

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

STATION:	SALEM		
SYSTEM:	Chemical and Volume Control System (CVCS)		
TASK:	Perform Manual Makeup of the VCT IAW S2.OP-SO.CVC-0006		
TASK NUMBER:	0040130101		
JPM NUMBER:	16-01 NRC Sim-b		
ALTERNATE PATH:	<input type="checkbox"/>	K/A NUMBER:	004 A4.04
APPLICABILITY:	IMPORTANCE FACTOR:		
EO <input type="checkbox"/>	RO <input checked="" type="checkbox"/>	STA <input type="checkbox"/>	SRO <input checked="" type="checkbox"/>
			3.2 RO
			3.6 SRO
EVALUATION SETTING/METHOD:	Simulator / Perform		
REFERENCES:	S2.OP-SO.CVC-0006, Rev. 25 (checked 8-24-17) S2.OP-AB.CVC-0001, Rev. 10 S2.RE-RA.ZZ-0012 Rev. 218		
TOOLS AND EQUIPMENT:	None		
VALIDATED JPM COMPLETION TIME:	<u>15 min</u>		
TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS:	<u>N/A</u>		
Developed By:	R. Chan <i>Rudolph Chan</i> Instructor	Date: 12-15-17	
Validated By:	<i>N/A</i> R 12-15-17 SME or Instructor	Date: <i>N/A</i> ^R	
Approved By:	Training Department <i>mchugh</i> <i>[Signature]</i>	Date: 12/15/17	
Approved By:	Operations Department <i>[Signature]</i> <i>J. Myers</i>	Date: 12/15/17	
ACTUAL JPM COMPLETION TIME:			
ACTUAL TIME CRITICAL COMPLETION TIME:			
PERFORMED BY:			
GRADE:	<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT	
REASON, IF UNSATISFACTORY:			
EVALUATOR'S SIGNATURE:			DATE:

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REVISION HISTORY

JPM NUMBER: 16-01 NRC Sim-b

Rev #	Date	Description	Validation Required
00	9-8-17	Added revision history and simulator setup pages. Editorial comments from IP 71111.11 FASA.	Yes
01	12-15-17	Added note for evaluator for step 5.2.4 that 2CV179 when placed in manual will initially go open from the closed position as per design.	No

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SIMULATOR SETUP INSTRUCTIONS

SYSTEM: Chemical and Volume Control System (CVCS)
TASK: Perform Manual Makeup of the VCT IAW S2.OP-SO.CVC-0006
TASK NUMBER: 0040130101
SIMULATOR IC: IC-241
MALFUNCTIONS / REMOTES:

1. Reset the simulator to IC-241
2. The following malfunctions will be INSERTED when simulator is placed in RUN:
 - RT-1 MALF CV0037 VCT LEVEL XMTR LT112 FAILS H/L, Final Value: 100.
3. This completes the setup for this JPM.

OVERRIDES: None

SPECIAL INSTRUCTIONS:

- Drain down the VCT level to about 39%.
- Make sure a marked up (partial procedure usage) of S2.OP-SO.CVC-0006 is available for candidate.
- Setup P250 on 2CC1 to CVCS system so operator can monitor VCT level using 2LT114.

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NAME: _____

DATE: _____

SYSTEM: Chemical and Volume Control System (CVCS)

TASK: Perform Manual Makeup of the VCT IAW S2.OP-SOCVC-0006.

TASK NUMBER: 0040130101

INITIAL CONDITIONS:

- 100% power, MOL. RCS boron concentration is 900 ppm.
- The crew has entered S2.OP-AB.CVC-0001, Loss of Charging, due to VCT level channel 2LT112 failing high.

INITIATING CUE:

- You are the Reactor Operator.
- The CRS has directed you to **PERFORM** a manual makeup of the VCT to **RESTORE** VCT level to 53% IAW **S2.OP.SO.CVC-0006, Boron Concentration Control, Section 5.2, Manual Makeup Mode**.
- All prerequisites are complete with no issues.
- P&Ls have **NOT** been reviewed.
- Boric Acid Storage Tank boron concentration is 6,700 ppm.

Successful Completion Criteria:

1. All critical steps completed.
2. All sequential steps completed in order.
3. All time-critical steps completed within allotted time.
4. JPM completed within validated time. Completion time may exceed the validated time if satisfactory progress is being made (and NRC concurrence is obtained).

