OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION: SALEM

SYSTEM: Generic Admin - Conduct of Operations

TASK: Review Completed Shutdown Margin IAW SC.RE-ST.ZZ-0002

TASK NUMBER: N1200030301

JPM NUMBER: 19-01 NRC SRO-A1

ALTERNATE PATH: [ ] **K/A NUMBER:** 2.1.43

IMPORTANCE FACTOR: RO: ____ SRO: 4.3

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

EVALUATION SETTING/METHOD: Classroom / Perform

REFERENCES: SC.RE-ST.ZZ-0002(Q), Rev. 24 SHUTDOWN MARGIN CALCULATION
S2.RE-RA.ZZ-0016(Q), Rev. 12 CURVE BOOK (both checked 4-7-20)

TOOLS AND EQUIPMENT: Calculator

VALIDATED JPM COMPLETION TIME: 30 min

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: N/A

Developed By: **R. Chan** **Date: 4-7-20**
Instructor

Validated By: **Moore / Knock / Lantigua** **Date: 4-8-20 / 4-21-20**
SME or Instructor

Approved By: **N/A** **Date:**
Training Department

Approved By: **N/A** **Date:**
Operations Department

ACTUAL JPM COMPLETION TIME:

ACTUAL TIME CRITICAL COMPLETION TIME:

PERFORMED BY: _____

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

REASON, IF UNSATISFACTORY:

EVALUATOR'S SIGNATURE: **DATE:**

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____

DATE: _____

SYSTEM: Conduct of Operations

TASK: Calculate Shutdown Margin

TASK NUMBER: N1200030301

INITIAL CONDITIONS:

- Unit 2 load reduction in preparation for Main Turbine valve testing was placed on hold at 90% Power due to two Control Rods (1D4 and 1D2) stopped moving.
- Group Demand Counter for Control Bank D indicates 200 steps.
- The CRS has declared both Control Rods INOPERABLE and entered TS LCO 3.1.3.1 Action c.3.
- Current boron concentration is 1300 ppm.
- Current core burnup is 4000 EFPH.

Subsequently,

- Reactor Engineering informs you that both Control Rods are **UNTRIPPABLE**.
- The RO has completed a Shutdown Margin Calculation IAW SC.RE-ST.ZZ-0002 to satisfy the action requirement of TSAS 3.1.3.1 Action c.3.

INITIATING CUE:

Review the completed Shutdown Margin Calculation for completeness and accuracy.

1. Identify discrepancies, if any, and how to correct them on the CUE SHEET by recording the step number in error and what the correction should be OR you can MARK UP the provided procedure by one lining the error and record the correction.

2. Does the Shutdown Margin Calculation meet the surveillance requirement (Yes/No)? If no, briefly explain why?

List of Discrepancies (use this if NOT marking up procedure):

Step # in error	What is the correction?

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.

Task Standard for Successful Completion:

- **Candidate identifies the following errors in Attachment 3:**
  1. **Step 4.1.6 completed in error. Step 4.1.5 should be completed with a value of 2.**
  2. **Step 4.2.5 completed in error. Step 4.2.4 should be completed with a value of 4330 pcm.**
  3. **Step 4.2.7 completed in error. Trippable Rod Worth with Untrippable RCCA(s) should be used with a value of -2327.8 pcm (+/- 1 pcm)**
  4. **Step 4.3.1 should be the same value as calculated in step 4.2.7 of -2327.8 pcm**
  5. **Step 4.3.5 SDM should be -269.5 pcm (+/- 1 pcm)**
  6. **Step 4.4.1 marked incorrectly as SAT. With SDM of -269.5 pcm this step should be marked as UNSAT.**
  7. **Step 4.4.2.A marked incorrectly as N/A, should be 315.5 pcm (+/- 1 pcm)**
  8. **Step 4.4..2.B marked incorrectly as N/A, should be 19 % RTP (15 - 20 % RTP)**

