 min	I (RO)	APRM 'C' gain drifts during the power reduction resulting in APRM indication reading out of specification for Tech Spec tolerance.
6.	Trigger 6 T=40 min	N (BOP) C (BOP)	Reduces load on DG-1 at completion of OSP-ELEC-M701. DG-1 Governor begins oscillating requiring the emergency trip of the diesel from the control room. (Columbia LER 98-014)
7.	Trigger 7 T=49 min	C (All)	DEH oil leak resulting in a Main Turbine trip and a loss of Bypass Valves.
8.	Initiated by event 7 actions T=49 min	M (All)	Reactor scrams due to the Main Turbine trip. A 100% ATWS prevents inward rod movement by scram (Columbia IPE)
9.	Initiated manually by disconnect of GDS computers T=49 min	C	The Graphical Display System (GDS) locks up during the Main Turbine trip transient.
10.	AUTO Trigger 10 on SLC initiation T=50 min	C	The SLC common discharge header ruptures in the reactor building preventing boron from reaching the core.

(N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Event No. 1

Description: Place RHR loop 'A' into the Suppression Pool Cooling mode.

This event is initiated by the turnover sheet. The event endpoint occurs when the 'A' loop of RHR is in Suppression Pool Cooling mode.

Time	Position	Applicants Actions or Behavior
	SRO	Directs the BOP to place the 'A' loop of RHR into the Suppression Pool Cooling mode per SOP-RHR-SPC.
	BOP	Carries out actions of SOP-RHR-SPC: <ul style="list-style-type: none"> <li data-bbox="521 1035 1451 1108">➤ starts SW-P-1A (pump is already running due to DG #1 surveillance in progress) <li data-bbox="521 1255 808 1287">➤ starts RHR-P-2A <li data-bbox="521 1434 1344 1507">➤ verifies RHR-FCV-64A opens during low flow (<800 gpm) conditions <li data-bbox="521 1654 1263 1686">➤ throttles open RHR-FCV-24A to achieve ~ 7000 gpm

		<ul style="list-style-type: none">➤ verifies RHR-FCV-64A closes at approximately 800 gpm flow ➤ closes RHR-V-48A to maximize Suppression Pool Cooling. ➤ monitors Suppression Pool temperature ➤ reports to CRS that the 'A' Loop of RHR is in Suppression Pool Cooling mode
<p>COMMENTS: 8/6/02 Added RHR-V-24B tagged out to initial conditions and turnover sheet to force the crew to place Loop 'A' of RHR into suppression pool cooling to accommodate recent procedure change.</p>		

Event No. 2

Description: High-pressure feedwater heater '6A' level controller fails high resulting in the trip of feedwater heater '6A'.

*This event is **MANUALLY initiated** by **TRIGGER 2** after Loop 'A' of RHR is placed into Suppression Pool Cooling mode. The event endpoint occurs when core flow is $\leq 80\text{Mlbm/hr}$.*

Critical Task for this event: Directs or takes actions to maintain Reactor Power at or below the licensed thermal power rating during a loss of feedwater heating transient.

Time	Position	Applicants Actions or Behavior
	BOP	<p>Reports Heater 6A Level High</p> <p>Refers to Annunciator Response Procedure (4.840.A2, 8-2)</p> <ul style="list-style-type: none"> ➤ check setpoint on HD-LIC-6A and adjust as required to clear alarm ➤ takes manual control of HD-LIC-6A or HD-LIC-6A2 and restores normal level.
	RO	<p>Monitors plant for loss of feedwater heating affects.</p> <ul style="list-style-type: none"> ▪ Adjusts reactor power to maintain $\leq 100\%$ using recirc flow

	BOP	<p>Reports Heater 6A Level High Trip and MSR Drain Tank Level High</p> <p>Refers to Annunciator Response Procedures (4.820.A2, 7-2 & 4.840.A2, 1-2; 4-1)</p> <ul style="list-style-type: none">➤ checks automatic actions ➤ informs CRS that the procedure refers to ABN-POWER ➤ places HD-LIC-6A in MANUAL and opens drain valve HD-LCV-6A1 to 100% ➤ places HD-LIC-6A2 in MANUAL and opens dump valve HD-LCV-6A2 TO approximately 50%. ➤ Verifies proper operation of MSR Drain tank level controllers and takes to MANUAL as necessary to control level.
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	SRO	<p>Refers to ABN-POWER for actions associated with Loss of FW Heating:</p> <ul style="list-style-type: none"> ➤ Directs power to be maintained at £ 3486 MWt ➤ Determines that feedwater inlet temperature has dropped more than 6 degrees Fahrenheit ➤ Directs reactor power reduction with core flow to be reduced to £ 80Mlbm/hr ➤ Directs insertion of control rods per the fast shutdown sequence to maintain rod line below 100% ➤ Directs the reduction of power per PPM 3.2.4, Plant Shutdown Procedure, to stay within the acceptable feedwater temperature-to-power operating region of Attachment 7.1
	RO	Carries out actions of ABN-POWER:

		<ul style="list-style-type: none">➤ Maintains power £3486 MWt ➤ Monitors for thermal hydraulic instabilities ➤ When directed, reduces core flow to £ 80 Mlbm/hr at a rate not to cause a Level 8 trip of the Main and FW turbines. (see event 3 & 4) ➤ When directed, inserts control rods to maintain rod line below 100% ➤ Ensures power is within the acceptable feedwater temperature-to-power operating region of Attachment 7.1 of PPM 3.2.4
<p>COMMENTS: Event 3 will either be discovered while the RO reduces recirc flow to maintain power under 100%, or when he lowers core flow to less than 80 Mlbm/hr.</p>		

Event No. 3

Description: Reduces reactor power with recirc flow in accordance with the subsequent actions of ABN-POWER, Unexplained Power Changes.

