Facility: Columbia Generating Station Date of examination: November 2006
Examination Level (circle one): RO / **SRO** Operating test number:

Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	D	SRO is given a turnover sheet that states a RX S/U is in progress and then parameters that indicate the reactor is critical. He is cued to determine his next action. To successfully complete the JPM he has to realize the Reactor is Critical prior to the ECP and take actions per PPM 3.1.2 which states to: stop control rod withdrawal, the CRS should direct the CRO to drive control rods in the reverse order until all rods are fully inserted; POC approval is required to proceed with further rod withdrawal; Consider the applicability of T.S. 3.1.2. He will fill out an attachment indicating what his next action will be and the basis for that action.
Conduct of Operations	N	SRO is cued that during an inspection of the Active Fire System in the Control Room, the 18 Halon systems storage tanks were found to be 85% of full charge pressure. He is asked to determine if any compensatory measures are required and if they are, what are they. He will refer to PPM 1.3.10B and determine operability. Per PPM 1.3.10B he is to issue an FPSI permit for the inoperable system. Once this is identified he is handed a blank FPSI permit to fill out.
Equipment Control	N	The SRO is given a turnover sheet that indicates a Division 1 instrument is OOS. He is then handed a taggout for a Div 2 piece of equipment. The taggout erroneously pulls a fuse for a non-related Div 2 component that is the opposite division of the Div 1 component already OOS. If approved and this fuse is removed, a full scram would occur. He has to determine if he would sign taggout or not and explain why/why not.
Radiation Control	D, S	The SRO is given data and is required to enter the data into the QEDPS and print out the form. Then, based on the results of the QEDPS, he is to classify the event.
Emergency Plan	N, S	After Scenario #2, Classify the event and fill out a CNF. The scenario should be classified as a Site Area Emergency per EAL 2.2.S.1 (ATWS with power GT 5%).

Note: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when all 5 are required.

*Type Codes & Criteria
(C)ontrol room
(D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs & RO retakes)
(N)ew or (M)odified from bank (≥ 1)
(P)revious 2 exams (≤ 1; randomly selected)
(S)imulator

Facility: Columbia Generating Station — Date of examination: November 2006
Examination Level (circle one): **RO** / SRO — Operating test number:

Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	D	The RO is given a turnover sheet that states a RX S/U is in progress and then parameters that indicate the reactor is critical. He has to realize the Reactor is Critical or will be critical prior to the ECP and take actions per PPM 3.1.2 which states to: stop control rod withdrawal and notify the CRS. He will fill out an attachment indicating what his next action will be and the basis for that action.
Conduct of Operations	M	The RO is given that a startup is in progress and plant data showing current APRM indicated Power and Bypass Valve Positions and told to complete step Q31 of PPM 3.1.2 and inform the CRS of the results. When done he will check the block on the attachment indicating APRM readings are GT power readings extrapolated from BPV position.
Equipment Control	N	The RO is given a section of OSP-INST-H101 that has 3 out of spec reading entered and not identified as out of spec readings. Candidate is told to verify readings and to submit the surveillance to the CRS for review. He should find the 3 out of spec readings and circle them.
Radiation Control	N	The RO is given a tagout that requires entry into a contaminated area of the plant to hang. His directions are to sign onto a specific RWP to perform the task. He is to determine if the tagout can be hung. The tagout has no discrepancies. When the RWP is reviewed it is discovered that the RWP does not allow entry into contaminated zones of the plant. The candidate will indicate that the task can not be performed.
Emergency Plan		

Note: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when all 5 are required.

*Type Codes & Criteria
(C)ontrol room
(D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs & RO retakes)
(N)ew or (M)odified from bank (≥ 1)
(P)revious 2 exams (≤ 1; randomly selected)
(S)imulator

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2006 NRC EXAM – ADMIN JPM RO #2

PROGRAM TITLE: LICENSED OPERATOR INITIAL TRAINING

COURSE TITLE: ADMIN JOB PERFORMANCE MEASURE

LESSON TITLE: VERIFY APRM READINGS GT POWER EXTRAPOLATED FROM BYPASS VALVE POSITION (PPM 3.1.2)

LESSON LENGTH: .5 HRS

MAXIMUM STUDENTS: 1

INSTRUCTIONAL MATERIALS INCLUDED

Lesson Plan PQD Code		Rev. No.
Simulator Guide PQD Code		Rev. No.
JPM PQD Code		Rev. No.
Exam PQD Code		Rev. No.

DIVISION TITLE: Nuclear Training

DEPARTMENT: Operations Training

PREPARED BY: Ron Hayden DATE: 5/15/06

REVISED BY: DATE:

TECHNICAL REVIEW BY: DATE:

INSTRUCTIONAL REVIEW BY: DATE:

APPROVED BY: DATE:

Operations Training Manager

Verify materials current IAW SWP-TQS-01 prior to use.

VERIFY APRM READINGS GT POWER EXTRAPOLATED FROM
BYPASS VALVE POSITION (PPM 3.1.2)

MINOR REVISION RECORD

Minor Rev Number	Description of Revision	Affected Pages	Entered By	Effective Date	Manager Approval

JPM SETUP

Simulator ICs; Malfunctions; Triggers; Overrides:

N/A

Setup Instructions:

Get Attachment 7.1 and put two boxes to be checked. One states APRM readings ARE GT power readings extrapolated from BPV position and the other states APRM readings ARE NOT GT power readings extrapolated from BPV position.

JPM Instructions:

Verify Current Procedure against JPM and ensure procedure critical steps match if procedure is different revision than listed in JPM. If critical steps have changed, the JPM should be revised.

The evaluator and student shall use current procedure. The evaluator should mark off steps as they are completed, note comments, and transfer the comments to the “Results of JPM” page.

Tools/Equipment: N/A

Safety Items: N/A

Task Number: RO-0906

Validation Time: 10 minutes

Prerequisite Training: N/A

Time Critical: NO

PPM Reference: PPM 3.1.2

Location: Any

NUREG 1123 Ref: 2.1.25 (2.8/3.1)

Performance Method: Perform

JPM CHECKLIST

PROCEDURE VALIDATION:	Procedure copies for evaluator and student, if procedure revision is different from that listed on JPM, critical tasks reverified. Evaluator copy may be used for marking step completion, and comments.
INITIAL CONDITIONS:	Columbia is in the process of starting up following a refueling outage. Current plant conditions are: • APRMs indicate 34% power • Feedwater temperature is 147°F • House Loads are equal to 1% Core Thermal Power • BPV#1 is indicating 95 percent open • BPV#2 is indicating 90 percent open • BPV#3 is indicating 93 percent open • BPV#4 is indicating 95 percent open
INITIATING CUE:	You have been directed by the CRS to perform step Q31 of PPM 3.1.2 “Verify the APRM readings are GT power level readings extrapolated from bypass valve position per Attachment 7.1”. Present the completed Attachment 7.1 to the examiner with the table of BPV vs. % CTP filled in and a check mark applied to the appropriate box indicating if APRM readings are or are not GT power level readings extrapolated from BPV position.

*** Items are Critical Steps**

Comments	Element	Standard	Sat/Unsat
		RECORD START TIME: _____	
		Fills in the following information: BPV #1 % open is approximately 8.2 BPV #2 % open is approximately 8.0 BPV #3 % open is approximately 8.2 BPV #4 % open is approximately 8.3 House Loads 1% (given) Total % CTP is approximately 33.7	 S / U S / U S / U S / U S / U S / U
		Indicates in attachment that APRM indicated power levels are GT extrapolated BPV power level readings.	S / U *
Termination Criteria: Candidate hands the examiner the completed Attachment 7.1 of PPM 3.1.2 and written indication that APRMs readings are GT power readings extrapolated from BPV position.			
		RECORD TERMINATION TIME: _____	
Transfer to "Results of JPM" page the following information: Procedures validated prior to use; Comments from marked up evaluator's procedure copy; Unsatisfactory critical tasks; Total JPM time; Marked Up procedure and remaining JPM pages may be discarded.			

RESULTS OF JPM:

Examinee (Please Print): _____

Evaluator (Please Print): _____

Task Standard: Candidate completes table on Attachment 7.1 of PPM 3.1.2 and determines APRM readings are GT power level readings extrapolated from BPV position.

Overall Evaluation	Exam Code
SAT / UNSAT (Circle One)	

Verified Procedure #/Rev. Used for JPM (Initial Box)	Validation/Critical Time	JPM Completion Time
	10 Minutes / NA	

COMMENTS:

Evaluator's Signature: _____ Date: _____

STUDENT JPM INFORMATION CARD

Initial Conditions:

Columbia is in the process of starting up following a refueling outage.

Current plant conditions are:

- APRMs are indicating 34% power
- Feedwater temperature is 147°F
- House Loads are equal to 1% Core Thermal Power
- BPV#1 is indicating 95 percent open
- BPV#2 is indicating 90 percent open
- BPV#3 is indicating 93 percent open
- BPV#4 is indicating 95 percent open

Cue:

You have been directed by the CRS to perform step Q31 of PPM 3.1.2 "Verify the APRM readings are GT power level readings extrapolated from bypass valve position per Attachment 7.1".

Present the completed Attachment 7.1 to the examiner with the table of BPV vs. % CTP filled in and a check mark applied to the appropriate box indicating if APRM readings are or are not GT power level readings extrapolated from BPV position.

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2006 NRC EXAM – ADMIN RO #3

PROGRAM TITLE: LICENSED OPERATOR INITIAL TRAINING

COURSE TITLE: ADMIN JOB PERFORMANCE MEASURE

LESSON TITLE: REVIEW SURVEILLANCE PROCEDURE OSP-INST-H101

LESSON LENGTH: .5 HRS MAXIMUM STUDENTS: 1

INSTRUCTIONAL MATERIALS INCLUDED

Lesson Plan PQD Code		Rev. No.
Simulator Guide PQD Code		Rev. No.
JPM PQD Code		Rev. No.
Exam PQD Code		Rev. No.

DIVISION TITLE: Nuclear Training

DEPARTMENT: Operations Training

PREPARED BY: Ron Hayden DATE: 5/17/06

REVISED BY: DATE:

TECHNICAL REVIEW BY: DATE:

INSTRUCTIONAL REVIEW BY: DATE:

APPROVED BY: DATE:

Operations Training Manager

Verify materials current IAW SWP-TQS-01 prior to use.

MINOR REVISION RECORD

Minor Rev Number	Description of Revision	Affected Pages	Entered By	Effective Date	Manager Approval

JPM SETUP

Simulator ICs; Malfunctions; Triggers; Overrides:

N/A

Setup Instructions:

Print out a blank OSP-INST-H101 and fill in readings. At least one reading should be out of spec.

JPM Instructions:

Verify Current Procedure against JPM and ensure procedure critical steps match if procedure is different revision than listed in JPM. If critical steps have changed, the JPM should be revised.

The evaluator and student shall use current procedure. The evaluator should mark off steps as they are completed, note comments, and transfer the comments to the "Results of JPM" page.

Tools/Equipment: N/A

Safety Items: N/A

Task Number: RO-0577

Validation Time: 20 minutes

Prerequisite Training: N/A

Time Critical: NO

PPM Reference: OSP-INST-H101 Rev. 54

Location: Any

NUREG 1123 Ref: 2.2.12 (3.0/3.4)

Performance Method: Perform

JPM CHECKLIST

PROCEDURE VALIDATION:	Procedure copies for evaluator and student, if procedure revision is different from that listed on JPM, critical tasks reverified. Evaluator copy may be used for marking step completion, and comments.
INITIAL CONDITIONS:	Columbia is operating at rated power. CRO2 has just completed filling out the OSP-INST-H101 checks and has asked you for a peer check.
INITIATING CUE:	When you have completed your peer check of the Shift and Daily Instrument Checks (OPS-INST-H101) present them to the examiner (CRS). Circle any errors that you may have found during your review.

*** Items are Critical Steps**

Comments	Element	Standard	Sat/Unsat
RECORD START TIME: _____			
		Notes the following Out Of Spec readings:	S / U
		Circles out-of-tolerance readings: • Page 12 CMS-TE-15 (GT 150°F) • Page 12 CMS-TE-17 (GT 150°F) • Page 13 CMS-TE-16 (GT 150°F)	 S / U * S / U * S / U *
Termination Criteria: Candidate hands the examiner the completed OSP-INST-H101's and has circled Out-Of-Tolerance readings on page 12 and page 13.			
RECORD TERMINATION TIME: _____			
Transfer to "Results of JPM" page the following information: Procedures validated prior to use; Comments from marked up evaluator's procedure copy; Unsatisfactory critical tasks; Total JPM time; Marked Up procedure and remaining JPM pages may be discarded.			

RESULTS OF JPM:
REVIEW SURVEILLANCE PROCEDURE OPS-INST-H101

Examinee (Please Print): _____

Evaluator (Please Print): _____

Task Standard: Candidate correctly circles the three Out-Of-Tolerance readings.

Overall Evaluation	Exam Code
SAT / UNSAT (Circle One)	

Verified Procedure #/Rev. Used for JPM (Initial Box)	Validation/Critical Time	JPM Completion Time
	15 Minutes / NA	

COMMENTS:

Evaluator's Signature: _____ Date: _____

STUDENT JPM INFORMATION CARD

Initial Conditions:

Columbia is operating at rated power.

CRO2 has just completed filling out the OSP-INST-H101 checks and has asked you for a peer check.

Cue:

When you have completed your peer check of the Shift and Daily Instrument Checks (OPS-INST-H101) present them to the examiner (CRS).

Circle any errors that you may have found during your review.

2006 NRC EXAM – ADMIN RO #4

PROGRAM TITLE: LICENSED OPERATOR INITIAL TRAINING

COURSE TITLE: ADMIN JOB PERFORMANCE MEASURE

LESSON TITLE: DETERMINE IF TAGOUT CAN BE HUNG (FAULTED)

LESSON LENGTH: .5 HRS

MAXIMUM STUDENTS: 1

INSTRUCTIONAL MATERIALS INCLUDED

Lesson Plan PQD Code		Rev. No.
Simulator Guide PQD Code		Rev. No.
JPM PQD Code		Rev. No.
Exam PQD Code		Rev. No.

DIVISION TITLE: Nuclear Training

DEPARTMENT: Operations Training

PREPARED BY: Ron Hayden DATE: 9/26/06

REVISED BY: DATE:

TECHNICAL REVIEW BY: DATE:

INSTRUCTIONAL REVIEW BY: DATE:

APPROVED BY: DATE:

Operations Training Manager

Verify materials current IAW SWP-TQS-01 prior to use.

DETERMINE IF A TAGOUT CAN BE HUNG WITH INFORMATION SUPPLIED

MINOR REVISION RECORD

Minor Rev Number	Description of Revision	Affected Pages	Entered By	Effective Date	Manager Approval

JPM SETUP

Simulator ICs; Malfunctions; Triggers; Overrides:

N/A

Setup Instructions:

Have a tagout for HPCS System that includes HPCS-V-4. Have a RWP that is Non-High Radiation entry with a survey map showing HPCS-V-4 in a high radiation area.

JPM Instructions:

Verify Current Procedure against JPM and ensure procedure critical steps match if procedure is different revision than listed in JPM. If critical steps have changed, the JPM should be revised.

The evaluator and student shall use current procedure. The evaluator should mark off steps as they are completed, note comments, and transfer the comments to the “Results of JPM” page.

Tools/Equipment: N/A

Safety Items: N/A

Task Number: RO-1293

Validation Time: 15 minutes

Prerequisite Training: N/A

Time Critical: NO

PPM Reference:

Location: Any

NUREG 1123 Ref: 2.3.10 (2.9/3.3)

Performance Method: Perform

JPM CHECKLIST

PROCEDURE VALIDATION:	Procedure copies for evaluator and student, if procedure revision is different from that listed on JPM, critical tasks reverified. Evaluator copy may be used for marking step completion, and comments.
INITIAL CONDITIONS:	Columbia Generating Station is shutdown during outage R18.
INITIATING CUE:	You have been directed by the Control Room Supervisor to hang tagout D-HPCS-V-102R18-001. Health Physics has been contacted and directed use of RWP-30001421 for the purpose of hanging tags in the Reactor Building. Review the task and from the information provided, fill out the attached sheet indicating your ability (or inability) to perform the task assigned.

*** Items are Critical Steps**

Comments	Element	Standard	Sat/Unsat
RECORD START TIME: _____			
		Fills out the attached sheet indicating that the task can not be performed due to HPCS-V-4 being in a High Radiation area and the RWP is for Non-High Radiation plant operation/ investigation.	S / U *
Termination Criteria: Candidate hands the examiner the completed attachment.			
RECORD TERMINATION TIME: _____			
Transfer to "Results of JPM" page the following information: Procedures validated prior to use; Comments from marked up evaluator's procedure copy; Unsatisfactory critical tasks; Total JPM time; Marked Up procedure and remaining JPM pages may be discarded.			

RESULTS OF JPM:

Examinee (Please Print): _____

Evaluator (Please Print): _____

Task Standard: Candidate fills out the attached sheet and indicates that the tagout can not be hung due to HPCS-V-4 being in a high radiation area and the RWP is for Non-High Rad operation/investigation.

Overall Evaluation	Exam Code
SAT / UNSAT (Circle One)	

Verified Procedure #/Rev. Used for JPM (Initial Box)	Validation/Critical Time	JPM Completion Time
	15 Minutes / NA	

COMMENTS:

Evaluator's Signature: _____ Date: _____

STUDENT JPM INFORMATION CARD

Initial Conditions:

Columbia Generating Station is shutdown during outage R18.

Cue:

You have been directed by the Control Room Supervisor to hang tagout D-HPCS-V-102R18-001.

Health Physics has been contacted and directed use of RWP-30001421 for the purpose of hanging tags in the Reactor Building.

Review the task and from the information provided, fill out the attached sheet indicating your ability (or inability) to perform the task assigned.

I will be able to perform the assigned task (Initial): _____

I will not be able to perform the assigned task (Initial and Reason): _____

_____

_____

_____

_____

_____

_____

_____

_____

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2006 NRC EXAM – ADMIN JPM RO/SRO #1

PROGRAM TITLE: LICENSED OPERATOR INITIAL TRAINING

COURSE TITLE: ADMIN JOB PERFORMANCE MEASURE

LESSON TITLE: DETERMINE ACTIONS FOR CRITICALITY OUTSIDE OF ECP (EARLY)

LESSON LENGTH: .5 HRS MAXIMUM STUDENTS: 1

INSTRUCTIONAL MATERIALS INCLUDED

Lesson Plan PQD Code		Rev. No.
Simulator Guide PQD Code		Rev. No.
JPM PQD Code		Rev. No.
Exam PQD Code		Rev. No.

DIVISION TITLE: Nuclear Training

DEPARTMENT: Operations Training

PREPARED BY: Ron Hayden DATE: 5/11/06

REVISED BY: DATE:

TECHNICAL REVIEW BY: DATE:

INSTRUCTIONAL REVIEW BY: DATE:

APPROVED BY: DATE:

Operations Training Manager

Verify materials current IAW SWP-TQS-01 prior to use.

DETERMINE ACTIONS FOR CRITICALITY OUTSIDE OF ECP (EARLY)

MINOR REVISION RECORD

Minor Rev Number	Description of Revision	Affected Pages	Entered By	Effective Date	Manager Approval

JPM SETUP

Simulator ICs; Malfunctions; Triggers; Overrides:

N/A

Setup Instructions:

Make a copy of the current pull sheet from the simulator. Determine where Minimum ECP is and indicate it on copy of pull sheet by placing an '*1' next to the step and at the bottom of the column indicate that a *1 is 'Minimum ECP'. Ensure it is AFTER step indicated in initial conditions.

Have a copy of PPM 3.1.2 startup flowchart available for reference.

JPM Instructions:

Verify Current Procedure against JPM and ensure procedure critical steps match if procedure is different revision than listed in JPM. If critical steps have changed, the JPM should be revised.

The evaluator and student shall use current procedure. The evaluator should mark off steps as they are completed, note comments, and transfer the comments to the "Results of JPM" page.

Tools/Equipment: N/A

Safety Items: N/A

Task Number: RO-0156; SRO-0118

Validation Time: 16 minutes

Prerequisite Training: N/A

Time Critical: NO

PPM Reference: PPM 3.1.2

Location: Simulator/Plant/Table Top

NUREG 1123 Ref: 2.1.7 3.7/4.4

Performance Method: Perform

DETERMINE ACTIONS FOR CRITICALITY OUTSIDE OF ECP (EARLY)

JPM CHECKLIST

PROCEDURE VALIDATION:	Procedure copies for evaluator and student, if procedure revision is different from that listed on JPM, critical tasks reverified. Evaluator copy may be used for marking step completion, and comments.
INITIAL CONDITIONS:	A plant startup is in progress. PPM 3.1.2 has been completed as follows: Step L11 has been completed, waiting at step L12 ; Step P1 has not yet been completed; Step Q9 has been completed and step Q10 is in progress. You are the RO pulling control rods and you note the following indications: • Time 0953 • Coolant Temp 205°F • Control rod 10-47 • Control rod position 18 • Neutron level 8,000 CPS and rising • Period 145 seconds and stable You have been pulling control rods steadily since starting Group 1 of the Pull Sheet. Control rod motion stopped approximately 1 minute ago.
INITIATING CUE:	Using the given information, PPM 3.1.2, and the supplied pull sheets, determine your next action. When you have determined your next action, write it on the page provided along with the basis for the decision and hand it to the examiner.

DETERMINE ACTIONS FOR CRITICALITY OUTSIDE OF ECP (EARLY)

*** Items are Critical Steps**

Comments	Element	Standard	Sat/Unsat
RECORD START TIME: _____			
SRO Position being evaluated		Using given information, determines that the reactor is critical or will be critical before the minimum ECP has been reached. Directs RO to (stop control rod withdrawal and to) drive control rods in the reverse order until all control rods are fully inserted.	S / U *
RO position being evaluated		Using given information, determines that the reactor is critical or will be critical before the minimum ECP has been reached. Notifies the CRS that he has stopped control rod withdrawal due to reactor critical outside ECP.	S / U *
SRO Candidate: To pass the JPM the candidate must state that direction is to be given to the RO to drive control rods in the reverse order until they all are inserted. **RO Candidate: To pass the JPM the candidate must state that control rod withdrawal must be stopped and that the CRS must be informed that the reactor is critical prior to the indicated minimum ECP.**			
RECORD TERMINATION TIME: _____			
Transfer to "Results of JPM" page the following information: Procedures validated prior to use; Comments from marked up evaluator's procedure copy; Unsatisfactory critical tasks; Total JPM time; Marked Up procedure and remaining JPM pages may be discarded.			

