SEQUOYAH NUCLEAR PLANT

SRO ADMIN A.1.a

Calculate Subcooling Margin

SRO

JOB PERFORMANCE MEASURE

Task: Calculate Subcooling with no Subcooling Monitors and NO Plant computers available.

Task #: 3440100302

Task Standard: Examinee calculates RCS subcooling of 49 degrees based on initial conditions and determines SI Termination is permissible.

Time Critical Task: **YES:** _____ **NO:** **X**

K/A Reference/Ratings: 2.1.45 (4.3)

Method of Testing:

Simulated Performance: _____ **Actual Performance:** **X**

Evaluation Method:

Simulator _____ **In-Plant** _____ **Classroom** **X**

Main Control Room _____ **Mock-up** _____

Performer: _____
Trainee Name

Evaluator: _____ / _____ _____
Name / Signature DATE

Performance Rating: **SAT:** _____ **UNSAT:** _____

Validation Time: **14 min** **Total Time:** _____

Performance Time: **Start Time:** _____ **Finish Time:** _____

COMMENTS

_____

_____

_____

_____

_____

SPECIAL INSTRUCTIONS TO EVALUATOR:

1. Critical steps are identified in step SAT/UNSAT column by bold print 'Critical Step.'
2. Any UNSAT requires comments.

Tools/Equipment/Procedures Needed:

1. Calculator
2. 2-68-PIP-004 Saturation Table
3. AOP-C.04 SHUTDOWN FROM AUXILIARY CONTROL ROOM

References:

	Reference	Title	Rev No.
1.	AOP-C.04	SHUTDOWN FROM AUXILIARY CONTROL ROOM	25

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Read to the examinee:

DIRECTIONS TO TRAINEE:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM. I will provide initiating cues and reports on other actions when directed by you. When you complete the task successfully, the objective for this job performance measure will be satisfied. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

HAND JPM BRIEFING SHEET TO EXAMINEE AT THIS TIME!

INITIAL CONDITIONS:

1. Unit 2 is in MODE 3
2. RCS Loop 1 Th is 540 Loop 2 Th is 545, Loop 3 Th is 560 and Loop 4 Th is 565.
3. RCS Pressure is 1700 psig
4. An event has occurred requiring Control Room Abandonment.
5. A valid SI signal has occurred.
6. AOP-C.04 SHUTDOWN FROM AUXILIARY CONTROL ROOM is in progress at step 26 RNO.

INITIATING CUES:

1. You are to calculate RCS subcooling using AOP-C.04 SHUTDOWN FROM AUXILIARY CONTROL ROOM Appendix F and the provided saturation table.

2. When you have calculated RCS subcooling, then determine if SI flow is required based on subcooling.

3. Inform the evaluator when you are complete.

Start Time _____

STEP 1 :	Obtain a copy of 2-68-PIP-004 Saturation Table and AOP-C.04 SHUTDOWN FROM AUXILIARY CONTROL ROOM	____ SAT ____ UNSAT
Standard:	Examinee obtains a copy of 2-68-PIP-004 Saturation Table and AOP-C.04 SHUTDOWN FROM AUXILIARY CONTROL ROOM Appendix F.	
Cue	Provide a copy of 2-68-PIP-004 Saturation Table and AOP-C.04 SHUTDOWN FROM AUXILIARY CONTROL ROOM Appendix F to the examinee.	
Comment		

Procedure Note	**NOTE 1** Conditions (such as an unisolable LOCA) which require maintaining ECCS flow are outside the scope of this procedure.	
Procedure Note	**NOTE 2** Arc flash protection requirements are waived in this procedure.	
STEP 2 :	1. **IDENTIFY** applicable unit: • Unit 1_____ • Unit 2_____	____ SAT ____ UNSAT
Standard:	Examinee records Unit 2 as the applicable unit based on information provided in the initiating cue.	
Comment		

STEP 3 :	2. **IF** terminating spurious SI during Appendix R fire event, **THEN** GO TO Note prior to Step 5.	____ SAT ____ UNSAT
Standard:	Examinee determines step is N/A based on information provided in the initiating cue.	
Comment		

STEP 4 :	3. **DETERMINE** RCS subcooling: a. **RECORD** RCS pressure. [L-10] _____ psig	____ SAT ____ UNSAT
Standard:	Examinee records RCS pressure of 1700 based on information provided in the initiating cue.	**Critical Step**
Comment		
Examiner Note	This step is critical because the correct answer will be calculated only if the information placed into the calculation is correct.	

STEP 5 :	3. **DETERMINE** RCS subcooling: b. **DETERMINE** saturation temperature for current RCS pressure **USING** posted saturation table. [L-10] _____ °F	____ SAT ____ UNSAT
Standard:	Examinee determines the saturation temperature of 614 based on information provided in 2-68-PIP-004 Saturation Table.	**Critical Step**
Comment		
Examiner Note	This step is critical because the correct answer will be calculated only if the information placed into the calculation is correct.	

STEP 6 :	3. **DETERMINE** RCS subcooling: c. **RECORD** highest RCS T-hot. [L-10] _____ °F	____ SAT ____ UNSAT
Standard:	Examinee records RCS the highest RCS Thot of 565 based on information provided in the initiating cue.	**Critical Step**
Comment		
Examiner Note	This step is critical because the correct answer will be calculated only if the information placed into the calculation is correct.	

STEP 7 :	3. **DETERMINE** RCS subcooling: d. **CALCULATE** subcooling: _____ (sat temp) — _____ (T-hot) = _____ (subcooling)	____ SAT ____ UNSAT **Critical Step**
Standard:	The examinee calculates a subcooling value of 49	
Comment		
Examiner Note	This step is critical because SI flow cannot be terminated until RCS subcooling is calculated at a value of greater than 40 deg.	

STEP 8 :	4. **MONITOR** SI flow NOT required: • RCS subcooling (step 3) greater than 40°F.	____ SAT ____ UNSAT **Critical Step**
Standard:	Examinee determines SI flow is NOT required based on RCS subcooling calculated is greater than 40°F.	
Comment		
Examiner Note	This step is critical because SI flow cannot be terminated until RCS subcooling is calculated at a value of greater than 40 deg.	

Terminating Cue:	**When the examinee determines that RCS subcooling is greater than the SI flow termination requirement, provide the following cue, "Another Operator will complete the remaining steps of this procedure."**	**STOP**

Stop Time _____

JPM BRIEFING SHEET

The examiner will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

INITIAL CONDITIONS:

1. Unit 2 is in MODE 3
2. RCS Loop 1 Th is 540 Loop 2 Th is 545, Loop 3 Th is 560 and Loop 4 Th is 565.
3. RCS Pressure is 1700 psig
4. An event has occurred requiring Control Room Abandonment.
5. A valid SI signal has occurred.
6. AOP-C.04 SHUTDOWN FROM AUXILIARY CONTROL ROOM is in progress at step 26 RNO.

INITIATING CUES:

1. You are to calculate RCS subcooling using AOP-C.04 SHUTDOWN FROM AUXILIARY CONTROL ROOM Appendix F and the provided saturation table.
2. When you have calculated RCS subcooling, then determine if SI flow is required based on subcooling.
3. Inform the evaluator when you are complete.

Acknowledge to the examiner when you are ready to begin.

HAND THIS PAPER BACK TO YOUR EVALUATOR WHEN YOU HAVE SATISFACTORILY COMPLETED THE ASSIGNED TASK.

SATURATION STEAM TABLE
(Temperatures Rounded to Nearest °F)

PSIG	SAT TEMP °F	50°F SUB-COOLED	PSIG	SAT TEMP °F	50°F SUB-COOLED
300	422	372	1350	584	534
350	436	386	1400	588	538
400	448	398	1450	593	543
450	459	409	1500	597	547
500	470	420	1550	602	552
550	480	430	1600	606	556
600	489	439	1650	610	560
650	497	447	1700	614	564
700	505	455	1750	618	568
750	513	463	1800	622	572
800	520	470	1850	626	576
850	527	477	1900	630	580
900	534	484	1950	633	583
950	540	490	2000	637	587
1000	546	496	2050	640	590
1050	552	502	2100	644	594
1100	558	508	2150	647	597
1150	563	513	2200	650	600
1200	569	519	2235	653	603
1250	574	524	2250	654	604
1300	579	529			

Saturation temperatures may be read from hot leg temperature RTD's or incore T/C's

2-68-PIP-95-004

A.1.a IN-PROGRESS

APPENDIX F

STOPPING ECCS PUMPS FOLLOWING SI ACTUATION

NOTE 1 Conditions (such as an unisolable LOCA) which require maintaining ECCS flow are outside the scope of this procedure.

NOTE 2 Arc flash protection requirements are waived in this procedure.

1. **IDENTIFY** applicable unit:
   - Unit 1_____
   - Unit 2_____

2. **IF** terminating spurious SI during Appendix R fire event,
   THEN
   GO TO Note prior to Step 5. ☐

3. **DETERMINE** RCS subcooling:

   a. **RECORD** RCS pressure. [L-10] _____ psig ☐

   b. **DETERMINE** saturation temperature for current RCS pressure **USING** posted saturation table. [L-10] ☐
   _____ °F

   c. **RECORD** highest RCS T-hot. [L-10] ☐
   _____ °F

   d. **CALCULATE** subcooling: ☐

   _____ (sat temp) — _____ (T-hot) = _____ (subcooling)

APPENDIX F

4. **MONITOR** SI flow NOT required:

   - RCS subcooling (step 3) greater than 40°F. ☐
   - RCS pressure stable or rising. [L-10] ☐
   - Narrow range level in at least one S/G greater than 10% OR total AFW flow greater than 440 gpm. ☐
   - pressurizer level greater than 10%. [L-10] ☐

NOTE Checklist 5 (Unit 1) and 6 (Unit 2) require closing CCPIT valves within 13 minutes to ensure adequate RCP seal injection flow and to prevent pzr overfill.

5. **IF** both CCPs RUNNING (A-A and B-B),
   THEN
   STOP one CCP. [6.9 KV Shutdown Bd A-A or B-B Compt 18] ☐

6. **STOP** SI pumps. [6.9 KV Shutdown Bd A-A and B-B Compt 15] ☐

7. **STOP** RHR pumps NOT running for shutdown cooling.
   [6.9 KV Shutdown Bd A-A and B-B Compt 14] ☐

8. **WHEN** appendix completed on affected unit,
   THEN
   NOTIFY ACR (x6359 or x6170). ☐

END OF TEXT

SEQUOYAH NUCLEAR PLANT

SRO ADMIN A.1.b

Review and Evaluate Shift Daily Surveillance Log Mode One

SRO

JOB PERFORMANCE MEASURE

Task: Review and Evaluate Shift Daily Surveillance Log Mode One

Task #: SRO 1190070301 Analyze operating loop for trends and out of specification conditions

Task Standard: Correctly review data on Appendix A to determine whether or not the surveillance meets acceptable criteria.

Time Critical Task: **YES:** _____ **NO:** X

K/A Reference/Ratings: 2.1.18 (3.6/3.8)

Method of Testing:

Simulated Performance: _____ **Actual Performance:** X

Evaluation Method:

Simulator _____ **In-Plant** _____ **Classroom** X

Main Control Room _____ **Mock-up** _____

Performer: _____
Trainee Name

Evaluator: _____ / _____ _____
Name / Signature DATE

Performance Rating: **SAT:** _____ **UNSAT:** _____

Validation Time: 19 minutes **Total Time:** _____

Performance Time: **Start Time:** _____ **Finish Time:** _____

COMMENTS

_____

_____

SPECIAL INSTRUCTIONS TO EVALUATOR:

1. Critical steps are identified in step SAT/UNSAT column by bold print 'Critical Step.'
2. Any UNSAT requires comments.

Tools/Equipment/Procedures Needed:

1. 1-SI-OPS-000-002.0, Shift Log, Appendix A
2. Technical Specifications, Unit 1
3. Chronological Test Log

References:

	Reference	Title	Rev No.
1.	1-SI-OPS-000-002.0	Shift Log, Appendix A	96
2.		Unit 1 Technical Specifications	

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Read to the examinee:

DIRECTIONS TO TRAINEE:
I will explain the initial conditions, and state the administrative task to be performed. I will provide initiating cues and reports on other actions when directed by you. When you complete the task successfully, the objective for this job performance measure will be satisfied. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

HAND JPM BRIEFING SHEET TO EXAMINEE AT THIS TIME!

INITIAL CONDITIONS:

1. Unit 1 has been operating at 100% rated thermal power and has been stable for the last 30 days. No LCO entries at this time.
2. Portions of the field data have been entered by ROs and AUOs.
3. Data takers are present.
4. You are the Unit Supervisor and the Shift Manager has assigned you to review only the data that is currently logged on 1-SI-OPS-000-002.0, "Shift Log, Appendix A" for the 0630-1830 shift for discrepancies and take appropriate action(s) if any, once the review is complete.

INITIATING CUES:

1. The Shift Manager directs you to review the data logged on the sections of Appendix A. (Another SRO will review the rest of the SI-2 data)
2. When you have finished reviewing the assigned pages of Appendix A, Identify and address any deviations on the Chronological Test Log.
3. Notify the Shift Manager when you have completed your task.

Start Time _____

STEP 1 :	Obtain a copy of 1-SI-OPS-000-002.0, Shift Log, Appendix A and a Chronological Test Log	____ SAT ____ UNSAT
Standard:	Copy of 1-SI-OPS-000-002.0, Shift Log, Appendix A and a Chronological Test Log have been obtained.	
Cue	Provide a copy of a marked up Appendix A and a Chronological Test Log to applicant.	
Comment		

<table>
<tr><td>STEP 2 :</td><td>Reviews data for CST A and CST B Level</td><td>___ SAT
___ UNSAT</td></tr>
<tr><td>Standard:</td><td>Applicant reviews readings for CST Level 0-LI-2-230A and 0-LI-2-233A recorded on the data sheet, determines that the values meets T.S. limit of ≥240,000 gallons.
<table>
<tr><td rowspan="2">>240,000 gals Operable</td><td>0-LI-2-230A</td><td>gals</td><td>300,000</td></tr>
<tr><td>0-LI-2-233A</td><td>Gals</td><td>320,000</td></tr>
</table></td><td></td></tr>
<tr><td>Comment</td><td></td><td></td></tr>
</table>

STEP 3 :	Reviews data in SG Level data table, check Operable, Channel Check, and MCD < 6.0%.	____ SAT ____ UNSAT
Standard:	Applicant reviews current readings for SG level on the data sheet and determines that SG 2 Level channel 2-LI-3-52 is not within MCD of <6.0%. The candidate will identify the associated Tech Spec LCO Action and write them on the Chronological Test Log. Tech Specs: 3.3.1.1, Action 9 3.3.2.1, Action 17 3.3.2.1, Action 36 3.3.3.7, Action 1	**Critical Step** **(Shaded portions critical)**
Examiner Note:	**If asked: Respond as the RO who took the data that the MCB still indicates as transcribed onto the data sheet.**	
Examiner Note:	**If asked to review previous shifts SI-2 data, inform the candidate that all previous data on this instrumentation was within MCD prior to today.**	
Examiner Note:	**If asked the color of the placard for 2-LI-3-52 (to deduce if it is a PAMS instrument), respond that it is a black placard.**	
Comment		

SG Water Level Channel Deviation	Operable	#1 LI-3-42	%	44
	Operable	#1 LI-3-39	%	42
	Operable	#1 LI-3-38	%	45
	Operable	#2 LI-3-55	%	46
	Operable	#2 LI-3-52	%	38
	Operable	#2 LI-3-51	%	42
	Operable	#3 LI-3-97	%	44
	Operable	#3 LI-3-94	%	44
	Operable	#3 LI-3-93	%	45
	Operable	#4 LI-3-110	%	46
	Operable	#4 LI-3-107	%	44
	Operable	#4 LI-3-106	%	42

STEP 4 :	Reviews data in SG Pressure data table, check Operable, Channel Check, and MCD ≤ 60 psig.	____ SAT ____ UNSAT
Standard:	Applicant reviews readings for SG Pressure on the data sheet, determines that the channels are operable, channel checked and MCD is within ≤ 60 psig.	
Comment		

