

Facility: ColumbiaDate of Examination: February 2013Examination Level: RO ☒ SRO ☐Operating Test Number: 1

Administrative Topic (See Note)	Type Code*	Describe activity to be performed
Conduct of Operations	M, R	Determine if APRM indication is greater than reactor power as calculated from Main Turbine Bypass Valve position and Reactor Feedwater temperature (2.1.25 RO 3.9). Given the positions of the four Main Turbine Bypass Valves, Reactor Feedwater temperature and house loads, calculate current reactor power by plotting the values on the "Core Thermal Power Versus Bypass Valve Position" graph in PPM 3.1.2 and summing the values. Compare the results to the APRM reading to determine if APRM indications are greater than reactor power.
Conduct of Operations	N, R	Use procedures to assign operators to the positions required to meet minimum crew compliment (2.1.5 RO 2.9). Provided a list of the On-Coming crew operators and the PQD Viewer duty areas, assign operators to positions to meet the requirements for the minimum crew compliment.
Equipment Control	M, R	Use electrical prints to determine why RHR-P-2C did not start following a manual initiation (2.2.41 RO 3.5). Given a set of initial conditions, explain which contacts prevent starting RHR-P-2C using the ARM & DEPRESS pushbutton.
Radiation Control	D, R, P	Use radiological survey maps to determine the minimum and maximum stay times until radiation exposure limits are reached (2.3.4 RO 3.2). Given year-to-date exposure and work instructions, refer to radiological survey maps to determine work area radiation levels and calculate the time at which a radiation exposure limit will be reached.
Emergency Procedures/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 5 are required.

* Type Codes & Criteria:

(C)ontrol room, (S)imulator, or Class(R)oom

(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)

Facility: ColumbiaDate of Examination: February 2013Examination Level: RO ☐ SRO ☒Operating Test Number: 1

Administrative Topic (See Note)	Type Code*	Describe activity to be performed
Conduct of Operations	D, R	Determine if a MODE change is allowed during a plant startup (2.1.23 SRO 4.4). With a plant startup in progress, the SRO candidate is provided a list of plant conditions and required to determine if a MODE change is allowed. The candidate must recognize that HPCS is inoperable and LCO 3.0.4 is not applicable.
Conduct of Operations	N, R	Use procedures to project On-Coming Crew's watch manning, and verify qualifications meet the minimum requirements (2.1.5 SRO 3.9). Provided the list of operators scheduled for the new crew starting a series of nightshifts and PQD Viewer areas, the SRO candidate must determine that the minimum qualifications are not satisfied.
Equipment Control	M, R	Maintain control of equipment status by issuing a Fire Protection System Impairment (2.2.14 SRO 4.3). During the performance of a surveillance, two Main Control Room Halon Tanks have been reported to have UNSAT pressures. The SRO candidate must determine that a Fire Protection System Impairment is required to track the equipment status, and complete the Impairment.
Radiation Control	D, P, R	The SRO Candidate is tasked with reviewing a request to initiate blowdown from the Circulating Water and Plant Service Water systems (2.3.6 SRO 3.8). Given parameters associated with CW and TSW blowdown, the SRO candidate must determine that the minimum instrumentation required to initiate blowdown is not available, and should not be allowed.
Emergency Procedures/Plan	D, R	The SRO Candidate is given that a UE was previously declared due to a credible threat security event. The situation then escalates and the SRO has to determine that an Emergency Plan upgrade is required, the applicable EAL and then fill out the required Classification Notification Form.

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

* Type Codes & Criteria:

(C)ontrol room, (S)imulator, or Class(R)oom

(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)



INSTRUCTIONAL COVER SHEET

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	LO001729	Rev. No.	2
Exam PQD Code		Rev. No.	
DIVISION TITLE	Nuclear Training		
DEPARTMENT	Operations Training		
PREPARED BY	Ron Hayden	DATE	07/20/10
REVISED BY	Ron Hayden	DATE	12/06/12
TECHNICAL REVIEW BY		DATE	
INSTRUCTIONAL REVIEW BY		DATE	
APPROVED BY	SAT Coordinator	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 of PPM 3.1.2 and put two boxes that could 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. If any steps have changed, the JPM should be revised.

Tools/Equipment: N/A

Safety Items: N/A

Task Number: RO-0906

Validation Time: 10 minutes

Alternate Path: No

Time Critical: No

PPM Reference: PPM 3.1.2 Rev. 76

Location: Classroom

NUREG 1123 Ref: 2.1.25 (3.9 / 4.2)

Performance Method: Perform

Task Standard: It is determined that APRM readings are NOT greater than power level readings extrapolated from BPV positions and that block is checked on Attachment 7.1.

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

JPM CHECKLIST

INITIAL CONDITIONS:	Columbia is in the process of starting up following a refueling outage. Current plant conditions are: APRMs indicate 29% power; Feedwater temperature is 147°F; House Loads are equal to 1% Core Thermal Power; BPV#1 is indicating 80 percent open; BPV#2 is indicating 85 percent open; BPV#3 is indicating 90 percent open; BPV#4 is indicating 95 percent open.
INITIATING CUE:	You have been directed by the CRS to perform step Q37 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				
Time	Step	Element	Standard	Cue Sat/Unsat
	1	PPM 3.1.2 step Q37: Completes Attachment 7.1	Indicates the following information on Attachment 7.1: BPV #1 is 80% open which correlates to approximately 6.6% of CTP BPV #2 is 85% open which correlates to approximately 7.3% of CTP BPV #3 is 90% open which correlates to approximately 7.9% of CTP BPV #4 is 95% open which correlates to approximately 8.2% of CTP House Loads 1% (given) Total CTP is approximately 31.0	S / U

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

* Items are Critical Steps

Time	Step	Element	Standard	Cue	Sat/Unsat
	2		Compares calculated Total CTP (~31%) to the given APRM reading of 29% and determines that APRM indicated power levels are NOT greater than extrapolated BPV power levels and checks the appropriate block on Attachment 7.1 (actual power levels are NOT greater than calculated power levels)		S / U *
Termination Criteria: Student hands Attachment 7.1 to examiner					
Transfer the following to the “Results of JPM” page: Any Unsat step - indicate if step was a Critical Step; JPM completion time.					

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 29% power
- Feedwater temperature is 147°F
- House Loads are equal to 1% Core Thermal Power
- BPV#1 is indicating 80 percent open
- BPV#2 is indicating 85 percent open
- BPV#3 is indicating 90 percent open
- BPV#4 is indicating 95 percent open

Cue:

You have been directed by the CRS to perform step Q37 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

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

extrapolated from BPV position.



INSTRUCTIONAL COVER SHEET

PROGRAM TITLE	LICENSED OPERATOR TRAINING		
COURSE TITLE	JOB PERFORMANCE MEASURE		
LESSON TITLE	ASSIGN OPERATORS TO CREW POSITIONS		
LESSON LENGTH	.5 HRS		
INSTRUCTIONAL MATERIALS INCLUDED			
LESSON PLAN PQD CODE	_____	Rev. No.	_____
SIMULATOR GUIDE PQD CODE	_____	Rev. No.	_____
JPM PQD CODE	LO001767	Rev. No.	0
EXAM PQD CODE	_____	Rev. No.	_____
DIVISION TITLE	Nuclear Training		
DEPARTMENT	Operations Training		
PREPARED BY	Chris Maxwell	DATE	10/02/12
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

ASSIGN OPERATORS TO CREW POSITIONS

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:

Ensure the candidate has access to a copy of PPM 1.3.1.

JPM Instructions:

Verify Current Procedure against JPM. If any steps have changed, the JPM should be revised.

Tools/Equipment: None

Safety Items: None

Task Number: RO-0559

Validation Time: 15 minutes

Alternate Path: N/A

Time Critical: No

PPM Reference: PPM 1.3.1 Rev.108

Location: Classroom/Simulator

NUREG 1123 Ref: 2.1.5 (RO 2.9)

Performance Method: Perform

Task Standard: Assign qualified operators to each crew position in accordance with PPM 1.3.1.

ASSIGN OPERATORS TO CREW POSITIONS

JPM CHECKLIST

INITIAL CONDITIONS:	<p>Today is 3/11/13. You are the night shift Lead RO (CRO3) with the plant operating at 100% power.</p> <p>The following Equipment Operators have been assigned to this shift:</p> <ul style="list-style-type: none"> - Rolland Kirby - Pete Latigo - Kevin Martin - Amy Parker
INITIATING CUE:	<p>Assign operators to the required crew positions by writing the name of the individuals in the blanks provided on the JPM Answer Sheet. When you have completed the JPM Answer Sheet, return all JPM materials to your examiner.</p>

* Items are Critical Steps

Time	Step	Element	Standard	Cue	Sat/Unsat
	3	Assign an operator to RW/CR.	Rolland Kirby		S / U *
	4	Assign an operator to Rx/RW.	Kevin Martin		S / U *
	5	Assign an operator to TG.	Pete Latigo		S / U *
	6	Assign an operator to Outside.	Amy Parker		S / U *
	7	Assign an operator to FBT Leader.	Rolland Kirby		S / U *
	8	Assign an operator to FBT-EO.	Amy Parker		S / U *
	9	Assign two operators to 1 st Responder.	Rolland Kirby and Amy Parker		S / U *
	10	Assign two operators to Safe S/D.	Pete Latigo and Kevin Martin		S / U *

Termination Criteria: Candidate hands in the completed JPM Answer Sheet.

ASSIGN OPERATORS TO CREW POSITIONS

* Items are Critical Steps

Time	Step	Element	Standard	Cue	Sat/Unsat
Transfer the following to the “Results of JPM” page: Any Unsat step(s) and JPM completion time.					

JPM RESULTS:

Evaluator (Print): _____

Task Standard: Assign qualified operators to each crew position in accordance with PPM 1.3.1.

Overall Evaluation	JPM Completion Time
SAT / UNSAT (Circle One)	Minutes

COMMENTS:

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and extend across the width of the page. There are no margins, text, or other markings on the paper.

Evaluator's Signature: _____ **Date:** _____

STUDENT JPM INFORMATION CARD

Initial Conditions:

Today is 3/11/13. You are the night shift Lead RO (CRO3) with the plant operating at 100% power.

The following Equipment Operators have been assigned to this shift:

- Rolland Kirby
- Pete Latigo
- Kevin Martin
- Amy Parker

Initiating Cue:

Assign operators to the required crew positions by writing the name of the individuals in the blanks provided on the JPM Answer Sheet.

When you have completed the JPM Answer Sheet, return all JPM materials to your examiner.

JPM ANSWER SHEET

RWCR	
Rx/RW	
TG	
Outside	
FBT Leader	
FBT-EO	
1 st Responder (2)	
Safe S/D (2)	

Duty Areas by User | **Users by Duty Area** | Qual Groups by User | Users by Qual Group | Supervisor Org Report

Select a Duty Area...

EORW - RADWASTE CONTROL ROOM TOUR

Find a Duty Area containing...

eorw

<< Search

Reset

Qualified
**Qualified,
Will Expire < 30
Days**
**Qualified,
Will Expire < 14
Days**
Not Qualified
Qualified Individuals

	Org Code	Duty Area	Qualified	Employee	Retrain By
1	52220	EORW	Y	ALLEN, KIRBY J	12/31/13
2			Y	BAILEY, JOHN R	5/31/13
3			N	DAVIS, MICHAEL M	12/31/13
4			Y	KIRBY, ROLLAND L	12/31/13
5			N	LATIGO, PETE S	12/31/13
6			Y	MARQUEZ, JEREMEY H	12/31/13
7			N	MARTIN, KEVIN F	5/31/13
8			N	PARKER, AMY B	8/15/13
9			Y	SMITH, FRED P	12/31/13

Duty Areas by User	Users by Duty Area	Qual Groups by User	Users by Qual Group	Supervisor Org Report
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Select a Duty Area...
EORX - REACTOR/RADWASTE BLDG TOUR

Find a Duty Area containing...

Qualified	Qualified, Will Expire < 30 Days	Qualified, Will Expire < 14 Days	Not Qualified
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10		Qualified Individuals			
	Org Code	Duty Area	Qualified	Employee	Retrain By
1	52220	EORX	Y	ALLEN, KIRBY J	12/31/13
2			Y	BAILEY, JOHN R	5/31/13
3			Y	DAVIS, MICHAEL M	12/31/13
4			Y	KIRBY, ROLLAND L	12/31/13
5			N	LATIGO, PETE S	12/31/13
6			N	MARQUEZ, JEREMEY H	12/31/13
7			Y	MARTIN, KEVIN F	5/31/13
8			N	PARKER, AMY B	8/15/13
9			Y	SMITH, FRED P	12/31/13
10			Y	ZOELLER, BRYAN B	3/31/13

Duty Areas by User
Users by Duty Area
Qual Groups by User
Users by Qual Group
Supervisor Org Report

Select a Duty Area...
EOTG - TURBINE BLDG. EO TOUR QUAL

Find a Duty Area containing...
eotg
<< Search
Reset

Qualified

Qualified,
Will Expire < 30
Days

Qualified,
Will Expire < 14
Days

Not Qualified

Qualified Individuals					
	Org Code	Duty Area	Qualified	Employee	Retrain By
1	52220	EOTG	Y	ALLEN, KIRBY J	12/31/13
2			Y	BAILEY, JOHN R	5/31/13
3			Y	DAVIS, MICHAEL M	12/31/13
4			Y	KIRBY, ROLLAND L	12/31/13
5			Y	LATIGO, PETE S	12/31/13
6			N	MARQUEZ, JEREMEY H	12/31/13
7			Y	MARTIN, KEVIN F	5/31/13
8			N	PARKER, AMY B	8/15/13
9			Y	SMITH, FRED P	12/31/13
10			Y	ZOELLER, BRYAN B	3/31/13

Duty Areas by User	Users by Duty Area	Qual Groups by User	Users by Qual Group	Supervisor Org Report
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Select a Duty Area...
EOOS - OUTSIDE EO TOUR QUALIFICATION

Find a Duty Area containing...
eoos

Qualified	Qualified, Will Expire < 30 Days	Qualified, Will Expire < 14 Days	Not Qualified
-----------	--	--	---------------

Qualified Individuals					
	Org Code	Duty Area	Qualified	Employee	Retrain By
1	52220	EOOS	Y	ALLEN, KIRBY J	12/31/13
2			Y	BAILEY, JOHN R	5/31/13
3			Y	DAVIS, MICHAEL M	12/31/13
4			Y	KIRBY, ROLLAND L	12/31/13
5			N	LATIGO, PETE S	12/31/13
6			Y	MARQUEZ, JEREMEY H	12/31/13
7			Y	MARTIN, KEVIN F	5/31/13
8			Y	PARKER, AMY B	8/15/13
9			Y	SMITH, FRED P	12/31/13
10			Y	ZOELLER, BRYAN B	3/31/13

Duty Areas by User Users by Duty Area Qual Groups by User **Users by Qual Group** Supervisor Org Report

Select a Qual Group...

FPAC - CGS FIRST RESPONDER

Find a Qual Group containing...

fpac

<< Search

Reset

Qualified
**Qualified,
Will Expire < 30
Days**
**Qualified,
Will Expire < 14
Days**
Not Qualified

Qualified Individuals

	Org Code	Duty Area	Qualified	Employee	Retrain By
1	52220	FPAC	Y	ALLEN, KIRBY J	12/31/13
2			Y	BAILEY, JOHN R	5/31/13
3			Y	DAVIS, MICHAEL M	12/31/13
4			Y	KIRBY, ROLLAND L	12/31/13
5			N	LATIGO, PETE S	12/31/13
6			N	MARQUEZ, JEREMEY H	12/31/13
7			Y	MARTIN, KEVIN F	5/31/13
8			Y	PARKER, AMY B	8/15/13
9			Y	SMITH, FRED P	12/31/13
10			Y	ZOELLER, BRYAN B	3/31/13

Duty Areas by User
Users by Duty Area
Qual Groups by User
Users by Qual Group
Supervisor Org Report

Select a Duty Area...
EOEP - OSC EQUIPMENT OPERATOR

Find a Duty Area containing...
eoep
<< Search
Reset

Qualified

Qualified,
Will Expire < 30
Days

Qualified,
Will Expire < 14
Days

Not Qualified

Qualified Individuals					
	Org Code	Duty Area	Qualified	Employee	Retrain By
1	52220	EOEP	Y	ALLEN, KIRBY J	12/31/13
2			Y	BAILEY, JOHN R	5/31/13
3			Y	DAVIS, MICHAEL M	12/31/13
4			Y	KIRBY, ROLLAND L	12/31/13
5			Y	LATIGO, PETE S	12/31/13
6			Y	MARQUEZ, JEREMEY H	12/31/13
7			Y	MARTIN, KEVIN F	5/31/13
8			Y	PARKER, AMY B	8/15/13
9			Y	SMITH, FRED P	12/31/13
10			Y	ZOELLER, BRYAN B	3/31/13

Duty Areas by User
Users by Duty Area
Qual Groups by User
Users by Qual Group
Supervisor Org Report

Select a Duty Area...
EOFB - FIRE BRIGADE QUALIFICATION

Find a Duty Area containing...
eofb
<< Search
Reset

Qualified

Qualified,
Will Expire < 30
Days

Qualified,
Will Expire < 14
Days

Not Qualified

Qualified Individuals					
	Org Code	Duty Area	Qualified	Employee	Retrain By
1	52220	EOFB	Y	ALLEN, KIRBY J	12/31/13
2			N	BAILEY, JOHN R	5/31/13
3			Y	DAVIS, MICHAEL M	12/31/13
4			Y	KIRBY, ROLLAND L	12/31/13
5			Y	LATIGO, PETE S	12/31/13
6			Y	MARQUEZ, JEREMEY H	12/31/13
7			Y	MARTIN, KEVIN F	5/31/13
8			Y	PARKER, AMY B	8/15/13
9			Y	SMITH, FRED P	12/31/13
10			Y	ZOELLER, BRYAN B	3/31/13

Duty Areas by User | **Users by Duty Area** | Qual Groups by User | Users by Qual Group | Supervisor Org Report

Select a Duty Area...

EOFL - FIRE BRIGADE LEADER QUAL

Find a Duty Area containing...

eofl

<< Search

Reset

Qualified
**Qualified,
Will Expire < 30
Days**
**Qualified,
Will Expire < 14
Days**
Not Qualified
Qualified Individuals

	Org Code	Duty Area	Qualified	Employee	Retrain By
1	52220	EOFL	Y	ALLEN, KIRBY J	12/31/13
2			Y	BAILEY, JOHN R	5/31/13
3			N	DAVIS, MICHAEL M	12/31/13
4			Y	KIRBY, ROLLAND L	12/31/13
5			N	LATIGO, PETE S	12/31/13
6			N	MARQUEZ, JEREMEY H	12/31/13
7			N	MARTIN, KEVIN F	5/31/13
8			N	PARKER, AMY B	8/15/13
9			Y	SMITH, FRED P	12/31/13
10			Y	ZOELLER, BRYAN B	3/31/13

Duty Areas by User
Users by Duty Area
Qual Groups by User
Users by Qual Group
Supervisor Org Report

Select a Duty Area...
EOSS - SAFE SHUTDOWN EO QUALIFICATION

Find a Duty Area containing...
eoss
<< Search
Reset

Qualified

Qualified,
Will Expire < 30
Days

Qualified,
Will Expire < 14
Days

Not Qualified

Qualified Individuals					
	Org Code	Duty Area	Qualified	Employee	Retrain By
1	52220	EOSS	Y	ALLEN, KIRBY J	12/31/13
2			N	BAILEY, JOHN R	5/31/13
3			Y	DAVIS, MICHAEL M	12/31/13
4			N	KIRBY, ROLLAND L	12/31/13
5			Y	LATIGO, PETE S	12/31/13
6			Y	MARQUEZ, JEREMEY H	12/31/13
7			Y	MARTIN, KEVIN F	5/31/13
8			N	PARKER, AMY B	8/15/13
9			Y	SMITH, FRED P	12/31/13
10			Y	ZOELLER, BRYAN B	3/31/13



**ENERGY
NORTHWEST**

INSTRUCTIONAL COVER SHEET

PROGRAM TITLE LICENSED OPERATOR TRAINING

COURSE TITLE JOB PERFORMANCE MEASURE

LESSON TITLE EXPLAIN RHR-P-2C FAILURE TO START USING EWDS

LESSON LENGTH .5 HRS

INSTRUCTIONAL MATERIALS INCLUDED

LESSON PLAN PQD CODE _____ Rev. No. _____

SIMULATOR GUIDE PQD CODE _____ Rev. No. _____

JPM PQD CODE LO001768 _____ Rev. No. 0

EXAM PQD CODE _____ Rev. No. _____

DIVISION TITLE Nuclear Training

DEPARTMENT Operations Training

PREPARED BY Chris Maxwell _____ DATE 10/02/12

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:

Ensure the candidate has access to the following EWDs:

- EWD-9E-006
- EWD-9E-097
- EWD-9E-098
- EWD-47E-007
- EWD-47E-007A
- EWD-46E-107A

JPM Instructions:

Verify Current Procedure against JPM. If any steps have changed, the JPM should be revised.

Tools/Equipment: None**Safety Items:** None**Task Number:** RO-0573**Validation Time:** 15 minutes**Alternate Path:** N/A**Time Critical:** No**PPM Reference:** None**Location:** Classroom/Simulator**NUREG 1123 Ref:** 2.2.41 (RO 3.5)**Performance Method:** Perform

Task Standard: Identify that RHR-P-2C will not start using the ARM and DEPRESS pushbutton while powered from E-TR-S with no LOCA signal present.

JPM CHECKLIST

INITIAL CONDITIONS:	The MODE Switch was just been placed in Startup/Hot Standby in preparation for control rod withdrawal. A Condensate piping rupture in the Turbine Building caused a loss of Condensate and lowering RPV water level. The CRS directed RHR-P-2C to be started for injection using the ARM and DEPRESS pushbutton. RHR-P-2C was in a normal standby lineup, and did <u>not</u> start when armed and depressed with RPV water level at -20”.
INITIATING CUE:	Using EWD-9E-006, explain why RHR-P-2C did not start when armed and depressed. Include the EPN(s) of any contacts in the RHR-P-2C circuit breaker logic that prevented the pump start. When you have completed the explanation, return all JPM materials to your examiner.

* Items are Critical Steps

Time	Step	Element	Standard	Cue	Sat/Unsat
	11	Identify E-RLY-RHRB/RHRC/2 contact 7-8 is open while RHR-P-2C is powered from E-TR-S.	<p>“E-RLY-RHRB/RHRC/2 contact 7-8 is open while RHR-P-2C is powered from E-TR-S”, or words to that affect included in the explanation.</p> <p>Note: Equivalent language to “RHR-P-2C is powered from E-TR-S” includes, but is not limited to the following:</p> <ul style="list-style-type: none"> - SM-8 is powered from E-TR-S - E-CB-S/3, E-CB-3/8, and E-CB-8/3 are closed - RHR-P-2C is powered by the Startup Transformer 		S / U *
	12	Identify E-RLY-RHRC/62/2 contact 1-5 is open when no F or A signal (LOCA signal) exists.	“E-RLY-RHRC/62/2 contact 1-5 is open when no F or A signal (LOCA signal) exists”, or words to that affect included in the explanation.		S / U *
Termination Criteria: Candidate hands in the completed explanation.					

* Items are Critical Steps

Time	Step	Element	Standard	Cue	Sat/Unsat
Transfer the following to the “Results of JPM” page: Any Unsat step(s) and JPM completion time.					

JPM RESULTS:

EXPLAIN RHR-P-2C FAILURE TO START USING EWDS

Examinee (Print): _____

Evaluator (Print): _____

Task Standard: Identify that RHR-P-2C will not start using the ARM and DEPRESS pushbutton while powered from E-TR-S with no LOCA signal present.

Overall Evaluation	JPM Completion Time
SAT / UNSAT (Circle One)	Minutes

COMMENTS:

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and extend across the width of the page. There are no margins, text, or other markings on the paper.

Evaluator's Signature: _____ **Date:** _____

Initial Conditions:

RHR-P-2C was in a normal standby lineup, and did not start when armed and depressed with RPV water level at -20”.

Initiating Cue:

When you have completed the explanation, return all JPM materials to your examiner.

RHR-P-2C did not start when armed and depressed because: _____

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There are approximately 20 lines visible. The paper has a slight shadow on its right side, suggesting it's resting on a surface.



**ENERGY
NORTHWEST**

INSTRUCTIONAL COVER SHEET

PROGRAM TITLE INITIAL LICENSED OPERATOR TRAINING

COURSE TITLE JOB PERFORMANCE MEASURE

LESSON TITLE DETERMINE MINIMUM AND MAXIMUM STAY TIMES (ADMIN)

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	LO001632	Rev. No.	1
Exam PQD Code	_____	Rev. No.	_____

DIVISION TITLE Nuclear Training

DEPARTMENT Operations Training

PREPARED BY Ron Hayden DATE 5/29/08

REVISED BY Ron Hayden DATE 12/06/12

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:

Each student should have access to a calculator.
Have a copy of the SWPs for student.

JPM Instructions:

Verify Current Procedure against JPM. If any steps have changed, the JPM should be revised.

Tools/Equipment: Calculator

Safety Items: None

Task Number: RO-0022

Validation Time: 10 minutes

Alternate Path: N/A

Time Critical: No

PPM Reference: PPM 11.2.7.1

Location: Classroom

NUREG 1123 Ref: 2.3.4 (3.2 / 3.7)

Performance Method: Perform

Task Standard: Fills in blanks on JPM Answer Sheet indicating that 0812 is the earliest time and 1000 is the latest time before exceeding Columbia's Administrative dose limit.

JPM CHECKLIST

INITIAL CONDITIONS:	Columbia is operating in MODE 1 at full power. You have been selected to work with maintenance personnel on a valve located in contaminated zone in the South East corner of Reactor Building 422' by the R5 sump. Your accumulated dose for the year is 1800 mrem. The job will start at 0800.
INITIATING CUE:	Using the high and low values associated with the radiation field you will be working in, answer the two questions on the JPM Answer Sheet provided. When completed, hand the sheet to the examiner.

* Items are Critical Steps

Comments	Element	Standard	Sat/Unsat
	Determines R5 sump location on Survey Map	Refers to RWP and determines the valve is in a High Radiation Area.	S / U
	Calculates remaining dose to achieve admin dose limit in a high radiation area.	High Radiation Area radiation levels are 100 mrem/hr to 1000 mrem/hr.	S / U
		The Administrative dose limit at Columbia is 2 Rem (2000 mrem).	S / U
		2000 – 1800 = 200 mrem to reach the Administrative dose limit.	S / U
	Calculates minimum time to exceeding admin dose limit.	Question #1 – The minimum time to get 200 mrem in a 1000 mrem area is 1/5 th of an hour which is 12 minutes. Start time is 0800, therefore you could exceed your admin dose limit at 0812 (accept 0811 to 0814).	S / U *
	Calculates maximum time to exceeding admin dose limit.	Question #2 – The maximum time to get 200 mrem (at 100 mrem/hr) would be 2 hours. Start time is 0800 therefore the maximum stay time is until 1000 (accept 0955 to 1005).	S / U *
Termination Criteria: Student hands the completed form to the examiner.			
Transfer the following to the “Results of JPM” page: Any Unsat step - indicate if step was a Critical Step; JPM completion time.			

RESULTS OF JPM:

Evaluator (Please Print): _____

Task Standard: Fills in blanks on JPM Answer Sheet indicating that 0812 is the earliest time and 1000 is the latest time before exceeding Columbia's Administrative dose limit.

Overall Evaluation	JPM Completion Time
SAT / UNSAT (Circle One)	Minutes

COMMENTS:

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and extend across the width of the page. There are no margins, text, or other markings on the paper.

Evaluator's Signature: _____ **Date:** _____

STUDENT JPM INFORMATION CARD

Initial Conditions:

Columbia is operating in MODE 1 at full power.

You have been selected to work with maintenance personnel on a valve located in the contamination zone in the South East corner of Reactor Building 422' by the R5 sump.

Your accumulated dose for the year is 1800 mrem.

The job will start at 0800.

Cue:

Using the high and low values associated with the radiation field you will be working in, answer the two questions on the JPM Answer Sheet provided.

When completed, hand the sheet to the examiner.

JPM ANSWER SHEET

Use the HIGH and LOW values associated with the radiation field you will be working in to answer the following two questions:

If the job starts at 0800....

1. ...what time represents the earliest time that you could exceed Columbia's Administrative dose limit?

2. ...what time represents the latest time that you could stay in the area and still not exceed Columbia's Administrative dose limit?

When completed, hand this sheet to the examiner.



INSTRUCTIONAL COVER SHEET

PROGRAM TITLE	LICENSED OPERATOR TRAINING		
COURSE TITLE	JOB PERFORMANCE MEASURE		
LESSON TITLE	DETERMINE IF MODE CHANGE IS ALLOWED (ADMIN)		
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	LO001633	Rev. No.	1
Exam PQD Code		Rev. No.	
DIVISION TITLE	Nuclear Training		
DEPARTMENT	Operations Training		
PREPARED BY	Ron Hayden	DATE	06/23/08
REVISED BY	Ron Hayden	DATE	09/20/12
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 MODE CHANGE IS ALLOWED

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:

Need a copy of PPM 3.1.2 Startup Flow Chart Page 1.
Need a copy of current Technical Specifications and Bases.

JPM Instructions:

Verify Current Procedure against JPM. If any steps have changed, the JPM should be revised.

Tools/Equipment: N/A

Safety Items: N/A

Task Number: SRO-0116

Validation Time: 10 minutes

Alternate Path: N/A

Time Critical: No

PPM Reference: LCO 3.7.2, LCO3.5.1, and PPM 3.1.2 Rev. 76

Location: Classroom / Simulator

NUREG 1123 Ref: 2.1.20 4.6 / 4.6

Performance Method: Perform

Task Standard: The JPM answer sheet is filled out indicating that a mode change is NOT allowed due to HPCS-P-2 being out of service.

DETERMINE IF MODE CHANGE IS ALLOWED

JPM CHECKLIST

INITIAL CONDITIONS:	<p>Columbia is operating in MODE 4. A startup is underway following a short maintenance outage. The following conditions exist:</p> <ul style="list-style-type: none"> • SRMs have normal indications and recorder speed has been raised to fast speed • All IRM indications are normal on Range 1 except IRM-A which has an upscale trip and is bypassed and recorder speed has been raised to fast speed • The Minimum and Maximum ECPs have been entered on the Control Rod Sequence Pull Sheet in the Control Room • A complete set of PPM 3.1.10 readings have been taken • OSP-INST-H101s have been completed and satisfied to enter MODE 2 • The Barrier Impairment Log has no MODE change limiting conditions • The Surveillance in Progress Log shows no MODE change limiting conditions • HPCS-P-2 is out of service for motor oil replacement • All surveillances are completed and up to date • There are 3 inoperable control rods that are disarmed at position 00 • A panel walk down has been completed • Offgas system warmup is in progress per SOP-OG-START • All ECCS systems except HPCS are in a standby lineup • RRC-P-1A and RRC-P-1B are operating at 15 hz. • Containment was de-inerted • A risk assessment has been completed which established risk management actions for the following Out Of Service equipment: <ul style="list-style-type: none"> ○ Remote Shutdown Panel Power Transfer Switch associated with MS-RV-4A, MS-RV-4B, and MS-RV-4C ○ Lower Drywell Spray Outboard Isolation Valve, RHR-V-16B
INITIATING CUE:	<p>A mode change to MODE 2 is planned. Determine if the change to MODE 2 is allowed. Notify the Shift Manager of your determination by filling in your justification for allowing or not allowing the planned change to MODE 2 on the JPM answer sheet provided.</p>

DETERMINE IF MODE CHANGE IS ALLOWED

* Items are Critical Steps

Comments	Element	Standard	Sat/Unsat
	Recognizes HPCS-P-2 is required to be operable in MODES 1, 2, and 3.	Lists HPCS-P-2 being inoperable as justification for not allowing a mode change.	S / U *
	Evaluate Tech Specs to determine that LCO 3.7.2 requires the HPCS System to be declared inoperable when HPCS-P-2 is inoperable. Determine that per LCO 3.0.4, a mode change is not permitted with the HPCS System inoperable (LCO 3.0.4.b does not apply to HPCS).	Indicates a mode change is NOT allowed on the JPM answer sheet.	S / U *
Termination Criteria: Student hands filled out the JPM answer sheet and hands it to the examiner.			
Transfer the following to the “Results of JPM” page: Any Unsat step - indicate if step was a Critical Step; JPM completion time.			

Examinee (Please Print): _____

Task Standard: The JPM answer sheet is filled out indicating that a mode change is NOT allowed due to HPCS-P-2 being out of service.

COMMENTS:

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Page 4 of 6

STUDENT JPM INFORMATION CARD

Initial Conditions: Columbia is operating in MODE 4. A startup is underway following a short maintenance outage. The following conditions exist:

- SRMs have normal indications and recorder speeds have been raised to fast speed
- All IRM indications are normal on Range 1 except IRM-A which has an upscale trip and is bypassed and recorder speed has been raised to fast speed
- The Minimum and Maximum ECPs have been entered on the Control Rod Sequence Pull Sheet in the Control Room
- A complete set of PPM 3.1.10 readings have been taken
- OSP-INST-H101s have been completed and satisfied to enter MODE 2
- The Barrier Impairment Log has no MODE change limiting conditions
- The Surveillance in Progress Log shows no MODE change limiting conditions
- The LCO/INOP/RFO Log shows no limiting conditions for a MODE change
- HPCS-P-2 is out of service for motor oil replacement
- All surveillances are completed and up to date
- There are 3 inoperable control rods that are disarmed at position 00
- A panel walk down has been completed
- Offgas system warmup is in progress per SOP-OG-START
- All ECCS systems are in a standby lineup
- RRC-P-1A and RRC-P-1B are operating at 15 hz.
- Containment was de-inerted
- A risk assessment has been completed which established risk management actions for the following Out Of Service equipment:
 - Remote Shutdown Panel Power Transfer Switch associated with MS-RV-4A, MS-RV-4B, and MS-RV-4C
 - Lower Drywell Spray Outboard Isolation Valve, RHR-V-16B

Cue:

A mode change to MODE 2 is planned.
Determine if the change to MODE 2 is allowed.
Notify the Shift Manager of your determination by filling in your justification for allowing or not allowing the planned change to MODE 2 on the JPM answer sheet provided.