DETERMINE ACTIONS FOR CRITICALITY OUTSIDE OF ECP (EARLY)

RESULTS OF JPM:

Examinee (Please Print): _____

Evaluator (Please Print): _____

Task Standard: Candidate determines early criticality and correctly identifies actions for being critical outside of the ECP per PPM 3.1.2.

Overall Evaluation	Exam Code
SAT / UNSAT (Circle One)	

Verified Procedure #/Rev. Used for JPM (Initial Box)	Validation/Critical Time	JPM Completion Time
	16 Minutes / NA	

COMMENTS:

Evaluator's Signature: _____ Date: _____

STUDENT JPM INFORMATION CARD

Initial Conditions:

A plant startup is in progress. PPM 3.1.2 has been completed as follows: Step L11 has been completed, waiting at step L12 ; Step P1 has not yet been completed; Step Q9 has been completed and step Q10 is in progress.

The following indications are observed:

- Time 0953
- Coolant Temp 205° F
- Control rod 10-47
- Control rod position 18
- Neutron level 8,000 CPS and rising
- Period 145 seconds and stable

Control rods have been steadily pulled since starting Group 1 of the Pull Sheet. Control rod motion stopped approximately 1 minute ago.

Cue:

Using the given information, PPM 3.1.2, and the supplied pull sheets, determine your next action.

When you have determined your next action, write it on the page provided along with the basis for the decision and hand it to the examiner.

NEXT ACTION TO BE TAKEN: _____

BASIS FOR ACTION: _____

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2006 NRC EXAM – ADMIN SRO #2

PROGRAM TITLE: LICENSED OPERATOR INITIAL TRAINING

COURSE TITLE: ADMIN JOB PERFORMANCE MEASURE

LESSON TITLE: DETERMINE HALON SYSTEM IMPAIRED AND ISSUE A FIRE PROTECTION SYSTEM IMPAIRMENT

LESSON LENGTH: .5 HRS

MAXIMUM STUDENTS: 1

INSTRUCTIONAL MATERIALS INCLUDED

Lesson Plan PQD Code		Rev. No.
Simulator Guide PQD Code		Rev. No.
JPM PQD Code		Rev. No.
Exam PQD Code		Rev. No.

DIVISION TITLE: Nuclear Training

DEPARTMENT: Operations Training

PREPARED BY: Ron Hayden DATE: 5/11/06

REVISED BY: DATE:

TECHNICAL REVIEW BY: DATE:

INSTRUCTIONAL REVIEW BY: DATE:

APPROVED BY: DATE:

Operations Training Manager

Verify materials current IAW SWP-TQS-01 prior to use.

DETERMINE HALON SYSTEM IMPAIRED AND ISSUE A
FIRE PROTECTION SYSTEM IMPAIRMENT

MINOR REVISION RECORD

Minor Rev Number	Description of Revision	Affected Pages	Entered By	Effective Date	Manager Approval

JPM SETUP

Simulator ICs; Malfunctions; Triggers; Overrides:

N/A

Setup Instructions:

Ensure candidate has access to a set of Volume One procedures and specifically to PPM 1.3.10B. Have a copy of the Fire Protection System Impairment Notification form ready to give to candidate after impairment is identrified.

JPM Instructions:

Verify Current Procedure against JPM and ensure procedure critical steps match if procedure is different revision than listed in JPM. If critical steps have changed, the JPM should be revised.

The evaluator and student shall use current procedure. The evaluator should mark off steps as they are completed, note comments, and transfer the comments to the “Results of JPM” page.

Tools/Equipment: N/A

Safety Items: N/A

Task Number: SRO-0158

Validation Time: 20 minutes

Prerequisite Training: N/A

Time Critical: NO

PPM Reference: PPM 1.3.10B

Location: Simulator/Plant/Table Top

NUREG 1123 Ref: 2.1.25 2.8/3.1

Performance Method: Perform

JPM CHECKLIST

PROCEDURE VALIDATION:	Procedure copies for evaluator and student, if procedure revision is different from that listed on JPM, critical tasks reverified. Evaluator copy may be used for marking step completion, and comments.
INITIAL CONDITIONS:	As the Production SRO, you have just been informed by Plant Inspector that during an inspection of the Active Fire System in the Main Control Room, the 18 Halon system storage tanks (FP-TK-1 thru 18) were found to be 85% of full charge pressure.
INITIATING CUE:	Based on the report provided determine if compensatory actions are required. Initial the attachment indicating either actions are or are not required. If actions are required indicate (on the attachment) what they are.

*** Items are Critical Steps**

Comments	Element	Standard	Sat/Unsat
	RECORD START TIME: _____		
	Refers to PPM 1.3.10B and notes at least 90% of full charge pressure is required.		S / U
	Per PPM 1.310B 3.4.3b determines a FPSI permit is required to be issued.		S / U *
CUE: Once the candidate informs the examiner that a FPSI permit is required to be completed, provide the candidate with a blank form to fill out (Attachment 9.1 of PPM 1.3.10B).			
	The FPSI permit is filled out with the following information: • System Impaired: Halon is checked • Reason for Impairment: All 18 Halon systems have storage tanks with only 85% of full charge pressure (90% is required) • Building/Elevation: Radwaste Building, 501' elevation • Compensatory Action Taken: None (Control Room continually manned) • Date Impairment Occurred: Today's date is filled in		 S / U * S / U * S / U * S / U * S / U *
Termination Criteria: Student hands the examiner a completed FPSI permit.			
	RECORD TERMINATION TIME: _____		
Transfer to "Results of JPM" page the following information: Procedures validated prior to use; Comments from marked up evaluator's procedure copy; Unsatisfactory critical tasks; Total JPM time; Marked Up procedure and remaining JPM pages may be discarded.			

RESULTS OF JPM:

Examinee (Please Print): _____

Evaluator (Please Print): _____

Task Standard: Candidate identifies that a FPSI permit is required to be initiated and completes the form with the required information.

Overall Evaluation	Exam Code
SAT / UNSAT (Circle One)	

Verified Procedure #/Rev. Used for JPM (Initial Box)	Validation/Critical Time	JPM Completion Time
	20 Minutes / NA	

COMMENTS:

Evaluator's Signature: _____ Date: _____

STUDENT JPM INFORMATION CARD

Initial Conditions:

As the Production SRO, you have just been informed by Plant Inspector that during an inspection of the Active Fire System in the Main Control Room, the 18 Halon system storage tanks (FP-TK-1 thru 18) were found to be 85% of full charge pressure.

Cue:

Based on the report provided determine if compensatory actions are required.

Initial the attachment indicating either actions are or are not required. If actions are required indicate (on the attachment) what they are.

INITIAL HERE IF NO ACTIONS ARE REQUIRED: _____

INITIAL HERE IF ACTIONS ARE REQUIRED:_____

ACTIONS IF REQUIRED: _____

_____

_____

_____

_____

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2006 NRC EXAM – ADMIN JPM RO/SRO #1

PROGRAM TITLE: LICENSED OPERATOR INITIAL TRAINING

COURSE TITLE: ADMIN JOB PERFORMANCE MEASURE

LESSON TITLE: DETERMINE ACTIONS FOR CRITICALITY OUTSIDE OF ECP (EARLY)

LESSON LENGTH: .5 HRS MAXIMUM STUDENTS: 1

INSTRUCTIONAL MATERIALS INCLUDED

Lesson Plan PQD Code		Rev. No.
Simulator Guide PQD Code		Rev. No.
JPM PQD Code		Rev. No.
Exam PQD Code		Rev. No.

DIVISION TITLE: Nuclear Training

DEPARTMENT: Operations Training

PREPARED BY: Ron Hayden DATE: 5/11/06

REVISED BY: DATE:

TECHNICAL REVIEW BY: DATE:

INSTRUCTIONAL REVIEW BY: DATE:

APPROVED BY: DATE:

Operations Training Manager

DETERMINE ACTIONS FOR CRITICALITY OUTSIDE OF ECP (EARLY)

Verify materials current IAW SWP-TQS-01 prior to use.

DETERMINE ACTIONS FOR CRITICALITY OUTSIDE OF ECP (EARLY)

MINOR REVISION RECORD

Minor Rev Number	Description of Revision	Affected Pages	Entered By	Effective Date	Manager Approval

JPM SETUP

Simulator ICs; Malfunctions; Triggers; Overrides:

N/A

Setup Instructions:

Make a copy of the current pull sheet from the simulator. Determine where Minimum ECP is and indicate it on copy of pull sheet by placing an '*1' next to the step and at the bottom of the column indicate that a *1 is 'Minimum ECP'. Ensure it is AFTER step indicated in initial conditions.

Have a copy of PPM 3.1.2 startup flowchart available for reference.

JPM Instructions:

Verify Current Procedure against JPM and ensure procedure critical steps match if procedure is different revision than listed in JPM. If critical steps have changed, the JPM should be revised.

The evaluator and student shall use current procedure. The evaluator should mark off steps as they are completed, note comments, and transfer the comments to the "Results of JPM" page.

Tools/Equipment: N/A

Safety Items: N/A

Task Number: RO-0156; SRO-0118

Validation Time: 10 minutes

Prerequisite Training: N/A

Time Critical: NO

PPM Reference: PPM 3.1.2

Location: Simulator/Plant/Table Top

NUREG 1123 Ref: 2.1.7 3.7/4.4

Performance Method: Perform

DETERMINE ACTIONS FOR CRITICALITY OUTSIDE OF ECP (EARLY)

JPM CHECKLIST

PROCEDURE VALIDATION:	Procedure copies for evaluator and student, if procedure revision is different from that listed on JPM, critical tasks reverified. Evaluator copy may be used for marking step completion, and comments.
INITIAL CONDITIONS:	A plant startup is in progress. PPM 3.1.2 has been completed as follows: Step L11 has been completed, waiting at step L12 ; Step P1 has not yet been completed; Step Q9 has been completed and step Q10 is in progress. You are the RO pulling control rods and you note the following indications: • Time 0953 • Coolant Temp 205°F • Control rod 10-47 • Control rod position 18 • Neutron level 8,000 CPS and rising • Period 145 seconds and stable You have been pulling control rods steadily since starting Group 1 of the Pull Sheet. Control rod motion stopped approximately 1 minute ago.
INITIATING CUE:	Using the given information, PPM 3.1.2, and the supplied pull sheets, determine your next action. When you have determined your next action, write it on the page provided along with the basis for the decision and hand it to the examiner.

DETERMINE ACTIONS FOR CRITICALITY OUTSIDE OF ECP (EARLY)

*** Items are Critical Steps**

Comments	Element	Standard	Sat/Unsat
RECORD START TIME: _____			
SRO Position being evaluated		Using given information, determines that the reactor is critical or will be critical before the minimum ECP has been reached. Directs RO to (stop control rod withdrawal and to) drive control rods in the reverse order until all control rods are fully inserted.	S / U *
RO position being evaluated		Using given information, determines that the reactor is critical or will be critical before the minimum ECP has been reached. Notifies the CRS that he has stopped control rod withdrawal due to reactor critical outside ECP.	S / U *
SRO Candidate: To pass the JPM, direction must be given to the RO to drive control rods in the reverse order until they all are inserted. **RO Candidate: To pass the JPM the candidate must state that control rod withdrawal must be stopped and that the CRS must be informed that the reactor is critical prior to the indicated minimum ECP.**			
RECORD TERMINATION TIME: _____			
Transfer to "Results of JPM" page the following information: Procedures validated prior to use; Comments from marked up evaluator's procedure copy; Unsatisfactory critical tasks; Total JPM time; Marked Up procedure and remaining JPM pages may be discarded.			

DETERMINE ACTIONS FOR CRITICALITY OUTSIDE OF ECP (EARLY)

RESULTS OF JPM:

Examinee (Please Print): _____

Evaluator (Please Print): _____

Task Standard: Candidate determines early criticality and correctly identifies actions for being critical outside of the ECP per PPM 3.1.2.

Overall Evaluation	Exam Code
SAT / UNSAT (Circle One)	

Verified Procedure #/Rev. Used for JPM (Initial Box)	Validation/Critical Time	JPM Completion Time
	8 Minutes / NA	

COMMENTS:

Evaluator's Signature: _____ Date: _____

STUDENT JPM INFORMATION CARD

Initial Conditions:

A plant startup is in progress. PPM 3.1.2 has been completed as follows: Step L11 has been completed, waiting at step L12 ; Step P1 has not yet been completed; Step Q9 has been completed and step Q10 is in progress.

The following indications are observed:

- Time 0953
- Coolant Temp 205° F
- Control rod 10-47
- Control rod position 18
- Neutron level 8,000 CPS and rising
- Period 145 seconds and stable

Control rods have been steadily pulled since starting Group 1 of the Pull Sheet. Control rod motion stopped approximately 1 minute ago.

Cue:

Using the given information, PPM 3.1.2, and the supplied pull sheets, determine your next action.

When you have determined your next action, write it on the page provided along with the basis for the decision and hand it to the examiner.

NEXT ACTION TO BE TAKEN: _____

BASIS FOR ACTION: _____

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2006 NRC EXAM – ADMIN RO #4

PROGRAM TITLE: LICENSED OPERATOR INITIAL TRAINING

COURSE TITLE: ADMIN JOB PERFORMANCE MEASURE

LESSON TITLE: DETERMINE IF TAGOUT CAN BE HUNG (FAULTED)

LESSON LENGTH: .5 HRS MAXIMUM STUDENTS: 1

INSTRUCTIONAL MATERIALS INCLUDED

Lesson Plan PQD Code		Rev. No.
Simulator Guide PQD Code		Rev. No.
JPM PQD Code		Rev. No.
Exam PQD Code		Rev. No.

DIVISION TITLE: Nuclear Training

DEPARTMENT: Operations Training

PREPARED BY: Ron Hayden DATE: 9/26/06

REVISED BY: DATE:

TECHNICAL REVIEW BY: DATE:

INSTRUCTIONAL REVIEW BY: DATE:

APPROVED BY: DATE:

Operations Training Manager

Verify materials current IAW SWP-TQS-01 prior to use.

DETERMINE IF A TAGOUT CAN BE HUNG WITH INFORMATION SUPPLIED

MINOR REVISION RECORD

Minor Rev Number	Description of Revision	Affected Pages	Entered By	Effective Date	Manager Approval

JPM SETUP

Simulator ICs; Malfunctions; Triggers; Overrides:

N/A

Setup Instructions:

Have a tagout for HPCS System that includes HPCS-V-4. Have a RWP that is Non-High Radiation entry with a survey map showing HPCS-V-4 in a high radiation area.

JPM Instructions:

Verify Current Procedure against JPM and ensure procedure critical steps match if procedure is different revision than listed in JPM. If critical steps have changed, the JPM should be revised.

The evaluator and student shall use current procedure. The evaluator should mark off steps as they are completed, note comments, and transfer the comments to the “Results of JPM” page.

Tools/Equipment: N/A

Safety Items: N/A

Task Number: RO-1293

Validation Time: 15 minutes

Prerequisite Training: N/A

Time Critical: NO

PPM Reference:

Location: Any

NUREG 1123 Ref: 2.3.10 (2.9/3.3)

Performance Method: Perform

JPM CHECKLIST

PROCEDURE VALIDATION:	Procedure copies for evaluator and student, if procedure revision is different from that listed on JPM, critical tasks reverified. Evaluator copy may be used for marking step completion, and comments.
INITIAL CONDITIONS:	Columbia Generating Station is shutdown during outage R18.
INITIATING CUE:	You have been directed by the Control Room Supervisor to hang tagout D-HPCS-V-102R18-001. Health Physics has been contacted and directed use of RWP-30001421 for the purpose of hanging tags in the Reactor Building. Review the task and from the information provided, fill out the attached sheet indicating your ability (or inability) to perform the task assigned.

*** Items are Critical Steps**

Comments	Element	Standard	Sat/Unsat
RECORD START TIME: _____			
		Fills out the attached sheet indicating that the task can not be performed due to HPCS-V-4 being in a High Radiation area and the RWP is for Non-High Radiation plant operation/ investigation.	S / U *
Termination Criteria: Candidate hands the examiner the completed attachment.			
RECORD TERMINATION TIME: _____			
Transfer to "Results of JPM" page the following information: Procedures validated prior to use; Comments from marked up evaluator's procedure copy; Unsatisfactory critical tasks; Total JPM time; Marked Up procedure and remaining JPM pages may be discarded.			

RESULTS OF JPM:

Examinee (Please Print): _____

Evaluator (Please Print): _____

Task Standard: Candidate fills out the attached sheet and indicates that the tagout can not be hung due to HPCS-V-4 being in a high radiation area and the RWP is for Non-High Rad operation/investigation.

Overall Evaluation	Exam Code
SAT / UNSAT (Circle One)	

Verified Procedure #/Rev. Used for JPM (Initial Box)	Validation/Critical Time	JPM Completion Time
	15 Minutes / NA	

COMMENTS:

Evaluator's Signature: _____ Date: _____

STUDENT JPM INFORMATION CARD

Initial Conditions:

Columbia Generating Station is shutdown during outage R18.

Cue:

You have been directed by the Control Room Supervisor to hang tagout D-HPCS-V-102R18-001.

Health Physics has been contacted and directed use of RWP-30001421 for the purpose of hanging tags in the Reactor Building.

Review the task and from the information provided, fill out the attached sheet indicating your ability (or inability) to perform the task assigned.

I will be able to perform the assigned task (Initial): _____

I will not be able to perform the assigned task (Initial and Reason): _____

_____

_____

_____

_____

_____

_____

_____

_____

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2006 NRC EXAM – ADMIN RO #3

PROGRAM TITLE: LICENSED OPERATOR INITIAL TRAINING

COURSE TITLE: ADMIN JOB PERFORMANCE MEASURE

LESSON TITLE: REVIEW SURVEILLANCE PROCEDURE OSP-INST-H101

LESSON LENGTH: .5 HRS MAXIMUM STUDENTS: 1

INSTRUCTIONAL MATERIALS INCLUDED

Lesson Plan PQD Code		Rev. No.
Simulator Guide PQD Code		Rev. No.
JPM PQD Code		Rev. No.
Exam PQD Code		Rev. No.

DIVISION TITLE: Nuclear Training

DEPARTMENT: Operations Training

PREPARED BY: Ron Hayden DATE: 5/17/06

REVISED BY: DATE:

TECHNICAL REVIEW BY: DATE:

INSTRUCTIONAL REVIEW BY: DATE:

APPROVED BY: DATE:

Operations Training Manager

Verify materials current IAW SWP-TQS-01 prior to use.

MINOR REVISION RECORD

Minor Rev Number	Description of Revision	Affected Pages	Entered By	Effective Date	Manager Approval

JPM SETUP

Simulator ICs; Malfunctions; Triggers; Overrides:

N/A

Setup Instructions:

Print out a blank OSP-INST-H101 and fill in readings. At least one reading should be out of spec.

JPM Instructions:

Verify Current Procedure against JPM and ensure procedure critical steps match if procedure is different revision than listed in JPM. If critical steps have changed, the JPM should be revised.

The evaluator and student shall use current procedure. The evaluator should mark off steps as they are completed, note comments, and transfer the comments to the "Results of JPM" page.

Tools/Equipment: N/A

Safety Items: N/A

Task Number: RO-0577

Validation Time: 20 minutes

Prerequisite Training: N/A

Time Critical: NO

PPM Reference: OSP-INST-H101 Rev. 54

Location: Any

NUREG 1123 Ref: 2.2.12 (3.0/3.4)

Performance Method: Perform

JPM CHECKLIST

PROCEDURE VALIDATION:	Procedure copies for evaluator and student, if procedure revision is different from that listed on JPM, critical tasks reverified. Evaluator copy may be used for marking step completion, and comments.
INITIAL CONDITIONS:	Columbia is operating at rated power. CRO2 has just completed filling out the OSP-INST-H101 checks and has asked you for a peer check.
INITIATING CUE:	When you have completed your peer check of the Shift and Daily Instrument Checks (OPS-INST-H101) present them to the examiner (CRS). Circle any errors that you may have found during your review.

*** Items are Critical Steps**

Comments	Element	Standard	Sat/Unsat
RECORD START TIME: _____			
		Notes the following Out Of Spec readings:	S / U
		Circles out-of-tolerance readings: • Page 12 CMS-TE-15 (GT 150°F) • Page 12 CMS-TE-17 (GT 150°F) • Page 13 CMS-TE-16 (GT 150°F)	 S / U * S / U * S / U *
Termination Criteria: Candidate hands the examiner the completed OSP-INST-H101's and has circled Out-Of-Tolerance readings on page 12 and page 13.			
RECORD TERMINATION TIME: _____			
Transfer to "Results of JPM" page the following information: Procedures validated prior to use; Comments from marked up evaluator's procedure copy; Unsatisfactory critical tasks; Total JPM time; Marked Up procedure and remaining JPM pages may be discarded.			

RESULTS OF JPM:
REVIEW SURVEILLANCE PROCEDURE OPS-INST-H101

Examinee (Please Print): _____

Evaluator (Please Print): _____

Task Standard: Candidate correctly circles the three Out-Of-Tolerance readings.

Overall Evaluation	Exam Code
SAT / UNSAT (Circle One)	

Verified Procedure #/Rev. Used for JPM (Initial Box)	Validation/Critical Time	JPM Completion Time
	15 Minutes / NA	

COMMENTS:

Evaluator's Signature: _____ Date: _____

STUDENT JPM INFORMATION CARD

Initial Conditions:

Columbia is operating at rated power.

CRO2 has just completed filling out the OSP-INST-H101 checks and has asked you for a peer check.

Cue:

When you have completed your peer check of the Shift and Daily Instrument Checks (OPS-INST-H101) present them to the examiner (CRS).

Circle any errors that you may have found during your review.

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2006 NRC EXAM – ADMIN JPM RO #2

PROGRAM TITLE: LICENSED OPERATOR INITIAL TRAINING

COURSE TITLE: ADMIN JOB PERFORMANCE MEASURE

LESSON TITLE: VERIFY APRM READINGS GT POWER EXTRAPOLATED FROM BYPASS VALVE POSITION (PPM 3.1.2)

LESSON LENGTH: .5 HRS

MAXIMUM STUDENTS: 1

INSTRUCTIONAL MATERIALS INCLUDED

Lesson Plan PQD Code		Rev. No.
Simulator Guide PQD Code		Rev. No.
JPM PQD Code		Rev. No.
Exam PQD Code		Rev. No.