OPERATOR TRAINING PROGRAM **NAME:**_____

JOB PERFORMANCE MEASURE **DATE:**_____

System: Conduct of Operations

Task: Calculate Shutdown Margin

*	STEP NO.	STEP (* Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		Obtains copy of procedure SC.RE-ST.ZZ-0002(Q). Obtains copy of S2.RE-RA.ZZ-0016 Curve Book.	Provide **Rev. 24** of surveillance. Provide **Rev. 12** of Curve Book.		
	CUE:	When the operator acknowledges ready to start JPM RECORD START TIME. **START:**_____			
*	4.1.6	# OF DROPPED OR MISALIGNED RCCA(s)	**Candidate determines step 4.1.6 is incorrectly filled out. This step should not be completed since both Control Rods were deemed untrippable.** **Candidate identifies that step 4.1.5 should have been completed with a value of:** **2 untrippable RCCA(s).**		

OPERATOR TRAINING PROGRAM **NAME:**_____

JOB PERFORMANCE MEASURE **DATE:**_____

System: Conduct of Operations

Task: Calculate Shutdown Margin

*	STEP NO.	STEP (* Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*	4.2.5	PENALTY FOR DROPPED OR MISALIGNED RCCA(s)	**Candidate determines that step 4.2.5 was not the correct step to complete based on rods being untrippable.** **Candidate determines that step 4.2.4 "PENALTY FOR UNTRIPPABLE RCCA(s)" should be used.** **Candidate performs step 4.2.4 and calculates a value of:** **4330 pcm.**		
	4.2.6	INTEGRAL ROD WORTH INSERTED AT POSITION IN ITEM 4.1.3	Candidate determines that Control Bank D demand is at 200 steps(from step 4.1.3) and looking at Table 1-7, the Integral Rod Worth at D-200 steps is **49.2 pcm**. **Examiner's Note**: IF Control Bank D demand was at 225 steps, this penalty would be 0 pcm.		

OPERATOR TRAINING PROGRAM **NAME:**_____

JOB PERFORMANCE MEASURE **DATE:**_____

System: Conduct of Operations

Task: Calculate Shutdown Margin

*	STEP NO.	STEP (* Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*	4.2.7	CHOOSE the appropriate calculation below. MARK the calculation not used as "N/A".	**Candidate determines that the " TRIPPABLE ROD WORTH" calculation chosen was incorrect based on rods being untrippable.** **Candidate determines that the "TIPPABLE ROD WORTH WITH UNTRIPPABLE RCCA(s)" calculation should be used.** **Candidate determines the calculated TRIPPABLE ROD WORTH WITH UNTRIPABLE RCCA(s) is:** **-2327.8 pcm.**		
*	4.3.1	TRIPPABLE ROD WORTH	**Candidates corrects step to the same value as step 4.2.7:** **-2327.8 pcm**		

OPERATOR TRAINING PROGRAM **NAME:**_____

JOB PERFORMANCE MEASURE **DATE:**_____

System: Conduct of Operations

Task: Calculate Shutdown Margin

*	STEP NO.	STEP (* Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*	4.3.5 2.1	SDM	**Candidate determines that the calculated SDM 0f -2815.5 pcm is incorrect.** **Candidate calculates the SDM value to be:** **-269.5 pcm.**		
*	4.4.1	IS THE SDM EQUAL TO OR MORE NEGATIVE THAN (-) 1300 PCM?	**Candidate determines that this step was incorrectly marked as SAT.** **Candidate determines that the step is UNSAT.**		
	4.4.2	IF the SDM is UNSAT, THEN PERFORM the following:			
	4.4.2.A	**CALCULATE** the power defect required to achieve required SDM	Candidate performs calculation and determines required power defect is: **315.5 pcm**		

OPERATOR TRAINING PROGRAM **NAME:**_____

JOB PERFORMANCE MEASURE **DATE:**_____

System: Conduct of Operations

Task: Calculate Shutdown Margin

*	STEP NO.	STEP (* Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	4.4.2.B	**DETERMINE** Reactor Power Level based on power defect in 4.4.2.A and boron concentration in 4.1.2 (Figure 17A/Table 2-1)	Candidate refers to Figure 17A and determines Reactor Power Level of: **19 % RTP** **(acceptable band 15-20 % RTP)**		
	CUE	MARK stop time of JPM when procedures are returned to proctor. **STOP:**_____	JPM is Complete when Candidate submits Attachment to Evaluator.		