JPM ANSWER SHEET

A MODE CHANGE TO MODE 2 IS ALLOWED: _____

A MODE CHANGE TO MODE 2 IS NOT ALLOWED: _____



**ENERGY
NORTHWEST**

INSTRUCTIONAL COVER SHEET

PROGRAM TITLE LICENSED OPERATOR TRAINING

COURSE TITLE JOB PERFORMANCE MEASURE

LESSON TITLE VERIFY ON-COMING CREW QUALIFICATIONS

LESSON LENGTH .5 HRS

INSTRUCTIONAL MATERIALS INCLUDED

LESSON PLAN PQD CODE _____ Rev. No. _____

SIMULATOR GUIDE PQD CODE _____ Rev. No. _____

JPM PQD CODE LO001769 _____ Rev. No. 0

EXAM PQD CODE _____ Rev. No. _____

DIVISION TITLE Nuclear Training

DEPARTMENT Operations Training

PREPARED BY Chris Maxwell _____ DATE 10/02/12

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 ON-COMING CREW QUALIFICATIONS

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:

Ensure the candidate has access to a copy of OI-54. Provide a copy of Attachment 8.8, Verifying Operator Qualifications, with the Student JPM Information Card.

JPM Instructions:

Verify Current Procedure against JPM. If any steps have changed, the JPM should be revised.

Tools/Equipment: None

Safety Items: None

Task Number: SRO-0158

Validation Time: 15 minutes

Alternate Path: N/A

Time Critical: No

PPM Reference: OI-54 Rev.018

Location: Classroom/Simulator

NUREG 1123 Ref: 2.1.5 (SRO 3.9)

Performance Method: Perform

Task Standard: Determine none of the Equipment Operators for the oncoming crew are qualified Fire Brigade Leader (EOFL), and check the box for “The oncoming crew is not qualified to stand watch.”

JPM CHECKLIST

INITIAL CONDITIONS:	<p>Today is 3/11/12. You are the day shift CRS with the plant operating at 100% power. The following individuals have been assigned to cover the night shift starting 3/12/13:</p> <table><tr><td><u>Shift Manager</u></td><td><u>CRS</u></td><td><u>STA</u></td><td><u>EO</u></td><td><u>RO</u></td></tr><tr><td>Herb Hancock</td><td>Paul Gregory</td><td>Christina Sanders</td><td>John Bailey</td><td>Pat Hughes</td></tr><tr><td></td><td></td><td></td><td>Pete Latigo</td><td>Ron McNair</td></tr><tr><td></td><td></td><td></td><td>Jeremy Marquez</td><td>Jeff Palmer</td></tr><tr><td></td><td></td><td></td><td>Amy Parker</td><td></td></tr><tr><td></td><td></td><td></td><td>Fred Smith</td><td></td></tr></table>	<u>Shift Manager</u>	<u>CRS</u>	<u>STA</u>	<u>EO</u>	<u>RO</u>	Herb Hancock	Paul Gregory	Christina Sanders	John Bailey	Pat Hughes				Pete Latigo	Ron McNair				Jeremy Marquez	Jeff Palmer				Amy Parker					Fred Smith	
<u>Shift Manager</u>	<u>CRS</u>	<u>STA</u>	<u>EO</u>	<u>RO</u>																											
Herb Hancock	Paul Gregory	Christina Sanders	John Bailey	Pat Hughes																											
			Pete Latigo	Ron McNair																											
			Jeremy Marquez	Jeff Palmer																											
			Amy Parker																												
			Fred Smith																												
INITIATING CUE:	<p>The Shift Manager directs you to verify the qualifications of the new crew starting night shift on 3/12/13 per OI-54. Determine if the oncoming crew is qualified to stand watch, and check the appropriate box on the JPM Answer Sheet. If the crew is qualified to stand watch, list the additional actions (if any) required to complete the qualification verification per OI-54. If the crew is <u>not</u> qualified to stand watch, list the reason(s) why. When you have completed the JPM Answer Sheet, return all JPM materials to your examiner.</p>																														

Time	Step	Element	Standard	Cue	Sat/Unsat
	1	Determines none of the Equipment Operators assigned to the oncoming crew are qualified Fire Brigade Leader (EOFL).	On the JPM Answer Sheet, lists “no qualified Fire Brigade Leader (EOFL)” or words to that affect as the reason why the crew is not qualified to take the watch.		S / U*
	2	Determines the oncoming crew is not qualified to stand watch per OI-54.	Places a mark in the box next to “The oncoming crew is <u>not</u> qualified to stand watch” on the JPM Answer Sheet.		S / U *
Termination Criteria: Candidate hands in the completed JPM Answer Sheet.					
Transfer the following to the “Results of JPM” page: Any Unsat step(s) and JPM completion time.					

* Items are Critical Steps

JPM RESULTS:

Examinee (Print): _____

Evaluator (Print): _____

Task Standard: Determine none of the Equipment Operators for the oncoming crew are qualified Fire Brigade Leader (EOFL), and check the box for “The oncoming crew is not qualified to stand watch.”

Overall Evaluation	JPM Completion Time
SAT / UNSAT (Circle One)	Minutes

COMMENTS:

[illegible]

Evaluator's Signature: _____ **Date:** _____

STUDENT JPM INFORMATION CARD

Initial Conditions:

Today is 3/11/13. You are the day shift CRS with the plant operating at 100% power.

The following individuals have been assigned to cover the night shift starting 3/12/13:

Shift Manager

Herb Hancock

CRS

Paul Gregory

STA

Christina Sanders

EO

John Bailey

Pete Latigo

Jeremey Marquez

Amy Parker

Fred Smith

RO

Pat Hughes

Ron McNair

Jeff Palmer

Initiating Cue:

The Shift Manager directs you to verify the qualifications of the new crew starting night shift on 3/12/13 per OI-54.

Determine if the oncoming crew is qualified to stand watch, and check the appropriate box on the JPM Answer Sheet.

If the crew is qualified to stand watch, list the additional actions (if any) required to complete the qualification verification per OI-54.

If the crew is not qualified to stand watch, list the reason(s) why.

When you have completed the JPM Answer Sheet, return all JPM materials to your examiner.

JPM ANSWER SHEET

☐ The oncoming crew is qualified to stand watch.

☐ The oncoming crew is not qualified to stand watch.

Duty Areas by User	Users by Duty Area	Qual Groups by User	Users by Qual Group	Supervisor Org Report
--------------------	--------------------	---------------------	---------------------	-----------------------

Select a Duty Area...
IA01 - INCIDENT ADVISOR QUALIFICATION

Find a Duty Area containing...

Qualified	Qualified, Will Expire < 30 Days	Qualified, Will Expire < 14 Days	Not Qualified
-----------	--	--	---------------

Qualified Individuals					
	Org Code	Duty Area	Qualified	Employee	Retrain By
1	52220	IA01	Y	ANDERSON, ROBERT A	12/31/13
2			N	GREGORY, PAUL T	3/15/13
3			Y	HANCOCK, HERB H	12/31/13
4			Y	KING, DARRIN S	12/31/13
5			N	LAPLACE, GENE W	12/31/13
6			N	PARK, CHAN H	12/31/13
7			Y	REED, JOHN R	5/31/13
8			Y	ROCKER, WILLIAM S	8/15/13
9			Y	SANDERS, CHRISTINA D	12/31/13
10			Y	TATE, FRED G	3/31/13

Duty Areas by User
Users by Duty Area
Qual Groups by User
Users by Qual Group
Supervisor Org Report

Select a Duty Area...
LO01 - CONTROL RM SUPV QUALIFICATION

Find a Duty Area containing...
lo01
<< Search
Reset

Qualified

Qualified,
Will Expire < 30
Days

Qualified,
Will Expire < 14
Days

Not Qualified

Qualified Individuals					
	Org Code	Duty Area	Qualified	Employee	Retrain By
1	52220	LO01	Y	ANDERSON, ROBERT A	12/31/13
2			Y	GREGORY, PAUL T	8/15/13
3			Y	KING, DARRIN S	12/31/13
4			Y	LAPLACE, GENE W	12/31/13
5			Y	MARTEN, DOUG B	12/31/13
6			Y	PARK, CHAN H	12/31/13
7			Y	REED, JOHN R	5/31/13
8			Y	ROCKER, WILLIAM S	8/15/13
9			Y	TATE, FRED G	3/31/13
10			Y	TURNER, RUSS R	12/31/13

Duty Areas by User	Users by Duty Area	Qual Groups by User	Users by Qual Group	Supervisor Org Report
--------------------	--------------------	---------------------	---------------------	-----------------------

Select a Duty Area...
SM01 - SHIFT MANAGER QUALIFICATION

Find a Duty Area containing...

Qualified	Qualified, Will Expire < 30 Days	Qualified, Will Expire < 14 Days	Not Qualified
-----------	--	--	---------------

Qualified Individuals					
	Org Code	Duty Area	Qualified	Employee	Retrain By
1	52220	SM01	Y	ABNER, KEVIN S	12/31/13
2			Y	HANCOCK, HERB H	12/31/13
3			Y	HEART, DUSTIN T	3/31/13
4			Y	KELVIN, LYLE J	12/31/13
5			Y	KITTLES, DAWN B	12/31/13
6			Y	MUTH, JASON M	6/15/13
7			Y	ROYCE, GARY F	3/15/13
8			Y	SUMMERS, TOM S	8/15/13

Duty Areas by User | **Users by Duty Area** | Qual Groups by User | Users by Qual Group | Supervisor Org Report

Select a Duty Area...

ST01 - SHIFT TECH ADVISOR REQUIRED

Find a Duty Area containing...

st01

<< Search

Reset

Qualified
**Qualified,
Will Expire < 30
Days**
**Qualified,
Will Expire < 14
Days**
Not Qualified
Qualified Individuals

	Org Code	Duty Area	Qualified	Employee	Retrain By
1	52220	ST01	Y	ABNER, KEVIN S	12/31/13
2			Y	ANDERSON, ROBERT A	12/31/13
3			N	KING, DARRIN S	12/31/13
4			Y	LAPLACE, GENE W	12/31/13
5			Y	MARTEN, DOUG B	12/31/13
6			Y	PARK, CHAN H	12/31/13
7			Y	ROYCE, GARY F	3/15/13
8			Y	SANDERS, CHRISTINA D	12/31/13
9			Y	SUMMERS, TOM S	8/15/13

Duty Areas by User	Users by Duty Area	Qual Groups by User	Users by Qual Group	Supervisor Org Report
--------------------	--------------------	---------------------	---------------------	-----------------------

Select a Duty Area...
TS01 - SHIFT SUPPORT SUPV REQUIRED

Find a Duty Area containing...

Qualified	Qualified, Will Expire < 30 Days	Qualified, Will Expire < 14 Days	Not Qualified
-----------	--	--	---------------

Qualified Individuals					
	Org Code	Duty Area	Qualified	Employee	Retrain By
1	52220	TS01	Y	ANDERSON, ROBERT A	12/31/13
2			Y	GREGORY, PAUL T	5/15/13
3			Y	KING, DARRIN S	12/31/13
4			Y	LAPLACE, GENE W	12/31/13
5			Y	MARTEN, DOUG B	12/31/13
6			Y	PARK, CHAN H	12/31/13
7			Y	REED, JOHN R	5/31/13
8			Y	ROCKER, WILLIAM S	8/15/13
9			Y	TATE, FRED G	3/31/13
10			Y	TURNER, RUSS R	12/31/13

Duty Areas by User Users by Duty Area Qual Groups by User **Users by Qual Group** Supervisor Org Report

Select a Qual Group...

TGAD - CLEARANCE ORDER PROC/APP/HNG

Find a Qual Group containing...

tgad

<< Search

Reset

Qualified
**Qualified,
Will Expire < 30
Days**
**Qualified,
Will Expire < 14
Days**
Not Qualified
Qualified Individuals

	Org Code	Duty Area	Qualified	Employee	Retrain By
1	52220	TGAD	Y	ABNER, KEVIN S	12/31/13
2			Y	HANCOCK, HERB H	12/31/13
3			Y	HEART, DUSTIN T	3/31/13
4			Y	KELVIN, LYLE J	12/31/13
5			Y	KITTLES, DAWN B	12/31/13
6			Y	MUTH, JASON M	6/15/13
7			Y	ROYCE, GARY F	3/15/13
8			Y	SUMMERS, TOM S	8/15/13

Duty Areas by User
Users by Duty Area
Qual Groups by User
Users by Qual Group
Supervisor Org Report

Select a Duty Area...
R001 - CONTROL ROOM OP REQUIRED QUALS

Find a Duty Area containing...
ro01
<< Search
Reset

Qualified	Qualified, Will Expire < 30 Days	Qualified, Will Expire < 14 Days	Not Qualified
------------------	--	--	----------------------

Qualified Individuals					
	Org Code	Duty Area	Qualified	Employee	Retrain By
1	52220	RO01	Y	ALVAREZ, JASON L	12/31/13
2			Y	HARRIS, BYRON L	3/31/13
3			Y	HUGHES, PAT J	12/31/13
4			Y	JACKSON, HENRY N	10/31/13
5			Y	MCNAIR, RON S	12/31/13
6			Y	MULKY, PHLLIP P	12/31/13
7			Y	OLSON, DONALD B	3/15/13
8			Y	PALMER, JEFF D	12/31/13
9			Y	ROBERTS, JOHN T	12/31/13
10			Y	WRIGHT, STEVEN R	12/31/13

[Duty Areas by User](#)
[Users by Duty Area](#)
[Qual Groups by User](#)
[Users by Qual Group](#)
[Supervisor Org Report](#)
[PA Entry Requirement](#)

Select a Qual Group...

TGAE - CLEAR ORDER PROCESS/HANGING

Find a Qual Group containing...

tgae

<< Search

Reset

Qualified

**Qualified,
Will Expire < 30
Days**

**Qualified,
Will Expire < 14
Days**

Not Qualified

Qualified Individuals

	Org Code	Duty Area	Qualified	Employee	Retrain By
1	52220	RO01	Y	ALVAREZ, JASON L	12/31/13
2			Y	HARRIS, BYRON L	3/31/13
3			Y	HUGHES, PAT J	12/31/13
4			Y	JACKSON, HENRY N	10/31/13
5			Y	MCNAIR, RON S	12/31/13
6			Y	MULKY, PHLLIP P	12/31/13
7			Y	OLSON, DONALD B	3/15/13
8			Y	PALMER, JEFF D	12/31/13
9			Y	ROBERTS, JOHN T	12/31/13
10			Y	WRIGHT, STEVEN R	12/31/13

Duty Areas by User
Users by Duty Area
Qual Groups by User
Users by Qual Group
Supervisor Org Report

Select a Duty Area...
EORW - RADWASTE CONTROL ROOM TOUR

Find a Duty Area containing...
eorw
<< Search
Reset

Qualified

Qualified,
Will Expire < 30
Days

Qualified,
Will Expire < 14
Days

Not Qualified

Qualified Individuals					
	Org Code	Duty Area	Qualified	Employee	Retrain By
1	52220	EORW	Y	ALLEN, KIRBY J	12/31/13
2			Y	BAILEY, JOHN R	5/31/13
3			N	DAVIS, MICHAEL M	12/31/13
4			Y	KIRBY, ROLLAND L	12/31/13
5			N	LATIGO, PETE S	12/31/13
6			N	MARQUEZ, JEREMEY H	12/31/13
7			Y	MARTIN, KEVIN F	5/31/13
8			N	PARKER, AMY B	8/15/13
9			N	SMITH, FRED P	12/31/13

Duty Areas by User	Users by Duty Area	Qual Groups by User	Users by Qual Group	Supervisor Org Report
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Select a Duty Area...
EORX - REACTOR/RADWASTE BLDG TOUR

Find a Duty Area containing...
eorx

Qualified	Qualified, Will Expire < 30 Days	Qualified, Will Expire < 14 Days	Not Qualified
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Qualified Individuals					
	Org Code	Duty Area	Qualified	Employee	Retrain By
1	52220	EORX	Y	ALLEN, KIRBY J	12/31/13
2			Y	BAILEY, JOHN R	5/31/13
3			Y	DAVIS, MICHAEL M	12/31/13
4			Y	KIRBY, ROLLAND L	12/31/13
5			N	LATIGO, PETE S	12/31/13
6			N	MARQUEZ, JEREMEY H	12/31/13
7			Y	MARTIN, KEVIN F	5/31/13
8			N	PARKER, AMY B	8/15/13
9			Y	SMITH, FRED P	12/31/13
10			Y	ZOELLER, BRYAN B	3/31/13

Duty Areas by User
Users by Duty Area
Qual Groups by User
Users by Qual Group
Supervisor Org Report

Select a Duty Area...
EOTG - TURBINE BLDG. EO TOUR QUAL

Find a Duty Area containing...

Qualified

Qualified,
Will Expire < 30
Days

Qualified,
Will Expire < 14
Days

Not Qualified

Qualified Individuals					
	Org Code	Duty Area	Qualified	Employee	Retrain By
1	52220	EOTG	Y	ALLEN, KIRBY J	12/31/13
2			Y	BAILEY, JOHN R	5/31/13
3			Y	DAVIS, MICHAEL M	12/31/13
4			Y	KIRBY, ROLLAND L	12/31/13
5			Y	LATIGO, PETE S	12/31/13
6			N	MARQUEZ, JEREMEY H	12/31/13
7			Y	MARTIN, KEVIN F	5/31/13
8			N	PARKER, AMY B	8/15/13
9			Y	SMITH, FRED P	12/31/13
10			Y	ZOELLER, BRYAN B	3/31/13

Duty Areas by User
Users by Duty Area
Qual Groups by User
Users by Qual Group
Supervisor Org Report

Select a Duty Area...
EOOS - OUTSIDE EO TOUR QUALIFICATION

Find a Duty Area containing...
eoos
<< Search
Reset

Qualified	Qualified, Will Expire < 30 Days	Qualified, Will Expire < 14 Days	Not Qualified
-----------	--	--	---------------

Qualified Individuals					
	Org Code	Duty Area	Qualified	Employee	Retrain By
1	52220	EOOS	Y	ALLEN, KIRBY J	12/31/13
2			Y	BAILEY, JOHN R	5/31/13
3			Y	DAVIS, MICHAEL M	12/31/13
4			Y	KIRBY, ROLLAND L	12/31/13
5			N	LATIGO, PETE S	12/31/13
6			Y	MARQUEZ, JEREMEY H	12/31/13
7			Y	MARTIN, KEVIN F	5/31/13
8			Y	PARKER, AMY B	8/15/13
9			Y	SMITH, FRED P	12/31/13
10			Y	ZOELLER, BRYAN B	3/31/13

Duty Areas by User | **Users by Duty Area** | Qual Groups by User | Users by Qual Group | Supervisor Org Report

Select a Duty Area...

DGSS - SAFE SHUTDOWN EO

Find a Duty Area containing...

dgss

<< Search

Reset

Qualified
**Qualified,
Will Expire < 30
Days**
**Qualified,
Will Expire < 14
Days**
Not Qualified
Qualified Individuals

	Org Code	Duty Area	Qualified	Employee	Retrain By
1	52220	DGSS	Y	ALLEN, KIRBY J	12/31/13
2			Y	BAILEY, JOHN R	5/31/13
3			Y	DAVIS, MICHAEL M	12/31/13
4			Y	KIRBY, ROLLAND L	12/31/13
5			N	LATIGO, PETE S	12/31/13
6			N	MARQUEZ, JEREMEY H	12/31/13
7			Y	MARTIN, KEVIN F	5/31/13
8			N	PARKER, AMY B	8/15/13
9			Y	SMITH, FRED P	12/31/13
10			Y	ZOELLER, BRYAN B	3/31/13

Duty Areas by User
Users by Duty Area
Qual Groups by User
Users by Qual Group
Supervisor Org Report

Select a Duty Area...
EOEP - OSC EQUIPMENT OPERATOR

Find a Duty Area containing...

Qualified

Qualified,
Will Expire < 30
Days

Qualified,
Will Expire < 14
Days

Not Qualified

Qualified Individuals					
	Org Code	Duty Area	Qualified	Employee	Retrain By
1	52220	EOEP	Y	ALLEN, KIRBY J	12/31/13
2			Y	BAILEY, JOHN R	5/31/13
3			Y	DAVIS, MICHAEL M	12/31/13
4			Y	KIRBY, ROLLAND L	12/31/13
5			Y	LATIGO, PETE S	12/31/13
6			Y	MARQUEZ, JEREMEY H	12/31/13
7			Y	MARTIN, KEVIN F	5/31/13
8			Y	PARKER, AMY B	8/15/13
9			Y	SMITH, FRED P	12/31/13
10			Y	ZOELLER, BRYAN B	3/31/13

Duty Areas by User
Users by Duty Area
Qual Groups by User
Users by Qual Group
Supervisor Org Report

Select a Duty Area...
EOFB - FIRE BRIGADE QUALIFICATION

Find a Duty Area containing...
eofb
<< Search
Reset

Qualified	Qualified, Will Expire < 30 Days	Qualified, Will Expire < 14 Days	Not Qualified
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Qualified Individuals					
	Org Code	Duty Area	Qualified	Employee	Retrain By
1	52220	EOFB	Y	ALLEN, KIRBY J	12/31/13
2			N	BAILEY, JOHN R	5/31/13
3			Y	DAVIS, MICHAEL M	12/31/13
4			Y	KIRBY, ROLLAND L	12/31/13
5			Y	LATIGO, PETE S	12/31/13
6			Y	MARQUEZ, JEREMEY H	12/31/13
7			Y	MARTIN, KEVIN F	5/31/13
8			Y	PARKER, AMY B	8/15/13
9			Y	SMITH, FRED P	12/31/13
10			Y	ZOELLER, BRYAN B	3/31/13

Duty Areas by User | **Users by Duty Area** | Qual Groups by User | Users by Qual Group | Supervisor Org Report

Select a Duty Area...

EOFL - FIRE BRIGADE LEADER QUAL

Find a Duty Area containing...

eofl

<< Search

Reset

Qualified
**Qualified,
Will Expire < 30
Days**
**Qualified,
Will Expire < 14
Days**
Not Qualified
Qualified Individuals

	Org Code	Duty Area	Qualified	Employee	Retrain By
1	52220	EOFL	Y	ALLEN, KIRBY J	12/31/13
2			N	BAILEY, JOHN R	5/31/13
3			N	DAVIS, MICHAEL M	12/31/13
4			Y	KIRBY, ROLLAND L	12/31/13
5			N	LATIGO, PETE S	12/31/13
6			N	MARQUEZ, JEREMEY H	12/31/13
7			Y	MARTIN, KEVIN F	5/31/13
8			N	PARKER, AMY B	8/15/13
9			N	SMITH, FRED P	12/31/13
10			Y	ZOELLER, BRYAN B	3/31/13

Duty Areas by User	Users by Duty Area	Qual Groups by User	Users by Qual Group	Supervisor Org Report
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Select a Duty Area...
EOSS - SAFE SHUTDOWN EO QUALIFICATION

Find a Duty Area containing...
eoss

Qualified	Qualified, Will Expire < 30 Days	Qualified, Will Expire < 14 Days	Not Qualified
------------------	--	--	----------------------

Qualified Individuals					
	Org Code	Duty Area	Qualified	Employee	Retrain By
1	52220	EOSS	Y	ALLEN, KIRBY J	12/31/13
2			N	BAILEY, JOHN R	5/31/13
3			Y	DAVIS, MICHAEL M	12/31/13
4			Y	KIRBY, ROLLAND L	12/31/13
5			N	LATIGO, PETE S	12/31/13
6			Y	MARQUEZ, JEREMEY H	12/31/13
7			Y	MARTIN, KEVIN F	5/31/13
8			Y	PARKER, AMY B	8/15/13
9			Y	SMITH, FRED P	12/31/13
10			Y	ZOELLER, BRYAN B	3/31/13

Duty Areas by User
Users by Duty Area
Qual Groups by User
Users by Qual Group
Supervisor Org Report

Select a Qual Group...
TGAF - BOUNDARY TAG HANGER (OPS)

Find a Qual Group containing...
tgaf

<< Search
Reset

Qualified	Qualified, Will Expire < 30 Days	Qualified, Will Expire < 14 Days	Not Qualified
-----------	--	--	---------------

Qualified Individuals					
	Org Code	Duty Area	Qualified	Employee	Retrain By
1	52220	TGAF	Y	ALLEN, KIRBY J	12/31/13
2			Y	BAILEY, JOHN R	5/31/13
3			Y	DAVIS, MICHAEL M	12/31/13
4			Y	KIRBY, ROLLAND L	12/31/13
5			Y	LATIGO, PETE S	12/31/13
6			Y	MARQUEZ, JEREMEY H	12/31/13
7			Y	MARTIN, KEVIN F	5/31/13
8			Y	PARKER, AMY B	8/15/13
9			Y	SMITH, FRED P	12/31/13
10			Y	ZOELLER, BRYAN B	3/31/13



INSTRUCTIONAL COVER SHEET

PROGRAM TITLE	LICENSED OPERATOR TRAINING		
COURSE TITLE	JOB PERFORMANCE MEASURE		
LESSON TITLE	HALON BOTTLES LOW PRESSURE - DETERMINE NEED FOR AND ISSUE A FIRE PROTECTION SYSTEM IMPAIRMENT		
LESSON LENGTH	.5 HRS		
	INSTRUCTIONAL MATERIALS INCLUDED		
LESSON PLAN PQD CODE		Rev. No.	
SIMULATOR GUIDE PQD CODE		Rev. No.	
JPM PQD CODE	LO001588	Rev. No.	1
EXAM PQD CODE		Rev. No.	
DIVISION TITLE	Nuclear Training		
DEPARTMENT	Operations Training		
PREPARED BY	Ron Hayden	DATE	05/11/06
REVISED BY	Ron Hayden	DATE	09/20/12
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 THE NEED FOR AND ISSUE A FIRE PROTECTION SYSTEM IMPAIRMENT TO TRACK EQUIPMENT STATUS

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:

Ensure the candidate has access to a set of Volume 1 procedures, including PPM 1.3.10B.
Have a copy of PPM 1.3.10B Attachment 9.1, Fire Protection System Impairment Notification, ready to give the candidate after the need to issue an impairment is identified.

JPM Instructions:

Verify Current Procedure against JPM. If any steps have changed, the JPM should be revised.

Tools/Equipment: None

Safety Items: None

Task Number: SRO-0158

Validation Time:

Alternate Path: N/A

Time Critical: No

PPM Reference: PPM 15.3.6 Rev.007
PPM 1.3.10B Rev.014

Location: Classroom/Simulator

NUREG 1123 Ref: 2.2.14 (SRO 4.3)

Performance Method: Perform

Task Standard: It is determined that a Fire Protection System Impairment is required and the Fire Protection System Impairment Notification form is completed with the required information.

JPM CHECKLIST

INITIAL CONDITIONS:	You are the Production SRO with the plant operating at 100% power. PPM 15.3.6 Section 7.1, Control Room Halon Annual Pressure Check, has just been completed. The Fire Protection System Engineer has informed you that FP-TK-U679/1B and FP-TK-U800/2 were discovered to be depressurized (0 psig), and must be replaced or refilled. All other tank pressures were SAT.
INITIATING CUE:	Based on the information provided, determine if any further actions are required. Initial the JPM Answer Sheet in the appropriate location to indicate your determination. If actions are required, fill in those actions on the JPM Answer Sheet. When you are done with your assessment and have filled in the required information, hand the JPM Answer Sheet to your examiner.

* Items are Critical Steps

Time	Step	Element	Standard	Cue	Sat/Unsat
	1	Refers to PPM 15.3.6 Section 7.1 for procedural guidance concerning Halon bottle low pressure.	Recognizes that the note after step 7.1.5 states: If pressure is UNSAT, a fire protection system impairment may be filled out and a WR initiated to replace or refill bottle.		S / U
	2	Documents required actions per PPM 15.3.6 and / or PPM 1.3.10B.	Initial placed on the line next to: 'Initial here if actions are required' on the JPM Answer Sheet. Fills in 'Issue a Fire Protection System Impairment' (or similar to), as a required action on the JPM Answer Sheet. May fill in 'Initiate a Work Request' as a required action on the JPM Answer Sheet.		S / U * S / U * S / U
EVALUATOR: When the candidate returns the JPM Answer Sheet:					
1. If it indicates that actions are required and one of those actions is to initiate a Fire Protection System Impairment then hand the candidate <i>STUDENT INFORMATION CARD 2</i> and a copy of PPM 1.3.10B Attachment 9.1.					
2. If it indicates that actions are NOT required inform the candidate that the termination point of the JPM has been reached.					

DETERMINE THE NEED FOR AND ISSUE A FIRE PROTECTION SYSTEM IMPAIRMENT TO TRACK EQUIPMENT STATUS

* Items are Critical Steps

Time	Step	Element	Standard	Cue	Sat/Unsat
	3	Completes the Fire Protection System Impairment:	Fills out the form.		S / U
	4	Date.	Fills in today's date.		S / U
	5	Reported By.	Fills in Fire Protection System Engineer.		S / U
	6	Impairment Permit Type (BI/FPSI) & Number.	Fills in FPSI #13-0025.		S / U *
	7	System(s) Impaired.	Places a mark next to Halon.		S / U *
	8	Description of Impairment.	Fills in FP-TK-U679/1B and FP-TK-U800/2.		S / U *
	9	Reason for Impairment.	Fills in 'Pressure does not meet the requirements of PPM 15.3.6" or 'Tank pressure low' (or similar to).		S / U *
	10	Building/Elevation/Location of Impairment.	Fills in Radwaste, 501', Main Control Room.		S / U *
	11	Compensatory Action(s) Taken.	Fills in None or leaves blank.		S / U
	12	Date Impairment Occurred.	Fills in today's date.		S / U
	13	Date Expected Return to Service.	Leaves blank.		S / U
Termination Criteria: Candidate hands in the completed Fire Protection System Impairment, Attachment 9.1 of PPM 1.3.10B.					
Transfer the following to the "Results of JPM" page: Any Unsat step - indicate if step was a Critical Step; JPM completion time.					

**JPM RESULTS:
DETERMINE THE NEED FOR AND ISSUE A FIRE PROTECTION
SYSTEM IMPAIRMENT**

Examinee (Print): _____

Evaluator (Print): _____

Task Standard: It is determined that a Fire Protection System Impairment is required and the Fire Protection System Impairment Notification form is completed with the required information.

Overall Evaluation	JPM Completion Time
SAT / UNSAT (Circle One)	Minutes

COMMENTS:

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and extend across the width of the page. There are no margins, text, or other markings on the paper.

Evaluator's Signature: _____ **Date:** _____

STUDENT JPM INFORMATION CARD 2

Initial Conditions:

You are the Production SRO with the plant operating at 100% power.

PPM 15.3.6 Section 7.1, Control Room Halon Annual Pressure Check, has just been completed.

The Fire Protection System Engineer informs you that FP-TK-U679/1B and FP-TK-U800/2 were discovered to be depressurized (0 psig), and must be replaced or refilled.

The last Fire Protection System Impairment Notification completed was FPSI #13-0024.

Initiating Cue:

Based on the information provided, complete a Fire Protection System Impairment Notification.

When you have filled in the required information, return all JPM materials to your examiner.

CARD 2

Number: 1.3.10B	Use Category: INFORMATION	Major Rev: 014 Minor Rev: 004 Page: 21 of 21
Title: Active Fire System Operability and Impairment Control		

FIRE PROTECTION SYSTEM IMPAIRMENT NOTIFICATION

Transmit by FAX to: NUCLEAR ELECTRIC INSURANCE LIMITED NUCLEAR SERVICE ORGANIZATION FAX# (302) 888-3095

Plant Columbia Generating Station Date _____

Reported By _____ Phone (509) _____

Impairment Permit Type (BI/FPSI) & Number _____

System(s) Impaired

☐ Wet Pipe ☐ Dry Pipe ☐ Firemain, Hydrants, Valves
☐ Deluge ☐ Preaction ☐ CO2 ☐ Halon
☐ Fire Pump ☐ Other _____

Description of Impairment (Include Valve/Equipment Tag No.) _____

Reason for Impairment _____

Building/Elevation/Location of Impairment (Include Area/Equipment Protected) _____

Compensatory Action(s) Taken _____

Date Impairment Occurred: _____ Date Expected Return to Service: _____

(Forward completed form to Fire Marshal; In-box located in SSS office)

Actual Date Returned to Service: _____

Closure Notification By: _____ Date _____

END

Attachment 9.1, Fire Protection System Impairment Notification

STUDENT JPM INFORMATION CARD

Initial Conditions:

You are the Production SRO with the plant operating at 100% power.

PPM 15.3.6 Section 7.1, Control Room Halon Annual Pressure Check, has just been completed.

The Fire Protection System Engineer informs you that FP-TK-U679/1B and FP-TK-U800/2 were discovered to be depressurized (0 psig), and must be replaced or refilled.

All other tank pressures were SAT.

Initiating Cue:

Based on the information provided, determine if any further actions are required.

Initial the JPM Answer Sheet to indicate your determination.

Additionally, if actions are required, fill in those actions on the JPM Answer Sheet.

When you have filled in the required information on the JPM Answer Sheet, hand it to your examiner.