DIVISION TITLE: Nuclear Training

DEPARTMENT: Operations Training

PREPARED BY: Ron Hayden DATE: 5/15/06

REVISED BY: DATE:

TECHNICAL REVIEW BY: DATE:

INSTRUCTIONAL REVIEW BY: DATE:

APPROVED BY: DATE:

Operations Training Manager

Verify materials current IAW SWP-TQS-01 prior to use.

VERIFY APRM READINGS GT POWER EXTRAPOLATED FROM
BYPASS VALVE POSITION (PPM 3.1.2)

MINOR REVISION RECORD

Minor Rev Number	Description of Revision	Affected Pages	Entered By	Effective Date	Manager Approval

JPM SETUP

Simulator ICs; Malfunctions; Triggers; Overrides:

N/A

Setup Instructions:

Get Attachment 7.1 and put two boxes to be checked. One states APRM readings ARE GT power readings extrapolated from BPV position and the other states APRM readings ARE NOT GT power readings extrapolated from BPV position.6

JPM Instructions:

Verify Current Procedure against JPM and ensure procedure critical steps match if procedure is different revision than listed in JPM. If critical steps have changed, the JPM should be revised.

The evaluator and student shall use current procedure. The evaluator should mark off steps as they are completed, note comments, and transfer the comments to the “Results of JPM” page.

Tools/Equipment: N/A

Safety Items: N/A

Task Number: RO-0906

Validation Time: 10 minutes

Prerequisite Training: N/A

Time Critical: NO

PPM Reference: PPM 3.1.2

Location: Any

NUREG 1123 Ref: 2.1.25 (2.8/3.1)

Performance Method: Perform

JPM CHECKLIST

PROCEDURE VALIDATION:	Procedure copies for evaluator and student, if procedure revision is different from that listed on JPM, critical tasks reverified. Evaluator copy may be used for marking step completion, and comments.
INITIAL CONDITIONS:	Columbia is in the process of starting up following a refueling outage. Current plant conditions are: • APRMs indicate 11% power • Feedwater temperature is 147°F • House Loads are equal to 1% Core Thermal Power • BPV#1 is indicating 38 percent open • BPV#2 is indicating 39 percent open • BPV#3 is indicating 38 percent open • BPV#4 is indicating 36 percent open
INITIATING CUE:	You have been directed by the CRS to perform step Q32 of PPM 3.1.2 “Verify the APRM readings are GT power level readings extrapolated from bypass valve position per Attachment 7.1”. Present the completed Attachment 7.1 to the examiner with a check mark applied to the appropriate box indicating if APRM readings are or are not GT power level readings extrapolated from BPV position.

*** Items are Critical Steps**

Comments	Element	Standard	Sat/Unsat
		RECORD START TIME: _____	
Accept a reading within .2 high or low		Fills in the following information: BPV #1 % open is approximately 2.4 BPV #2 % open is approximately 2.5 BPV #3 % open is approximately 2.4 BPV #4 % open is approximately 2.2 House Loads 1% (given) Total % CTP is approximately 10.5	 S / U * S / U * S / U * S / U * S / U * S / U *
		Indicates in attachment that APRM indicated power levels are GT extrapolated BPV power level readings.	S / U *
Termination Criteria: Candidate hands the examiner the completed Attachment 7.1 of PPM 3.1.2 and written indication that APRMs readings are GT power readings extrapolated from BPV position.			
		RECORD TERMINATION TIME: _____	
Transfer to "Results of JPM" page the following information: Procedures validated prior to use; Comments from marked up evaluator's procedure copy; Unsatisfactory critical tasks; Total JPM time; Marked Up procedure and remaining JPM pages may be discarded.			

RESULTS OF JPM:

Examinee (Please Print): _____

Evaluator (Please Print): _____

Task Standard: Candidate completes Attachment 7.1 of PPM 3.1.2 and determines APRM readings are GT power level readings extrapolated from BPV position.

Overall Evaluation	Exam Code
SAT / UNSAT (Circle One)	

Verified Procedure #/Rev. Used for JPM (Initial Box)	Validation/Critical Time	JPM Completion Time
	10 Minutes / NA	

COMMENTS:

Evaluator's Signature: _____ Date: _____

STUDENT JPM INFORMATION CARD

Initial Conditions:

Columbia is in the process of starting up following a refueling outage.

Current plant conditions are:

- APRMs are indicating 11% power
- Feedwater temperature is 147°F
- House Loads are equal to 1% Core Thermal Power
- BPV#1 is indicating 38 percent open
- BPV#2 is indicating 39 percent open
- BPV#3 is indicating 38 percent open
- BPV#4 is indicating 36 percent open

Cue:

You have been directed by the CRS to perform step Q32 of PPM 3.1.2 “Verify the APRM readings are GT power level readings extrapolated from bypass valve position per Attachment 7.1”.

Present the completed Attachment 7.1 to the examiner with a check mark applied to the appropriate box indicating if APRM readings are or are not GT power level readings extrapolated from BPV position.

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2006 NRC EXAM – JPM #7

PROGRAM TITLE: INITIAL LICENSED OPERATOR TRAINING

COURSE TITLE: JOB PERFORMANCE MEASURE

LESSON TITLE: RB HVAC FAILURE; START SGT (ALT PATH) (SIMULATOR)

LESSON LENGTH: .5 HRS MAXIMUM STUDENTS: 1

INSTRUCTIONAL MATERIALS INCLUDED

Lesson Plan PQD Code		Rev. No.
Simulator Guide PQD Code		Rev. No.
JPM PQD Code		Rev. No.
Exam PQD Code		Rev. No.

DIVISION TITLE: Nuclear Training

DEPARTMENT: Operations Training

PREPARED BY: Ron Hayden DATE: 9/02/06

REVISED BY: DATE:

TECHNICAL REVIEW BY: DATE:

INSTRUCTIONAL REVIEW BY: DATE:

APPROVED BY: DATE:

Operations Training Manager

Verify materials current IAW SWP-TQS-01 prior to use.

MINOR REVISION RECORD

Minor Rev Number	Description of Revision	Affected Pages	Entered By	Effective Date	Manager Approval

JPM SETUP

Simulator ICs; Malfunctions; Triggers; Overrides:

Any IC where REA-FN-1B is running.

Special Setup Instructions:

Prevent REA-FN-1A from auto/manually starting. Trip REA-FN-1B.

JPM Instructions:

Verify Current Procedure against JPM and ensure procedure critical steps match if procedure is different revision than listed in JPM. If critical steps have changed, the JPM should be revised.

The evaluator and student shall use current procedure. The evaluator should mark off steps as they are completed, note comments, and transfer the comments to the "Results of JPM" page.

Tools/Equipment: None

Safety Items: None

Task Number: RO-0491; RO-0383

Validation Time: 10 Minutes

Prerequisite Training: N/A

Time Critical: No

PPM Reference: ARP 4.812.R2 9-1; SOP-SGT-START-DIV/2-QC Rev. 0

Location: Simulator

NUREG 1123 Ref: 295035 EA1.01 (3.6/3.6) EA1.02 (3.8/3.8)

Performance Method: Perform

JPM CHECKLIST

PROCEDURE VALIDATION	Procedure copies for evaluator and student, if procedure revision is different from that listed on JPM, critical tasks reverified. Evaluator copy may be used for marking step completion, and comments.
INITIAL CONDITIONS:	A 'RX BLDG HVAC DIV1 and DIV2 Board R Trouble' alarm have just annunciated. The alarms were acknowledged on P851 S1 and S2.
INITIATING CUE:	The CRS has directed you to investigate and respond to the Reactor Building HVAC annunciators.

*** Items are Critical Steps**

Comments	Element	Standard	Sat/Unsat
RECORD START TIME: _____			
		Responds to the back panel 4.812.R2 and notes annunciator 'RX BLDG EXH FAN B TRIP' (9-1) is illuminated. Refers to ARP	S / U
		Checks REA-FN-1B tripped	S / U
		Attempts to start the other RB Exhaust Ran REA-FN-1A and notes it will not start	S / U *
	Places the control switch for ROA-FN-1B to STOP/ PTL	If neither fan can be started, perform the following: Immediately secures any operating Reactor Building Inlet fan, ROA-FN-1A (1B)	S / U *
		Close: • ROA-V-1 • ROA-V-2 • REA-V-1 • REA-V-2	 S / U * S / U * S / U * S / U *
		Start one train of the SGT System to maintain Reactor Building pressure negative	S / U *
CUE: If candidate decides to start the 'A' SGT train, cue candidate to use the 'B' SGT Train			
SOP-SGT-START and SOP-SGT-START-DIV/2-QC		Refers to SOP-SGT-START-DIV/2-QC and starts SGT as follows:	S / U

Comments	Element	Standard	Sat/Unsat
are not the same. If SOP-SGT-START is referenced, and not the Quick Card, the ROA and REA fan control switches will not be placed in PTL.	Takes the C/S for and fan that was not taken to PTL previously - to PTL	If necessary, THEN place the following fans in PTL: • ROA-FN-1A • ROA-FN-1B • REA-FN-1A • REA-FN-1B	S / U
		If necessary, THEN close the following valves: **Otherwise N/A**	**N/A**
		Momentarily turn SGT-FN-1B2 fan control switch from AUTO to PTL SYS. START	S / U *
		Verify the following: • Main Heaters energize as indicated by Main Heater ON light and B2 amp meters • SGT-V-5B2 OPENS • SGT-FN-1B2 STARTS Note: to prevent a fan trip flow should be GT 750 CFM and LT 5378 CFM	S / U S / U S / U
		If required to operate in manual flow control, THEN refer to SOP -SGT-START. **Otherwise N/A**	**N/A**
Termination Criteria: Candidate informs the CRS that REA-FN-1B tripped, REA-FN-1A would not start and SGT 'B' train was started and is operating. **Note: If candidate continues with the ARP actions after SGT is started, inform the candidate that the termination point of the JPM has been reached.**			
RECORD TERMINATION TIME: _____			
Transfer to "Results of JPM" page the following information: Procedures validated prior to use; Comments from marked up evaluator's procedure copy; Unsatisfactory critical tasks; Total JPM time; Marked Up procedure and remaining JPM pages may be discarded.			

RESULTS OF JPM:

RB HVAC FAILURE; START SGT

Examinee (Please Print): _____

Evaluator (Please Print): _____

Task Standard: Reactor Building Ventilation has been secured and SGT B train has been started to maintain Secondary Containment pressure.

Overall Evaluation	Exam Code
SAT / UNSAT (Circle One)	

Verified Procedure #/Rev. Used for JPM	Validation/Critical Time	JPM Completion Time
	10 Minutes / NA	

COMMENTS:

Evaluator's Signature: _____ Date: _____

STUDENT JPM INFORMATION CARD

Initial Conditions:

A ‘RX BLDG HVAC DIV1 and DIV2 Board R Trouble’ alarm have just annunciated. The alarms were acknowledged on P851 S1 and S2.

Cue:

The CRS has directed you to investigate and respond to the Reactor Building HVAC annunciators.

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2006 NRC EXAM – JPM #6

PROGRAM TITLE: INITIAL LICENSED OPERATOR TRAINING

COURSE TITLE: JOB PERFORMANCE MEASURE

LESSON TITLE: MANUAL RCIC INITIATION FOR VESSEL INJECTION (ALT PATH) (SIM)

LESSON LENGTH: .5 HRS MAXIMUM STUDENTS: 1

INSTRUCTIONAL MATERIALS INCLUDED

Lesson Plan PQD Code		Rev. No.
Simulator Guide PQD Code		Rev. No.
JPM PQD Code		Rev. No.
Exam PQD Code		Rev. No.

DIVISION TITLE: Nuclear Training

DEPARTMENT: Operations Training

PREPARED BY: _____ DATE: _____

REVISED BY: _____ DATE: _____

TECHNICAL REVIEW BY: _____ DATE: _____

INSTRUCTIONAL REVIEW BY: _____ DATE: _____

APPROVED BY: _____ DATE: _____

Operations Training Manager

Verify materials current IAW SWP-TQS-01 prior to use.

MINOR REVISION RECORD

Minor Rev Number	Description of Revision	Affected Pages	Entered By	Effective Date	Manager Approval

JPM SETUP

Simulator ICs; Malfunctions; Triggers; Overrides:
IC-14.
Place the Mode switch to Shutdown.
Trip both RFPs when level is approximately –5 inches. Ensure RPV level is less than 13 inches and no high-pressure injection systems are injecting.

Special Setup Instructions:

Fail RCIC-V-46 to not open automatically (manual operation allowed).
MAL MOV-RCI010F 3 – Fail auto open

JPM Instructions:

Verify the current procedure against the JPM. If the procedure is a different revision than listed in the JPM, ensure the critical steps still match. If the critical steps have changed, the JPM should be revised.

The evaluator and student shall use the current procedure. The instructor should mark off steps as they are completed, note comments, and transfer the comments to the results of JPM page.

Tools/Equipment: None

Safety Items: None

Task Number: RO-0656, RO-0268

Validation Time: 5 min.

Prerequisite Training: N/A

Time Critical: No

PPM Reference: SOP-RCIC-INJECTION-QC rev. 1

Location: Simulator

NUREG 1123 Ref: 2170000A4.04 (3.6,3.6)

Performance Method: Perform

JPM CHECKLIST

PROCEDURE VALIDATION	Verify the revision number of procedure copies for evaluator and student. If the procedure revision is different from that listed on the JPM, the critical tasks must be verified. The evaluator copy may be used for marking step completion and comments.
INITIAL CONDITIONS:	The Reactor is shutdown and it has been decided to use RCIC for RPV level control. PPM 5.1.1 has been entered on low RPV level.
INITIATING CUE:	The CRS has directed you to manually start the RCIC system for vessel injection using the RCIC-INJECTION Quick Card. Inform the CRS when RCIC is injecting into the RPV and system operation has been verified.

*** Items are Critical Steps**

Comments	Element	Standard	Sat/Unsat
RECORD START TIME: _____			
		Rotates the collar of the arm and;	S / U*
		Depresses the pushbutton.	S / U*
		Verifies RCIC-V-46 OPENS (Lube Oil Cooler Water Supply).	S / U
		Notes RCIC-V-46 failed to open. Takes C/S to open and verifies valve opens.	S / U*
		Verifies RCIC-P-2 running (Barometric Condenser Vacuum Pump).	S / U
		Verifies RCIC-V-45 OPENS (Steam to Turbine)	S / U
		Verifies RCIC Turbine speed rising.	S / U
		Verifies RCIC-V-13 OPENS (RPV Injection).	S / U

*** Items are Critical Steps**

Comments	Element	Standard	Sat/Unsat
		When RCIC-V-45 OPENS (Steam to Turbine), verifies: • RCIC-V-25 and RCIC-V-26 CLOSE(Steam Line Warm up Drains to Main Condenser) • RCIC-V-4 and RCIC-V-5 CLOSE (Cond Pump Discharge to EDR) • SW-P-1B Running (20 second time delay	S / U S / U S / U
		Verifies RCIC-V-19 (Min Flow valve) OPENS during low flow conditions (LT 125 gpm). When RCIC flow is GT 125 gpm, verifies RCIC-V-19 CLOSES.	S / U S / U
		Verifies RCIC-FIC-600 CONTROLS RCIC Turbine speed at the flow setpoint (normally 600 GPM).	S / U
Termination Criteria: Candidate informs the CRS that the RCIC system is injecting into the vessel and that RCIC-V-46 had to be manually opened.			
RECORD TERMINATION TIME: _____			
Transfer to JPM Results Page the following information: Procedures validated prior to use; Comments from marked up evaluator's procedure copy; Unsatisfactory critical tasks; Total JPM time. Marked Up procedure and remaining JPM pages may be discarded.			

RESULTS OF JPM:

MANUAL INITIATION OF RCIC FOR VESSEL INJECTION

Examinee (Please Print): _____

Evaluator (Please Print): _____

Task Standard: RCIC system is manually initiated and system operation verified per RCIC-INJECTION-QC.

Overall Evaluation	Exam Code
SAT / UNSAT (Circle One)	

Verified Procedure #/Rev. Used for JPM (Initial box)	Validation/Critical Time	JPM Completion Time
	5 Minutes / NA	

COMMENTS:

Evaluator's Signature: _____ Date: _____

STUDENT JPM INFORMATION CARD

Initial Conditions:

The Reactor is shutdown and it has been decided to use RCIC for level control.

PPM 5.1.1 has been entered on RPV level control.

Cue:

The CRS has directed you to manually start the RCIC system, using the RCIC-INJECTION Quick Card, for vessel injection.

Inform the CRS when RCIC is injecting into the RPV and system operation has been verified.

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2006 NRC EXAM – JPM #5

PROGRAM TITLE: INITIAL LICENSED OPERATOR TRAINING

COURSE TITLE: JOB PERFORMANCE MEASURE

LESSON TITLE: LOWER RPV PRESSURE USING DEH (SIMULATOR)

LESSON LENGTH: .5 HRS MAXIMUM STUDENTS: 1

INSTRUCTIONAL MATERIALS INCLUDED

Lesson Plan PQD Code		Rev. No.
Simulator Guide PQD Code		Rev. No.
JPM PQD Code		Rev. No.
Exam PQD Code		Rev. No.

DIVISION TITLE: Nuclear Training

DEPARTMENT: Operations Training

PREPARED BY: Ron Hayden DATE: 09/02/06

REVISED BY: DATE:

TECHNICAL REVIEW BY: DATE:

INSTRUCTIONAL REVIEW BY: DATE:

APPROVED BY: DATE:

Operations Training Manager

Verify materials current IAW SWP-TQS-01 prior to use.

MINOR REVISION RECORD

Minor Rev Number	Description of Revision	Affected Pages	Entered By	Effective Date	Manager Approval

JPM SETUP

Simulator ICs; Malfunctions; Triggers; Overrides:

Reset to IC where reactor is scrammed and RPV/P is approximately 920 psig.

Special Setup Instructions:

None

JPM Instructions:

Verify the current procedure against the JPM. If the procedure is a different revision than listed in the JPM, ensure the critical steps still match. If the critical steps have changed, the JPM should be revised.

The evaluator and student shall use the current procedure. The instructor should mark off steps as they are completed, note comments, and transfer the comments to the results of JPM page.

Tools/Equipment: None

Safety Items: None

Task Number: RO-0348

Validation Time: 10 minutes

Prerequisite Training: N/A

Time Critical: No

PPM Reference: SOP-DEH-QC Rev. 1

Location: Simulator

NUREG 1123 Ref: 241000 A4.02 (4.1/4.1)

Performance Method: Perform

JPM CHECKLIST

PROCEDURE VALIDATION	Verify the revision number of procedure copies for evaluator and student. If the procedure revision is different from that listed on the JPM, the critical tasks must be verified. The evaluator copy may be used for marking step completion and comments.
INITIAL CONDITIONS:	Columbia has just scrammed due to low RPV level. Another operator is returning RPV Level back to the normal operating band.
INITIATING CUE:	The CRS has directed you to lower RPV pressure to 850 psig at the rate of 25 psig per minute using DEH in Automatic per SOP-DEH-QC. Inform the CRS when RPV pressure is 850 psig.

*** Items are Critical Steps**

Comments	Element	Standard	Sat/Unsat
		RECORD START TIME: _____	
		VERIFY PRESS SETPOINT AUTO light is LIT	S / U
		DEPRESS PRESS SETPOINT PSI pushbutton	S / U*
		VERIFY PRESS SETPOINT PSI pushbutton light is LIT	S / U
		VERIFY the current pressure setpoint APPEARS in the DISPLAY and DISPLAY DEMAND window	S / U
		ENTER the desired pressure setpoint **(850)** with the numerical keyboard	S / U*
		VERIFY the desired pressure setpoint APPEARS in the DISPLAY DEMAND window	S / U
		DEPRESS ENTER	S / U*
		VERIFY the following: • The old (but still current) pressure setpoint remains in the DISPLAY window • The HOLD light is LIT	S / U

*** Items are Critical Steps**

Comments	Element	Standard	Sat/Unsat
		DEPRESS PRESS RATE, PSI/MIN	S / U*
		VERIFY PRESS RATE, PSI/MIN light is LIT	S / U
		VERIFY PRESS SETPOINT PSI light is EXTINGUISHED	S / U
		VERIFY the current selected pressure setpoint rate of change APPEARS in the DISPLAY window	S / U
		IF the displayed pressure setpoint rate of change is acceptable, THEN PROCEED to Step 5.5.1.o**. Otherwise N/A**	**N/A**
		IF the displayed pressure setpoint rate of change is not acceptable, THEN ENTER a new value with the numerical keyboard **(25)**, and PERFORM the following:	S / U*
		VERIFY the value selected APPEARS in the DISPLAY DEMAND window	S / U
		DEPRESS ENTER	S / U*
		VERIFY the new pressure setpoint rate of change APPEARS in the DISPLAY window	S / U
		DEPRESS PRESS SETPOINT PSI pushbutton to DISPLAY the following: • The new pressure setpoint in the DISPLAY DEMAND window. • The current value for the pressure setpoint in the DISPLAY window	S / U*

*** Items are Critical Steps**

Comments	Element	Standard	Sat/Unsat
		DEPRESS GO and VERIFY the following: • GO light BACKLIGHTS • HOLD light is EXTINGUISHED • Current pressure setpoint changes at the predetermined rate (25) until it is equal to the new setpoint in the DISPLAY DEMAND window • GO light extinguishes when new setpoint is reached	S / U* S / U
		PERFORM the following: • VERIFY Steam Supply Pressure (MS-PR-1C) responds as the DISPLAY value changes	S / U
		IF pressure does not respond, THEN DEPRESS the HOLD pushbutton and investigate. **Otherwise N/A**	**N/A**
Termination Criteria: Candidate informs the CRS that RPV Pressure has been lowered to 850 psig using DEH.			
RECORD TERMINATION TIME: _____			
Transfer to JPM Results Page the following information: Procedures validated prior to use; Comments from marked up evaluator's procedure copy; Unsatisfactory critical tasks; Total JPM time. Marked Up procedure and remaining JPM pages may be discarded.			