Table G Data Points for Curvebook Figure 15

Total Control Bank Worth versus Core Exposure for HZP and CZP Conditions

Cycle Burnup (EFPH)	Control Bank Worth (pcm)		
	68 °F	350 °F	547 °F
0.0	3098	3448	3878
100.0	3098	3454	3886
1000.0	3002	3347	3777
2000.0	2896	3227	3657
3000.0	2840	3163	3594
4000.0	2823	3143	3576
5000.0	2809	3126	3562
6000.0	2822	3141	3580
7000.0	2835	3156	3598
8000.0	2859	3180	3627
9000.0	2887	3209	3661
10000.0	2916	3240	3697
11000.0	2950	3276	3739
12000.0	2985	3312	3782
12502.7	3002	3330	3803

Table H Data Points for Curvebook Figure 16

Total Shutdown Bank Worth versus Core Exposure for HZP and CZP Conditions

Cycle Burnup (EFPH)	Shutdown Bank Worth (pcm)		
	68 °F	350 °F	547 °F
0.0	2258	2394	2552
100.0	2250	2378	2541
1000.0	2425	2546	2703
2000.0	2618	2732	2883
3000.0	2776	2880	3023
4000.0	2906	2999	3131
5000.0	3033	3115	3235
6000.0	3139	3205	3313
7000.0	3245	3295	3391
8000.0	3340	3375	3458
9000.0	3429	3451	3521
10000.0	3516	3524	3581
11000.0	3593	3589	3633
12000.0	3671	3654	3686
12502.7	3710	3686	3712

Table 1-6

Summary of Control Rod Worths

HZP, No Xe

Burnup (EFPH)		Control Banks (pcm)	Shutdown Banks (pcm)	Control and Shutdown Banks (pcm)
BOL	0.0	3877.5	2552.4	6429.9
MRDS	2439.6	3603.8	2961.7	6565.5
MOL	6098.9	3575.4	3325.8	6901.2
LFPC	11381.8	3753.3	3654.6	7407.9

Rod Worth Penalty to Use for Modes 1, 2

Event A	Rod Worth Penalty (pcm) BOL to < MOL (6098.9 EFPH)	Rod Worth Penalty (pcm) MOL (6098.9 EFPH) to EOL
One Untrippable RCCA	2005	2165

Event B	Rod Worth Penalty (pcm) BOL to EOL
Two or more Untrippable RCCAs	2165

Event C	Rod Worth Penalty (pcm)* BOL to EOL
Dropped RCCA	500

*In the event of a misaligned RCCA, apply dropped RCCA penalty.

Table 1-7 (Continued)

Data Points for Curvebook Figures 2 and 2C
MRDS HFP Differential and Integral Rod Worth vs. RCCA Steps Withdrawn
Burnup = 2439.6 EFPH, Range = 1265.6 - 4269.3 EFPH, 128 Step Separation, Eq Xe

Steps Withdrawn				Differential	Integral
Total Steps	D	C	B	Rod Worth (pcm/step)	Rod Worth (pcm)
609	225	225	225	0.5	0.0
604	220	225	225	0.9	2.6
594	210	225	225	2.4	20.4
584	200	225	225	3.0	49.2
574	190	225	225	4.0	85.2
564	180	225	225	4.4	126.4
554	170	225	225	4.6	171.9
544	160	225	225	4.9	217.1
534	150	225	225	4.9	266.1
524	140	225	225	5.1	315.8
514	130	225	225	5.2	364.8
504	120	225	225	5.2	416.4
494	110	225	225	5.1	467.5
482	98	225	225	5.1	528.6
474	90	218	225	6.6	575.4
464	80	208	225	8.1	649.7
454	70	198	225	8.8	733.7
444	60	188	225	9.8	826.5
434	50	178	225	10.3	927.2
424	40	168	225	10.3	1031.7
414	30	158	225	10.5	1134.6
404	20	148	225	9.9	1237.6
394	10	138	225	9.0	1333.4
384	0	128	225	7.4	1415.0

Table 2-1 (Continued)

Data Points for Curvebook Figure 17A
MRDS Total Power Defect (pcm) as a Function of Power and Boron Concentration
Burnup = 2439.6 EFPH, Range = 1265.6 - 4269.3 EFPH