This event is initiated by the procedure addressed in Event #2. The event endpoint occurs when core flow is £80Mlbm/hr (this event is a subset of event 2, thus having the same endpoint)

Time	Position	Applicants Actions or Behavior
	SRO	<p>Directs the RO to reduce power with recirc flow to £ 80 Mlbm/hr core flow</p> <p>Cautions the RO to reduce power at a rate to prevent a Level 8 trip of the main and feedwater turbines.</p>
	RO	<p>Reduces reactor power by reducing core flow with reactor recirc system at a rate as to prevent a Level 8 trip.</p> <p><i>NOTE: Event 5 will begin when power level drops below 95%</i></p> <p>Informs the CRS when he has reached £ 80 Mlbm/hr</p>
	BOP	Monitors plant

COMMENTS: Event 3 actions are a subset of Event 2

Event No. 4

Description: The 'A' recirc pump fails to follow the automatic controller and must be taken to manual for reduction and balance of recirc flow.

This event is initiated by the power reduction requirement of ABN-POWER addressed in Event 2 & 3. The malfunctions are setup to automatically clear themselves to allow manual control of RRC when the Manual button is depressed on the 'A' RRC pump controller. The event endpoint occurs when the 'A' RRC pump controller has been taken to MANUAL and pump speed reduced while in manual.

Time	Position	Applicants Actions or Behavior
	RO	<p>Realizes that the 'A' RRC pump speed is not changing when a change is commanded with the automatic controller.</p> <p>Reports the equipment problem to the SRO</p> <p>Takes manual control of the 'A' RRC controller and maintains pump speeds matched during the power reduction. The operator may elect to take both RRC controllers to manual to control speed of each recirc pump.</p>
	SRO	<p>If manual control is not taken by the RO, directs the RO to place the 'A' RRC pump controller in Manual and maintain pump speeds matched during the power reduction. The SRO may direct that both RRC pump controllers are taken to manual to control speed.</p>

COMMENTS:

Event No. 5

Description: APRM 'C' gain drifts during the power reduction resulting in APRM indication reading out of specification for Tech Spec tolerance.

*This event **AUTOMATICALLY initiates TRIGGER 5** when reactor power drops below 95% on APRM 'B'. The GAF malfunction ramps to its new value over a 6-minute period. The event endpoint occurs when APRM 'C' has been bypassed.*

Time	Position	Applicants Actions or Behavior
	RO	<p>Reports that APRM 'C' is not tracking with the other APRMs during the power reduction.</p> <p>May reference the PPCRS overview screen or L-4 screen to determine APRM GAF's and determines that APRM 'A' is out of spec.</p>
	SRO	<p>May direct the STA to perform a GAF adjustment on APRM 'C' per TSP-APRM-C301</p> <p>STA CUE: When directed to perform TSP-APRM-C301, inform the CRS that you will proceed to adjust the gain after action to reduce power per ABN-POWER. Five minutes after completion of power reduction, report back that the gain-adjust is not working.</p>

		<p>If TSP-APRM-C301 is entered, directs the RO to maintain reactor power constant while gain adjustment is made on the 'C' APRM</p> <p>Directs the RO to bypass APRM 'C'</p>
	RO	Bypasses APRM 'C'
	SRO	<p>After STA informs that the APRM 'C' gain adjust is not working, references Tech Specs and determines that no action is required.</p> <p>If APRM 'C' is not already bypassed, directs APRM 'C' to be bypassed.</p> <p>Prepares a tracking LCO for the inoperable APRM</p>
<p>COMMENTS: 8/6/02 – Changed statement regarding output of APRM from “non-conservative” to out of spec for Tech Spec tolerance.</p>		

Event No. 6

Description: Reduces load on DG-1 at completion of OSP-ELEC-M701. DG-1 Governor begins oscillating requiring the emergency trip of the diesel from the control room.

*This event is **MANUALLY initiated with TRIGGER 6** when the BOP begins to reduce load on DG-1, or as directed by the lead examiner. The event endpoint occurs when DG-1 has been emergency tripped from Board C.*

Time	Position	Applicants Actions or Behavior
	BOP	<p>Informs the CRS that the run time is completed for the DG-1 surveillance and that he will be reducing DG-1 output.</p> <p><i>SIM CUE: When the BOP begins reducing DG output, initiate TRIGGER 6</i></p> <p>While reducing DG-1 load, determines that the DG-1 governor is oscillating and reports this to the CRS.</p>
	SRO	Directs the BOP to manually trip DG-1
	BOP	Emergency trips DG-1 from Board C (P800) by depressing emergency trip pushbutton.