Task Standard for Successful Completion:

1. Initiates manual makeup to VCT and stops the makeup when directed.

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* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	CUE:	Provide the operator the initial conditions, marked up S2.OP-SO.CVC-0006, and initiating cue sheet.			
	CUE:	Fill in the JPM Start Time when the student acknowledges the Initiating Cue. START TIME: _____			
	Pre-Reqs 2.0	PREREQUISITES 2.1 THRU 2.3	Cue: All prerequisites are completed SAT with no issues.		
	P&Ls	Precautions and Limitations 3.1 thru 3.22	Operator reviews all P&Ls.		
	5.2	MANUAL MAKEUP MODE	N/A		

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* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*	5.2.1	<p>DETERMINE Boric Acid Flow Setpoint from S2.RE-RA.ZZ-0012, Figure(s), 100A, 100C, and 105 as applicable, <u>OR</u> as calculated and verified by the CRS/STA, AND RECORD Boric Acid Flow Setpoint.</p>	<p>Cue: If asked about Boric Acid Tank Boron concentration, state all required information given in Initiating Cue.</p> <p>Cue: IF operator uses the current makeup boric acid flow setpoint as displayed on the control console, THEN CUE that the CRS directs you to perform Step 5.2.1 to verify the Boric Acid Flow setpoint is correct.</p> <p>Evaluator's Note; Correct Figure to Use is 100A for 62 gpm Primary Water Flow with BAST concentration at normal ppm. 100C is wrong figure because it is for 9000 ppm boron which is not used during normal ops. Figure 105 is the correction factor for RCS temperatures less than 547, which is N/A at 100% power.</p> <p>If operator uses the graph; then setpoint is about 10 gpm.</p> <p>If operator calculates; then setpoint is 9.6 gpm.</p> <p>Operator determines setpoint between 9-11 gpm.</p> <p>Evaluator's Note: If operator performs calculation using 900 ppm in RCS and 6,700 ppm in BAST, result is 9.62 gpm. Boric Acid flow setter is in 1 gallon increments.</p>		

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	5.2.2	IF required, THEN RESET COUNT A on the Makeup Flow Registers to zero IAW Exhibit 1.	Resets COUNT A for Boric Acid and Primary Water flow IAW Exhibit 1.		
*	5.2.3	PRESS Makeup Control Mode Select STOP pushbutton.	Presses Makeup Control Mode Select STOP pushbutton and verifies bezel illuminates.		
*	5.2.4	PLACE 2CV179, PRIMARY WATER FLOW, in MANUAL, AND CLOSE 2CV179.	Depresses 2CV179 MANUAL PB until bezel illuminates. Note: when selected to manual the 2CV179 will go full open. This is expected. Depresses 2CV179 CLOSE PB until bezel illuminates.		
*	5.2.5	PLACE 2CV172, BORIC ACID FLOW, in MANUAL, AND CLOSE 2CV172.	Depresses 2CV172 MANUAL PB until bezel illuminates. Depresses 2CV172 CLOSE PB until bezel illuminates.		
	NOTE	Makeup from Boric Acid Blender to Charging Pump suction is the preferred alignment.	Operator reads and initials the Note.		

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* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*	5.2.6	ALIGN outlet of Boric Acid Blender to one of the following: A. OPEN 2CV185, MAKEUP FLOWPATH OR B. OPEN 2CV181, MAKEUP FLOWPATH	Operator selects one (1) flowpath alignment by depressing the MANUAL PB until bezel illuminates, THEN the OPEN PB for 2CV185 or 2CV181 until OPEN bezel illuminates. Evaluator's Note: The "NOTE" prior to Step 5.2.6 states that charging pump suction is the preferred path, (but not required) which is accomplished by opening the 2CV185. Opening either 2CV185 or 2CV181 is acceptable.		
	CAUTION	Pump damage may occur while operating in a parallel configuration IF both a Fast and Slow speed Boric Acid pump is aligned to the same header.	Operator reads the Caution Note		