Power Level (%)	Boron Concentration (ppm)															
	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	1700	1750	1800
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	91	90	89	88	87	86	85	84	83	82	81	80	79	78	77	76
10	179	177	175	173	171	169	167	165	163	161	159	157	155	154	152	150
15	265	262	259	256	253	250	247	244	241	238	235	232	229	227	224	221
20	348	344	340	336	332	328	324	320	316	312	308	305	301	297	294	290
25	430	425	420	415	409	404	399	395	390	385	380	376	371	366	362	357
30	511	504	498	492	486	479	473	468	462	456	450	445	439	434	428	423
35	590	583	575	568	560	553	546	539	533	526	519	513	506	500	493	487
40	668	660	651	643	634	626	618	610	602	595	587	580	572	565	557	550
45	746	736	727	717	708	698	689	680	671	663	654	646	637	629	621	612
50	824	813	802	791	781	770	760	750	740	730	721	711	702	692	683	674
55	901	889	877	865	853	842	830	819	808	797	787	776	766	755	745	735
60	978	965	952	939	926	913	900	888	876	864	852	841	829	818	807	796
65	1056	1041	1027	1012	998	984	971	957	944	931	918	905	893	881	868	856
70	1134	1118	1102	1086	1071	1056	1041	1026	1012	998	984	970	957	943	930	917
75	1212	1195	1178	1161	1144	1128	1112	1096	1080	1065	1050	1035	1020	1006	991	977
80	1291	1272	1254	1236	1218	1200	1183	1166	1149	1132	1116	1100	1084	1068	1053	1038
83	1338	1319	1300	1281	1262	1244	1225	1208	1190	1173	1156	1139	1123	1106	1090	1074
85	1370	1350	1330	1311	1292	1273	1254	1236	1218	1200	1182	1165	1148	1131	1115	1098
90	1450	1429	1408	1387	1366	1346	1326	1306	1287	1268	1249	1231	1213	1195	1177	1159
95	1531	1508	1486	1463	1441	1420	1398	1377	1357	1336	1316	1297	1277	1258	1239	1221
99	1596	1572	1548	1525	1502	1479	1456	1434	1413	1391	1370	1350	1329	1309	1289	1270
100	1613	1588	1564	1540	1517	1494	1471	1449	1427	1405	1384	1363	1342	1322	1302	1282

ANSWER KEY

ATTACHMENT 3
SHUTDOWN MARGIN VERIFICATION
FOR MODES 1 OR 2
Page 1 of 4

SALEM UNIT 2

1.0 **PURPOSE**

1.1 The purpose of this attachment is to determine the SDM with a critical reactor.

1.2 This attachment satisfies the surveillance requirements of T/S 4.1.1.1.1.a and 4.1.1.1.2.

1.3 This attachment **SHALL** be performed within 1 hour after detection of an inoperable control rod and at least once per 12 hours thereafter while the rod(s) is (are) inoperable.

1.4 This attachment is used to ensure adequate shutdown margin IAW SC.RE-ST.ZZ-0003(Q), Core Reactivity Balance Calculation.

1.5 To determine shutdown margin with a bank inserted beyond insertion limit specified in the COLR in accordance with T/S 3.1.3.4 and T/S 3.1.3.5.

2.0 **PREREQUISITES**

R 2.1 The reactor is in Mode 1 or Mode 2 with $k_{eff} \geq 1.0$.

3.0 **PRECAUTIONS AND LIMITATIONS**

R 3.1 All figures are located in S1(2).RE-RA.ZZ-0016(Q) Curvebook.

R 3.2 All data from the tables and figures should be taken as the absolute value. Any mathematical signs (+/-) should be propagated throughout the rest of the calculation.

R 3.3 This calculation does **NOT** consider the effects of RCS boron concentration, RCS average temperature, xenon concentration, or samarium concentration; Tave will decrease from the critical condition to the hot zero power shutdown condition. However, the reactivity effect of this will be accounted for in the power defect. The other factors will stay constant from the critical condition to the hot zero power shutdown condition.

R 3.4 The term "abs" found in some formulas refers to the absolute value of the item in question.

R 3.5 Inoperable RCCAs are further classified as untrippable, dropped or misaligned.

