V.C. SUMMER NUCLEAR STATION
JOB PERFORMANCE MEASURE

JPM NO: **09 RO/SRO**
A.1.a

EOP-18.2 Maximum Allowable Head Vent Calculation

APPROVAL: WRQ ***APPROVAL DATE:*** 4/25/2007

REV NO: 0

CANDIDATE:

EXAMINER:

THIS JPM IS APPROVED

TASK:

TASK STANDARD:

Calculation of Head Venting time of approximately 10.4 minutes (tolerance of 9.1-11.6 minutes).

PREFERRED EVALUATION LOCATION

CLASSROOM

PREFERRED EVALUATION METHOD

PERFORM

REFERENCES:

TOOLS: EOP-18.2
Calculator
Pen

EVALUATION TIME 15 ***TIME CRITICAL*** NO ***10CFR55:*** 55.45(a)12

TIME START: TIME FINISH: PERFORMANCE TIME:

PERFORMANCE RATING: SAT: UNSAT:

EXAMINER:

SIGNATURE DATE

INSTRUCTIONS TO OPERATOR

READ TO OPERATOR:

WHEN I TELL YOU TO BEGIN, YOU ARE TO PERFORM THE ACTIONS AS DIRECTED IN THE INITIATING CUES. I WILL DESCRIBE THE GENERAL CONDITIONS UNDER WHICH THIS TASK IS TO BE PERFORMED AND PROVIDE THE NECESSARY TOOLS WITH WHICH TO PERFORM THIS TASK. BEFORE STARTING, I 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.

SAFETY CONSIDERATIONS: None

INITIAL CONDITION: The following conditions exist:

1. RB Pressure is 0.9 psig on PI-950.
2. RB Temperature is 148°F on TI-9201A
3. RB Temperature is 146°F on TI-9203A.
4. Hydrogen Concentration is 2.1% on CI-8257
5. Hydrogen Concentration is 2.3% on CI-8258.
6. RCS Pressure is 310 psig on PI-402
7. RCS Pressure is 320 psig on PI-403.

INITIATING CUES: The CRS has directed you to perform EOP-18.2 step 17 to determine the maximum allowable head venting time.

HAND JPM BRIEFING SHEET TO OPERATOR AT THIS TIME!

JPM BRIEFING SHEET

OPERATOR INSTRUCTIONS:

SAFETY CONSIDERATIONS: None

INITIAL CONDITION: The following conditions exist:

1. RB Pressure is 0.9 psig on PI-950.
2. RB Temperature is 148°F on TI-9201A
3. RB Temperature is 146°F on TI-9203A.
4. Hydrogen Concentration is 2.1% on CI-8257
5. Hydrogen Concentration is 2.3% on CI-8258.
6. RCS Pressure is 310 psig on PI-402
7. RCS Pressure is 320 psig on PI-403.

INITIATING CUES: The CRS has directed you to perform EOP-18.2 step 17 to determine the maximum allowable head venting time.

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

STEPS

STEP: 1

CUES:

CR	*SEQ*		*STEP STANDARD:*
No	Yes	Record values for the following parameters: a. TI-9201A, RB TEMP "F. "F b. TI-9203A, RB TEMP "F. "F c. CI-8257, RB H2 CONC %. %H2 d. CI-8258, RB H2 CONC %. %H2 e. PI-402, RCS WR PRESS PSIG. psig f. PI-403, RCS WR PRESS PSIG. Psig	148°F is entered for TI-9201A and 146°F for TI-9203A; 2.1 % Hydrogen Concentration is entered for CI-8257 and 2.3% for CI-8258; 310 psig is entered for PI-402 and 320 psig for PI- 403.

COMMENTS:

SAT

UNSAT

STEP: 2

CUES:

CR	*SEQ*		*STEP STANDARD:*
Yes	Yes	Use the higher of the two readings recorded above to calculate: a. Reactor Building volume (at standard temperature and pressure): RB AIR VOLUME = (1.84E6 ft3) x [492"R/(RB TEMP ("F) + 460)] RB AIR VOLUME = ft3 MAX VENTED VOL = (3% - RB H2 CONC %) x (RB AIR VOLUME (STP)) ft3/100% MAX VENTED VOL = ft3	RB Air Volume is approximately 1.489E6 ft3

COMMENTS:

SAT

UNSAT

STEP: 3

CUES:

CR	*SEQ*		*STEP STANDARD:*
No	Yes	Maximum hydrogen volume to be vented (when RB H2 CONC is LESS THAN 3%):	Max Vented Volume is approximately 1.0423E4 ft3.

COMMENTS:

SAT . . . .

UNSAT . . . .

STEP: 4

CUES:

CR	*SEQ*		*STEP STANDARD:*
Yes	Yes	From the graph on the next page, determine the hydrogen flow rate using the higher RCS pressure recorded from Step 1: HYDROGEN FLOW RATE = SCFM	SCFM calculated to be approximately 1000 SCFM (based on 320 psig). Based on a tolerance of +/- 1/2 the smallest increment, the tolerance for RCS pressure would be 300-350 psig (unacceptable to read below 300 psig line), which results in a hydrogen flow rate tolerance of 900-1150 SCFM.

COMMENTS:

SAT . . . . .

UNSAT . . .

STEP: 5

CUES:

CR	*SEQ*		*STEP STANDARD:*
Yes	Yes	Calculate maximum allowable head venting period: MAXIMUM ALLOWABLE HEAD VENTING TIME = (MAX VENTED VOL) ft3 /(HYDROGEN FLOW RATE) SCFM MAXIMUM ALLOWABLE HEAD VENTING TIME = Minutes	A calculated Maximum Allowable Head Venting Time of approximately 10.4 minutes. Based on the tolerance of 900-1150 SCFM hydrogen flow rate, the maximum allowable venting time should be from 9.1 minutes to 11.6 minutes.

COMMENTS:

SAT . . .

UNSAT . . .

Examiner ends JPM at this point.

JPM SETUP SHEET

JPM NO: 09 RO/SRO A.

DESCRIPTION: EOP-18.2 Maximum Allowable Head Vent Calculation

IC SET:

INSTRUCTIONS:

COMMENTS:

NRC RO/SRO Admin A.1.a KEY

SOUTH CAROLINA ELECTRIC & GAS COMPANY

VIRGIL C. SUMMER NUCLEAR STATION

NUCLEAR OPERATIONS

NUCLEAR OPERATIONS

COPY NO. _____

EMERGENCY OPERATING PROCEDURE

EOP-18.2

RESPONSE TO VOIDS IN REACTOR VESSEL

REVISION 13

SAFETY RELATED

Original signed by Baker — 01/16/05
DISCIPLINE SUPERVISOR — DATE

Original signed by Ray — 01/19/05
APPROVAL AUTHORITY — DATE

RESPONSE TO VOIDS IN REACTOR VESSEL

TABLE OF CONTENTS

RESPONSE TO VOIDS IN REACTOR VESSEL

PURPOSE

This procedure provides instructions for responding to voids in the Reactor Vessel Head.

ENTRY CONDITIONS

This procedure is entered from EOP-12.0, MONITORING OF CRITICAL SAFETY FUNCTIONS, Attachment 6.

RESPONSE TO VOIDS IN REACTOR VESSEL

ACTION/EXPECTED RESPONSE	ALTERNATIVE ACTION

OPERATOR ACTIONS

CAUTION

If a controlled natural circulation cooldown is in progress AND a void in the Reactor Vessel Upper Head is expected, this procedure should NOT be performed.

NOTE

Conditions for implementing Emergency Plan Procedures should be evaluated using EPP-001, ACTIVATION AND IMPLEMENTATION OF EMERGENCY PLAN.