JPM ANSWER SHEET

INITIAL HERE IF NO FURTHER ACTIONS ARE REQUIRED: _____

INITIAL HERE IF ACTIONS ARE REQUIRED: _____

IF ACTIONS ARE REQUIRED, THEY ARE: _____



INSTRUCTIONAL COVER SHEET

PROGRAM TITLE LICENSED OPERATOR TRAINING

COURSE TITLE JOB PERFORMANCE MEASURE

LESSON TITLE APPROVAL OF CW AND PLANT SERVICE WATER BLOWDOWN

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 LO001725 _____ Rev. No. 1

Exam PQD Code _____ Rev. No. _____

DIVISION TITLE Nuclear Training

DEPARTMENT Operations Training

PREPARED BY Chris Maxwell DATE 7/15/10

REVISED BY Ron Hayden DATE 09/23/12

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:

Ensure each candidate has access to SOP-CW-OPS.

Provide a copy of PPM 12.2.9 Section 8.4 with all steps up to 8.4.3.a. completed.

JPM Instructions:

Verify Current Procedure against JPM. If any steps have changed, the JPM should be revised.

Tools/Equipment: None

Safety Items: None

Task Number: SRO-0091

Validation Time: 10 minutes

Alternate Path: N/A

Time Critical: No

PPM Reference: PPM 12.2.9 Rev. 38 SOP-CW-OPS Rev. 15

Location: Classroom or Simulator

NUREG 1123 Ref: 2.3.6 2.0 / 3.8

Performance Method: Perform

Task Standard: The JPM Answer Sheet indicates that Circulating Water System blowdown would not be approved due to the required NPDES monitoring instruments not being available.

JPM CHECKLIST

INITIAL CONDITIONS:	<ul style="list-style-type: none"> • Columbia is operating at 100% power. • CW and TSW Halogenation has just been completed per PPM 12.2.9. • CW-PHR-1 is in service. • CBD-FR-10 was removed from service and Danger Tagged this morning. • CBD-FI-1A is isolated for calibration. • Halogen concentration has been verified LT 0.1 ppm TRH in two samples taken 20 minutes apart. • CW pH has been verified to be between 6.5 and 9.0.
INITIATING CUE:	Chemistry is requesting approval to commence Circulating Water System blowdown. Determine if you would approve Circulating Water System blowdown. When your decision is made, check the appropriate box on the JPM Answer Sheet indicating whether you would approve or would not approve the Circulating Water System blowdown. Additionally, if you indicate that you would not approve the blowdown, provide the bases for your disapproval. When done, hand the completed JPM Answer Sheet to the examiner.

* Items are Critical Steps

Comments	Element	Standard	Sat/Unsat
	PPM 12.2.29 Step 8.4.3 Verify NPDES required flow instrumentation is available per SOP-CW-OPS (N/A the other.) a. With Circ Water pumps in operation. b. Without Circ Water in operation.	Refers to SOP-CW-OPS.	S / U

* Items are Critical Steps

Comments	Element	Standard	Sat/Unsat
	SOP-CW-OPS step 5.8.3 Verify the following NPDES monitoring instruments or approved alternate instruments/methods are in service prior to initiating blowdown. N/A the method not used. <u>Primary Instruments:</u> <ul style="list-style-type: none"> • CW-PHR-1 (pH recorder) (CW-PNL-1) • CBD-FR-10 (CW Blowdown Flow) (H13-P840). 	Recognizes that Primary Instrument CW-PHR-1, is in service. Recognizes that Primary Instrument CBD-FR-10 is not in service.	S / U S / U *
	<u>Approved Alternate Instrument/ Method</u> <ul style="list-style-type: none"> • Grab samples every 8 hours; • CBD-FI-1A (CBD Flow) (H13-P840). 	Recognizes that the approved alternate instrument/method, CBD-FI-1A, is not in service.	S / U *
	Determines the conditions required to initiate Circulating Water System blowdown have not been met	Places a mark in the “NOT APPROVED” block on the JPM Answer Sheet. Indicates that the bases for the disapproval is that the required NPDES monitoring instruments are not available (or similar).	S / U * S / U *
Termination Criteria: Candidate hands the completed JPM Answer Sheet to the examiner.			
Transfer the following to the “Results of JPM” page: Any Unsat step - indicate if step was a Critical Step; JPM completion time.			

RESULTS OF JPM: APPROVAL OF CIRCULATING AND PLANT SERVICE WATER BLOWDOWN

Examinee (Please Print): _____

Evaluator (Please Print): _____

Task Standard: The JPM Answer Sheet indicates that Circulating Water System blowdown would not be approved due to the required NPDES monitoring instruments not being available.

Overall Evaluation	JPM Completion Time
SAT / UNSAT (Circle One)	Minutes

COMMENTS:

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and extend across the width of the page. There are no margins, text, or other markings on the paper.

Evaluator's Signature: _____ **Date:** _____

STUDENT JPM INFORMATION CARD

Initial Conditions:

- Columbia is operating at 100% power.
- Circ Water and TSW Halogenation has just been completed.
- CW-PHR-1 is in service.
- CBD-FR-10 was removed from service and Danger Tagged this morning.
- CBD-FI-1A is isolated for calibration.
- Halogen concentration has been verified LT 0.1 ppm TRH in two samples taken 20 minutes apart.
- CW pH has been verified to be between 6.5 and 9.0.

Cue:

Chemistry is requesting approval to commence Circulating Water System blowdown. Determine if you would approve Circulating Water System blowdown.

When your decision is made, check the appropriate box on the JPM Answer Sheet indicating whether you would approve or would not approve the Circulating Water System blowdown.

Additionally, if you indicate that you would not approve the blowdown, provide the bases for your disapproval.

When done, hand the completed JPM Answer Sheet to the examiner.

JPM ANSWER SHEET

☐

APPROVED

☐

NOT APPROVED

When completed, hand this sheet to the examiner.



INSTRUCTIONAL COVER SHEET

PROGRAM TITLE LICENSED OPERATOR TRAINING

COURSE TITLE JOB PERFORMANCE MEASURE

LESSON TITLE RECLASSIFY A SECURITY EVENT (SAE) (TC)

LESSON LENGTH .5 HRS

INSTRUCTIONAL MATERIALS INCLUDED

LESSON PLAN PQD CODE _____ Rev. No. _____

SIMULATOR GUIDE PQD CODE _____ Rev. No. _____

JPM PQD CODE LR001548 _____ Rev. No. 7

EXAM PQD CODE _____ Rev. No. _____

DIVISION TITLE Nuclear Training

DEPARTMENT Operations Training

PREPARED BY Steve Hutchison _____ DATE 10/31/02

REVISED BY Ron Hayden _____ DATE 09/20/12

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:

Have a blank CNF form, a copy of PPM 13.1.1 EAL Chart, and PPM 13.1.1A available.

JPM Instructions:

Verify Current Procedure against JPM. If any steps have changed, the JPM should be revised.

Tools/Equipment: None

Safety Items: None

Task Number: SRO-0529

Validation Time: 20 minutes

Alternate Path: No

Time Critical: 40 minutes

PPM Reference: 13.1.1 Rev. 42; PPM 13.1.1A Rev. 25

Location: Any

NUREG 1123 Ref: 2.4.41 2.9 / 4.6

Performance Method: Perform

Task Standard: A new CNF Form has been completed with required information.

JPM CHECKLIST

INITIAL CONDITIONS:	The plant is operating at 100% power. One hour ago, the FBI notified security and plant management that a mid-western terrorist group has threatened to interfere with the operation of Columbia Generating Station. The FBI considers this a credible threat. An Unusual Event was declared 50 minutes ago.
INITIATING CUE:	<p>Five minutes ago, security called and notified you that an explosive device has been discovered within Columbia's Vital Area, specifically in the 'A' Service Water Pump House. The device is of sufficient size that if it should detonate, SW-P-1A would be destroyed. All personnel have been evacuated from the area.</p> <p>Meteorological data: Stability Class E; Wind direction is from 245°; Wind speed 4 mph; It is not raining</p> <p><i>As the Emergency Director, determine if an EAL change is required. The electronic CNF form is not available. Complete a paper CNF if necessary. If a CNF is not required, initial the line at the bottom of the Student JPM Information Card and hand it to your examiner. If a CNF is required, present the completed form to the examiner. This is a time critical JPM and your time starts now.</i></p>

* Items are Critical Steps				
Time	Step	Element	Standard	Cue
Candidate is allowed 20 minutes to determine if a change in classification is needed and 20 minutes to complete the CNF form for a total of 40 minutes.				
	13	Complete the CNF Form	CNF Form is completed as follows:	
	14	Block 1	Checked Emergency or Drill	S / U
	15	Block 2	Filled in '2'	S / U
	16	Block 3	Filled in a name and a phone number	S / U
	17	Block 4	Checked 'b' for a Reclassification and filled in a Date and a Time	S / U * S / U
	18	Block 5	Checked 'c' Site Area Emergency	S / U *

* Items are Critical Steps

Time	Step	Element	Standard	Cue	Sat/Unsat
	19	Block 6a	Left blank		S / U
	20	Block 6b	Checked Yes Checked Alternate EOF, Energy Northwest Office Complex, 3000 George Washington Way		S / U * S / U
	21	Block 7	Filled in: Wind Speed = 4 Wind Direction: from = 245° Precipitation = 'No' block checked Stability Class = E		S / U
	22	Block 8	Checked No Release		S / U
	23	Block 9	Checked N/A		S / U
	24	Block 10	Left blank		S / U
	25	Block 11	Checked No		S / U
	26	Block 12	Filled in: EAL - # 9.1.S.1 or 9.1.S.2 Description of Incident – Something similar to: Bomb found in Service Water pump house		S / U * S / U *
	27	Block 13	Checked 'a', 'b' or 'c'		S / U
Termination Criteria: Student presents the completed CNF to the examiner.					
Transfer the following to the “Results of JPM” page: Any Unsat step - indicate if step was a Critical Step; JPM completion time.					

STUDENT JPM INFORMATION CARD

Initial Conditions:

The plant is operating at 100% power.

One hour ago, the FBI notified security and plant management that a mid-eastern terrorist group has threatened to interfere with the operation of Columbia Generating Station. The FBI considers this as a credible threat.

An Unusual Event was declared 50 minutes ago.

Initiating Cue:

Five minutes ago, security called and notified you that an explosive device has been discovered within Columbia's Vital Area, specifically in the 'A' Service Water Pump House. The device is of sufficient size that, if it should detonate, SW-P-1A would be destroyed. All personnel have been evacuated from the area.

Meteorological data:

- Stability class is E
- Wind direction is from 245°
- Wind speed is 4 mph
- It is not raining

As the Emergency Director, determine if an EAL change is required.

The electronic CNF form is not available. Complete a paper CNF if necessary.

If a CNF is not necessary, indicate that by initialing the bottom of this page and hand it to the examiner.

If a CNF is required, present the completed form to the examiner.

THIS IS A TIME CRITICAL JPM AND YOUR TIME STARTS NOW

A new CNF is not required: _____
(Initial)

Facility: <u>Columbia</u>		Date of Examination: <u>February 2013</u>
Exam Level: RO <input checked="" type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/>		Operating Test Number: <u>1</u>
Control Room Systems [@] (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)		
System / JPM Title	Type Code*	Safety Function
a. Reactor Manual Control System / Conduct a Refueling Interlocks Functional Test of the Refuel Position One-Rod-Out Interlock (201002 A3.01). With the MODE Switch in SHUTDOWN, place the plant in MODE 5 and perform OSP-NSSE-W402 (Refuel Position One-Rod-Out Interlock CFT). The designated control rod is in a quadrant that does not have an operable SRM.	A, L, N, S	1
b. Component Cooling Water System / Restore adequate Component Cooling Water (RCC) flow to containment loads (400000 A1.01). While transferring SM-7 to the Backup Transformer, a lockout on SL-71 occurs. This results in the loss of one RCC pumps and requires manual action to start the standby RCC pump to restore normal system flow.	A, M, S	8
c. Reactor Core Isolation Cooling System / Manually initiate RCIC and establish normal RPV water level (217000 A4.04). Initiate RCIC for level control following a scram. The controller is failed and manual control is required to establish flow and restore RPV water level.	A, D, L, S	2
d. Main and Reheat Steam / Open the inboard MSIVs to establish the Main Condenser as a heat sink (239001 A4.01). Following a loss and restoration of Containment Instrument Air, open the inboard MSIVs to restore the Main Condenser heat sink.	D, L, S	4
e. Reactor/Turbine Pressure Regulating System / Lower RPV pressure with Main Turbine Bypass Valves (241000 A2.03). Three Main Turbine Bypass Valves fail open while manually reducing RPV pressure. Entry into ABN-PRESSURE and actions to close the MSIVs are required prior to RPV Pressure reaching 500 psig.	A, D, L, S	3
f. Traversing In-Core Probe System / Manually Initiate Containment Isolations (223002 A2.03; A3.01; A3.02). TIP-V-5 is found to be opened when -50" Isolations are verified. Action is then taken to manually isolate the containment penetration by firing the associated squib valve.	A, D, P, S	7
g. Fuel Pool Cooling and Clean-up / Align Standby Service Water to the Fuel Pool Cooling HX following a complete loss of RCC (233000 A2.08). Following a reactor scram due to a complete loss of RCC and with Fuel Pool Temperatures rising, align Service Water A and B to the Fuel Pool Cooling HXs.	L, N, S	9

h. Secondary Containment / Restore Secondary Containment differential pressure (290001 A4.01). Operate the Reactor Building HVAC System to restore Reactor Building differential pressure. Start ROA-FN-1A and REA-FN-1A.	M, S	5
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In-Plant Systems [@] (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)		
i. Emergency Generators / Shutdown DG-2 from the local control panel (264000 K4.07). DG-2 fails to stop when the stop pushbutton is depressed requiring a manual trip using the mechanical overspeed device.	A, D, EN, R	6
j. Reactor Core Isolation Cooling System / Prevent a RCIC High Exhaust Pressure Trip (217000 A2.02). During a Station Blackout, performs the actions of PPM 5.6.1 required to prevent a high exhaust pressure trip of the RCIC turbine.	D, E, EN, L, P, R	2
k. Primary Containment System and Auxiliaries / Perform Emergency Drywell Venting during a LOCA using SGT-B (223001 A2.07). With a LOCA signal present, emergency vent the Drywell using SGT.	C, D, E, EN, L, R	5
[@] All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.		
* Type Codes	Criteria for RO / SRO-I / SRO-U	
(A)lternate path	4-6 / 4-6 / 2-3	
(C)ontrol room		
(D)irect from bank	≤ 9 / ≤ 8 / ≤ 4	
(E)mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1	
(EN)gineered safety feature	- / - / ≥ 1 (control room system)	
(L)ow-Power / Shutdown	≥ 1 / ≥ 1 / ≥ 1	
(N)ew or (M)odified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 1	
(P)revious 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)	
(R)CA	≥ 1 / ≥ 1 / ≥ 1	
(S)imulator		

Facility: <u>Columbia</u>		Date of Examination: <u>February 2013</u>
Exam Level: RO <input type="checkbox"/> SRO-I <input checked="" type="checkbox"/> SRO-U <input type="checkbox"/>		Operating Test Number: <u>1</u>
Control Room Systems [@] (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)		
System / JPM Title	Type Code*	Safety Function
a. Reactor Manual Control System / Conduct a Refueling Interlocks Functional Test of the Refuel Position One-Rod-Out Interlock (201002 A3.01). With the MODE Switch in SHUTDOWN, place the plant in MODE 5 and perform OSP-NSSE-W402 (Refuel Position One-Rod-Out Interlock CFT). The designated control rod is in a quadrant that does not have an operable SRM.	A, L, N, S	1
b. Component Cooling Water System / Restore adequate Component Cooling Water (RCC) flow to containment loads (400000 A1.01). While transferring SM-7 to the Backup Transformer, a lockout on SL-71 occurs. This results in the loss of one RCC pumps and requires manual action to start the standby RCC pump to restore normal system flow.	A, M, S	8
c.		
d. Main and Reheat Steam / Open the inboard MSIVs to establish the Main Condenser as a heat sink (239001 A4.01). Following a loss and restoration of Containment Instrument Air, open the inboard MSIVs to restore the Main Condenser heat sink.	D, L, S	4
e. Reactor/Turbine Pressure Regulating System / Lower RPV pressure with Main Turbine Bypass Valves (241000 A2.03). Three Main Turbine Bypass Valves fail open while manually reducing RPV pressure. Entry into ABN-PRESSURE and actions to close the MSIVs are required prior to RPV Pressure reaching 500 psig.	A, D, L, S	3
f. Traversing In-Core Probe System / Manually Initiate Containment Isolations (223002 A2.03; A3.01; A3.02). TIP-V-5 is found to be opened when -50" Isolations are verified. Action is then taken to manually isolate the containment penetration by firing the associated squib valve.	A, D, P, S	7
g. Fuel Pool Cooling and Clean-up / Align Standby Service Water to the Fuel Pool Cooling HX following a complete loss of RCC (233000 A2.08). Following a reactor scram due to a complete loss of RCC and with Fuel Pool Temperatures rising, align Service Water A and B to the Fuel Pool Cooling HXs.	L, N, S	9
h. Secondary Containment / Restore Secondary Containment differential pressure (290001 A4.01). Operate the Reactor Building HVAC System to restore	M, S	5

Reactor Building differential pressure. Start ROA-FN-1A and REA-FN-1A.		
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In-Plant Systems [@] (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)		
i. Emergency Generators / Shutdown DG-2 from the local control panel (264000 K4.07). DG-2 fails to stop when the stop pushbutton is depressed requiring a manual trip using the mechanical overspeed device.	A, D, EN, R	6
j. Reactor Core Isolation Cooling System / Prevent a RCIC High Exhaust Pressure Trip (217000 A2.02). During a Station Blackout, performs the actions of PPM 5.6.1 required to prevent a high exhaust pressure trip of the RCIC turbine.	D, E, EN, L, P, R	2
k. Primary Containment System and Auxiliaries / Perform Emergency Drywell Venting during a LOCA using SGT-B (223001 A2.07). With a LOCA signal present, emergency vent the Drywell using SGT.	C, D, E, EN, L, R	5
[@] All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.		
* Type Codes	Criteria for RO / SRO-I / SRO-U	
(A)lternate path	4-6 / 4-6 / 2-3	
(C)ontrol room		
(D)irect from bank	≤ 9 / ≤ 8 / ≤ 4	
(E)mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1	
(EN)gineered safety feature	- / - / ≥ 1 (control room system)	
(L)ow-Power / Shutdown	≥ 1 / ≥ 1 / ≥ 1	
(N)ew or (M)odified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 1	
(P)revious 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)	
(R)CA	≥ 1 / ≥ 1 / ≥ 1	
(S)imulator		

Facility: <u>Columbia</u>		Date of Examination: <u>February 2013</u>
Exam Level: RO <input type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input checked="" type="checkbox"/>		Operating Test Number: <u>1</u>
Control Room Systems [@] (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)		
System / JPM Title	Type Code*	Safety Function
a. Reactor Manual Control System / Conduct a Refueling Interlocks Functional Test of the Refuel Position One-Rod-Out Interlock (201002 A3.01). With the MODE Switch in SHUTDOWN, place the plant in MODE 5 and perform OSP-NSSE-W402 (Refuel Position One-Rod-Out Interlock CFT). The designated control rod is in a quadrant that does not have an operable SRM.	A, L, N, S	1
b. Component Cooling Water System / Restore adequate Component Cooling Water (RCC) flow to containment loads (400000 A1.01). While transferring SM-7 to the Backup Transformer, a lockout on SL-71 occurs. This results in the loss of one RCC pumps and requires manual action to start the standby RCC pump to restore normal system flow.	A, M, S	8
c.		
d.		
e.		
f.		
g.		
h.		

In-Plant Systems [@] (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)		
i. Emergency Generators / Shutdown DG-2 from the local control panel (264000 K4.07). DG-2 fails to stop when the stop pushbutton is depressed requiring a manual trip using the mechanical overspeed device.	A, D, EN, R	6
j. Reactor Core Isolation Cooling System / Prevent a RCIC High Exhaust Pressure Trip (217000 A2.02). During a Station Blackout, performs the actions of PPM 5.6.1 required to prevent a high exhaust pressure trip of the RCIC turbine.	D, E, EN, L, P, R	2
k. Primary Containment System and Auxiliaries / Perform Emergency Drywell Venting during a LOCA using SGT-B (223001 A2.07). With a LOCA signal present, emergency vent the Drywell using SGT.	C, D, E, EN, L, R	5
[@] All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.		
* Type Codes	Criteria for RO / SRO-I / SRO-U	
(A)lternate path	4-6 / 4-6 / 2-3	
(C)ontrol room		
(D)irect from bank	≤ 9 / ≤ 8 / ≤ 4	
(E)mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1	
(EN)gineered safety feature	- / - / ≥ 1 (control room system)	
(L)ow-Power / Shutdown	≥ 1 / ≥ 1 / ≥ 1	
(N)ew or (M)odified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 1	
(P)revious 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)	
(R)CA	≥ 1 / ≥ 1 / ≥ 1	
(S)imulator		



INSTRUCTIONAL COVER SHEET

PROGRAM TITLE	INITIAL LICENSED OPERATOR TRAINING		
COURSE TITLE	JOB PERFORMANCE MEASURE		
LESSON TITLE	CONDUCT REFUEL POSITION ONE-ROD-OUT INTERLOCK CFT OSP-NSSE-W402 (Simulator, Alt Path)		
LESSON LENGTH	.5 HRS		
	INSTRUCTIONAL MATERIALS INCLUDED		
LESSON PLAN PQD CODE	_____	Rev. No.	_____
SIMULATOR GUIDE PQD CODE	_____	Rev. No.	_____
JPM PQD CODE	LO001754	Rev. No.	0
EXAM PQD CODE	_____	Rev. No.	_____
DIVISION TITLE	Nuclear Training		
DEPARTMENT	Operations Training		
PREPARED BY	Ron Hayden	DATE	12/06/12
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 where reactor is shutdown.

Special Setup Instructions:

Have a signed in copy of the surveillance ready for each student.

JPM Instructions:

Verify Current Procedure against JPM. If any steps have changed, the JPM should be revised.

Tools/Equipment: None

Safety Items: None

Task Number: RO-0251; SRO-0263

Validation Time: 15 Minutes

Alternate Path: Yes

Time Critical: No

PPM Reference: OSP-NSSE-W402 Rev. 3

Location: Simulator

NUREG 1123 Ref: 2012002 A4.05 (3.1 / 3.0)

Performance Method: Perform

Task Standard: OSP-NSSE-W402 Sections 7.1 and 7.2 have been completed. Control Rod 18-47 was used as the withdrawn control rod and has been re-inserted to the full in position.

JPM CHECKLIST

INITIAL CONDITIONS:	Columbia is shutdown. OSP-NSSE-W402 is scheduled to be performed. SRM-A and SRM-B are inoperable have been verified operable per SR 3.3.1.2.2 and SR 3.3.1.2.4. SRM-C and SRM-D are inoperable. Refueling has not begun.
INITIATING CUE:	The CRS has directed you to perform OSP-NSSE-W402, Refuel Position One-Rod-Out Interlock CFT. Inform the CRS when you have completed the surveillance.

* Items are Critical Steps				
Time	Step	Element	Standard	Cue Sat/Unsat
EVALUATOR NOTE: If at any time during the review of the surveillance or the performance of the JPM the candidate requests the designated control rod inform him that control rod 38-19 is to be withdrawn. If at any time prior to JPM step 11 the candidates recognizes the control rod is NOT in an operable quadrant provide JPM step 11's cue.				
	1	Step 7.1 Preparation	Performs this step.	S / U
	2	Step 7.1.1 Verify the following (H13-P603) (SR 3.9.2.1):	Performs this step.	S / U
	3	Step 7.1.1a. Reactor Mode Switch Locked in REFUEL.	Rotates the Mode Switch clockwise until the arrow is pointing to the REFUEL position. May inform the CRS that the Mode Switch is in REFUEL.	S / U *
	4	Step 7.1.1b. Reactor Mode Switch key removed.	Removes the key from the Mode Switch.	S / U
Note: If no control rods are withdrawn and there is fuel in the vessel perform section 7.2 and mark section 7.3 N/A. If a control rod is already withdrawn (i.e. rods withdrawn for drive replacement or blade shuffle) perform section 7.3 and mark section 7.2 N/A.				
	5	Step 7.2 No Rods Withdrawn and Fuel in the Vessel.	Performs this step.	S / U

* Items are Critical Steps

Time	Step	Element	Standard	Cue	Sat/Unsat
	6	Step 7.2.1 Verify all control rods indicate fully inserted (HI13-P603).	Observes all Green lights on the full core display on or observes the "00" indications for all rods on RWM.		S / U
	7	Step 7.2.2 Verify the RODS NOT FULL IN (FI) indicator LED's at Activity Control Numbers 1 and 2 are extinguished (HI13-P616).	Observes that the RODS NOT FULL IN red lights in Activity Control Numbers 1 and 2 are not on.		S / U
Note: In the following step EITHER the GRAPPLE LOAD (PG) indicator LEDs OR the OVER CORE (PC) indicator LEDs extinguished will prevent causing a ROD BLOCK. Both are acceptable, but not required.					
	8	Step 7.2.3 Verify GRAPPLE LOAD (PG) indicator LEDs, OR OVER CORE (PC) indicator LEDs at Activity Control Numbers 1 and 2 are extinguished (HI13-P616).	Observes that the GRAPPLE LOAD (PG) indicator LEDs, OR OVER CORE (PC) indicator LEDs at Activity Control Numbers 1 and 2 are not on.		S / U
NOTE: For an SRM to be considered operable in the following step, one of the following conditions is required to be satisfied per TSP-SRM-W401 (SR 3.3.1.2.4). • Minimum count rate of 0.7 cps provided signal to noise ratio GE 20:1; or • Minimum count rate of 3 cps provided signal to noise ratio is GE 2:1.					
	9	Step 7.2.4 Verify the SRMs in the core quadrant of activity and an adjacent quadrant are operable prior to rod withdrawal (SR 3.3.1.2.2).	Refers to Initial Conditions to find SRM-A and SRM-B are given as operable.		S / U
	10	Step 7.2.5 If a control rod can be withdrawn for testing, then select a single control rod, designated by the CRS for surveillance purposes, located in quadrant with an operable SRM.	Verbalizes this step and requests designated control rod from the CRS.	Control Rod 38-19 has been designated for surveillance purposes.	S / U

* Items are Critical Steps

Time	Step	Element	Standard	Cue	Sat/Unsat
	11	Faulted Step Recognizes that control rod 38-19 is NOT in one of the operational SRM quadrants given in the initial conditions.	Informs the CRS that control rod 38-19 is not in an operable SRM quadrant.	Repeat back the report. Then cue: The appropriate notifications and investigations have been made. Use control rod 18-47 and continue with OSP-NSSE-W402 at step 7.2.5.	S / U *
	12	Step 7.2.5 If a control rod can be withdrawn for testing, then select a single control rod, designated by the CRS for surveillance purposes, located in quadrant with an operable SRM. Control Rod Number _____	Selects control rod 18-47. Verifies control rod 18-47 is in an quadrant with an operable SRM.		S / U *
	13	Step 7.2.6 If a control rod cannot be withdrawn for testing, then select control rod 14-07 (H13-P603).	Does not perform this step.		S / U
	14	Step 7.2.7 Verify the green FULL IN indicator for the rod selected is illuminated on the full core display (vertical section of H13-P603).	Observes the Green FULL IN light is on for control rod 18-47.		S / U
	15	Step 7.2.8 If a control rod can be withdrawn for testing, then withdraw the selected control rod to notch position 02.	Momentarily depresses the Withdraw pushbutton. Observes control rod 18-47 moves to position 02.		S / U *
	16	Step 7.2.9 If unable to withdraw a control rod for testing, then disconnect PIP cable 8815/C12A-009 from jack J14-07 (Back of H13/P615).	Does not perform this step.		S / U

* Items are Critical Steps

Time	Step	Element	Standard	Cue	Sat/Unsat
	17	Step 7.2.10 Verify the RODS NOT FULL IN (FI) indicator LED's for Activity Control Numbers 1 and 2 illuminate (H13-P616).	Observes that the RODS NOT FULL IN (FI) indicator LED's for Activity Control Numbers 1 and 2 are on.		S / U
	18	Step 7.2.11 Verify the control rod position indication for the control rod on the four control rod group display does not read XX.	Observes position indication on the four control rod group display does not read XX (reads 02).		S / U
	19	Step 7.2.12 Verify the green FULL IN indicator for the rod selected is not illuminated on the full core display (vertical section of H13-P603).	Observes the full core display and notes the Green FULL IN light is not on for control rod 18-47.		S / U
	20	Step 7.2.13 Attempt to select a different control rod. Control Rod Number _____	May ask CRS for a different control rod to complete this step. Or Selects any of the other control rods. Performs this step.	If the CRS is asked for a control rod direct control rod 18-19 selection.	S / U *
	21	Step 7.2.14 Verify the following:			S / U
	22	Step 7.2.14a. SELECT BLOCK at H13-P603.	Observes the amber SELECT BLOCK light came on.		S / U
	23	Step 7.2.14b. Selection of the second control rod is prohibited.	Verifies the control rod could not be selected as the light for that rod does not illuminate. Performs this step.		S / U
	24	Step 7.2.15 If a control rod was withdrawn for testing, then perform the following:			S / U
	25	Step 7.2.15a. Select the control rod which was withdrawn to notch position 02.	Selects control rod 18-47.		S / U

* Items are Critical Steps

Time	Step	Element	Standard	Cue	Sat/Unsat
	26	Step 7.2.15b. Insert the control rod to FULL IN.	Momentarily depresses the Insert pushbutton. Observes control rod 18-47 at position 00 and the Green Full In light on.		S / U *
NOTE: Reconnecting cable will require multiple seatings and collar tightening to ensure connection.					
	27	Step 7.2.16 If PIP cable J14-07 was disconnected, then perform the following:	Does not perform this step.		S / U
Termination Criteria: The student informs the CRS that OSP-NSSE-W402 has been completed.					
Transfer the following to the “Results of JPM” page: Any Unsat step - indicate if step was a Critical Step; JPM completion time.					

**RESULTS OF JPM:
CONDUCT REFUEL POSITION ONE-ROD-OUT INTERLOCK CFT,
OSP-NSSE-W402**

Examinee (Print): _____

Evaluator (Print): _____

Task Standard: OSP-NSSE-W402 Sections 7.1 and 7.2 have been completed. Control Rod 18-47 was used as the withdrawn control rod and has been re-inserted to the full in position.

Overall Evaluation	JPM Completion Time
SAT / UNSAT (Circle One)	Minutes

COMMENTS:

Evaluator's Signature: _____ **Date:** _____

STUDENT JPM INFORMATION CARD

Initial Conditions:

Columbia is shutdown.

OSP-NSSE-W402 is scheduled to be performed.

SRM-A and SRM-B have been verified operable per SR 3.3.1.2.2 and SR 3.3.1.2.4.

SRM-C and SRM-D are inoperable.

Refueling has not begun.

Initiating Cue:

The CRS has directed you to perform OSP-NSSE-W402, Refuel Position One-Rod-Out Interlock CFT.

Inform the CRS when you have completed the surveillance.



**ENERGY
NORTHWEST**

INSTRUCTIONAL COVER SHEET

PROGRAM TITLE LICENSED OPERATOR TRAINING

COURSE TITLE JOB PERFORMANCE MEASURE

LESSON TITLE SL-71 LOCKOUT; START RCC-P-1B (Simulator) (Alt Path)

LESSON LENGTH .5 HRS

INSTRUCTIONAL MATERIALS INCLUDED

LESSON PLAN PQD CODE _____ Rev. No. _____

SIMULATOR GUIDE PQD CODE _____ Rev. No. _____

JPM PQD CODE LO001755 _____ Rev. No. 0

EXAM PQD CODE _____ Rev. No. _____

DIVISION TITLE Nuclear Training

DEPARTMENT Operations Training

PREPARED BY Ron Hayden _____ DATE 12/12/12

REVISED BY _____ DATE _____

TECHNICAL REVIEW BY _____ DATE _____

INSTRUCTIONAL REVIEW BY _____ DATE _____

APPROVED BY SAT Coordinator _____ 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-7 is being powered from SM-1. Candidate is given SOP-ELEC-4160V-OPS section 5.7 to start the JPM and is handed a copy of ABN-ELEC-SM1/SM7 Section 4.5 during the performance of the JPM.

Special Setup Instructions:

None

JPM Instructions:

Verify Current Procedure against JPM. If any steps have changed, the JPM should be revised.

Tools/Equipment: None	Safety Items: None
Task Number: R0-0048	Validation Time: 10 minutes
Alternate Path: Yes	Time Critical: No
PPM Reference: SOP-ELEC-4160V-OPS Rev. 9 ABN-ELEC-SM1/SM7 Sect 4.5 Rev. 15	Location: Simulator
NUREG 1123 Ref: 400000 A2.01 (3.3 / 3.4)	Performance Method: Perform
Task Standard: RCC-P-1B has been manually started.	

JPM CHECKLIST

INITIAL CONDITIONS:	A plant shutdown is in progress. All conditions, limitations, and prerequisites for this evolution are completed.
INITIATING CUE:	The CRS has directed you to transfer SM-7 from SM-1 to the Backup Transformer. Inform the CRS when SM-7 is being powered from the Backup Transformer.