4.0 **PROCEDURE**

4.1 **CRITICAL CONDITIONS**

4.1.1 POWER LEVEL 90 %RTP

4.1.2 BORON CONCENTRATION 1300 ppm

ANSWER KEY

ATTACHMENT 3
SHUTDOWN MARGIN VERIFICATION
FOR MODES 1 OR 2

SALEM UNIT 2

4.1.3 BANK POSITION

CONTROL BANKS:	SHUTDOWN BANKS
BANK A at 225 STEPS	BANK A at 225 STEPS
BANK B at 225 STEPS	BANK B at 225 STEPS
BANK C at 225 STEPS	BANK C at 225 STEPS
BANK D at 200 STEPS	BANK D at 225 STEPS

4.1.4 BURNUP 4000 EFPH

4.1.5 # OF UNTRIPPABLE RCCA(s) 2 ~~0~~ RCCA(s)

4.1.6 # OF DROPPED OR MISALIGNED RCCA(s) 0 ~~2~~ RCCA(s)

4.2 **CALCULATION OF ROD WORTH**

4.2.1 TOTAL CONTROL BANK WORTH (Figure 15/Table G) (-) 3576 pcm

4.2.2 TOTAL SHUTDOWN BANK WORTH (Figure 16/Table H) (-) 3131 pcm

4.2.3 MOST REACTIVE STUCK ROD WORTH (Figure 14/Table I) 784 pcm

NOTE
The reactivity worth for a single or multiple untrippable RCCAs and dropped or misaligned RCCAs comes from Table 1-6 S1(2).RE-RA.ZZ-0016, Curve Book. For multiple untrippable RCCAs, the penalty in 4.2.4 should have a maximum value of the sum of the total shutdown and control bank worths in steps 4.2.1 and 4.2.2.

4.2.4 PENALTY FOR UNTRIPPABLE RCCA(s) 4330 ~~0~~ pcm
_____ (Item 4.1.5) x _____ (Table 1-6) =

4.2.5 PENALTY FOR DROPPED OR MISALIGNED RCCA(s) 0 ~~1000~~ pcm
_____ (Item 4.1.6) x _____ (Table 1-6) =

ANSWER KEY

ATTACHMENT 3
SHUTDOWN MARGIN VERIFICATION
FOR MODES 1 OR 2

SALEM UNIT 2

NOTE
If control bank B or C is inserted ≤ 10 steps beyond the rod insertion limit, the value in step 4.2.6 should be the integral rod worth from Table 1-8 at the violating bank's current position. This is a conservative estimate of the rod worth of any violation allowed in T.S. 3.1.3.5 Action 1.

CAUTION
Shutdown margin may only be calculated with 1 shutdown bank or control bank A, B, or C inserted beyond the RIL.

4.2.6 INTEGRAL ROD WORTH INSERTED AT POSITION IN ITEM 4.1.3 (If ARO, use zero) (HFP: Figure 2C/Table 1-7 or HZP: Figure 2A/Table 1-8) — 49.2 pcm

4.2.6.a **IF** any shutdown bank or control bank A is inserted ≤ 10 steps, record 50 pcm; otherwise record 0 pcm. — 0 pcm

4.2.6.b INTEGRAL ROD WORTH and Penalty (Item 4.2.6) + (Item 4.2.6.a) = — 49.2 pcm

NOTE
The penalties for untrippable RCCAs include the most reactive stuck rod worth. The most reactive stuck rod worth from step 4.2.3 is not needed when calculating the trippable rod worth with at least one untrippable RCCA.

4.2.7 **CHOOSE** the appropriate calculation below. **MARK** the calculation not used "N/A."

TRIPPABLE ROD WORTH. (Item 4.2.1) + (Item 4.2.2) + (Item 4.2.3) + (Item 4.2.5) + (Item 4.2.6.b) = ~~-4873.8~~ pcm N/A

OR

TRIPPABLE ROD WORTH WITH UNTRIPPABLE RCCA(s) (Item 4.2.1) + (Item 4.2.2) + (Item 4.2.4) + (Item 4.2.5) + (Item 4.2.6.b) = -2327.8 ~~N/A~~ pcm

4.3 **CALCULATION OF SDM (Note: See Precaution 3.4)** -2327.8

4.3.1 TRIPPABLE ROD WORTH (Item 4.2.7) — ~~-4873.8~~ pcm

4.3.2 TEN PERCENT ROD WORTH PENALTY (_____ + _____ - _____) x 0.10 = abs(Item 4.2.1) abs(Item 4.2.2) (Item 4.2.3) — (+) 592.3 pcm