1 **Verify SI has been terminated:**

a. SI has been reset. ☐

b. Both MVG-8801A(B), HI HEAD TO COLD LEG INJ, are closed. ☐

1 **RETURN TO the Procedure and Step in effect.** ☐

2 **Verify Instrument Air to the RB has been established.** ☐

2 Perform the following:

a) Start one Instrument Air Compressor and place the other in Standby. ☐

IF no Instrument Air Compressor can be started, THEN locally start the Diesel Driven Air Compressor. **REFER TO SOP-220, STATION AND BACKUP INSTRUMENT AIR SYSTEMS.** ☐

b) Open PVA-2659, INST AIR TO RB AIR SERV. ☐

c) Open PVT-2660, AIR SPLY TO RB. ☐

RESPONSE TO VOIDS IN REACTOR VESSEL

ACTION/EXPECTED RESPONSE	ALTERNATIVE ACTION
3 **Verify at least <u>one</u> Charging Pump is running.** ☐	3 Perform the following: a) <u>IF</u> CCW flow to the RCP Thermal Barrier(s) is lost, <u>THEN</u> close MVT-8102A(B)(C), A(B)(C) SEAL WTR INJ ISOL, to the AFFECTED RCP(s) before starting a Charging Pump. ☐ b) <u>IF</u> Charging Pump miniflow is isolated, <u>THEN</u> open the miniflow valves: 1) Open MVG-8106, CHG PP. ☐ 2) Open MVT-8109A(B)(C), CHG PP A(B)(C). ☐ c) Ensure at least <u>one</u> CCW Pump is running. ☐ d) Start the associated Charging Pump. ☐
4 **Verify Charging flow on FI-122A, CHG FLOW GPM.** ☐	4 Perform the following: a) Close FCV-122, CHG FLOW. ☐ b) Open <u>both</u> MVG-8107 <u>AND</u> MVG-8108, CHG LINE ISOL. ☐ c) Adjust FCV-122, CHG FLOW, to obtain 60 gpm Charging flow. ☐ <u>IF</u> FCV-122, CHG FLOW, is inoperable, <u>THEN</u> locally control Charging flow (AB-412 West Pen): a) Close XVG08402B-CS, CHG HDR FLOW CONTROL INLET ISOL VALVE. ☐ b) Throttle open XVT08403-CS, FCV0122-CS BYPASS, to obtain 60 gpm Charging flow. ☐ <u>IF</u> 60 gpm Charging flow can <u>NOT</u> be established, <u>THEN</u> **RETURN TO the Procedure and Step in effect.** ☐

RESPONSE TO VOIDS IN REACTOR VESSEL

ACTION/EXPECTED RESPONSE	ALTERNATIVE ACTION
5 **Verify Letdown flow on FI-150, LO PRESS LTDN FLOW GPM.** ☐	5 Establish Normal Letdown: a) Set PCV-145, LO PRESS LTDN, to 70%. ☐ b) Open TCV-144, CC TO LTDN HX. ☐ c) Open PVT-8152, LTDN LINE ISOL. ☐ d) Open both LCV-459 AND LCV-460, LTDN LINE ISOL. ☐ e) Open desired Orifice Isolation Valve(s) to obtain 60 gpm to 120 gpm: • PVT-8149A, LTDN ORIFICE A ISOL (45 gpm). ☐ • PVT-8149B, LTDN ORIFICE B ISOL (60 gpm). ☐ • PVT-8149C, LTDN ORIFICE C ISOL (60 gpm). ☐ f) Adjust FCV-122, CHG FLOW, to maintain TI-140, REGEN HX OUT TEMP °F, between 250°F and 350°F while maintaining PZR level. ☐ g) Adjust PCV-145, LO PRESS LTDN, to maintain PI-145, LO PRESS LTDN PRESS PSIG, between 300 psig and 400 psig. ☐ h) Place PCV-145, LO PRESS LTDN, in AUTO. ☐ i) Place TCV-144, CC TO LTDN HX, in AUTO. ☐ j) Verify 60 gpm to 120 gpm on FI-150, LO PRESS LTDN FLOW GPM. ☐ k) Transfer Charging Pump suction to the VCT: 1) Open both LCV-115C(E), VCT OUTLET ISOL. ☐ 2) Close both LCV-115B(D), RWST TO CHG PP SUCT. ☐ IF Normal Letdown can NOT be established, THEN establish Excess Letdown. **REFER TO SOP-102, CHEMICAL AND VOLUME CONTROL SYSTEM.** ☐

RESPONSE TO VOIDS IN REACTOR VESSEL

ACTION/EXPECTED RESPONSE	ALTERNATIVE ACTION
6 **Establish stable RCS conditions:**	
a. Verify PZR level is GREATER THAN 72%. ☐	a. Control Charging and Letdown flows to establish PZR level GREATER THAN 72%. ☐
b. Verify RCS pressure is stable. ☐	b. Control PZR Heaters and Normal PZR Spray as necessary to control RCS pressure. ☐ IF Normal PZR Spray is NOT available AND Letdown is in service, THEN use Aux Spray. **REFER TO SOP-102, CHEMICAL AND VOLUME CONTROL SYSTEM.** ☐
c. Verify RCS T_{hot} is stable. ☐	c. Dump steam as necessary to control RCS T_{hot}. ☐
7 **Verify all RCPs are stopped.** ☐	7 **GO TO Step 13.** ☐
8 **Check if RCS pressure should be increased:**	
a. Verify RCS pressure is at least 100 psi LESS THAN the Tech Spec limit. **REFER TO Attachment 1.** ☐	a. **GO TO Step 11.** Observe the **CAUTION** and **NOTE** prior to **Step 11.** ☐
b. Verify RCS pressure is LESS THAN 1875 psig. ☐	b. **GO TO Step 11.** Observe the **CAUTION** and **NOTE** prior to **Step 11.** ☐
c. Control PZR Heaters as necessary to increase RCS pressure 50 psi. ☐	
9 **Control Charging and Letdown flows to maintain PZR level GREATER THAN 30% [50%].** ☐	

RESPONSE TO VOIDS IN REACTOR VESSEL

ACTION/EXPECTED RESPONSE	ALTERNATIVE ACTION
10 **Check RVLIS Upper Plenum level:**	
a. Verify level is increasing. ☐	a. **GO TO Step 11.** Observe the **CAUTION** and **NOTE** prior to **Step 11.** ☐
b. Verify level is GREATER THAN 94%. ☐	b. **RETURN TO Step 8.** ☐
c. Control PZR Heaters as necessary to stabilize RCS pressure. ☐	
d. **RETURN TO the Procedure and Step in effect.** ☐	

RESPONSE TO VOIDS IN REACTOR VESSEL

ACTION/EXPECTED RESPONSE	ALTERNATIVE ACTION

CAUTION - Step 11

If RCP Seal Cooling had previously been lost, the AFFECTED RCP(s) should NOT be started prior to an Engineering evaluation, to prevent RCP Seal failure.

NOTE - Step 11

Priority should be given to starting RCP A to restore Normal PZR Spray.