*** Items are Critical Steps**

Time	Step	Element	Standard	Cue	Sat/Unsat
Caution – Operation of SM-7 on TR-B should only be for maintenance or testing purposes when operating in Mode 1, 2, or 3 to minimize the reduction of offsite power sources. Caution – If TR-B is supplying SM-7 and SM-8 at the same time in Modes 1, 2, 3 then TR-S is considered inoperable. (Tech Spec 3..1) Note: It may be necessary to transfer SM-7 to the Backup Transformer (TR-B) to start a large plant load. SM-7 should be transferred to TR-B to start a large load or when any of the following conditions exist....					
	28	Step 5.7.1 Verify E-CB-TRB Closed.	Observes Red light on and Green light off for E-CB-TRB.		S / U
	29	Step 5.7.2 Verify TR-B voltage GE 115 KV.	Observes voltage GT 115 KV phase A, phase B and phase C on the TR-B Voltage meters.		S / U
	30	Step 5.7.3 Verify E-CB-B7 white Lockout Circuit Avail light illuminated.	Observes white Lockout Circuit Available light on for E-CB-B7.		S / U
	31	Step 5.7.4 Verify E-CB-B7 READY TO XFR light illuminated.	Observes the white READY TO XFR light for E-CB-B7 light is on.		S / U
	32	Step 5.7.5 Verify E-CB-B7 green light illuminated and green flag displayed.	Observes the Green light on and Red light off for E-CB-B7. Observes Green flag displayed.		S / U

* Items are Critical Steps

Time	Step	Element	Standard	Cue	Sat/Unsat
	33	Step 5.7.6 Verify E-CB-7/1 white Lockout Circuit Avail light illuminated.	Observes the white Lockout Circuit Available light on for E-CB-7/1.		S / U
	34	Step 5.7.7 Verify E-CB-7/1 red light illuminated.	Observes the Red light on for E-CB-7/1.		S / U
	35	Step 5.7.8 Place E-CB-B7 Sync Selector switch in Manual.	Rotates the Sync Selector switch counter-clockwise to the MAN position.		S / U *
	36	Step 5.7.9 Verify voltage present on both incoming and running buses.	Observes voltage on incoming and running volt meters.		S / U
NOTE: The blue Sync Permit light for E-CB-B7 is illuminated from initiation of breaker closure until closure actually occurs. NOTE: E-CB-7/1 should automatically trip when E-CB-B7 closes. NOTE: HI3-P800.C.1.1-7, Bkr 7-1 Trip will alarm when the following step is performed. NOTE: HI3-800.C4.305 TR-B- Rev Pwr Relay may alarm when the following step is performed.					
	37	Step 5.7.10 Close E-CB-B7.	Turns the control switch for CB-B7 clockwise and observes the Red light on and Green light off for CB-B7.		S / U *

* Items are Critical Steps

Time	Step	Element	Standard	Cue	Sat/Unsat
	38	Faulted Step Recognizes some of the annunciators that alarming are not associated with SM-7 transfer to TR-B: <ul style="list-style-type: none">• Bus 71 Gnd• Xfmr TR-7/71 Wdg Temp High• Bkr 7/71 Trip	Acknowledges alarms and informs the CRS. Observes that breaker 7/71, the Bus 71 Feeder – 480V is opened (Green light on Red light off) and inform the CRS. Refers to ARP for Bkr 7/71 Trip. Refers CRS to ABN-ELEC-SM-1/SM7.	If ARPs for additional alarms are not referenced, cue candidate to investigate the unexpected alarms. After CRS is referred to ABN-ELEC-SM1/SM7 cue candidate to perform the applicable subsequent operator actions of ABN-ELEC-SM1/SM7.	S / U *
When cue is given in step 11 (previous step), hand candidate a copy of ABN-ELEC-SM1/SM7 Section 4.5.					
	39	ABN-ELEC-SM1/SM7 Section 4.5 Loss of E-SL-71	Performs this section.		S / U
	40	Step 4.5.1 Verify RCC-P-1B and RCC-P-1C are operating.	Observes RCC-P-1B is not running (Green light is on and Red light off). Turns the control switch for RCC-P-1B clockwise to start and observes the Red light on and Green light off. Observes RCC-P-1C is running (Red light on and Green light off). May place the control switch for RCC-P-1A to stop or PTL as breaker is still closed but pump is not running. May inform the CRS that normal RCC system flow has been restored.	S / U S / U *	S / U S / U S / U
Termination Criteria: When RCC-P-1B has been started, inform the candidate that the termination point of the JPM has been reached.					
Transfer the following to the “Results of JPM” page: Any Unsat step - indicate if step was a Critical Step; JPM completion time.					

RESULTS OF JPM SL-71 LOCKOUT; START RCC-P-1B

Examinee (Print): _____

Evaluator (Print): _____

Task Standard: RCC-P-1B has been manually started.

Overall Evaluation	JPM Completion Time
SAT / UNSAT (Circle One)	Minutes

COMMENTS:

[illegible]

Evaluator's Signature: _____ **Date:** _____

STUDENT JPM INFORMATION CARD

Initial Conditions:

A plant shutdown is in progress.

All conditions, limitations, and prerequisites for this evolution are completed.

Initiating Cue:

**The CRS has directed you to transfer SM-7
from SM-1 to the Backup Transformer.
Inform the CRS when SM-7 is being powered
from the Backup Transformer.**



**ENERGY
NORTHWEST**

INSTRUCTIONAL COVER SHEET

PROGRAM TITLE LICENSED OPERATOR TRAINING

COURSE TITLE JOB PERFORMANCE MEASURE

LESSON TITLE INITIATE RCIC FOR INJECTION (Simulator) (Alt Path)

LESSON LENGTH .5 HRS

INSTRUCTIONAL MATERIALS INCLUDED

LESSON PLAN PQD CODE _____ Rev. No. _____

SIMULATOR GUIDE PQD CODE _____ Rev. No. _____

JPM PQD CODE LR000302 Rev. No. 11

EXAM PQD CODE _____ Rev. No. _____

DIVISION TITLE Nuclear Training

DEPARTMENT Operations Training

PREPARED BY Ron Hayden DATE 1997

REVISED BY Ron Hayden DATE 12/06/12

TECHNICAL REVIEW BY _____ DATE _____

INSTRUCTIONAL REVIEW BY _____ DATE _____

APPROVED BY SAT Coordinator 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 a 100% IC. Take MODE switch to SHUTDOWN. When RPV Level starts to recover and is at -10 inches, trip both RFW pumps.

Special Setup Instructions:

Insert a malfunction prior to starting the JPM that fails the RCIC controller to control in Auto (OVR-RCI001C and set it to 0 and OVR-CNH-RCI002E and set it at 50%).

JPM Instructions:

Verify Current Procedure against JPM. If any steps have changed, the JPM should be revised.

Tools/Equipment: None

Safety Items: None

Task Number: RO-0268; RO-0656

Validation Time: 6 minutes

Alternate Path: Yes

Time Critical: No

PPM Reference: SOP-RCIC-INJECTION-QC Rev. 5

Location: Simulator

NUREG 1123 Ref: 217000A2.10 (3.1/3.1)
217000A2.11 (3.1/3.2)

Performance Method: Perform

Task Standard: RCIC is injecting with system flow at a minimum of 600 gpm

JPM CHECKLIST

INITIAL CONDITIONS:	Columbia was scrambled due to an electrical problem associated with the Main Generator. PPM 5.1.1, RPV Level Control has been entered due to low RPV water level. As RPV level started to recover, both Reactor Feed Pumps tripped.
INITIATING CUE:	The CRS has directed you to initiate the RCIC system for RPV injection. Return RPV level to a +13" to +54" level band. Inform the CRS when you have established an injection flow rate of 600 gpm.

* Items are Critical Steps

Time	Step	Element	Standard	Cue	Sat/Unsat
	1	Step 2.1.1 If not already operating, then perform the following:	Performs this step.		S / U
	2	Step 2.1.1a Verify the RCIC Manual Initiation pushbutton is armed.	Rotates RCIC-RMS-S36 to ARM by turning collar clockwise.		S / U *
	3	Step 2.1.1b Depress and hold the RCIC Manual Initiation pushbutton.	Depresses and holds the Manual Initiation pushbutton.		S / U *
	4	Step 2.1.1c When all applicable RCIC valves have repositioned, then release the RCIC Manual Initiation pushbutton.	Observes RCIC valves repositioning and when satisfied that all have repositioned, releases the pushbutton.	(Releasing pushbutton is the critical part of this step - refer to JPM step 5 for non-critical part of step).	S / U *

* Items are Critical Steps

Time	Step	Element	Standard	Cue	Sat/Unsat
NOTE: When RCIC initiates the following occurs:					
	5	RCIC-V-45 (Steam to Turbine) opens RCIC-V-46 (Lube Oil Cooler Water Supply) opens RCIC-P-2 (Barometric Condenser Vacuum Pump) starts RCIC-V-13 (RPV Injection) opens RCIC-V-25 and RCIC-V-26 (Steam Line Warmup Drains to Main Condenser) close RCIC-V-4 and RCIC-V-5 (Cond Pump Discharge to EDR) close SW-P-1B starts (20 second time delay)	Observes: RCIC-V-45 Red light on and Green light off RCIC-V-46 Red light on and Green light off RCIC-P-2 Red light on and Green light off RCIC-V-13 Red light on and Green light off RCIC-V-25 and RCIC-V-26 Green light on and Red light off RCIC-V-4 and RCIC-V-5 Green light on and Red light off SW-P-1B Red light on and Green light off		S / U
	6	Faulted Step Recognizes failure of RCIC to inject to the RPV.	Recognizes that no flow has started to RPV. Diagnoses that the problem is associated with RCIC-FIC-600 as it is not on scale. May inform the CRS.	If CRS is informed: Take actions necessary to inject to the RPV with RCIC at 600 gpm.	S / U
	7	Takes manual control of RCIC-FIC-600 and adjusts RCIC system flow.	Places RCIC-FIC-600 in MANUAL and increases system flow to at least 600 gpm by depressing the controllers open pushbutton.		S / U *
Termination Criteria: When RCIC injection flow is established at least at 600 gpm inform the student that the termination point of the JPM has been reached.					
Transfer the following to the “Results of JPM” page: Any Unsat step - indicate if step was a Critical Step; JPM completion time.					

RESULTS OF JPM INITIATE RCIC FOR RPV INJECTION

Examinee (Print): _____

Evaluator (Print): _____

Task Standard: RCIC is injecting with system flow at a minimum of 600 gpm.

Overall Evaluation	JPM Completion Time
SAT / UNSAT (Circle One)	Minutes

COMMENTS:

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There are approximately 20 lines visible. The paper has a slight shadow on the right side, suggesting it's resting on a surface. There is no handwriting or other markings on the paper.

Evaluator's Signature: _____ **Date:** _____

STUDENT JPM INFORMATION CARD

Initial Conditions:

Columbia was scrambled due to an electrical problem associated with the Main Generator.

PPM 5.1.1, RPV Level Control has been entered due to low RPV water level.

As RPV level started to recover, both Reactor Feed Pumps tripped.

Initiating Cue:

The CRS has directed you to initiate the RCIC system for RPV injection.

Return RPV level to a +13”to +54.5” level band.

Inform the CRS when you have established an injection flow rate of 600 gpm.



INSTRUCTIONAL COVER SHEET

PROGRAM TITLE	LICENSED OPERATOR TRAINING/STA REQUALIFICATION TRAINING		
COURSE TITLE	JOB PERFORMANCE MEASURE		
LESSON TITLE	OPEN INBOARD MSIVs TO RE-ESTABLISH THE MAIN CONDENSER AS A HEAT SINK (Simulator)		
LESSON LENGTH	.5 HRS		
INSTRUCTIONAL MATERIALS INCLUDED			
LESSON PLAN PQD CODE	_____	Rev. No.	_____
SIMULATOR GUIDE PQD CODE	_____	Rev. No.	_____
JPM PQD CODE	LO001638	Rev. No.	1
EXAM PQD CODE	_____	Rev. No.	_____
DIVISION TITLE	Nuclear Training		
DEPARTMENT	Operations Training		
PREPARED BY	Ron Hayden	DATE	06/05/08
REVISED BY	Ron Hayden	DATE	09/13/12
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 with the reactor at rated pressure
Ensure Stopwatch is available if timing is desired

Special Setup Instructions:

Post scram. Close the Inboard MSIVs (MS-V-22A –D). Close MS-V-146 to keep dP within 50 psig. And maintain RPV Pressure LT 960 psig.

JPM Instructions:

Verify Current Procedure against JPM. If any steps have changed, the JPM should be revised.

Tools/Equipment: None

Safety Items: None

Task Number: RO-0311

Validation Time: 7 minutes

Alternate Path: No

Time Critical: NO

PPM Reference: SOP-MSIV-OPS Section 5.2 Rev. 16

Location: Simulator

NUREG 1123 Ref: 239001A4.01 (4.2/4.0)

Performance Method: Perform

Task Standard: The Inboard MSIVs are open.

JPM CHECKLIST

INITIAL CONDITIONS:	A loss of CIA pressure caused the CRS to direct a manual scram. The inboard MSIVs went closed due to low CIA pressure. CIA pressure has been restored. Health Physics has been notified of this evolution.
INITIATING CUE:	The CRS has directed you to equalize around and open the Inboard MSIVs per SOP-MSIV-OPS Section 5.2. Do NOT take and record the stroke time using Attachment 6.1. You have permission to N/A those steps. Notify the CRS when all of the MSIVs are open.

* Items are Critical Steps

Time	Step	Element	Standard	Cue	Sat/Unsat
Note: This section is to be used only when the MSIV to be opened is wetted. Use section 5.5 or 5.6 to open MSIVs that require wetting.					
	41	Step 5.2.1 If not in Modes 1 or 2, then verify DEH pressure setpoint is GT RPV pressure prior to opening MSIVs.	Observes RPV pressure on MS-PR-1C (or other recorder). Observes DEH touch screen and notes DEH pressure setpoint. Verifies DEH setpoint is GT RPV Pressure.		S / U
	42	Step 5.2.2 Notify Health Physics the equalizing/opening of the MSIV's has the potential of changing radiological conditions.	Given in Initial Conditions as being completed.	If performed, refer candidate to Initial Conditions.	S / U
	43	Step 5.2.3 Verify the applicable MSIV control switch is Closed.	Observes all switches for the Inboard MSIVs are in the closed position.		S / U
Note: Differential pressure across the MSIV can be determined by RPV pressure MS-LR/PR-623A or B on H13-P601 and main steam supply header pressure MS-PR-1C pen 1 on H13-P820. Caution: Do not open the MSIVs with GT 50 psi differential pressure across them.					

* Items are Critical Steps

Time	Step	Element	Standard	Cue	Sat/Unsat
	44	Step 5.2.4 Verify the differential pressure across the MSIV is LT 50 psid.	Observes pressure on MS-LR/PR-623A/B on H13-P601 and MS-PR-1C on H13-P820 and verifies LT 50 psid.		S / U
	45	Step 5.2.5 If the reactor is in Mode 1 or 2,....	Not in MODE 1 or 2 – does not perform this step.		S / U
	46	Step 5.2.6 Reset the isolation logic as follows:	Performs this step.		S / U
	47	Step 5.2.6a DEPRESS MS-RMS-S33 (Channel A and B Isolation Reset Pushbutton) (H13-P601).	Depresses the Channel A and B Isolation Reset Pushbuttons.		S / U *
	48	Step 5.2.6b DEPRESS MS-RMS-S33 (Channel C and D Isolation Reset Pushbutton) (H13-P601).	Depresses the Channel C and D Isolation Reset Pushbuttons.		S / U *
Note: Timing of MSIVs are required each time the MSIVs are stroked. The MSIVs may be timed using either a stop watch or TDAS as determined by the CRS. Note: The recorded data is for information only to be used for monitoring and trending purposes, there is no specific acceptance criteria. Note: The opening stroke time should be measured from the time the control switch is turned to Auto until the green (closed) light extinguishes. Note: Perform one of the following steps, depending on which valve is closed. N / A the other step.					
	49	Step 5.2.7 Perform the following to Open the Outboard MSIV: N/A those not opened.	All Outboard MSIVs are opened – does not perform this step.		S / U
	50	Step 5.2.8 Perform the following to Open the Inboard MSIV: N/A those not opened.	Performs this step.		S / U

* Items are Critical Steps

Time	Step	Element	Standard	Cue	Sat/Unsat
	51	<p>Step 5.2.8a</p> <p>Perform the following for MS-V-22A:</p> <ol style="list-style-type: none"> 1) Verify CIA header pressure is stabilized at normal system pressure on CIA-PI-20. 2) Verify H13-P840.A5-5.3, CIA Header Press Low is clear. 3) Place MS-V-22A control switch in Auto 4) Verify MS-V-22A Opens 5) Record open time on Attachment 6.1 	<ol style="list-style-type: none"> 1) Observes CIA-PI-20 on H13-P840 and notes pressure is stable and is a normal pressure (about 180 psig). 2) Observes H13-P840.A5-5.3 is not in an alarmed condition (is off). 3) Turns the control switches for MS-V-22A clockwise to the Open position. 4) Observes the Red light comes on and the Green light goes off. 5) Does not perform 	<p>If candidate wants to record opening times refer him to the Initiating Cue.</p>	<ol style="list-style-type: none"> 1) S / U 2) S / U 3) S / U * 4) S / U 5) S / U
	52	<p>Step 5.2.8b</p> <p>Perform the following for MS-V-22B:</p> <ol style="list-style-type: none"> 1) Verify CIA header pressure is stabilized at normal system pressure on CIA-PI-20. 2) Verify H13-P840.A5-5.3, CIA Header Press Low is clear. 3) Place MS-V-22B control switch in Auto 4) Verify MS-V-22B Opens 5) Record open time on Attachment 6.1 	<ol style="list-style-type: none"> 1) Observes CIA-PI-20 on H13-P840 and notes pressure is stable and is a normal pressure (about 180 psig). 2) Observes H13-P840.A5-5.3 is not in an alarmed condition (is off). 3) Turns the control switches for MS-V-22B clockwise to the Open position. 4) Observes the Red light comes on and the Green light goes off. 5) Does not perform 		<ol style="list-style-type: none"> 1) S / U 2) S / U 3) S / U * 4) S / U 5) S / U

* Items are Critical Steps

Time	Step	Element	Standard	Cue	Sat/Unsat
	53	<p>Step 5.2.8c</p> <p>Perform the following for MS-V-22C:</p> <p>1) Verify CIA header pressure is stabilized at normal system pressure on CIA-PI-20.</p> <p>2) Verify H13-P840.A5-5.3, CIA Header Press Low is clear.</p> <p>3) Place MS-V-22C control switch in Auto</p> <p>4) Verify MS-V-22C Opens</p> <p>5) Record open time on Attachment 6.1</p>	<p>1) Observes CIA-PI-20 on H13-P840 and notes pressure is stable and is a normal pressure (about 180 psig).</p> <p>2) Observes H13-P840.A5-5.3 is not in an alarmed condition (is off).</p> <p>3) Turns the control switches for MS-V-22C clockwise to the Open position.</p> <p>4) Observes the Red light comes on and the Green light goes off.</p> <p>5) Does not perform</p>		<p>1) S / U</p> <p>2) S / U</p> <p>3) S / U *</p> <p>4) S / U</p> <p>5) S / U</p>
	54	<p>Step 5.2.8d</p> <p>Perform the following for MS-V-22D:</p> <p>1) Verify CIA header pressure is stabilized at normal system pressure on CIA-PI-20.</p> <p>2) Verify H13-P840.A5-5.3, CIA Header Press Low is clear.</p> <p>3) Place MS-V-22D control switch in Auto</p> <p>4) Verify MS-V-22D Opens</p> <p>5) Record open time on Attachment 6.1</p>	<p>1) Observes CIA-PI-20 on H13-P840 and notes pressure is stable and is a normal pressure (about 180 psig).</p> <p>2) Observes H13-P840.A5-5.3 is not in an alarmed condition (is off).</p> <p>3) Turns the control switches for MS-V-22D clockwise to the Open position.</p> <p>4) Observes the Red light comes on and the Green light goes off.</p> <p>5) Does not perform</p>		<p>1) S / U</p> <p>2) S / U</p> <p>3) S / U *</p> <p>4) S / U</p> <p>5) S / U</p>
Termination Criteria: Student informs CRS that all MSIVs are open.					
Transfer the following to the “Results of JPM” page: Any Unsat step - indicate if step was a Critical Step; JPM completion time.					

Examinee (Print): _____

Evaluator (Print): _____

Overall Evaluation	JPM Completion Time
SAT / UNSAT (Circle One)	Minutes

COMMENTS:

This image shows a full page of blank, lined paper. It features approximately 20 evenly spaced horizontal blue or grey lines across its entire width, typical of notebook paper. The lines are uniform in thickness and spacing, providing a guide for handwriting. There are no margins, text, or other markings on the page.

Evaluator's Signature: _____ **Date:** _____

STUDENT JPM INFORMATION CARD

Initial Conditions:

A loss of CIA pressure caused the CRS to direct a manual scram.

The inboard MSIVs went closed due to low CIA pressure.

CIA pressure has been restored.

Health Physics has been notified of this evolution.

Initiating Cue:

The CRS has directed you to equalize around and open the Inboard MSIVs per SOP-MSIV-OPS Section 5.2.

DO NOT take and record the stroke times. You have permission to N/A those steps.

Notify the CRS when all of the MSIVs are open.



INSTRUCTIONAL COVER SHEET

PROGRAM TITLE LICENSED OPERATOR TRAINING

COURSE TITLE JOB PERFORMANCE MEASURE

LESSON TITLE LOWER RPV PRESSURE USING DEH; BPV FAILS OPEN (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 LO001721 Rev. No. 1

Exam PQD Code _____ Rev. No. _____

DIVISION TITLE Nuclear Training

DEPARTMENT Operations Training

PREPARED BY Ron Hayden DATE 07/08/10

REVISED BY Ron Hayden DATE 12/06/12

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 960 psig.
Insert the following malfunctions to have initiate on a Trigger with the severity 100%:
MAL-DEH-013B
MAL-DEH-013C
MAL-DEH-013D

Special Setup Instructions:

None

JPM Instructions:

Verify Current Procedure against JPM. If any steps have changed, the JPM should be revised.

Tools/Equipment: None

Safety Items: None

Task Number: RO-0348

Validation Time: 10 minutes

Alternate Path: Yes

Time Critical: No

PPM Reference: SOP-DEH-QC Rev. 4

Location: Simulator

ABN-PRESSURE Rev. 6

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

Performance Method: Perform

Task Standard: RPV Pressure was being lowered to 550 psig at the rate of 50 psig per minute.
Additionally, one MSIV in each main steam line was closed prior to RPV pressure reaching 500 psig.

JPM CHECKLIST

INITIAL CONDITIONS:	Columbia has just scrambled 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 550 psig at the rate of 50 psig per minute using DEH in Automatic per SOP-DEH-QC. Inform the CRS when RPV pressure is 550 psig.

* Items are Critical Steps

Time	Step	Element	Standard	Cue	Sat/Unsat
	55	Step 2.1.1 Initiate Pressure setpoint change as follows (Turbine Start-Up, Reactor Start Display) or (Main Display).	Determines that one of the three screens is displayed. May select a different screen.		S / U
	56	Step 2.1.1a Select PRESSURE TARGET.	Touces and verifies PRESSURE TARGET selected.		S / U *
	57	Step 2.1.1b Enter desired pressure.	Touces and verifies 5 – 5 – 0 displayed.		S / U *
	58	Step 2.1.1c Select OK.	Touces and verifies OK selected.		S / U *
	59	Step 2.1.1d If a change in pressure rate is desired, then perform the following:	Continues with procedure step.		S / U
Time	Step	Element	Standard	Cue	Sat/Unsat

60	Step 2.1.1d 1) Select PRESSURE RATE.	Touches and verifies PRESSURE RATE selected.		S / U *
61	Step 2.1.1d 2) Enter desired PRESSURE RATE.	Touches and verifies 5 – 0 displays.		S / U *
62	Step 2.1.1d 3) Select OK.	Touches and verifies OK selected.		S / U *
63	Step 2.1.1e Select GO.	Touches and verifies GO selected.		S / U *
64	Step 2.1.1f Select YES.	Touches and verifies YES selected.		S / U *
Trigger 1 initiates when RPV Pressure reaches 950 psig				
65	Step 2.1.1g Verify PRESS DEMAND and THROTTLE PRESS change at the PRESSURE RATE.	Observes changing RPV Pressure at desired rate.		S / U

Time	Step	Element	Standard	Cue	Sat/Unsat
	66		When RPV Pressure reaches 950 psig may observe pressure drop is faster than previous or may note that three of the four bypass valves are at 100% Open. It takes approximately 2 minutes 30 seconds to get to 500 psig.	If candidate informs CRS that three bypass valves have failed open and is waiting for direction inform the candidate to perform the required procedural actions. If candidate attempts to refer to a procedure, inform him to perform the required actions from memory.	S / U *
	67		Candidate may attempt to take manual control of Bypass valves but will be unsuccessful in closing them.		S / U
	68	Per Immediate Actions of ABN-PRESSURE - Step 3.1: If DEH failure is suspected and RPV Pressure is dropping rapidly, then FAST CLOSE the MSIVs before pressure drops below 500 psig.	May refers to Quick Card.		S / U
	69	Quick Card Step 2.1.1 If isolating one Main Steam line, then verify reactor power is LE 65%.	Recognizes that the reactor is shutdown.		S / U
	70	Quick Card Step 2.1.2 If isolating multiple Main Steam lines, then verify the reactor is shutdown or verify a reactor scram has occurred.	Recognizes that the reactor is shutdown.		S / U

Time	Step	Element	Standard	Cue	Sat/Unsat
	71	Quick Card Step 2.1.3 Place the applicable MSIV control switch(es) to close: <ul style="list-style-type: none"> • MS-V-22A • MS-V-22B • MS-V-22C • MS-V-22D • MS-V-28A • MS-V-28B • MS-V-28C • MS-V-28D 	Turns each MSIV control switch counter-clockwise to the Close position and verifies Green lights on and Red lights off.		S / U * To pass this critical step at least one MSIV in each of the four Main Steam lines must be closed prior to RPV pressure reaching 500 psig
Termination Criteria: When candidate informs the CRS that the MSIVs have been closed and the RPV depressurization has been stopped, inform him that the termination point of the JPM has been reached.					
Transfer the following to the “Results of JPM” page: Any Unsat step - indicate if step was a Critical Step; JPM completion time.					

RESULTS OF JPM: LOWER RPV PRESSURE USING DEH

Examinee (Please Print): _____

Evaluator (Please Print): _____

Task Standard: RPV Pressure was being lowered to 550 psig at the rate of 50 psig per minute. Additionally, one MSIV in each main steam line was closed prior to RPV pressure reaching 500 psig.

Overall Evaluation	JPM Completion Time
SAT / UNSAT (Circle One)	Minutes

COMMENTS:

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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.

Initiating Cue:

The CRS has directed you to lower Reactor Pressure to 550 psig at the rate of 50 psig/minute using DEH in Automatic per SOP-DEH-QC.

Inform the CRS when RPV pressure is 550 psig.



**ENERGY
NORTHWEST**

INSTRUCTIONAL COVER SHEET

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	LO001599	Rev. No.	2
Exam PQD Code	_____	Rev. No.	_____
DIVISION TITLE	Nuclear Training		
DEPARTMENT	Operations Training		
PREPARED BY	Ron Hayden	DATE	05/18/06
REVISED BY	Ron Hayden	DATE	12/06/12

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 a 100% IC.
Ensure GDS screen on P601 is displayed.
Fail TIP-V-5 open.
Trip both RFW pumps.
Ensure RPV level drops to LT -50".
After the 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. 2

Location: Simulator

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

Performance Method: Perform

JPM CHECKLIST

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 has verified initiations and DG starts. Inform the CRS when EOP isolations for –50 inches have been verified.

* Items are Critical Steps

Time	Step	Element	Standard	Cue	Sat/Unsat
Candidate is not given any reference material to start this JPM. Candidate may refer to GDS screen or quick card to determine required isolations. GDS will indicate TIP-V-5 is opened. The indicating lights for the valve on H13-P601 will also indicate valve is opened.					
	72	Identifies all isolations are not complete.	Refers to GDS screen or quick card and notes TIP-V-5 is not closed and informs the CRS.	You are directed to take the necessary actions to isolate the penetration per ABN-TIPS. Hand the candidate his procedure copy.	S / U *
CUE: When the first note is read, inform candidate that no TIP operations are or were being performed.					
NOTE: If the failure to isolate occurred during TIP operation, this procedure may be entered at step 4.5.					
NOTE: If the affected drive unit is not known, then it may require that all of the Tip units need to be checked.					
	73	Step 4.1 If necessary, then close the breaker for each affected OR all of the TIP Drive Unit(s): <ul style="list-style-type: none"> E-CB-PP8CAA/22 (TIP-DRIVE-1A) E-CB-PP8CAA/23 (TIP-DRIVE-1B) E-CB-PP8CAA/24 (TIP-DRIVE-1C) E-CB-PP8CAA/25 (TIP-DRIVE-1D) E-CB-PP8CAA/26 (TIP-DRIVE-1E) 	Verbalizes this step.	When step is verbalized, inform the candidate that all of the TIP Drive Unit Breakers are closed.	S / U

* Items are Critical Steps

Time	Step	Element	Standard	Cue	Sat/Unsat
	74	Step 4.2 Verify the following for each associated Drive Control Unit (A through E) (HI3-P607): <ul style="list-style-type: none"> • The Mode switch is in the OFF position 	Observes the Mode switch for drive E is in the OFF position. (Note: Other drives may also be verified/operated during the remainder of the JPM).		S / U
	75	<ul style="list-style-type: none"> • The Manual Drive switch is in the OFF position 	Observes the Manual Drive switch for drive E is in the OFF position.		S / U
	76	<ul style="list-style-type: none"> • The Manual Valve Control switch is in the CLOSED position 	Observes the Manual Valve Control switch for drive E is in the CLOSED position.		S / U
	77	Step 4.3 Place the MODE switch to the MAN position for each associated Drive Control Unit (A through E)	Turns the Mode switch for drive E to the MAN position.		S / U
	78	Step 4.4 Verify the following on the associated drive unit(s): <ul style="list-style-type: none"> • The READY light is illuminated 	Performs this step.		S / U
	79	<ul style="list-style-type: none"> • The READY light is illuminated 	Observes the white READY light is on for drive E.		S / U
	80	<ul style="list-style-type: none"> • The IN-SHIELD light is illuminated. (If any detectors are NOT IN-SHIELD, proceed to the following step). 	Observes the white In-Shield light is on for drive E.		S / U
	81	<ul style="list-style-type: none"> • The detector position is at the posted IN-SHIELD location, + 1”. 	Verbalizes this step.	Cue: The detector position is at the posted IN-SHIELD location.	S / U
	82	Step 4.5 Refer to Technical Specification 3.6.1.3.	Refers CRS to Tech Spec 3.6.1.3.	Roleplay as necessary.	S / U

* Items are Critical Steps

Time	Step	Element	Standard	Cue	Sat/Unsat
	83	<p>Step 4.6</p> <p>If any detector is not in-shield, then retract each affected detector to the IN-SHIELD position as follows:</p> <ul style="list-style-type: none"> Place the Manual Drive Control switch on the appropriate Drive Control Unit to the REV position Verify the IN-SHIELD light is illuminated 	Recognizes that all detectors are IN-SHIELD – step is not performed.	If candidate performs this step cue that the detector position is at the posted IN-SHIELD location.	S / U
	84	<p>Step 4.7</p> <p>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.</p>	Recognizes that all detectors are IN-SHIELD – step is not performed	If candidate performs this step cue that the detector position is at the posted IN-SHIELD location.	S / U
	85	<p>Step 4.8</p> <p>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:</p>	Performs this step as the isolation valve has failed to close.		S / U
	86	<p>Step 4.8.1</p> <p>Obtain permission from the CRS/Shift Manager to fire the applicable squib valve(s).</p>	<p>Requests permission of the CRS to fire the squib valve.</p> <p>The Candidate may already assume he has permission.</p>	If CRS's permission is requested, give permission to fire the squib valve.	S / U
	87	<p>Step 4.8.2</p> <p>Place the key lock valve control switch (key number 31,32,33,34,35) on the appropriate valve control drawer to the FIRE position for the channel(s) that did not isolate.</p>	<p>Obtains key #35 from the key locker outside the Shift Managers office.</p> <p>Places the TIP shear valve (TIP-V-5) to the FIRE position.</p>		S / U *

* Items are Critical Steps					
Time	Step	Element	Standard	Cue	Sat/Unsat
	88	Step 4.8.3 Verify the applicable squib Monitor lights are illuminated.	Observes the squib and shear valve monitor lights illuminated for TIP-V-5.		S / U
Termination Criteria: Inform the Candidate that the termination point for the JPM has been reached.					
Transfer the following to the “Results of JPM” page: Any Unsat step - indicate if step was a Critical Step; JPM completion time.					

RESULTS OF JPM:

MANUALLY INITIATES CONTAINMENT ISOLATIONS FOR THE TIP SYSTEM

Examinee (Please Print): _____

Evaluator (Please Print): _____

Task Standard: The line associated with TIP-V-5 has been isolated per ABN-TIP.

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:

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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 has verified initiations and DG starts.

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



INSTRUCTIONAL COVER SHEET

PROGRAM TITLE	LICENSED OPERATOR TRAINING		
COURSE TITLE	JOB PERFORMANCE MEASURE		
LESSON TITLE	ALIGN SERVICE WATER TO THE FUEL POOL HEAT EXCHANGERS (Control Room)		
LESSON LENGTH	.5 HRS		
	INSTRUCTIONAL MATERIALS INCLUDED		
LESSON PLAN PQD CODE		Rev. No.	
SIMULATOR GUIDE PQD CODE		Rev. No.	
JPM PQD CODE	LO001756	Rev. No.	0
EXAM PQD CODE		Rev. No.	
DIVISION TITLE	Nuclear Training		
DEPARTMENT	Operations Training		
PREPARED BY	Ron Hayden	DATE	09/19/12
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:

None

Special Setup Instructions:

N/A

JPM Instructions:

Verify Current Procedure against JPM. If any steps have changed, the JPM should be revised.

Tools/Equipment: None

Safety Items: None

Task Number: RO-0304

Validation Time: 8 Minutes

Alternate Path: No

Time Critical: No

PPM Reference: SOP-FPC-OPS Section 5.6 Rev. 5

Location: Control Room

NUREG 1123 Ref: 233000 A2.08 (2.9 / 3.1)

Performance Method: Simulate

Task Standard: Service Water has been aligned to FPC-HX-1A and to FPC-HX-1B.