4.3.3 ROD MISALIGNMENT RELAXATION PENALTY — (+) 120 pcm

4.3.4 POWER DEFECT (Figure 17A/Table 2-1) — 1346 pcm

4.3.5 SDM (Item 4.3.1) + (Item 4.3.2) + (Item 4.3.3) + (Item 4.3.4)= — ~~-2815.5~~ -269.5 pcm

ANSWER KEY

ATTACHMENT 3
SHUTDOWN MARGIN VERIFICATION
FOR MODES 1 OR 2

SALEM UNIT 2

4.4 **ACCEPTANCE CRITERIA**

NOTE
REQUIRED SDM (per T/S 3.1.1.1) MODE 1 OR 2:
(-)1.3 % Δk/k = (-)1300 PCM

R / $ 4.4.1 IS THE SDM (Item 4.3.5) EQUAL TO OR MORE NEGATIVE THAN (-) 1300 PCM?

YES: then surveillance is SAT: ✓

NO: then surveillance is UNSAT: ✓

NOTE
If the required power defect in step 4.4.2.A is negative, then it is not possible to meet SDM by lowering reactor power and step 4.4.2.B will be 0%.

R ~~NA~~ 4.4.2 IF the SDM is UNSAT, THEN **PERFORM** the following:

R ~~NA~~ A. **CALCULATE** the power defect required to achieve required SDM.

2327.8 (abs(Item 4.3.1)) - 592.3 (Item 4.3.2) - 120 pcm (Item 4.3.3) - 1300 pcm = 315.5 pcm

R ~~NA~~ B. **DETERMINE** Reactor Power Level based on power defect in 4.4.2.A and boron concentration in 4.1.2. (Figure 17A/Table 2-1)

19 %RTP

R ~~NA~~ C. **NOTIFY** SM/CRS to initiate rapid boration, IAW S1(2).OP-SO.CVC-0008(Q), Rapid Boration, and reduce reactor power UNTIL the required SDM is attained.

Completed by: R. Chan Date: Today Time: Now

Reviewed by: D. Bell Date: Today Time: Now

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.

RC 1. Task description and number, JPM description and number are identified.

RC 2. Knowledge and Abilities (K/A) references are included.

RC 3. Performance location specified. (in-plant, control room, or simulator)

RC 4. Initial setup conditions are identified.

RC 5. Initiating and terminating Cues are properly identified.

RC 6. Task standards identified and verified by SME review.

RC 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*).

RC 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure: Procedure Rev. __24___ Date ____4-7-20_____

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

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

N/A 11. When JPM is revalidated, SME or Instructor sign and date JPM cover page.

SME/Instructor: R. Chan Date: 4-7-20

SME/Instructor: R. Moore Date: 4-8-20

SME/Instructor: L. Knock Date: 4-21-20

INITIAL CONDITIONS:

- Unit 2 load reduction in preparation for Main Turbine valve testing was placed on hold at 90% Power due to two Control Rods (1D4 and 1D2) stopped moving.
- Group Demand Counter for Control Bank D indicates 200 steps.
- The CRS has declared both Control Rods INOPERABLE and entered TS LCO 3.1.3.1 Action c.3.
- Current boron concentration is 1300 ppm.
- Current core burnup is 4000 EFPH.

Subsequently,

- Reactor Engineering informs you that both Control Rods are **UNTRIPPABLE**.
- The RO has completed a Shutdown Margin Calculation IAW SC.RE-ST.ZZ-0002 to satisfy the action requirement of TSAS 3.1.3.1 Action c.3.

INITIATING CUE:

Review the completed Shutdown Margin Calculation for completeness and accuracy.

1. Identify discrepancies, if any, and how to correct them on the CUE SHEET by recording the step number in error and what the correction should be **OR** you can MARK UP the provided procedure by one lining the error and record the correction.

2. Does the Shutdown Margin Calculation meet the surveillance requirement (Yes/No)? If no, briefly explain why?

List of Discrepancies (use this if NOT marking up procedure):

Step # in error	What is the correction?