11 **Try to start one RCP:**

a. Establish the following conditions prior to RCP start:

- PZR level GREATER THAN 72%. ☐
- RCS subcooling on TI-499A(B), A(B) TEMP °F, GREATER THAN 55°F. ☐
- Use PZR Heaters as necessary to saturate PZR water. ☐
- Establish normal conditions for starting RCP(s). **REFER TO SOP-101, REACTOR COOLANT SYSTEM.** ☐

b. Start RCP A. ☐

a. **GO TO Step 13.** ☐

b. IF RCP A can NOT be started, THEN start RCP B AND C. ☐

12 **Check if RVLIS level is LESS THAN the following:** ☐

RCPs running	RVLIS level
0	94% Upper Plen
1	37% WR
2	56% WR

12 **GO TO Step 23.** ☐

RESPONSE TO VOIDS IN REACTOR VESSEL

ACTION/EXPECTED RESPONSE	ALTERNATIVE ACTION
13 **Start the RB Hydrogen Analyzers. REFER TO SOP-122, POST ACCIDENT HYDROGEN REMOVAL SYSTEM.** ☐	13 IF both Hydrogen Analyzers are inoperable, THEN notify Chemistry to sample the RB atmosphere for hydrogen concentration. ☐
14 **Check if Low PZR Pressure SI can be blocked:**	
a. Verify PZR pressure is LESS THAN 1925 psig. ☐	a. Decrease PZR pressure to LESS THAN 1925 psig using Normal PZR Spray. ☐ IF Normal PZR Spray is NOT available AND Letdown is in service, THEN depressurize using Aux Spray. **REFER TO SOP-102, CHEMICAL AND VOLUME CONTROL SYSTEM.** ☐ IF Aux Spray is NOT available, THEN depressurize using one PZR PORV. ☐
b. Place both PZR SI TRAIN A(B) Switches to BLOCK. ☐	
15 **Establish the following RCS conditions:**	
a. Verify PZR level is GREATER THAN 72%. ☐	a. Control Charging and Letdown flows as necessary to establish PZR level GREATER THAN 72%. ☐
b. Verify RCS pressure is stable. ☐	b. Control PZR Heaters and Normal PZR Spray as necessary to control RCS pressure. ☐ IF Normal PZR Spray is NOT available AND Letdown is in service, THEN use Aux Spray. **REFER TO SOP-102, CHEMICAL AND VOLUME CONTROL SYSTEM.** ☐
c. Verify RCS subcooling on TI-499A(B), A(B) TEMP °F, is GREATER THAN 80°F. ☐	c. Dump steam to increase subcooling. ☐
d. Verify RCS T_{hot} is stable. ☐	d. Dump steam as necessary to control RCS T_{hot}. ☐

RESPONSE TO VOIDS IN REACTOR VESSEL

ACTION/EXPECTED RESPONSE	ALTERNATIVE ACTION
NOTE - Step 16 RB Purge and Alternate Purge Systems should be isolated. All other available Containment air circulation equipment should be started to prevent hydrogen from forming local gas pockets.	
16 **Prepare the RB for Reactor Vessel venting:**	
a. Verify PRT pressure is NOT EQUAL TO RB pressure. ☐	a. Consult with TSC personnel to determine if Reactor Vessel venting should be performed without an INTACT PRT. ☐ IF Reactor Vessel venting will NOT be performed, THEN **GO TO Step 23.** ☐
b. Verify Containment Ventilation Isolation Valves closed by verifying the following SAFETY INJECTION monitor lights are dim:	b. IF any listed SAFETY INJECTION monitor light is bright, THEN close the associated damper (HVAC Panel):
• XCP-6103 3-4 (POST ACCID HR EXH 6057 & 6067). ☐	• PVG-6057, ALT PUR SPLY ISOL VLV, AND PVG-6067, CNTMT PUR EXH ISOL VLV. ☐
• XCP-6103 2-1 (POST ACCID HR EXH 6056/6066). ☐	• PVG-6056, ALT PUR SPLY ISOL VLV, AND PVG-6066, CNTMT PUR EXH ISOL VLV. ☐
c. Start all other available RB ventilation fans. **REFER TO SOP-114, REACTOR BUILDING VENTILATION SYSTEM.** ☐	
d. Align the PRT for cooldown. **REFER TO SOP-101, REACTOR COOLANT SYSTEM.** ☐	

RESPONSE TO VOIDS IN REACTOR VESSEL

ACTION/EXPECTED RESPONSE	ALTERNATIVE ACTION
NOTE - Step 17 Venting time is limited to prevent hydrogen concentration in the RB from exceeding 3% in the event the PRT Rupture Disk ruptures.	
17 **Determine maximum allowable head venting time:**	
a. Verify RB hydrogen concentration is LESS THAN 3%. ☐	a. Reduce RB hydrogen concentration to LESS THAN 3%: 1) Verify hydrogen concentration is LESS THAN 6%. ☐ 2) Start one Hydrogen Recombiner. **REFER TO SOP-122, POST ACCIDENT HYDROGEN REMOVAL SYSTEM.** ☐ IF hydrogen concentration is GREATER THAN 6%, THEN notify TSC personnel of excessive RB hydrogen concentration. **GO TO Step 23.** ☐
b. **COMPLETE ATTACHMENT 2, CALCULATION OF MAXIMUM ALLOWABLE HEAD VENTING TIME.** ☐	

RESPONSE TO VOIDS IN REACTOR VESSEL

ACTION/EXPECTED RESPONSE	ALTERNATIVE ACTION

18 **Review Reactor Vessel venting termination criteria:**

- RCS subcooling on TI-499A(B), A(B) TEMP °F, is LESS THAN 30°F. ☐

OR

- PZR level is LESS THAN 30% [50%]. ☐

OR

- RCS pressure decreases by 200 psi. ☐

OR

- The venting time is GREATER THAN the maximum determined on **ATTACHMENT 2, CALCULATION OF MAXIMUM ALLOWABLE HEAD VENTING TIME.** ☐

OR

- PRT pressure increases to 80 psig. ☐

OR

- PRT level increases to 100%. ☐

OR

- RVLIS GREATER THAN the following indicates the Reactor Vessel Upper Head is full: ☐

RCPs running	RVLIS level
0	94% Upper Plen
1	37% WR
2	56% WR
3	94% WR

RESPONSE TO VOIDS IN REACTOR VESSEL

ACTION/EXPECTED RESPONSE	ALTERNATIVE ACTION

CAUTION - Step 19

If any venting termination criterion in **Step 18** is exceeded, venting should be stopped. Venting termination criteria may be reached rapidly.

19 **Initiate Reactor Vessel Head venting:**

a. Locally unlock and close the breakers for the Reactor Vessel Head Vent Valves:

- XMC1DA2X 05IM, RX HEAD VENT VLV TO PRT XVT08095A-RC (IB-463). ☐
- XMC1DA2X 07AE, RX HEAD VENT VLV TO PRT XVT08096A-RC (IB-463). ☐
- XMC1DB2Y 23FJ, RX HEAD VENT VLV TO PRT XVT08095B-RC (AB-463). ☐
- XMC1DB2Y 12IM, RX HEAD VENT VLV TO PRT XVT08096B-RC (AB-463). ☐

b. Open <u>both</u> valves in <u>either</u> vent path:

- Open <u>both</u> MVG-8095A <u>AND</u> MVG-8096B, RX HEAD VENT VLV. ☐

<u>OR</u>

- Open <u>both</u> MVG-8095B <u>AND</u> MVG-8096A, RX HEAD VENT VLV. ☐

b. <u>IF either</u> valve fails to open in <u>one</u> vent path, <u>THEN</u> close <u>both</u> valves and open the valves in the other vent path. ☐