COMMENTS:

Event No. 7

Description: DEH oil leak resulting in a Main Turbine trip and a loss of Bypass Valves.

*This event is **MANUALLY initiated with TRIGGER 7** after the BOP operator trips DG-1 or as directed by the lead examiner. The event endpoint occurs when the reactor is scrammed.*

Critical Task for this event: Directs or takes action to manually scram the reactor upon loss of DEH (pressure control)

Time	Position	Applicants Actions or Behavior
	BOP	<p>Reports DEH reservoir low (approx 1 minute into event) and low-low (approx 4 minutes into event)</p> <p>Refers to the annunciator response procedure (4.820.B1, 6-7)</p> <ul style="list-style-type: none"> ➤ Has an equipment operator check local level indication for the DEH reservoir ➤ Notifies CRS of reference to ABN-DEH-LEAK, DEH System Leak.

	SRO	<p>Directs actions of ABN-DEH-LEAK for a rapidly lowering reservoir level</p> <ul style="list-style-type: none">➤ If an auto scram has not occurred, directs manual scram of the reactor and entry into PPM 3.3.1 ➤ Directs tripping of the Main Turbine ➤ Directs tripping of the Main Generator
	RO	<p>Manually scrams the reactor and/or carries out immediate scram actions: (see Event 8)</p> <ul style="list-style-type: none">➤ Takes the mode switch to SHUTDOWN ➤ Reports reactor power, reactor pressure, and reactor level ➤ Reports failure to scram; Hydraulic ATWS

		<ul style="list-style-type: none">➤ Depresses Manual Scram Pushbuttons ➤ Initiates ARI ➤ Inserts SRMs and IRMs ➤ Reports control rod status
	BOP	<p>Trips the Main Turbine and the Main Generator</p> <p>Verifies transfer of electric buses from the Normal transformer to the Startup transformer</p>
COMMENTS:		

Event No. 8

Description: Reactor scrams - A 100% ATWS prevents inward rod movement by scram

This event is initiated by actions taken in Event 7. The event endpoint occurs when all control rods are in their "full-in" position.

Critical Tasks for this event:**1. Directs or takes action to shutdown an ATWS core**

- **ARI initiation**
- **SLC initiation**
- **Manual Scram**
- **Stop and prevent injection**
- **Trips RRC pumps**
- **Drives control rods manually**

Time	Position	Applicants Actions or Behavior
	RO	Continues with reactor scram actions: <ul style="list-style-type: none"> ➤ Reports that all rods are not in – ATWS ➤ Depresses manual scram pushbuttons ➤ Initiates ARI

		<ul style="list-style-type: none"> ➤ Inserts SRMs and IRMs ➤ Reports that there is still no inward rod motion
	SRO	<p>Enters EOP 5.1.1, RPV Control, based on reactor scram and then transitions to EOP 5.1.2, RPV Control – ATWS, based on the ATWS condition</p> <ul style="list-style-type: none"> • directs BOP to inhibit ADS and take manual control of HPCS • directs RO to trip both RRC pumps and to initiate SLC <p>NOTE: SLC is initiated but its discharge piping breaks, reducing SLC flow to the core. See Event #10 for details)</p> <ul style="list-style-type: none"> • directs RO/BOP to ensure isolations and auto initiations have occurred • directs BOP to bypass MSIV isolations per PPM 5.5.6, Bypassing MSIV Low RPV Level and High Steam Tunnel Temperature Isolation Interlocks, and ECCS valve interlocks per PPM 5.5.1, Overriding ECCS Valve Logic to Allow Throttling RPV Injection • directs RO to stop and prevent FW injection and maintain RPV level –65” to –192” (or some band in between)

		<ul style="list-style-type: none"> • directs BOP to maintain RPV pressure 800-1000 psig using SRVs • directs RO/BOP to attempt to insert control rods using PPM 5.5.10, Overriding ARI Logic, and 5.5.11, Alternate Control Rod Insertions
	RO	Inhibits ADS
	BOP	<p>Takes manual control of HPCS</p> <ul style="list-style-type: none"> • Manually initiates HPCS with ARM and DEPRESS • Secures HPCS pump and/or shuts HPCS-V-4
	RO	Trips RRC pumps and initiates SLC (See Event 10)
	RO/BOP	Verifies +13" isolations

	BOP	<p>Bypasses MSIV isolations using PPM 5.5.6</p> <ul style="list-style-type: none">• Obtains procedure package and keys from EOP drawer• At P609, places MS-RMS-S84 to BYPASS position• At P611, places MS-RMS-S85 to BYPASS position• Reports completion of PPM 5.5.6 to the SRO
	BOP	<p>Bypasses ECCS valve interlocks using PPM 5.5.1 and inserting keys:</p> <ul style="list-style-type: none">• At P625, takes HPCS-RMS-S25 to OVERRIDE• At P629, takes LPCS-RMS-S21 to OVERRIDE• At P629, takes RHR-RMS-S105 to OVERRIDE• At P618, takes RHR-RMS-S106 to OVERRIDE