RESULTS OF JPM:

LOWER RPV PRESSURE USING DEH

Examinee (Please Print): _____

Evaluator (Please Print): _____

Task Standard: RPV Pressure has been lowered to 850 psig at the rate of 25 psig/minute with DEH in Automatic as per SOP-DEH-QC.

Overall Evaluation	Exam Code
SAT / UNSAT (Circle One)	

Verified Procedure #/Rev. Used for JPM (Initial box)	Validation/Critical Time	JPM Completion Time
	10 Minutes / NA	

COMMENTS:

Evaluator's Signature: _____ Date: _____

STUDENT JPM INFORMATION CARD

Initial Conditions:

Columbia has just scrammed due to low RPV level.

Another operator is returning RPV Level back to the normal operating band.

Cue:

The CRS has directed you to lower Reactor Pressure to 850 psig at the rate of 25 psig/minute using DEH in Automatic per SOP-DEH-QC.

Inform the CRS when RPV pressure is 850 psig.

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2006 NRC EXAM – JPM #4

PROGRAM TITLE: INITIAL LICENSED OPERATOR TRAINING

COURSE TITLE: JOB PERFORMANCE MEASURE

LESSON TITLE: MANUALLY INITIATES CONTAINMENT ISOLATIONS FOR THE TIP SYSTEM (SIMULATOR) (ALT PATH)

LESSON LENGTH: .5 HRS MAXIMUM STUDENTS: 1

INSTRUCTIONAL MATERIALS INCLUDED

Lesson Plan PQD Code		Rev. No.
Simulator Guide PQD Code		Rev. No.
JPM PQD Code		Rev. No.
Exam PQD Code		Rev. No.

DIVISION TITLE: Nuclear Training

DEPARTMENT: Operations Training

PREPARED BY: Ron Hayden DATE: 05/18/06

REVISED BY: DATE:

TECHNICAL REVIEW BY: DATE:

INSTRUCTIONAL REVIEW BY: DATE:

APPROVED BY: DATE:

Operations Training Manager

Verify materials current IAW SWP-TQS-01 prior to use.

MINOR REVISION RECORD

Minor Rev Number	Description of Revision	Affected Pages	Entered By	Effective Date	Manager Approval

JPM SETUP

Simulator ICs; Malfunctions; Triggers; Overrides:

Reset to IC-14.
Ensure GDS screen on P601 is displayed.
Fail TIP-V-5 open.
Trip both RFW pumps.
After scram place mode switch in shutdown.

Special Setup Instructions:

None

JPM Instructions:

Verify Current Procedure against JPM and ensure procedure critical steps match if procedure is different revision than listed in JPM. If critical steps have changed, the JPM should be revised.

The evaluator and student shall use current procedure. The evaluator should mark off steps as they are completed, note comments, and transfer the comments to the “Results of JPM” page.

Tools/Equipment: None

Safety Items: None

Task Number: RO-0314

Validation Time: 15 Minutes

Prerequisite Training: N/A

Time Critical: No

PPM Reference: ABN-TIPS Rev. 0

Location: Simulator

NUREG 1123 Ref: 223002 A2.03 A3.01 A3.02

Performance Method: Perform

JPM CHECKLIST

PROCEDURE VALIDATION	Procedure copies for evaluator and student, if procedure revision is different from that listed on JPM, critical tasks reverified. Evaluator copy may be used for marking step completion, and comments.
INITIAL CONDITIONS:	The plant was operating at full power when both RFW pumps tripped. RPV level dropped to less than –50 inches.
INITIATING CUE:	The CRS has directed you to ensure all isolations for –50 inches RPV level signal per EOP 5.1.1. Another licensed operator will verify initiations and DG starts. Inform the CRS when EOP isolations for –50 inches have been verified.

*** Items are Critical Steps**

Comments	Element	Standard	Sat/Unsat
		RECORD START TIME: _____	
	Identifies all isolations are not complete	Refers to GDS screen and notes TIP-V- 5 is not closed and informs the CRS	S / U *
CUE: When informed that TIP-V- 5 is opened, inform the candidate "You are directed to take the necessary actions to isolate the penetration per ABN-TIPS".			
		If necessary, THEN CLOSE the following TIP Drive Unit Breakers: **Otherwise N/A**	**N/A**
CUE: When step is read, inform candidate that the TIP Drive Unit Breakers are all closed			
	The Manual Drive switch is labeled MANUAL	Verify the following for each Drive Control Unit (A through E) (H13-P607): • The Mode switch is in the OFF position • The Manual Drive switch is in the OFF position • The Manual Valve Control switch is in the CLOSED position	 S / U S / U S / U
		Place the MODE switch to the MAN position for each Drive Control Unit (A through E)	S / U *

*** Items are Critical Steps**

Comments	Element	Standard	Sat/Unsat
		Verify the following: • The READY light is illuminated • The IN-SHIELD light is illuminated. (If any detectors are NOT IN-SHIELD, proceed to the following step)	S / U S / U
CUE: Inform candidate that the detector position is at the posted IN-SHIED location			
		• The detector position is at the posted IN-SHIELD location, $\pm$ 1”	S / U
	May/May not refer CRS to applicable Tech Spec	REFER to Technical Specification 3.6.1.3	S / U
		If any detector is NOT IN-SHIELD, THEN RETRACT each affected detector to the IN-SHIELD position as follows (**otherwise N/A**): • PLACE the Manual Drive Control switch on the appropriate Drive Control Unit to the REV position • VERIFY the IN-SHIELD light is illuminated	**N/A**
		If the detector is still not IN-SHIELD, THEN CONSIDER MANUALLY CRANKING the affected detector to the IN-SHIELD position from the Drive Mechanism per PPM 10.27.74. **Otherwise N/A**	**N/A**

*** Items are Critical Steps**

Comments	Element	Standard	Sat/Unsat
		If the detector is still not IN-SHIELD **OR the isolation valve has failed to close**, THEN ISOLATE the affected TIP line(s) as follows: Otherwise N/A • Obtain permission from the CRS/Shift Manager to fire the applicable squib valve(s)	S / U
CUE: IF asked, the CRS/Shift Manager gives permission to fire the squib valve (Candidate may already assume he has permission from last communication/cue).			
	Obtains key #35 and Isolates TIP shear valve (TIP-V-5).	PLACE the key lock valve control switch on the appropriate valve control drawer to the FIRE position for the channel that did not isolate	S / U *
		VERIFY the applicable squib Monitor lights are illuminated	S / U
		VERIFY TIP SHEAR VLV CLOSED OR CKT CONTINUITY LOSS annunciator (H13-P601.A12-5.1) is illuminated	S / U
		VERIFY the green ALL VALVES SHUT light at the TIP ISOLATION status display on H13-P601 is illuminated	S / U *
Termination Criteria: Student informs CRS that all isolations for -50 inches have been verified and that the squib valve was fired to isolate TIP-V-5 penetration.			
RECORD TERMINATION TIME: _____			
Transfer to "Results of JPM" page the following information: Procedures validated prior to use; Comments from marked up evaluator's procedure copy; Unsatisfactory critical tasks; Total JPM time; Marked Up procedure and remaining JPM pages may be discarded.			

RESULTS OF JPM:

MANUALLY INITIATES CONTAINMENT ISOLATIONS FOR THE TIP SYSTEM

Examinee (Please Print): _____

Evaluator (Please Print): _____

Task Standard: Verifies isolations for –50 inch RPV level signal and isolates TIP-V-5 line that did not isolate.

Overall Evaluation	Exam Code
SAT / UNSAT (Circle One)	

Verified Procedure #/Rev. Used for JPM	Validation/Critical Time	JPM Completion Time
	15 Minutes / NA	

COMMENTS:

Evaluator's Signature: _____ Date: _____

STUDENT JPM INFORMATION CARD

Initial Conditions:

The plant was operating at full power when both RFW pumps tripped.

RPV level dropped to less than –50 inches.

Cue:

The CRS has directed you to ensure all isolations for a -50 inch RPV level signal per EOP 5.1.1.

Another licensed operator will verify initiations and DG starts.

Inform the CRS when EOP isolations for -50 inches have been verified.

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2006 NRC EXAM – JPM #3

PROGRAM TITLE: INITIAL LICENSED OPERATOR TRAINING

COURSE TITLE: JOB PERFORMANCE MEASURE

LESSON TITLE: TRANSFER SL-21 FROM SL-11 to SM-2 (SIMULATOR)

LESSON LENGTH: .5 HRS MAXIMUM STUDENTS: 1

INSTRUCTIONAL MATERIALS INCLUDED

Lesson Plan PQD Code		Rev. No.
Simulator Guide PQD Code		Rev. No.
JPM PQD Code		Rev. No.
Exam PQD Code		Rev. No.

DIVISION TITLE: Nuclear Training

DEPARTMENT: Operations Training

PREPARED BY: Ron Hayden DATE: 09/02/06

REVISED BY: DATE:

TECHNICAL REVIEW BY: DATE:

INSTRUCTIONAL REVIEW BY: DATE:

APPROVED BY: DATE:

Operations Training Manager

Verify materials current IAW SWP-TQS-01 prior to use.

MINOR REVISION RECORD

Minor Rev Number	Description of Revision	Affected Pages	Entered By	Effective Date	Manager Approval

JPM SETUP

Simulator ICs; Malfunctions; Triggers; Overrides:

Any IC where SM-2 is powered and supplying power to SL-21.

Special Setup Instructions:

Transfer SL-21 to SL-11 per PPM 2.7.1B section 5.2.

JPM Instructions:

Verify Current Procedure against JPM and ensure procedure critical steps match if procedure is different revision than listed in JPM. If critical steps have changed, the JPM should be revised.

The evaluator and student shall use current procedure. The evaluator should mark off steps as they are completed, note comments, and transfer the comments to the "Results of JPM" page.

Tools/Equipment: None

Safety Items: None

Task Number: RO-0390

Validation Time: 10 Minutes

Prerequisite Training: N/A

Time Critical: No

PPM Reference: PPM 2.7.1B Section 5.6 Rev. 24

Location: Simulator

NUREG 1123 Ref: 262001 A4.01 (3.4/3.7)

Performance Method: Perform

JPM CHECKLIST

PROCEDURE VALIDATION	Procedure copies for evaluator and student, if procedure revision is different from that listed on JPM, critical tasks reverified. Evaluator copy may be used for marking step completion, and comments.
INITIAL CONDITIONS:	SL-21 is currently being powered from SL-11.
INITIATING CUE:	The CRS has directed you to transfer SL-21 from SL-11 to SM-2 by performing a break before make transfer. Inform the CRS when SL-21 is being powered from SM-2.

*** Items are Critical Steps**

Comments	Element	Standard	Sat/Unsat
RECORD START TIME: _____			
CUE: Cue response of simulated actions based on procedure and student actions			
		Notifies Radwaste that they will momentarily lose power to G33-P0026	S / U
		Verify CB-2/21 while LOCKOUT CIRCUIT AVAIL light is illuminated	S / U
		If CB-2/21 is closed THEN verify CB-2/21 red light illuminated. Otherwise N/A	S / U
		If CB-2/21 is not closed THEN perform the following: Otherwise N/A	**N/A**
		Verify CB-21/2 green tripped light is illuminated and the green position flag is being displayed in the CB-21/2 control switch window	S / U
	2 Hand Operation OK	Place and Hold the control switch for CB-21/2 in the close position	S / U *
	2 Hand Operation OK	Place CB-21/11 control switch to the Trip position	S / U *
		Verify CB-21/11 green tripped light illuminates	S / U
		Verify CB-21/11 red closed light extinguishes	S / U

*** Items are Critical Steps**

Comments	Element	Standard	Sat/Unsat
		Verify CB-2/21 green tripped light extinguishes	S / U
		Verify CB-2/21 red closed light illuminates	S / U
		Release the control switch for CB-21/2	S / U
Termination Criteria: Candidate informs the CRS that SL-21 is being supplied from SM-2.			
RECORD TERMINATION TIME: _____			
Transfer to "Results of JPM" page the following information: Procedures validated prior to use; Comments from marked up evaluator's procedure copy; Unsatisfactory critical tasks; Total JPM time; Marked Up procedure and remaining JPM pages may be discarded.			

RESULTS OF JPM:

TRANSFER SL-21 FROM SL-11 to SM-2

Examinee (Please Print): _____

Evaluator (Please Print): _____

Task Standard: SL-21 power supply is transferred from SL-11 to SM-2 per PPM 2.7.1B.

Overall Evaluation	Exam Code
SAT / UNSAT (Circle One)	

Verified Procedure #/Rev. Used for JPM	Validation/Critical Time	JPM Completion Time
	10 Minutes / NA	

COMMENTS:

Evaluator's Signature: _____ Date: _____

STUDENT JPM INFORMATION CARD

Initial Conditions:

SL-21 is currently being powered from SL-11.

Cue:

The CRS has directed you to transfer SL-21 from SL-11 to SM-2 by performing a break before make transfer.

Inform the CRS when SL-21 is being powered from SM-2.

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2006 NRC EXAM – JPM #2

PROGRAM TITLE: INITIAL LICENSED OPERATOR TRAINING

COURSE TITLE: JOB PERFORMANCE MEASURE

LESSON TITLE: RESTORE RPS A FROM ALTERNATE POWER SOURCE (SIMULATOR)

LESSON LENGTH: .5 HRS

MAXIMUM STUDENTS: 1

INSTRUCTIONAL MATERIALS INCLUDED

Lesson Plan PQD Code		Rev. No.
Simulator Guide PQD Code		Rev. No.
JPM PQD Code		Rev. No.
Exam PQD Code		Rev. No.

DIVISION TITLE: Nuclear Training

DEPARTMENT: Operations Training

PREPARED BY: Ron Hayden DATE: 9/02/06

REVISED BY: DATE:

TECHNICAL REVIEW BY: DATE:

INSTRUCTIONAL REVIEW BY: DATE:

APPROVED BY: DATE:

Operations Training Manager

Verify materials current IAW SWP-TQS-01 prior to use

RESTORE RPS A FROM ALTERNATE POWER SOURCE

MINOR REVISION RECORD

Minor Rev Number	Description of Revision	Affected Pages	Entered By	Effective Date	Manager Approval

JPM SETUP

Simulator ICs; Malfunctions; Triggers; Overrides:

Any IC with a normal electrical lineup – all load centers energized
Ensure AR-EX-1B is in service

Special Setup Instructions:

Open RPS EPA BKR 3A, acknowledge all annunciators, and allow plant to stabilize.

JPM Instructions:

Verify the current procedure against the JPM. If the procedure is a different revision than listed in the JPM, ensure the critical steps still match. If the critical steps have changed, the JPM should be revised.

The evaluator and student shall use current procedure. The evaluator should mark off steps as they are completed, note comments, and transfer the comments to the "Results of JPM" page.

Tools/Equipment: None

Safety Items: None

Task Number: RO-0248

Validation Time: 15 minutes

Prerequisite Training: N/A

Time Critical: NO

PPM Reference: ABN-RPS Rev. 4

Location: SIMULATOR

NUREG 1123 Ref: 212000 A4.14 (3.8/3.8)

Performance Method: PERFORM

JPM CHECKLIST

PROCEDURE VALIDATION	Regarding procedure copies for evaluator and student, if the procedure revision is different from that listed on the JPM, verify that the critical task steps are the same. Evaluator copy may be used for marking step completion, and comments.
INITIAL CONDITIONS:	A loss of RPS 'A' occurred 20 minutes ago. All maintenance and surveillance testing has been stopped. Investigation revealed a failure of the 'A' RPS MG set motor.
INITIATING CUE:	The CRS has directed you to perform the subsequent actions for ABN-RPS and transfer 'A' RPS to its Alternate power supply. Inform the CRS when the subsequent actions for ABN-RPS have been completed and 'A' RPS has been repowered.

*** Items are Critical Steps**

Comments	Element	Standard	Sat/Unsat
RECORD START TIME: _____			
		If power is available to RWCU-V-104 (Cleanup System Bypass), then THROTTLE OPEN RWCU-V-104	S / U *
		If alternate Gland Exhaust (AR-EX-1A/B) is required then start the alternate Gland Exhauster and place the tripped Gland Exhauster in OFF. **Otherwise N/A**	**N/A**
		If the alternate Mechanical Vacuum Pump (AR-P-1A/B) is requires then start the alternate Mechanical Vacuum Pump. **Otherwise N/A**	**N/A**

		ENSURE automatic actions have occurred. Verifies: • Half Scram • The following valves close: o RRC-V-20 o FDR-V-4 o EDR-V-20 o RWCU-V-4 o RHR-V-8 o RHR-V-40 o RHR-V-75A and 75B o RHR-V-23 o RHR-V-53A and 53B o MS-V-67A-D o MS-V-19 • RC-1 trips • AR-EX-1A trips • AR-P-1A trips • Refers to Attachment 7.1 for list of annunciation	S / U
CUE: When Attachment 7.1 is referenced, inform candidate that another operator has verified annunciation per Attachment 7.1 and no discrepancies were noted.			
		IF the condition of the RPS MG set is known to be operable, then restart the RPS MG set and repower the bus per PPM 2.7.6. **Otherwise N/A**	**N/A**
		If the condition of the RPS MG set is uncertain then repower RPS A or B from H13-P610 as follows: • Check power available from the RPS Alternate Power Supply, MC-6B, by observing the Alternate Feed white light illuminated. • Place the RPS power source selector switch in the position (ALT A) to be powered from the Alternate Supply	S / U S / U *

		When RPS power has been restored stabilized, then perform the following: If restoring RPS A then perform the following:	
	Depresses the two Rx Scram Logic A1/B1 and A2/B2 reset P/B's on P603	• Reset the Half Scram at H13-P603	S / U *
		• Reset Main Steam Line Rad Monitor alarms at H13-P606 o MS-RIS-610A o MS-RIS-610C	 S / U * S / U *
		Depress the following pushbuttons at H13-P601: o Isolation logic A & B reset P/Bs o Isolation logic C & D reset P/Bs	 S / U * S / U *
		Return RWCU to service per SOP-RWCU-START	S / U
CUE: Inform the candidate that another operator is placing RWCU into service and to continue with ABN-RPS.			
		Reset RC-1 by depressing WMA-RMS-FAZ/3AXY pushbutton.	S / U *
		If RHR SDC was in service then refer to ABN-RHR-SDC. **Otherwise N/A**	**N/A**
		Open RRC-V-20	S / U *
		Open EDR-V-20	S / U *
Candidate may voice concern for overflowing sump	FDR-V-3 already opened	If FDR-V-3 and FDR-V-4 have been isolated for LT 8 hours, then open the following: o FDR-V-3 o FDR-V-4	 S / U S / U *

		If FDR-V-3 and FDR-V-4 have been isolated for GT 8 hours….. **Otherwise N/A**	**N/A**
	May direct communication to CRS	Refer to TS 3.3.1.1 for RPS and LCS 1.4.1 for coolant chemistry control.	S / U
	May direct communication to CRS	Determine cause and correct	S / U
	May direct communication to CRS	Evaluate resumption of maintenance and surveillance activities	S / U
Termination Criteria: Candidate informs CRS that ABN-RPS has been completed for the restoration of RPS A.			
RECORD TERMINATION TIME: _____			
Transfer the following information to the "Results of JPM" page: Procedures validated prior to use; Comments from marked up evaluator's procedure copy; Unsatisfactory critical tasks; Total JPM time. The marked up procedure and remaining JPM pages may be discarded.			

RESULTS OF JPM:

RESTORE RPS A FROM ALTERNATE POWER SOURCE

Examinee (Please Print): _____

Evaluator (Please Print): _____

Task Standard: The subsequent actions for ABN-RPS have been completed and RPS A has been re-powered from Alternate Power Supply.

Overall Evaluation	Exam Code
SAT / UNSAT (Circle One)	

Verified Procedure #/Rev. Used for JPM (Initial Box)	Validation/Critical Time	JPM Completion Time
	15 Minutes / NA	

COMMENTS:

Evaluator's Signature: _____ Date: _____

STUDENT JPM INFORMATION CARD

Initial Conditions:

A loss of RPS 'A' occurred 20 minutes ago.

All maintenance and surveillance testing has been stopped.

Investigation revealed a failure of the 'A' RPS MG set motor.

Cue:

The CRS has directed you to perform the subsequent actions for ABN-RPS and transfer 'A' RPS to its Alternate power supply.

Inform the CRS when the subsequent actions for ABN-RPS have been completed and 'A' RPS has been repowered.

2006 NRC EXAM - JPM #1

PROGRAM TITLE: INITIAL LICENSED OPERATOR TRAINING

COURSE TITLE: JOB PERFORMANCE MEASURE

LESSON TITLE: REMOVING HEATER 1A, 1B, AND 1C FROM SERVICE (SIMULATOR)

LESSON LENGTH: .5 HRS MAXIMUM STUDENTS: 1

INSTRUCTIONAL MATERIALS INCLUDED

Lesson Plan PQD Code		Rev. No.
Simulator Guide PQD Code		Rev. No.
JPM PQD Code		Rev. No.
Exam PQD Code		Rev. No.

DIVISION TITLE: Nuclear Training

DEPARTMENT: Operations Training

PREPARED BY: Ron Hayden DATE: 9/02/06

REVISED BY: DATE:

TECHNICAL REVIEW BY: DATE:

INSTRUCTIONAL REVIEW BY: DATE:

APPROVED BY: DATE:

Operations Training Manager

Verify materials current IAW SWP-TQS-01 prior to use.

MINOR REVISION RECORD

Minor Rev Number	Description of Revision	Affected Pages	Entered By	Effective Date	Manager Approval

JPM SETUP

Simulator ICs; Malfunctions; Triggers; Overrides:

A 100% IC

Special Setup Instructions:

N/A

JPM Instructions:

Verify Current Procedure against JPM and ensure procedure critical steps match if procedure is different revision than listed in JPM. If critical steps have changed, the JPM should be revised.

Current procedure shall be used by evaluator and student. The instructor should mark off steps as they are completed, note comments, and transfer the comments to the results of JPM page.