Steam Line Pressure	Operable	#1 PI-1-2A	psig	865
	Operable	#1 PI-1-2B	psig	860
	Operable	#1 PI-1-5	psig	860
	Operable	#2 PI-1-9A	psig	860
	Operable	#2 PI-1-9B	psig	860
	Operable	#2 PI-1-12	psig	870
	Operable	#3 PI-1-20A	psig	870
	Operable	#3 PI-1-20B	psig	860
	Operable	#3 PI-1-23	psig	870
	Operable	#4 PI-1-27A	psig	870
	Operable	#4 PI-1-27B	psig	850
	Operable	#4 PI-1-30	psig	860

STEP 5 :	Reviews data in Shutdown Banks data table, check Operable and Rod Position Indication agree within ≤ 12 steps	____ SAT ____ UNSAT
Standard:	Applicant reviews readings for Shutdown Banks on the data sheet, determines that the RPIs are operable and RPIs are within ≤ 12 steps.	
Comment		

Shutdown Banks	A	COLR	Gr 1 Step	steps	228
		**	Gr 1 RPIs	steps	230
		COLR	Gr 2 Step	steps	228
		**	Gr 2 RPIs	steps	225
	B	COLR	Gr 1 Step	steps	228
		**	Gr 1 RPIs	steps	224
		COLR	Gr 2 Step	steps	228
		**	Gr 2 RPIs	steps	224
	C	COLR	Gr Step	steps	228
		**	Gr RPIs	steps	224
	D	COLR	Gr Step	steps	228
		**	Gr RPIs	steps	226

<table>
<tr><td>STEP 6 :</td><td colspan="6">Reviews data in Control Banks A & B data table (page 6),check Operable, and Rod Position Indication agree within ≤ 12 steps</td><td>____ SAT
____ UNSAT</td></tr>
<tr><td rowspan="10">Standard:</td><td colspan="6">Applicant reviews readings for Control Banks A & B on the data sheet, determines that the RPIs are operable and RPIs are within ≤ 12 steps.</td><td rowspan="10"></td></tr>
<tr><td rowspan="8">Control Rod Banks</td><td rowspan="4">A</td><td>COLR figure 1</td><td>Gr 1 Step</td><td>steps</td><td>228</td></tr>
<tr><td>**</td><td>Gr 1 RPIs</td><td>steps</td><td>225</td></tr>
<tr><td>COLR figure 1</td><td>Gr 2 Step</td><td>steps</td><td>228</td></tr>
<tr><td>**</td><td>Gr 2 RPIs</td><td>steps</td><td>225</td></tr>
<tr><td rowspan="4">B</td><td>COLR figure 1</td><td>Gr 1 Step</td><td>steps</td><td>228</td></tr>
<tr><td>**</td><td>Gr 1 RPIs</td><td>steps</td><td>226</td></tr>
<tr><td>COLR figure 1</td><td>Gr 2 Step</td><td>steps</td><td>228</td></tr>
<tr><td>**</td><td>Gr 2 RPIs</td><td>steps</td><td>225</td></tr>
<tr><td>Comment</td><td colspan="6"></td><td></td></tr>
</table>

STEP 7 :	Reviews data in Control Banks C & D data table (page 7),check Operable, and Rod Position Indication agree within ≤ 12 steps	____ SAT ____ UNSAT
Standard:	Applicant reviews readings for Control Banks C & D on the data sheet, determines that the RPIs are operable and RPIs are within ≤ 12 steps.	
Comment		

Control Rod Banks	C	COLR figure 1	Gr 1 Step	steps	228
		**	Gr 1 RPIs	steps	225
		COLR figure 1	Gr 2 Step	steps	228
		**	Gr 2 RPIs	steps	225
	D	COLR figure 1	Gr 1 Step	steps	220
		**	Gr 1 RPIs	steps	222
		COLR figure 1	Gr 2 Step	steps	220
		**	Gr 2 RPIs	steps	225

<table>
<tr><td>STEP 8 :</td><td>Reviews data in ECCS Subsystem (page 13), checks TS limit "Valve Open".</td><td>___ SAT
___ UNSAT</td></tr>
<tr><td>Standard:</td><td>Applicant reviews data for ECCS subsystem on the data sheet, determines that the indicating lights for 1-HS-63-1A and 1-HS-63-22A indicate that the valves are OPEN (check mark in box), Red lights On/Green lights Off.
<table>
<tr><td rowspan="2">ECCS Subsystem</td><td>Valve Open</td><td>1-HS-63-1A</td><td>√</td><td>√</td></tr>
<tr><td>Valve Open</td><td>1-HS-63-22A</td><td>√</td><td>√</td></tr>
</table></td><td></td></tr>
<tr><td>Evaluators Note</td><td>If asked by applicant for the current indications for 1-HS-63-1A and/or 1-HS-63-22A on 1-M-6, respond that the Red lights are lit.</td><td></td></tr>
<tr><td>Comment</td><td></td><td></td></tr>
</table>

<table>
<tr><td>STEP 9 :</td><td>Reviews data in RWST Level and CNTMT Level for Auto Swapover Cold Leg during SI (page 13) data block, checks Operable, Channel Check, and MCD ≤ 5% for RWST level and MCD ≤ 6% for CNTMT sump level.</td><td>____ SAT
____ UNSAT</td></tr>
<tr><td>Standard:</td><td>Applicant reviews data for RWST Level and CNTMT Level on the data sheet, determines that the MCD of ≤ 5% for RWST level has been exceeded due to 1-LI-63-52 at 91 The candidate will identify the associated Tech Spec LCO Action and write them on the Chronological Test Log. Applicant also determines that indicated level on 1-LI-63-178 does not exceed MCD and is acceptable even if no level is present (Note 40).
Tech Spec:
3.3.2.1 Action 18
<table><tr><td rowspan="8">RWST Level and CNTMT Level for Auto Swapover Cold Leg during SI</td><td rowspan="4">RWST</td><td rowspan="4">Operable</td><td>1-LI-63-50</td><td>%</td><td>99</td></tr><tr><td>1-LI-63-51</td><td>%</td><td>98</td></tr><tr><td>1-LI-63-52</td><td>%</td><td>91</td></tr><tr><td>1-LI-63-53</td><td>%</td><td>97</td></tr><tr><td rowspan="4">CTNMT</td><td rowspan="4">Operable</td><td>1-LI-63-176</td><td>%</td><td>0</td></tr><tr><td>1-LI-63-177</td><td>%</td><td>0</td></tr><tr><td>1-LI-63-178</td><td>%</td><td>2</td></tr><tr><td>1-LI-63-179</td><td>%</td><td>0</td></tr></table></td><td>Critical Step
(Shaded portions critical)</td></tr>
<tr><td>Evaluators Note</td><td>If asked by applicant for the current indications for RWST level, respond that the indications are as listed in the table.</td><td></td></tr>
<tr><td>Evaluators Note</td><td>If asked by applicant for the current indications for Containment Sump level, respond that the indications are as listed in the table.</td><td></td></tr>
<tr><td>EXAMINER NOTE:</td><td>If asked the color of the placard for 1-LI-63-52 (to deduce if it is a PAMS instrument), respond that it is a white placard.</td><td></td></tr>
<tr><td>Comment</td><td></td><td></td></tr>
</table>

Terminating Cue:	**When the examinee determines acceptance criteria is NOT met, provide the following cue, "Another Operator will complete the remaining steps of this procedure."**	**STOP**

Stop Time _____

JPM BRIEFING SHEET

DIRECTIONS TO TRAINEE:

The examiner will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

INITIAL CONDITIONS:

1. Unit 1 has been operating at 100% rated thermal power and has been stable for the last 30 days. No LCO entries at this time.
2. Portions of the field data have been entered by ROs and AUOs.
3. Data takers are present.
4. You are the Unit Supervisor and the Shift Manager has assigned you to review only the data that is currently logged on 1-SI-OPS-000-002.0, "Shift Log, Appendix A" for the 0630-1830 shift for discrepancies and take appropriate action(s) if any, once the review is complete.

INITIATING CUES:

1. The Shift Manager directs you to review the data logged on the sections of Appendix A. (Another SRO will review the rest of the SI-2 data)
2. When you have finished reviewing the assigned pages of Appendix A, Identify and address any deviations on the Chronological Test Log.
3. Notify the Shift Manager when you have completed your task.

Acknowledge to the examiner when you are ready to begin.

HAND THIS PAPER BACK TO YOUR EVALUATOR WHEN YOU HAVE SATISFACTORILY COMPLETED THE ASSIGNED TASK.

	Surveillance Ref.	Mode	Notes	TS Limits	Instrument No.	Units	0630-1830	1830-0630	REMARKS
SFP Area and Fuel Pool Rad Monitors	4.3.3.1.A.1.a	All	11,16	Operable	0-RM-90-102	mR/hr			
					0-RM-90-103	mR/hr			
Condensate Storage Tank Level	4.7.1.3.1	1,2,3,4	3,15	> 240,000 Gal Operable	0-LI-2-230A	gals	300000		
					0-LI-2-233A	gals	320000		

UO/RO Review Initials

NOTES:

3. Applicable at all times during modes 1, 2, & 3. Applicable during mode 4, only when steam generator is relied upon for heat removal.

11. General Notes: In the event a radiation monitor listed in this Instruction becomes inoperable, the monitor is to be listed on Attachment 1. **NOTIFY** the SRO to consult Tech Specs for appropriate actions for inoperable monitors. Any questionable monitor may be source checked in accordance with 1-SO-90-2 for Unit 1 monitors and 0-SO-90-2 for Unit 0 monitors to aid in determining operability.

15. **LOG** the water level indicated on LI-2-230A for CST A and LI-2-233A for CST B. Operability is determined by having equal to or greater than 240,000 gallons, in the CST aligned to the unit. Either A or B CST may be aligned to the operable unit. **IF** inoperable **THEN REFER** to 0-SI-OPS-067-117.0.

16. **VERIFY** the Fuel Pool Radiation Monitors are operable by observing power is "on," instrument malfunction alarms clear, and readings of at least background on ratemeter. **COMPARE** radiation levels to opposite train monitor and to levels from the previous shift using either the ICS computer or ratemeter readings. Radiation Protection Area surveys are required when RM-90-102 and RM-90-103 are inoperable with fuel in the storage pool, and the survey results are recorded on Attachment 1.

	Surveillance Ref.	Mode	Notes	TS Limits	Instrument No.	Units	0630-1830	1830-0630	REMARKS
SG Water Level Channel Deviation	4.3.1.1.1.A.14.A 4.3.1.1.1.A.14.B 4.3.2.1.1.A.5.a 4.3.2.1.1.A.6.c.1 4.3.2.1.1.A.6.c.2	1,2,3	17	OPERABLE	#1 LI-3-42	%	44		
				OPERABLE	#1 LI-3-39	%	42		
				OPERABLE	#1 LI-3-38	%	45		
				OPERABLE	#2 LI-3-55	%	46		
				OPERABLE	#2 LI-3-52	%	38		
				OPERABLE	#2 LI-3-51	%	42		
				OPERABLE	#3 LI-3-97	%	44		
				OPERABLE	#3 LI-3-94	%	44		
				OPERABLE	#3 LI-3-93	%	45		
				OPERABLE	#4 LI-3-110	%	46		
				OPERABLE	#4 LI-3-107	%	44		
				OPERABLE	#4 LI-3-106	%	42		

UO/RO Review Initials

NOTES:

17. **COMPARE** the three Steam Generator Level indicators for each S/G located on panel 1-M-4 to each other. Operability is verified by an acceptable deviation between channels of equal to or less than 6%.

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	Surveillance Ref.	Mode	Notes	TS Limits	Instrument No.	Units	0630-1830	1830-0630	REMARKS
Steam Line Pressure	4.3.2.1.1.A.1.f 4.3.2.1.1.A.4.d 4.3.2.1.1.A.4.e 4.3.2.1.1.A.6.d	1,2,3	18	OPERABLE	#1 PI-1-2A	PSIG	865		
				OPERABLE	#1 PI-1-2B	PSIG	860		
				OPERABLE	#1 PI-1-5	PSIG	860		
				OPERABLE	#2 PI-1-9A	PSIG	860		
				OPERABLE	#2 PI-1-9B	PSIG	860		
				OPERABLE	#2 PI-1-12	PSIG	870		
				OPERABLE	#3 PI-1-20A	PSIG	870		
				OPERABLE	#3 PI-1-20B	PSIG	870		
				OPERABLE	#3 PI-1-23	PSIG	860		
				OPERABLE	#4 PI-1-27A	PSIG	870		
				OPERABLE	#4 PI-1-27B	PSIG	850		
				OPERABLE	#4 PI-1-30	PSIG	860		

UO/RO Review Initials

NOTES:

18. **COMPARE** the three steam line pressure indicators for each steam line, located on panel 1-M-4 to each other. Operability is verified by an acceptable deviation between channels of equal to or less than 60 psig.

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Surveillance Ref.	Bank	Mode	Notes	TS Limits	Instrument No.	Units	0630-1830	1830-0630	REMARKS
Shutdown Banks 4.1.3.1.1 4.1.3.2 4.1.3.5.b	A	1,2	19,21,22	COLR	Gr 1 Step	Steps	228		
		1,2	20	**	Gr 1 RPIs	Steps	230		
		1,2	19,21,22	COLR	Gr 2 Step	Steps	228		
		1,2	20	**	Gr 2 RPIs	Steps	225		
	B	1,2	19,21,22	COLR	Gr 1 Step	Steps	228		
		1,2	20	**	Gr 1 RPIs	Steps	224		
		1,2	19,21,22	COLR	Gr 2 Step	Steps	228		
		1,2	20	**	Gr 2 RPIs	Steps	224		
	C	1,2	19,21,22	COLR	Gr Step	Steps	228		
		1,2	20	**	Gr RPIs	Steps	224		
	D	1,2	19,21,22	COLR	Gr Step	Steps	228		
		1,2	20	**	Gr RPIs	Steps	226		

**Within ± 12 steps of step counter.

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NOTES:

19. **COMPARE** each full length rod position indicator (RPI) to its associated group demand position indicator **AND VERIFY** correct rod position by each RPI within ± 12 steps of the indicated group demand.
    COMPARE each group of RPIs to the associated group demand position indicator **AND VERIFY** the rod position indication system and the rod position demand indication system are operating and agree within ± 12 steps. **RECORD** steps in the applicable column of the data sheet.
20. With Keff equal to or greater than 0.99.
21. **REFER** to COLR Figure 1 for fully withdrawn position range of rod banks. TI-28, Attachment 6, provides the desired position within this range.
22. **WHEN** the rod position deviation monitor is inoperable **OR WHEN** the rod insertion limit monitor is inoperable
    VERIFY rod position once per 4 hours and **LOG** on the data sheet. (Reference LCO 3.1.3.2) **WHEN** a maximum of one demand position indicator per bank is inoperable, **THEN VERIFY** that all RPIs for the affected bank are operable and that the most withdrawn rod and the least withdrawn rod of the bank are within a maximum of 12 steps of each other, once per 12 hours. (Reference LCO 3.1.3.2.c.1)

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	Surveillance Ref.	Bank	Mode	Notes	TS Limits	Instrument No.	Units	0630-1830	1830-0630	REMARKS
Control Rod Banks	4.1.3.1.1 4.1.3.2 4.1.3.6 4.1.1.1.1.b	A	1,2	19,21,22	COLR Figure 1	Gr 1 Step	Steps	228		
			1,2	20	**	Gr 1 RPIs	Steps	225		
			1,2	19,21,22	COLR Figure 1	Gr 2 Step	Steps	228		
			1,2	20	**	Gr 2 RPIs	Steps	225		
		B	1,2	19,21,22	COLR Figure 1	Gr 1 Step	Steps	228		
			1,2	20	**	Gr 1 RPIs	Steps	226		
			1,2	19,21,22	COLR Figure 1	Gr 2 Step	Steps	228		
			1,2	20	**	Gr 2 RPIs	Steps	225		

**Within ± 12 steps of step counter.

UO/RO Review Initials

NOTES:

19. **COMPARE** each full length rod position indicator (RPI) to its associated group demand position indicator **AND VERIFY** correct rod position by each RPI within ± 12 steps of the indicated group demand. **COMPARE** each group of RPIs to the associated group demand position indicator **AND VERIFY** the rod position indication system and the rod position demand indication system are operating and agree within ± 12 steps, **THEN RECORD** steps in the applicable column of the data sheet.
20. With Keff equal to or greater than 0.99.
21. **REFER** to COLR Figure 1 for fully withdrawn position range of rod banks. TI-28, Attachment 6, provides the desired position within this range.
22. **WHEN** the rod position deviation monitor is inoperable **OR WHEN** the rod insertion limit monitor is inoperable **VERIFY** rod position once per 4 hours and **LOG** on the data sheet. (Reference LCO 3.1.3.2) **WHEN** a maximum of one demand position indicator per bank is inoperable, **THEN VERIFY** that all RPIs for the affected bank are operable and that the most withdrawn rod and the least withdrawn rod of the bank are within a maximum of 12 steps of each other, once per 12 hours. (Reference LCO 3.1.3.2.c.1)

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	Surveillance Ref.	Bank	Mode	Notes	TS Limits	Instrument No.	Units	0630-1830	1830-0630	REMARKS
Control Rod Banks	4.1.3.1.1 4.1.3.2 4.1.3.6 4.1.1.1.1.b	C	1,2	19,21,22,23, 66	COLR Figure 1	Gr 1 Step	Steps	228		
			1,2	20	**	Gr 1 RPIs	Steps	225		
			1,2	19,21,22,23, 66	COLR Figure 1	Gr 2 Step	Steps	228		
			1,2	20	**	Gr 2 RPIs	Steps	225		
		D	1,2	19,21,22,23, 66	COLR Figure 1	Gr 1 Step	Steps	220		
			1,2	20	**	Gr 1 RPIs	Steps	222		
			1,2	19,21,22,23, 66	COLR Figure 1	Gr 2 Step	Steps	220		
			1,2	20	**	Gr 2 RPIs	Steps	225		

**Within ± 12 steps of step counter.

UO/RO Review Initials

NOTES:

19. **COMPARE** each full length rod position indicator (RPI) to its associated group demand position indicator **AND VERIFY** correct rod position by each RPI within ± 12 steps of the indicated group demand. **COMPARE** each group of RPIs to the associated group demand position indicator **AND VERIFY** the rod position indication system and the rod position demand indication system are operating and agree within ± 12 steps, **THEN RECORD** steps in the applicable column of the data sheet.
20. With Keff equal to or greater than 0.99.
21. **REFER** to COLR Figure 1 for fully withdrawn position range of rod banks. TI-28, Att. 6, provides the desired position within this range.
22. **WHEN** the rod position deviation monitor is inoperable **OR WHEN** the rod insertion limit monitor is inoperable **VERIFY** rod position once per 4 hours and **LOG** on the data sheet. (Reference LCO 3.1.3.2)
    WHEN a maximum of one demand position indicator per bank is inoperable, **THEN VERIFY** that all RPIs for the affected bank are operable and that the most withdrawn rod and the least withdrawn rod of the bank are within a maximum of 12 steps of each other, once per 12 hours. (Reference LCO 3.1.3.2.c.1)
23. **IF** manual rod motion occurs during SI performance, **THEN** allowing one-half hour for thermal soak may provide a more accurate RPI reading.
66. **MAINTAIN** rods above insertion limits as shown by COLR Figure 1. IF LEFM calorimetric power indication (U2118) is inoperable, then rod insertion limit lines in COLR must be raised by 3 steps withdrawn until LEFM is restored.

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	Surveillance Ref.		Mode	Notes	TS Limits	Instrument No.	Units	0630-1830	1830-0630	REMARKS
ECCS Subsystem	4.5.2.a		1,2,3	38 68	Valve Open	1-HS-63-1A	(√)	✓		
						1-HS-63-22A	(√)	✓		
RWST Level and CNTMT Level for Auto Swapover Cold Leg during SI	4.3.2.1.1.A.9.a	RWST	1,2,3,4	39	Operable	1-LI-63-50	%	99		
						1-LI-63-51	%	98		
						1-LI-63-52	%	91		
						1-LI-63-53	%	97		
		CTNMT	1,2,3,4	40	Operable	1-LI-63-176	%	0		
						1-LI-63-177	%	0		
						1-LI-63-178	%	2		
						1-LI-63-179	%	0		
Cold Leg Accumulator Isolation Valves	4.5.1.1.1.a.2		1,2,3	41	Valves Fully Open	1-HS-63-118A	(√)			
						1-HS-63-98A	(√)			
						1-HS-63-80A	(√)			
						1-HS-63-67A	(√)			

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NOTES:

38. **VERIFY** by use of the indicating lights on panel 1-M-6 that these valves are open. Verification of power disconnected will be accomplished later in this Instruction.
39. **COMPARE** the four RWST level indicators to each other. Acceptable deviation between channels is equal to or less than 5%. If control room indication is lost, refer to GOI-6 for alternative means of obtaining RWST level.
40. **COMPARE** the four containment sump level indicators to each other. Acceptable deviation between channels is equal to or less than 6%. With no water in the sump, no indicator should read more than 4%.
41. **WHEN** pressurizer pressure is above 1000 psig, **THEN VERIFY** each of the four cold leg accumulator isolation valves on panel 1-M-6 are open by observation of the position indicating lights.
68. When entering Mode 3 from Mode 4, FCV-63-22 may be closed to support transition from LCO 3.4.12 for up to 4 hrs. or until the temperature of all RCS cold legs exceeds 375°F (whichever comes first).

CHRONOLOGICAL TEST LOG (CTL)

Data Package Page _____ of _____

Procedure No. _____ Rev. _____

Date[3]/Time[1]	Narrative	Initials

Log entries have been reviewed and items are appropriately addressed.

_____ _____

Test Director[2] Date

[1]Use 24 hour clock for each entry.
[2]Test Director signature only required on last sheet of CTL. The other review blanks can be marked N/A.
[3] The Date column needs to be filled in for the first entry on the CTL and for the first entry after each date change.

3/4.3 INSTRUMENTATION

3/4.3.1 REACTOR TRIP SYSTEM INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.1.1 As a minimum, the reactor trip system instrumentation channels and interlocks of Table 3.3-1 shall be OPERABLE.

APPLICABILITY: As shown in Table 3.3-1.

ACTION:

As shown in Table 3.3-1.

SURVEILLANCE REQUIREMENTS

4.3.1.1.1 Each reactor trip system instrumentation channel and interlock shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST operations for the MODES and at the frequencies shown in Table 4.3-1.

4.3.1.1.2 The logic for the interlocks shall be demonstrated OPERABLE prior to each reactor startup unless performed during the preceeding 92 days. The total interlock function shall be demonstrated OPERABLE at least once per 18 months during CHANNEL CALIBRATION testing of each channel affected by interlock operation.

4.3.1.1.3 The REACTOR TRIP SYSTEM RESPONSE TIME of each reactor trip function shall be verified to be within its limit at least once per 18 months. Neutron detectors are exempt from response time testing. Each verification shall include at least one train such that both trains are verified at least once per 36 months and one channel per function such that all channels are verified at least once every N times 18 months where N is the total number of redundant channels in a specific reactor trip function as shown in the "Total No. of Channels" column of Table 3.3.1.

TABLE 3.3-1

REACTOR TRIP SYSTEM INSTRUMENTATION

	FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION	
1.	Manual Reactor Trip	2	1	2	1, 2, and *	1	
2.	Power Range, Neutron Flux	4	2	3	1, 2	2	|
3.	Power Range, Neutron Flux High Positive Rate	4	2	3	1, 2	2	|
4.	Power Range, Neutron Flux, High Negative Rate	4	2	3	1, 2	2	|
5.	Intermediate Range, Neutron Flux	2	1	2	1, 2, and *	3	
6.	Source Range, Neutron Flux						
	A. Startup	2	1	2	2##, and *	4	
	B. Shutdown	2	0	1	3, 4 and 5	5	
7.	Overtemperature ΔT Four Loop Operation	4	2	3	1, 2	6	|
8.	Overpower ΔT Four Loop Operation	4	2	3	1, 2	6	|
9.	Pressurizer Pressure-Low	4	2	3	1, 2	6	|
10.	Pressurizer Pressure—High	4	2	3	1, 2	6	|
11.	Pressurizer Water Level—High	3	2	2	1, 2	6	|

TABLE 3. 3-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION

	FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
12.	Loss of Flow - Single Loop (Above P-8)	3/loop	2/loop in any operating loop	2/loop in each operating loop	1	6
13.	Loss of Flow - Two Loops (Above P-7 and below P-8)	3/loop	2/loop in two operating loops	2/loop in each operating loop	1	6
14.	Main Steam Generator Water Level--Low-Low					
	A. Steam Generator Water Level--Low-Low (Adverse)	3/Stm. Gen.	2/Stm. Gen. in any operating Stm. Gen	2/Stm. Gen. in each Operating Stm. Gen.	1,2	9
	B. Steam Generator Water Level--Low-Low (EAM)	3/Stm. Gen.	2/Stm. Gen. in any operating Stm. Gen.	2/Stm. Gen. in each operating Stm. Gen.	1,2	9
	C. RCS Loop ΔT	4 (1/loop)	2	3	1,2	10
	D. Containment Pressure (EAM)	4	2	3	1,2	11
15.	Deleted					
16.	Undervoltage-Reactor Coolant Pumps	4-1/bus	2	3	1	6
17.	Underfrequency-Reactor Coolant Pumps	4-1/bus	2	3	1	6
18.	Turbine Trip					
	A. Low Fluid Oil Pressure	3	2	2	1**	6
	B. Turbine Stop Valve Closure	4	4	4	1**	7

TABLE 3.3-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION

	FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
19.	Safety Injection Input from ESF	2	1	2	1, 2	12
20.	Reactor Trip Breakers					
	A. Startup and Power Operation	2	1	2	1, 2	12, 15
	B. Shutdown	2	1	2	3*,4* and 5*	16
21.	Automatic Trip Logic					
	A. Startup and Power Operation	2	1	2	1, 2	12
	B. Shutdown	2	1	2	3*,4* and 5*	16
22.	Reactor Trip System Interlocks					
	A. Intermediate Range Neutron Flux, P-6	2	1	2	2, and*	8a
	B. Power Range Neutron Flux, P-7	4	2	3	1	8b
	C. Power Range Neutron Flux, P-8	4	2	3	1	8c
	D. Power Range Neutron Flux, P-10	4	2	3	1, 2	8d
	E. Turbine Impulse Chamber Pressure, P-13	2	1	2	1	8b
	F. Power Range Neutron Flux, P-9	4	2	3	1	8e
	G. Reactor Trip P-4	2	1	2	1, 2, and *	14

TABLE 3.3-1 (Continued)

TABLE NOTATION

* With the reactor trip system breakers in the closed position, the control rod drive system capable of rod withdrawal, and fuel in the reactor vessel.

** Above the P-9 (Power Range Neutron Flux) interlock.

Source Range outputs may be disabled above the P-6 (Block of Source Range Reactor Trip) setpoint.

ACTION STATEMENTS

ACTION 1 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 48 hours or be in HOT STANDBY within the next 6 hours and/or open the reactor trip breakers.

ACTION 2 - With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and POWER OPERATION may proceed provided the following conditions are satisfied:

a. The inoperable channel is placed in the tripped condition within 6 hours.

b. The Minimum Channels OPERABLE requirement is met; however, the inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels per Specification 4.3.1.1.1.

c. The QUADRANT POWER TILT RATIO is monitored in accordance with Technical Specification 3.2.4.

TABLE 3.3-1 (Continued)

ACTION 3 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement and with the THERMAL POWER level:

a. Below the P-6 (Block of Source Range Reactor Trip) setpoint, restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above the P-6 Setpoint.

b. Above the P-6 (Block of Source Range Reactor Trip) setpoint, but below 5% of RATED THERMAL POWER, restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above 5% of RATED THERMAL POWER.

c. Above 5% of RATED THERMAL POWER, POWER OPERATION may continue.

d. Above 10% of RATED THERMAL POWER, the provisions of Specification 3.0.3 are not applicable.

ACTION 4 - With the number of OPERABLE channels one less than required by the Minimum Channels OPERABLE requirement and with the THERMAL POWER level:

a. Below the P-6 (Block of Source Range Reactor Trip) setpoint, restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above the P-6 Setpoint.

b. Above the P-6 (Block of Source Range Reactor Trip) setpoint, operation may continue.

ACTION 5 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, verify compliance with the SHUTDOWN MARGIN requirements of Specification 3.1.1.1 or 3.1.1.2, as applicable, within 1 hour and at least once per 12 hours thereafter.

ACTION 6 - With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided the following conditions are satisfied:

a. The inoperable channel is placed in the tripped condition within 6 hours.

b. The Minimum Channels OPERABLE requirement is met; however, the inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels per Specification 4.3.1.1.1.

ACTION 7 - With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided the inoperable channel is placed in the tripped condition within 6 hours or THERMAL POWER is reduced to less than P-9 within 10 hours.

ACTION 8 - With less than the Minimum Number of Channels OPERABLE, declare the interlock inoperable and verify that all affected channels of the functions listed below are OPERABLE or apply the appropriate ACTION statement(s) for those functions. Functions to be evaluated are:

a. Source Range Reactor Trip

b. Reactor Trip

Low Reactor Coolant Loop Flow (2 loops)
Undervoltage
Underfrequency
Pressurizer Low Pressure
Pressurizer High Level

c. Reactor Trip

Low Reactor Coolant Loop Flow (1 loop)

d. Reactor Trip

Intermediate Range
Low Power Range
Source Range

e. Reactor Trip

Turbine Trip

ACTION 9 - With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided the following conditions are satisfied:

a. The inoperable channel is placed in the tripped condition within 6 hours.

b. For the affected protection set, the Trip Time Delay for one affected steam generator (T_S) is adjusted to match the Trip Time Delay for multiple affected steam generators (T_M) within 4 hours.

c. The Minimum Channels OPERABLE requirement is met; however, the inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels per Specification 4.3.1.1.1.

ACTION 10 - With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided that within 6 hours, for the affected protection set, the Trip Time Delays (T_S and T_M) threshold power level for zero seconds time delay is adjusted to 0% RTP.

TABLE 3.3-1 (Continued)

ACTION 11 - With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided that within 6 hours, for the affected protection set, the Steam Generator Water Level - Low-Low (EAM) channels trip setpoint is adjusted to the same value as Steam Generator Water Level - Low-Low (Adverse).

ACTION 12 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, be in at least HOT STANDBY within 6 hours; however, one channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.1.1.1 provided the other channel is OPERABLE.

ACTION 13 - Deleted

ACTION 14 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, be in at least HOT STANDBY within 6 hours.

ACTION 15 - With one of the diverse trip features (undervoltage or shunt trip attachment) inoperable, restore it to operable status within 48 hours or declare the breaker inoperable and apply ACTION 12. The breaker shall not be bypassed while one of the diverse trip features is inoperable except for up to 4 hours for performing maintenance to restore the breaker to OPERABLE status.

ACTION 16 - With the number of OPERABLE channels one less than the minimum channels operable requirement, restore the inoperable channel to OPERABLE status within 48 hours or open the reactor trip breakers within the next hour.

INSTRUMENTATION

3/4.3.2 ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.2.1 The Engineered Safety Feature Actuation System (ESFAS) instrumentation channels and interlocks shown in Table 3.3-3 shall be OPERABLE with their trip setpoints set consistent with the values shown in the Nominal Trip Setpoint column of Table 3.3-4.

APPLICABILITY: As shown in Table 3.3-3.

ACTION:

a. With an ESFAS instrumentation channel or interlock trip setpoint less conservative than the value shown in the Allowable Values column of Table 3.3-4, declare the channel inoperable and apply the applicable ACTION requirement of Table 3.3-3 until the channel is restored to OPERABLE status with the trip setpoint adjusted consistent with the Nominal Trip Setpoint value.

b. With an ESFAS instrumentation channel or interlock inoperable, take the ACTION shown in Table 3.3-3.

SURVEILLANCE REQUIREMENTS

4.3.2.1.1 Each ESFAS instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST operations for the MODES and at the frequencies shown in Table 4.3-2.

4.3.2.1.2 The logic for the interlocks shall be demonstrated OPERABLE during the automatic actuation logic test. The total interlock function shall be demonstrated OPERABLE at least once per 18 months during CHANNEL CALIBRATION testing of each channel affected by interlock operation.