	RO/BOP	<ul style="list-style-type: none"> • At P618, takes RHR-RMS-S107 to OVERRIDE
	RO/BOP	<p>Maintains water level using FW system</p>
	RO/BOP	<p>Overrides ARI logic using PPM 5.5.10: <u>(see note 1)</u></p> <ul style="list-style-type: none"> • Obtains procedure package and fuse pullers from EOP drawer
	RO/BOP	<ul style="list-style-type: none"> • At P650, pulls one of the following fuses on TB1: <ul style="list-style-type: none"> • F01; F02; F03; F04 • At P650, pulls one of the following fuses on TB2: <ul style="list-style-type: none"> • F01; F02; F03; F04 • Reports to SRO that PPM 5.5.10 is complete
	RO/BOP	

		<p>Performs actions of PPM 5.5.11: (see note 1)</p> <ul style="list-style-type: none">• Obtains procedure package and tools from EOP drawer • Determines that the appropriate sections of the procedure for the existing conditions are Tabs B and F. <p>TAB B:</p> <ul style="list-style-type: none">• Places SDV HIGH LEVEL TRIP control switch to BYPASS • Overrides RPS trip signals:<ul style="list-style-type: none">• Installs jumper between terminal stud 2 on RPS-RLY-K9B and terminal stud 4 on PRS-RLY-K12F in P611 • Installs jumper between terminal stud 2 on RPS-RLY-K9D and terminal stud 4 on PRS-RLY-K12H in P611 • Installs jumper between terminal stud 2 on RPS-RLY-K9A and terminal stud 4 on PRS-RLY-K12E in P609 • Installs jumper between terminal stud 2 on RPS-RLY-K9C and terminal stud 4 on PRS-RLY-K12G in P609
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- Resets the scram on P603
- When SDV has drained for more than 2 minutes, checks rod density and initiates a manual scram
- Reports any rod movement, or lack thereof, to the SRO

SIM CUE: When Tab B is completed and after the RO has attempted his first “re-scram”, remove the Hydraulic ATWS malfunctions to allow inward rod motion on the next “re-scram”.

TAB F:

- Starts second CRD pump if available
- Places SDV HIGH LEVEL TRIP control switch to BYPASS
- Resets scram if possible

		<ul style="list-style-type: none">• Bypasses all RSCS rod blocks:<ul style="list-style-type: none">• Installs a jumper from terminal 7 to terminal 8 on the following two Bailey Alarm Cards on P613<ul style="list-style-type: none">• AHH (MS-PS-654A) • AGG (MS-PS-654B) • Places RWM bypass switch to BYPASS <p>Manually drives rods and informs SRO of results</p>
	SRO	<p>Enters EOP 5.2.1, Primary Containment Control, based on high drywell temperature and high wetwell level (no actions are necessary at this point)</p> <p>Directs the verification of Level 1 isolations, initiations and DG starts</p>

	RO/BOP	When RPV level drops below -129", verifies Level 1 isolations, initiations, and DG starts
	RO	Reports when all rods are in
	SRO	Exits EOP 5.1.2 and transitions back to EOP 5.1.1 <ul style="list-style-type: none">• directs RO to stop SLC and restore RPV level to +13" to +54"• may direct BOP to remove RPS jumpers
COMMENTS: NOTE 1: These tasks may not be necessary depending on how the crew prioritizes their actions.		

Event No. 9

Description: The Graphical Display System (GDS) locks up during the Main Turbine trip transient.

This event is initiated manually (by disconnecting the GDS monitors in the panels) as soon as the verbal scram report is completed by the RO. The event endpoint occurs when the scenario is terminated.

Time	Position	Applicants Actions or Behavior
	RO/BOP	Reports the loss of the Graphical Display System
	SRO	Directs RO/SRO to monitor parameters on hardwired instrumentation Directs verifications of NSSSS isolations to be accomplished with PPM 3.3.1, Reactor Scram procedure.

COMMENTS:

Event No. 10

Description: The SLC common discharge header ruptures in the reactor building preventing boron from reaching the core.

*This event is **automatically initiated by TRIGGER 10** as soon as the SLC system is taken to ON. The event endpoint occurs when the scenario is terminated.*

Time	Position	Applicants Actions or Behavior
SLC is initiated in Event #8 (page 18) as directed by EOP 5.1.2, ATWS RPV Control		
	RO	Reports that SLC system discharge pressure has dropped and that flow rate has dropped from 84 gpm to 14 gpm with both pumps indicating energized.
	SRO	Dispatches OPS-2 to investigate the SLC system
OPS-2 CUE: If requested to investigate the SLC system, wait several minutes and report back that there is a leak at the combined outlet header downstream of the Squib Valves. The SLC berm is captivating the discharged SLC fluid		
	SRO	May direct SLC to be secured due to the leak, or may decide to leave it running since there is 14 gpm of borated solution being injected into the reactor.

	RO	If directed, secures both SLC pumps due to the SLC system leak.
COMMENTS:		
 <u>SCENARIO ENDPOINT:</u> When all control rods are in and reactor water level has been restored to its normal band and SLC is secured, the scenario may be terminated.		

SRO TURNOVER INFORMATION

The plant is at 100% power.

DG-1 is fully loaded for OSP-ELEC-M701 (currently at step 7.5.63). There are 20 minutes left on the one-hour diesel run.

Suppression Pool temperature is slowly rising due to two SRVs that are leaking by. The off-going shift recommends that suppression pool cooling be initiated as soon as you take the shift. RHR-V-24B is tagged out for replacement of the motor operator. The expected time to job completion is two hours.