JPM CHECKLIST

INITIAL CONDITIONS:	Columbia was operating in Mode 1 when a complete loss of RCC occurred. A reactor scram was inserted and efforts are underway to restore RCC cooling. SW-P-1A and SW-P-1B are running. Fuel Pool temperatures are rising. Free release of RCC heat exchanger water to the Service Water spray ponds has been approved. OSP-SW-M101 and OSP-SW-M102 have been referenced for component flow requirements. OPS2 has been briefed and is on station.
INITIATING CUE:	The Control Room Supervisor has directed you to align Service Water to both Fuel Pool Cooling Heat Exchangers per SOP-FPC-OPS Section 5.6. Inform the CRS when Service Water has been aligned to both Fuel Pool Cooling heat exchangers. The performance of this JPM will be simulated. Control manipulations will not be performed.

* Items are Critical Steps

Time	Step	Element	Standard	Cue	Sat/Unsat
<p>NOTE: Standby Service Water to FPC-HX-1A(B) is normally used if RCC flow is lost and restoration is not anticipated prior to 125° F in the Fuel Pool, as indicated on FPC-TI-7/8 at H13-P626 (FPC-1), or for evolutions that require the Fuel Pool to be cooled below the capabilities of the RCC system. Examples: Loading spent fuel into an ISFSI MPC or to raise stay time for divers.</p> <p>NOTE: If Standby Service Water is aligned to the FPC heat exchanger, it is acceptable to operate below the minimum flow specified in OSP-SW-M101(M102) as long as the minimum operability value specified in PPM 8.4.81 is maintained.</p> <p>NOTE: If RCC is lined up to SSW for GE 48 hours, then it is recommended RCC-RV-34A(B) (FPC-HX-1A(B) Shell Side Relief Valve) be scheduled for replacement and test as soon as possible after swapping back to RCC. This is due to the potential for loose debris in SSW causing RCC-RV-34A(B) to lift and leak.</p>					
	1	Step 5.6.1 Verify free release of RCC Heat Exchanger water to the Service Water Spray Ponds.	Recognizes that discharge of RCC heat exchanger water into the Service Water spray ponds has been approved.		S / U
	2	Step 5.6.2 If desired, then lineup Standby Service Water Cooling to FPC-HX-1A as follows:	Performs this step.		S / U
	3	Step 5.6.2a Refer to OSP-SW-M101 for Standby Service Water Loop A for component flow requirements.	Given as complete in the Initial Conditions – does not perform.	If OSP-SW-M101 is referenced, refer candidate to Initial Conditions.	S / U
	4	Step 5.6.2b Verify SW-P-1A is running.	Given in Initial Conditions as running.	If candidate approaches front panel refer candidate to Initial Conditions.	S / U

*** Items are Critical Steps**

Time	Step	Element	Standard	Cue	Sat/Unsat
	5	<p>Step 5.6.2c</p> <p>If RCC cooling to FPC-HX-1B is not required, then close the following:</p> <ul style="list-style-type: none"> • RCC-V-129 (Fuel Pool HX-A/B RCC Cooling Inlet) • RCC-V-130 (Fuel Pool HX-A/B RCC Cooling Outlet) • RCC-V-131 (Fuel Pool HX-A/B RCC Cooling Outlet) 	<p>Simulates turning the control switch for the following valves to close and verifies Green light on and Red light off for:</p> <ul style="list-style-type: none"> • RCC-V-129 • RCC-V-130 • RCC-V-131 	<p>As each control switch is turned: The switch is in the closed position. The Green light is on and the Red light is off.</p>	S / U *
	6	<p>Step 5.6.2d</p> <p>If RCC cooling to FPC-HX-1B is required, or SW is to be aligned to both FPC-HX-1A and FPC-HX-1B, then close the following:</p> <ul style="list-style-type: none"> • RCC-V-9A (FPC-HX-1A RCC Cooling Inlet) (FPC HX Room) • RCC-V-10A (FPC-HX-1A RCC Cooling Outlet) (FPC HX Room) 	<p>Verbalizes to direct OPS2 to perform Step 5.6.2d of SOP-FPC-OPS to close RCC-V-9A and RCC-V-10A.</p>	<p>If candidate approaches front panel to use the radio, direct candidate to simulate communications.</p> <p>Roleplay and then as OPS2 report step 5.6.2d is complete as RCC-V-9A and RCC-V-10A are closed.</p>	S / U *
<p>NOTE: SW-V-187A and SW-V-188A keylock switch spring returns to NORMAL from OPEN, and maintains in CLOSE.</p> <p>A DISCUSSION WHERE THE KEYS ARE LOCATED IS SUFFICIENT (KEYS ARE LOCATED IN CABINETS NEXT TO TE SHIFT MANAGERS OFFICE DOOR), WHEN CANDIDATE CORRECTLY STATES KEY LOCATION CUE THAT THE KEYS HAVE BEEN OBTAINED.</p>					
	7	<p>Step 5.6.2e</p> <p>Open SW-V-187A (FPC-HX-1A Backup Cooling SW-A Inlet) (H13-P626).</p>	<p>Simulates placing key 219 in the control switch and turning the control switch for SW-V-187A clockwise to open.</p> <p>Verifies Red light on and Green light off.</p>	<p>The control switch was placed in Open and spring returned to Norm. The Red light is on and the Green light is off.</p>	S / U *
	8	<p>Step 5.6.2f</p> <p>Open SW-V-188A (FPC-HX-1A Backup Cooling SW-A Outlet) (H13-P626).</p>	<p>Simulates placing key 221 in the control switch and turning the control switch for SW-V-188A clockwise to open.</p> <p>Verifies Red light on and Green light off.</p>	<p>The control switch was placed in Open and spring returned to Norm. The Red light is on and the Green light is off.</p>	S / U *

* Items are Critical Steps

Time	Step	Element	Standard	Cue	Sat/Unsat
	9	Step 5.6.3 If desired, then lineup Standby Service Water Cooling to FPC-HX-1B as follows:	Performs this step.		S / U
	10	Step 5.6.3a Refer to OSP-SW-M102 for Standby Service Water Loop B for component flow requirements.	Given as complete in the Initial Conditions – does not perform.	If OSP-SW-M102 is referenced, refer candidate to Initial Conditions.	S / U
	11	Step 5.6.3b Verify SW-P-1B is running.	Given in Initial Conditions as running.	If candidate approaches front panel refer candidate to Initial Conditions.	S / U
	12	Step 5.6.3c If RCC cooling to FPC-HX-1A is not required, then close the following: • RCC-V-129 (Fuel Pool HX-A/B RCC Cooling Inlet) • RCC-V-130 (Fuel Pool HX-A/B RCC Cooling Outlet) • RCC-V-131 (Fuel Pool HX-A/B RCC Cooling Outlet)	Recognizes that these valves were closed in a previous step – does not perform.	If candidate performs this step - the Green light is on and the Red light is off for RCC-V-129, RCC-V-130 and RCC-V-131.	S / U
	13	Step 5.6.3d If RCC cooling to FPC-HX-1A is required, or SW is to be aligned to both FPC-HX-1A and FPC-HX-1B, then close the following: • RCC-V-9B (FPC-HX-1B RCC Cooling Inlet) (FPC HX Room) • RCC-V-10B (FPC-HX-1B RCC Cooling Outlet) (FPC HX Room)	Verbalizes to direct OPS2 to perform Step 5.6.3d of SOP-FPC-OPS to close RCC-V-9B and RCC-V-10B.	If candidate approaches front panel to use the radio, direct candidate to simulate communications. Roleplay and then as OPS2 report step 5.6.3d is complete as RCC-V-9B and RCC-V-10B are closed.	S / U

* Items are Critical Steps

Time	Step	Element	Standard	Cue	Sat/Unsat
NOTE: SW-V-187B and SW-V-188B keylock switch spring returns to NORMAL from OPEN, and maintains in CLOSE.					
	14	Step 5.6.3e Open SW-V-187B (FPC-HX-1B Backup Cooling SW-B Inlet) (H13-P626).	Simulates placing key 220 in the control switch and turning the control switch for SW-V-187B clockwise to open. Verifies Red light on and Green light off.	The control switch was placed in Open and spring returned to Norm. The Red light is on and the Green light is off.	S / U *
	15	Step 5.6.3f Open SW-V-188B (FPC-HX-1A Backup Cooling SW-B Outlet) (H13-P626).	Simulates placing key 222 in the control switch and turning the control switch for SW-V-188B clockwise to open. Verifies Red light on and Green light off.	The control switch was placed in Open and spring returned to Norm. The Red light is on and the Green light is off.	S / U *
Termination Criteria: Student informs CRS that Service Water has been aligned to both Fuel Pool Cooling Heat Exchangers.					
Transfer the following to the “Results of JPM” page: Any Unsat step - indicate if step was a Critical Step; JPM completion time.					

**RESULTS OF JPM
ALIGN SERVICE WATER TO THE
FUEL POOL COOLING HEAT EXCHANGERS**

Examinee (Print): _____

Evaluator (Print): _____

Task Standard: Service Water has been aligned to FPC-HX-1A and to FPC-HX-1B.

Overall Evaluation	JPM Completion Time
SAT / UNSAT (Circle One)	Minutes

COMMENTS:

Evaluator's Signature: _____ **Date:** _____

STUDENT JPM INFORMATION CARD

Initial Conditions:

Columbia was operating in Mode 1 when a complete loss of RCC occurred.

A reactor scram was inserted and efforts are underway to restore RCC cooling.

SW-P-1A and SW-P-1B are running.

Fuel Pool temperatures are rising.

Free release of RCC heat exchanger water to the Service Water spray ponds has been approved.

OSP-SW-M101 and OSP-SW-M102 have been referenced for component flow requirements.

OPS2 has been briefed and is on station.

Initiating Cue:

The Control Room Supervisor has directed you to align Service Water to both Fuel Pool Cooling Heat Exchangers per SOP-FPC-OPS Section 5.6.

Inform the CRS when Service Water has been aligned to both Fuel Pool Cooling heat exchangers.

The performance of this JPM will be simulated.

Control manipulations will not be performed.



**ENERGY
NORTHWEST**

INSTRUCTIONAL COVER SHEET

PROGRAM TITLE	LICENSED OPERATOR TRAINING		
COURSE TITLE	JOB PERFORMANCE MEASURE		
LESSON TITLE	RE-ESTABLISH SECONDARY CONTAINMENT/START RB HVAC		(Control Room)
LESSON LENGTH	.5 HRS		
	INSTRUCTIONAL MATERIALS INCLUDED		
LESSON PLAN PQD CODE		Rev. No.	
SIMULATOR GUIDE PQD CODE		Rev. No.	
JPM PQD CODE	LO001757	Rev. No.	0
EXAM PQD CODE		Rev. No.	
DIVISION TITLE	Nuclear Training		
DEPARTMENT	Operations Training		
PREPARED BY	Ron Hayden	DATE	12/26/12
REVISED BY		DATE	
TECHNICAL REVIEW BY		DATE	
INSTRUCTIONAL REVIEW BY		DATE	
APPROVED BY	SAT Coordinator	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:

None

Special Setup Instructions:

N/A

JPM Instructions:

Verify Current Procedure against JPM. If any steps have changed, the JPM should be revised.

Tools/Equipment: None

Safety Items: None

Task Number: RO-0497

Validation Time: 8 Minutes

Alternate Path: No

Time Critical: No

PPM Reference: SOP-RB HVAC-RESTART-QC Rev. 0

Location: Simulator

NUREG 1123 Ref: 290001 A4.01 (3.3 / 3.4)

Performance Method: Perform

Task Standard: ROA-FN-1A and REA-FN-1A are running with REA-DPIC-1A in Automatic operation.

JPM CHECKLIST

INITIAL CONDITIONS:	A series of events occurred that resulted in no running Reactor Building Supply or Exhaust fan. PPM 5.3.1 was entered due to Reactor Building dP high. Prior to starting Standby Gas Treatment, the Control Room received information that Reactor Building HVAC could be restarted.
INITIATING CUE:	The Control Room Supervisor has directed you to restart RB HVAC by starting ROA-FN-1A and REA-FN-1A per SOP-RB HVAC-RESTART-QC. Inform the CRS when SOP-RB HVAC-RESTART-QC has been completed.

* Items are Critical Steps

Time	Step	Element	Standard	Cue	Sat/Unsat
	89	Step 2.1 Place REA-DPIC-1A (1B) (Δ P Control RX Bldg/Outside) in MANUAL.	Simulates placing the toggle for REA-DPIC-1A to the Manual position.	The black lever is under the 'M'.	S / U *
	90	Step 2.2 Set REA-DPIC-1A (1B) output signal at approximately 60% of scale.	Simulates depressing the closed pushbutton on REA-DPIC-1A to have the red arrow indicator on the vertical meter at approximately 60% of scale.	Initially show the red arrow on the horizontal meter is above the 100. When the closed pushbutton is simulated being depressed indicate the red arrow is moving slowly down the scale. Stop moving the indication when the candidate indicates the pushbutton would be released (Accept 55% - 65% of scale). If asked, REA-DPR-1A output starts at 100 and follows the vertical meter reading as the closed pushbutton is depressed.	S / U *

* Items are Critical Steps

Time	Step	Element	Standard	Cue	Sat/Unsat
	91	<p>Step 2.3</p> <p>Place the control switch for the following fans in PULL-TO-LOCK:</p> <ul style="list-style-type: none"> • ROA-FN-1A (Reactor Bldg Supply Fan) • ROA-FN-1B (Reactor Bldg Supply Fan) • REA-FN-1A (Reactor Building Exhaust Fan) • REA-FN-1B (Reactor Building Exhaust Fan) 	<p>Simulates turning the black handles counter - clockwise and simulates pulling the black handles out to engage the Pull-To-Lock position for:</p> <p>ROA-FN-1A ROA-FN-1B REA-FN-1A REA-FN-1B</p>	<p>As each switch is simulated being placed in the PTL position: The switch has been turned counter - clockwise and pulled out and remains in that position.</p> <p>The black flag is displayed in the switches window.</p>	<p>S / U *</p> <p>S / U *</p> <p>S / U *</p> <p>S / U *</p>
	92	<p>Step 2.4</p> <p>Verify the following valves are OPEN:</p> <ul style="list-style-type: none"> • ROA-V-1 (RB Supply Outboard Isolation) • ROA-V-2 (RB Supply Inboard Iso) • REA-V-1 (RB Exhaust Inboard Iso) • REA-V-2 (RB Exhaust Outboard Iso) 	<p>Observes the Red light on and the Green light off for:</p> <p>ROA-V-1 ROA-V-2 REA-V-1 REA-V-2</p>	<p>As each valve is observed: The Red light is on and the Green light is off.</p>	<p>S / U</p>
	93	<p>Step 2.5 (2H)</p> <p>Simultaneously start REA-FN-1A (1B) and ROA-FN-1A (1B).</p>	<p>Simulates simultaneously pushing in the black handled control switches for ROA-FN-1A and REA-FN-1A.</p> <p>Simulates simultaneously turning the black handled control switches clockwise to the start position and then releases them.</p>	<p>Simultaneous operation of ROA-FN-1A and REA-FN-1A IS a part of the critical step.</p> <p>The control switches handles have been pushed in and turned clockwise.</p> <p>The Red light is on and the Green light is off for each of the fans.</p> <p>The red flag is displayed for both control switches.</p>	<p>S / U *</p>

*** Items are Critical Steps**

Time	Step	Element	Standard	Cue	Sat/Unsat
	94	Step 2.6 Manually adjust REA-DPIC-1A(1B) controller output until Reactor Building pressure on REA-DPR-1A (1B) is approximately -0.6" W.G.	Simulates (verbalizes) depressing the open pushbutton to adjust REA-DPIC-1A to achieve approximately -0.6"W.G.. on REA-DPR-1A.	Inform the candidate that REA-DPR-1A digital readout is -0.3" Initially indicate the red arrow on the vertical meter of REA-DPIC-1A is pointing at -0.3" As the Open pushbutton is depressed, indicate the red arrow on the vertical meter moving slowly down the scale towards the -0.6 reading and inform the candidate that REA-DPR-1A digital output correlates to the red arrow indication. When the open pushbutton is simulated as being released, stop the indicated movement of the red arrow. (Accept -0.5" to -0.7"wg).	S / U *
	95	Step 2.7 Null REA-DPIC-1A (1B), and place it in AUTO.	Verbalizes step. May indicate that the thumbwheel would be turned until REA-DPIC-1A is nulled or waits until red arrow lines up with green band. Simulates moving the black lever to the AUTO position (under the 'A').	Ask candidate what indications he would observe that would indicate that REA-DPIC-1A is nulled (red arrow in center of green band). Inform the candidate that REA-DPIC-1A is nulled. The black lever has been moved and is now under the 'A'.	S / U S / U *

* Items are Critical Steps

Time	Step	Element	Standard	Cue	Sat/Unsat
	96	Step 2.8 Place the control switch for the following non- running fans in the NORMAL-after- STOP position. <ul style="list-style-type: none"> • ROA-FN-1B(1A) • REA-FN-1B(1A) 	Simulates pushing in the black handled control switches for ROA-FN-1B and REA-FN-1B (switches will automatically move to the Normal after stop position). May observe the control switches green flag displayed.	As each control switch is manipulated: The control switches has been pushed in and the black handles are now straight up and down. The green flag is displayed for each control switch.	S / U
Termination Criteria: Student informs CRS that SOP-RB HVAC-RESTART-QC has been completed.					
Transfer the following to the “Results of JPM” page: Any Unsat step - indicate if step was a Critical Step; JPM completion time.					

RESULTS OF JPM RESTART RB HVAC TO ESTABLISH SECONDARY CONTAINMENT

Examinee (Print): _____

Evaluator (Print): _____

Task Standard: ROA-FN-1A and REA-FN-1A are running with REA-DPIC-1A in Automatic operation.

Overall Evaluation	JPM Completion Time
SAT / UNSAT (Circle One)	Minutes

COMMENTS:

This image shows a single sheet of white paper with horizontal blue ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Evaluator's Signature: _____ **Date:** _____

STUDENT JPM INFORMATION CARD

Initial Conditions:

A series of events occurred that resulted in no running Reactor Building Supply or Exhaust fan.

PPM 5.3.1 was entered due to Reactor Building dP high.

Prior to starting Standby Gas Treatment, the Control Room received information that Reactor Building HVAC could be restarted.

Initiating Cue:

The Control Room Supervisor has directed you to restart RB HVAC by starting ROA-FN-1A and REA-FN-1A per SOP-RB HVAC-RESTART-QC.

Inform the CRS when SOP-RBHVAC-QC has been completed.



**ENERGY
NORTHWEST**

INSTRUCTIONAL COVER SHEET

PROGRAM TITLE OPERATIONS TRAINING

COURSE TITLE COLUMBIA GENERATING STATION SIMULATOR EXAMINATION

LESSON TITLE BPV Surveillance – One BPV is Failed Closed; Lower Power with Flow to Perform Surveillance; NR Instrument Fails Downscale; Fire in TB – CAS Leak – A/C's Fail to Auto Start – CAS A/B Trip; Scram on Loss of CAS Pressure; Steam Leak in Containment; RHR-P-2A Overcurrent Causes an SM-7 Lockout; RHR-P-2B Fail Auto Start Then a Shaft Shear; RRC-P-1A Stop P/B Failed off; Spray with SW-B per PPM 5.5.2

LENGTH OF LESSON 1.5 Hours

INSTRUCTIONAL MATERIALS INCLUDED

Lesson Plan PQD Code	_____	Rev. No.	_____
Simulator Guide PQD Code	LO001750	Rev. No.	0
JPM PQD Code	_____	Rev. No.	_____
Exam PQD Code	_____	Rev. No.	_____

DIVISION TITLE Nuclear Training

DEPARTMENT Operations Training

PREPARED BY Ron Hayden DATE 12/12/12

REVISED BY _____ DATE _____

VALIDATED BY _____ DATE _____

TECHNICAL REVIEW _____ DATE _____

INSTRUCTIONAL REVIEW _____ DATE _____

SAT Coordinator

APPROVED _____ DATE _____

Operations Training Manager

Facility: ColumbiaScenario No.: 1Op-Test No.: 2013

Examiners: _____ Operators: _____

Initial conditions: Columbia is operating at 100% power. TSW-P-1A is tagged out for motor replacement. TSW-P-1B is protected and selected as the emergency standby TSW pump.

Shift Directions: Perform OSP-MS-M701, the Bypass Valve Test monthly surveillance. The pre job brief and the reactivity brief have been conducted. Proper margin to Pre-Conditioned Status (PCS) exists per PPM 9.3.18. The Dittmer Dispatcher has been notified of the upcoming Bypass Valve Testing. The MT is in Sequential Valve mode.

Event No.	Timeline	Event Type*	Event Description
1	T = 0	C (BOP) R (ATC) R (CRS)	Perform OSP-MS-M701, Main Turbine Bypass Valves Test. BV2 fails to open, requiring BPV's to be declared inoperable (Tech Spec). Power reduction by lowering RRC flow to facilitate performance of OSP-MS-M701.
2	T = 20	I (ATC) I (CRS)	RFW-LI-606A (the selected NR instrument) fails downscale (Tech Spec).
3	T = 35	I (BOP)	Fire in the Turbine Building resulting in degrading Control Air header pressure. Both standby CAS compressors fail to auto start on low header pressure, and must be manually started to restore header pressure.
4	T = 45	M (All)	Loss of CAS-C-1A and CAS-C-1B. A manual reactor scram is required prior to MSIV closure.
5	T = 55	M (All)	A Steam LOCA develops inside containment when the MSIVs close.
6	T = 60	C (BOP) C (CRS)	When Drywell pressure reaches 1.68 psig, RHR-P-2A will automatically start with an overcurrent condition. The output breaker will fail to trip and cause a lockout on SM-7. DG-1 must be emergency tripped (Critical Task).
7	T = 65	C (BOP) C (CRS)	RHR-P-2B fails to auto start. RHR-P-2B has a sheared shaft when manually started. Initiate Drywell sprays with SW-B through RHR-B using PPM 5.5.2 after Drywell temperature reaches 285°F, but before Drywell temperature reaches 330°F (Critical Task).
8	T = 65	C (ATC)	The stop pushbutton fails to stop RRC-P-1A.

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

The scenario starts with Columbia at 100% power. TSW-P-1A is tagged out for motor replacement.

After the crew takes the shift the BOP operator will perform BPV surveillance test, OSP-MS-M701.

The CRS will direct Reactor Power be lowered to perform the surveillance.

When the second bypass valve is tested, it will not open. The CRS will refer to Tech Specs and enter TS 3.7.6.

After Tech Specs are referenced, RFW-LI-606A will fail downscale. The crew will swap FWLC channels from Channel A to Channel B. Tech Spec again will be referenced.

The next event is a fire in the Aux Boiler Room, Turbine Building 441' elevation East side. The fire will cause a rupture in the Control Air System. CAS pressure will slowly drop. ABN-FIRE and ABN-CAS will be entered. The Standby CAS compressors will not auto start but may be started manually. When started, CAS pressure will start to recover.

Due to a failed fire hose that occurs during firefighting efforts, CAS-C-1A and CAS-C-1B become wetted and will trip. With only one CAS compressor running, CAS pressure will again begin to drop. Firefighting efforts will put the fire out.

When it is determined that a complete loss of air is apparent, the crew will insert a manual scram (should be prior to MSIVs going closed which would cause an automatic scram).

When the MSIVs close, a Steam LOCA inside containment will occur causing a High Drywell Pressure signal at 1.68 psig.

When RHR-P-2A starts on high Drywell pressure, it will have an overcurrent fault. The breaker on SM-7 will not open, and a lockout on SM-7 will occur. The crew will emergency trip DG-1 which will be running with no Service Water cooling (Critical Task).

Additionally, RHR-P-2B will not auto start on high Drywell pressure but may be manually started. When it is started the shaft will shear and the pump will develop no discharge pressure.

The crew will realize that both RRC pumps are running without RCC flow (RRC pumps tripped off on the high drywell pressure signal). When the stop pushbutton for RRC-P-1A is depressed it will not stop the pump. The crew will open one of the supply breakers to stop RRC-P-1A.

Wetwell pressure will rise to 2 psig and the crew will want to spray the Wetwell but will realize both RHR spray systems are not operational.

Drywell/Wetwell pressure and Drywell temperature will continue to rise. The crew will perform PPM 5.5.2, RHR/SW Crosstie Lineup.

Wetwell sprays will be initiated (GT 2 psig Wetwell pressure). Drywell Sprays will be initiated when Drywell temperature reaches 285°F or Wetwell pressure reaches 12 psig. (Note: After MSIVs close it takes 5 minutes and 15 seconds to get to 285°F DW/T, 6 minutes and 15 seconds to get to 12 psig WW/P, and 12 minutes to get to 330°F DW/T) (Critical Task).

The scenario will be terminated when drywell sprays have been initiated.

Event No. 1

Description: Perform Bypass Valve Test Surveillance OSP-MS-M701 (Tech Spec). Reduce Reactor Power to LE 3411 Mwt (75 Mwt below 100% power).

This event is initiated by turnover information. Failure of BPV #2 to open is active from the beginning of the scenario.

Time	Position	Applicants Actions or Behavior
T = 0	CRS	Directs BOP operator to perform OSP-MS-M701.
	BOP	May ensures expected annunciators are flagged (P&L 3.4).
		Step 7.1 Reduce Reactor Power to LE 3411 Mwt (75 Mwt below 100% power) per PPM 3.2.1 or 3.2.6.
	CRS	Directs the ATC to reduce reactor power at the rate of 1 Hz per minute or 10 MWe/minute or 1% power/minute to LE 3411 Mwt (75 Mwt below 100% power) per PPM 3.2.1 or 3.2.6 to facilitate Bypass Valve testing.
	ATC	Reduces reactor power with RRC flow as directed at the rate directed. Verifies both RRC pump individual pump controllers are in AUTO and depresses the Master Controller LOWER pushbutton to lower RRC Pump flow. Reports Power/Pressure/Level to CRS when power reduction is completed.
		Step 7.2 Verify proper margin to Pre-Conditioned Status (PCS) exists per PPM 9.3.18.
		NOTE: Due to low extraction steam pressures, therefore slower heater level control, low pressure heaters 1 and 2 are removed from service when Reactor Power is LT 76% and testing Turbine Bypass Valves.
		Step 7.3 If reactor power is LT 76%, then verify COND-HX-1A, B, and C and COND-HX-2A, B, and C are removed from service per SOP-FWH-SHUTDOWN..

Time	Position	Applicants Actions or Behavior
		NOTE: The following condensate flow requirement is to allow sufficient margin for Desuperheat Sprays and Hotwell dump flow, while providing sufficient flow to the Reactor. NOTE: Each Condensate Booster Pump is rated for 11,000 gpm.
		<p>Step 7.4</p> <p>If condensate flow is not 3000 gpm LT the rated flow for the present condensate pump configuration (as indicated on COND-FR-11), then reduce reactor power until condensate flow is 3000 gpm LT the rated flow for the present pump configuration.</p>
		<p>Step 7.5</p> <p>Establish desuperheat spray at approximately 150 psig (COND-PI-40), by one or more of the following methods. N/A method(s) not used.</p> <ul style="list-style-type: none"> • Place COND-PCV-40 to OPEN (Desuper Spray Press Control) • Throttle OPEN COND-V-178 (Desuper Spray Bypass) • Place COND-PIC-40 in MANUAL (TB 441, IR-9) to establish desuperheat spray at ~100 psig
		<p>Step 7.6</p> <p>Select BV on the SELECT VALVE panel (Menu, Valve Testing).</p> <p>Selects Menu. Selects Valve Testing. Selects BV.</p>
		<p>Step 7.7</p> <p>Verify OK TO TEST BV VALVES is green.</p> <p>(The light will turn green at ~91% power)</p>
		NOTE: Use indication on DEH Monitor panel for MWe.
		<p>Step 7.8</p> <p>Perform the following to test BV1:</p>
		<p>Step 7.8.1</p> <p>Record MWe.</p>
		<p>Step 7.8.2</p> <p>Select TEST BV1.</p>

Time	Position	Applicants Actions or Behavior
		NOTE: When in the Valve Testing Mode, BPVs will move only while the OPEN BV or CLOSE BV button is being touched. Valve motion will stop if finger is lifted from the touch screen, and will resume when the button is touched and held again.
		Step 7.8.3 Select TEST.
		Step 7.8.4 Touch and hold OPEN BV1 button.
		Step 7.8.5 When BPV1 is fully open, then release OPEN BV1 button (Evaluator Note: Digital readout indicates 98% with full out indication).
		Step 7.8.6 Verify BPV1 is OPEN.
		Step 7.8.7 Record MWe.
		Step 7.8.8 Touch and hold CLOSE BV1 button.
		Step 7.8.9 When BPV1 is fully closed, then release CLOSE BV1 button.
		Step 7.8.10 Verify BPV1 is CLOSED.
		Step 7.8.11 Record MWe.

Time	Position	Applicants Actions or Behavior
		Step 7.8.12 Select TEST BV1.
		Step 7.8.13 Select EXIT TEST.
	CRS	Step 7.8.14 Verify Plant conditions have stabilized before continuing to the next step.
	BOP	Step 7.9 Perform the following to test BV2:
		Step 7.9.1 Record MWe.
		Step 7.9.2 Select TEST BV2.
		NOTE: When in the Valve Testing Mode, BPVs will move only while the OPEN BV or CLOSE BV button is being touched. Valve motion will stop if finger is lifted from the touch screen, and will resume when the button is touched and held again.
		Step 7.9.3 Select TEST.
		Step 7.9.4 Touch and hold OPEN BV2 button.
		Step 7.9.5 When BPV2 is fully open, then release OPEN BV2 button.

Time	Position	Applicants Actions or Behavior
	BOP	Recognizes that Bypass valve #2 does not open and informs CRS. (Note: if the OPEN button is held long enough the DEH Trouble alarm will annunciate due to SPC A Control vs. Feedback Deviation).
	CRS	Refers to Technical Specifications and refers to LCO 3.7.6 Main Turbine Bypass System.
		Contacts Work Control and requests assistance with inoperable bypass valve. May contact System Engineer.
		Conducts Brief – informs crew that LCO 3.7.6 Condition A is applicable and required action is to satisfy the requirements of the LCO within 2 hours or reduce thermal power to LT 25% RTP within 4 hours.
		Directs BPV surveillance be stopped and exited. May direct desuperheat spray be secured.
	BOP	If directed secures desuperheat spray by taking the control switch for COND-PCV-40 to Close.
COMMENT:		

Event No. 3

Description: RFW-LI-606A Fails Downscale.

This event is initiated by activating **TRIGGER 1** after Tech Specs for the Bypass Valve has been referenced.

Time	Position	Applicants Actions or Behavior
T = 20	ATC	Acknowledges RFW CONTR SYSTEM TROUBLE alarm. Recognizes RFW-LI-606A indicates downscale and informs CRS. Monitors RPV level and reports 'B' and 'C' instruments indicate level is 36" and steady. May observe RFW-LR-608 is indicating 0" and informs CRS. Refers to ARP.
	CRS	Enters ABN-INSTRUMENTATION and updates crew on entry. Determines RFW-LI-606A detector is RFW-DPT-4A.
	BOP	Per ARP, checks FWLC Video Display on back panel H13-P612 and notes that it indicated 'A' Narrow Range has an invalid signal (reading 0.0 in) and Channel B is controlling.
		May direct OPS2 to investigate RFW-DPT-4A on RB 522' on H22-P004.
ROLEPLAY: In two minutes and call X2171 and report there is nothing obviously wrong with RFW-DPT-4A.		
	BOP	May check EFCV-X107 open.
	CRS	Directs transfer of Reactor Vessel Level Control Channel selector switch from CH A to CH B.
	ATC	Places the Reactor Vessel Level Control Channels from Channel A to Channel B.

Time	Position	Applicants Actions or Behavior
	CRS	Refers to Tech Specs and identifies TS 3.3.2.2, Feedwater and Main Turbine High Water Trip Instrumentation, Condition A (Place channel in trip within 7 days).
		Contacts Work Control about Channel A failure and requirement to put in a tripped condition within 7 days.
		Conducts brief.
COMMENTS:		

Event No. 4

Description: Fire in the Turbine Building with degrading CAS pressure on a 2 minute time delay. CAS-C-1A and CAS-C-1C fail to Auto Start.

This event is initiated by activating **TRIGGER 2** and is initiated after Tech Specs for RFW-LI-606A failure have been referenced. The failure of compressors to auto start is active from the beginning of the scenario.

Time	Position	Applicants Actions or Behavior
T = 35	BOP	Responds to fire alarms and reports alarms indicate a fire in the Turbine Building 441' Boiler Room and the Turbine Building 441' East End Equipment Area.
		Reports start of FP-P-2A.
ROLEPLAY: After FP-P-2A starts, call as OPS 3 (on radio) and report heavy smoke coming from the Aux Boiler Room.		
	CRS	Enters ABN-FIRE and updates crew on entry.
	BOP	Performs ABN-FIRE immediate actions: <ul style="list-style-type: none"> • Sounds Alerting Tone • Announces fire Turbine Building 441' East Side (Aux Boiler Room) • Dispatches the Fire Brigade • Repeats the three steps • Depresses the Hanford Fire Department pushbutton on FCP-1
ROLEPLAY: After the announcement: As the Fire Brigade Leader request the fire brigade muster at the 441' turnout locker.		
	BOP	Makes announcement for the fire brigade to muster at the 441' turnout locker.
	CRS	Directs evacuation of non-emergency personnel per PPM 13.5.1 (Blue form).