Tools/Equipment: None

Safety Items: None

Task Number: RO-0377

Validation Time: 15 Minutes

Prerequisite Training: N/A

Time Critical: NO

PPM Reference: PPM 2.2.7 Rev. 38

Location: Simulator

NUREG 1123 Ref: 259001A4.03 (2.9/3.0)

Performance Method: Perform

JPM CHECKLIST

PROCEDURE VALIDATION	Regarding procedure copies for evaluator and student, if the procedure revision is different from that listed on the JPM, verify that the critical task steps are the same. Evaluator copy may be used for marking step completion, and comments.
INITIAL CONDITIONS:	BPA has requested Columbia reduce power to 60% for economic dispatch. CRO1 is aware of the evolution and is monitoring hotwell level.
INITIATING CUE:	The CRS has directed you to remove Feedwater Heaters 1A, 1B and 1C from service per PPM 2.2.7 Section 5.2. Notify the CRS when heaters 1A, 1B and 1C have been removed from service.

*** Items are Critical Steps**

Comments	Element	Standard	Sat/Unsat
RECORD START TIME: _____			
CUE: Cue response of simulated actions based on procedure and student actions			
	Moves selector over demand to get % open	Record HD-LIC-1A output signal	S / U
	depresses A/M pushbutton to display 'M'	Places HD-LIC-1A in MANUAL	S / U *
	selects valve demand (far right) and depresses the up arrow pushbutton	SLOWLY RAISE HD-LIC-1A output signal to 100%	S / U *
		OPEN the following: • HV-V-23A Startup Vent (H13-P832) • BS-DV-1A BS Dump (H13-P832)	 S / U * S / U *
	depresses the down arrow pushbutton	LOWER output signal on HD-LIC-1A to 0% to CLOSE HD-LCV-1A	S / U *
	Moves selector over demand to get % open	Record HD-LIC-1B output signal	S / U
	depresses A/M pushbutton to display 'M'	Places HD-LIC-1B in MANUAL	S / U *

	selects valve demand (far right) and depresses the up arrow pushbutton	SLOWLY RAISE HD-LIC-1B output signal to 100%	S / U *
		OPEN the following: • HV-V-23E Startup Vent (H13-P832) • BS-DV-1B BS Dump (H13-P832)	S / U * S / U *
	depresses the down arrow pushbutton	LOWER output signal on HD-LIC-1B to 0% to CLOSE HD-LCV-1B	S / U *
	Moves selector over demand to get % open	Record HD-LIC-1C output signal	S / U
	depresses A/M pushbutton to display 'M'	Places HD-LIC-1C in MANUAL	S / U *
	selects valve demand (far right) and depresses the up arrow pushbutton	SLOWLY RAISE HD-LIC-1C output signal to 100%	S / U *
		OPEN the following: • HV-V-23I Startup Vent (H13-P832) • BS-DV-1C BS Dump (H13-P832)	S / U * S / U *
	depresses the down arrow pushbutton	LOWER output signal on HD-LIC-1C to 0% to CLOSE HD-LCV-1C	S / U *
Termination Criteria: The operator informs the CRS that heaters 1A, 1B, and 1C have been removed from service.			
RECORD TERMINATION TIME: _____			
Transfer the following information to the "Results of JPM" page: Procedures validated prior to use; Comments from marked up evaluator's procedure copy; Unsatisfactory critical tasks; Total JPM time. Marked Up procedure and remaining JPM pages may be discarded.			

RESULTS OF JPM:
REMOVE HEATERS 1A, 1B, AND 1C FROM SERVICE

Examinee (Please Print): _____

Evaluator (Please Print): _____

Task Standard: Heaters 1A, 1B, and 1C have been removed from service per PPM 2.2.7.

Overall Evaluation	Exam Code
SAT / UNSAT (Circle One)	

Verified Procedure #/Rev. Used for JPM (Initial box)	Validation/Critical Time	JPM Completion Time
	15 Minutes / NA	

COMMENTS:

Evaluator's Signature: _____ Date: _____

STUDENT JPM INFORMATION CARD

Initial Conditions:

BPA has requested Columbia reduce power to 60% for economic dispatch.

Cue:

The CRS has directed you to remove Feedwater Heaters 1A, 1B and 1C from service per PPM 2.2.7 Section 5.2.

Notify the CRS when heaters 1A, 1B and 1C have been removed from service.

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2006 NRC EXAM –IN PLANT JPM #3

PROGRAM TITLE: INITIAL LICENSED TRAINING

COURSE TITLE: JOB PERFORMANCE MEASURE

LESSON TITLE: RESPOND TO CONTROL ROOM HVAC HIGH RADIATION (PLANT) (ALT PATH)

LESSON LENGTH: .5 HRS

MAXIMUM STUDENTS: 1

INSTRUCTIONAL MATERIALS INCLUDED

Lesson Plan PQD Code		Rev. No.
Simulator Guide PQD Code		Rev. No.
JPM PQD Code		Rev. No.
Exam PQD Code		Rev. No.

DIVISION TITLE: Nuclear Training

DEPARTMENT: Operations Training

PREPARED BY: Ron Hayden DATE: 05/22/06

REVISED BY: DATE:

TECHNICAL REVIEW BY: DATE:

INSTRUCTIONAL REVIEW BY: DATE:

APPROVED BY: DATE:

Operations Training Manager

Verify materials current IAW SWP-TQS-01 prior to use.

MINOR REVISION RECORD

Minor Rev Number	Description of Revision	Affected Pages	Entered By	Effective Date	Manager Approval

JPM SETUP

Simulator ICs; Malfunctions; Triggers; Overrides:

N/A

Special Setup Instructions:

N/A

JPM Instructions:

Verify the current procedure against the JPM. If the procedure is a different revision than listed in the JPM, ensure the critical steps still match. If the critical steps have changed, the JPM should be revised.

The evaluator and student shall use current procedure. The evaluator should mark off steps as they are completed, note comments, and transfer the comments to the "Results of JPM" page.

Tools/Equipment: None

Safety Items: None

Task Number: RO-0114

Validation Time: 10 minutes

Prerequisite Training: N/A

Time Critical: NO

PPM Reference: ABN-RAD-CR

Location: PLANT

NUREG 1123 Ref: 288000A2.02 (3.7/3.8)

Performance Method: SIMULATE

JPM CHECKLIST

PROCEDURE VALIDATION	Regarding procedure copies for evaluator and student, if the procedure revision is different from that listed on the JPM, verify that the critical task steps are the same. Evaluator copy may be used for marking step completion, and comments.
INITIAL CONDITIONS:	A Reactor Building High Radiation signal is present. All automatic actions have been verified. The "B" Control Room Ventilation and Emergency Filtration systems have been secured and the "A" Control Room ventilation (WMA-FN-51A) and Emergency Filtration Fans (WMA-FN-54A) are operating. A Hi-Hi radiation alarm has been confirmed on the Northwest remote air intake (WOA-RIS-31A/B reads 5,000 CPM). No alarm is observed on the Southeast side (WOA-RIS-32A/B reads normal).
INITIATING CUE:	The CRS has directed you to isolate the Northwest Remote Air Intake per ABN-RAD-CR. Notify the CRS when actions per ABN-RAD-CR have been completed for the high radiation condition. CONTROL MANIPULATIONS WILL NOT BE PERFORMED. ALL ACTIONS AND STEPS WILL BE SIMULATED.

*** Items are Critical Steps**

Comments	Element	Standard	Sat/Unsat
RECORD START TIME: _____			
		Verify WOA-V-51B is open (SE #2) Remote intake outboard isolation	
Cue: If candidate checks WOA-V-51B is open and independent verification of the step has been performed.			
		Verify WOA-V-52B is open (SE #2) Remote intake inboard isolation	
Cue: If candidate checks WOA-V-52B is open and independent verification of the step has been performed.			
		Unlock and close WOA-V-51A, NW (#1) Remote Intake Outboard Isolation. If remote air intake #1 is isolated using only valve WOA-V-52A, then N/A this step and step 7.1.4	S / U *
Cue: When student attempts to close WOA-V-51A, inform the student that the operator is broken and the valve is danger tagged in the open position.			
	STEP IS N/A	Verify WOA-V-51D Opens, NW (#1) Remote Intake Purge, (WOA-V-51A Closed)	

		Unlock and close WOA-V-52A, NW (#1) Remote Intake Inboard Isolation	S / U *
E-CP-COHV/1 is labeled COHV-1. Cover for F4 is labeled with a 4 and door aid indicates TB-F4.		If remote air intake #1 is isolated using only valve WOA-V-52A, then remove fuse F4 in Control, Cable Spreading and Critical Switchgear Rooms Control Panel E-CP-COHV/1 (RW 525) to open WOA-V-51D, NW (#1) Remote Intake Purge. Otherwise N/A	S / U *
Cue: If candidate checks, WOA-V-51D opens.			
Termination Criteria: Student informs CRS that the NW Remote Air Intake is isolated, only WOA-V-52A is closed, and Fuse F4 has been pulled.			
RECORD TERMINATION TIME: _____			
Transfer the following information to the "Results of JPM" page: Procedures validated prior to use; Comments from marked up evaluator's procedure copy; Unsatisfactory critical tasks; Total JPM time. The marked up procedure and remaining JPM pages may be discarded.			

RESULTS OF JPM:

RESPOND TO CONTROL ROOM HVAC HIGH RADIATION (ONE INTAKE)

Examinee (Please Print): _____

Evaluator (Please Print): _____

Task Standard: The Northwest Remote Air Intake to the Control Room Ventilation System is isolated per ABN-RAD-CR.

Overall Evaluation	Exam Code
SAT / UNSAT (Circle One)	

Verified Procedure #/Rev. Used for JPM (Initial Box)	Validation/Critical Time	JPM Completion Time
	10 Minutes / NA	

COMMENTS:

Evaluator's Signature: _____ Date: _____

STUDENT JPM INFORMATION CARD

Initial Conditions:

- A Reactor Building High Radiation signal is present
- All automatic actions have been verified
- The "B" Control Room Ventilation and Emergency Filtration systems have been secured and the "A" Control Room ventilation (WMA-FN-51A) and Emergency Filtration Fans (WMA-FN-54A) are operating
- A Hi-Hi radiation alarm has been confirmed on the Northwest remote air intake (WOA-RIS-31A/B reads 5,000 CPM)
- No alarm is observed on the Southeast side (WOA-RIS-32A/B reads normal)

Cue:

The CRS has directed you to isolate the Northwest Remote Air Intake per ABN-RAD-CR.

Notify the CRS when actions per ABN-RAD-CR have been completed for the high radiation condition.

CONTROL MANIPULATIONS WILL NOT BE PERFORMED.

ALL ACTIONS AND STEPS WILL BE SIMULATED.

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2006 NRC EXAM – In Plant JPM #2

PROGRAM TITLE: OPERATIONS TRAINING

COURSE TITLE: JOB PERFORMANCE MEASURE

LESSON TITLE: START AND PARALLEL DG-2 ON CR EVACUATION (ALT PATH) (Plant)

LESSON LENGTH: 0.5 MAXIMUM STUDENTS: 1

INSTRUCTIONAL MATERIALS INCLUDED

Lesson Plan PQD Code		Rev. No.
Simulator Guide PQD Code		Rev. No.
JPM PQD Code		Rev. No.
Exam PQD Code		Rev. No.

DIVISION TITLE: Nuclear Training

DEPARTMENT: Operations Training

PREPARED BY: Ron Hayden DATE: 5/22/06

REVISED BY: DATE:

TECHNICAL REVIEW BY: DATE:

INSTRUCTIONAL REVIEW BY: DATE:

APPROVED BY: DATE:

Operations Training Manager

Verify materials current IAW SWP-TQS-01 prior to use.

MINOR REVISION RECORD

Minor Rev Number	Description of Revision	Affected Pages	Entered By	Effective Date	Manager Approval

JPM SETUP

Simulator ICs; Malfunctions; Triggers; Overrides:

N/A

Special Setup Instructions:

N/A

JPM Instructions:

Verify Current Procedure against JPM and ensure procedure critical steps match if procedure is different revision than listed in JPM. If critical steps have changed, the JPM should be revised.

The evaluator and student shall use current procedure. The instructor should mark off steps as they are completed, note comments, and transfer the comments to the results of JPM page.

Tools/Equipment: None

Safety Items: None

Task Number: RO-0700

Validation Time: 10 Minutes

Prerequisite Training: N/A

Time Critical: NO

PPM Reference: ABN-CR-EVAC Rev. 9

Location: Plant

NUREG 1123 Ref: 219000A4.13 (3.9/3.8)

Performance Method: Simulate

JPM CHECKLIST

PROCEDURE VALIDATION:	Procedure copies for evaluator and student, if procedure revision is different from that listed on JPM, critical tasks reverified. Evaluator copy may be used for marking step completion, and comments.
INITIAL CONDITIONS:	The Control Room has been abandoned due to a fire in the back panels. The Remote Shutdown Panel is manned.
INITIATING CUE:	The CRS has directed you to start DG-2 per ABN-CR-EVAC Section 7.5. Another operator has been dispatched to pull the control power fuses from HPCS-P-1 and to trip the HPCS DG. Inform the CRS when DG-2 has been started and has assumed SM-8 loads. CONTROL MANIPULATIONS WILL NOT BE PERFORMED. ALL ACTIONS AND STEPS WILL BE SIMULATED.

*** Items are Critical Steps**

Comments	Element	Standard	Sat/Unsat
RECORD START TIME: _____			
Cue: If Student checks, cue that DG-2 is not running.			
		At E-CP-DG/RP2, Depress the Emergency Stop Pushbutton	S / U*
		Inform the CRS that DG-2 has been tripped	S / U
Cue: When candidate dials correct phone number for the RSD (2649 or 2569) to informs the CRS, respond as the CRS.			
		Place the Diesel Engine Mode Selector to MAINT	S / U*
		Resets the Lockout Relay (E-RLY-86/DG2)	S / U*
		Ensures Diesel Engine Control Selector is in LOCAL	S / U
Cue: When candidate checks, inform him that the Diesel Engine Control Selector is in the Control Room position.			
		Places Diesel Engine Control Selector in LOCAL	S / U*
		Places DG-RMS-DG-2/FTS56B in the EMERG position	S / U*
Cue: If candidate asks, respond as the CRS to place Diesel Engine Mode Selector Switch to AUTO. If candidate waits until prompted by the CRS cue that the phone is ringing and, when answered, inform candidate as the CRS to initiate DG-2 Auto fast-start and loading.			

Comments	Element	Standard	Sat/Unsat
		Places the Diesel Engine 1B1/1B2 Mode Selector to AUTO	S / U *
Cue: When switch is taken to AUTO inform candidate that DG-2 did NOT start.			
		If DG-2 failed to Auto start, THEN start DG-2 by depressing the Diesel Engine 1B1/1B2 Start pushbutton	S / U *
Cue: If candidate checks, cue that DG-2 is running.			
		If E-CB-DG2/8 did not automatically close, THEN place E-CB-DG2/8 control switch to close. Otherwise N/A	S / U *
Cue: If candidate checks, cue that E-CB-DG2/8 did NOT automatically close.			
		Places E-CB-DG2/8 control switch to CLOSE	S / U *
Cue: If candidate checks, cue that E-CB-DG2/8 is now closed.			
Termination Criteria: Candidate informs the CRS that DG-2 has started and has assumed SM-8 loads.			
RECORD TERMINATION TIME: _____			
Transfer to JPM Results Page the following information: Procedures validated prior to use; Comments from marked up evaluator's procedure copy; Unsatisfactory critical tasks; Total JPM time; Marked Up procedure and remaining JPM pages may be discarded.			

RESULTS OF JPM:
START AND PARALLEL DG-2 ON CR EVAC.

Examinee (Please Print): _____

Evaluator (Please Print): _____

Task Standard: DG-2 has been started and has assumed SM-8 load per ABN-CR-EVAC.

Overall Evaluation	Exam Code
SAT / UNSAT (Circle One)	

Verified Procedure #/Rev. Used for JPM	Validation/Critical Time	JPM Completion Time
	10 Minutes / NA	

COMMENTS:

Evaluator's Signature: _____ Date: _____

STUDENT JPM INFORMATION CARD

Initial Conditions:

The Control Room has been abandoned due to a fire in the back panels.

The Remote Shutdown Panel is manned.

Cue:

The CRS has directed you to start DG-2 per ABN-CR-EVAC Section 7.5.

Another operator has been dispatched to pull the control power fuses from HPCS-P-1 and to trip the HPCS DG.

Inform the CRS when DG-2 has been started and has assumed SM-8 loads.

CONTROL MANIPULATIONS WILL NOT BE PERFORMED.

ALL ACTIONS AND STEPS WILL BE SIMULATED.

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2006 NRC EXAM – IN PLANT JPM #1

PROGRAM TITLE: INITIAL LICENSED OPERATOR TRAINING

COURSE TITLE: JOB PERFORMANCE MEASURE

LESSON TITLE: INSERT CONTROL RODS BY VENTING SCRAM AIR HEADER (Plant)

LESSON LENGTH: .5 HRS

MAXIMUM STUDENTS: 1

INSTRUCTIONAL MATERIALS INCLUDED

Lesson Plan PQD Code _____ Rev. No. _____

Simulator Guide PQD Code _____ Rev. No. _____

JPM PQD Code _____ Rev. No. _____

Exam PQD Code _____ Rev. No. _____

DIVISION TITLE: Nuclear Training

DEPARTMENT: Operations Training

PREPARED BY: Ron Hayden DATE: 5/22/06

REVISED BY: _____ DATE: _____

TECHNICAL REVIEW BY: _____ DATE: _____

INSTRUCTIONAL REVIEW BY: _____ DATE: _____

APPROVED BY: _____ DATE: _____

Operations Training Manager

MINOR REVISION RECORD

Minor Rev Number	Description of Revision	Affected Pages	Entered By	Effective Date	Manager Approval

JPM SETUP

Simulator ICs; Malfunctions; Triggers; Overrides:

N/A

Special Setup Instructions:

N/A

JPM Instructions:

Verify the current procedure against the JPM. If the procedure is a different revision than listed in the JPM, ensure the critical steps still match. If the critical steps have changed, the JPM should be revised.

The evaluator and student shall use current procedure. The evaluator should mark off steps as they are completed, note comments, and transfer the comments to the "Results of JPM" page.

Tools/Equipment: Pre-staged EOP Tools

Safety Items: None

Task Number: RO-0680

Validation Time: 9 Minutes

Prerequisite Training: N/A

Time Critical: NO

PPM Reference: PPM 5.5.11

Location: PLANT

NUREG 1123 Ref: 295037EA1.05 (3.9/4.0)

Performance Method: SIMULATE

JPM CHECKLIST

PROCEDURE VALIDATION	Regarding procedure copies for evaluator and student, if the procedure revision is different from that listed on the JPM, verify that the critical task steps are the same. Evaluator copy may be used for marking step completion, and comments.
INITIAL CONDITIONS:	A scram has been initiated and the blue scram lights are extinguished at H13-P603. Reactor pressure is stable at 930 psig and Reactor Power is 38%.
INITIATING CUE:	The CRS has directed you to insert control rods by venting the Scram Air Header per PPM 5.5.11 Tab D. Inform the CRS when actions are completed to vent the Scram Air Header. THE PERFORMANCE OF THIS JPM WILL BE SIMULATED. CONTROL MANIPULATIONS WILL NOT BE PERFORMED.

*** Items are Critical Steps**

Comments	Element	Standard	Sat/Unsat
RECORD START TIME: _____			
		Closes CRD-V-95 (Scram Air Header Isolation)	S / U *
		Closes CRD-V-729 (CRD-PI-13 isolation)	S / U *
Note: Pre-staged crescent wrench is used to remove instrument drain plug.			
	Removes instrument drain plug for CRD-PI-13.	Rotates instrument drain plug counterclockwise on CRD-PI-13 until drain plug is removed	S / U *
Cue candidate that the drain line plug is removed if rotated in proper direction.			
		Open CRD-V-729 (CRD-PI-13 isolation)	S / U *
Cue: Inform candidate that the scram air header is fully depressurized and no further rod motion is observed.			
		Closes CRD-V-729 (CRD-PI-13 isolation)	S / U
		Install instrument drain plug for CRD-PI-13 by rotating it clockwise	S / U

*** Items are Critical Steps**

Comments	Element	Standard	Sat/Unsat
Cue candidate that the drain line plug is installed if rotated in proper direction.			
		Open CRD-V-729 (CRD-PI-13 isolation)	S / U
		Open CRD-V-95 (Scram Air Header Isolation)	S / U
Termination Criteria: Student informs CRS that actions to vent Scram Air Header have been completed.			
RECORD TERMINATION TIME: _____			
Transfer the following information to the "Results of JPM" page: Procedures validated prior to use; Comments from marked up evaluator's procedure copy; Unsatisfactory critical tasks; Total JPM time. The marked up procedure and remaining JPM pages may be discarded.			

RESULTS OF JPM:
INSERT CONTROL ROD BY VENTING SCRAM AIR HEADER

Examinee (Please Print): _____

Evaluator (Please Print): _____

Task Standard: The scram air header has been vented per PPM 5.5.11 Tab D.

Overall Evaluation	Exam Code
SAT / UNSAT (Circle One)	

Verified Procedure #/Rev. Used for JPM (Initial Box)	Validation/Critical Time	JPM Completion Time
	10 Minutes / NA	

COMMENTS:

Evaluator's Signature: _____ Date: _____

STUDENT JPM INFORMATION CARD

Initial Conditions:

A scram has been initiated and the blue scram lights are extinguished at H13-P603

Reactor pressure is stable at 930 psig and Reactor Power is 38%.

Cue:

The CRS has directed you to insert control rods by venting the Scram Air Header per PPM 5.5.11 Tab D.

Inform the CRS when actions are completed to vent the Scram Air Header.

THE PERFORMANCE OF THIS JPM WILL BE SIMULATED.

CONTROL MANIPULATIONS WILL NOT BE PERFORMED.

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2006 NRC EXAM – JPM #8

PROGRAM TITLE: INITIAL LICENSED OPERATOR TRAINING

COURSE TITLE: JOB PERFORMANCE MEASURE

LESSON TITLE: HPCS SYSTEM INITIATION / SW FAILS TO AUTO START (SIM) (ALT PATH)

LESSON LENGTH: .5 HRS

MAXIMUM STUDENTS: 1

INSTRUCTIONAL MATERIALS INCLUDED

Lesson Plan PQD Code		Rev. No.
Simulator Guide PQD Code		Rev. No.
JPM PQD Code		Rev. No.
Exam PQD Code		Rev. No.