4.3.2.1.3 The ENGINEERED SAFETY FEATURES RESPONSE TIME of each ESFAS function shall be verified to be within the limit at least once per 18 months. Each verification shall include at least one train such that both trains are verified at least once per 36 months and one channel per function such that all channels are verified at least once per N times 18 months where N is the total number of redundant channels in a specific ESFAS function as shown in the "Total No. of Channels" Column of Table 3.3-3.

TABLE 3.3-3

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
1. SAFETY INJECTION, TURBINE TRIP AND FEEDWATER ISOLATION					
a. Manual Initiation	2	1	2	1, 2, 3, 4	20
b. Automatic Actuation Logic	2	1	2	1, 2, 3, 4	15
c. Containment Pressure-High	3	2	2	1, 2, 3	17
d. Pressurizer Pressure-Low	3	2	2	1, 2, 3#	17
e. Deleted					

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
f. Steam Line Pressure-Low	3/steam line	2/steam line in any steam line	2/steam line	1, 2, 3#	17
2. CONTAINMENT SPRAY					
a. Manual	2	1**	2	1, 2, 3, 4	20
b. Automatic Actuation Logic	2	1	2	1, 2, 3, 4	15
c. Containment Pressure--High-High	4	2	3	1, 2, 3	18
3. CONTAINMENT ISOLATION					
a. Phase "A" Isolation					
1) Manual	2	1	2	1, 2, 3, 4	20
2) From Safety Injection Automatic Actuation Logic	2	1	2	1, 2, 3, 4	15

**Two switches must be operated simultaneously for actuation.

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
b. Phase "B" Isolation					
1) Manual	2	1**	2	1, 2, 3, 4	20
2) Automatic Actuation Logic	2	1	2	1, 2, 3, 4	15
3) Containment Pressure-High-High	4	2	3	1, 2, 3	18
c. Containment Ventilation Isolation	2	1	2	1, 2, 3, 4	19
1) Manual					
2) Automatic Isolation Logic	2	1	2	1, 2, 3, 4	15
3) Containment Purge Air Exhaust Monitor Radioactivity-High	2	1	1	1, 2, 3, 4	19

**Two switches must be operated simultaneously for actuation.

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
4. STEAM LINE ISOLATION					
a. Manual	1/steam line	1/steam line	1/operating steam line	1, 2, 3	25
b. Automatic Actuation Logic	2	1	2	1, 2, 3	23
c. Containment Pressure--High-High	4	2	3	1, 2, 3	18
d. Steam Line Pressure- Low	3/steam line	2/steam line in any steam line	2/steam line	1, 2, 3[#]	17
e. Negative Steam Line Pressure Rate-High	3/steam line	2/steam line in any steam lines	2/steam line	3[##]	17

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION	
5. TURBINE TRIP & FEEDWATER ISOLATION						
a. Steam Generator Water Level—High-High	3/loop	2/loop in any operating loop	2/loop in each operating loop	1, 2, 3	17	|
b. Automatic Actuation Logic	2	1	2	1, 2, 3	23	
6. AUXILIARY FEEDWATER						
a. Manual Initiation	2	1	2	1, 2, 3	24	
b. Automatic Actuation Logic	2	1	2	1, 2, 3	23	
c. Main Stm. Gen. Water Level—Low-Low						
i. Start Motor-Driven Pumps						
a. Steam Generator Water Level--Low-Low (Adverse)	3/Stm. Gen.	2/Stm. Gen. in any operating Stm. Gen.	2/Stm. Gen. in each operating Stm. Gen	1, 2, 3	36	|
b. Steam Gen Water Level--Low-Low (EAM)	3/Stm. Gen	2/Stm. Gen. in any operating Stm. Gen.	2/Stm. Gen. in each operating Stm. Gen.	1, 2, 3	36	|
c. RCS LoopΔT	4(1/loop)	2	3	1, 2, 3	37	|
d. Containment Pressure (EAM)	4	2	3	1, 2, 3	38	|

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
ii. Start Turbine Driven Pump					
a. Steam Generator Water Level--Low-Low (Adverse)	3/Stm. Gen.	2/Stm. Gen. in any 2 Stm. Gen.	2/Stm. Gen. in each operating Stm. Gen	1, 2, 3	36
b. Steam Generator Water Level--Low-Low (EAM)	3/Stm. Gen.	2/Stm. Gen. in any 2 Stm. Gen.	2/Stm. Gen. In each operating Stm. Gen	1, 2, 3	36
c. RCS Loop ΔT	4(1/loop)	2	3	1, 2, 3	37
d. Containment Pressure (EAM)	4	2	3	1, 2, 3	38
d. S.I. Start Motor-Driven Pumps and Turbine Driven Pump	See 1 above (all S.I. initiating functions and requirements)				

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
e. Loss of Power Start					
1. Voltage Sensors	3/shutdown board**	2/shutdown board**	3/shutdown board**	1, 2, 3	35
2. Load Shed Timer	2/shutdown board**	1/shutdown board**	1/shutdown board**	1, 2, 3	35
f. Trip of Main Feedwater Pumps Start Motor-Driven Pumps and Turbine Driven Pump	1/pump	1/pump	1/pump[(a)]	1, 2[(b)]	20
g. Auxiliary Feedwater Suction Pressure-Low	3/pump	2/pump	3/pump	1, 2, 3	21
h. Auxiliary Feedwater Suction Transfer Time Delays					
1. Motor-Driven Pump	1/pump	1/pump	1/pump	1, 2, 3	21
2. Turbine-Driven Pump	2/pump	1/pump	2/pump	1, 2, 3	21

**Unit 1 shutdown boards only

(a) One channel may be inoperable during Mode 1 for up to 4 hours when placing the second main feedwater (MFW) pump in service or removing one of two MFW pumps from service.

(b) When one or more Main Feedwater Pump(s) are supplying feedwater to steam generators.

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
7. This Functional Unit has been deleted.					
8. ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INTERLOCKS					
a. Pressurizer Pressure-P-11/Not P-11	3	2	2	1, 2, 3	22a
b. Deleted					
c. Steam Generator Level P-14	3/loop	2/loop any loop	3/loop	1, 2	22c

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
9. AUTOMATIC SWITCHOVER TO CONTAINMENT SUMP					
a. RWST Level - Low COINCIDENT WITH	4	2	3	1, 2, 3, 4	18
Containment Sump Level - High AND	4	2	3	1, 2, 3, 4	18
Safety Injection	(See 1 above for Safety Injection Requirements)				
b. Automatic Actuation Logic	2	1	2	1, 2, 3, 4	15

TABLE NOTATION

Trip function may be bypassed in this MODE below P-11 (Pressurizer Pressure Block of Safety Injection) setpoint.

Trip function automatically blocked above P-11 and may be blocked below P11 when Safety Injection on Steam Line Pressure-Low is not blocked.

ACTION STATEMENTS

ACTION 15 - With the number of OPERABLE Channels one less than the Total Number of Channels, be in at least HOT STANDBY within 12 hours and in COLD SHUTDOWN within the following 30 hours; however, one channel may be bypassed for up to 4 hours for surveillance testing per Specification 4.3.2.1.1 provided the other channel is OPERABLE.

ACTION 16 - Deleted.

ACTION 17 - With the number of OPERABLE Channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided the following conditions are satisfied:

a. The inoperable channel is placed in the tripped condition within 6 hours.

b. The Minimum Channels OPERABLE requirements is met; however, the inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels per Specification 4.3.2.1.1.

ACTION 18 - With the number of OPERABLE Channels one less than the Total Number of Channels, operation may proceed provided the inoperable channel is placed in the bypassed condition within 6 hours and the Minimum Channels OPERABLE requirement is met; one additional channel may be bypassed for up to 4 hours for surveillance testing per Specification 4.3.2.1.1.

ACTION 19 - With less than the Minimum Channels OPERABLE, operation may continue provided the containment purge supply and exhaust valves are maintained closed.

ACTION 20 - With the number of OPERABLE Channels one less than the Total Number of Channels, restore the inoperable channel to OPERABLE status within 48 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

TABLE 3.3-3 (Continued)

ACTION 21 - With less than the Minimum Number of Channels OPERABLE, declare the associated auxiliary feedwater pump inoperable, and comply with the ACTION requirements of Specification 3.7.1.2.

ACTION 22 - With less than the Minimum Number of Channels OPERABLE, declare the interlock inoperable and verify that all affected channels of the functions listed below are OPERABLE or apply the appropriate ACTION statement(s) for those functions. Functions to be evaluated are:

a. Safety Injection
   Pressurizer Pressure
   Steam Line Pressure
   Negative Steam Line Pressure Rate

b. Deleted

c. Turbine Trip
   Steam Generator Level High-High
   Feedwater Isolation
   Steam Generator Level High-High

ACTION 23 - With the number of OPERABLE channels one less than the Total Number of Channels, be in at least HOT STANDBY within 6 hours and in at least HOT SHUTDOWN within the following 6 hours; however, one channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.2.1.1.

ACTION 24 - With the number of OPERABLE channels one less than the Total Number of Channels, restore the inoperable channel to OPERABLE status within 48 hours or be in at least HOT STANDBY within 6 hours and in at least HOT SHUTDOWN within the following 6 hours.

ACTION 25 - With the number of OPERABLE channels one less than the Total Number of Channels, restore the inoperable channel to OPERABLE status within 48 hours or declare the associated valve inoperable and take the ACTION required by Specification 3.7.1.5.

ACTION 34 - Deleted

TABLE 3.3-3 (Continued)

ACTION 35 -

a. With the number of OPERABLE channels one less than the Total Number of Channels for voltage sensors, restore the inoperable channel to OPERABLE status within 6 hours or enter applicable Limiting Condition(s) For Operation and Action(s) for the associated auxiliary feedwater pump made inoperable by the channel.

b. With the number of OPERABLE channels less than the Total Number of Channels by more than one for voltage sensors or timers, restore all but one channel to OPERABLE status within 1 hour or enter applicable Limiting Condition(s) For Operation and Action(s) for the associated auxiliary feedwater pump made inoperable by the channels.

ACTION 36 - With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided the following conditions are satisfied:

a. The inoperable channel is placed in the tripped condition within 6 hours.

b. For the affected protection set, the Trip Time Delay for one affected steam generator (T_S) is adjusted to match the Trip Time Delay for multiple affected steam generators (T_M) within 4 hours.

c. The Minimum Channels OPERABLE requirement is met; however, the inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels per Specification 4.3.2.1.1.

ACTION 37 - With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided that within 6 hours, for the affected protection set, the Trip Time Delays (T_S and T_M) threshold power level for zero seconds time delay is adjusted to 0% RTP.

ACTION 38 - With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided that within 6 hours, for the affected protection set, the Steam Generator Water Level - Low-Low (EAM) channels trip setpoint is adjusted to the same value as Steam Generator Water Level - Low-Low (Adverse).

INSTRUMENTATION

ACCIDENT MONITORING INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.3.7 The accident monitoring instrumentation channels shown in Table 3.3-10 shall be OPERABLE.

APPLICABILITY: MODES 1, 2 and 3.

ACTION: As shown in Table 3.3-10

SURVEILLANCE REQUIREMENTS

4.3.3.7 Each accident monitoring instrumentation channel shall be demonstrated OPERABLE:

a. Every 31 days by performance of a CHANNEL CHECK, and

b. Every 18 months by performance of a CHANNEL CALIBRATION.*

*For Containment Area Radiation Monitors, a CHANNEL CALIBRATION may consist of an electronic calibration of the channel, not including the detector, for range decades above 10R/h and a single calibration check of the detector below 10R/h with either an installed or portable gamma source.

TABLE 3.3-10

ACCIDENT MONITORING INSTRUMENTATION

INSTRUMENT	TOTAL NO. OF CHANNELS	MINIMUM CHANNELS REQUIRED	ACTION
1. Reactor Coolant T_{HOT} (Wide Range) (Instrument Loops 68-001,-024,-043,-065)	4(1/RCS Loop)	4(1/RCS Loop)	1
2. Reactor Coolant T_{COLD} (Wide Range) (Instrument Loops 68-018,-041,-060,-083)	4(1/RCS Loop)	4(1/RCS Loop)	1
3. Containment Pressure (Wide Range) (Instrument Loops 30-310,-311)	2	2	1
4. Containment Pressure (Narrow Range) (Instrument Loops 30-044,-045)	2	2	1
5. Refueling Water Storage Tank Level (Instrument Loops 63-050,-051)	2	2	1
6. Reactor Coolant Pressure (Wide Range) (Instrument Loops 68-062,-066,-069)	3	3	2
7. Pressurizer Level (Wide Range) (Instrument Loops 68-320,-335,-339)	3	3	2
8. Steam Line Pressure (Instrument Loops 1-002A,-002B,-009A,-009B,-020A,-020B,-027A,-027B)	2/steam line	2/steam line	1
9. Steam Generator Level - (Wide Range) (Instrument Loops 3-043,-056,-098,-111)	4(1/steam generator)	4(1/steam generator)	1
10. Steam Generator Level - (Narrow Range) (Instrument Loops 3-039,-042,-052,-055,-094,-097,-107,-110)	2/steam generator	2/steam generator	1
11. Auxiliary Feedwater			
a. Flow Rate (Instrument Loops 3-163,-155,-147,-170)	1/steam generator	1/steam generator	5
b. Valve Position Indication (Instrument Loops 3-164,-164A,-172,-156,-156A,-173,-148,-148A,-174,-171,-171A,-175)	3/steam generator	3/steam generator	5

TABLE 3.3-10 (Continued)

ACCIDENT MONITORING INSTRUMENTATION

INSTRUMENT	TOTAL NO OF CHANNELS	MINIMUM CHANNELS REQUIRED	ACTION
12. Reactor Coolant System Subcooling Margin Monitor (Instrument Loops 94-101,-102)	2	2	1
13. Containment Water Level (Wide Range) (Instrument Loops 63-178,-179)	2	2	1
14. Incore Thermocouples	65		
a. Core Quadrant (1)		2(1/Train)	1
b. Core Quadrant (2)		2(1/Train)	1
c. Core Quadrant (3)		2(1/Train)	1
d. Core Quadrant (4)		2(1/Train)	1
15. Reactor Vessel Level Instrumentation	6		
a. Dynamic Range (Instrument Loops 68-367, 370)		2	1
b. Lower Range (Instrument Loops 68-368, 371)		2	1
c. Upper Range (Instrument Loops 68-369, 372)		2	1
16. Containment Area Radiation Monitors			
a. Upper Compartment (Instrument Loops 90-271,-272)	2	1	4
b. Lower Compartment (Instrument Loops 90-273,-274)	2	1	4

TABLE 3.3-10 (Continued)

ACCIDENT MONITORING INSTRUMENTATION

INSTRUMENT	TOTAL NO. OF CHANNELS	MINIMUM CHANNELS REQUIRED	ACTION
17. Neutron Flux			
a. Source Range (Instrument Loops 92-5001,-5002)	2	2#	1
b. Intermediate Range (Instrument Loops 92-5003,-5004)	2	2	1
18. ERCW to AFW Valve Position			
a. Motor Driven Pumps (Instrument Loops 3-116A, -116B, -126A, -126B)	1/Train/Pump (2 Valves/Train)	1/Train/Pump (2 Valves/Train)	1
b. Turbine Driven Pumps (Instrument Loops 3-136A, -136B, -179A, -179B)	2 Trains (2 Valves/Train)	2 Trains (2 Valves/Train)	1
19. Containment Isolation Valve Position (Panels TR-A XX-55-6K & TR-B XX-55-6L)	1/Valve	1/Valve##	3

#Source Range outputs may be disabled above the P-6 (Block of Source Range Reactor Trip) setpoint.
##Not required for isolation valves that are closed and deactivated.

TABLE 3.3-10 (Continued)

ACTION STATEMENTS

ACTION 1 - NOTE: Also refer to the applicable action requirements from Tables 3.3-1 and 3.3-3, and LCO 3.3.3.5 since they may contain more restrictive actions.

a. With the number of channels one less than the minimum channels required, restore the inoperable channel to OPERABLE status within 30 days or be in at least HOT STANDBY within the next 6 hours, and in HOT SHUTDOWN within the next 6 hours.

b. With the number of channels two less than the minimum channels required, restore at least one inoperable channel to OPERABLE status within 7 days, or be in HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the next 6 hours.