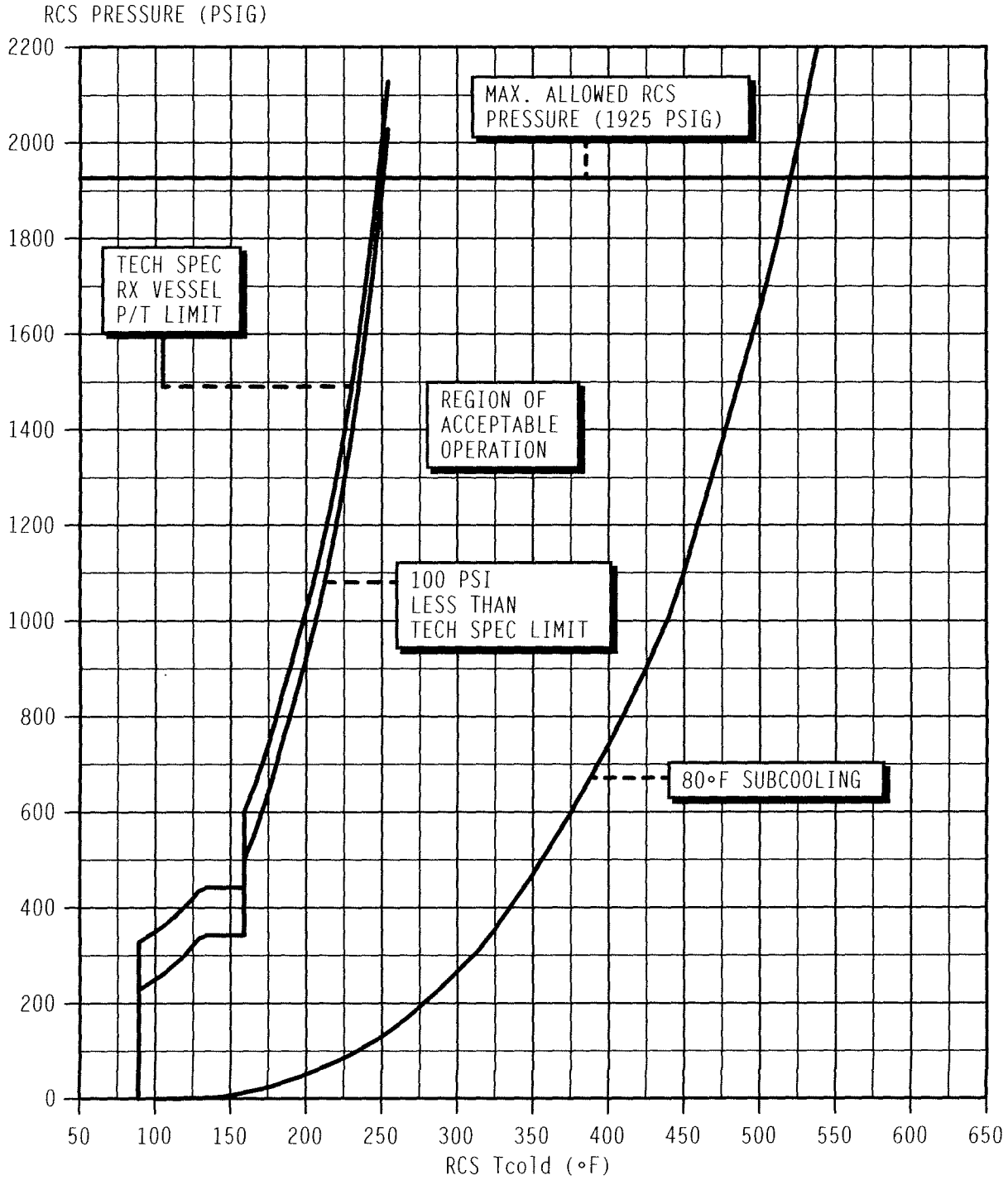
20 **Continue venting until <u>any</u> of the criteria of Step 18 are satisfied before continuing with Step 21.** ☐

21 **Close Reactor Vessel Head Vent Valves opened in Step 19.** ☐

RESPONSE TO VOIDS IN REACTOR VESSEL

ACTION/EXPECTED RESPONSE	ALTERNATIVE ACTION
22 **Verify RVLIS GREATER THAN the following indicates the Reactor Vessel Upper Head is full:** ☐ RCPs running / RVLIS level 0 / 94% Upper Plen 1 / 37% WR 2 / 56% WR 3 / 94% WR	22 Increase RCS pressure to the higher value recorded on **ATTACHMENT 2, CALCULATION OF MAXIMUM ALLOWABLE HEAD VENTING TIME.** ☐ **RETURN TO Step 13.** ☐
23 **Verify PZR level is stable.** ☐	23 Control Charging and Letdown flows as necessary to stabilize PZR level. ☐
24 **RETURN TO the Procedure and Step in effect.** ☐	
End of EOP-18.2	

RCS PRESSURE/TEMPERATURE LIMITS



NOTES: Minimum pressure for RCPs = 290 psig.
Maximum pressure for RHR = 425 psig.
Maximum temperature for RHR = 350°F.

CALCULATION OF MAXIMUM ALLOWABLE HEAD VENTING TIME

OPERATOR ACTIONS

1. Record the following parameters:

   a. TI-9201A, RB TEMP °F. _____ °F

   b. TI-9203A, RB TEMP °F. _____ °F

   c. CI-8257, RB H_2 CONC %. _____ %H_2

   d. CI-8258, RB H_2 CONC %. _____ %H_2

   e. PI-402, RCS WR PRESS PSIG. _____ psig

   f. PI-403, RCS WR PRESS PSIG. _____ psig

2. Use the higher of the <u>two</u> readings recorded above to calculate:

   a. Reactor Building volume
   (at standard temperature and pressure):

   RB AIR VOLUME = (1.84E6 ft^3) x [492°R/(RB TEMP (°F) + 460)]

   RB AIR VOLUME = _____ ft^3

   b. Maximum hydrogen volume to be vented
   (when RB H_2 CONC is LESS THAN 3%):

$$\text{MAX VENTED VOL} = \frac{(3\% - \text{RB } H_2 \text{ CONC } \%) \times (\text{RB AIR VOLUME (STP)})\ ft^3}{100\%}$$