Facility: COLUMBIA	Scenario No.: 3	Op-Test No.: 1	
Examiners: _____		Operators: _____	
_____		_____	
_____		_____	
 Initial conditions: IC-172 (batch file NRC02.3.txt). Reactor power is at 21% on a beginning of life core. The feedwater system is in a "10 Valve" lineup with 2 reactor feed pumps in operation.			
 Turnover: The reactor is at 21% power with a reactor shutdown in progress. The rod sequence is at RWM group 39, rod 14-31, at position 48. The feedwater system is in a "10 Valve" lineup with 2 reactor feed pumps in operation. A power reduction to 15% has been directed, at which point, the 'A' reactor feedwater pump will be taken out of service. You are to hold the plant at 15% with the main turbine on line while the Feedwater system engineer gathers data on the feedwater system.			
Event No.	Malfunction No.	Event Type*	Event Description
1.	Initiated by turnover T= 0 min	R (RO)	Reactor power reduction to 15% by inserting control rods
2.	Trigger 2 T= 8 min	I (RO)	The "C" Recirc Flow Unit fails downscale resulting in a rod block requiring the RO to bypass the unit.
3.	Trigger 3 T= 18 min	I (RO)	The RWM fails, requiring the RO to bypass the RWM.
4.	Initiated by turnover T= 30 min	N (BOP)	The "A" RFP is removed from service
5.	Trigger 5 T= 46 min	C (BOP)	The running plant service water pump trips. The standby plant service water pump fails to auto start requiring the BOP to manually start it.
6.	Trigger 6	C (BOP)	The hotwell level controller fails causing a low condenser hotwell level requiring the BOP to manually start level and transfer control

	T= 51 min		level, requiring the BOP to manually restore level and transfer control to the standby controller.
7.	Trigger 7 T= 67 min	C (All)	The shaft of the running plant service water pump shears, resulting in a total loss of plant service water, requiring a manual reactor scram.
8.	Trigger 8 T= 69 min	M (All)	A high vibration condition occurs on the "B" recirc pump resulting in a large LOCA on the "B" reactor recirc loop.
9.	Preset This is in from the beginning and is recognized upon HPCS pump auto initiation	C	The HPCS pump experiences reduced head resulting in the loss of injection capability.
10.	Preset This is in from the beginning and is recognized upon RHR pump auto initiation	C	RHR pump 2A fails to auto start on its initiation signal.

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Event No. 1

Description: Reactor power reduction to 15% by inserting control rods

This event is initiated by the turnover sheet. The event endpoint occurs when power has been reduced by 5% from its original value.

Time	Position	Applicants Actions or Behavior
	SRO	Directs a power reduction to 15%
	RO	<p>Inserts control rods to reduce power using the rod pull sequence sheets in the reverse order.</p> <p>Monitors reactor power</p> <p>Informs the CRS when power is at 15%</p>

COMMENTS: 8/6/02 Changed initial power level and desired power level from 25 and 20 to 22 and 15 respectively to provide the necessary drop below the LPSP for RWM for event 3. Event 4 was moved to the event 2 position with the remaining events remaining in progression in order to better test the operator's reaction to this event.

Event No. 2

Description: The “C” Recirc Flow Unit fails downscale resulting in a rod block requiring the RO to bypass the unit.

*This event is **MANUALLY initiated** by **TRIGGER 2** after the RO begins inserting control rods, or by the direction of the lead examiner. The event endpoint occurs when the ‘C’ Recirc Flow Unit has been bypassed.*

Time	Position	Applicants Actions or Behavior
	RO	<p>Reports Flow Reference Off Normal and Rod Out Block annunciators</p> <p>Refers to annunciator response procedures (4.603.A8, 3-6 & 4.603.A7, 2-7)</p> <ul style="list-style-type: none"> ➤ Determines which flow comparater channel is causing the alarm by checking lights at P608 or P603 ➤ Informs the CRS that the procedure says to consider bypassing the failed channel
	SRO	Directs the RO to bypass the failed channel

		Refers to LCS 1.3.2.1 and TS 3.3.1.1 (will have to go to TS bases for inoperable flow unit). TS allows it to be bypassed – only two required.
	RO	Bypasses the 'C' recirc flow unit
COMMENTS:		

Event No. 3

Description: The RWM fails, requiring the RO to bypass the RWM.

*This event is **MANUALLY initiated by TRIGGER 3** after the RO bypasses the failed recirc flow unit in Event 2, or by the direction of the lead examiner. The event endpoint occurs when the RWM has been bypassed.*

Critical Task for this event: Directs that a second licensed operator or member of the technical staff verify all rod movement to be in compliance with the Bank Position Withdrawal Sequence.