ACTION 2 - NOTE: Also refer to the applicable action requirements from Tables 3.3-1 since it may contain more restrictive actions.

a. With the number of channels one less than the minimum channels required, restore the inoperable channel to OPERABLE status within 30 days or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the next 6 hours.

b. With the number of channels two less than the minimum channels required, restore at least one inoperable channel to OPERABLE status within 7 days or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the next 6 hours.

c. With the number of channels three less than the minimum channels required, restore one channel to OPERABLE status within 48 hours or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the next 6 hours.

ACTION 3 - NOTE: Also refer to the applicable action requirements from LCO 3.6.3 since it may contain more restrictive actions.

a. With the accident monitoring indication for one of the penetration inboard or outboard valve(s) inoperable, restore the inoperable valve(s) accident indication to OPERABLE status within 30 days, or isolate each affected penetration within 30 days by use of at least one deactivated automatic valve secured in the isolated position, or isolate each

TABLE 3.3-10 (Continued)

ACTION STATEMENTS
(Continued)

affected penetration within 30 days by use of at least one closed manual valve or blind flange, or be in at least HOT STANDBY within the next 6 hours and HOT SHUTDOWN within the next 6 hours.

b. With the accident monitoring indication for both an inboard and outboard valve(s) on the same penetration inoperable, restore at least the inboard or outboard inoperable valve(s) indication to OPERABLE status within 7 days, or isolate each affected penetration within 7 days by use of at least one deactivated automatic valve secured in the isolated position, or isolate each affected penetration within 7 days by use of at least one closed manual valve or blind flange, or be in at least HOT STANDBY within the next 6 hours and HOT SHUTDOWN within the next 6 hours.

On a penetration where accident indication is declared INOPERABLE on a valve but on the opposite side of the penetration an accident indication valve does not exist (such as with a closed system or a check valve), only ACTION 3(a) must be entered. However, valves FCV-63-158 & -172 are both inboard penetration valves, but if both valves have inoperable accident indication, ACTION 3(b) must be entered until at least one of the valve's accident indication is restored to OPERABLE status. Valves FCV-30-46 & VLV-30-571, FCV-30-47 & VLV-30-572, and FCV-30-48 & VLV-30-573 are all outboard penetration valves, but if both valves have inoperable accident indication, ACTION 3(b) must be entered until at least one of the valve's accident indication is restored to OPERABLE status.

TABLE 3.3-10 (Continued)

ACTION STATEMENTS
(Continued)

ACTION 4 - With the number of channels less than the minimum channels required, initiate an alternate method of monitoring containment area radiation within 72 hours and either restore the inoperable channel(s) to OPERABLE status within 30 days, or prepare and submit a special report to the Commission pursuant to Specification 6.9.2.1 within the next 14 days that provides actions taken, cause of the inoperability, and plans and schedule for restoring the channels to OPERABLE status.

ACTION 5 - NOTE: Also refer to the applicable action requirements from LCO 3.3.3.5 since it may contain more restrictive actions.

a. With the number of channels on one or more steam generators less than the minimum channels required for either flow rate or valve position, restore the inoperable channel to OPERABLE status within 30 days or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the next 6 hours.

b. With the number of channels on one or more steam generators less than the minimum channels required for flow rate and valve position, restore the inoperable channel(s) to OPERABLE status within 7 days or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the next 6 hours.

SEQUOYAH NUCLEAR PLANT

SRO ADMIN A.2

Evaluate Arc Clothing Requirements and Tag Flash Verification Requirements

SRO

JOB PERFORMANCE MEASURE

Task: Evaluate Arc Clothing Requirements and Tag Verification Requirements

Task #: 3420320302

Task Standard: The examinee determines the minimum protective clothing requirements for manipulating electrical breakers of a Flash Hood (ATPV 100 or 100 cal) and Flash Suit (ATPV 100 or 100 cal) during breaker manipulation and that independent verification is required when placing tags.

Time Critical Task: **YES:** _____ **NO:** X

K/A Reference/Ratings: 2.2.13 (3.8)

Method of Testing:

Simulated Performance: _____ **Actual Performance:** X

Evaluation Method:

Simulator _____ **In-Plant** _____ **Classroom** X

Main Control Room _____ **Mock-up** _____

Performer: _____
Trainee Name

Evaluator: _____ / _____ _____
Name / Signature DATE

Performance Rating: **SAT:** _____ **UNSAT:** _____

Validation Time: 6 min **Total Time:** _____

Performance Time: **Start Time:** _____ **Finish Time:** _____

COMMENTS

_____

_____

SPECIAL INSTRUCTIONS TO EVALUATOR:

1. Critical steps are identified in step SAT/UNSAT column by bold print 'Critical Step.'
2. Any UNSAT requires comments.

Tools/Equipment/Procedures Needed:

1. NPG SPP-10.2, Clearance Procedure to Safely Control Energy
2. NPG-SPP-10.3, Verification Program
3. TI-300, Electrical Arc Flash Personal Protective Equipment & Protection Boundary Matrices
4. Copy of clearance 2- 82-1807

References:

	Reference	Title	Rev No.
1.	NPG SPP-10.2	Clearance Procedure to Safely Control Energy	1
2.	NPG-SPP-10.3	Verification Program	0
3.	TI-300	Electrical Arc Flash Personal Protective Equipment & Protection Boundary Matrices	19
4.	0-GO-10	ELECTRICAL APPARATUS OPERATION	45

==========

Read to the examinee:

DIRECTIONS TO TRAINEE:
I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM. I will provide initiating cues and reports on other actions when directed by you. When you complete the task successfully, the objective for this job performance measure will be satisfied. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

HAND JPM BRIEFING SHEET TO EXAMINEE AT THIS TIME!

INITIAL CONDITIONS:

1. Unit 2 is in Mode 1
2. Clearance 2- 82-1807 is being developed on Diesel 2A2 Starting Air Compressor.
3. The clearance will require opening Diesel 2A2 Starting Air Compressor breaker located on Diesel Aux Board 2A1-A.

INITIATING CUES:

1. You are the WCC SRO and will complete developing clearance 2- 82-1807
2. You will identify:
    a. MINIMUM Arc Flash protective clothing requirements above normal PPE for the individual performing the breaker manipulation
    b. The verification requirements for the actual placement of the clearance cards.
3. Inform the evaluator when you are complete.

Start Time _____

STEP 1 :	Obtain a copy of clearance 2- 82-1807.	___ SAT ___ UNSAT
Standard:	Copy of clearance 2- 82-1807 is obtained	
Cue	Provide a copy of clearance 2- 82-1807.	
Comment		

STEP 2 :	Obtain a copy of TI-300, Electrical Arc Flash Personal Protective Equipment & Protection Boundary Matrices	___ SAT ___ UNSAT
Standard:	Copy of TI-300, Electrical Arc Flash Personal Protective Equipment & Protection Boundary Matrices is obtained	
Cue	When directed, provide a copy of TI-300, Electrical Arc Flash Personal Protective Equipment & Protection Boundary Matrices.	
Comment		

STEP 3 :	Determine the MINIMUM Arc Flash protective clothing requirements above normal PPE for the individual opening Diesel 2A2 Starting Air Compressor breaker.	____ SAT ____ UNSAT **Critical Step**
Standard:	Examinee determines the MINIMUM Arc Flash protective clothing requirements above normal PPE for the individual opening Diesel 2A2 Starting Air Compressor breaker is a Flash Hood (ATPV 100 or 100 cal) and a Flash Suit (ATPV 100 or 100 cal).	
Comment		
Examiner Note:	The reference for the MINIMUM Arc Flash protective clothing requirements is contained in TI-300, Electrical Arc Flash Personal Protective Equipment & Protection Boundary Matrices Appendix A (Page 7 of 24)	
Examiner Note:	**Appendix A** **(Page 7 of 24)** **ARC FLASH PERSONAL PROTECTIVE EQUIPMENT (PPE)/PROTECTIVE BOUNDARY MATRICES**	
Examiner Note:	This step is critical because it identifies the minimum PPE required to complete the breaker manipulation.	

Location	Working Distance (inches)	Incident Energy (Cal/cm²)	Arc Flash Boundary (feet)	Required PPE: Daily Wear [1] (ATPV 8)	Face Shield (ATPV 8)	Flash Hood (ATPV 31)	Flash Hood (ATPV 100)	Flash Suit [5] (ATPV 31)	Flash Suit [4] (ATPV 100)	
480V DSL AUX BD 2A1A 2-BDC-201-FQ-A	18.0	32.6	9.9				x		x	

STEP 4 :	Obtain a copy of NPG-SPP-10.3, Verification Program	___ SAT ___ UNSAT
Standard:	Copy of NPG-SPP-10.3, Verification Program is obtained.	
Cue	When directed, provide a copy of NPG-SPP-10.3, Verification Program.	
Comment		

STEP 5 :	Determine the MINIMUM verification requirements for the actual placement of the clearance cards	___ SAT ___ UNSAT **Critical Step**
Standard:	Examinee determines the MINIMUM verification requirements for the actual placement of the clearance cards is independent verification	
Comment		
Examiner Note:	**3.4.4 Independent Verification Requirements** IV is used to confirm that an activity or condition has been implemented in conformance with specified requirements. The individual performing the IV shall physically check the condition without relying on observation or verbal confirmation by the initial performer. However, the independent verifier may be involved in unrelated portions of the same activity. IV is required for the following (except for components which meet the criteria in Section 3.4.5 for concurrent verification): E. Placement and release of hold order tags.	
Examiner Note:	The reference for the MINIMUM is NPG-SPP-10.3, Verification Program step 3.4.4.E	
Examiner Note:	This step is critical because it identifies the minimum verification requirement for clearance placement.	
Terminating Cue:	**The task is complete when the Examinee returns the cue sheet to the examiner.**	**STOP**

Stop Time _____

JPM BRIEFING SHEET

DIRECTIONS TO TRAINEE:

The examiner will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

INITIAL CONDITIONS:

1. Unit 2 is in Mode 1
2. Clearance 2- 82-1807 is being developed on Diesel 2A2 Starting Air Compressor.
3. The clearance will require opening Diesel 2A2 Starting Air Compressor breaker located on Diesel Aux Board 2A1-A.

INITIATING CUES:

1. You are the WCC SRO and will complete developing clearance 2- 82-1807
2. You will identify:
    a. MINIMUM Arc Flash protective clothing requirements above normal PPE for the individual performing the breaker manipulation
    b. The verification requirements for the actual placement of the clearance cards.
3. Inform the evaluator when you are complete.

Acknowledge to the examiner when you are ready to begin.

HAND THIS PAPER BACK TO YOUR EVALUATOR WHEN YOU HAVE SATISFACTORILY COMPLETED THE ASSIGNED TASK.

Component to be Worked:

2-CMP - 82- 241

2A2 STARTING AIR COMPRESSOR 25.5 CFM

2-DGB-722-D/G 2A_DG 2A-A Engine Room

Remarks

DSL 2A2 STARTING AIR COMPRESSOR 25.5 CFM
This clearance is written to maintain system configuration control. Configuration control of components within the boundary not listed by this clearance SHALL remain in the required configuration unless controlled by another approved plant procedure.
Review & operate equipment only IAW 0-SO-82-3 & 0-SO-82-7.

SRO to evaluate the TI-300 Arc Flash Requirements for breaker manipulation.

Placement Instructions

1. Place clearance.

Caution Tag Information

Release Instructions

1. Release clearance.

Clearance Attributes:

Attribute Description	Attribute Value
Requested By	
Requestor's Organization	
Requestor's Phone and Pager	
PER Number	
Work Week or Outage Window	
Scheduled Date	
Outage Related Clearance?	
Containment Penetration Breached?	
Ground Discs Issued?	

Work Order / CPAL List:

Clearance Verification:

Status	Description	Name	Verification Date
Section Written	Written		
Section Placement Reviewed	Placement Reviewed		
Approved for Placement	Placement Approved		
Issued	Issued		
Section Release Modified	Release Modified		
Approved for Release	Release Reviewed & Approved		
Approved for Archive	Released		

Ground Disc List:

Tag Type Serial No.	Equipment * Equipment Description * Equipment Location	Ver Req	Pla Seq	Placement Configuration * Notes	Place. 1st Verif Date/Time	Place. 2nd Verif Date/Time	Ver Req	Rest Seq	Rest. Config. *As Left (If Diff.) * Notes	Rest. 1st Verif Date/Time	Rest. 2nd Verif Date/Time
Danger 0	0-HS - 82- 241 * Sel Sw Auto-Off-Man Eng 2A2 Bay 2A-A * 0-DGB-722-D/G 2A_DG 2A-A Control Board, Ann Pnl 45N771-2		1	OFF			NV	2	AUTO		
Danger 0	2-BCTC- 82- 241 * DIESEL GEN 2A-A AIR COMPRESSOR 2 * 2-DGB-740-FQ _480V Diesel Aux Board 2A1-A, compt 6C		2	OFF * Evaluate TI-300 requirements			NV	1	ON		

Component	Print Number
0-HS - 82- 241	45N771-2
2-BCTC- 82- 241	45N732-1

Appendix A
(Page 7 of 24)

ARC FLASH PERSONAL PROTECTIVE EQUIPMENT (PPE)/PROTECTIVE BOUNDARY MATRICES

Location	Working Distance (inches)	Incident Energy (Cal/cm^2)	Arc Flash Boundary (feet)	Required PPE						
				Daily Wear [1] (ATPV 8)	Face Shield (ATPV 8)	Flash Hood (ATPV 31)	Flash Hood (ATPV 100)	Flash Suit [5] (ATPV 31)	Flash Suit [6] (ATPV 100)	
480V C&A VT BD 2A2-A- 2-BDC-201-JK-A	18.0	12.1	6.1			X		X		See Note 11
480V C&A VT BD 2B1-B- 2-BDC-201-JL-B	18.0	9.2	5.2			X		X		See Note 11
480V C&A VT BD 2B2-B-2-BDC-201-JM-B	18.0	12.6	6.3			X		X		See Note 11
480V C&V CONT BD A - 0-BDC-201-HD	18.0	3.6	3.0	X	X					See Note 18
480V C&V CONT BD B - 0-BDSC-201-HE	18.0	39.2	10.9				X		X	
480V CDWES BLDG MCC 0-BDC-201-JV	18.0	4.6	3.4	X	X					See Note 18
480V COND DEM BLDG 0-BDC-201-FZ	18.0	73.3	15.3				X		X	
480V DSL AUX BD 1A1A 1-BDC-201-FO-A	18.0	34.0	10.1				X		X	
480V DSL AUX BD 1A2A 1-BDC-201-FP-A	18.0	34.6	10.2				X		X	
480V DSL AUX BD 1B1B 1-BDC-201-FS-B	18.0	29.4	9.3			X		X		
480V DSL AUX BD 1B2B 1-BDC-201-FT-B	18.0	29.6	9.4			X		X		
480V DSL AUX BD 2A1A 2-BDC-201-FQ-A	18.0	32.6	9.9				X		X	
480V DSL AUX BD 2A2A 2-BDC-201-FR-A	18.0	29.3	9.3			X		X		
480V DSL AUX BD 2B1B 2-BDC-201-FU-B	18.0	35.1	10.3				X		X	
480V DSL AUX BD 2B2B 2-BDC-201-FV-B	18.0	35.9	10.4				X		X	
480V F&W HDLG BD A 0-BDC-201-HB	18.0	3.6	3.0	X	X					See Note 18
480V F&W HDLG BD B 0-BDC-201-HC	18.0	36.0	11.4				X		X	
480V LUB OIL BD 0-BDC-201-HF	18.0	51.9	12.7				X		X	
480V MK WTR TRMT BD 0-BDC-201-HA	18.0	5.9	4.0	X	X					See Note 18

3.3.4 Alternate Verification Techniques

Alternate verification techniques may be used by the verifier where specified by approved procedures, valve and breaker line-up checklists, or at the discretion of shift supervisory personnel. Examples include the following:

A. Use of remote position indicators. (Indicating lights in the control room, at the switchgear, or at local controls are the normal method of determining motor-operated and air-operated valve position.)