   MAX VENTED VOL = _____ ft^3

3. From the graph on the next page, determine the hydrogen flow rate using the higher RCS pressure recorded from Step 1:

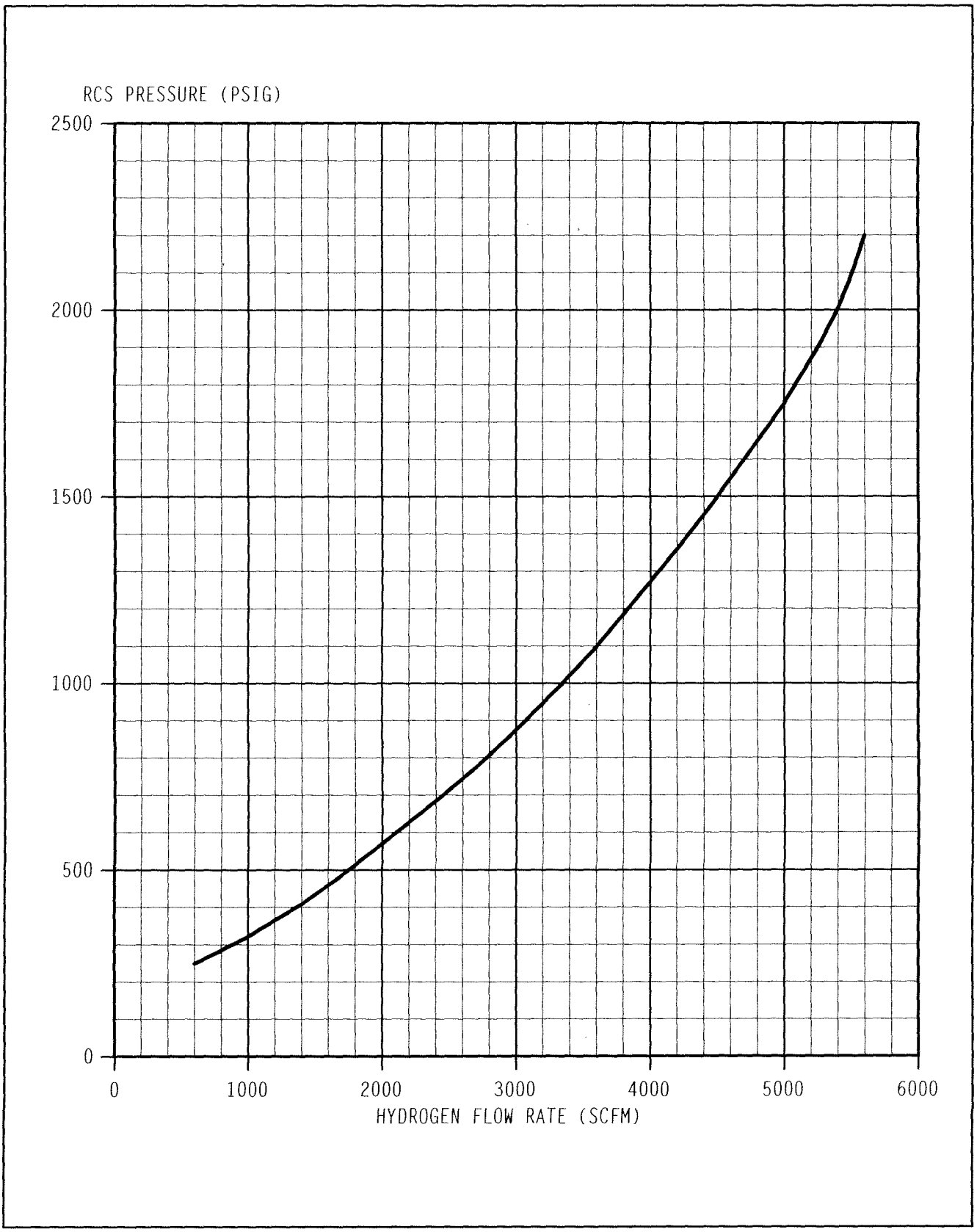
   HYDROGEN FLOW RATE = _____ SCFM

4. Calculate maximum allowable head venting period:

$$\text{MAXIMUM ALLOWABLE HEAD VENTING TIME} = \frac{(\text{MAX VENTED VOL})\ ft^3}{(\text{HYDROGEN FLOW RATE})\ \text{SCFM}}$$

   MAXIMUM ALLOWABLE HEAD VENTING TIME = _____ minutes

CALCULATION OF MAXIMUM ALLOWABLE HEAD
VENTING TIME



NRC RO/SRO KEY
Admin A.1.a

CALCULATION OF MAXIMUM ALLOWABLE HEAD VENTING TIME

OPERATOR ACTIONS

1. Record the following parameters:

   a. TI-9201A, RB TEMP °F. 148 °F

   b. TI-9203A, RB TEMP °F. 146 °F

   c. CI-8257, RB H_2 CONC %. 2.1 %H_2

   d. CI-8258, RB H_2 CONC %. 2.3 %H_2

   e. PI-402, RCS WR PRESS PSIG. 310 psig

   f. PI-403, RCS WR PRESS PSIG. 320 psig

2. Use the higher of the two readings recorded above to calculate:

   a. Reactor Building volume (at standard temperature and pressure): 492/608 = 0.81

   RB AIR VOLUME = (1.84E6 ft^3) x [492°R/(RB TEMP (°F) + 460)]

   148 + 460 = 608

   RB AIR VOLUME = 1.49E6 ft^3

   84
   1.84E6 x 0.81

   b. Maximum hydrogen volume to be vented (when RB H_2 CONC is LESS THAN 3%): (3-2.3)=[0.7 x 1.49E6] = 1.04E6

   $$\text{MAX VENTED VOL} = \frac{(3\% - \text{RB } H_2 \text{ CONC } \%) \times (\text{RB AIR VOLUME (STP)}) \ ft^3}{100\%}$$

   $\frac{1.04E6}{100}$ = MAX VENTED VOL = 1.04E4 ft^3

3. From the graph on the next page, determine the hydrogen flow rate using the higher RCS pressure recorded from Step 1: TOLERANCE ESTABLISHED ON PPG 2 of ATT 2.

   HYDROGEN FLOW RATE = 900 — 1150 SCFM

   minimum 900 ACTUAL 1000 MAXIMUM 1150

4. Calculate maximum allowable head venting period:

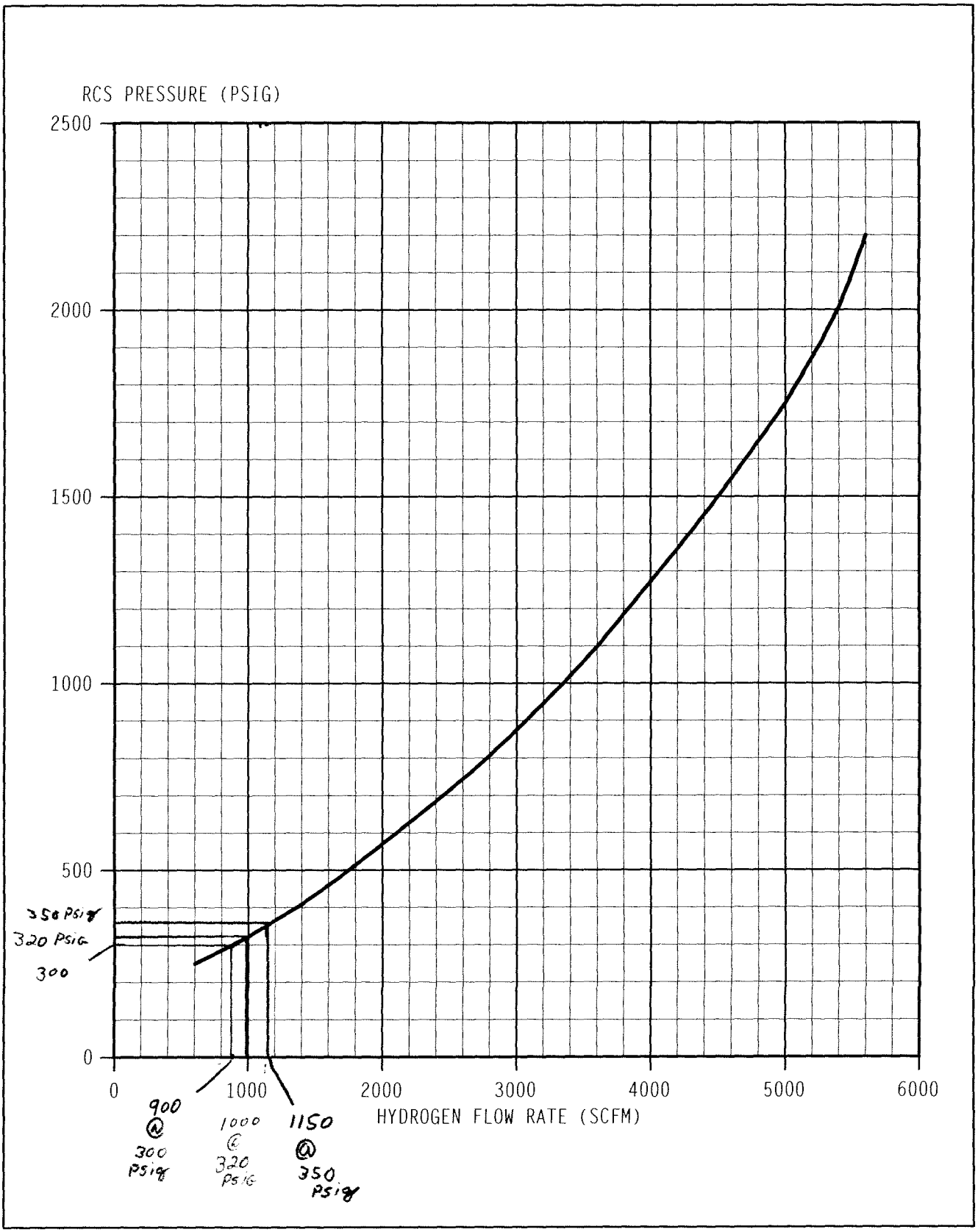
   $$\text{MAXIMUM ALLOWABLE HEAD VENTING TIME} = \frac{(\text{MAX VENTED VOL}) \ ft^3}{(\text{HYDROGEN FLOW RATE}) \ SCFM}$$