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* *	5.2.7	PERFORM the following as required to support current plant conditions: <ul style="list-style-type: none"> • START a Primary Water Pump • PLACE a Boric Acid Pump in MANUAL/FAST START 	Evaluator's Note: Normal configuration is ONE Boric acid pump running in AUTO SLOW, and NO Primary Water pumps running. Operator depresses MANUAL PB for selected PW pump and verifies bezel illuminates. Operator depresses START PB for selected PW Pump and verifies bezel illuminates. Operator depresses MANUAL PB for selected BAT pump and verifies bezel illuminates. Operator depresses FAST START PB for selected BAT Pump and verifies bezel illuminates.		
*	5.2.8	ADJUST 2CV172 flow (FI110A) to the value recorded in step 5.2.1	Adjusts Boric Acid Flow on FI110A to the value recorded in Step 5.2.1 by depressing the 2CV172 OPEN PB to raise setpoint or 2CV172 CLOSE PB to lower setpoint.		
	5.2.9	<u>IF</u> required Boric Acid flow is <u>NOT</u> achieved, <u>THEN:</u> <ul style="list-style-type: none"> • CLOSE 21CV160, RECIRC VALVE • CLOSE 22CV160, RECIRC VALVE • 	Determines closing of the CV160 valves will NOT be required.		

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* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*	5.2.10	Manually ADJUST 2CV179 Setpoint to 62 gpm (or as calculated) to obtain the required flow as indicated on FI111A (Refer to step 3.12)	Adjusts Primary Water flow on FI111A to 62 gpm (acceptable range 60-64 gpm) by depressing the 2CV179 OPEN PB to raise setpoint or 2CV179 CLOSE PB to lower setpoint. Cue: Once makeup is in progress and operator is monitoring VCT level via LT-114 using the Plant Computer, <u>inform operator that VCT level is now at 53%.</u>		
	5.2.11	ENSURE required Boric Acid <u>AND</u> Primary Water Flow are being maintained <u>OR</u> ADJUST 2CV172 and 2CV179 as required to obtain required flows.	Monitors Boric Acid and Primary Water flows being maintained as required and adjusts 2CV172 and 2CV179 as required to obtain required flows.		

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* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
* * * *	5.2.12	When desired makeup is completed: A. CLOSE the following valves: <ul style="list-style-type: none"> • 2CV179 • 2CV172 • 2CV185 • 2CV181 B. STOP Primary Water Pump C. PLACE Boric Acid Pump selected in SLOW Speed D. PLACE the system in Automatic Makeup Mode IAW Section 5.1	<p>Depresses the CLOSE PBs for 2CV179 and 2CV172, and whichever of the 2CV185 or 2CV181 was opened in Step 5.2.6; verifies that the CLOSE PB bezels are illuminated.</p> <p>Depresses STOP pushbutton for Primary Water Pump which was started.</p> <p>Places the selected Boric Acid Pump in SLOW speed and verifies SLOW speed bezel illuminates.</p> <p>Terminate the JPM once the selected Boric Acid Pump has been placed in SLOW speed.</p>		
	CUE:	JPM is Complete. RECORD STOP TIME STOP TIME: _____	Terminate the JPM when the Boric Acid Pump is in SLOW speed.		

OPERATIONS DEPARTMENT
JOB PERFORMANCE MEASURE

TQ-AA-106-0303

JPM: 16-01 NRC Sim-b

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

NOTE: All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 8 and 11 below.

- _____ 1. Task description and number, JPM description and number are identified.
- _____ 2. Knowledge and Abilities (K/A) references are included.
- _____ 3. Performance location specified. (in-plant, control room, or simulator)
- _____ 4. Initial setup conditions are identified.
- _____ 5. Initiating and terminating Cues are properly identified.
- _____ 6. Task standards identified and verified by SME review.
- _____ 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*).
- _____ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure: Procedure Rev. _____ Date _____
- _____ 9. Pilot test the JPM:
 - a. verify Cues both verbal and visual are free of conflict, and
 - b. ensure performance time is accurate.
- _____ 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.
- _____ 11. When JPM is revalidated, SME or Instructor sign and date JPM cover page.

SME/Instructor: _____

Date: _____

SME/Instructor: _____

Date: _____

SME/Instructor: _____

Date: _____

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INITIAL CONDITIONS:

- 100% power, MOL. RCS boron concentration is 900 ppm.
- The crew has entered S2.OP-AB.CVC-0001, Loss of Charging, due to VCT level channel 2LT112 failing high.

INITIATING CUE:

- You are the Reactor Operator.
- The CRS has directed you to **PERFORM** a manual makeup of the VCT to **RESTORE** VCT level to 53% IAW **S2.OP.SO.CVC-0006, Boron Concentration Control, Section 5.2, Manual Makeup Mode.**
- All prerequisites are complete with no issues.
- P&Ls have **NOT** been reviewed.
- Boric Acid Storage Tank boron concentration is 6,700 ppm.