Time	Position	Applicants Actions or Behavior
	BOP	Announces evacuation of the Turbine Building.
ROLEPLAY: Three minutes later, as the Fire Brigade Leader, report the fire is limited to the Aux Boiler Room.		
	BOP	Responds to Air Dryer Trouble, the Air AFT-FLTR A dP High, Standby Air Compressor On, and Low CAS Header Pressure alarms as they annunciate. Informs CRS and refers to ARP.
		Informs CRS of lowering CAS pressure and trend (down slow).
	CRS	Enters ABN-CAS and updates crew on entry. May set a key parameter of CAS pressure.
ROLEPLAY: If asked for local investigation of CAS pressure loss – you will try and investigate but priority is on fighting the fire for now.		
	BOP	When the Standby Compressor On annunciator alarms, verifies starting of standby air compressors. Recognizes that CAS-C-1A and CAS-C-1C should have auto started but did not. May inform CRS prior to attempting start.
		Places the control switches for CAS-C-1A and CAS-C-1C in the START position and reports start of both compressors to the CRS.
		Checks CAS pressure and reports CAS pressure trend is up slow (Note: it takes about a minute until CAS pressures downward trend stops and the header starts to re-pressurize).

Time	Position	Applicants Actions or Behavior
	CRS	Directs announcement to suspend all unnecessary use of Control and Service Air be made.
	BOP	Makes announcement as directed.
COMMENT:		

Event No. 5

Description: Loss of CAS-C-1A and CAS-C-1B.

This event is triggered by activating **TRIGGER 3** after it has been reported that CAS pressure trend is up and the Control Air Header Pressure Low annunciator has cleared.

Time	Position	Applicants Actions or Behavior
T=45	BOP	Acknowledges and reports Bus 73 ground alarm. Acknowledges and reports CAS-C-1A motor trip alarm. Acknowledges and reports Bus 83 ground alarm. Acknowledges and reports CAS-C-1B motor trip alarm. Reports CAS-C-1A and CAS-C-1B are not running.
	CRS	May direct Fire Brigade be contacted and asked about the compressor trips.
<p>ROLEPLAY: If asked, report that the compressors tripped when a fire hose failed and wetted the air compressor motors. Fire water has been isolated to that hose and efforts are underway to replace the hose. The fire is being attacked with another hose and the fire is under control.</p> <p>Also – if asked about CAS pressure loss report there is no way to investigate that at this time.</p>		
	BOP	Reports CAS pressure again trending down.
	CRS	Sets CAS pressure as a key parameter.
		When it is determined that a complete loss of air is apparent directs RFW-V-118 be verified closed. Directs RFW-LIC-620 to manual and full open Startup flow control valves.
	ATC	Verifies RFW-V-118 is closed and fully opens both Startup Flow Control valves (RFW-FCV-10A/10B) using the controllers turn knob until 100 is indicated on the controller. May also observe panel indication for both valves indicates that both are full open (note: the 10A fully opens before the 10B starts to open).
Time	Position	Applicants Actions or Behavior
	BOP	Monitors lowering CAS pressure and reports when key parameter met.
	CRS	When it is determined that a complete loss of air is apparent directs a manual scram be inserted. May direct flow be lowered to 60 Mlbm/hr.

	ATC	<p>Lowers flow if directed to 60 Mlbm/hr.</p> <p>Announces "Listen up for the scram report".</p> <p>Inserts a manual scram by rotating the Mode switch to Shutdown; Monitors and reports APRM downscale lights illuminated, reports RPV Pressure and trend, and reports RPV Level and trend.</p> <p>Announces EOP entry due to low RPV level.</p> <p>Reports All Rods In.</p> <p>Inserts IRM/SRMs by depressing the Power On and the Drive In pushbuttons.</p>
	CRS	Enters EOP 5.1.1 (RPV Control) and updates crew on entry.
<p>Right after the CRS announces entry into EOP 5.1.1 (RPV Control): ROLEPLAY: Control Room – this is the Fire Brigade Leader – the fire is out and a re-flash watch has been stationed.</p> <p>Also – if asked about CAS pressure loss report that you will attempt to look into it (no further feedback during the remainder of the scenario will be given).</p>		
	CRS	Directs RPV level be maintained +13" to +54" with the feed and condensate system and supplement with RCIC (The RPV/L band may be widened to -50" to +54" as the scenario progresses due to MSIV closure and changing feed sources).

Time	Position	Applicants Actions or Behavior
	CRS	Directs PPM 3.3.1 (Reactor Scram) subsequent actions.
		Directs pressure control with DEH in automatic (while MSIVs are still open).
		Direct +13" actuations be verified.
	BOP	Verifies the following: Reactor scram; RRC Pumps running at 15 Hz; Group 5 and 6 valves isolated on GDS screen (no yellow bordered NSSS groups on GDS). Reports +13" actuations verified.
	ATC	Maintains RPV level in given band with the Feed and Condensate System using RFW-V-118.
		Uses Quick Card initially to use RFW pumps to maintain level (while MSIVs are still open should use RFW pumps): Step 2.1.1 If Reactor Feed Pump(s) (RFP) are operating, then perform the following:
		a. Verify RFP(s) have ramped down in speed. b. If preferred to operate RFW-FCV-2A(B) in auto, then verify RFW-FCV-2A(B) is operating properly in Automatic (Minimum Flow Valve) (H13-P840).

Time	Position	Applicants Actions or Behavior
		<p>c. If desired to operate RFW-FCV-2A(B) in manual to prevent complications in controlling Reactor Level or valve cycling, then place RFW-FCV-2A(B) in Manual, and slowly Open to approximately 80%. (Should leave in Auto)</p> <p>d. Place RFW-P-1B in MDEM mode using either RFT-COMP-1 or RFT-COMP-2 (Pump Control Screen) as follows (H13-P840):</p> <ol style="list-style-type: none"> 1) Select MDEM. 2) Select YES. <p>e. Place RFW-P-1A in MDEM mode using either RFT-COMP-1 or RFT-COMP-2 (Pump Control Screen) as follows (H13-P840):</p> <ol style="list-style-type: none"> 1) Select MDEM. 2) Select YES. <p>f. Control Turbine speed as required.</p>
		<p>Step 2.1.2</p> <p>If Feedwater Temperature Reduction was in progress, then verify RFW-V-109 is closed (H13-P840).</p>
		<p>Step 2.1.3</p> <p>Start closing RFW-V-112A and RFW-V-112B (H13-P840).</p>
		<p>Step 2.1.4</p> <p>Start opening RFW-V-118 (Throttle valve) (H13-P840) (Uses RFW-V-118 to control feed rate to vessel to maintain RPV Level as directed).</p>
		<p>Step 2.1.5</p> <p>Verify the following open (H13-P840):</p> <ul style="list-style-type: none"> • RFW-V-117A • RFW-V-117B

Time	Position	Applicants Actions or Behavior
		<p>Step 2.1.6</p> <p>Verify RFW-LIC-620 is in manual (V selected for Valve position demand) with 0 output (Startup RPV Level Control) (H13-P603). (Valves are fully open due to loss of CAS).</p>
		<p>Step 2.1.7</p> <p>Verify RFW-V-112A and RFW-V-112B are fully closed.</p>
		<p>Step 2.1.8</p> <p>Verify RFW-V-118 is FULLY OPEN.</p>
		<p>Step 2.1.9</p> <p>If Reactor Feed Pump(s) (RFP) are operating, then adjust the running RFP speed to establish ~ 200 psid across RFW-FCV-10A & 10B using either Feedwater touch screen (H13-P840) (Will adjust RFW pump speed to be GT RPV pressure).</p>
<p>Note: When MSIVs close, RPV pressure band should be lowered to 500 psig – 600 psig to facilitate feeding with the Condensate Booster pumps.</p>		
	ATC	May initiate RCIC using the quick card.
		Maintains RPV level in band directed.
<p>COMMENTS:</p>		

Event No. 7

Description: Steam LOCA inside Primary Containment.

This event is **automatically activated** when the MSIVs close on low CAS pressure by the Event File and uses Conditional Trigger 4.

Time	Position	Applicants Actions or Behavior
T=55	BOP	Recognizes and reports MSIV closure (due to low CAS pressure).
		Places MSIV control switches for all MSIVs in the close position.
		Takes manual control of RPV pressure with SRVs at a pressure band of 800 to 1000 psig. Updates crew.
	CRS	Directs pressure control with SRVs at 800 – 1000 psig. May direct a lower pressure band of 500 to 600 psig to facilitate feeding with the Condensate Booster Pumps.
	BOP	Acknowledges Suppression Pool Level high/low and Drywell/Suppression Pool Temp high annunciators as they annunciate. Recognizes increasing Drywell pressure and informs CRS.
		Reports EOP entry on High Drywell pressure at 1.68 psig (and Wetwell level (+2'') and Drywell temperature (135°F) when they occur).
	CRS	Enters PPM 5.2.1 (Primary Containment Control) and re-enters PPM 5.1.1 (RPV Control) and updates crew.

Time	Position	Applicants Actions or Behavior
		Directs actuations be verified for 1.68 psig Drywell pressure.
		Verifies the following: HPCS DG, HPCS-P-1 and HPCS-P-2 start DG-1 and DG-2 start RHR-P-2A (Refer to Event 8), RHR-P-2B (refer to Event 9), RHR-P-2C and LPCS-P-1 start CW-P-1B and CW-P-1C trip SW-P-2A and SW-P-2B start RCC-P-1A, RCC-P-1B and RCC-P-1C trip Observes GDS and verifies no yellow bordered NSSS groups (which would indicate a containment isolation valve out of position)
Comments:		

Event No. 8

Description: SM-7 Lockout caused by overcurrent condition on RHR-P-2A and failure of the pumps breaker to open.

This event is active from the start of the scenario and is realized when RHR-P-2A starts. When the pump starts the Event File will **automatically initiate** event trigger 5 which causes pump breaker to fail as is and SM-7 lockout on a 30 second time delay.

The Critical Task is to initiate Emergency Trip DG-1 due to loss of Service Water cooling.

Time	Position	Applicants Actions or Behavior
T=60	BOP	May recognize overcurrent condition on RHR-P-2A when it auto starts by observing pump amp meter on P601.
		May recognize that a loss of power to LPCS-P-1 and RHR-P-2A has occurred. Responds to electrical panel to investigate loss of power.
		Notes that SM-7 is not powered. Investigates annunciators and panel indications and recognizes that a lockout on SM-7 exists (the Lockout Circuit Avail white light for CB-7/1 is not lit) and informs CRS.
		Reports that due to the lockout, DG-1 is running without service water. May refer CRS to ABN-SW and ABN-ELEC-SM1/SM7.
	CRS	Enters ABN-SW and ABN-ELEC-SM1/SM7 and updates crew.
		Directs DG-1 be tripped per subsequent actions of either ABN-SW or ABN-ELEC-SM1/SM7.
	BOP	Depresses the DG-1 emergency trip pushbutton and reports DG-1 tripped.

Comments:

Event No. 9

Description: RHR-P-2B Fails to Auto Start and when it is manually started it has a sheared shaft.

This event is active from the start of the scenario and is realized when 1.68 psig actuations are being verified.

Time	Position	Applicants Actions or Behavior
T=65	BOP	While verification of 1.68 psig actuations is being performed, recognizes that RHR-P-2B should have auto started but did not.
		Takes the control switch for RHR-P-2B to start and observes breaker closure/pump start. Verifies proper pump operation and recognizes the pump has not developed any discharge pressure and low running amps are indicated. Informs CRS.
	CRS	May direct local investigation of RHR-P-2B.
ROLEPLAY: Wait one minute: RHR-P-2B shaft is sheared and the motor is free spinning from the pump.		
	CRS	Directs RHR-P-2B be secured and may direct control fuses be pulled.
	BOP	Secures RHR-P-2B by placing C/S to Stop and directs OPS 2 to pull the control power fuses.
BOOTH OPERATOR: Wait two minutes and <u>ACTIVATE TRIGGER 10</u> to pull the control power fuses/rackout the breaker and report completion to the control room.		
Comments:		

*Event No. 10***Description:** RRC-P-1A Stop pushbutton Failed.

This event is active from the start of the scenario and is realized when the pushbutton is depressed.

Time	Position	Applicants Actions or Behavior
T=65	ATC	Recognizes that RRC pumps are running without RCC cooling (RCC pumps trip off at 1.68 psig Drywell pressure).
		Informs CRS and requests permission to stop the RRC pumps.
	CRS	Directs both RRC pumps be stopped.
	ATC	Depresses the stop pushbuttons for RRC-P-1A and RRC-P-1B. Verifies pumps stopped (red ASD lights out and green lights illuminate). Recognizes RRC-P-1A did not stop.
		Informs the CRS of the failure of RRC-P-1A to stop when the Stop pushbutton was depressed.
	CRS	Directs opening CB-RRA, CB-RPT-3A or CB-RPT-4A to stop RRC-P-1A.
	ATC	Opens breaker as directed. Reports RRC-P-1A stopped.
Comments:		

Event No. 11

Description: Perform PPM 5.5.2 to spray containment with Service Water B.

The Critical Task is to initiate Drywell sprays with SW-B through RHR-B using PPM 5.5.2 after Drywell temperature reaches 285°F, but before Drywell temperature reaches 330°F . Sprays may also be initiated due to Wetwell pressure of 12 psig.

Time	Position	Applicants Actions or Behavior
T=70	BOP	Reports Wetwell pressure at 2 psig and trending up.
	CRS	Referring to PPM 5.2.1 (Primary Containment Control, determines that Wetwell sprays are required to be initiated (before 12 psig Wetwell pressure). Recognizes that both loops of RHR are unavailable to spray containment. Using flow chart icon, directs PPM 5.5.2 (RHR/SW CROSSTIE LINEUP) be performed.
	BOP	Obtains PPM 5.5.2 and required equipment in plastic bag from EOP drawer.
		Step 4.1.1 Verify RHR-P-2B Stopped. Takes C/S for RHR-P-2B to stop if not previously accomplished.
FLOOR OPERATOR: Be behind H13-P601 and when candidates comes back to perform step 4.1.2 ask what actions he is performing. When step 4.1.2 is stated inform him that he is in the process of performing the step. Keep him there for one total minute and then inform him that the step has been completed.		
		NOTE: The following step overrides RHR-V-68B (Heat Exchanger SW Discharge) automatic open logic. E-CP-H13/P680 Bay F is located behind H13-P601. See Attachment 6.1.

Time	Position	Applicants Actions or Behavior
		<p>Step 4.1.2</p> <p>Lift and tape the black wire at TM-7, Terminal 15 (Cable 2M8BB-24) to override RHR-V-68B automatic open logic (E-CP-H13-P680 Bay F) (This panel is not modeled in the simulator but is located behind H13-P601 in the control room.</p>
		<p>Step 4.1.3</p> <p>Verify the following valves are closed:</p> <ul style="list-style-type: none"> • RHR-V-24B (Suppression Pool Cooling/Test Return)(H13-P601) • RHR-V-27B (Suppression Pool Spray) (H13-P601) • RHR-V-16B (Drywell Spray Outboard Isolation) (H13-P601) • RHR-V-17B (Drywell Spray Inboard Isolation) (H13-P601)
		NOTE: If SW-P-1B is operating, then performing the following step may result in injecting service water into the RPV.
		<p>Step 4.1.4</p> <p>Open the following valves:</p> <ul style="list-style-type: none"> • RHR-V-115 (SW B to RHR B Cross Connect) (H13-P601) • RHR-V-116 (SW B to RHR B Cross Connect) (H13-P601)
		<p>Step 4.1.5</p> <p>Start SW-P-1B (if not operating).</p>
		<p>Step 4.1.6</p> <p>Perform one of the following sections. N/A the section not performed.</p> <ul style="list-style-type: none"> • Section 4.2 for RPV injection • Section 4.3 for Containment Sprays
		<p>Inform the CRS that PPM 5.5.2 is completed up to initiating containment sprays.</p>
Time	Position	Applicants Actions or Behavior
	CRS	Directs spraying the Wetwell.
	BOP	<p>Step 4.3.1</p> <p>Verify RHR-V-42B Closed.</p>
		<p>Step 4.3.2</p>

		If desire to spray the Wetwell, then open RHR-V-27B.
		Verifies flow through RHR-B (may not be visible due to only about 500 gpm flowrate from Wetwell sprays). Informs the CRS that Wetwell sprays have been initiated with SW-B.
	CRS	Sets key parameter of 285°F DW/T or 12 psig Wetwell pressure.
	BOP	Informs the CRS when Drywell Temperature reaches 285°F or when Wetwell pressure reaches 12 psig.
	CRS	Verifies RRC pumps are secured. (It may be at this point in the scenario that the crew attempts to stop RRC-P-1A and not on the loss of RCC cooling flow at 1.68 psig). Directs Drywell Cooling fans be secured.
	BOP/ATC	Goes to back panel and secures the five Drywell Cooling Fans (CRA-FC-2A, 1A, 2B, 1B, 1C – Fan controls that are not in brown area on panel – Note: CRA-FC-2A and 1A are already off due to loss of power to SM-7). Informs CRS that Drywell Cooling fans are secured.
	CRS	Directs Drywell Sprays be initiated with PPM 5.5.2.
Time	Position	Applicants Actions or Behavior
	BOP	Step 4.3.3 If desire to spray the Drywell, then open the following valves: <ul style="list-style-type: none"> • RHR-V-17B • RHR-V-16B
		Step 4.3.4 Close RHR-V-68B.
		Informs CRS Drywell sprays with SW-B have commenced. Reports Drywell pressure and downward trend (sprays are effective).
	CRS	Directs that Drywell sprays be terminated when Drywell pressure drops to LT 1.68 psig and that Wetwell Sprays be stopped if Wetwell pressure drops to LT 1.68 psig.

Comments:

TERMINATION CRITERIA: The scenario will be terminated when Drywell sprays have been initiated using PPM 5.5.2.

TURNOVER INFORMATION

Initial Conditions

Columbia is operating at 100% power. TSW-P-1A is tagged out for motor replacement.

TSW-P-1B is protected and selected as the emergency standby TSW pump.

Shift Directions

Perform OSP-MS-M701, the Bypass Valve Test monthly surveillance.

The pre job brief and the reactivity brief have been conducted.

Proper margin to Pre-Conditioned Status (PCS) exists per PPM 9.3.18.

The Dittmer Dispatcher has been notified of the upcoming Bypass Valve Testing.

The MT is in Sequential Valve mode.

SIMULATOR SETUP INSTRUCTIONS

Reset to IC #171.

Blue Tag TSW-P-1A C/S.

Blue tag the Emergency Standby Selector Switch in the B Pump position.

Flag the following per surveillance prerequisites:

P840-A2.5-2, 5-4

P840-A3.6-4, 6-5, 1-2, 2-1, 2-2, 4-1, 5-1, 5-2, 6-2

Protect TSW-P-1B.

Have a signed in copy of OSP-MS-M701 available for each crew.

Connect a mouse to DEH-COMP-3 port.

SCHEDULE FILE

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  <ITEM row = 1>
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    <ACTION>Insert malfunction BKR-RHR002 to FAI_AUT_CLOS</ACTION>
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Start and Trigger 6 on RHR-V-68B Green light on</DESCRIPTION>
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EVENT FILE

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<!-- This file contains a Thunder Simulations Event -->
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LOCA">X010196G &gt; 0</TRIGGER>
    <TRIGGER id="5" description="RHR-P-2A START KICKS TRG 5 FOR SM-7 O/C
LOCKOUT">X010299R &gt; 0</TRIGGER>
    <TRIGGER id="6" description="RHR-V-68B GREEN ON KICKS TRG 6 TO KEEP VALVE
CLOSED">X010321G &gt; 0</TRIGGER>

</EVENT>

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INSTRUCTIONAL COVER SHEET

PROGRAM TITLE OPERATIONS TRAINING

COURSE TITLE COLUMBIA GENERATING STATION SIMULATOR EXAMINATION

LESSON TITLE Pull Control Rods for a Control Rod Set; Rod Drifts Out; Isolate Rod; SGT Strip Heater Fails On; DEH-P-1B Fails; OBE – Trip of RFW-P-1A; RRC Pumps Fail to Run Back; RFW-P-1B Trips; Startup Fail to Close in on SM-1, SM-2 and SM-3 – Manually Re-Energized; RHR-A Suction Line Rupture ED on Low Suppression Pool Water Level

LENGTH OF LESSON 1.5 Hours

INSTRUCTIONAL MATERIALS INCLUDED

Lesson Plan PQD Code	_____	Rev. No.	_____
Simulator Guide PQD Code	LO001751	Rev. No.	0
JPM PQD Code	_____	Rev. No.	_____
Exam PQD Code	_____	Rev. No.	_____

DIVISION TITLE Nuclear Training

DEPARTMENT Operations Training

PREPARED BY Ron Hayden DATE 12/12/12

REVISED BY _____ DATE _____

VALIDATED BY _____ DATE _____

TECHNICAL REVIEW _____ DATE _____

INSTRUCTIONAL REVIEW _____ DATE _____

SAT Coordinator

APPROVED _____ DATE _____

Operations Training Manager

Facility: ColumbiaScenario No.: 2Op-Test No.: 2013

Examiners: _____ Operators: _____

Initial Conditions: Reactor power has been lowered to support a Control Rod Set. HPCS-P-1 is tagged out for shaft replacement. The #1 and #2 RFW Heaters have been removed from service per the Reactivity Control Plan. The reactivity brief and the task preview for the shift's scheduled activities have been completed. An SNE is stationed in the Control Room to monitor core conditions.

Turnover: Adjust control rods to the target pattern per the Control Rod Withdrawal Deviation Sheet and then return the plant to 100% power.

Event No.	Timeline	Event Type*	Event Description
1	T = 0	R (ATC) R (CRS)	Pull Control Rods per the Control Rod Withdrawal Deviation Sheet to achieve the target rod pattern.
2	T = 10	C (ATC) C (CRS)	While moving control rods, a previously adjusted rod (38-23) begins to drift out. Once inserted, releasing the continuous insert pushbutton causes the control rod to drift out again, requiring the control rod to be isolated (Tech Spec).
3	T = 20	I (BOP) I (CRS)	SGT-A high temperature due to strip heaters failing to de-energize (Tech Spec).
4	T = 45	C (BOP)	DEH-P-1B Fails. DEH-P-1A, the standby pump, does not auto start but can be manually started.
5	T = 50	I (ATC) I (CRS)	Operating Basis Earthquake. RFW-P-1A Trip. RRC pumps fail to automatically run back to 30Hz.
6	T = 50	M (All)	A trip of RFW-P-1B results in a loss of Feedwater and a reactor scram.
7	T = 51	C (All)	When the Main Turbine trips, Startup Power will not close in on SM-1, SM-2 or SM-3.
8	T = 70	M (All)	Aftershock results in a rupture in the RHR-A suction line. Emergency Depressurize the RPV before Suppression Pool level reaches 19 feet 2 inches (Critical Task).
9	T = 70	C (BOP) C (CRS)	The cross-connect valve between the RHR-A and RCIC pump rooms (FDR-V-607) fails to automatically close due to a failed level switch, and must be manually closed to maintain RCIC operation. Close FDR-V-607 prior to reaching the Maximum Safe Operating Value water level in the RCIC pump room (Critical Task). This was determined not to be a critical task during the exam.

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

The scenario starts with Columbia at approximately 75% power. HPCS-P-1 is OOS due to shaft replacement.

After shift turnover control rods will be withdrawn per the Control Rod Withdrawal Deviation Sheet to support a control rod set.

During the control rod set, one of the previously moved control rods will begin to drift out of the core. The ATC operator will recognize this and take actions to insert the control rod, which will insert. When the insert pushbutton is released, the control rod will again begin to drift out of the core. The ATC operator will again insert the control rod and the crew will take action to isolate that rod. Tech Spec will be referenced.

After Tech Specs have been referenced a SGT-B high temperature alarm will occur due to a strip heater failing to de-energize. The BOP operator will respond and start SGT-B per and then start SGT-A which will cause temperature to drop. Tech Specs will be referenced.

The next event is a failure of DEH-P-1B. The BOP operator will respond to annunciators and report the lowering of DEH header pressure and refer to ARPs. As pressure continues to lower he will note that DEH-P-1A should have auto started but did not and take manual actions to start DEH-P-1A.

The next event is an Operating Basis Earthquake which results in a trip of one of the two operating Reactor Feedwater Pumps, RFW-P-1A. During verification of automatic actions the ATC operator will find that the automatic runback of the Reactor Recirculation Pumps did not occur. Manual actions to lower RRC pumps to 30 Hz will be successful.

After the plant stabilizes, the Turbine Building watch will contact the Control Room and inform them that the reason RFW-P-1A tripped was a rupture of the control oil system and that there is a leak in the control oil system on RFW-P-1B. Ten seconds later RFW-P-1B will trip. The crew should attempt to insert a manual scram prior to the automatic scram at +13 inches.

When the Main Turbine trips and the electrical plant transfers to the Startup Transformer, the startup breakers associated with SM-1, SM-2 and SM-3 will not auto close. This results in a loss of all operating Condensate Pumps, closure of the MSIVs, a loss of CRD and a trip of the Control Air System's Air Compressors. The crew will take action to establish RPV level control with the RCIC system, and restart CRD pumps (HPCS-P-1 is OOS at the beginning of the scenario). Pressure control will be on SRVs at 800 – 1000 psig.

An aftershock will result in a rupture of the RHR-A suction line from the suppression pool causing flooding in the A-RHR room. The crew will take action per EOP PPM 5.3.1 (Secondary Containment Control). During verification of automatic actions the crew will recognize that the cross connect valve between RHR-A room and the RCIC pump room, FDR-V-607, failed to automatically close (due to a failed R1 sump level switch). Prior to reaching Maximum Safe Operating Value in the RCIC pump room, the crew will manually close FDR-V-607 with the control switch which is located on back panel H13-P632.

Makeup to the Suppression Pool cannot be performed due to HPCS being OOS.

The crew should initiate an Emergency Depressurization per PPM 5.1.3, RPV Depressurization, before Suppression Pool water level drops to 19 feet 2 inches.

The scenario will be terminated when an Emergency Depressurization has been performed and RPV level is being returned to +13" to +54" level band.

Event No. 1

Description: Withdraws control rods 38-23, 22-23 and 38-39 per the control rod deviation sheet from position 18 to position 24.

This event is initiated by the turnover information.

Time	Position	Applicants Actions or Behavior
T = 0	CRS	Directs control rod withdrawal per the control rod deviation sheet.
	ATC	<p>Selects control rod 38-23 (then 22-23, then 38-39).</p> <p>Performs the following to withdraw each control rod one notch each time:</p> <ul style="list-style-type: none"> • Verifies control rod position and no rod blocks exist • Depresses the Withdraw pushbutton • Observes CRD Drive Header and Cooling Header Flow • Observes Insert then the Withdraw and then the Settle lights illuminate • Verifies control rod position when settle function complete
COMMENTS:		

Event No. 2

Description: Control Rod 38-23 Drifts Out of the Core.

This event is initiated by activating **TRIGGER 1** when Control Rod 22-39 (the last control rod to be withdrawn per the Reactivity Plan) is **selected** to be withdrawn (Note: Drift is on 38-23 NOT 22-39).

Time	Position	Applicants Actions or Behavior
T = 10	ATC	Acknowledges the Rod Drift annunciator. Scans the full core display and observes the red drift light is lit for control rod 38-23 or observes the Rod Worth Minimizer Operator Console display and observes the 'd' associated with rod 38-23.
		Per ABN-ROD immediate actions - selects Control Rod 38-23. Observes the rod position. Notes that the rod is drifting out of the core.
		Per ABN-ROD immediate actions: Depresses the CONTINUOUS INSERT pushbutton. May report that the control rod is not inserting at a normal rate/speed. Drives Control Rod 38-23 full in. Releases the Continuous Insert pushbutton.
		Observes that Control Rod 38-23 continues to drift out of the core and informs the CRS. Per ABN-ROD Immediate Actions: Depresses and Holds the CONTINUOUS INSERT pushbutton.
	CRS	Per ABN-ROD immediate actions: Directs Control Rod 38-23 be isolated per step 4.1.2 of ABN-ROD.
Time	Position	Applicants Actions or Behavior
	BOP	Directs OPS2 to isolate control rod 38-23 by closing CRD-V-103 and CRD-V-105 associated with control rod 38-23.
BOOTH OPERATOR: Wait two minutes and then REMOVE MAL-RMC-004 for rod 38-23.		
ROLEPLAY: After malfunction is removed inform the control room that the rod has been isolated.		
	CRS	Directs the ATC operator release the CONTINUOUS INSERT pushbutton for 38-23.
	ATC	Releases the CONTINUOUS INSERT pushbutton and observes control rod remains fully inserted

		and informs the CRS.
	CRS	Refers to Tech Spec 3.1.3 Control Rod operability and notes condition C applies (Fully insert inoperable control rod within 3 hours AND Disarm the associated CRD within 4 hours). Conducts Brief.
COMMENT:		

Event No. 3

Description: SGT-B Strip Heater Fails Resulting in a High Temperature Condition.

This event is initiated by activating **TRIGGER 2** after Tech Specs for the Control Rod has been referenced. Ensure Trigger 3 initial value is 275°F.

Time	Position	Applicants Actions or Behavior
T = 20	BOP	Acknowledge the SGT Div B Board K2 Trouble alarm on Board S. Investigates back panel.
		Acknowledges the Charcoal Filter B-1 Outlet Temperature High alarm and refers to ARP.
		Observes SGT-TI-6B and notes reading (~265°F). Refers CRS to ABN-SGT-TEMP/RAD.
	CRS/ BOP	May send OPS2 to SGT-B to investigate locally.
ROLEPLAY: If sent, wait two minutes and report that SGT-B train smells hot and the unit is hot to the touch. The local temperature indications are higher than normal at 200°F and 230°F. There is no smoke and no indications of a fire.		
	CRS	Per ABN-SGT-TEMP/RAD directs SGT-A be started per SOP-SGT-START.
	CRS/ BOP	Directs SGT-DISC-8B2BL (SGT-ESH-1B) and SGT-DISC-8B2BR (SGT-ESH-2B) disconnects be opened per ARP.
BOOTH OPERATOR: When SGT-FN-1B12 is started per ABN, Conditional Trigger 3 will automatically initiate and lower SGT Temperature to 100°F on a 15 minute ramp.		
ROLEPLAY: When Conditional Trigger 3 initiates, report SGT-DISC-8B2BL and 8B2BR have been opened.		

Time	Position	Applicants Actions or Behavior
	BOP	<p>Starts SGT-A per SOP-SGT-START section 5.2.2:</p> <p>If manually initiating SGT Train A with the lead fan at the subsystem level, then perform the following (H13-P827, Bd K1):</p> <ol style="list-style-type: none"> Verify SGT-V-2A is OPEN (Inlet from Reactor Building). Momentarily turn SGT-FN-1A1 fan control switch from AUTO to PTL SYS. START. Verify the following: <ul style="list-style-type: none"> Main Heaters ENERGIZE as indicated by Main Heater ON light and A1 amp meter. SGT-V-5A1 OPENS (Exhaust to Stack). SGT-FN-1A1 STARTS (within 10 seconds). If required to operate in manual flow control, then perform the following: (MANUAL CONTROL SHOULD NOT BE REQUIRED).
	CRS	Directs subsequent actions of ABN-SGT-TEMP/RAD be performed to start SGT-B.
	BOP	<p>Start and recirculate the SGT train that has the charcoal high temperature or high radiation as follows:</p> <p>Step 4.2.1</p> <p>Verify SGT-V-1A (1B) is CLOSED (Inlet From Containment).</p> <p>Step 4.2.2</p> <p>Verify SGT-V-5A1 (5B2) and SGT-V-5A2(5B1) are CLOSED (Exhaust to Stack).</p> <p>Step 4.2.3</p> <p>Verify SGT-V-2A (2B) is OPEN (Inlet from Reactor Building).</p> <p>Step 4.2.4</p> <p>Verify SGT-V-3A2 (3B1) is OPEN (Fan Inlet).</p> <p>Step 4.2.5</p> <p>If possible, then station an HP technician near SGT to monitor for airborne contamination/smoke.</p> <p>Step 4.2.6</p> <p>Open SGT-V-4A1 (4B2) (Exhaust to Reactor Building).</p>

Time	Position	Applicants Actions or Behavior
		<p>Step 4.2.7</p> <p>Place SGT-EHC-1A1 (1B2) control switch to ON (Main Heater).</p> <p>Step 4.2.8</p> <p>Verify SGT-FN-1A1 (1B2) starts within 10 seconds after the Main Heaters energize.</p> <p>Step 4.2.9</p> <p>If the SGT system is required to be operable, then declare the SGT train inoperable in the Plant Logging System.</p>
		<p>Step 4.2.10</p> <p>Place SGT-DPIC-1A-1 (1B-2) in MANUAL, and adjust the flow rate to approximately 4000 CFM as indicated by SGT-FR-2A1 (2B2).</p> <p>Step 4.2.11</p> <p>When the charcoal temperature/radiation has returned to normal, then place SGT in standby per SOP-SGT-STBY.</p>
		<p>Reports SGT-B started per ABN-SGT-TEMP/RAD and temperature decreasing.</p>
	CRS	<p>Refers to Tech Specs 3.6.4.3 (SGT is inoperable when manual control of SGT-B is taken. TS 3.6.4.3 Condition A is applicable – Restore SGT subsystem to operable status within 7 days.</p>
<p>COMMENTS:</p>		

Event No. 4

Description: DEH-P-1B fails causing a DEH pressure drop with a failure of DEH-P-1A to auto start.

This event is triggered by activating **TRIGGER 9** after SGT-B is started and Technical Specifications have been referenced.

Time	Position	Applicants Actions or Behavior
T = 35	BOP	Announce the DEH Pump Disch Press Low and DEH Warning annunciators. Observes DEH-PI-21 and informs CRS of current pressure reading and trend (down slow).
		Refers to Alarm Response Procedures and notes DEH-P-1A should have started but is still not running. May start DEH-P-1A without direction from CRS. May report to CRS that the standby pump did not auto start as it should have done and wait for direction.
	CRS	Directs start of DEH-P-1A (if not already started). Updates crew and enters ABN-DEH-LEAK. Directs OPS 3 to check system for indications of failure.