   $\frac{1.04E4}{900}$ = 11.6 $\frac{1.04E4}{1150}$ = 9.0

   MAXIMUM ALLOWABLE HEAD VENTING TIME = 9.0 TO 11.6 minutes

NRC RO/SRO KEY
Admin A.1.e

CALCULATION OF MAXIMUM ALLOWABLE HEAD VENTING TIME



V.C. SUMMER NUCLEAR STATION
JOB PERFORMANCE MEASURE

JPM NO: **09 RO A.1.b**

PERFORM A SHUTDOWN MARGIN FOR
INTENDED PLANT CONDITIONS

APPROVAL: ***APPROVAL DATE:***

REV NO: 0

CANDIDATE:

EXAMINER:

THIS JPM IS NOT APPROVED

TASK:

TASK STANDARD:

Obtain required data from the Curve Book, tables, and graphs. Use obtained data to calculate required boron concentration to maintain required shutdown margin in MODE 5. Determine that shutdown margin is not satisfied for MODE 5 using Attachment III of STP-134.001.

PREFERRED EVALUATION LOCATION	*PREFERRED EVALUATION METHOD*
CLASSROOM	PERFORM

REFERENCES:	Curve Book	Station Curve Book
	GOP-5	REACTOR SHUTDOWN FROM STARTUP TO HOT ST (Mode 2 to Mode 3)
	STP-134.001	SHUTDOWN MARGIN VERIFICATION

TOOLS: GOP-5, step 3.7 (Page 9 of 20)
STP-134.001, SHUTDOWN MARGIN VERIFICATION
Station Curve Book or copies of the following:
Figure II-9.1
Figure II-7.3

EVALUATION TIME 20 *TIME CRITICAL* NO *10CFR55:* 55.45(a)13

TIME START: TIME FINISH: PERFORMANCE TIME:

PERFORMANCE RATING: SAT: UNSAT:

EXAMINER:

SIGNATURE DATE

INSTRUCTIONS TO OPERATOR

READ TO OPERATOR:

WHEN I TELL YOU TO BEGIN, YOU ARE TO PERFORM THE ACTIONS AS DIRECTED IN THE INITIATING CUES. I WILL DESCRIBE THE GENERAL CONDITIONS UNDER WHICH THIS TASK IS TO BE PERFORMED AND PROVIDE THE NECESSARY TOOLS WITH WHICH TO PERFORM THIS TASK. BEFORE STARTING, I 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.

SAFETY CONSIDERATIONS: N/A

INITIAL CONDITION:

- The unit had been operating at 100% power for 150 days when a shutdown to Mode 5 was directed by plant management to repair a leaking Main Steam Safety Valve.
- RCS Tavg is 557 °F.
- Current RCS Boron Concentration is 262 ppm.
- Core Burnup is 20000 MWD/MTU
- One Control Bank (D) Control Rod did not indicate movement during the power reduction and is assumed to be untrippable.
- The operating crew is performing GOP-5, REACTOR SHUTDOWN FROM STARTUP TO HOT STANDBY (Mode 2 to Mode 3) and will continue to MODE 5.

INITIATING CUES: You are an extra licensed operator in the Control Room. The Control Room Supervisor has directed you to perform GOP-5, Step 3.7.b: If a return to power from present conditions is not desired, perform STP-134.001, Shutdown Margin Verification, for the desired Mode and temperature.
Round any calculations to the nearest whole number.

HAND JPM BRIEFING SHEET TO OPERATOR AT THIS TIME!

JPM BRIEFING SHEET

OPERATOR INSTRUCTIONS:

SAFETY CONSIDERATIONS: N/A

INITIAL CONDITION:
- The unit had been operating at 100% power for 150 days when a shutdown to Mode 5 was directed by plant management to repair a leaking Main Steam Safety Valve.
- RCS Tavg is 557 °F.
- Current RCS Boron Concentration is 262 ppm.
- Core Burnup is 20000 MWD/MTU
- One Control Bank (D) Control Rod did not indicate movement during the power reduction and is assumed to be untrippable.
- The operating crew is performing GOP-5, REACTOR SHUTDOWN FROM STARTUP TO HOT STANDBY (Mode 2 to Mode 3) and will continue to MODE 5.

INITIATING CUES: You are an extra licensed operator in the Control Room. The Control Room Supervisor has directed you to perform GOP-5, Step 3.7.b: If a return to power from present conditions is not desired, perform STP-134.001, Shutdown Margin Verification, for the desired Mode and temperature.
Round any calculations to the nearest whole number.

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

STEPS

STEP: 1

CUES:

CR SEQ

No Yes Review Precautions.

STEP STANDARD:

Reviews Precautions in front of STP-134.001. Initials the top blank on Page 1 of Attachment I of STP-134.001.

COMMENTS:

SAT

UNSAT

STEP: 2

CUES:

CR SEQ

No Yes Review Initial Conditions.

STEP STANDARD:

Reviews Initial Conditions for STP-134.001.

Initials the second blank on Page 1 of Attachment I of STP-134.001.

COMMENTS:

SAT

UNSAT

STEP: 3

CUES:

CR SEQ

No Yes Record Cycle Burnup.

STEP STANDARD:

Enters "20,000 on Attachment III step 1, of STP-134.001.

COMMENTS:

SAT

UNSAT

STEP: 4

CUES:

Evaluator Note: There is no error band because the value can be read directly from the figure.

CR	*SEQ*		*STEP STANDARD:*
Yes	Yes	Enter required RCS boron concentration to maintain Shutdown Margin based on Burnup: Using Curve Book Figure II-9.1 (Column SI BLOCKED MODES 3, 4, 5) enter the required RCS boron concentration to maintain Shutdown Margin based on Burnup.	Enters "1108" on Attachment III step 2, of STP-134.001.

COMMENTS:

SAT

UNSAT

STEP: 5

CUES:

CR	*SEQ*		*STEP STANDARD:*
Yes	Yes	Perform the following to calculate the required additional Boron concentration to compensate for untrippable Control Rods: 3.a.1 If no Control Rods are untrippable, enter a value of zero. 3.a.2 Enter 2200 pcm if one rod is untrippable.	Enters 2200 on Attachment III step 3.a, of STP-134.001

COMMENTS:

SAT

UNSAT

STEP: 6

CUES:

Evaluator Note: The acceptable band for differential boron worth is based on applying a tolerence of + or - 1/2 the smallest increment on the graph of Firgure II-7.3:

The smallest increment on the graph is 50 ppm; therefore the graph may be read between 1083 (1108 - 25) and 1133 ppm (1108 + 25)

The DBW for 1083 = - 7.57 and the DBW for 1133 = - 7.50

CR	*SEQ*		*STEP STANDARD:*
Yes	Yes	Enter the Differential Boron Worth for the boron concentration entered in Step 2 (Curve Book Figure II-7.3 at 557 °F)	Enters a value at or between -7.50 and -7.57, on Attachment III step 3.b, of STP-134.001.