Time	Position	Applicants Actions or Behavior
	RO	<p>Reports that the RWM is not following the rod insertion sequence.</p> <p>Reports Rod Out Block annunciator and that RDCS is showing both Insert and Withdraw blocks</p> <p>Stops rod movement and awaits further direction from the CRS.</p>
	BOP	<p>Checks RWM status on RDCS back panel and reports that RDCS shows a RWM INOP light and the RWM Operating light is extinguished.</p>

	SRO	<p>Refers to ABN-RWM:</p> <ul style="list-style-type: none">➤ Determines if the reactor is within the LPSP ➤ If within the LPSP, directs the RO to stop any further rod motion, except by manual scram if necessary. ➤ Refers to Tech Specs 3.3.2.1 and determines that the RWM is not required until 10% RTP. ➤ Directs the RWM to be reinitialized per PPM 2.1.4 (RWM will not reinitialize)
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		<p>➤ After determining that the RWM will not return to service, directs the RWM be manually bypassed per PPM 2.1.4 and complies with Tech Spec 3.3.2.1, requiring that rod movement be verified in compliance with the BPWS by a second licensed operator or member of the technical staff.</p> <p><i>NOTE: All rod movements (except during emergency situations) are required to be verified by a second licensed operator or tech staff by Columbia Generating Station procedures.</i></p>
COMMENTS:		

Event No. 4

Description: The “A” RFP is removed from service

CUE: *Call is the feedwater engineer and inform the control room that you are ready for them to secure the “A” RFP.*

This event is initiated by the turnover sheet. The event endpoint occurs when the feedpump turbine has been placed on the turning gear.

Time	Position	Applicants Actions or Behavior
	SRO	Directs the shutdown of the ‘A’ RFP per PPM 2.2.4, section 5.17
	BOP	Performs PPM 2.2.4, section 5.15: <ul style="list-style-type: none"> ➤ informs HP of potential change in radiological conditions ➤ selects MDEM on the A RFP controller and reduces speed slightly on pump to be removed and verifies that the other pump’s controller picks up the load ➤ lowers speed of RFP turbine ‘A’ until the MIN lamp illuminates

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| | | <ul style="list-style-type: none">➤ closes RFW-V-102A
➤ trips RFB "A"
➤ ensures the RFW-FCV-2A is closed and its controller output is at zero
➤ verifies that MS-V-142A, BS-V-44A and BS-V-45A auto open
➤ closes MS-V-105A (HP steam supply)
➤ closes BS-V-17A (LP steam supply) |
|--|--|--|

		<ul style="list-style-type: none">➤ As the turbine slows to <1 RPM, places the turbine turning gear control switch to AUTO ENGAGE and ensures turning gear engagement. ➤ Starts the Aux. Oil Pump for the feedwater turbine ➤ Stops the main oil pump for the feedwater turbine ➤ Informs the CRS that the 'A' RFP is removed from service
COMMENTS:		

Event No. 5

Description: The running plant service water pump trips. The standby Plant Service Water pump fails to auto start requiring the BOP to manually start it

*This event is **MANUALLY initiated** by **TRIGGER 5** after the BOP completes the RFP removal event or at the direction of the lead examiner. The event endpoint occurs when the standby Plant Service Water pump has been manually started.*

Time	Position	Applicants Actions or Behavior
	BOP	<p>Responds to TSW-P-1B motor trip annunciator</p> <p>Carries out actions of the ARP:</p> <ul style="list-style-type: none"> ➤ Notifies the CRS of the loss of the operating TSW pump and the failure of the standby pump to auto start. ➤ Manually starts the standby TSW pump ➤ Ensures the discharge valve for the running pump opens

		<ul style="list-style-type: none">➤ Ensures the discharge valve for the tripped pump closes ➤ Checks the TSW discharge header pressure increasing on TSW-PI-28 ➤ Informs CRS of reference to ABN-TSW
	SRO	Refers to ABN-TSW and verifies that ARP actions meet the requirements of the ABN.
	RO	Monitors: <ul style="list-style-type: none">➤ reactor level, pressure, and power ➤ equipment for temperature increases

		<p>➤ drywell pressure for increase</p>
<p>COMMENTS:</p>		

Event No. 6		
<p>Description: The hotwell level controller fails causing a low condenser hotwell level, requiring the BOP to manually restore level and transfer control to the standby controller.</p> <p><i>This event is MANUALLY initiated by TRIGGER 6 after the completion of event 5 or at the direction of the lead examiner. The event endpoint occurs when Hotwell Level Control has been transferred to the alternate controller and hotwell level is recovering.</i></p>		
Time	Position	Applicants Actions or Behavior
	RO/BOP	Reports Main Condenser Hotwell Level Low annunciator.
	SRO	Gives BOP direction to carry out actions of the ARP (4.840.A3, 7-4).
	BOP	Carries out actions of the ARP: <ul style="list-style-type: none"> ➤ Checks in-service hotwell level controller for level indication

		<ul style="list-style-type: none">➤ Reports that the in-service hotwell level controller indicates low hotwell level and that the controller output is demanding the low level rather than responding to raise hotwell level. ➤ Checks hotwell LCV's aligned for raising hotwell level and notes that they are not due to the apparent controller failure ➤ Checks COND-V-17 is open ➤ Checks CST levels are normal ➤ Recommends that the Hotwell Level Control be swapped to the
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- Shifts Hotwell Level Control by placing the Condenser Hotwell Level Select switch to COND-LIC-1

- If desired, places the on-coming controller in AUTO

COMMENTS: 8/6/02 Added clarification to the event title to show the direction of the hotwell level failure

Event No. 7

Description: The shaft of the running plant service water pump shears, resulting in a total loss of plant service water, requiring a manual reactor scram.