ROLEPLAY: A minute after being sent, report back as OPS 3 that DEH-P-1B is making significantly more noise than earlier in the shift and the motor is very hot to the touch. If asked, report that DEH-P-1A operation looks good. If asked, DEH reservoir level is normal (at 25 inches).

COMMENTS:

Event No. 5

Description: Operating Basis Earthquake. Trip of RFW-P-1A (on a 20 second Time Delay). Failure of RRC Pumps to Automatically runback to 30 Hz.

This event is initiated by activating **TRIGGER 4** and is initiated after Tech Specs for SGT has been referenced.

Time	Position	Applicants Actions or Behavior
BOOTH OPERATOR: Start EQ at lowest volume and work to highest volume in 15 seconds then turn off the earthquake machine. Activate TRIGGER 4 five seconds into earthquake simulation.		
T = 40	BOP	Responds to Board S and announces Operating Basis Earthquake Exceeded alarm. Refers to ARP and directs the CRS to ABN-EARTHQUAKE.
	ATC	Recognizes and announces the trip of RFW-P-1A. Observes RPV level dropping. Observes RFW-P-1B speed ramping up and reports B Feed Pump responding. Reports RPV level as it drops to about +20 inches and then begins to return to +36".
	CRS	Directs runback of the RRC pumps be verified.
	ATC	Observes P602 indications and recognizes: <ul style="list-style-type: none"> • both RRC pumps remain at GT 30 Hz • both RRC Pump controllers remain in Automatic • the FW Pump trip amber lights are not lit on either controller • the Feedwater pump Trip Limit annunciator is not in alarm Reports observations to the CRS.
	CRS	Directs both RRC pump speeds be lowered to 30 Hz.
Time	Position	Applicants Actions or Behavior
	ATC	May leave master controller in Auto and depress the lower pushbutton to reduce RRC-P-1A and RRC-P-1B's speed to 30 Hz. May take manual control of the both RRC pump controllers and depresses the lower pushbutton to reduce RRC-P-1A and RRC-P-1B's speed to 30 Hz or may depress the master controller to lower speeds to 30 Hz. Reports both RRC pumps at 30 Hz. Reports Power/Pressure/Level at end of power reduction.
	BOP	After referring CRS to ABN-EARTHQUAKE, checks back panel and reports all Amber and all

		Red lights illuminated.
	CRS	Updates crew on ABN-EARTHQUAKE entry. Per subsequent actions – initiates a controlled Reactor Shutdown per PPM 3.2.1.
		Directs ABN-EARTHQUAKE announcement be made.
	BOP	Makes ABN-EARTHQUAKE announcement.
ROLEPLAY: Booth Operator to Role Play SAS officer.		
	BOP	Goes to Simulator Booth and directs SAS to repeat above announcement on the Alternate Security/Area Wide and Security radio channels. Directs OPS2 inspection of the Spent Fuel Pool for damage.
COMMENT:		

Event No. 6

Description: Trip of the B Reactor Feedwater Pump.

This event is initiated by activating **TRIGGER 5** and is initiated after the below role play which should be made after actions to reduce RRC flow due to the failure of the pumps to runback and actions for the OBE have taken place.

Time	Position	Applicants Actions or Behavior
T = 50		ROLEPLAY: Call X2171 and as OPS3 report oil on floor in front of the A Reactor Feed Pump cabinet which is probably coming from the control oil system and you are investigating further. Call back one minute later and report that you just opened the cabinet door of the B Reactor Feed Pump cabinet and it appears there is a leak in the control oil piping on the B Reactor Feed Pump also which is getting larger even as we are talking. After the Roleplay and after CRO updates the CRS <u>THEN</u> activate <u>TRIGGER 5</u>.
	ATC	Acknowledges annunciator and reports trip of the B Reactor Feedwater pump and may also announce that he is initiating a manual reactor scram.
	CRS	Directs a manual scram if not already being performed.
	ATC	Turns Mode switch to SHUTDOWN and announces: Listen up for the scram report: Mode switch is in Shutdown, APRMs are downscale, RPV Pressure is xxx and trend, RPV Level is xxx and down fast. Reports EOP entry due to low RPV water level.
	CRS	Repeats back the scram report. Updates crew and enters EOP 5.1.1 (RPV Control) on low RPV water level.
	ATC	Reports RPV level as it drops below -50". Reports all rods in to CRS. Verifies RCIC initiation and injection to the RPV at 600 gpm (operator may increase injection flow to 700 gpm).
Time	Position	Applicants Actions or Behavior
	CRS	Directs RPV level band of -50" to +54" with RCIC and CRD. Directs +13" and -50" actuations be verified.
	ATC/BOP	Verifies Containment isolation valves closed by GDS indication (no yellow bordered groups). Verifies RCIC initiated. Verifies HPCS DG start.
	ATC	Updates crew on MSIV closure (Due to loss of RPS power when buses fail to auto transfer to startup power) and that pressure control is on SRVs at 800 to 1000 psig.

	CRS	Directs pressure control with SRVs at 800 – 1000 psig pressure band.
COMMENTS:		

Event No. 7

Description: Failure of the Startup Transformer to Auto Close in on SM-1, SM-2 and SM-3 causing a loss of the Condensate system.

This event is active from the beginning of the scenario and is realized when the Main Turbine trips.

Time	Position	Applicants Actions or Behavior
The Critical Task for this event is to re-power SL-21 which supplies power to Control Room back panel H13-P632 which will allow the closure of FDR-V-607 (refer to EVENT No 9).		
T=50	BOP	<p>Responds to the electrical panels and observes that the Startup breakers have not closed in on SM-1, SM-2 and SM-3 but did close in on SH-5 and SH-6.</p> <p>Observes and reports that Backup Transformer has closed in and is powering SM-7 and SM-8.</p> <p>Observes DG-1 and DG-2 have auto started.</p>
	BOP	<p>May report electrical board status to CRS prior to taking the following actions to re-power SM-1, SM-2 and SM-3:</p> <p>Places the CB-S1 SYNC Selector switch to MAN position.</p> <p>Places the CB-S1 Control Switch to CLOSE and observes red light on and green light off.</p> <p>Places the CB-S1 SYNC Selector switch to OFF position.</p> <p>Places the CB-S2 SYNC Selector switch to MAN position.</p> <p>Places the CB-S2 Control Switch to CLOSE and observes red light on and green light off.</p> <p>Places the CB-S2 SYNC Selector switch to OFF position.</p> <p>Places the CB-S3 SYNC Selector switch to MAN position</p> <p>Places the CB-S3 Control Switch to CLOSE and observes red light on and green light off.</p> <p>Places the CB-S3 SYNC Selector switch to OFF position.</p>

Time	Position	Applicants Actions or Behavior
	BOP	<p>Re-powers SL-11, SL-21 and SL-31 using quick card:</p> <p>2.1 Energizing SL-11 from SM-1 (Dead Bus)</p> <p>2.1.1 Verify SM-1 is energized.</p> <p>2.1.2 Verify CB-11/1 green light illuminated and green flag displayed.</p> <p>2.1.3 If CB-1/11 is OPEN, then perform the following:</p> <p>a. Verify CB-1/11 white LOCKOUT CIRCUIT AVAIL light illuminated.</p> <p>b. Verify CB-1/11 green light illuminated and green flag displayed.</p> <p>c. Close CB-1/11.</p> <p>2.1.4 Close CB-11/1.</p> <p>2.1.5 Verify SL-11 voltage is approximately 480 (432-528) volts.</p> <p>2.2 Energizing SL-21 from SM-2 (Dead Bus)</p> <p>2.2.1 Verify SM-2 is energized.</p> <p>2.2.2 Verify CB-21/2 green light illuminated and green flag displayed.</p> <p>2.2.3 If CB-2/21 is OPEN, then perform the following:</p> <p>a. Verify CB-2/21 white LOCKOUT CIRCUIT AVAIL light illuminated.</p> <p>b. Verify CB-2/21 green light illuminated and green flag displayed.</p> <p>c. Close CB-2/21.</p> <p>2.2.4 Close CB-21/2.</p> <p>2.2.5 Verify SL-21 voltage is approximately 480 (432-528) volts.</p> <p>2.3 Energizing SL-31 from SM-3 (Dead Bus)</p> <p>2.3.1 Verify SM-3 is energized.</p> <p>2.3.2 Verify CB-31/3 green light illuminated and green flag displayed.</p> <p>2.3.3 If CB-3/31 is OPEN, then perform the following:</p> <p>a. Verify CB-3/31 white LOCKOUT CIRCUIT AVAIL light illuminated.</p> <p>b. Verify CB-3/31 green light illuminated and green flag displayed.</p> <p>c. Close CB-3/31.</p> <p>2.3.4 Close CB-31/3.</p> <p>2.3.5 Verify SL-31 voltage is approximately 480 (432-528) volts.</p>

Time	Position	Applicants Actions or Behavior
	CRS	Directs both CRD pumps be started for RPV injection.
	ATC/BOP	Places CRD controller to manual and takes control switches for CRD-P-1A and CRD-P-1B to START. May direct OPS2 perform ABN-CRD-MAXFLOW.
BOOTH OPERATOR: If directed to perform ABN-CRD-MAXFLOW, wait three minutes and then <u>ACTIVATE TRIGGER 26</u> and report completion when valves have completed repositioning.		
	BOP	Reports High Drywell Pressure EOP entry into PPM 5.2.1 (Primary Containment Control) at 1.68 psig with no indication of a leak in the drywell (due to heat up).
	CRS	Directs 1.68 psig actuations be verified.
	BOP	Verifies 1.68 psig actuations: RHR-P-2A, RHR-P-2B, RHR-P-2C, LPCS-P-1 running on min flow. DG-1 and DG-2 are running. SW-P-1A and SW-P-1B are running. GDS indicates all containment isolation valves closed except for RCIC-V-8 and RCIC-V-63 (no yellow bordered NSSSS groups).
	ATC	Reports RPV level slowly recovering.
	BOP	Reports Main Steam Tunnel high temp alarm and eventual EOP entry into PPM 5.3.1 (Secondary Containment Control), due to Main Steam Tunnel Temp Hi Hi. Reports EOP 5.2.1 (Primary Containment Control), entry on Drywell Temperature and Wetwell level as they occur.
	ATC/BOP	Recognizes CAS air compressors do not restart on loss of power. Directs OPS3 to reset CAS air compressors.

Time	Position	Applicants Actions or Behavior
ROLEPLAY: A minute after the request to reset CAS, <u>ACTIVATE TRIGGER 23</u> and when compressors have restarted, report completion to the Control Room.		
	CRS	May direct SLC initiation and injection into RPV as an Alternate Injection System (Table 3 of EOP 5.1.1 RPV Control).
	ATC	<p>If directed, injects with both SLC Systems using SOP-SLC-INJECTION-QC or PPM 5.5.25:</p> <p>2.1 Remove the SLC keylock switch blanks, and insert both keys into the SLC System control switches.</p> <p>2.2 Initiate SLC injection by performing the following (H13-P603):</p> <ul style="list-style-type: none"> • PLACE SLC System A control switch to the OPER position. • PLACE SLC System B control switch to the OPER position. <p>2.3 Report the following to the CRS:</p> <ul style="list-style-type: none"> • SLC flow rate (-82 gpm) • Initial tank level (4800 gal) • RWCU-V-4 status (should be closed)
COMMENTS:		

Event No. 8

Description: Earthquake tremor causes a rupture in the RHR-A suction piping resulting in flooding of the RHR-A pump room and Suppression Pool Water Level to drop. Emergency Depressurize the RPV when it is determined that Suppression Pool water level cannot be maintained GT 19' 2".

The event is initiated by activating **TRIGGER 6** and is initiated after plant has been stabilized, the electrical buses have been re-energized and RPV level is GT -50".

Time	Position	Applicants Actions or Behavior
The Critical Task for this event is to initiate an Emergency Depressurization prior to Suppression Pool Water Level reaching 19'2".		
BOOTH OPERATOR: Start EQ and work back to highest volume in 10 seconds then turn off the earthquake machine. Activate TRIGGER 6 five seconds into earthquake simulation.		
T=60	BOP	Acknowledges the Suppression Pool Level Hi/Low alarm (P601-A11 2-3 and P601-A12 2-3). Reports Suppression Pool level dropping giving actual level and trend. Reports EOP entry into PPM 5.2.1 (Primary Containment Control) on Low Suppression Pool level when level drops to LT -2".
	CRS	Directs field investigation by OPS2. Updates crew on PPM 5.2.1 (Primary Containment Control) EOP entry.
ROLE-PLAY – Two minutes after being directed to investigate, report that there is a huge rupture in the piping between the Suppression Pool and the RHR Pumps suction valve, RHR-V-4A. Room water level is rising rapidly and you are leaving the room. If asked, the break cannot be isolated.		
NOTE: It takes about five minutes after trigger actuation to get the RHR-A Pump Room High Level EOP entry alarm and BISI. The R1 sump high level alarm does not annunciate due to failed level switch which also causes FDR-V-607 not to auto close.		
	BOP	Acknowledges RHR A PUMP ROOM WATER LEVEL HIGH annunciator and BISI and reports EOP entry into PPM 5.3.1 (Secondary Containment Control). Refers to ARP: May contact the RWCR Operator to verify sump pumps FDR-P-1A and FDR-P-1B operating. Refers CRS to ABN-FLOODING.

Time	Position	Applicants Actions or Behavior
		Verifies FDR-V-607 closed on P632 and observes valve is actually opened. Takes FDR-V-607 control switch to close and observes green light on and red light off. Informs CRS.
	CRS	Updates crew on PPM 5.3.1 (Secondary Containment Control) EOP entry. Refers ABN-FLOODING and directs actions: <ul style="list-style-type: none"> • Directs evacuation of affected Area (RHR-A Pump Room). • Directs RHR-P-2A be stopped (Note: Pump will eventually trip on overload if not secured). • Directs the control power fuses be removed for RHR-P-2A. • Locate and isolate the source of the flooding per Section 7.2. • Monitor adjacent ECCS Pump rooms for flooding.
ROLE-PLAY – Two minutes after request to pull RHR-P-2A fuses, <u>ACTIVATE TRIGGER 7</u> and report control power fuses for RHR-P-2A have been pulled.		
	BOP	Makes evacuation announcement as directed per ABN-FLOODING: <ul style="list-style-type: none"> • Sounds Alerting tone for 5-10 seconds • Alert station personnel to flooding in the RHR-A Pump Room • Evacuates all non-emergency personnel from the affected area • Refers to PPM 13.5.1 for localized evacuation.
COMMENTS:		

Event No. 9

Description: FDR-V-607 (the RHR-A / RCIC Room cross-connect valve) Fails to Auto Close.

This event is initiated by the CRS when it has been determined that Suppression Pool Water Level cannot be maintained GT +19'2".

The Critical Task is to close FDR-V-607 prior to exceeding Max Safe Operating Level in the RCIC Pump Room.

Time	Position	Applicants Actions or Behavior
T = 75	CRS	Recognizes HPCS-P-1 is not available and Suppression Pool Water Level cannot be maintained GT +19'2".
	CRS	Updates crew on requirement to initiate an Emergency Depressurization. Updates crew on PPM 5.1.3 (Emergency RPV Depressurization) EOP entry. Exits the Pressure leg of PPM 5.1.1 (RPV Control), and enters PPM 5.1.3 (Emergency RPV Depressurization).
		Determines if RPV injection with LPCS and RHR is required based on RPV Level and trend (It is anticipated that one ECCS pump will be used to return RPV water level back to +13" to +54" level band with RCIC eventually isolating on low RPV pressure).
		Determines Wetwell level is above 17'. Directs 7 SRVs (ADS preferred) be opened.
	BOP	Opens SRVs as directed starting with the first ADS SRV and working to the last.
		As each SRV is opened, observes Primary Containment pressure response.
Comments: 		

TURNOVER INFORMATION

Initial Conditions

HPCS-P-1 is undergoing schedule maintenance and the pump shaft has been removed.

The following have been protected per PPM 1.3.83 – RCIC-P-1, LPCS-P-1, DG-1, DG-2, ADS-A, ADS-B' SW-A, SW-B, TR-S, TR-B.

Reactor power has been lowered to support a Control Rod Set.

The #1 and #2 RFW Heaters have been removed from service per the Reactivity Control Plan.

The reactivity brief and the task preview for the shift's scheduled activities have been completed.

An SNE is stationed in the Control Room to monitor core conditions.

Shift Directions

Adjust control rods to the target pattern per the control rod deviation sheet and then return the plant to 100% power.

SIMULATOR SETUP INSTRUCTIONS

Reset to Saved IC#172 (73% Power, FW Heaters #1 and #2's Removed From Service).

Hang Blue Tags on HPCS-P-1 and HPCS-V-4.

Depress the Manual Out Of Service BISI for the HPCS System.

Flag locked in annunciators.

Make it a Div 3 Work Week.

Protect the following per PPM 1.3.83 – RCIC-P-1, LPCS-P-1, DG-1, DG-2, ADS-A, ADS-B, SW-A, SW-B, TR-S and TR-B.

Set up the Earthquake Machine on lowest volume.

Ensure deviation sheet ready for turnover.

SCHEDULE FILE

```
<!-- This file contains a Thunder Simulations Schedule -->
<SCHEDULE>
  <ITEM row = 1>
    <TIME>0</TIME>
    <ACTION>Insert remote LOA-EPS140 to RACKED-OUT</ACTION>
    <DESCRIPTION>HPCS-V-4 Breaker Racked out</DESCRIPTION>
  </ITEM>
  <ITEM row = 2>
    <TIME>0</TIME>
    <ACTION>Insert remote LOA-EPS374 to RACKED-OUT</ACTION>
    <DESCRIPTION>HPCS-P-1 Breaker Racked out</DESCRIPTION>
  </ITEM>
  <ITEM row = 3>
    <TIME>0</TIME>
    <ACTION>Insert malfunction MAL-RFC019</ACTION>
    <DESCRIPTION>FAILURE OF ALL FWC INPUTS To RRC ASD</DESCRIPTION>
  </ITEM>
  <ITEM row = 4>
    <TIME>0</TIME>
    <ACTION>Insert malfunction MAL-PCN002R to 850000</ACTION>
    <DESCRIPTION>RUPT MS-RV-4D TAILPIP ABOVE SUPP POOL LVL</DESCRIPTION>
  </ITEM>
  <ITEM row = 5>
    <TIME>0</TIME>
    <ACTION>Insert malfunction BST-SCN020F to FAIL_TO_TRIP</ACTION>
    <DESCRIPTION>LEVEL SWITCH for FDR-V-607</DESCRIPTION>
  </ITEM>
  <ITEM row = 6>
    <TIME>0</TIME>
    <ACTION>Insert malfunction BKR-EPS049 to FAI_AUT_CLOS</ACTION>
    <DESCRIPTION>SM-1 STARTUP</DESCRIPTION>
  </ITEM>
  <ITEM row = 7>
    <TIME>0</TIME>
    <ACTION>Insert malfunction BKR-EPS050 to FAI_AUT_CLOS</ACTION>
```

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      <DESCRIPTION>SM-2 STARTUP</DESCRIPTION>
    </ITEM>
    <ITEM row = 8>
      <TIME>0</TIME>
      <ACTION>Insert malfunction BKR-EPS051 to FAI_AUT_CLOS</ACTION>
      <DESCRIPTION>SM-3 STARTUP</DESCRIPTION>
    </ITEM>
    <ITEM row = 9>
      <TIME>0</TIME>
      <ACTION> Insert malfunction MAL-DEH015A </ACTION>
      <DESCRIPTION>DEH-P-1A FAIL TO AUTO START</DESCRIPTION>
    </ITEM>
    <ITEM row = 10>
      <TIME>0</TIME>
      <EVENT>1</EVENT>
      <ACTION>Insert malfunction MAL-RMC004-3823 to OUT on event
1</ACTION>
      <DESCRIPTION>ROD 38-23 DRIFTS OUT</DESCRIPTION>
    </ITEM>
    <ITEM row = 11>
      <TIME>0</TIME>
      <EVENT>2</EVENT>
      <ACTION>Insert malfunction XMT-SCN111A to 275 on event 2</ACTION>
      <DESCRIPTION>SGT-TE-6B FOR SGT-1B1 OUTLET TEMP</DESCRIPTION>
    </ITEM>
    <ITEM row = 12>
      <TIME>0</TIME>
      <EVENT>2</EVENT>
      <ACTION>Insert malfunction XMT-RMS034A to 2 on event 2</ACTION>
      <DESCRIPTION>ARM-RE-8 SGT FILTER AREA</DESCRIPTION>
    </ITEM>
    <ITEM row = 13>
      <TIME>0</TIME>
      <EVENT>3</EVENT>
      <ACTION>Insert malfunction XMT-SCN111A from 275 to 100 in 900 on
event 3</ACTION>

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      <DESCRIPTION>SGT-TE-6B FIXED OUTPUT SGT-CF-1B1 OUTLET
TEMP</DESCRIPTION>
    </ITEM>
    <ITEM row = 14>
      <TIME>0</TIME>
      <EVENT>4</EVENT>
      <ACTION>Insert malfunction MAL-RWB001 to 0.222 on event 4 delete in
10</ACTION>
      <DESCRIPTION>OBE EARTHQUAKE</DESCRIPTION>
    </ITEM>
    <ITEM row = 15>
      <TIME>0</TIME>
      <EVENT>4</EVENT>
      <ACTION>Insert malfunction XMT-FPT020A after 10 to 10 in 20 on event
4</ACTION>
      <DESCRIPTION>RFT-1A CONTROL OIL PRESS METER</DESCRIPTION>
    </ITEM>
    <ITEM row = 16>
      <TIME>0</TIME>
      <EVENT>4</EVENT>
      <ACTION>Insert malfunction RLY-FPT007F after 20 to TRIP on event
4</ACTION>
      <DESCRIPTION>RFT-1A CONTROL OIL PRESSURE LOW</DESCRIPTION>
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EVENT FILE

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<!-- This file contains a Thunder Simulations Event -->
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INSTRUCTIONAL COVER SHEET

PROGRAM TITLE OPERATIONS TRAINING

COURSE TITLE COLUMBIA GENERATING STATION SIMULATOR EXAMINATION

LESSON TITLE Raise Power with Flow to 100%; Perform OSP-HPCS/IST-Q701; HPCS Min Flow Fuses Clear; CRD-P-1B Trips; Grid Disturbance, ASD Channel 1B1 Trips; Grid Disturbance, Lockout on SH-5 and SH-6, Manual Scram; Hydraulic ATWS; Inject SLC, RWCU-V-4 Fails to Auto Close; Lower Level, S/R/S Inserts Control Rods

LENGTH OF LESSON 1.5 Hours

INSTRUCTIONAL MATERIALS INCLUDED

Lesson Plan PQD Code	_____	Rev. No.	_____
Simulator Guide PQD Code	LO001752	Rev. No.	0
JPM PQD Code	_____	Rev. No.	_____
Exam PQD Code	_____	Rev. No.	_____

DIVISION TITLE Nuclear Training

DEPARTMENT Operations Training

PREPARED BY Ron Hayden DATE 12/12/12

REVISED BY _____ DATE _____

VALIDATED BY _____ DATE _____

TECHNICAL REVIEW _____ DATE _____

INSTRUCTIONAL REVIEW _____ DATE _____

APPROVED SAT Coordinator _____ DATE _____

Operations Training Manager

Facility: Columbia Scenario No.: 3 Op-Test No.: 2013

Examiners: _____ Operators: _____

Initial Conditions: The plant is operating at approximately 95% power. RCC-P-1B is tagged out due to excessive vibrations and imminent failure. OSP-HPCS/IST-Q701, HPCS System Operability Test, is in-progress.

Turnover: Return Columbia to 100% power. Continue with the performance of OSP-HPCS/IST-Q701, starting at Step 7.3. The two year VPI and channel calibration are NOT due. The pre-job brief has been completed, and Equipment Operators are on station to support completion of the surveillance. HP has been informed of surveillance performance. The power increase and surveillance are to be performed concurrently.

Event No.	Timeline	Event Type*	Event Description
1	T = 0	R (ATC) R (CRS)	Increase Reactor Power from 95% to 100% with RRC Flow.
2	T = 0	N (BOP) N (CRS)	Perform the HPCS System Operability Test, OSP-HPCS/IST-Q701.
3	T = 15	I (BOP) I (CRS)	The HPCS min flow, HPCS-V-12, fuses clear while closing. (Tech Spec).
4	T = 25	C (ATC) C (CRS)	CRD-P-1B trips on low suction pressure.
5	T = 45	C (CRS) R (ATC)	A grid disturbance causes a trip of ASD Channel 1B1. (Tech Spec) Power reduction by lowering RRC-P-1A speed to match loop flows.
6	T = 60	C (ATC) C (CRS)	Another grid disturbance results in a lockout of SH-5 and SH-6, and a complete loss of RRC flow requiring a manual reactor scram.
7	T = 60	M (All)	Hydraulic ATWS. Inhibit ADS prior to automatic initiation to prevent an uncontrolled depressurization and significant power excursion (Critical Task). Terminate and prevent injection into the RPV with the exception of SLC, RCIC, and CRD, to establish an LL (Critical Task). Perform PPM 5.5.11 to insert control rods. Rods insert. Return RPV level to normal band (Critical Task).
8	T = 65	C (ATC)	Inject Standby Liquid Control (boron) prior to exceeding 110°F Suppression Pool temperature (Critical Task). RWCU-V-4 fails to automatically close when SLC is initiated.

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

Columbia is at 95% power due to economic dispatch. BPA has just requested Columbia return to 100%. Additionally, OSP-HPCS/IST-Q701 is in progress and will be continued after shift turnover.

The ATC will raise reactor power with RRC flow to achieve 100% power.

The BOP operator will perform the HPCS surveillance. As full flow test conditions are established, the Min Flow valve for HPCS-P-1, HPCS-V-12's fuses will clear. The crew should back out of the surveillance and secure HPCS-P-1. Tech Specs will be referenced and HPCS will be declared inoperable.

The next event is a trip of CRD-P-1B on low suction pressure. ABN-CRD will be entered and both suction filters will be placed into service. CRD-P-1A will be started.

The next event is a grid disturbance that results in multiple annunciators and ASD Channel 1B1 tripping causing RRC-P-1B to run back to 51 Hz. The crew will lower RRC-P-1A speed to match loop flows.

Another grid disturbance will result in a lockout on SH-5 and then SH-6 which results in a loss of both RRC pumps. Per immediate actions of ABN-RRC-LOSS a manual reactor scram will be inserted.

The crew will recognize a hydraulic ATWS condition exists. The crew will take manual control of HPCS and will inhibit ADS. RCIC-V-1 will be closed to prevent RCIC initiation at -50" (which would cause the Main Turbine to trip).

Standby Liquid Control will be initiated and when initiated, SLC flow will be only 18 gpm due to relief valves lifting.

PPM 5.5.6 will be performed to prevent the MSIVs from closing when RPV level is lowered.

PPM 5.5.1 will be performed to make all ECCS injection valves throttleable.

The crew will stop and prevent injection into the RPV and establish an Lowered Level of -65" with RPV level being maintained between -80" and -140".

PPM 5.5.11 will be performed to insert control rods.

Control rods will go in after RPV level has been lowered and is being controlled -80" to -140".

When all control rods are inserted the crew will stop SLC injection and return RPV level back to +13" to +54" level band.

The scenario will be terminated when RPV level has been returned to normal.

*Event No. 1***Description:** Raise power with Flow from 95% to 100%.

This event is initiated by the turnover information.

Time	Position	Applicants Actions or Behavior
T = 0	CRS	Directs ATC to raise power with flow to achieve 100% reactor power at a rate not to exceed 10MWE/min or 1Hz per minute.
	ATC	Notes Reactor Power and RRC pump flow and Hz indications. Verifies both RRC pumps individual controllers are in AUTO and depresses Master Controller Raise P/B to increase flow/power as directed.
		Inform the CRS when power is 100%.

COMMENTS:

Event No. 2

Description: Perform the HPCS System Operability Test, OSP-HPCS/IST-Q701.

This event is initiated by turnover information.

Time	Position	Applicants Actions or Behavior
T = 0		<p>Step 7.3.3</p> <p>If not already operating, then start HPCS-P-2 (Service Water Pump) (H13-P601).</p> <p><i>Takes HPCS-P-2 control switch to start and observes red light on, green light off.</i></p>
		<p>Step 7.3.4</p> <p>If not already open, then verify SW-V-29 auto opens. (Service Water Pump Discharge) (H13-P601).</p> <p><i>Observes SW-V-29 red light on green light off and rising discharge pressure on SW-PI-40.</i></p>
		<p>Step 7.3.5</p> <p>Verify HPCS-P-1 Motor upper and lower lubricant levels are normal. Record SAT in the Driver Lubrication Measured Value space on Attachment 9.2.</p> <p><i>Contacts OPS2 and directs step performance.</i></p>
ROLEPLAY: Wait 30 seconds and then report HPCS-P-1 motor upper and lower lubricant levels are normal.		
		<p>Step 7.3.6</p> <p>Verify H13-P601.A1-6.7, HPCS WATER LEG PUMP DISCH PRESS LOW is clear.</p>

Time	Position	Applicants Actions or Behavior
		<p>Step 7.3.7</p> <p>Verify HPCS System pressure GE 50 psig per HPCS-PIS-13 (H22-P024) (RB 471).</p> <p><i>Contacts OPS2 and requests gage reading.</i></p>
ROLEPLAY: HPCS-PIS-13 is reading 90 psig.		
		<p>Step 7.3.8</p> <p>If HPCS is required to be operable, then enter HPCS as inoperable, but available, in the Plant Logging System.</p> <p><i>Informs the CRS to perform this step.</i></p>
		<p>Step 7.3.9</p> <p>Open HPCS-V-10 (Inboard Test Valve).</p> <p><i>Takes control switch for HPCS-V-10 to open and observes valve position indication on HPCS-P01-606 on P601 vertical board.</i></p>
		<p>Step 7.3.10</p> <p>If non-intrusive testing is scheduled for HPCS-V-2 and/or HPCS-V-24, then notify Electricians that HPCS-V-2 and HPCS-V-24 are about to open.</p>
		<p>Step 7.3.11</p> <p>Start HPCS-P-1 (H13-P601).</p> <p><i>Makes plant announcement of the intent to start HPCS-P-1.</i></p> <p><i>Takes control switch for HPCS-P-1 to start and observes red light on, green light off and amps rising and discharge pressure rise.</i></p>

Time	Position	Applicants Actions or Behavior
		<p>Step 7.3.12</p> <p>Verify HPCS-V-12 (Minimum Flow Valve) auto opens.</p> <p><i>Observes HPCS-V-12 red light on and Green light off.</i></p>
<p>ROLEPLAY: A minute after HPCS-P-2 starts as OPS4 report start looks good. A minute after HPCS-P-1 starts, as OPS2, inform the Control Room that the pump start looks good.</p>		
		<p>Step 7.3.13</p> <p>Throttle open HPCS-V-11 (Outboard Test Valve) to adjust system flow at HPCS-FI-603 to 6560 gpm (GE 6500 gpm but LE 6690 gpm).</p> <p><i>Takes control switch for HPCS-V-11 to open and observes valve position indication on HPCS-P01-604 on P601 vertical board.</i></p> <p><i>Observes HPCS flow rising on HPCS-FI-603 as HPCS-V-11 is opened.</i></p>
		<p>Step 7.3.14</p> <p>Verify HPCS-V-12 (Minimum Flow Valve) auto closes above approximately 1300 gpm.</p> <p><i>Observes HPCS-V-12 start to close (green light comes on) as flow is raised GT 1300 gpm.</i></p> <p><u>SEE NEXT EVENT</u></p>
<p>COMMENT:</p>		

Event No. 3

Description: HPCS-V-12, HPCS Minimum Flow Valve fuses clear.

This event is initiated by **EVENT TRIGGER 1** which automatically activates when HPCS flow rises to 3000 gpm.

Time	Position	Applicants Actions or Behavior
T = 10	BOP	Observes both the green alight and the red light for HPCS-V-12 go out. Acknowledges the HPCS OUT OF SERVICE alarm and the MOV Network Pwr loss/OL BISI. Informs the CRS of indication and alarm/BISI.
	CRS	May direct HPCS-V-11 be closed and HPCS-P-1 be secured or may direct BOP operator to back out of the surveillance procedure (OK if HPCS is not secured).
	BOP	Performs actions to secure HPCS as directed by the CRS.
	CRS	Contacts Work Control / Production about HPCS-V-12.
		Refers to Tech Specs and notes LCO 3.5.1 Condition B applies (Verify RCIC operable by administrative means immediately; AND restore HPCS to operable status within 14 days). Tech Spec for 3.6.1.3 is applicable for HPCS-V-12 (Isolate the line within 4 hours). (Note - this is also reportable to NRC due to single train failure within 8 hours and PAM 3.3.3.1 is also applicable - 30 days).
	CRS / BOP	May direct control power fuses for HPCS-P-1 be pulled if pump has been secured.
ROLEPLAY: If directed, wait two minutes, <u>ACTIVATE TRIGGER 2</u>, and report completion.		
	CRS	Conducts Brief.
COMMENTS:		

Event No. 4

Description: CRD-P-1B Trips on Low Suction Pressure.

This event is initiated by activating **TRIGGER 3** and is initiated after Tech Specs for HPCS have been referenced and brief has been completed (or as directed).