B. Use of process parameters (e.g., pressure, flow, vibration, current, voltage, potential lamps, etc.).

C. Observation of the valve stem to aid in determination of valve position if the valve stem is marked by paint (when fully closed) or other positive verification methods.

D. Authorized scribe marks on valve stems, properly labeled with the throttled position.

E. Functional mechanical position indicators.

F. A post maintenance/modification functional test provided the testing verifies each component under consideration.

3.3.5 Circuit Breakers

Circuit breaker verification shall include a local inspection of the breaker, control power switches or fuses, and other equipment as outlined below:

A. To verify a breaker is removed from service, the independent or concurrent verifier shall ensure control power is isolated (if required) by inspecting appropriate switches, fuses or fuse blocks, and ensure the breaker is racked out to the disconnected position, as applicable.

B. To verify a breaker is restored to service, the independent or concurrent verifier shall ensure control power is energized by inspecting appropriate switches, indicating lights, fuses or fuse blocks, and shall ensure the breaker is fully racked in with closing springs charged as applicable. Where practical, the end device should be operated following the reinstallation of a breaker. The verifier also shall ensure the cubicle door is in good condition with all fasteners tight.

3.4 Verification Requirements

When determination of these requirements is not clear, the responsible manager shall designate the requirements. If there is disagreement, the Operations Manager shall designate the requirements.

SEQUOYAH NUCLEAR PLANT

SRO ADMIN A.3

Pre Job Analysis for Emergent Work in the RCA

SRO

JOB PERFORMANCE MEASURE

Task: Pre Job Analysis for Emergent Work in the RCA

Task #: 3430290302

Task Standard: Examinee calculates a total dose of 160 mrem and based on that calculation, applies the result to On Line Work Management Appendix A to conclude the evolution is a category "High Risk."

Time Critical Task: **YES:** _____ **NO:** X

K/A Reference/Ratings: 2.3.13 (3.8)

Method of Testing:

Simulated Performance: _____ **Actual Performance:** X

Evaluation Method:

Simulator _____ **In-Plant** _____ **Classroom** X

Main Control Room _____ **Mock-up** _____

Performer: _____
Trainee Name

Evaluator: _____ / _____ _____
Name / Signature DATE

Performance Rating: **SAT:** _____ **UNSAT:** _____

Validation Time: 14 min **Total Time:** _____

Performance Time: **Start Time:** _____ **Finish Time:** _____

COMMENTS

_____

_____

SPECIAL INSTRUCTIONS TO EVALUATOR:

1. Critical steps are identified in step SAT/UNSAT column by bold print 'Critical Step.'
2. Any UNSAT requires comments.

Tools/Equipment/Procedures Needed:

1. NPG-SPP-07.1, On Line Work Management
2. Calculator
3. Survey map A216 U-1 Pipe Chase
4. Survey map A217 U-2 Pipe Chase
5. Survey map 408 U-1 Mixed Bed Valve Gallery
6. Survey map 417 U-2 Mixed Bed Valve Gallery

References:

	Reference	Title	Rev No.
1.	NPG-SPP-07.1	On Line Work Management	3
2.	RCI-3		

==========

Read to the examinee:

DIRECTIONS TO TRAINEE:
I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM. I will provide initiating cues and reports on other actions when directed by you. When you complete the task successfully, the objective for this job performance measure will be satisfied. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

HAND JPM BRIEFING SHEET TO EXAMINEE AT THIS TIME!

INITIAL CONDITIONS:

1. Unit 2 is in MODE 1
2. You are the WCC SRO and are performing a review of a work package to be merged into the schedule in two weeks.
3. The work is in the vicinity of valve 2-63-750 Test Conn on RHR Suction from RWST located in the Auxiliary Bldg 653 elevation pipe chase.
4. The total time to perform the job is 12 min

INITIATING CUES:

1. Calculate the total dose that the worker will accumulate performing the job
2. Using the total dose, perform an Impact Assessment of the level of risk while performing the task using NPG-SPP-07.1 On Line Work Management, Appendix A On Line Work Management Work Management Process Description.
3. Inform the evaluator when you are complete.

Start Time _____

STEP 1 :	Obtain the correct copy of a Survey map.	___ SAT ___ UNSAT **Critical step**
Standard:	Examinee discriminates and chooses Survey map A217 U-2 Pipe Chase of the four given.	
Cue	Provide a copy of the following survey maps: • Survey map A216 U-1 Pipe Chase • Survey map A217 U-2 Pipe Chase • Survey map 408 U-1 Mixed Bed Valve Gallery • Survey map 417 U-2 Mixed Bed Valve Gallery	
Comment		
Examiner Note	Both the Unit 1 and Unit 2 Pipe Chase and Mixed Bed Valve Gallery survey maps are provided.	
Examiner Note	This step is critical because the examinee needs to differentiate between survey maps to get the correct results.	

STEP 2 :	Calculate the dose	___ SAT ___ UNSAT **Critical step**
Standard:	Examinee calculates a total dose of 160 mrem will be accumulated performing the task.	
Comment		
Examiner Note	This step is critical because the examinee needs to calculate the correct dose to get the correct result from the Impact Assessment.	
Examiner Note	The work will be performed near valve 2-63-750 Test Conn on RHR Suction from RWST. General area dose rate from survey map A217 from a hot spot in the area is 800 mr/hr. The job as indicated from the initiating cue will take 12 minutes. 800 mrem/hr X 60 min/1 hr ÷ 12 min = 160 mrem	

STEP 3 :	Obtain a copy of NPG-SPP-07.1 On Line Work Management Appendix A On Line Work Management Work Management Process Description.	___ SAT ___ UNSAT
Standard:	Copy of NPG-SPP-07.1 On Line Work Management Appendix A On Line Work Management Work Management Process Description is obtained.	
Cue	Provide a copy of NPG-SPP-07.1 On Line Work Management Appendix A On Line Work Management Work Management Process Description.	
Comment		

STEP 4 :	Matrix 1 (Impact Assessment) Category / High / Medium / Low / Routine Radiation Dose (5) / ≥ 150 mrem / ≥ 100 mrem / ≥ 50 mrem / < 50 mrem	___ SAT ___ UNSAT **Critical Step**
Standard:	The examinee performs an impact assessment and determines the risk level to be HIGH due to the projected dose of ≥ 150 mrem for the job.	
Comment		
Examiner Note	The first matrix (Matrix 1) is used to determine a level of risk in performance of the task. The horizontal axis represents the level of risk, decreasing from left to right. The vertical axis is a list of items for consideration and includes the traditional risk considerations from risk assessment colors and LCO restraints to less traditional risk considerations such as task frequency, worker experience, and task complexity.	
Examiner Note	(5) **Radiation Dose**: Setting site-specific thresholds to trigger the need for enhanced preparation and oversight for planned activities is critical in managing overall risk, not only from the standpoint of personnel protection but also for out-of-service time. Higher dose activities can increase the amount of time needed for implementation. Required activities such as ALARA briefings, radiation surveys after components are isolated and drained, and contamination checks for equipment breaches can impact out-of-service time. In addition, worker stay times may be limited by area dose rates or required personnel protective equipment.	
Examiner Note	This step is critical because the examinee needs to make the determination of high risk in order to achieve the terminal standard.	

Terminating Cue:	**The task is complete when the Examinee returns the cue sheet to the examiner.**	**STOP**

Stop Time _____

JPM BRIEFING SHEET

DIRECTIONS TO TRAINEE:

The examiner will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

INITIAL CONDITIONS:

1. Unit 2 is in MODE 1
2. You are the WCC SRO and are performing a review of a work package to be merged into the schedule in two weeks.
3. The work is in the vicinity of valve 2-63-750 Test Conn on RHR Suction from RWST located in the Auxiliary Bldg 653 elevation pipe chase.
4. The total time to perform the job is 12 min

INITIATING CUES:

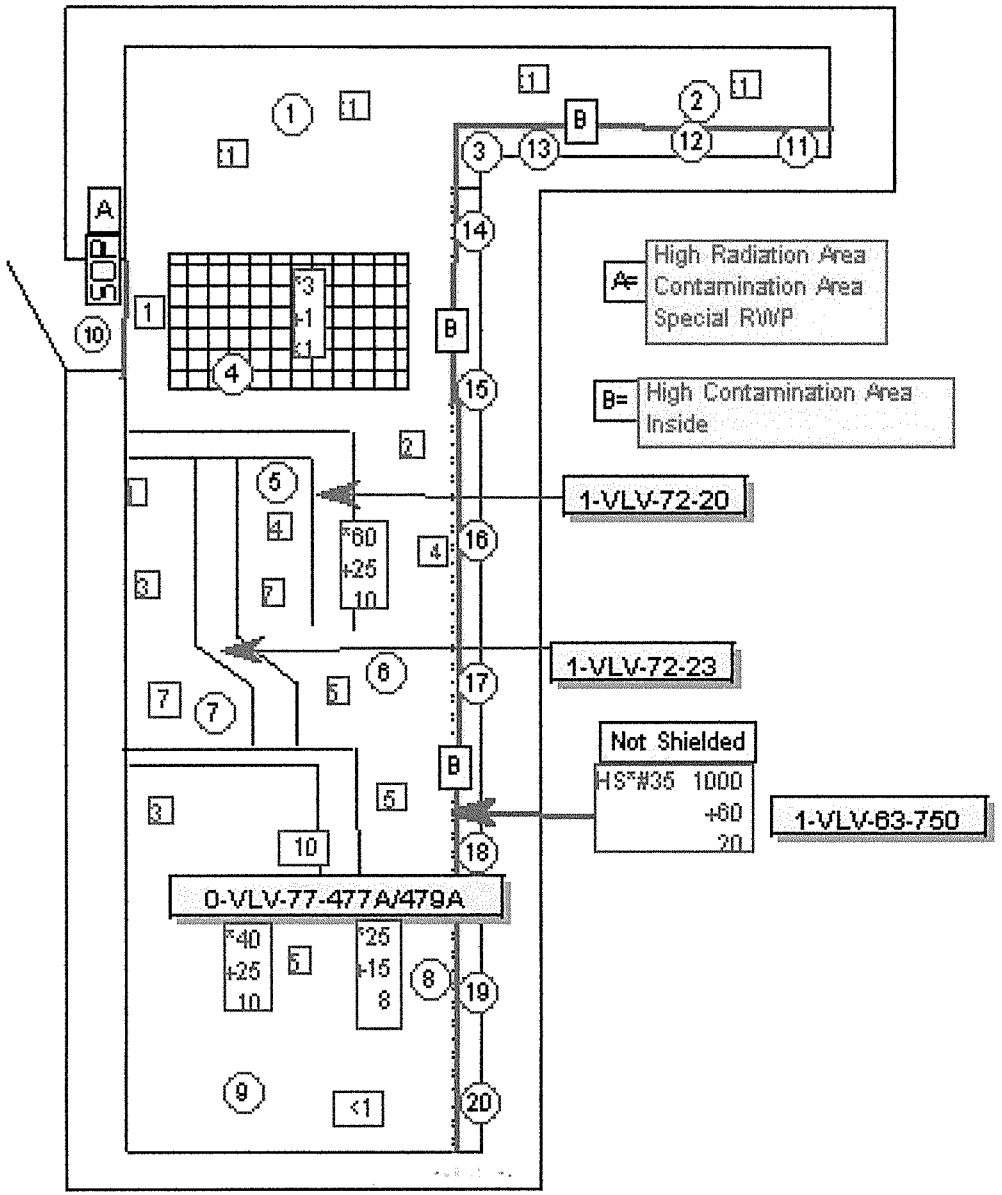
1. Calculate the total dose that the worker will accumulate performing the job
2. Using the total dose, perform an Impact Assessment of the level of risk while performing the task using NPG-SPP-07.1 On Line Work Management, Appendix A On Line Work Management Work Management Process Description.
3. Inform the evaluator when you are complete.

Acknowledge to the examiner when you are ready to begin.

HAND THIS PAPER BACK TO YOUR EVALUATOR WHEN YOU HAVE SATISFACTORILY COMPLETED THE ASSIGNED TASK.

Summary of Highest Readings	
Smears	**Air Samples & Wipes**
19) 250,000 DPM/100 cm2 β/γ	
20) 100,000 DPM/100 cm2 β/γ	
18) 100,000 DPM/100 cm2 β/γ	
17) 60000 DPM/100 cm2 β/γ	
15) 40000 DPM/100 cm2 β/γ	
16) 30000 DPM/100 cm2 β/γ	
8) 20000 DPM/100 cm2 β/γ	
3) 20,000 DPM/100 cm2 β/γ	
13) 4000 DPM/100 cm2 β/γ	
14) 2000 DPM/100 cm2 β/γ	
11) 2000 DPM/100 cm2 β/γ	
12) 1200 DPM/100 cm2 β/γ	
9) 1000 DPM/100 cm2 β/γ	
7) 1000 DPM/100 cm2 β/γ	
6) 1000 DPM/100 cm2 β/γ	
5) 1000 DPM/100 cm2 β/γ	

Map: A216.WMF - A216 Unit 1 Pipe Chase - Aux 653
Survey #: 110310-7 Surveyed by Arnold, Alonzo J. on 11/3/2010 at 14:58
Approved on: 11/3/2010 16:37



Symbol Legend (for example only)

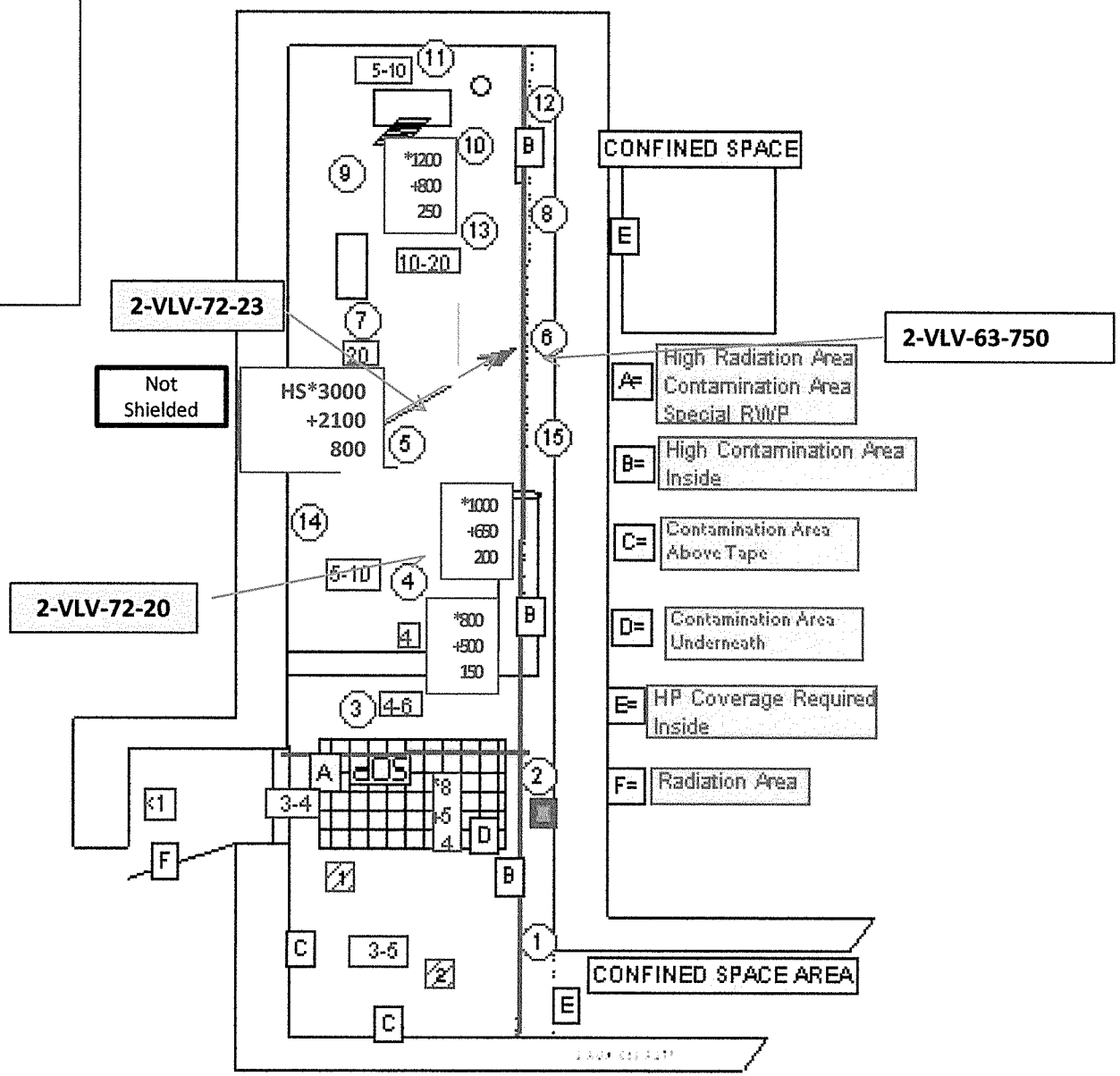
Dose Rate
*150 Contact Reading
+75 30 cm Reading
20 General Area