DIVISION TITLE: Nuclear Training

DEPARTMENT: Operations Training

PREPARED BY: Ron Hayden DATE: 9/02/06

REVISED BY: DATE:

TECHNICAL REVIEW BY: DATE:

INSTRUCTIONAL REVIEW BY: DATE:

APPROVED BY: DATE:

Operations Training Manager

Verify materials current IAW SWP-TQS-01 prior to use

MINOR REVISION RECORD

Minor Rev Number	Description of Revision	Affected Pages	Entered By	Effective Date	Manager Approval

JPM SETUP

Simulator ICs; Malfunctions; Triggers; Overrides:

Insert a malfunction that prevents HPCS-P-2 from starting automatically but may be started manually.

Special Setup Instructions:

Insert a manual scram and allow RPV/L to recover to about 0” then trip both RFP’s.

JPM Instructions:

Verify the current procedure against the JPM. If the procedure is a different revision than listed in the JPM, ensure the critical steps still match. If the critical steps have changed, the JPM should be revised.

The evaluator and student shall use current procedure. The evaluator should mark off steps as they are completed, note comments, and transfer the comments to the “Results of JPM” page.

Tools/Equipment: None

Safety Items: None

Task Number: RO-0235; RO-0459

Validation Time: 5 minutes

Prerequisite Training: N/A

Time Critical: NO

PPM Reference: SOP-HPCS-INJECTION-QC Rev. 2

Location: SIMULATOR

NUREG 1123 Ref: 264000A3.06 (3.1/3.2)

Performance Method: PERFORM

JPM CHECKLIST

PROCEDURE VALIDATION	Regarding procedure copies for evaluator and student, if the procedure revision is different from that listed on the JPM, verify that the critical task steps are the same. Evaluator copy may be used for marking step completion, and comments.
INITIAL CONDITIONS:	A failure of the master controller caused RPV level to drop. The Control Room Supervisor directed a manual scram prior to +13" being reached. Both Reactor Feed Pumps then tripped as RPV level approached 0".
INITIATING CUE:	The CRS has directed you to initiate the HPCS and bring RPV level back to a band of +13" to +54". Inform the CRS when RPV level is in the band.

*** Items are Critical Steps**

Comments	Element	Standard	Sat/Unsat
RECORD START TIME: _____			
		Refers to HPCS INJECTION QUICK CARD	S / U
CUE: If asked, inform candidate that Arm and Depress pushbutton may be used.			
		IF directed by the CRS/Shift Manager, THEN ARM and DEPRESS the HPCS MANUAL INITIATION pushbutton. Otherwise, N/A this step and proceed to the next step	S / U *
		START HPCS-P-1	S / U
		Verify HPCS-V-12 OPENS, during low flow conditions (approximately 1300 gpm) (Minimum Flow Bypass)	S / U
		Verify HPCS-P-2 running Notes HPCS-P-2 is not running and takes the Control Switch for HPCS-P-2 to the START position	S / U *
		Notes HPCS-P-2 start and verifies proper system operation	S / U

		IF required, THEN RESET the Reactor Level 8 Seal In. **Otherwise N/A**	**N/A**
		OPEN HPCS-V-4 (RPV Injection)	S / U
		VERIFY injection into the RPV	S / U
		WHEN flow rate is GT 1300 gpm, THEN VERIFY HPCS-V-12 CLOSES	S / U
	Closes HPCS-V-4 when RPV level is in band	Operate HPCS-V-4 as necessary to MAINTAIN RPV level between +13 to +54 inches	S / U
Termination Criteria: Student informs CRS that RPV level is in the band given and that HPCS-P-2 did not auto start but was started manually.			
RECORD TERMINATION TIME: _____			
Transfer the following information to the "Results of JPM" page: Procedures validated prior to use; Comments from marked up evaluator's procedure copy; Unsatisfactory critical tasks; Total JPM time. The marked up procedure and remaining JPM pages may be discarded.			

RESULTS OF JPM:
HPCS SYSTEM INITIATION (SW FAILS TO START)

Examinee (Please Print): _____

Evaluator (Please Print): _____

Task Standard: The HPCS SW Pump (HPCS-P-2) has been manually started.

Overall Evaluation	Exam Code
SAT / UNSAT (Circle One)	

Verified Procedure #/Rev. Used for JPM (Initial Box)	Validation/Critical Time	JPM Completion Time
	5 Minutes / NA	

COMMENTS:

Evaluator's Signature: _____ Date: _____

STUDENT JPM INFORMATION CARD

Initial Conditions:

A failure of the master controller caused RPV level to drop.

The Control Room Supervisor directed a manual scram prior to +13” being reached.

Both Reactor Feed Pumps then tripped as RPV level approached 0”.

Cue:

The CRS has directed you to initiate the HPCS system using the Arm and Depress pushbutton, verify proper system operation, and bring RPV level back to a band of +13” to +54”.

Inform the CRS when RPV level is in the band.

Facility: Columbia Scenario No: 2

Examiners: _____ Operators: _____

_____ _____

_____ _____

Initial conditions: Columbia is operating at full power. CAS-C-1C is tagged out for motor replacement.

Turnover: Preparations are being made to perform the DG-1 quarterly surveillance. After turnover transfer SM-1 from the Normal power supply to the Startup power supply in preparation.

Event No.	Timeline	Event Type*	Event Description
1.	T=0	N (BOP)	Transfers SM-1 from Normal to Startup power per PPM 2.7.1A
2.	T=10	I (SRO/RO)	B Flow Unit Failure (Tech Spec)
3.	T=25	C (SRO/RO) R (RO)	Control Rod 38-23 Drifts In (Tech Spec) Recirc flow is lowered to LE 80 Mlbm/hr.
4.	T=40	C (SRO/BOP) R (RO)	Ground on the operating TSW pump; Standby TSW pump does not start; Operating TSW pump trips on overcurrent - Total Loss of TSW. Recirc flow is lowered to 60 Mlbm/hr and a manual scram is inserted.
5.	T=45	M (ALL)	Hydraulic ATWS. RPV level lowered to –65 inches to LL. (Critical Step) SLC started - Only one SLC pump starts
6.	T=50	C (RO)	RWCU-V-4 fails to Auto close on SLC Initiation
7.	T=60		Insert Control Rods. (Critical Step)
8.	T=75		EOP 5.1.2 exited, PPM 5.1.1 entered. RPV level raised +13” to +54”.

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

The scenario will start with Columbia at full power. Turnover information will have the crew getting ready to support a DG-1 quarterly surveillance by transferring SM-1 from Normal to Startup power.

After the transfer a Flow Unit failure will occur. The crew should take actions to bypass it and refer to Tech Specs.

The next event is a control rod drifting in. The crew should enter ABN-ROD and take actions to insert the control rod. Reactor flow will be reduced to LE 80 Mlbm/hr. Tech Specs will be referenced.

The next event is a failure of the operating TSW pump. The crew will take actions to start the standby TSW pump which will not start. ABN-TSW will direct RRC flow be lowered to 60 Mlbm/hr and a manual scram be inserted. After the scram is inserted OPS1 will contact the control room and report that TSW-P-1A's breaker closed when the door to the breaker was opened.

When a scram is inserted the crew will recognize a hydraulic ATWS has occurred. PPM 5.1.1 will be exited to PPM 5.1.2. RPV/L will be lowered to reduce reactor power. The crew will establish a LL (-65") and maintain RPV/L between –80" and –140".

SLC will be initiated and only one of the SLC pumps will start. Additionally, RWCU-V-4 will fail to auto close but will be closed when the control Switch is taken to close.

The crew will perform PPM 5.5.6 and PPM 5.5.1 and prevent a RCIC start by closing RCIC-V-1.

The crew will take actions to insert control rods and perform PPM 5.5.10 and 5.5.11. When the first Scram/Reset/Scram is attempted, all control rods will insert. The crew will exit PPM 5.1.2, stop SLC injection, and enter PPM 5.1.1. RPV/L will be returned to normal.

The scenario will be terminated when RPV/L is returned to +13' to +54" level band.

Event No. 1		
Description: Transfers SM-1 from Normal to Startup power per PPM 2.7.1A. This event is initiated by the SRO and is given in the turnover information.		
Time	**Position**	**Applicants Actions or Behavior**
T=0	SRO	Directs RO to transfer SM-1 from TR-N to TR-S per PPM 2.7.1A.
	BOP	Refers to PPM 2.7.1A section 5.6 and performs the following: • Place CB-S1 Sync Selector switch in the MANUAL position • Place CB-S1 control switch to CLOSE position • Place CB-N1 control switch to TRIP position • Place CB-S1 sync selector switch to OFF position Informs SRO that SM-1 is being powered from TR-S.
	RO	Monitors plant conditions
COMMENTS:		

Event No. 2		
Description: B Flow Unit Failure – Tech Spec. The event is manually initiated by activating **TRIGGER 1** after SM-1 is transferred to Startup power.		
Time	**Position**	**Applicants Actions or Behavior**
T=10	I (SRO/RO)	Acknowledges alarms and refers to ARP for Flow Reference Off Normal. Determines the B Flow Unit has failed (light illuminated on apron on P603) and informs SRO.
	SRO	Directs backpanel status be checked. Directs the B Flow Unit be bypassed per ARP step.
	RO	Bypasses B Flow Unit by placing bypass switch to the B position on P603. Verifies bypass light illuminated for B Flow Unit. Reports alarms cleared.
	SRO	Refers to Tech Specs 3.3.1.1, LCS 1.3.2.1, and TS Bases page 3.3.1.1-9 for flow unit failure in Mode 1. Contacts PSRO and conducts brief.
COMMENTS:		

Event No. 3		
Description:. Control Rod 38-23 Drift In. (Tech Spec) The event is manually initiated by activating **TRIGGER 2** after flow unit has been bypassed/brief has occurred.		
Time	**Position**	**Applicants Actions or Behavior**
T=25	RO	Acknowledges drift alarm and identifies 38-23 as having the drift light illuminated. Informs SRO of rod drift. Takes immediate actions of ABN-ROD: • Selects rod • Depress Insert or the Continuously Insert P/B • Drive control rod to position 00 • Release and verify rod remains full in
	BOP	Pulls ARP for drifting rod and refers SRO to ABN-ROD.
	SRO	Per subsequent actions of ABN-ROD directs Core flow be reduced to LE 80 Mlbm/hr. May direct resetting rod drift annunciator.
	RO	Reduces core flow to LT 80 Mlbm/hr. Reports Reactor Power/Pressure/Level when flow reduction is completed.

	SRO	Refers to Tech Spec 3.1.3 C: • verifies total # of slow and inop rods is LE 8 • Control rod is fully inserted within 3 hours • Disarm within 4 hours May refer to PPM 3.2.1 to verify actions for downpower are complete.
ROLE PLAY – If sent to isolate 38-23 per tech spec, wait three minutes and then activate **TRIGGER 3** and report CRD-V-101 and CRD-V-102 for rod 38-23 are closed.		
FLOOR ROLE PLAY – If asked, the Mon Run shows no thermal limits exceeded.		
	RO	May selects an edge rod to minimize alarms.
COMMENTS:		

Event No. 4		
Description: Ground on operating TSW pump and standby pump will not start - Total Loss of TSW. The event is manually initiated by activating **TRIGGER 4** after rod tech specs are referenced.		
Time	**Position**	**Applicants Actions or Behavior**
T=40	BOP	Acknowledges OL/Gnd alarm, investigates and reports rising amps on TSW-P-1B. Refers SRO to ABN-TSW.
	SRO	Per ARP directs monitoring motor current and temperature and consider swapping to TSW-P-1A. Refers to ABN-TSW and directs TSW-P-1A start.
	BOP	Attempts to manually start TSW-P-1A, notes it does not start, and reports actions to SRO. Reports trip (and lockout) of TSW-P-1B resulting a total loss of TSW.
	SRO	Per subsequent actions of ABN-TSW, directs RRC flow be reduced to 60 Mlbm/hr.
	RO	Reduces RRC flow to 60 Mlbm/hr and reports completion to SRO.
	SRO	Directs a manual scram be inserted.
BOOTH OPERATOR – 1 minute after scram is inserted, **ACTIVATE TRIGGER 5** to remove overrides and start TSW-P-1A. **ROLE-PLAY: As OPS1 contact the control room and inform them that when you opened the door to breaker for TSW-P-1A, the breaker closed in.**		
COMMENTS:		

Event No. 5		
Description: Hydraulic ATWS. This event initiated by the SRO per EOP PPM 5.1.1.		
Time	**Position**	**Applicants Actions or Behavior**
Critical step for this event is to start SLC and lower RPV level to reduce RPV power.		
T=45	RO	Manually scrams the reactor and performs immediate operator actions of PPM 3.3.1: • mode switch to shutdown • monitors/reports power/level/pressure • Notes all rods not inserted and APRMs NOT downscale and continues with immediate scram actions: • Depresses Manual Scram Pushbuttons • Initiates ARI • inserts SRMs/IRMs Reports EOP entry on scram required and Reactor Power GT 5%. May report Hydraulic ATWS conditions exist.
	SRO	Enters PPM 5.1.1 and exits to PPM 5.1.2 due to ATWS. Directs ADS be inhibited. Directs manual control of HPCS.

	BOP	Places ADS override switches in INHIBIT. Takes manual control of HPCS by holding HPCS-P-1 control switch to stop and arming and depressing manual HPCS initiation P/B. Closes HPCS-V-4.
	SRO	Directs PPM 5.5.6 (Bypassing MSIV Low RPV level and Steam Tunnel High Temp Isolations) be performed.
	BOP	Performs PPM 5.5.6: • At P609, inserts key in MS-RMS-S84 and places to the BYPASS • At P611, inserts key in MS-RMS-S85 and places to the BYPASS Verifies alarms and reports completion to SRO.
	SRO	Directs RCIC start be prevented by closing RCIC-V-1.
	BOP	Closes RCIC-V-1 and verifies TRIP annunciator.
	SRO	Directs PPM 5.5.1 (Overriding ECCS RPV Injection Valve logic) be performed.
	BOP	Performs PPM 5.5.1 by: • At P625, places key for HPCS-V-4 in OVERRIDE position • At P629, places key for LPCS-V-5 in OVERRIDE position

		• At P629, places key for RHR-V-42A in OVERRIDE position • At P618, places key for RHR-V-42B in OVERRIDE position • At P618, places key for RHR-V-42C in OVERRIDE position Verifies alarms and updates crew when completed.
	SRO	Directs stopping and preventing all injection into RPV except from boron injection systems, RCIC and CRD.
	RO	Stops and prevents all injection into RPV except from boron injection systems, RCIC and CRD. by lining feedwater up on startup valves using quick card: • Places RFW-LIC-600 to MANUAL • Places RFW-SC-601A and 601B to MDEM • Closes RFW-V-112A and V-112B • Opens RFW-V-118 • Ensures startup valve controller in manual and closed signal
	SRO	Directs RPV/L be lowered and maintained between –80” and –140”.
	RO	When RPV level is LT –65, commences feeding RPV with feedwater to maintain RPV level as directed. Note: RPV level may not get to 65” due to injection of SLC. Feed should NOT be initiated while level is GT –65” except from boron, RCIC and CRD.

	SRO	Directs pressure control with SRVs and DEH.
	BOP	Control RPV Pressure as directed.
	SRO	Directs SLC injection.
	RO	Initiates SLC as directed using quick card: • Removes SLC key blanks and installs keys for switches • Places both SLC System control switches to OPER position Verifies SLC system operation and notes only one SLC pump starts. Reports flow rate and initial tank level. Verifies RWCU-V-4 isolation (Refer to event 6).
	BOP/RO	Announces EOP entry conditions as they occur: PPM 5.2.1 on Hi DW Pressure / DW Temperature / WW Level. PPM 5.3.1 on MS Tunnel Temperature Hi Hi
	SRO	Enters PPM 5.2.1 and PPM 5.3.1 as EOP entries are announced. Directs EOP initiations, actuations and DG starts be verified for –50 inch and 1.68 psig.
ROLE-PLAY – If sent to investigate the SLC pump, five minutes after being sent, report nothing obviously wrong with the pump or the breaker.		
Comments:		

Event No. 6		
Description: RWCU-V-4 does not close when SLC is initiated. This event is initiated active from the beginning of the scenario and becomes evident when SLC is started.		
Time	**Position**	**Applicants Actions or Behavior**
T=50	RO	Initiates SLC as directed.
	RO	Verifies SLC system operation and notes only one SLC pump starts. Reports flow rate and initial tank level. Verifies RWCU-V-4 isolation.
	RO	Notes RWCU-V-4 is still opened. Takes control switch to close and notes valve goes closed.
	RO	Reports RWCU-V-4 failure to auto close to SRO.
COMMENTS:		

Event No. 7		
Description: Inserts Control Rods (Critical Step). The event initiated by SRO by performance of PPM 5.1.2 flow chart.		
Time	**Position**	**Applicants Actions or Behavior**
Critical step for this event is to insert control rods by performing PPM 5.5.10 and 5.5.11.		
	SRO	Directs PPM 5.5.10 and 5.5.11 be performed to insert rods.
	BOP	Performs PPM 5.5.10: • At P650, pulls one fuse on TB1 (FO1, FO2, FO3, or FO4) • At P650, pulls one fuse on TB2 (FO1, FO2, FO3, or FO4)
	BOP	Performs PPM 5.5.11 to insert control rods and determines Tab B and F to be performed: Starts both CRD pumps (May have OPS2 place both suction and drive water filters in service per ABN-CRD-MAXFLOW.
ROLE-PLAY – Three minutes after request for ABN-CRD-MAXFLOW **ACTIVATE TRIGGER 26**. When trigger actions completed report completion to control room.		

	BOP	Performs Tab B:
		• Places SDV HIGH LEVEL TRIP C/S to BYPASS
		• Notes scram cannot be reset and performs Attachment 6.11:
		  • At P611 installs jumper between RPS-RLY-K9B stud 2 and RPS-RLY-K12F stud 4
		  • At P611 installs jumper between RPS-RLY-K9D stud 2 and RPS-RLY-K12H stud 4

		• At P609 installs jumper between RPS-RLY-K9A stud 2 and RPS-RLY-K12E stud 4 • At P609 installs jumper between RPS-RLY-K9C stud 2 and RPS-RLY-K12G stud 4 • At P603 resets the scram
BOOTH OPERATOR: When Scram is Reset, activate <u>TRIGGER 6</u> which deletes ATWS.		
	BOP	When SDV has drained for more than 2 minutes: • Checks rod density • Initiates a manual scram Notes all rods inserted and reports condition to SRO.
COMMENTS:		

Event No. 8		
Description: EOP 5.1.2 exited, PPM 5.1.1 entered. RPV level raised +13" to +54". This event is initiated by report from BOP that all rods are in approximately 40 minutes after the start of the scenario.		
Time	**Position**	**Applicants Actions or Behavior**
T=75	SRO	Acknowledges "All rods in report" and directs SLC system be secured.
	RO	Stops both SLC systems by returning control switches to normal. Reports SLC secures to SRO.
	SRO	Announces exit of PPM 5.1.2 and entry into PPM 5.1.1. Directs RPV level be raised to normal operating band of +13 inches to +54 inches.
	RO	Raises RPV level to band given with feed and condensate system. Reports RPV level in band as appropriate.
Termination Cue: The scenario can be terminated when SLC has been secured and RPV level has been returned to normal operating band of +13 inches to +54 inches.		
COMMENTS:		

SRO TURNOVER INFORMATION

Initial conditions: Columbia is operating at full power. CAS-C-1C is tagged out for motor replacement.

Turnover: Preparations are being made to perform the DG-1 quarterly surveillance. After turnover transfer SM-1 from the Normal power supply to the Startup power supply in preparation.

NRC SCENARIO #2 SETUP

Reset Simulator to IC 119

Hang tags on CAS-C-1C

Ensure bat files 2006scenario2A, 2B and 2C are in the BATCH directory

Put Turnover on SM Window

BAT FILE 2006Sscenario2.txt

```
>Load this batch file by first initializing the simulator to IC-14, then
>go the expert mode and type "BAT 2006scenario2.txt" and hit enter.
>
>Ensure 2006scenario2.txt & 2006scenario2A.txt,
>2006Scenario2B.txt, and 2006Scenario2C.txt are in BATCH directory.
>
>*************************
>* Trigger list *
>*************************
>
> Trigger 1: B Flow Unit Failure
> Trigger 2: Control Rod 38-23 Drifts in
> Trigger 3: Isolate Control Rod 38-23
> Trigger 4: Ground on TSW-P-1B (Also puts in Hydraulic ATWS)
> Trigger 5: Clear TSW overrides and start TSW-P-1A
> Trigger 6: Clear ATWS
>
>*************************************************************************
>The following items setup conditions for the beginning of the scenario
>*************************************************************************
>
>DISC CAS-C-1C
IRF LOA-EPS127 DISCONNECT
>
> TSW-P-1A Start prevented
IOR OVR-TSW001E ON
IOR OVR-TSW001G OFF
>
>SLC-P-1B Failure to Start
IOR OVR-SLC002C  OFF
>
>RWCU-V-4 Fails to Auto Close
IMF MOV-RWU010F  4
>
>SET MET DATA
> ENV-RWB002   AMBIENT TEMP AT 33 FEET
IRF ENV-RWB002 90
> ENV-RWB001   AMBIENT DELTA TEMP ELEV 245-33'
IRF ENV-RWB001 2
> ENV-RWB007   WIND SPEED AT 33 FEET
IRF ENV-RWB007 5
> ENV-RWB005   WIND SPEED AT 245 FEET
IRF ENV-RWB005 5
> ENV-RWB006   WIND DIRECTION AT 33 FEET
```

```
IRF ENV-RWB006 180
> ENV-RWB004   WIND DIRECTION AT 245 FEET
IRF ENV-RWB004 180
>
>ANN-840A4A04  CW PMP A MOTOR TRIP OFF
IMF ANN-840A4A04   1
> ANN-840A4B04  CW PUMP A MOTOR OL/GND OFF
IMF ANN-840A4B04   1
> ANN-840A5A07  TSW PMP A MOTOR TRIP
IMF ANN-840A5A07   1
>
>**********************************************************************
>The following items are triggered in the scenario
>**********************************************************************
>
>Trigger 1 - B Flow Unit Failure
IMF MAL-NIS006B (1)  0
>
> Trigger 2 - Control Rod 38-23 Drifts In
IMF MAL-RMC004-3823 (2) 0
>
>Trigger 3 - Isolate Rod 38-23
> Isolate Control Rod 38-23 by closing CRD-V-101 and CRD-V-102
IRF LOA-CRD092 (3)  CLOSE
IRF LOA-CRD277 (3)  CLOSE
>
>Trigger 4 - TSW-P-1B ground/trip
> TSW-P-1B WINDING GROUND
IMF MOT-TSW004G (4) 60 999
> ANN-840A5H07  TSW PMP B MOTOR OL/GND
IMF ANN-840A5H07 (4 5)  0
>
> ATWS
IMF MAL-CRD007A1 (4) 100
IMF MAL-CRD007A2 (4) 100
IMF MAL-CRD007B1 (4) 94
IMF MAL-CRD007B2 (4) 94
>
>**********************************************************************
>The following set up triggers to initiate batch files
>**********************************************************************
>
> Trigger 5
> Clear TSW Overrides and start TSW-P-1A
TRG 5 "bat 2006scenario2B.txt"
>
```

> Trigger 6
>Clear ATWS
TRG 6 "bat 2006scenario2A.txt"
>
>Local Bat file loads generic triggers for local plant actions
bat local.txt

BAT FILE 2006Sscenario2A.txt

>This file supplements 2006 Scenario#2 and clears Hydraulic ATWS
DMF MAL-CRD007A1
DMF MAL-CRD007A2
DMF MAL-CRD007B1
DMF MAL-CRD007B2
>

BAT FILE 2006scenario2b.txt

>This file supplements 2006 Scenario#2 and clears TSW-P-1A
>Overrides and starts TSW-P-1A
DOR OVR-TSW001E
DOR OVR-TSW001G
"bat 2006scenario2c.txt"
>

BAT FILE 2006scenario2c.txt

>This file supplements 2006 Scenario#2 and starts TSW-P-1A
IOR OVR-TSW001G ON

Facility: Columbia Scenario No: 1

Examiners: _____ Operators: _____

_____ _____

_____ _____

Initial conditions: Columbia is at 85% power due to an economic dispatch request from BPA. REA-FN-1A is OOS due to bearing replacement. REA-FN-1B is protected.

