OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION: SALEM

SYSTEM: Chemical and Volume Control System (CVCS)

TASK: Perform Manual Makeup to VCT IAW S2.OP-SO.CVC-0006

TASK NUMBER: 0040130101

JPM NUMBER: 20-01 NRC Sim-b

ALTERNATE PATH: [ ]

K/A NUMBER: 004 A4.04

IMPORTANCE FACTOR:	3.2	3.6
	RO	**SRO**

APPLICABILITY:

EO [ ] **RO** [X] **STA** [ ] **SRO** [X]

EVALUATION SETTING/METHOD: Simulator / Perform

REFERENCES: S2.OP-SO.CVC-0006, Rev. 25 (checked 8-3-21)
S2.OP-AB.CVC-0001, Rev. 14
S2.RE-RA.ZZ-0012 Rev. 225

TOOLS AND EQUIPMENT: None

VALIDATED JPM COMPLETION TIME: 15 min

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: N/A

Developed By: **K.Hantho** **Date: 8-3-21**
Instructor

Validated By: **Rydell/Zirkle** **Date: 8-12-21**
SME or Instructor

Approved By: **M. Wadusky (signature on file)** **Date: 2-10-22**
Training Department

Approved By: **W. Hargrave** **Date: 1-11-22**
Operations Department

ACTUAL JPM COMPLETION TIME:

ACTUAL TIME CRITICAL COMPLETION TIME:

PERFORMED BY:

GRADE: [ ] **SAT** [ ] **UNSAT**

REASON, IF UNSATISFACTORY:

EVALUATOR'S SIGNATURE: **DATE:**

REVISION HISTORY

JPM NUMBER: 20-01 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
02	8-3-21	Updated to current procedure revisions. JPM not affected by revisions.	Yes
03	1-3-22	Incorporated NRC comments from ES-301-7.	Yes

SIMULATOR SETUP INSTRUCTIONS

SYSTEM: Chemical and Volume Control System (CVCS)

TASK: Perform Manual Makeup to VCT IAW S2.OP-SO.CVC-0006

TASK NUMBER: 0040130101

SIMULATOR IC: IC-251

MALFUNCTIONS / REMOTES:

1. Reset the simulator to IC-251
2. The following malfunctions have been INSERTED:
   - **MALF CV0037 VCT LEVEL XMTR LT112 FAILS H/L, Final Value: 100.**
3. This completes the setup for this JPM.

OVERRIDES: None

SPECIAL INSTRUCTIONS:

- **Ensure the VCT level is about 30%.**
- **Ensure a marked up (partial procedure usage) of S2.OP-SO.CVC-0006 is available for candidate.**
- **Setup Plant computer on 2CC1 to CVCS system so operator can monitor VCT level using 2LT114.**

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____

DATE: _____

SYSTEM: Chemical and Volume Control System (CVCS)

TASK: Perform Manual Makeup to 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.
- 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 informed that VCT level is at 53%.

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

SYSTEM: **Chemical and Volume Control System (CVCS)**

TASK: **Perform Manual Makeup to VCT IAW S2.OP-SO.CVC-0006**

* #	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		

OPERATOR TRAINING PROGRAM
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SYSTEM: **Chemical and Volume Control System (CVCS)**

TASK: **Perform Manual Makeup to VCT IAW S2.OP-SO.CVC-0006**

* #	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	**DETERMINE** Boric Acid Flow Setpoint from S2.RE-RA.ZZ-0012, Figure(s), 100A, 100C, and 105 as applicable, OR as calculated and verified by the CRS/STA, AND **RECORD** Boric Acid Flow Setpoint.	**Cue:** If asked about Boric Acid Tank Boron concentration, state all required information given in Initiating Cue. **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. **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. **If operator uses the graph; then setpoint is about 10 gpm.** **If operator calculates; then setpoint is 9.6 gpm.** **Operator determines setpoint between 9-11 gpm.** **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.		

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

SYSTEM: **Chemical and Volume Control System (CVCS)**

TASK: **Perform Manual Makeup to VCT IAW S2.OP-SO.CVC-0006**

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	5.2.2	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.		

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

SYSTEM: **Chemical and Volume Control System (CVCS)**

TASK: **Perform Manual Makeup to VCT IAW S2.OP-SO.CVC-0006**

* #	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		

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

SYSTEM: **Chemical and Volume Control System (CVCS)**

TASK: **Perform Manual Makeup to VCT IAW S2.OP-SO.CVC-0006**

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
* *	5.2.7	**PERFORM** the following as required to support current plant conditions: • **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	IF required Boric Acid flow is NOT achieved, THEN: • **CLOSE** 21CV160, RECIRC VALVE • **CLOSE** 22CV160, RECIRC VALVE	Determines closing of the CV160 valves will NOT be required.		

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

SYSTEM: **Chemical and Volume Control System (CVCS)**

TASK: **Perform Manual Makeup to VCT IAW S2.OP-SO.CVC-0006**

* #	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, inform operator that VCT level is now at 53%.		
	5.2.11	**ENSURE** required Boric Acid AND Primary Water Flow are being maintained OR **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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JOB PERFORMANCE MEASURE

SYSTEM: **Chemical and Volume Control System (CVCS)**

TASK: **Perform Manual Makeup to VCT IAW S2.OP-SO.CVC-0006**

* #	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:			
* * * *		• 2CV179 • 2CV172 • 2CV185 • 2CV181	**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.**		
*		**B. STOP** Primary Water Pump	Depresses STOP pushbutton for Primary Water Pump which was started.		
*		**C. PLACE** Boric Acid Pump selected in SLOW Speed **D. PLACE** the system in Automatic Makeup Mode IAW Section 5.1	Places the selected Boric Acid Pump in SLOW speed and verifies SLOW speed bezel illuminates. **Terminate the JPM once the selected Boric Acid Pump has been placed in SLOW speed.**		
	CUE:	**JPM is Complete.** **RECORD STOP TIME** **STOP TIME**:_____	**Terminate the JPM when the Boric Acid Pump is in SLOW speed.**		

JPM: 20-01 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 (*).

___KH__ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure: Procedure Rev. __25___ Date __3-10-17

___KH_ 9. Pilot test the JPM:
a. verify Cues both verbal and visual are free of conflict, and
b. ensure performance time is accurate.

__NA___ 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.

__KH___ 11. When JPM is revalidated, SME or Instructor sign and date JPM cover page.

SME/Instructor:_____ Date: _____

SME/Instructor:_____ Date: _____

SME/Instructor:_____ Date: _____

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.
- Boric Acid Storage Tank boron concentration is 6,700 ppm.