HS-50 Hot Spot
RCA Posting
Drip Bag

15 Smear 15 Air Sample 0 RM 15 Wipe

Summary of Highest Readings	
Smears	**Air Samples & Wipes**
15) 14000 DPM/100 cm2 β/γ	Wipe 1) <100 CPM
8) 10000 DPM/100 cm2 β/γ	Wipe 2) <100 CPM
7) 2000 DPM/100 cm2 β/γ	
6) 2000 DPM/100 cm2 β/γ	
12) 1000 DPM/100 cm2 β/γ	
5) 1000 DPM/100 cm2 β/γ	
2) 1000 DPM/100 cm2 β/γ	
14) <1000 DPM/100 cm2 β/γ	
13) <1000 DPM/100 cm2 β/γ	
11) <1000 DPM/100 cm2 β/γ	
10) <1000 DPM/100 cm2 β/γ	
9) <1000 DPM/100 cm2 β/γ	
4) <1000 DPM/100 cm2 β/γ	
3) <1000 DPM/100 cm2 β/γ	
1) <1000 DPM/100 cm2 β/γ	

Map: A217.WMF - A217 Unit 2 Pipe Chase - Aux 653
Survey # 110209-7 Surveyed by Munns, Annette R. on 11/2/2009 at 15:02
Approved on: 11/2/2009 16:10



Symbol Legend (for example only)

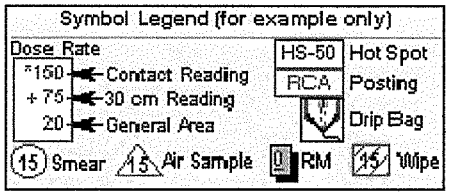
Dose Rate
*150 Contact Reading
+ 75 30 cm Reading
20 General Area

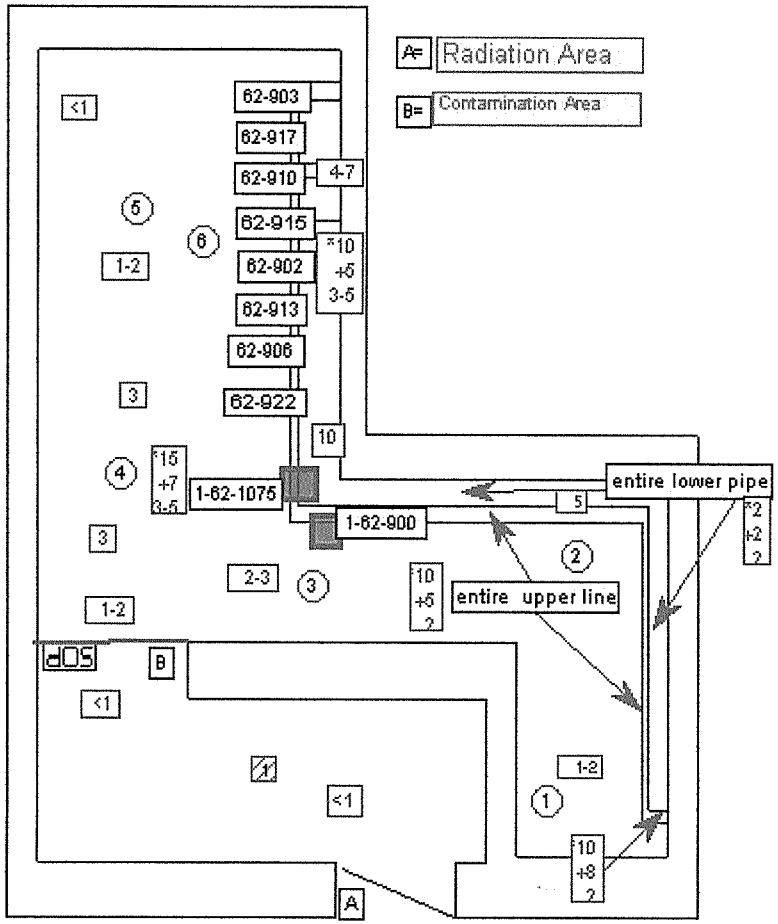
HS-50 Hot Spot
RCA Posting
Drip Bag

15 Smear 15 Air Sample RM 15 Wipe

Map: A408.WMF - A408 Unit 1 Mixed Bed Valve Gallery
Survey #: 101210-20 Surveyed by Wood, Bruce R on 10/12/2010 at 05:45
Approved on: 10/13/2010 00:51

Summary of Highest Readings	
Smears	**Air Samples & Wipes**
6) 40,000 DPM/100 cm2 β/γ 5) 1,000 DPM/100 cm2 β/γ 4) 1,000 DPM/100 cm2 β/γ 3) 1,000 DPM/100 cm2 β/γ 2) 1,000 DPM/100 cm2 β/γ 1) 1,000 DPM/100 cm2 β/γ 6) N/D DPM/100 cm2 β 6) <20 DPM/100 cm2 α	Wipe 1) <100 CPM



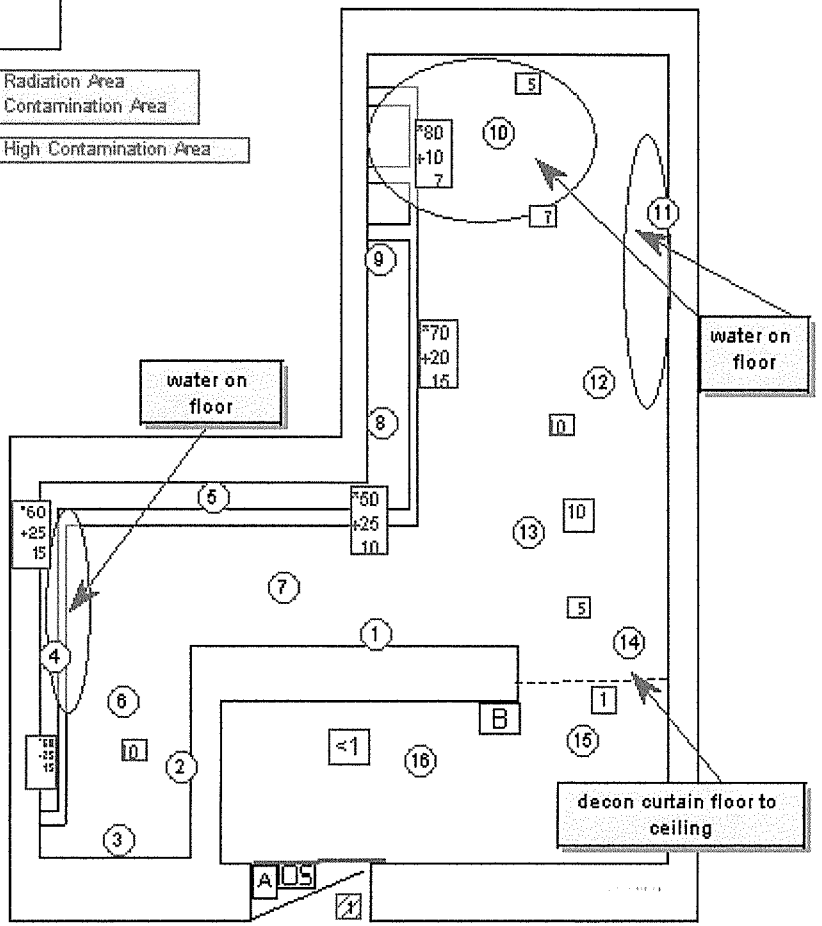


Summary of Highest Readings	
Smears	**Air Samples & Wipes**
9) 300,000 DPM/100 cm2 β/γ	Wipe 1) <100 CPM
3) 300000 DPM/100 cm2 β/γ	
2) 300000 DPM/100 cm2 β/γ	
5) 180,000 DPM/100 cm2 β/γ	
4) 160,000 DPM/100 cm2 β/γ	
1) 120000 DPM/100 cm2 β/γ	
11) 100,000 DPM/100 cm2 β/γ	
10) 100,000 DPM/100 cm2 β/γ	
8) 100,000 DPM/100 cm2 β/γ	
6) 100,000 DPM/100 cm2 β/γ	
14) 75,000 DPM/100 cm2 β/γ	
7) 75,000 DPM/100 cm2 β/γ	
12) 60,000 DPM/100 cm2 β/γ	
13) 50,000 DPM/100 cm2 β/γ	
16) 30,000 DPM/100 cm2 β/γ	
15) 30,000 DPM/100 cm2 β/γ	

Map: A417.WMF - A417 Mixed Bed Valve Gallery
Survey #: 121609-2 Surveyed by Smith, Steve L. on 12/16/2009 at 10:09
Approved on: 12/16/2009 14:16

A= Radiation Area
Contamination Area

B= High Contamination Area



Symbol Legend (for example only)

Dose Rate
*150 Contact Reading
+ 75 30 cm Reading
20 General Area

HS-50 Hot Spot
RCA Posting
Drip Bag

15 Smear
15 Air Sample
RM
15 Wipe

Appendix A
(Page 28 of 32)

On Line Work Management
Work Management Process Description

For those large component or system outages that are LCO/AOT related, the level of potential impact would dictate the appropriate level of preparation, approval, oversight, and assessment. Matrices 2 and 3 are examples of methods used in the industry to lower risk, minimize out-of-service (OOS) time, and assess performance. The provided methods are guidelines and are not meant to be all inclusive. They should be used to help develop station programs or enhance existing programs. When dealing with the assessment of managed risk refer to NPG-SPP-07.3 (Work Activity Risk Management Process)

Matrix 1 (Impact Assessment)

Category	High	Medium	Low	Routine
PRA / PSA (1)	Orange	Yellow	White	Green
Available LCO/AOT Time (2)	≤ 72 hours	≤ 7 days	≤ 14 days	> 14 days
Percentage of LCO Time to be Used (3)	≥ 75%	≥ 50%	≥ 25%	< 25%
Maintenance Rule OOS Time (4)	Planned duration will result in the system being in or near A-1 status	≥ 75% of available time	≥ 50% of available time	< 50% of available time
Radiation Dose (5)	≥ 150 mrem	≥ 100 mrem	≥ 50 mrem	< 50 mrem
Generation Risk (6)	high consequence / high probability	high consequence / low probability	low consequence / high probability	low consequence / low probability
Power Reduction (7)	≥ 20%	≥ 10%	< 10%	None
Human Performance/ Personnel Safety (8)	First-time task; infrequently performed tasks with personnel unfamiliar with the work	Infrequently performed tasks with personnel familiar with the work	Routine tasks with personnel unfamiliar with the work	Routine tasks with personnel familiar with the work
Task Complexity (9)	Multidepartmental support required for many multidiscipline tasks in parallel	Normal inter-departmental support required for several multidiscipline tasks in parallel	Normal inter-departmental support required with few multi-discipline tasks in parallel	Normal inter-departmental support required for single-discipline tasks

SEQUOYAH NUCLEAR PLANT

SRO ADMIN A.4

Evaluate Conditions For Emergency Classification

SRO

JOB PERFORMANCE MEASURE

Task: Evaluate Conditions For Emergency Classification

Task #: 3440030302

Task Standard: Classification of Site Area Emergency, EAL Number 1.1.1 P and 1.2.2 P is declared within 15 minutes of starting the task.
The TVA Initial Notification for Site Area Emergency is completed within 10 minutes of event declaration.

Time Critical Task: **YES:** X **NO:** _____

K/A Reference/Ratings: 2.4.41 (4.6)

Method of Testing:

Simulated Performance: _____ **Actual Performance:** X

Evaluation Method:

Simulator _____ **In-Plant** _____ **Classroom** X

Main Control Room _____ **Mock-up** _____

Performer: _____
Trainee Name

Evaluator: _____ / _____ _____
Name / Signature DATE

Performance Rating: **SAT:** _____ **UNSAT:** _____

Validation Time: 21 min **Total Time:** _____

Performance Time: **Start Time:** _____ **Finish Time:** _____

COMMENTS

_____

_____

SPECIAL INSTRUCTIONS TO EVALUATOR:

1. Critical steps are identified in step SAT/UNSAT column by bold print 'Critical Step.'
2. Any UNSAT requires comments.

Tools/Equipment/Procedures Needed:

1. EPIP- 1, EMERGENCY PLAN CLASSIFICATION MATRIX
2. EPIP-2 NOTIFICATION OF UNUSUAL EVENT
3. EPIP-4, SITE AREA EMERGENCY
4. A clock must be available in classroom that all examinees and evaluator can see

References:

	Reference	Title	Rev No.
1.	EPIP- 1	EMERGENCY PLAN CLASSIFICATION MATRIX	45
2.	EPIP-2	NOTIFICATION OF UNUSUAL EVENT	30
3.	EPIP-4	SITE AREA EMERGENCY	32

==========

Read to the examinee:

DIRECTIONS TO TRAINEE:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM. I will provide initiating cues and reports on other actions when directed by you. When you complete the task successfully, the objective for this job performance measure will be satisfied. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

HAND JPM BRIEFING SHEET TO EXAMINEE AT THIS TIME!

INITIAL CONDITIONS:

1. Unit 1 is currently in a NOUE based upon system degradation, 2.1 due to loss of both channels of control room annunciators as well as the annunciator printer and CRT.
2. EPIP-2, NOTIFICATION OF UNUSUAL EVENT is in progress at step 3.2.3
3. Subsequently a Reactor trip occurred
4. Safety Injection actuated and E-1, Loss of Reactor or Secondary Coolant, was entered.
5. FR-C.2, Response to Degraded Core Cooling, is being performed due to an Orange condition on the CSF Status Trees.
6. ICS is available.
7. The ODS is NOT available.
8. The TSC is NOT operational.
9. Emergency Paging System (EPS) is not available in MCR.
10. There are no indications of an Onsite Security Event.

INITIATING CUES:

1. You are the Emergency Director in the Control Room until the TSC is staffed.

2. Given the initial conditions classify the event using EPIP-1, Emergency Plan Classification Matrix AND complete a TVA Follow up information Form.

3. When you raise your hand you will signify that you have completed the event declaration. At that time the Examiner will provide you with a TVA Notification Form. You will then complete the TVA Notification Form.