Turnover: Return Columbia to 100% power with flow. There are no preconditioning limits associated with the power/flow increase.

Event No.	Timeline	Event Type*	Event Description
1.	T=0	R (RO)	Raises Reactor Power with recirculation flow.
2.	T=10	C (SRO)	Accumulator for a Control Rod Inop (Tech Spec #1)
3.	T=20	C (RO)	Slow drop of RFW-P-1A Control Oil Pressure with failure of RFW-P-AOP/1A to start.
4.	T=30	C (RO)	CRD-P-1A reduced flow and pump trip.
5.	T=45	C (SRO/BOP)	RHR-A Suction piping rupture that is isolated by closing RHR-V-4A. (Critical Step) (Tech Spec)
6.	T=50	N (BOP)	Performs PPM 5.5.23 to fill SP with HPCS.
7.	T=70	M (ALL)	RRC-P-1A High Vibration alarms followed by seal failures followed by LOCA.
8.	T=75	C (BOP)	RRC-V-19 fails to Auto close on 1.68 psig isolation signal.
9.	T=85		RHR-V-17B breaker trips when C/S taken to open (results in the inability to spray drywell)
10.	T=90		Initiates an Emergency Depressurization when DW/T cannot be maintained below 330°F or PSP is exceeded. (Critical Step)

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

The scenario starts with Columbia at 86% due to economic dispatch. The crew will be directed to raise power back to 100% after turnover. After the power increase, accumulator for rod 14-23 will annunciate. Report from the field will be a valve failure with pressure LT required by Tech Specs. The SRO will declare rod 14-23 inoperable.

The next event will occur after the power increase. Due to a failed pump, the A RFP control oil pressure low alarm will annunciate. The crew will note that the Auxiliary Oil Pump should have started when this alarm is received but did not. The crew will start the Auxiliary Oil Pump and control oil pressure will return to normal.

The next event is a slow failure of CRD-P-1A. CRD system pressure will drop and the crew will take actions to start the standby CRD pump which will restore system pressure.

The next event is a rupture in RHR-P-2A suction piping. Suppression pool level will drop and EOP 5.2.1 will be entered. Additionally ABN-Flooding will be entered. Report from the field will be that the leak is between the RHR pump and the suction valve. The crew will close RHR-V-4A and pull the control power fuses on the pump to prevent it from starting. Closing RHR-V-4A will stop the leak and PPM 5.5.23 will be used to return SP/L to normal with HPCS.

The next event is high vibrations on RRC-P-1A. The lower and upper seals will quickly fail and cause a small LOCA. DW/P will rise and the crew should take actions to scram the reactor. With RHR-A already being OOS, sprays will be initiated with RHR-B. When WW/P exceeds 12 psig, the crew will attempt to spray the drywell. When RHR-V-17B is opened to initiate sprays it will lose power and the crew will not be able to spray the drywell. On the 1.68 psig initiation, EDR-V-19 will fail to auto close. Manual actions to close the valve will result in the valve closing.

When it is determined that Drywell temperature cannot be maintained below 330°F or PSP has been exceeded, the crew will enter EOP 5.1.3 and initiate an Emergency Depressurization.

The scenario will be terminated when an Emergency Depressurization has been initiated and RPV level is being returned to normal.

Event No. 1		
Description: Raises Reactor Power with recirculation flow. This event is initiated by the SRO and is given in the turnover information.		
Time	**Position**	**Applicants Actions or Behavior**
T=0	SRO	Directs RO to raise Reactor power with flow at a directed rate of change.
	RO	Depresses Master Controller raise pushbutton while monitoring RPV Power, Pressure and Level. Monitors rate of power increase to be less that rate given by SRO.
	BOP	Provides Peer Checks to RO as necessary.
COMMENTS:		

Event No. 2		
Description: Accumulator for Control Rod 14-23 Inop. (Tech Spec) This event is initiated by activating **TRIGGER 1** as soon as the crew takes the shift.		
Time	**Position**	**Applicants Actions or Behavior**
T=10	RO	Acknowledges Rod Accumulator Trouble alarm and refers to ARP. Determines alarm is associated with rod 14-23 and informs SRO.
	SRO	Directs local investigation.
Role Play – Wait a minute and call 2171 and report as OPS2 that you have found accumulator valve CRD-V-111/14-23 (the accumulator's nitrogen charging valve) has a stem to disk separation. Accumulator pressure is down to 920 psig and you cannot stop the pressure drop which appears to be slowly dropping.		
	SRO	Refers to Tech Spec 3.1.5. Notes surveillance pressure requirement for each accumulator is GT 940 psig. Determines accumulator for rod 14-23 is inop and enters TS 3.1.5 Condition A – Declare the associated control rod inoperable within 8 hours. Contacts PSRO and conducts brief.
COMMENTS:		

Event No. 3		
Description: Slow drop of RFW-P-1A Control Oil Pressure with failure of RFW-P-AOP/1A to start. The event is initiated by activating **TRIGGER 2** (It takes 2 minutes to get alarm)		
Time	**Position**	**Applicants Actions or Behavior**
T=20	RO	Acknowledges TURB A CNTR OIL PRESS LOW annunciator and refers to ARP. Provides SRO with current control oil pressure (LT 70 psig).
	SRO/RO	Notes that RFW-P-AOP/1A should have started per ARP but is not running.
	SRO	Directs RFW-P-AOP/1A be started (RO may start pump without direction – auto action that should have occurred but did not).
	RO	Starts RFW-P-AOP/1A and reports start to SRO. Reports control oil pressure returned to normal and clearing of control oil pressure low annunciator. Acknowledges annunciator for RFW-P-AOP/1A running.
	SRO	Contacts Production SRO/System Engineer to investigate problem with RFW-P-AOP/1A.
ROLE-PLAY: If OPS3 is contacted report no leak observed.		
COMMENTS:		

Event No. 4		
Description: CRD-P-1A reduced flow and eventual pump trip This event is initiated by activating **TRIGGER 3** (It takes 1 minute to get alarm)		
Time	**Position**	**Applicants Actions or Behavior**
T=30	RO	Acknowledges Charge Water Press Low annunciator and refers to ARP. Provides SRO with current reading on CRD-PIS-600 and indicates that it continues to drop. Refers SRO to ABN-CRD. Acknowledges RWCU Pump trouble alarms associated with the drop in CRD pressure.
	SRO	Refers to ABN-CRD and directs placing CRD-FC-600 (CRD Flow Controller) in MANUAL at zero output.
	RO	Places CRD-FC-600 in MANUAL at zero output. Acknowledges CRD Abnormal Operation annunciator and reports the trip of CRD-P-1A.
	SRO	Per ABN-CRD directs start of CRD-P-1B, the standby CRD Pump.
	RO	Starts CRD-P-1B and reports start to SRO.
	SRO	Directs CRD-FC-600 be nulled and returned to AUTO.

	RO	Nulls CRD-FC-600 deviation meter and shifts CRD-FC-600 to AUTOMATIC.
COMMENTS:		

Event No. 5		
Description: Rupture in the RHR-A suction piping causing RHR-A room level to rise and Suppression Pool Level to drop. The event is initiated by activating **TRIGGER 4**. (It takes about 1 minute to get alarm)		
Time	**Position**	**Applicants Actions or Behavior**
Critical step for this event is to stop Suppression Pool leak by closing RHR-V-4A.		
T=45	BOP	Acknowledges alarms associated with lowering Suppression Pool level and rising water level in RHR-A Pump Room as they occur: • Sump R1 Level Hi Hi • Suppression Pool Level Hi/Low • RHR-A Pump Room Water Level High (EOP entry) Refers to ARPs as necessary. Reports Suppression Pool level dropping giving actual level. Reports EOP entry into PPM 5.2.1 on low suppression pool level when level drops to -2". Reports EOP entry into PPM 5.3.1 when RHR-A Room Level alarm annunciates (and BISI) (EOP entry is +6 inches above floor).
	SRO	Directs field investigation by OPS2. Enters PPM 5.2.1 on Suppression Pool level LT –2".
	BOP	Verifies FDR-V-607 is closed (H13-P632). Refers SRO to ABN-FLOODING and ABN-RAD-SPILL as appropriate.

ROLE-PLAY – Two minutes after being directed to investigate, report that there is a crack in the piping coming from the suppression pool to RHR-P-2A. The rupture is located between the RHR pump and the suction valve. Room level report (if requested) should be consistent with alarms in at the time. ROOM LEVEL REPORTS WILL ALWAYS BE LT +36".		
	SRO	Enters PPM 5.3.1. Refers ABN-FLOODING (and ABN-RAD-SPILL) and directs actions: • Make local evacuation announcement • START RHR-P-2B • Pull control Power fuses for RHR-P-2A • Close RHR-V-4A • Monitor ECCS rooms adjacent to RHR-P-2A room for flooding
ROLE-PLAY – Two minutes after request to pull RHR-P-2A fuses, initiate **TRIGGER 5** and report control fuses for RHR-P-2A pulled to Control Room.		
	BOP	Obtains key #3 from key locker and closes RHR-V-4A. Reports valve closed when appropriate. Reports SP level stops dropping when RHR-V-4A closes. Starts RHR-P-2B by placing its C/S to START. Verifies pump operation and SW-P-1B start.
ROLE-PLAY – If asked, the final level report will depend on actual SP level decrease (but will always be LT 36") (Use 1" drop in SP level is 1 inch rise in room flooding level).		
	SRO	Reviews Tech Specs for RHR-V-4A not being full open. TS 3.5.1 (Condition A applies – restore within 7 days), 3.6.1.5 (Condition A applies – restore within 7 days), and 3.6.2.3 (Condition A applies – restore within 7 days) apply in Mode 1. Tech Spec for SP Water level is 3.6.2.2A. Conducts brief.
COMMENTS: Note: SP/T high alarm received due to uncovering of the detector at 9".		

Event No. 6		
Description: Performs PPM 5.5.23 to fill Suppression Pool with HPCS. This event initiated by the SRO per EOP PPM 5.2.1.		
Time	**Position**	**Applicants Actions or Behavior**
	SRO	Directs Suppression Pool level be raised to 0" per PPM 5.5.23.
T=50	BOP	Pulls PPM 5.5.23 and performs the following: • Ensure HPCS-V-1 is opened • Start HPCS-P-1 and ensure HPCS-V-12 opens • Starts HPCS-P-2 (Service Water Pump) • Open HPCS-V-23 to raise flow to suppression pool to 7175 gpm and verifies HPCS-V-12 closes • When suppression pool level reaches 0 inches, closes HPCS-V-23 and ensures HPCS-V-12 opens • Stops HPCS-P-1 and ensures HPCS-V-12 closes. Reports suppression pool level to SRO.
Comments:		

Event No. 7		
Description: RRC-P-1A High Vibration alarms followed by LOCA requires manual scram prior to automatic scram at 1.68 psig drywell pressure. High Drywell EOP Entry into PPM 5.1.1 and re-entry into 5.2.1. The event is **MANUALLY initiated with <u>TRIGGER 6</u>**.		
Time	**Position**	**Applicants Actions or Behavior**
T=70	RO	Acknowledges RRC-P-1A high vibration alarm and refers to ARP.
	SRO	Directs local investigation.
ROLE-PLAY: A minute after being sent report vibration readings pegged high on all channels.		
		Reports annunciators as the occur: • Motor Bearing Oil Level High • Outer Seal Leakage High • Leak Detection Drywell Floor Drain Flow High • Staging Flow Hi/Lo • EOP entry into PPM 5.3.1 on Rx. Bldg High Rad (ARM-RIS-13 reading approximately 200mr/hr)
	SRO	Based on annunciators present, may direct tripping of RRC-P-1A.
	BOP/RO	Reports rising Drywell pressure and High Drywell Pressure annunciator.
	SRO	May directs a reactor scram prior to 1.68 psig scram.

	RO	Inserts a manual scram and performs immediate scram actions: • Places Reactor Mode Switch in SHUTDOWN • Monitors Power, Pressure, and Level • Verifies all rods inserted • Inserts IRMs and SRMs by depressing INSERT P/B Reports EOP entry on low RPV water level.
	SRO	Enters PPM 5.1.1 on Low RPV level.
	BOP	Recognizes and calls out Drywell pressure 1.68 EOP entry (and other PPM 5.2.1 entries as they occur).
	SRO	Enters PPM 5.2.1 and re-enters PPM 5.1.1 on high drywell pressure (ALERT PER 3.1.A.1). Directs RPV level controlled +13" to +54" with available systems.
	RO	Lines up on Startup Flow Control Valves using quick card: • Place RFW-LIC-600 in MANUAL (if RFW pumps running) • Place RFW-SC-601A and 601B in MDEM (If pumps running) • Close RFW-V-112A and 112B • Adjust RFW speed to maintain GT 100 psid on startup valve • Adjust RFW-LIC-620 to control level and place in AUTO when RPV/L is 36 inches Maintains RPV level with available systems.
	SRO	Directs Isolations, Initiations and DG starts be verified for +13" and 1.68

		psig. (Refer to Event 8)
	RO/BOP	Notes B RRC Pump running with no RCC running. Informs SRO and requests to trip RRC pump. May reports RRC-P-1A tripped.
	SRO	Directs RRC-P-1B be tripped.
	RO/BOP	Trips pump by depressing STOP P/B and reports to SRO.
	SRO	May direct RPV pressure reduction to reduce leak rate. NOTE: At some point in time MSIVs will close on MS Tunnel Temp High. SRO would then direct pressure control with SRVs.
	BOP	Maintains RPV Pressure at directed pressure band.
COMMENTS:		

Event No. 8		
Description: EDRV-19 fails to Auto Close on 1.68 psig Drywell pressure signal. This event is inserted at the beginning of the scenario.		
Time	**Position**	**Applicants Actions or Behavior**
	SRO	Directs Isolations, Initiations and DG starts be verified for +13" and 1.68 psig.
	BOP	Verifies Isolations, Initiations and DG starts be verified for +13" and 1.68 psig.
	BOP	Manually closes EDR-V-19 by taking control switch to close. Notes it does close.
	BOP	Reports to SRO that EDR-V-19 failed to isolate on 1.68 psig isolation signal but was closed manually. Reports remainder of isolations, Initiations and DG starts have been verified.
COMMENTS:		

Event No. 9		
Description: Breaker for RHR-V-17B trips when C/S taken to open results in the inability to spray drywell. This event is inserted at the beginning of the scenario.		
Time	**Position**	**Applicants Actions or Behavior**
T=85	BOP	Provides EOP entry conditions into PPM 5.2.1 as they occur. Reports Wetwell pressure when GT 2 psig.
	SRO	Directs Wetwell Sprays be initiated with RHR-P-2B. Directs sprays be terminated when WW/P drops below 1.68 psig.
	BOP	Initiates Wetwell sprays by opening RHR-V-27B. Reports Wetwell sprays initiated.
	BOP	Reports Wetwell pressure when it is GT 12 psig.
	SRO	Ensures parameters are within DSIL, WW/L LT 51', RRC pumps are stopped and directs Drywell Cooling Fans be secured.
	RO/BOP	Stops Drywell Cooling Fans and reports completion to SRO.
	SRO	Directs Drywell sprays be initiated with RHR-P-2B.
	BOP	Checks DSIL and opens RHR-V-16B and attempts to open RHR-V-17B. Notes that RHR-V-17B lost position indication as soon as the valve C/S was positioned. Reports condition to SRO.

	SRO	Sets Wetwell Pressure, Wetwell Level (PSP) and Drywell Temperature as a KEY parameters due to inability to spray.
	RO/BOP	Reports Drywell Temperature as it rises towards 330°F. Reports trend of parameters as it approaches PSP limits.
	RO/BOP	If RCIC was initiated for level control, it may trip on high backpressure.
ROLE-PLAY – If asked to manually open RHR-V-17B, wait five minutes and report valve is stuck in the closed position and you can not get it opened.		
COMMENTS:		

Event No. 10		
Description: Initiates an EMERGENCY DEPRESSURIZATION when Drywell Temperature approaches 330°F or PSP is exceeded. This event is initiated when it is determined that Drywell Temperature cannot be maintained LT 330°F or PSP is exceeded.		
Critical step is to initiate an EMERGENCY DEPRESSURIZATION when drywell Temperature cannot be restored and maintained LT 330°F.		
Time	**Position**	**Applicants Actions or Behavior**
T=90	BOP	Reports Drywell Temperature as it approaches 330°F. Reports WW Pressure and WW Level as they apply to PSP curve.
	SRO	When Drywell Temperature cannot be maintained below 330°F or when PSP is exceeded, determines that an ED is required: Follows overrides to PPM 5.1.3. Directs ECCS pumps not required for adequate core cooling be stopped from injecting.
	RO/BOP	Stops ECCS injection as necessary to maintain RPV level.
	SRO	Requests Wetwell Level and when reported GT 17 foot, directs seven SRVs, ADS preferred, be opened.

	RO/BOP	Opens seven ADS SRVs as directed and reports completion to SRO.
	SRO	Directs RPV/L maintenance +13 inches to +54 inches.
Termination Cue: The scenario can be terminated when the reactor has been Emergency Depressurized and RPV level is under control in the band of +13 inches to +54 inches.		
Comments:		

SRO TURNOVER INFORMATION

Initial Conditions: Columbia is at approximately 85% power due to an economic dispatch request from BPA. REA-FN-1A is OOS due to bearing replacement. REA-FN-1B is protected.

Turnover: Return Columbia back to 100% power with flow. The reactivity brief has been completed and there are no preconditioning limits associated with the power/flow increase.

SIMULATOR SETUP INSTRUCTIONS

Reset to IC-120
Tag REA-FN-1A
Protect REA-FN-1B
Ensure CRD-P-1A is running with dot above it
Ensure Bat 2006scenario1A.txt and 2006scenario1B.txt are in BATCH directory

2006scenario1.txt

```
>RON HAYDEN
>
>This scenario starts out at a reduced power level (approx 85%).
>
>Load this batch file by first initializing the simulator to AN 85% IC,
>then go to expert and type "BAT 2006scenario1.txt" and hit enter.
>
>Note: The following Batch Files need to be in the OPENSIM Batch
>file directory:   2006scenario#1.txt; 2006scenario1A.txt
>
>************************
>* Trigger list *
>************************
>
> Trigger 1: Accumulator Alarm Control Rod 14-23
> Trigger 2: Failure of RFW-P-AOP/1A to Auto start
> Trigger 3: CRD-P-1A reduced head followed by pump trip
> Trigger 4: RHR A Suction line rupture
> Trigger 5: Rackout RHR-P-2A
> Trigger 6: RRC-P-1A Pump Fails and LOCA
> Trigger 7: Conditional for RHR-V-17A control power fuses failing
> Trigger 10: Conditional for trip of CRD-P-1A
> Trigger 11: Conditional to delete RFW-P-AOP/1A events
> Trigger 12: Conditional to fail on seal leakage alarm when it annunciates
>
>*********************************************************************
>The following items setup conditions for the beginning of the scenario
>*********************************************************************
>
>REA-FN-1A Racked out
IRF LOA-EPS330 RACKED-OUT
>
>EDR-V-19 Fails to Auto Close
IMF AOV-SCN002F 3
>
>*********************************************************************
>The following items are triggered in the scenario
>*********************************************************************
>
> Trigger 1
>Accumulator alarm on control rod 14-23
IMF MAL-CRD001-1423 (1)
>
>Trigger 2
>RFW-A  CONTROL OIL PRESS METER SIGNAL
IOR IND-FPT015 (2) 68 120
>RFW-A  BEARING OIL PRESS METER SIGNAL
IOR IND-FPT016 (2) 18 120
> ANN-840A1E02  TURB A LUBE OIL PRESS LOW
IMF ANN-840A1E01 (2 110)  0
>
> Trigger 3
>CRD-P-1A REDUCED HEAD
IMF PMP-CRD001H (3) 100 1200
>
> Trigger 4
> RHR A Suction line rupture
```

```
IMF MAL-RHR001 (4) 8400 180
>
>Trigger 5
> Rackout RHR-P-2A Breaker
IRF LOA-EPS384 (5) RACKED-OUT
>
> Trigger 6
> RRC-P-1A High Vibration/Pump Failure/LOCA
IMF MAL-RRP002A (6) 16
> RRC-P-1A Low Bearing Oil Level Alarm
IMF ANN-602A6A03 (6 30)  0
> RRC-P-1A Lower Seal failure
IMF MAL-RRP001A (6 60) 100
> RRC-P-1A Upper Seal Failure
IMF MAL-RRP001C (6 60) 100
> RRC-P-1A Shaft Seizure trip
IMF PMP-RRP001S (6 180)  TRUE
> Small LOCA
IMF MAL-RRS004A (6 90) .4 300
>
> Large Steam Leak in Containment
IMF MAL-RRS009A (6 600) 30900000  1800
>
>*********************************************************************
>The following items are set up for conditionals
>*********************************************************************
>
> RHR-V-17B control power fails when red light illuminates
IMF MOV-RHR011F (7)  0
TRGSET 7 "X01I276P.GT.0"
>
> CRD-P-1A SHAFT SEIZURE
IMF PMP-CRD001S (10)  TRUE
TRGSET 10 "X03i121e.eq.0"
>
>Delete RFW-P-AOP/1A events on AOP switch to Run position
TRG 11 "bat 2006scenario1A.txt"
TRGSET 11 "X8Ai154R.eq.1"
>
>Fails of RRC-P-1A seal leakage high when it annunciates
IMF ANN-602A6B02 (12)  0
TRGSET 12 "JN06B02.GT.0"
>
>*********************************************************************
>The following set up triggers to initiate batch files
>*********************************************************************
>
>Local Bat file loads generic triggers for local plant actions
bat local.txt
```

NRC SCENARIO #3

Facility: Columbia Scenario No: 3

Examiners: _____ Operators: _____

_____ _____

_____ _____

Initial Conditions: Columbia is in the process of starting up following a 35 day outage. The Reactor is critical and RPV pressure is approximately 600 psig. HPCS-P-1 is OOS and is planned to be returned to service within the next few hours.