Time	Position	Applicants Actions or Behavior
T = 25	ATC	Acknowledges CRD PUMP B SUCTION PRESS LOW alarm and refers to ARP. Acknowledges CRD PUMP ABNORMAL OPERATION alarm and refers to ARP.
		Observes CRD-P-1B not running and informs the CRS. Refers CRS to ABN-CRD.
		When Accumulator alarms annunciate, refers the CRS to Tech Spec 3.1.5.
	CRS	Updates crew on ABN-CRD entry. Refers to ABN-CRD and directs placing both CRD suction filters in service per ABN-CRD-MAXFLOW (due to the CRD PUMP B SUCTION PRESS LOW alarm that was in and cleared).
ROLEPLAY: Wait two minutes and then <u>ACTIVATE TRIGGER 26</u> and report completion.		
	CRS	Notes time the second accumulator alarm comes in and starts the 20 minute clock (see ABN-CRD step 4.1.1).
	CRS	May hand off ABN completion to ATC or direct individual steps. Directs placing CRD-FC-600, CRD Flow Controller, in MANUAL at zero output.
	ATC	Places the CRD Flow Controller in MANUAL by moving black knob to the left over the 'M'. Depresses the Close pushbutton until the red arrow lowers and is over the '0'.

Time	Position	Applicants Actions or Behavior
	CRS	Directs the standby CRD pump, CRD-P-1A be started (May direct the tripped CRD pump be re-started if he determines the cause for the trip is known and has been corrected -Low suction trip corrected by placing both suction filters in service) (CRD-P-1B will trip immediately if restarted).
	ATC	Starts CRD pump as directed by taking control switch to start. Observes amps, pressure indications for CRD pump start.
	CRS	Directs CRD-FC-600 be nulled and transferred to Auto.
	ATC	Depresses the Open pushbutton until the red arrow is in the green band. Moves black lever to the right until over the 'A'. Observes CRD accumulator alarms clearing. Informs the CRS when all accumulator alarms have cleared.
COMMENTS:		

*Event No. 5***Description:** Grid Disturbance, ASD Channel 1B1 Fault Trip

This event is initiated by activating **TRIGGER 4** and is initiated after a CRD pump has been started and all CRD accumulators have cleared.

Time	Position	Applicants Actions or Behavior
T=45	ATC	Acknowledges various annunciators associated with the grid disturbance. Acknowledges ASD 1B/1 Alarm and ASD 1B/1 Fault annunciators.
		Observes the following indication: Loop B ASD Channel Failure Limit light illuminated. RRC-P-1B speed is 51Hz. Green light on (Red light off) for ASD Channel 1B1. B RRC Pump controller has transferred to Manual.
		Informs CRS that ASD Channel 1B1 has tripped off due to fault. Reports current Reactor Power, Pressure and Level.
		Acknowledges A or B Hi Flow Delta annunciator. Observes Loop B flow at 36,000 gpm and Loop A flow at 44,000 gpm.
	CRS	Updates crew on ABN-POWER entry. Refers to Tech Spec 3.4.1, flow mismatch, which is applicable until flows are matched. Contacts Production/Work Control concerning ASD Channel fault. Directs RO to match RRC loop flows by lowering RRC Loop A flow.

Time	Position	Applicants Actions or Behavior
	ATC	Reduces RRC-P-1A speed as directed to match flows and clear High Flow Delta alarm (may reduce RRC-A speed with controllers in Auto or may take manual control of RRC-M/A-R676A).
ROLEPLAY: As BPA contact the control room on the direct line and report a grid disturbance, not sure of the cause, and you are investigating and will inform them of any findings or cause determination.		
	ATC	Reports Reactor Power, Pressure and Level after the flow reduction.
	CRS BOP	Directs OPS4 to investigate ASD channel 1B1 fault/trip.
COMMENTS:		

Event No. 6

Description: Another Grid Disturbance and Lockout on SH-5 and SH-6 causing a loss of both RRC Pumps and a manual scram insertion.

The event is initiated by activating **TRIGGER 5** and is initiated after plant has been stabilized and RPV level is **STEADY** at +36”.

Time	Position	Applicants Actions or Behavior
T=60	ATC	Acknowledges various annunciators associated with the grid disturbance.
	BOP	Responds to electrical plant and recognizes and reports lockout on SH-5 and SH-6. May not initially report lockouts due to loss of RRC Pumps and insertion of manual scram.
	ATC	Acknowledges alarms associated with loss of both RRC Pumps.
		Recognizes the loss of both RRC pumps and announces intent to initiate a manual reactor scram per immediate actions of ABN-RRC-LOSS. Inserts a manual reactor scram by turning Mode switch to SHUTDOWN and announces: Listen up for the scram report: Mode switch is in Shutdown, APRMs are NOT downscale/current reactor power, current RPV Pressure and trend, and current RPV Level and trend. Reports EOP entry due to failure to scram.

COMMENTS:

Event No. 7		
Description: Hydraulic ATWS. This event is active at the beginning of the scenario and is realized when a manual reactor scram is inserted.		
Time	Position	Applicants Actions or Behavior
Critical Task is to inhibit ADS prior to an automatic initiation to prevent an uncontrolled depressurization and significant power excursion.		
Critical Task is to terminate and prevent injection into the RPV with the exception of SLC, RCIC, and CRD, to establish a Lowered Level.		
Critical Task is to Insert Control Rods.		
T = 60	ATC	Continues with immediate scram actions after recognizing all control rods did not insert: <ul style="list-style-type: none"> Depress the manual scram pushbuttons Initiate ARI and verifies valves opened Insert SRMs and IRMs Reports reactor power at approximately 45%.
	CRS	Updates crew on EOP entry into PPM 5.1.1 (RPV Control), and directs/verifies that the Mode Switch has been placed in SHUTDOWN. Updates crew and exits PPM 5.1.1 (RPV Control) and transitions to PPM 5.1.2 (RPV Control - ATWS). Directs BOP to: <ul style="list-style-type: none"> Inhibit ADS and take manual control of HPCS. Verify actuations for +13" and -50" as they occur. Verify pressure is being maintained by the bypass valves in Auto.

Time	Position	Applicants Actions or Behavior
	CRS	Directs ADS be inhibited and to take manual control of HPCS.
	BOP	<p>Takes both ADS control switches to the INHIBIT position and acknowledges associated alarms and BISIs.</p> <p>Arms and Depresses the HPCS system initiation P/B while holding the control switch for HPCS-P-1 to STOP.</p> <p>Closes HPCS-V-4 when it get fully opened.</p> <p>Reports ADS inhibited and manual control of HPCS taken to CRS.</p>
	CRS	Directs bypassing the MSIV isolation interlocks on high tunnel temperature and low RPV level per PPM 5.5.6.
	CRS	<p>Goes to EOP drawer and gets PPM 5.5.6 procedure and equipment bag containing two keys.</p> <p>Performs PPM 5.5.6:</p> <ul style="list-style-type: none"> At H13-P609 places MS-RMS-S84 to BYPASS At H13-P611 places MS-RMS-S85 to BYPASS <p>Updates Crew on the completion of PPM 5.5.6.</p>
	CRS	Directs RCIC-V-1 be closed to keep Main Turbine on line when RPV level is lowered.
	BOP	Closes RCIC-V-1, verifies RCIC trip annunciator, and reports completion to CRS.
	CRS	Directs performance of PPM 5.5.1, Overriding ECCS valve logic to allow throttling RPV injection.

Time	Position	Applicants Actions or Behavior
	BOP	<p>Goes to EOP drawer and pulls PPM 5.5.1 procedure and equipment bag containing 5 keys.</p> <p>Performs PPM 5.5.1:</p> <ul style="list-style-type: none"> • HPCS – Override HPCS-V-4 (HPCS RPV injection valve) automatic logic by placing HPCS-RMS-S25 in the OVERRIDE position (H13-P625). • LPCS - Override LPCS-V-5 (LPCS RPV injection valve) automatic logic by placing LPCS-RMS-S21 in the OVERRIDE position (H13-P629). • RHR Loop A - Override RHR-V-42A (RHR RPV injection valve) automatic logic by placing RHR-RMS-S105 in the OVERRIDE position (H13-P629). • RHR Loop B - Override RHR-V-42B (RHR RPV injection valve) automatic logic by placing RHR-RMS-S106 in the OVERRIDE position (H13-P618). • RHR Loop C - Override RHR-V-42C (RHR RPV injection valve) automatic logic by placing RHR-RMS-S107 in the OVERRIDE position (H13-P618). <p>Updates crew to completion of PPM 5.5.1, and that the ECCS injection valves are closed and throttleable.</p>
	CRS	<p>Direct the ATC to:</p> <ul style="list-style-type: none"> • Stop and prevent condensate and feedwater. • Lower level to a band less than –65” but greater than –183” (preferred band is –80” to –140”). • Commence RPV injection at -65”.
	ATC	<p>Uses Quick Cards to stop and prevent Condensate and Feedwater and lines up on the startup flow control valves as directed:</p> <p>Step 2.1.1</p> <p>If Reactor Feed Pump(s) (RFP) are operating, then perform the following:</p> <ol style="list-style-type: none"> Verify RFP(s) have ramped down in speed. Verify RFW-FCV-2A(B) is operating properly in Automatic (Minimum Flow Valve) (H13-P840). If RFW-FCV-2A(B) is not operating properly and is cycling, complicating Reactor Level Control, then place RFW-FCV-2A(B) in Manual, and slowly open to approximately 80%.

Time	Position	Applicants Actions or Behavior
		<p>d. Place RFW-P-1B in MDEM mode using either RFT-COMP-1 or RFT-COMP-2 (Pump Control Screen) as follows (H13-P840):</p> <ol style="list-style-type: none"> 1) Select MDEM. 2) Select YES. <p>e. Place RFW-P-1A in MDEM mode using either RFT-COMP-1 or RFT-COMP-2 (Pump Control Screen) as follows (H13-P840):</p> <ol style="list-style-type: none"> 1) Select MDEM. 2) Select YES. <p>f. Control Turbine speed as required.</p> <p>Step 2.1.2 If Feedwater Temperature Reduction was in progress, then verify RFW-V-109 is Closed (H13-P840).</p> <p>Step 2.1.3 Start closing RFW-V-112A and RFW-V-112B (H13-P840). (2H)</p> <p>Step 2.1.4 Start opening RFW-V-118 (Throttle valve) (H13-P840).</p>
		<p>Step 2.1.5 Verify the following Open (H13-P840): (2H)</p> <ul style="list-style-type: none"> • RFW-V-117A • RFW-V-117B <p>Step 2.1.6 Verify RFW-LIC-620 is in MANUAL (V selected for Valve position demand) with 0 output (Startup RPV Level Control) (H13-P603).</p> <p>Step 2.1.7 Verify RFW-V-112A and RFW-V-112B are Fully Closed.</p> <p>Step 2.1.8 Verify RFW-V-118 is Fully Open.</p>

Time	Position	Applicants Actions or Behavior
		<p>Reports EOP entry on low RPV water level at +13".</p> <p>Reports Reactor Power as it drops due to lowering level.</p> <p>When Reactor Power is LT 5%, marks RPV level to establish an LL.</p> <p>Step 2.1.9 If Reactor Feed Pump(s) (RFP) are operating, then adjust the running RFP speed to establish ~ 200 psid across RFW-FCV-10A & 10B using either Feedwater touch screen (H13-P840).</p> <p>Step 2.1.10 Adjust RFW-LIC-620 manual output to control RPV level.</p> <p>Maintains RPV level between LL and -183" as directed (-80" to -140").</p>
T = 70	CRS	Directs PPM 5.5.11 be performed to insert control rods.
	BOP	<p>Goes to EOP drawer and pulls procedure for PPM 5.5.11 and equipment bag.</p> <p>Performs PPM 5.5.11:</p> <p style="padding-left: 40px;">Determines that no RPS scram lights are lit and:</p> <p style="padding-left: 80px;">Removes one TB1 ARI fuse (P650 F01, F02, F03 or F04)</p> <p style="padding-left: 80px;">Removes one TB2 ARI fuse (P650 F01, F02, F03 or F04).</p> <p style="padding-left: 40px;">Observes that some or all blue scram valve lights are lit and determines Tab B should be performed:</p> <p>Operator Actions per TAB B:</p> <p style="padding-left: 40px;">Places the SDV HIGH LEVEL TRIP control switch to BYPASS.</p> <p style="padding-left: 40px;">Determines the scram cannot be reset.</p> <p style="padding-left: 40px;">Overrides RPS trip signals per Attachment 6.1.</p>

Time	Position	Applicants Actions or Behavior
	BOP	<p>ATTACHEMNT 6.1</p> <p>At H13-P611 - Installs a jumper between RPS-RLY-K9B terminal stud 2 and RPS-RLY-K12F terminal stud 4.</p> <p>At H13-P611 - Installs a jumper between RPS-RLY-K9D terminal stud 2 and RPS-RLY-K12H terminal stud 4.</p> <p>At H13-P609 - Installs a jumper between RPS-RLY-K9A terminal stud 2 and RPS-RLY-K12E terminal stud 4.</p> <p>At H13-P609 - Installs a jumper between RPS-RLY-K9C terminal stud 2 and RPS-RLY-K12G terminal stud 4.</p>
	BOP	<p>Continues with Tab B operator actions:</p> <p>Reset the scram by depressing reset pushbuttons.</p> <p>Ensures both CRD pumps are running (the tripped CRD pump may or may not be re-started per this step but if restarted it will immediately trip).</p>
	BOP	<p>Determines that CRD drive header pressure can be established and performs Attachment 6.2 to bypass all RSCS rod blocks:</p> <p>At H13-P613 - Installs one jumper from terminal 7 to terminal 8 on Baily Alarm Card AHH.</p> <p>At H13-P613 - Installs one jumper from terminal 7 to terminal 8 on Baily Alarm Card AGG.</p> <p>Places the RWM bypass switch to bypass on H13-P603.</p>
BOOTH OPERATOR: When RPV Level has been lowered and is being maintained: TO CLEAR ATWS: When both scram discharge volume vents and drains are fully open, set the four ATWS malfunctions to a severity of sixty (insertion order does not matter).		
	BOP	<p>Manually starts to drive control rods by starting at 10-43 and inserting every other rod in every other row.</p> <p>Reports success in driving control rods to CRS.</p>

Time	Position	Applicants Actions or Behavior
		<p>When the Scram Discharge Volume has been drained for more than 2 minutes initiates a manual scram by depressing the four red manual scram pushbuttons.</p> <p>If all rods did not insert, continues scram/reset/scram Tab B and raises SDV drain time by 2 minutes.</p> <p>Determines All Rods are in and informs the CRS.</p>
		<p>Installs the following fuses removed in TAB A:</p> <p style="padding-left: 40px;">TB1 ARI fuse</p> <p style="padding-left: 40px;">TB2 ARI fuse</p>
	CRS	Directs SLC be stopped.
	ATC BOP	Takes control switches out of OPER and observes both SLC pumps stop.
	CRS	<p>Exits PPM 5.1.2 (RPV Control ATWS) and enters PPM 5.1.1 (RPV Control).</p> <p>Directs RPV level be raised to -50" to +54" band with available systems.</p>
	ATC	Raises RPV level into band as directed.
TERMINATION POINT – The scenario will be terminated when RPV level is being returned to the directed band.		
Comments:		

Event No. 8		
Description: Initiate Standby Liquid Control - RWCU-V-4 fails to auto close. This event is active from the start of the scenario and is realized when SLC is initiated.		
Time	Position	Applicants Actions or Behavior
Critical Task is to inject Standby Liquid Control (boron) prior to exceeding 110°F Suppression Pool temperature.		
T = 65	CRS	Directs SLC initiation prior to Suppression Pool temperature reaching 110°F.
	ATC	Initiates SLC per the quick card: Remove the SLC keylock switch blanks and insert both keys into the SLC System control switches. Initiate SLC injection by performing the following (H13-P603): <ul style="list-style-type: none"> Place SLC System A control switch to the OPER position Place SLC System B control switch to the OPER position Report the following to the CRS: <ul style="list-style-type: none"> SLC flow rate (~82gpm) Initial tank level RWCU-V-4 status (should be closed) Reports SLC flow rate indicating low at about 18 gpm. Reports initial tank level.
		Verifies RWCU-V-4 closed and notes valve is actually open. Takes the control switch for RWCU-V-4 to the close position and observes green light on and red light goes out.
		Reports RWCU-V-4 failed to auto close but was manually closed with the control switch.
	CRS ATC	Directs investigation by OPS2 of reduced SLC flow.
Time	Position	Applicants Actions or Behavior
ROLEPLAY - Three minutes after request inform the Control Room that the SLC relief valves are lifting and that maintenance has been contacted and is on their way. You will inform them in any change in SLC system status.		
Comments:		

TURNOVER INFORMATION

Initial Conditions

The plant is operating at approximately 95% power.

RCC-P-1B is tagged out due to excessive vibrations and imminent failure.

OSP-HPCS/IST-Q701, HPCS System Operability Test, is in-progress.

Shift Directions

Return Columbia to 100% power.

Continue with the performance of OSP-HPCS/IST-Q701, starting at Step 7.3. The two year VPI and channel calibration are NOT due. Non-intrusive testing for HPCS-V-2 and HPCS-V-24 is not scheduled. The pre-job brief has been completed, and Equipment Operators are on station to support completion of the surveillance. HP has been informed of surveillance performance.

The power increase and surveillance are to be performed concurrently.

SIMULATOR SETUP INSTRUCTIONS

Have a copy of OSP-HPCS/IST-Q701 with it signed in and prerequisites signed off.

Reset to saved IC #173.

Hang blue tag on RCC-P-1B. Protect RCC-P-1A and RCC-P-1C.

Ensure CRD-P-1B Running and the red dot is over CRD-P-1B.

Flag annunciators: P800-C4 4.3 and C5 3.7; P603-A7 3.8; P601-A1 6.7, 6.8, 3.5 and 4.4; P601-A11 2.3; P601-A12 2.3.

You may want to give the HPCS surveillance to the crew ahead of time for them to review.

SCHEDULE FILE

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<ITEM row = 1>

<TIME>0</TIME>

<ACTION>Insert malfunction MAL-CRD007A2 to 100</ACTION>

<DESCRIPTION>HYDRAULIC ATWS EAST SDV</DESCRIPTION>

</ITEM>

<ITEM row = 2>

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<ACTION>Insert malfunction MAL-CRD007B2 to 100</ACTION>

<DESCRIPTION>HYDRAULIC ATWS WEST SDV</DESCRIPTION>

</ITEM>

<ITEM row = 3>

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<ACTION>Insert malfunction MAL-CRD007A1 to 100</ACTION>

<DESCRIPTION>HYDRAULIC ATWS EAST SDV BLOCKAGE</DESCRIPTION>

</ITEM>

<ITEM row = 4>

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<ACTION>Insert malfunction MAL-CRD007B1 to 100</ACTION>

<DESCRIPTION>HYDRAULIC ATWS WEST SDV BLOCKAGE</DESCRIPTION>

</ITEM>

<ITEM row = 5>

<TIME>0</TIME>

<ACTION>Insert malfunction MOV-RWU010F to FAIL_AUTO_CLOSE</ACTION>

<DESCRIPTION>RWCU-V-4</DESCRIPTION>

</ITEM>

<ITEM row = 6>

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<ACTION>Insert malfunction BKR-RCC002 to FA_CTRL_FUS</ACTION>

<DESCRIPTION>Rackout RCC-P-1B</DESCRIPTION>

</ITEM>

<ITEM row = 7>

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<ACTION>Insert malfunction PMP-SLC002F to 50</ACTION>

<DESCRIPTION>SLC PUMP 1B REDUCED FLOW</DESCRIPTION>

</ITEM>

<ITEM row = 8>

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<ACTION>Insert malfunction BKR-CSS001 to FA_CTRL_FUS on event 2</ACTION>
<DESCRIPTION>HPCS-P-1 Pull Control Power Fuses</DESCRIPTION>
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<DESCRIPTION>CRD PUMP B SUCTION PRESS LOW</DESCRIPTION>
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<ITEM row = 12>
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<ACTION>Insert malfunction BKR-CRD002 to TRIP after 5 on event 3</ACTION>
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      <DESCRIPTION>Load Local Operator Actions</DESCRIPTION>
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  </SCHEDULE>

                                EVENT FILE

  <EVENT>

    <TRIGGER id="1" description="HPCS FLOW GT KICKS TRG 1 TO CLEAR MIN FLOW FUSES">X01D033M &gt;
    3000</TRIGGER>
  </EVENT>

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ES-301 Transient and Event Checklist Form ES-301-5

Facility: Columbia			Date of Exam: February 2013									Operating Test Number: 1						
A P P L I C A N T	E V E N T T Y P E	S c e n a r i o s													T O T A L	M I N I M U M (*)		
		1			2			3			4							
		C R E W P O S I T I O N			C R E W P O S I T I O N			C R E W P O S I T I O N			C R E W P O S I T I O N							
		S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P					
<div style="border: 1px solid black; padding: 2px; display: inline-block;">R1</div> RO <input checked="" type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U	RX								1,5					2	1	1	0	
	NOR													0	1	1	1	
	I/C			2,4,7,8			3,4,7,9		4,6,8					11	4	4	2	
	MAJ			5,6			6,8		7					5	2	2	1	
	TS													0	0	2	2	
<div style="border: 1px solid black; padding: 2px; display: inline-block;">R2</div> RO <input checked="" type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U	RX					1								1	1	1	0	
	NOR								2					1	1	1	1	
	I/C					2,5,7			3					4	4	4	2	
	MAJ					6,8			7					3	2	2	1	
	TS													0	0	2	2	
<div style="border: 1px solid black; padding: 2px; display: inline-block;">R3</div> RO <input checked="" type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U	RX		1											1	1	1	0	
	NOR													0	1	1	1	
	I/C		3,9				3,4,7,9							6	4	4	2	
	MAJ		5,6				6,8							4	2	2	1	
	TS													0	0	2	2	
<div style="border: 1px solid black; padding: 2px; display: inline-block;">R4</div> RO <input checked="" type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U	RX					1								1	1	1	0	
	NOR													0	1	1	1	
	I/C			2,4,7,8		2,5,7								7	4	4	2	
	MAJ			5,6		6,8								4	2	2	1	
	TS													0	0	2	2	

Instructions:

- Check the applicant level and enter the operating test number and Form ES-D-1 event numbers for each event type; TS are not applicable for RO applicants. ROs must serve in both the "at-the-controls (ATC)" and "balance-of-plant (BOP)" positions. Instant SROs must serve in both the SRO and the ATC positions, including at least two instrument or component (I/C) malfunctions and one major transient, in the ATC position. If an Instant SRO *additionally* serves in the BOP position, one I/C malfunction can be credited toward the two I/C malfunctions required for the ATC position.
- Reactivity manipulations may be conducted under normal or *controlled* abnormal conditions (refer to Section D.5.d) but must be significant per Section C.2.a of Appendix D. (*) Reactivity and normal evolutions may be replaced with additional instrument or component malfunctions on a 1-for-1 basis.
- Whenever practical, both instrument and component malfunctions should be included; only those that require verifiable actions that provide insight to the applicant's competence count toward the minimum requirements specified for the applicant's license level in the right-hand columns.

ES-301 Transient and Event Checklist Form ES-301-5

Facility: Columbia			Date of Exam: February 2013									Operating Test Number: 1							
A P P L I C A N T	E V E N T T Y P E	Scenarios														T O T A L	M I N I M U M (*)		
		1			2			3			4								
		C R E W P O S I T I O N			C R E W P O S I T I O N			C R E W P O S I T I O N			C R E W P O S I T I O N								
		S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P						
<div style="border: 1px solid black; padding: 2px; display: inline-block;">U1, U2</div>	RX	1			1									2	1	1	0		
	NOR													0	1	1	1		
	I/C	3,7,8			2,3,5, 7,9									8	4	4	2		
	MAJ	5,6			6,8									4	2	2	1		
	TS	2,3			2,3									4	0	2	2		
<div style="border: 1px solid black; padding: 2px; display: inline-block;">I2, I4, I6</div>	RX	1			1				1,5					4	1	1	0		
	NOR													0	1	1	1		
	I/C	3,7,8			2,3,5, 7,9				4,6,8					11	4	4	2		
	MAJ	5,6			6,8				7					5	2	2	1		
	TS	2,3			2,3									4	0	2	2		
<div style="border: 1px solid black; padding: 2px; display: inline-block;">I3, I5, I7</div>	RX		1					1						2	1	1	0		
	NOR							2						1	1	1	1		
	I/C		3,9				3,4,7, 9	3,4,5, 6						10	4	4	2		
	MAJ		5,6				6,8	7						5	2	2	1		
	TS							3,5						2	0	2	2		
<div style="border: 1px solid black; padding: 2px; display: inline-block;">R5, R6, R7</div>	RX				1									1	1	1	0		
	NOR									2				1	1	1	1		
	I/C			2,4,7, 8		2,5,7				3				8	4	4	2		
	MAJ			5,6		6,8				7				5	2	2	1		
	TS													0	0	2	2		
Instructions: 1. Check the applicant level and enter the operating test number and Form ES-D-1 event numbers for each event type; TS are not applicable for RO applicants. ROs must serve in both the "at-the-controls (ATC)" and "balance-of-plant (BOP)" positions. Instant SROs must serve in both the SRO and the ATC positions, including at least two instrument or component (I/C) malfunctions and one major transient, in the ATC position. If an Instant SRO <i>additionally</i> serves in the BOP position, one I/C malfunction can be credited toward the two I/C malfunctions required for the ATC position. 2. Reactivity manipulations may be conducted under normal or <i>controlled</i> abnormal conditions (refer to Section D.5.d) but must be significant per Section C.2.a of Appendix D. (*) Reactivity and normal evolutions may be replaced with additional instrument or component malfunctions on a 1-for-1 basis. 3. Whenever practical, both instrument and component malfunctions should be included; only those that require verifiable actions that provide insight to the applicant's competence count toward the minimum requirements specified for the applicant's license level in the right-hand columns.																			

ES-301 Transient and Event Checklist Form ES-301-5

Facility: Columbia			Date of Exam: February 2013			Operating Test Number: 1												
A P P L I C A N T	E V E N T T Y P E	Scenarios													T O T A L	M I N I M U M (*)		
		1			2			3			4							
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION							
		S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P					
<div style="border: 1px solid black; width: 40px; height: 40px; margin-bottom: 5px;"></div> <div style="border: 1px solid black; width: 40px; height: 40px; margin-bottom: 5px;"></div> <div style="border: 1px solid black; width: 40px; height: 40px; margin-bottom: 5px;"></div> <div style="border: 1px solid black; width: 40px; height: 40px; margin-bottom: 5px;"></div> <div style="border: 1px solid black; width: 40px; height: 40px;"></div>	RX		1					1							2	1	1	0
	NOR							2							1	1	1	1
	I/C		3,9					3,4,5,6							6	4	4	2
	MAJ		5,6					7							3	2	2	1
	TS							3,5							2	0	2	2
<div style="border: 1px solid black; width: 40px; height: 40px; margin-bottom: 5px;"></div> <div style="border: 1px solid black; width: 40px; height: 40px; margin-bottom: 5px;"></div> <div style="border: 1px solid black; width: 40px; height: 40px; margin-bottom: 5px;"></div> <div style="border: 1px solid black; width: 40px; height: 40px; margin-bottom: 5px;"></div> <div style="border: 1px solid black; width: 40px; height: 40px;"></div>	RX														1	1	0	
	NOR														1	1	1	
	I/C														4	4	2	
	MAJ														2	2	1	
	TS														0	2	2	
<div style="border: 1px solid black; width: 40px; height: 40px; margin-bottom: 5px;"></div> <div style="border: 1px solid black; width: 40px; height: 40px; margin-bottom: 5px;"></div> <div style="border: 1px solid black; width: 40px; height: 40px; margin-bottom: 5px;"></div> <div style="border: 1px solid black; width: 40px; height: 40px; margin-bottom: 5px;"></div> <div style="border: 1px solid black; width: 40px; height: 40px;"></div>	RX														1	1	0	
	NOR														1	1	1	
	I/C														4	4	2	
	MAJ														2	2	1	
	TS														0	2	2	
<div style="border: 1px solid black; width: 40px; height: 40px; margin-bottom: 5px;"></div> <div style="border: 1px solid black; width: 40px; height: 40px; margin-bottom: 5px;"></div> <div style="border: 1px solid black; width: 40px; height: 40px; margin-bottom: 5px;"></div> <div style="border: 1px solid black; width: 40px; height: 40px; margin-bottom: 5px;"></div> <div style="border: 1px solid black; width: 40px; height: 40px;"></div>	RX														1	1	0	
	NOR														1	1	1	
	I/C														4	4	2	
	MAJ														2	2	1	
	TS														0	2	2	

Instructions:

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Facility: Columbia		Date of Examination: February 2013								Operating Test No.: 1							
Competencies	APPLICANTS																
	RO ⁽¹⁾ <input checked="" type="checkbox"/>				RO ⁽²⁾ <input checked="" type="checkbox"/>				RO ⁽³⁾ <input checked="" type="checkbox"/>				RO ⁽⁴⁾ <input checked="" type="checkbox"/>				
	SRO-I <input type="checkbox"/>				SRO-I <input type="checkbox"/>				SRO-I <input type="checkbox"/>				SRO-I <input type="checkbox"/>				
	SRO-U <input type="checkbox"/>				SRO-U <input type="checkbox"/>				SRO-U <input type="checkbox"/>				SRO-U <input type="checkbox"/>				
	SCENARIO				SCENARIO				SCENARIO				SCENARIO				
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	
Interpret/ Diagnose Events and Conditions	3,5,6,9	3,4,6,7,8,9	4,5,6,7,8			2,5,6,7,8	3,6,7		3,5,6,9	3,4,6,7,8,9			2,4,5,6,7,8	2,5,6,7,8			
Comply With and Use Procedures (1)	1,5,9	3,4,6,8,9	1,4,5,6,7			1,2,5,8	2,3,6,7		1,5,9	3,4,6,8,9			2,4,5,7	1,2,5,8			
Operate Control Boards (2)	1,3,5,6,9	3,4,7,8,9	1,4,5,6,7,8			1,2,5,6,7,8	2,3,6,7		1,3,5,6,9	3,4,7,8,9			2,4,5,7,8	1,2,5,6,7,8			
Communicate and Interact	5,6,9	3,4,5,6,7,8,9	4,5,6,7,8			2,5,6,7,8	3,6,7		5,6,9	3,4,5,6,7,8,9			2,4,5,6,7,8	2,5,6,7,8			
Demonstrate Supervisory Ability (3)																	
Comply With and Use Tech Specs. (3)																	
Notes: (1) Includes Technical Specification compliance for an RO. (2) Optional for an SRO-U. (3) Only applicable to SROs.																	

Instructions:

Check the applicant's license type and enter one or more event numbers that will allow the examiners to evaluate every applicable competency for every applicant.

Facility: Columbia		Date of Examination: February 2013		Operating Test No.: 1												
Competencies	APPLICANTS															
	RO <input type="checkbox"/> SRO-I _(2,4,6) <input checked="" type="checkbox"/> SRO-U <input type="checkbox"/>				RO <input type="checkbox"/> SRO-I _(3,5,7) <input checked="" type="checkbox"/> SRO-U <input type="checkbox"/>				RO _(5,6,7) <input checked="" type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/>				RO <input type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U _(1,2) <input checked="" type="checkbox"/>			
	SCENARIO				SCENARIO				SCENARIO				SCENARIO			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Interpret/ Diagnose Events and Conditions	2,3,4,5,6,7,8	2,3,4,5,6,7,8,9	4,5,6,7,8		3,5,6,9	3,4,6,7,8,9	3,4,5,6,7		2,4,5,6,7,8	2,5,6,7,8	3,6,7		2,3,4,5,6,7,8	2,3,4,5,6,7,8,9		
Comply With and Use Procedures (1)	1,3,5,6,7,8,9	2,3,5,6,7,8,9	1,4,5,6,7		1,5,9	3,4,6,8,9	3,4,5,6,7		2,4,5,7	1,2,5,8	2,3,6,7		1,3,5,6,7,8,9	2,3,5,6,7,8,9		
Operate Control Boards (2)			1,4,5,6,7,8		1,3,5,6,9	3,4,7,8,9			2,4,5,7,8	1,2,5,6,7,8	2,3,6,7					
Communicate and Interact	1,4,5,6,7,8	1,2,3,5,6,7,8,9	4,5,6,7,8		5,6,9	3,4,5,6,7,8,9	3,4,5,6,7,8		2,4,5,6,7,8	2,5,6,7,8	3,6,7		1,4,5,6,7,8	1,2,3,5,6,7,8,9		
Demonstrate Supervisory Ability (3)	1,4,5,7,8	1,2,5,6,7,8,9					1,3,4,5,6,7						1,4,5,7,8	1,2,5,6,7,8,9		
Comply With and Use Tech Specs. (3)	2,3	2,3					3,5						2,3	2,3		
Notes: (1) Includes Technical Specification compliance for an RO. (2) Optional for an SRO-U. (3) Only applicable to SROs.																

Instructions:

Check the applicant's license type and enter one or more event numbers that will allow the examiners to evaluate every applicable competency for every applicant.

Facility: Columbia		Date of Examination: February 2013								Operating Test No.: 1							
Competencies	APPLICANTS																
	RO <input type="checkbox"/> SRO-I ⁽¹⁾ <input checked="" type="checkbox"/> SRO-U <input type="checkbox"/>				RO <input type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/>				RO <input type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/>				RO <input type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/>				
	SCENARIO				SCENARIO				SCENARIO				SCENARIO				
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	
Interpret/ Diagnose Events and Conditions	3,5,6,9		3,4,5,6,7														
Comply With and Use Procedures (1)	1,5,9		3,4,5,6,7														
Operate Control Boards (2)	1,3,5,6,9																
Communicate and Interact	5,6,9		3,4,5,6,7,8														
Demonstrate Supervisory Ability (3)			1,3,4,5,6,7														
Comply With and Use Tech Specs. (3)			3,5														
Notes: (1) Includes Technical Specification compliance for an RO. (2) Optional for an SRO-U. (3) Only applicable to SROs.																	

Instructions:

Check the applicant's license type and enter one or more event numbers that will allow the examiners to evaluate every applicable competency for every applicant.