4. When you have completed the TVA Notification Form, raise your hand to inform the Examiner you are done.

5. There is an element of this task that is Time Critical.

Start Time _____

STEP 1 :	Obtain a copy of EPIP-2 NOTIFICATION OF UNUSUAL EVENT	____ SAT ____ UNSAT
Standard:	Examinee obtains a copy of EPIP-2 NOTIFICATION OF UNUSUAL EVENT.	
Cue	Provide a copy of EPIP-2 NOTIFICATION OF UNUSUAL EVENT marked up through step 3.2.3	
Comment		

STEP 2 :	Obtain a copy of EPIP-1, EMERGENCY PLAN CLASSIFICATION MATRIX.	____ SAT ____ UNSAT
Standard:	Examinee obtains a copy of EPIP-1, EMERGENCY PLAN CLASSIFICATION MATRIX.	
Cue	Provide a copy of EPIP-1, EMERGENCY PLAN CLASSIFICATION MATRIX.	
Comment		

Procedure Note	***INSTRUCTIONS*** **Note:** A condition is considered to be **MET** if, in the judgment of the SED, the condition will be **MET IMMINENTLY** (i.e.: with two hours). The classification shall be made as soon as this determination is made.	
STEP 3 :	1. In the matrix to the left, REVIEW the initiating conditions in all three barrier columns and circle the conditions that are MET. 2. In each of the three barrier columns, IDENTIFY if any Loss or Potential Loss **INITIATING CONDITIONS** have been MET.	___ SAT ___ UNSAT
Standard:	Examinee reviews the EMERGENCY PLAN CLASSIFICATION MATRIX and identifies initiating conditions provided in the initial conditions.	
Comment		

STEP 4 :	3. COMPARE the number of barrier Losses and Potential losses to the criteria below and make the appropriate declaration. **Emergency Class Criteria** **Site Area Emergency** **LOSS** or **Potential LOSS** of any two barriers	___ SAT ___ UNSAT **Critical Step**
Standard:	The examinee compares barrier losses and classifies the event as a Site Area Emergency within 15 minutes of starting the task. Potential LOSS of the Fuel Clad Barrier 1.1.1 due to Core Cooling Orange (FR-C.2) entry **and** Potential LOSS of the RCS Barrier 1.2.2. Non Isolatable RCS leak exceeding the capacity of one charging pump in the normal charging alignment **OR RCS** leakage results in entry into E-1	
Comment		
EXAMINER NOTE:	This is a critical step because of the requirement to arrive at the correct classification within 15 minutes.	
EXAMINER NOTE:	Annotate the stop time for the event classification here. _____	
EXAMINER NOTE:	Examinee continues with the task to complete the State Notification Form using EPIP-4, SITE AREA EMERGENCY. The critical time element continues.	
EXAMINER NOTE:	Annotate the start time for the State Notification here. _____	
EXAMINER NOTE:	The start data is provided to the examinee on the JPM briefing sheet.	
EXAMINER NOTE:	Examinee transitions to EPIP-4 SITE AREA EMERGENCY	

STEP 5 :	Obtain a copy of EPIP-4, SITE AREA EMERGENCY	___ SAT ___ UNSAT
Standard:	Examinee obtains a copy of EPIP-4, SITE AREA EMERGENCY.	
Cue	Provide a copy of EPIP-4, SITE AREA EMERGENCY	
Comment		

Procedure Note	**NOTE:** **IF** there are personnel injuries, **THEN IMPLEMENT** EPIP-10, "Medical Emergency Response." **NOTE:** **IF** there are immediate hazards to plant personnel, **THEN** consider immediately implementing EPIP-8 "Personnel Accountability and Evacuation" in parallel with this procedure	
STEP 6 :	3.1 **SITE AREA EMERGENCY DECLARATION BY THE MAIN CONTROL ROOM** Upon classifying events as a SITE AREA EMERGENCY the SM/SED shall: **[1]** **IF** TSC is OPERATIONAL, (SED transferred to TSC), **THEN GO TO** Section 3.2 (Page 7). **[2]** **RECORD time of Declaration.** **[3]** **ACTIVATE** Emergency Paging System (EPS) as follows:	___ SAT ___ UNSAT
Standard:	The examinee addresses steps 3.1.1 through 3.1.3	
Comment		

STEP 7 :	**3.1 SITE AREA EMERGENCY DECLARATION BY THE MAIN CONTROL ROOM** Upon classifying events as a SITE AREA EMERGENCY the SM/SED shall: **[4] COMPLETE** Appendix B, TVA Initial Notification for Site Area Emergency.	____ SAT ____ UNSAT
Standard:	The examinee completes an Appendix B, TVA Initial Notification for Site Area Emergency with no errors on items noted with an * on the answer key within 10 minutes of event declaration.	**Critical Step**
EXAMINER NOTE:	This is a critical step because of the requirement to provide notification of an event to the state within 10 minutes.	
EXAMINER NOTE:	Annotate the stop time for the completion of the state notification form here. _____	
Comment		

Terminating Cue:	**The task is complete when the Examinee returns the cue sheet to the examiner.**	**STOP**

Stop Time _____

JPM BRIEFING SHEET

DIRECTIONS TO TRAINEE:

The examiner will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

INITIAL CONDITIONS:

1. Unit 1 is currently in a NOUE based upon system degradation, 2.1 due to loss of both channels of control room annunciators as well as the annunciator printer and CRT.
2. EPIP-2, NOTIFICATION OF UNUSUAL EVENT is in progress at step 3.2.3
3. Subsequently a Reactor trip occurred.
4. Safety Injection actuated and E-1, Loss of Reactor or Secondary Coolant, was entered.
5. FR-C.2, Response to Degraded Core Cooling, is being performed due to an Orange condition on the CSF Status Trees.
6. ICS is available.
7. The ODS is NOT available.
8. The TSC is NOT operational.
9. Emergency Paging System (EPS) is not available in MCR.
10. There are no indications of an Onsite Security Event.

INITIATING CUES:

1. You are the Emergency Director in the Control Room until the TSC is staffed.
2. When you raise your hand you will signify that you have completed the event declaration. At that time the Examiner will provide you with a TVA Notification Form. You will then complete the TVA Notification Form.
3. When you have completed the TVA Notification Form, raise your hand to inform the Examiner you are done.
4. There is an element of this task that is Time Critical.

Acknowledge to the examiner when you are ready to begin.

HAND THIS PAPER BACK TO YOUR EVALUATOR WHEN YOU HAVE SATISFACTORILY COMPLETED THE ASSIGNED TASK.

A.4 KEY

APPENDIX B
TVA INITIAL NOTIFICATION FOR SITE AREA EMERGENCY

TVA INITIAL NOTIFICATION FOR SITE AREA EMERGENCY

* 1. ☒ This is a Drill ☐ This is an Actual Event - Repeat - This is an Actual Event

2. This is SED _____. **Sequoyah** has declared a **SITE AREA EMERGENCY** affecting: * ☒ Unit 1 ☐ Unit 2 ☐ Both Unit 1 and Unit 2

3. **EAL Designator(s):** * 1.1.1 P & 1.2.2 P

4. **Brief Description of the Event:** Examiner Note: The following is amplifying information only (NOT CRITICAL) Core Cooling (FR-C.2) and RCS Leakage results in entry into E-1

5. **Radiological Conditions:** (Check one box under each Airborne AND Liquid column.)

* **Airborne** Releases Offsite	* **Liquid** Releases Offsite
☒ Minor releases within federally approved limits[1]	☒ Minor releases within federally approved limits[1]
☐ Releases above federally approved limits[1]	☐ Releases above federally approved limits[1]
☒ Release information not known	☒ Release information not known
([1]Tech Specs)	([1]Tech Specs)

R — OR —

6. **Event Declared:** * Time: Declaration TIME * Date: Declaration DATE

7. **Provide Protective Action Recommendation:** ..... * ☒ None

8. When completed, FAX this information to the ODS or TEMA as required by Sections 3.1 or 3.2. ☐

ODS Fax: 5-751-8620. TEMA Fax: 9-1-615-242-9635

9. Please repeat back the information you have received to ensure accuracy. ☐

A.4 KEY

TENNESSEE VALLEY AUTHORITY

SEQUOYAH NUCLEAR PLANT

EMERGENCY PLAN IMPLEMENTING PROCEDURE

EPIP-2

NOTIFICATION OF UNUSUAL EVENT

REVISION 30

PREPARED BY: BILL PEGGRAM

RESPONSIBLE ORGANIZATION: EMERGENCY PREPAREDNESS

APPROVED BY: RUSSELL THOMPSON

EFFECTIVE DATE: 12/21/2010

LEVEL OF USE: REFERENCE USE

QUALITY-RELATED

A.4 IN-PROGRESS

Revision History

Rev	Date	Pages Revised	Reason for Revision
20	08/26/2002		Corrections, editorials and pagination cleanup. Clarified step 3.1, Step 3 to avoid redundancy. This is a intent revision.
21	10/22/2002		Revised to remove activation of the TSC/OSC at the NOUE. This is an intent revision.
22	04/22/2003		General revision to restructure EPIP for better flow. Moved ODS notification earlier in procedure. Added EPIPs 6, 7 & 16 as references. Intent revision.
23	06/26/2003		Non intent change. Correct typo on phone number.
24	10/23/2003	4, 6, 10	Intent change. Added step to record time of declaration upon entry into the procedure. Split step that had two actions in one step. Specified Security implement EPIP-11
25	04/22/2004	11	Intent change. Added guidance to use EPIP-6 Appendix B for guidance when briefing NRC on ENS line.
26	09/23/2004	5, 7, 10,	Intent change. Removed TEMA satellite phone number. Removed one cell No. and added Nextel Nos. for EP.
27	04/26/2006	4, 10, 12, 13	Revision Change: replaced SSI-1 with SSI-7.1. Replaced the EP Mgr names and phone numbers with a reference to the weekly REP duty list. Changed App.B, Step 9 from being the time and date info was provided to the ODS to faxing App. B to the ODS. Made App. C consistent with App. by putting "THIS IS A DRILL" before "THIS IS A REAL EVENT".
28	01/23/2007	6, 10	Plan effectiveness determinations reviews indicate the following revisions do not reduce the level of effectiveness of the procedure or REP: Annual review. Added to announce NOUE on old plant PA, 4800 bridge Revised responsibility of dose assessment from Chemistry to RP.
29	02/19/2010	12	Plan effectiveness determinations reviews indicate the following revisions do not reduce the level of effectiveness of the procedure or REP: Annual review. PER162926-001-Added additional directions to contact TEMA to Step 9 of App B.
30	12/21/2010	4, 5, 12, 13	Plan effectiveness determinations reviews indicate the following revisions do not reduce the level of effectiveness of the procedure or REP: Annual review. Revised title of NPG-SPP-03.5. Revised the title of EPIP-10, PER 226308-001. Moved faxing the ODS App. B ahead of calling the ODS to expedite the notification PER167954-008. Reversed steps 8 and 9 on Appendix B. Added ODS and TEMA Fax numbers to Step 8 of Appendix B. Reordered steps 11 and 12 of Appendix C to reflect faxing the ODS or CECC Director prior to following up with submission of Appendix C.

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1.0 PURPOSE

1.1 To provide a method for timely notifications of appropriate individuals or organizations when the Shift Manager (SM)/Site Emergency Director (SED) has determined by EPIP-1 that events have occurred that are classified as a **NOUE**.

1.2 To provide the SED/SM a method for periodic reanalysis of current conditions to determine whether the **NOUE** should be terminated or continued.

2.0 REFERENCES

2.1 Interface Documents

[1] NPG-SPP-03.5, "Regulatory Reporting Requirements"
[2] EPIP-3, "Alert"
[3] EPIP-4, "Site Area Emergency"
[4] EPIP-5, "General Emergency"
[5] EPIP-6, "Activation and Operation of the Technical Support Center"
[6] EPIP-7, "Activation and Operation of the Operations Support Center, OSC"
[7] EPIP-8, "Personnel Accountability and Evacuation"
[8] EPIP-10, "Medical Emergency Response"
[9] EPIP-13, "Dose Assessment"
[10] EPIP-14, "Radiation Protection Response"
[11] EPIP-16, "Termination and Recovery"
[12] CECC EPIP-9, "Emergency Environmental Radiological Monitoring Procedures"
[13] SSI-7.1, "Post Requirements and Responsibilities, Central and Secondary Alarm Stations"

3.0 INSTRUCTIONS

NOTE: **IF** there are personnel injuries, **THEN IMPLEMENT** EPIP-10, "Medical Emergency Response."

NOTE: **IF** there are immediate hazards to plant personnel, **THEN** consider immediately implementing EPIP-8 "Personnel Accountability and Evacuation" in parallel with this procedure.

3.1 ACTIVATION OF THE EMERGENCY PLAN

Upon classifying events as an NOUE the SM/SED shall:

[1] **RECORD** Time of Declaration. XXXX
Time

NOTE: ODS should be notified within **5 minutes** after declaration of the event.

[2] **COMPLETE** Appendix B, TVA Initial Notification for NOUE. ☑

[3] **FAX** completed Appendix B to the ODS.

XO Initial XXXX Time

5-751-8620 (Fax)

[4] **CALL** ODS and **READ** completed Appendix B. ☑

ODS: Ringdown Line or
5-751-1700 or 5-751-2495 or 9-785-1700

MONITOR for confirmation call from ODS that State/Local notifications complete: **RECORD** time State notified.

XXXX Notification Time

N/A [5] **IF** ODS **CANNOT** be contacted within **10 minutes** of the declaration, **THEN**

[a] **CONTACT** Tennessee Emergency Management Agency (TEMA) and **READ** completed Appendix B.

____ Initial ____ Time.

9-1-800-262-3300 or 9-1-615-741-0001

[b] **FAX** completed Appendix B to TEMA. ☐

9-1-615-242-9635 (Fax)

[6] **PERFORM** Appendix A, Notifications and Announcements. (Delegate as needed.) ☑

3.2 MONITOR CONDITIONS

[1] **MONITOR** radiation monitors.

N/A [2] **WHEN** indication exists of an unplanned radiological release, **THEN ENSURE** Dose Assessment is performed. ☐

[a] **IF** the CECC has not assumed Dose Assessment responsibility, **THEN NOTIFY** Radiation Protection to perform a dose assessment using EPIP-13, "Dose Assessment"

AND

PROVIDE the following information:
1. Type Of Event (SGTR/L, LOCA, WGDT, Cntmt Bypass)
2. Release Path (SG/PORV, Aux, Shld, Turb, Serv, Cond)
3. Expected Duration (If unknown assume 4 hour duration) ☐

7865 (RP Lab) or 6417 (RP Lab) or Use REP Call List to contact a qualified individual in RP, who is onsite, to perform the dose assessment

[3] **MONITOR** plant conditions:

[a] **EVALUATE** using EPIP-1:

1. **IF** conditions satisfy criteria of **ALERT(s)** or higher classification, **THEN** initiate EPIP-3, EPIP-4, or EPIP-5 as appropriate. ☐

2. **IF** additional conditions satisfy criteria of other **NOUE(s)** **THEN** Complete Appendix C. ☐

3. **IF** conditions warrant a need for follow-up information, **THEN** complete Appendix C. ☐

[b] **IF** plant conditions warrant, **THEN ACTIVATE** assembly and accountability using EPIP-8. ☐

1.1 Fuel Clad Barrier

1. Critical Safety Function Status

LOSS	Potential LOSS
Core Cooling Red (FR-C.1)	Core Cooling Orange (FR-C.2) **OR** Heat Sink RED (FR-H.1) and RHR Shutdown Cooling not in service

- OR -

2. Primary Coolant Activity Level

LOSS	Potential LOSS
RCS sample activity is greater than 300 uCi/gm dose equivalent I131	Not Applicable

- OR -

3. Incore Thermocouple Hi Quad Average

LOSS	Potential LOSS
Greater than 1200 °F on XI-94-101 or 102 (EXOSENSOR)	Greater than or equal to 700 °F on XI-94-101 or 102 (EXOSENSOR)

- OR -

4. Reactor Vessel Water Level

LOSS	Potential LOSS
Not Applicable	**VALID** RVLIS level <42% on LI-68-368 or LI-68-371 with no RCP running

- OR -

5. Containment Radiation Monitor

LOSS	Potential LOSS
VALID reading of greater than: 2.8E+01 Rem/hr on RM-90-271A or -272A **OR** 2.9E+01 Rem/hr on RM-90-273A or -274A (see instruction note 4)	Not Applicable

- OR -

6. SED Judgment

Any condition that, in the judgment of the SM or SED, indicates loss or potential loss of the Fuel Clad Barrier comparable to the conditions listed above.

1.2 RCS Barrier

1. Critical Safety Function Status

LOSS	Potential LOSS
Not Applicable	Pressurized Thermal Shock Red (FR-P.1) **OR** Heat Sink RED (FR-H.1) and RHR Shutdown Cooling not in service

- OR -

2. RCS Leakage / LOCA

LOSS	Potential LOSS
RCS leak results in subcooling <40 °F as indicated on XI-94-101 or 102 (EXOSENSOR)	Non Isolatable **RCS** leak exceeding the capacity of one charging pump in the normal charging alignment **OR** **RCS** leakage results in entry into E-1

- OR -

3. Steam Generator Tube Rupture

LOSS	Potential LOSS
SGTR that results in a Safety Injection actuation **OR** Entry into E-3	Not Applicable

- OR -

4.

LOSS	Potential LOSS
VALID RVLIS level <42% on LI-68-368 or LI-68-371 with no RCP running	Not Applicable

- OR -

5. SED Judgment

Any condition that, in the judgment of the SM or SED, indicates loss or potential loss of the **RCS** Barrier comparable to the conditions listed above.