Turnover: Continue with the startup by pulling control rods to get BPVs 30% open. The reactivity brief has been completed. The evaluator for CRO1 will be the Peer Checker for pulling control rods. Swap RCC Pumps for run time equalization to RCC-P-1C running and RCC-P-1B in standby (These two evolutions may be done concurrently). A pre-job brief for DW entry is scheduled in 1.5 hours. Control Rod withdrawal is to commence at step 35-1 with control rod 10-43.

Event No.	Timeline	Event Type*	Event Description
1.	T=0	R (RO)	Withdraw Control Rods
2.	T=0	N (BOP)	Swap RCC Pumps to RCC-P-1C running and RCC-P-1B in standby
3.	T=10	I (SRO/RO)	Reed Switch Failure on 42-35 position 8 (Tech Spec)
4.	T=30	I (SRO/RO)	IRM H Fails Downscale (Tech Spec)
5.	T=40	C (SRO/BOP)	Min Seismic Earthquake Lockout on TR-S SM-8 de-energized (TR-B fails to close in on SM-8; DG-2 output breaker fails to auto close but may be manually closed) (Critical step)
6.	T=50	M (ALL)	OBE LOCA Drywell Floor Rupture.
7.	T=60	C (BOP)	RHR-P-2C breaker fails to auto/manually close. LPCS-P-1 and RHR-P-2B breakers fails auto start but can be manually started
8.	T=70		Spray the Drywell when Wetwell pressure exceeds 12# (Critical Step)
9.	T=80		Restore RPV level +13 to +54 inches

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

NRC SCENARIO #3

The scenario starts with a plant startup in progress. Reactor is critical at 600 psig and HPCS is OOS. The crew is directed to continue with the startup. The first task is to raise reactor power by pulling control rods to get bypass valves 30% open.

While the control rod pull is going on, the BOP operator will swap RCC pumps to RCC-P-1C running and RCC-P-1B in standby.

About five minutes into the rod pulls control rod 42-35 will loose position indication. The crew will enter ABN-RPIS. The crew will substituting a rod position per SOP-RSCS-OPS and SOP-RWM-OPS. Tech Specs will be referenced.

After control rod pull re-commences, IRM H will fail downscale. The crew will respond and bypass the failed IRM. Tech Specs will be referenced.

The next event is a Minimum Seismic Earthquake. After actions have been completed another tremor will occur and Offsite power will be lost. A reactor scram will occur and the crew will respond to the electrical panel SM-7 will be powered from TR-B. SM-8 will become de-energized when TR-B fails to close in and DG-2 output breaker also fails to close in. Manual actions will close in DG-2 onto SM-8.

The next event is a Operating Basis Earthquake which causes a large LOCA. RPV level will drop. The crew will enter EOP 5.1.1 on RPV/L and EOP 5.2.1 on DW/P. LPCS-P-1 and RHR-P-2B will not automatically start on high DW/P but manual actions will start both pumps. Additionally RHR-P-2FC will not start but can not be manually started. As Primary Containment pressures rise the crew will note they are both the same and conclude drywell pressure response is not consistent with LOCA conditions. Wetwell sprays will be initiated when WW/P exceeds 2 psig. DW sprays will be initiated when WW/P exceeds 12 psig. DW sprays will be secured when DW pressure drops to 1.68 psig and will be initiated again if WW pressure reaches 12 psig.

As RPV level continues to drop RPV pressure will also drop. The crew may take action to lower RPV pressure or allow LOCA to drop pressure to allow LP ECCS injection. When RPV pressure drops to approx 320 psig, LPCS will start to inject and other low pressure ECCS will start to inject as RPV pressure continues to drop.

The scenario will be terminated when RPV level has been returned to normal and Containment sprays have been initiated/re-initiated.

NRC SCENARIO #3

Event No. 1		
Description: Withdraw Control Rods to open BPVs to 30% open. This event is initiated by the SRO and is given in the turnover information.		
Time	**Position**	**Applicants Actions or Behavior**
T=0	SRO	Directs RO to withdraw control rods to open BPVs to 30% open.
	RO	Withdraws control rods to open BPVs to 30% open.
	BOP	Monitor plant conditions.
COMMENT:		

NRC SCENARIO #3

Event No. 2		
Description: Swap RCC pumps to RCC-P-1C running and RCC-P-1B in standby. This event is initiated by the SRO and is given in the turnover information.		
Time	**Position**	**Applicants Actions or Behavior**
T=0	SRO	Directs RO to swap RCC Pumps.
	BOP	Refers to PPM 2.8.3 starting at step 5.2.3 and contacts OPS 2 to verify RCC-V-1C and RCC-V-2C are opened.
CUE: As OPS2 report RCC-V-1C and RCC-V-2C are opened.		
	BOP	Places C/S for RCC-P-1C in the Auto after Start position and verifies proper pump operation.
	BOP	Secure RCC-P-1B and takes C/S for RCC-P-1B to the Auto after Stop position and verifies actions.
	BOP	Contacts OPS2 to verify discharge check valve closed.
CUE: As OPS2 report the discharge check on RCC-P-1B did close.		
	BOP	Reports completion to SRO.
COMMENT:		

NRC SCENARIO #3

Event No. 3		
Description: Failed Reed Switch on Control Rod 42-35 position 08. This event is initiated when the RO pulls control rod 42-35 to the 08 position.		
Time	**Position**	**Applicants Actions or Behavior**
T=10	RO	When Control Rod 42-35 is pulled to position 08 receives Rod Out Block annunciator. Pulls ARP and reports alarm to SRO.
	RO	Notes rod block, insert block and data fault lights illuminated on horizontal P603 panel and informs SRO.
	RO	Recognizes that no position is displayed on RWM and informs SRO.
	SRO	Enters ABN-RPIS. Discusses step 4.2 and may contact SNE.
ROLE-PLAY: When ABN-RPIS is entered, step 4.3 states "At the direction of the CRS, move the control rod to an operable position per Attachment 7.1 or 7.2". **FLOOR EVALUATOR – Inform the CRS that the SNE has been contacted and has issued a Control Rod Deviation Sheet – hand him the deviation sheet to move rod 42-35 from 08 to 06.**		
	SRO	Directs ABN-RPIS (step 4.3) Attachment 7.1 be performed.
	RO	Refers to ABN-RPIS Attachment 7.1, step 7.1.1 and inserts a substitute value into RSCS and RWM. Per SOP-RSCS-OPS completes section 5.3: • Verify that a notch is displayed in the SUBSTITUTE POSITION window (RSCS display) • Verify the displayed notch position is the expected position for the control rod

NRC SCENARIO #3

		• Verify the SEL SUB illuminated on the SUBSTITUTE POSITION SELECTION pushbutton
EVALUATOR NOTE: **The SEL SUB light WILL NOT be illuminated due to a Simulator Vs. Plant difference – provide a verbal cue to the operators that the light is illuminated.**		
	RO	• Depress the SUBSTITUTE POSITION SELECTION pushbutton • Refer to SOP-RWM-OPS to substitute a rod position in RWM
	RO	Refers to SOP-RWM-OPS and performs the following: • Directs SRO to refer to TS 3.1.3, 3.1.6, 3.3.2.1, 3.10.7, and 3.9.5 PRIOR to entering a substitute position
	SRO	Refers to TS as directed, notes no applicability, and directs RO to continue with entering a substitute rod position.
	RO	Continues with SOP-RWM-OPS: • Verifies rod selected is correct • Touches "MENUS" • Selects "Substitute/Bypass Rod" • Verifies substitute position is not correct and touches up to display correct substitute position • Selects Substitute Rod Position • Obtains Independent Verification from BOP operator Notes Rod Out block clears.
	BOP	Performs Independent Verification as requested.
COMMENT:		

NRC SCENARIO #3

Event No. 4		
Description: IRM H Fails Downscale (Tech Spec). The event is MANUALLY initiated with **TRIGGER 1** when SOP-RWM-OPS is completed.		
Time	**Position**	**Applicants Actions or Behavior**
T=30	RO	Acknowledges and reports Rod Out Block and IRM Monitor Downscale annunciators and refers to ARP. Reports IRM H is reading downscale.
	SRO	Per both ARPs, directs RO to bypass IRM H.
	RO	Places IRM H in the bypass position and clears alarms.
	SRO	Refers to Technical Specification 3.3.1.1 and LCS 1.3.2.1. Notes this IRM channel is not a 'required' IRM channel and that no TS conditions apply and no actions are required. Conducts brief.
COMMENTS:		

NRC SCENARIO #3

Event No. 5		
Description: Min Seismic Earthquake; Lockout on TR-S; SM-8 becomes de-energized (TR-B fails to close in on SM-8; DG-2 output breaker fails to auto close but may be closed in manually) (Critical step) The event is MANUALLY initiated with **TRIGGER 2.**		
Time	**Position**	**Applicants Actions or Behavior**
Critical step for this event is to close in the output breaker for DG-2 to re-power SM-8 loads.		
BOOTH OPERATOR – To start this event turn on the EQ machine at low volume, working up to **MID volume** and run for a total EQ of 15 seconds. Three seconds after EQ machine is on, activate **TRIGGER 2**.		
ROLE-PLAY: When EQ is done, contact the control room as OPS1 and inform them you are in the Reactor Building and shaking has been felt.		
T=40	BOP	Responds to Minimum Seismic alarm and refers to ARP. Announces Minimum Seismic Earthquake and directs SRO to ABN-EARTHQUAKE. Check Red/Yellow Response Spectrum Lights on H13-P823 and reports number of amber lights illuminated to SRO.
	SRO	Direct actions per ABN-EARTHQUAKE. Direct OPS-1 to have EOs commence a quick tour of Plant.
	BOP	Makes plant announcement per ABN-EARTHQUAKE.
BOOTH OPERATOR: When announcement has been completed, turn on the EQ machine (at the mid range level left after first play) for 10 seconds. TWO seconds into this tremor, activate TRIGGER 3.		

NRC SCENARIO #3

T=45	RO	Notes reactor scram and performs immediate operator actions of PPM 3.3.1: • mode switch to shutdown • monitors and reports power/level/pressure • inserts SRMs/IRMs • reports all rods in Reports EOP entry on low RPV level.
	SRO	Acknowledges scram report and enters EOP 5.1.1 on low RPV level.
	BOP	Responds to electrical boards and diagnoses: • Lockout on TR-S • SM-7 powered from TR-B • SM-8 de-energized Attempts to close in TR-B on SM-8: • Places CB-B8 SYNC SELECTOR to MAN • Places CB-B8 C/S to the CLOSE position and notes SYNC PERMIT light illuminated but breaker failed to close Closes in DG-2 to re-power SM-8 • Places CB-DG2/8 SYNC SELECTOR to MAN • Places CB-DG2/8 MODE SELECTOR to C.R. position • Places CB-DG2/8 C/S to the CLOSE position and verifies it re-powers SM-8 Updates SRO on Electrical Plant status.

NRC SCENARIO #3

	BOP/RO	May report drywell pressure rising (due to lack of cooling) and if DW/P reaches 1.68 psig reports it as an EOP entry.
	BOP/RO	Notes CAS compressors off and directs OPS3 to reset and restart CAS compressors.
	BOP	Notes MSIVs closed (on loss of both RPS buses). Takes pressure control with SRVs and updates crew.
	SRO	Directs pressure control with SRVs.
	BOP/RO	Reports EOP 5.3.1 entry on Secondary Containment dP High.
	SRO	Enters PPM 5.3.1 on Secondary Containment dP High.
	BOP	May investigate Secondary Containment EOP entry and start SGT .
ROLE-PLAY – Wait one minutes after request and then activate **TRIGGER 23** to reset and restart the CAS compressors. Report completion to the control room.		
COMMENTS:		

NRC SCENARIO #3

Event No. 6

Description: OBE; LOCA; Drywell Floor Rupture.

This event manually initiated after actions have been completed for last event and SM-8 has been re-powered.

BOOTH OPERATOR - Turn on the EQ machine at mid volume (where left from last tremor), working up to full volume. Run EQ for 15 seconds total. Three seconds after EQ machine is on, activate **TRIGGER 4**.

Time	Position	Applicants Actions or Behavior
T=50	BOP	Acknowledges OBE alarm and refers to ARP. Announces OBE (ALERT per 9.4.A.1). Check Red/Yellow Response Spectrum Lights on H13-P823 and reports findings to SRO.
	RO/BOP	Notes rising drywell pressure and reports EOP entry when pressure exceeds 1.68 psig. As Containment pressures continue to rise, it is noted that Drywell and Wetwell pressures rise together indicating loss of suppression function. The CRS is informed when condition is recognized.
	SRO	Enters PPM 5.2.1 and PPM 5.1.1 on high DW/P when DW/P is 1.68#. Directs initiations, isolations and DG starts for 1.68 psig be verified.
	RO	Notes RPV level drop and reports EOP entry when RPV/L drops to +13".

Comments:

NRC SCENARIO #3

Event No. 7		
Description: On 1.68 psig drywell pressure initiations: LPCS-P-1, RHR-P-2B and RHR-P-2C breakers fail to auto close. LPCS-P-1 and RHR-P-2B may be closed manually. The event is initiated when drywell pressure reaches 1.68 psig.		
Time	**Position**	**Applicants Actions or Behavior**
T=60	BOP	Verifies isolations, DG starts and initiations and notes LPCS-P-1, RHR-P-2B, and RHR-P-2C did not start at 1.68 psig. Attempts to start RHR-P-2C and notes breaker does not close. Reports failure to start to SRO. Starts LPCS-P-1 and RHR-P-2B by taking their control switches to START. Verifies both pumps start and system parameters normal. Reports pump status to CRS.
COMMENTS:		

NRC SCENARIO #3

Event No. 8		
Description: Spray Drywell when Wetwell pressure exceeds 12 psig. (Critical Step) This event is initiated by the SRO when Wetwell pressure exceeds 12 psig.		
Time	**Position**	**Applicants Actions or Behavior**
Critical Step is to initiate drywell sprays when wetwell pressure exceeds 12 psig.		
T=70	BOP	Provides EOP entry conditions into PPM 5.2.1 as they occur. Reports Wetwell pressure when GT 2 psig.
	BOP	Notes that Drywell and Wetwell pressures are approximately the same pressure and reports condition to SRO. (SITE AREA EMERGENCY PER EAL 3.1.S.1).
	SRO	Directs Wetwell Sprays be initiated with either RHR loop and that sprays be terminated when WW/P drops below 1.68 psig.
	BOP	Initiates Wetwell sprays by opening RHR-V-27A/B. Reports Wetwell sprays initiated.
	BOP	Reports Wetwell pressure when it is GT 12 psig.
	SRO	Ensures parameters are within DSIL, WW/L LT 51', RRC pumps are stopped and directs Drywell Cooling Fans be secured.
	RO/BOP	Stops Drywell Cooling Fans and reports completion to SRO.
	SRO	Directs Drywell sprays be initiated with RHR-P-2A/2B.

NRC SCENARIO #3

	BOP	Checks DSIL and opens RHR-V-16A/B and opens RHR-V-17A/B. Notes drop in wetwell/drywell pressures and may report drywell spray initiation and a positive effect on containment parameter has been noted.
COMMENTS:		

NRC SCENARIO #3

Event No. 9		
Description: Restoration of RPV level +13 to +54 inches (Critical Step) This event is initiated by the SRO due to RPV level drop caused by LOCA.		
Time	**Position**	
Critical Step is to restore RPV level to +13 to +54 inch band.		
T=80	RO/BOP	Continues to supply RPV level reports.
	SRO	Enters PPM 5.1.1 on low RPV level. Directs RPV level restoration with both CRD pumps.
	RO/BOP	Reports RPV level as it drops.
	RO/BOP	Directs OPS2 to perform ABN-CRD-MAXFLOW and place both CRD suction and drive filters in service.
ROLE-PLAY – Four minutes after request, activate **TRIGGER 26.** When simulator actions are complete contact the control room and report completion.		
	SRO	Directs RCIC be initiated to recover RPV level.
	RO/BOP	Initiates RCIC using quick card. Reports injection as appropriate.
	SRO	As RPV level continues to drop with CRD and RCIC flow maximized, may directs RPV Pressure be reduced to allow feeding with LP ECCS pumps or wait until pressure is low enough (due to LOCA) to inject.

NRC SCENARIO #3

	RO/BOP	Opens SRVs as necessary to drop RPV pressure. As RPV pressure drops below 470 psig, notes injection valves open for running ECCS pumps.
	SRO	Directs RPV level maintenance +13 to +54 inches with available low pressure ECCS systems as RPV pressure allows.
	RO/BOP	Allows low pressure ECCS pumps to inject and removes pumps as necessary to control RPV level in band.

Scenario Termination point is when RPV level has been returned to normal operating band.

Comments:

NRC SCENARIO #3

CREW TURNOVER INFORMATION

Initial Conditions: Columbia is in the process of starting up following a 35 day outage. The Reactor is critical and RPV pressure is approximately 600 psig. HPCS-P-1 is OOS and is planned to be returned to service within the next few hours.

Turnover: Continue with the startup by pulling control rods to get BPVs 30% open. The reactivity brief has been completed. The evaluator for CRO1 will be the Peer Checker for pulling control rods. Swap RCC Pumps for run time equalization to RCC-P-1C running and RCC-P-1B in standby (These two evolutions may be done concurrently). A pre-job brief for DW entry is scheduled in 1.5 hours. Control Rod withdrawal is to commence at step 35-1 with control rod 10-43.

SIMULATOR SETUP INSTRUCTIONS

Reset to IC 118
Tagout HPCS-P-1 and V-4
Acknowledge HPCS BISIs

Ensure RWCU dot is over correct C/S
Sign off pull sheets through step 34-16. Crew starts on 35-1
Set up Earthquake machine on low volume
Mark up Startup Flow Charts per guide

Ensure BAT files 2006scenario3A.txt is in BATCH directory

NRC SCENARIO #3

BAT FILES

```
>Load this batch file by first initializing the simulator to IC-118, then
>go the expert mode and type "BAT 2006Scenario3.txt" and hit enter.
>
>Ensure 2006Scenario3.txt & 2006Scenario3A.txt are in BATCH directory.
>
>*************************
>* Trigger list *
>*************************
>
> Trigger 1: IRM H Fails Downscale
> Trigger 2: Minimum Seismic EQ
> Trigger 3: TR-S lockout; SM-8 de-energizes
> Trigger 4: OBE Earthquake/LOCA
>
>*************************************************************************
>The following items setup conditions for the beginning of the scenario
>*************************************************************************
>
> CB-B8 Fail As Is
IMF BKR-EPS031   4
>
> DG-2 Output Breaker fails to auto close
IMF BKR-DGN003 3
>
> CB-RHR-P-2B Fail Auto Close
IMF BKR-RHR002  3
> CB-LPCS-P-1 Fail Auto Close
IMF BKR-CSS002  3
>
> CB-RHR-P-2C Fail As Is
IMF BKR-RHR003  4
>
>BKR HPCS-V-4 RACKOUT
IRF LOA-EPS140  RACKED-OUT
>
>Drywell Floor Failure
IMF MAL-PCN006 TRUE
>
> Control Rod 42-35 Reed Switch 08 fails to close
IMF MAL-RMC008-4235C  8
>
>SET MET DATA
> ENV-RWB002   AMBIENT TEMP AT 33 FEET
IRF ENV-RWB002 90
> ENV-RWB001   AMBIENT DELTA TEMP ELEV 245-33'
IRF ENV-RWB001 2
> ENV-RWB007   WIND SPEED AT 33 FEET
IRF ENV-RWB007 5
> ENV-RWB005   WIND SPEED AT 245 FEET
IRF ENV-RWB005 5
> ENV-RWB006   WIND DIRECTION AT 33 FEET
IRF ENV-RWB006 180
```

NRC SCENARIO #3

> ENV-RWB004 WIND DIRECTION AT 245 FEET
IRF ENV-RWB004 180
>
>*
>The following items are triggered in the scenario
>*>**
>
> Trigger 1
> IRM H Fails Downscale
IMF MAL-NIS002H (1) 1
>
> Trigger 2
> Minimum Seismic EQ; TR-S lockout; SM-8 de-energizes
IMF MAL-RWB001 (2) 0.1
>
> Trigger 3
> TRS LOCKOUT
IMF MAL-OED001 (3 10) TRUE
>
> Trigger 4
> (OBE) and LOCA
IMF MAL-RRS004B (4 20) 0.9 400
>
>*>**
>The following set up triggers to initiate batch files
>*>**
>
> OBE Earthquake
TRG 4 "bat 2006Scenario3A.txt"
>
> Local Bat file loads generic triggers for local plant actions
bat local.txt
>

2006Scenario3A.txt

>
OBE Earthquake
IMF MAL-RWB001 0.125