*This event is **MANUALLY initiated** by **TRIGGER 7** after the BOP completes the swap of hotwell level controllers, or at the direction of the lead examiner. The event endpoint occurs when the immediate operator actions for a scram have been completed.*

Critical Task for this event: Directs or takes action to shutdown the reactor prior to an automatic actuation of RPS

Time	Position	Applicants Actions or Behavior
	BOP	<p>Reports Plant Service Water Header Pressure Low annunciator</p> <p>References and carries out actions of ARP (4.840.A5, 5-7):</p> <ul style="list-style-type: none"> ➤ Checks discharge pressure on P840 ➤ Checks TSW-PCV-20 operating properly

		<ul style="list-style-type: none"> ➤ Sends equipment operators to check for TSW leakage and system operation ➤ Determines that running pump amps are low and may deduce that there is a problem with the running TSW pump. ➤ Informs the CRS that the ARP refers to ABN-TSW
	SRO	<p>Refers to ABN-TSW:</p> <ul style="list-style-type: none"> ➤ Determines that neither TSW pump is running and declares a total loss of TSW ➤ Directs the RO to reduce RRC flow and SCRAM the reactor
	RO	Carries out immediate SCRAM actions:

		<ul style="list-style-type: none"> ➤ Takes mode switch to SHUTDOWN ➤ Reports reactor power, pressure, and level (reports level below +13" and states that this is an EOP entry condition) ➤ Inserts IRMs and SRMs ➤ Reports that all control rods are in ➤ Refers to PPM 3.3.1 to verify that all immediate actions have been carried out.
	<p>SRO</p>	<p>Enters EOP 5.1.1 (RPV Control) based on low reactor water level</p> <ul style="list-style-type: none"> ➤ Directs the BOP or RO to verify isolations associated with

		<p>reactor water level below Level 2.</p> <ul style="list-style-type: none"> ➤ Directs the RO to maintain reactor water level in a band of +13” to +54” using table one injection systems (feed, RCIC, CRD, Condensate, HPCS) ➤ Directs the BOP to maintain reactor pressure in a band of 800 to 1000 psig using BPVs (and alternate pressure control systems if necessary) ➤ Directs RO to enter and carry out actions of PPM 3.3.1
	<p>RO</p>	<p>Lines up the feedwater system for startup level control with the “10 valves” in automatic to maintain the prescribed water level band</p> <p>Verifies that RRC pumps are at 15 Hz, or trips RRC pumps if directed</p>

		<p>Swaps at least four IRM/APRM recorders to IRM and ranges IRMs down to monitor power</p> <p>Verifies that the SCRAM has been announced over the Plant PA</p>
	BOP	<p>Monitors BPV operation to ensure reactor pressure remains in the prescribed band.</p> <p>Trips the Main Turbine when output is < 50 Mwe and verifies Main Generator output breakers have opened</p> <p>Verifies power transfer to TR-S</p> <p>May start RCIC to aid in pressure/level control</p>

	SRO	Directs alignment of Fire Water to the CAS and SA compressors per ABN-TSW Directs monitoring of TSW cooled equipment
COMMENTS:		

Event No. 8

Description: A high vibration condition occurs on the “B” recirc pump resulting in a large LOCA on the “B” reactor recirc loop.

*This event is **MANUALLY initiated** by **TRIGGER 8** after the immediate scram actions have been completed, or at the direction of the lead examiner. The event begins with a high vibration annunciator and is followed 20 seconds later by a Large LOCA. The event endpoint occurs when the scenario is terminated.*

Critical Tasks for this event:

1. Directs or takes action to maintain adequate core cooling by performing EOP level control actions.
2. Directs or takes action to maintain primary containments pressure suppression function by spraying the wetwell and drywell as directed by EOP Primary Containment Control.

Time	Position	Applicants Actions or Behavior
	RO	Reports High Vibration annunciator for the ‘B’ RRC pump
	SRO	<p>Re-enters EOP 5.1.1 on low RPV level and enters EOP 5.2.1 on high DW pressure:</p> <ul style="list-style-type: none"> • Directs RO/BOP to verify isolation, initiations, and DG starts • Directs RO to maintain RPV level between –161” and +54” (will give a band within these limits) with Table 1 systems.

	<ul style="list-style-type: none">• Directs RO/BOP spray of WW before reaching 12 psig in the WW • Directs RO/BOP to confirm RRC pumps are stopped and stop DW cooling fans in prep for DW spray • Directs RO/BOP to spray DW when WW press exceeds 12 psig and within DSIL • Directs the securing of containment sprays when pressure drops =1.68 psig in respective area. • At -50" RPV level, directs verification of expected isolations and initiations • At -129", if ADS timer has started, direct inhibition of ADS • At TAF, determines that LP ECCS is available and that current trend
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		<p>will drop level below $-192''$; determines Emergency RPV depressurization is required; enters PPM 5.1.3, Emerg. RPV Depress.</p> <ul style="list-style-type: none"> • Directs RO/BOP to open 7 SRVs, ADS preferred.
	RO/BOP	<p>Reports that expected initiations, isolations, and DG starts have occurred except that HPCS-V-4 has failed closed (see event 11).</p> <p>Uses RCIC and FW systems to maintain RPV level</p> <p>Sprays the WW when directed</p> <p>Confirms that RCC pumps and DW fans have been secured</p> <p>Sprays the DW when directed</p>

		<p>Secures WW/DW sprays when if or when ≤ 1.68 psig in each area</p> <p>Opens 7 SRVs (ADS preferred) to emergency depressurize the RPV.</p>
	SRO	Directs restoration of RPV level to band of +13" to +54"
	RO/BOP	Controls injection systems to restore RPV level to new band.
COMMENTS:		
Event No. 9		
Description: The HPCS pump experiences reduced head resulting in the loss of injection capability.		

This event is self-initiating when the HPCS pump starts. The event endpoint occurs when HPCS has been secured.

Time	Position	Applicants Actions or Behavior
	RO/BOP	Reports that HPCS is not injecting even though it is running
	SRO	Directs HPCS secured
	RO/BOP	Secures HPCS

COMMENTS:

Event No. 10

Description: RHR pump 2A fails to auto start on its auto initiation signal.

This event is self-initiating when the RHR pump receives an initiation signal. The event endpoint occurs when RHR-P-2A has been manually started.

Critical Task for this event: Directs or takes action to manually start an ECCS system that has failed to start automatically on an initiation signal.

Time	Position	Applicants Actions or Behavior
	RO/BOP	<p>Reports that RHR-P-2A failed to auto start</p> <p>Manually starts RHR-P-2A</p>
	SRO	<p>If the operator fails to attempt the manual start of RHR-P-2A, then directs the operator to start RHR-P-2A</p>

COMMENTS:

SCENARIO ENDPOINT: When reactor water level is stable and drywell pressure is < 1.68 psig, the scenario may be terminated.

SRO TURNOVER INFORMATION

The reactor is at 21% power with a reactor shutdown in progress.

The feedwater system is in a "10 Valve" lineup with 2 reactor feed pumps in operation.

A power reduction to 15% has been directed, at which point, the 'A' reactor feedwater pump will be taken out of service. You are to hold the plant at 15% power with the main turbine on line while the Feedwater system engineer gathers data on the feedwater system.

INDIVIDUAL WALK-THROUGH TEST OUTLINE FORM ES-301-2

Columbia Generating Station October 2002

Facility: Columbia Generating Station		Date of examination: October 2002	
Exam level: RO / SRO-I			
B.1 Control Room Systems			
System / JPM Title		Type Code*	Safety Function
a.	Start Control Room Ventilation Simulator	D, ESF, A	9
b.	Main Generator / Generator Capability Curve LR001153 Simulator	D, A 2000 NRC Exam	4
c.	Reactor Closed Cooling / Change RCC Pump Simulator/2000 NRC Exam	D, A	8
d.	Start RCIC with Arm and Depress Simulator	N, A, L	2
e.	AC Dist. / Transfer SL-31 480V Bus Power Supply From Alternate to Normal. Simulator	N	6
f.	Change Operating CRD Pump Control Room	N	1
g.	Purge Drywell LR000164 Control Room	D	9
B2. Facility Walkthrough			
a.	Control Room Evacuation – ED on RPV level LR000147 Plant – Remote Shutdown	D, RCA	3
b.	Close RPS Breakers LR000173 Plant	D, RCA	7
c.	Manual Start of HPCS DG LR000199 Plant	D, RCA	6

INDIVIDUAL WALK-THROUGH TEST OUTLINE FORM ES-301-2
 Columbia Generating Station October 2002

Facility: Columbia Generating Station		Date of examination: October 2002	
Exam level: RO / SRO-I			
Spare JPMs			
System / JPM Title		Type Code*	Safety Function
1.	Vent Overpiston Area for Control Rod Insertion LR000258 Plant	D, RCA, L	1
2.	Suppression Pool to CST via FPC LR000208 Simulator	D	9
* Type Codes: (D)irect from bank, (M)odified from bank, (N)ew, (A)lternate path, (L)ow power			
Indicates spare JPMs			

INDIVIDUAL WALK-THROUGH TEST OUTLINE FORM ES-301-2
 Columbia Generating Station October 2002

Facility: Columbia Generating Station		Date of examination: October 2002	
Exam level:		SRO-U	
B.1 Control Room Systems			
System / JPM Title / Type Codes *	Type Code	Safety Function	
a. Start Control Room Ventilation Simulator	D, ESF, A	9	
b. Main Generator / Generator Capability Curve LR001153 Simulator	D, A 2000 NRC Exam	4	
d. Start RCIC with Arm and Depress Simulator	N, A, L	2	
B2. Facility Walkthrough			
a. Control Room Evacuation – ED on RPV level LR000147 Plant – Remote Shutdown	D, RCA	3	
c. Manual Start of HPCS DG LR000199 Plant	D, RCA	6	
Spare JPMs			
System / JPM Title / Type Codes *	Type Code	Safety Function	
1. Vent Overpiston Area for Control Rod Insertion LR000258 Plant	D, RCA, L	1	
2. Suppression Pool to CST via FPC LR000208 Simulator	D, RCA	9	
* Type Codes: (D)irect from bank, (M)odified from bank, (N)ew, (A)lternate path, (L)ow power			
Indicates spare JPMs			