COMMENTS:

SAT

UNSAT

STEP: 7

CUES:

CR	*SEQ*		*STEP STANDARD:*
Yes	Yes	Divide Step 3.a by Step 3.b.	Enters a value at or between -290 and -293, on Attachment III step 3.c, of STP-134.001. 2200 pcm ÷ -7.50 = ≤ -293 (293.3) 2200 pcm ÷ -7.57 = ≥ -290 (290.6)

COMMENTS:

SAT

UNSAT

STEP: 8

CUES:

CR	*SEQ*		*STEP STANDARD:*
Yes	Yes	Determine required minimum boron concentration to maintain Shutdown Margin (Subtract Step 3.c from Step 2).	Enters a value at or between 1398 and 1401, on Attachment III step 3.c, of STP-134.001 1108 - (-293) = 1401 ppm 1108 - (-291) = 1399 ppm

COMMENTS:

SAT

UNSAT

STEP: 9

CUES:

CR	*SEQ*		*STEP STANDARD:*
Yes	Yes	Enter present boron concentration.	Enters "262" ppm on Attachment III step 5, of STP-134.001.

COMMENTS:

SAT

UNSAT

STEP: 10

CUES:

CR	*SEQ*		*STEP STANDARD:*
Yes	Yes	Shutdown Margin is satisfied if Step 5 is greater than Step 4.	Circles or otherwise indicates NO and signs his/her Initials

COMMENTS:

SAT

UNSAT

STEP: 11

CUES:

Evaluator Cue: For the purposes of the JPM, there will be no independent verification of your work. You may review it yourself if you choose to do so now.

CR SEQ

No Yes Calculated by:

STEP STANDARD:

Signs and dates.

COMMENTS:

SAT

UNSAT

Examiner ends JPM at this point.

JPM SETUP SHEET

JPM NO: 09 RO A.1.b

DESCRIPTION: PERFORM A SHUTDOWN MARGIN FOR INTENDED PLANT CONDITIONS

IC SET:

INSTRUCTIONS:

COMMENTS:

09 NRC
RO A.1.b.

KEY

SHUTDOWN MARGIN VERIFICATION WITH SAFETY INJECTION BLOCKED
(MODES 3, 4, AND 5)

STEP	ACTION	DATA
5.2.a	PRECAUTIONS of Section 2.0 reviewed.	SS/CRS Signature
5.2.b	INITIAL CONDITIONS of Section 5.0 met.	SS/CRS Signature
1.	Enter Cycle Burnup.	20000 MWD/MTU
2.	Using either of the following enter the required RCS boron concentration to maintain Shutdown Margin based on Burnup: a. Curve Book Figure II-9.1 (column SI BLOCKED, MODES 3, 4, 5). b. An EIR supplied by Reactor Engineering.	1108 ppm CHG A
3.	Perform the following to calculate the required additional Boron concentration to compensate for untrippable Control Rods:	
3.a	Enter one of the following Bounding Worths of Untrippable Control Rods: 1) If no Control Rods are untrippable, enter a value of zero. 2) Enter 2200 pcm if one rod is untrippable. 3) Enter 7000 pcm if more than one rod is untrippable).	(+) 2200 pcm
3.b	Enter the Differential Boron Worth for the boron concentration entered in Step 2 (Curve Book Figure II-7.3 at 557°F).	-7.50 (-) -7.57 pcm/ppm
3.c	Divide Step 3.a by Step 3.b: (+) 2200 pcm (Step 3.a) ÷ (-) 7.50 / 7.57 pcm/ppm (Step 3.b) =	293.3 (-) 290.6 ppm

09 NRC
RO A.1.b. KEY

SHUTDOWN MARGIN VERIFICATION WITH SAFETY INJECTION BLOCKED
(MODES 3, 4, AND 5)

STEP	ACTION	DATA
4.	Determine required minimum boron concentration to maintain Shutdown Margin (Subtract Step 3.c from Step 2): (+) 1108 (Step 2) ppm - (-) 293.3 290.6 (Step 3.c) ppm =	Note 1108 + 293.3 = 1401.3 Examinee may conservatively round up to 1402. 1401 1399 ppm
5.	Enter present boron concentration.	_____ ppm
8.3	Shutdown Margin is satisfied if Step 5 is greater than Step 4.	YES / (NO) Initials: [signature]

Calculated by: [signature] Date: (TODAY'S DATE)

Verified by: _____ Date: _____

Figure II-9.1
Revision Date: 5-13-08
Prepared By:
Verified By:
Approved By:

Required Boron Concentration for Shutdown Margin as a Function of Temperature and Burnup for Modes 3-5, No Xenon

Burnup (MWD/MTU)	Shutdown Banks In		Shutdown Banks Out		SI Blocked, Modes 3, 4, 5
	450 °F	557 °F	450 °F	557 °F	68 to 557 °F
0	1294	1136	1397	1283	1452
500	1339	1185	1452	1346	1475
1000	1379	1230	1503	1404	1503
1500	1416	1270	1548	1455	1534
2000	1449	1306	1588	1501	1566
2500	1478	1337	1624	1542	1598
3000	1503	1364	1656	1577	1629
3500	1524	1387	1683	1607	1657
4000	1543	1406	1706	1632	1683
4500	1557	1421	1724	1652	1704
5000	1569	1432	1739	1668	1722
5500	1577	1440	1750	1679	1735
6000	1582	1444	1757	1687	1745
6500	1584	1445	1761	1689	1750
7000	1583	1443	1761	1688	1752
7500	1580	1437	1758	1683	1749
8000	1573	1428	1752	1675	1744
8500	1564	1416	1743	1663	1735
9000	1552	1402	1731	1648	1724
9500	1538	1384	1716	1630	1710
10000	1522	1364	1699	1608	1694
10500	1503	1342	1679	1584	1677
11000	1482	1317	1656	1557	1657
11500	1459	1290	1632	1528	1636
12000	1434	1261	1605	1497	1614
12500	1407	1229	1577	1463	1591
13000	1378	1196	1546	1427	1567
13500	1348	1161	1514	1390	1542
14000	1316	1124	1481	1351	1516
14500	1282	1086	1446	1310	1489
15000	1247	1046	1410	1269	1461
15500	1211	1005	1372	1226	1432
16000	1173	962	1334	1182	1402
16500	1134	919	1295	1137	1370
17000	1094	874	1255	1092	1337
17500	1054	829	1214	1046	1302
18000	1012	783	1173	1000	1266
18500	970	736	1131	953	1228
19000	926	688	1090	907	1189
19500	883	640	1048	861	1149
20000	839	592	1006	815	1108
20500	794	544	965	770	1067
21000	749	495	924	725	1026
21500	704	447	883	682	987
22000	659	398	843	639	951
22500	614	350	804	597	918
23000	569	302	765	557	891

Note: When SI is blocked, credit for Samarium is included. With SI enabled, credit for Samarium may be taken per STP-134.001. All scenarios include penalty for B10 depletion.

Tech Spec Ref.: 3.1.1.2 Procedure Ref.: STP-134.001 Figure Ref.: Calc DC0 020K-040

Interpolation from table:

1100 = 7.53
1108 = ?
1200 = 7.41

.08 x .08 = .0064

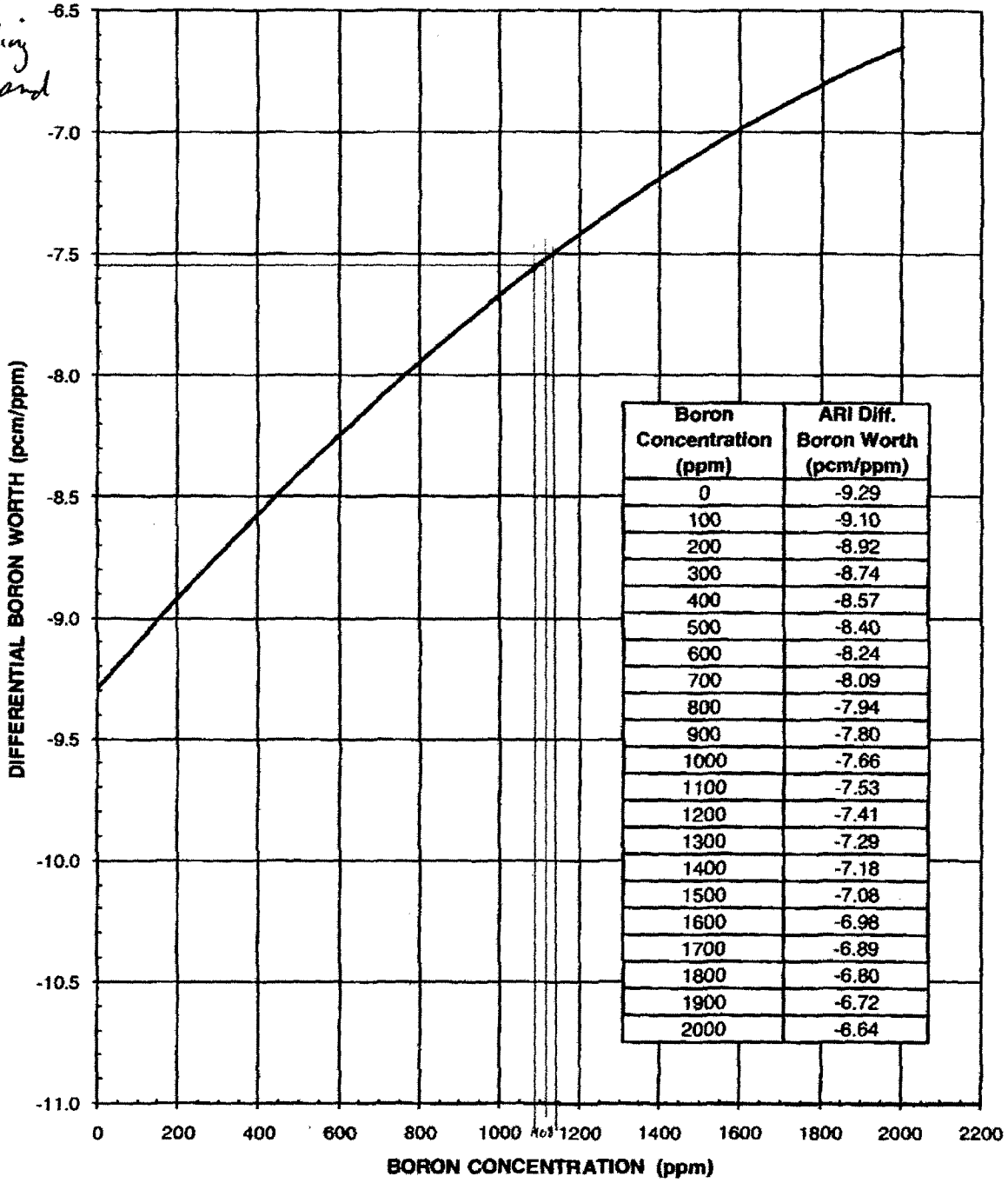
7.53 - .0064 = 7.52

Reading graph w/ ± ½ smallest increment as tolerance:

Accept any reading between -7.58 and -7.55

Figure II-7.3
Revision Date: 5-13-08
Prepared By:
Verified By:
Approved By:

ARI Differential Boron Worth at HZP vs. Boron Concentration
No Xenon and Samarium



Boron Concentration (ppm)	ARI Diff. Boron Worth (pcm/ppm)
0	-9.29
100	-9.10
200	-8.92
300	-8.74
400	-8.57
500	-8.40
600	-8.24
700	-8.09
800	-7.94
900	-7.80
1000	-7.66
1100	-7.53
1200	-7.41
1300	-7.29
1400	-7.18
1500	-7.08
1600	-6.98
1700	-6.89
1800	-6.80
1900	-6.72
2000	-6.64

Tech Spec Ref.: N/A Procedure Ref.: STP-134.001 Figure Ref.: Calc DC0 020K-037

SOUTH CAROLINA ELECTRIC & GAS COMPANY

VIRGIL C. SUMMER NUCLEAR STATION

NUCLEAR OPERATIONS

NUCLEAR OPERATIONS

COPY NO._____

SURVEILLANCE TEST PROCEDURE

STP-134.001

SHUTDOWN MARGIN VERIFICATION

REVISION 12

SAFETY RELATED

RECORD OF CHANGES

CHANGE LETTER	TYPE CHANGE	APPROVAL DATE	CANCELLATION DATE	CHANGE LETTER	TYPE CHANGE	APPROVAL DATE	CANCELLATION DATE
A	P	05/25/06					
B	P	10/12/06					
C	P	10/31/07					

CONTINUOUS USE

Continuous Use Of Procedure Required.
Read Each Step Prior To Performing.

DOCUMENT REVIEW FORM

Page 1 of 2

Document Identification

Originators Name: R. Perrill; **Ext:** 55524 **Mail Code:** 410

Date: 05/01/07 **Document No.:** STP-134.001 **Revision No.:** 12 **Change Letter:** C

Title: Shutdown Margin Verification ☒ SR ☐ QR ☐ NNS

Development Process:
Permanent: (check one) ☒ Normal Rev/Chg or ☐ Editorial Correction
☐ Temporary Approval

Description: See attached.

Reason/Basis for Change: See attached.

Is the SCOPE of the procedure affected by this change? NO ☒ YES ☐

Temporary Approval — **Final approval required by: (30 days)**

QR ____ DC&R (Person Notified) ____ SS ____ Date ____

Document Reviewers (Enclosure C)

Required Position	Type/Print Name	Comments Yes/No	*Additional Position	Type/Print Name	Comments Yes/No
QR	F Lucas	☐ ☒	Reno	D Bryson	☒ ☐
		☐ ☐	OPS	J Shepp	☐ ☒
		☐ ☐	SE	E Rumfelt	☐ ☒
		☐ ☐			☐ ☐
		☐ ☐			☐ ☐

Concurrence Supervisor/Date: TAStoh 4/30/07 — Comment Due Date: 05/25/07

Pre- implementation Actions

All Comments Resolved ☒ Yes — R Perrill / 10/08/07 (Originator/Date)

Commitments Addressed per SAP-0630 ☒ NA ☐ Yes, P/CAP # ____ ☐ MLSA ____ Initial/Date

50.59 Applicability/Review Completed (SAP-0107) ☒ NA ☐ Yes, Attached

Pre-implementation Training Completed ☒ NA ☐ Yes

Training required after implementation ☒ NA ☐ Yes, CER # ____

PSRC Review Completed ☒ NA ☐ Yes, Mtg. No. ____

NSRC Review Completed ☒ NA ☐ Yes, Mtg. No. ____

CHAMPS Update Required ☒ NA ☐ Yes ~~CHAMPS Updated~~ Planner Notified per telecon Initial/Date

Supervisor/Date: 11/1/07 — Approval Authority/Date: 10/31/07

* Failure by the "Additional Reviewers" to provide comments within 5 working days following the comment due date may be considered as "No Comment".

DOCUMENT REVIEW FORM

Document No.: STP-134.001 Rev. No.: 12 Chg. Ltr.: C

DESCRIPTION CONTINUED:

a. Simplified wording in Steps 6.1 c and d for ease of transition to the proper attachment.

b. Modified Attachment III as follows
   1) Changed title description to include IPCS Shutdown Margin Program (XENON) unavailable.
   2) Deleted Caution regarding unavailability if the IPCS Program.
   3) Amended Step 14 transition requirements.

c. Added new Note 6.1.a through d regarding using values for Shutdown margin calculations provided by the Reactor Engineering group when the station Curve Book has not been updated.

REASON/BASIS FOR CHANGE CONTINUED:

a. Procedure enhancement.

b. Reason:
   1) Attachment II is not used unless the IPCS Shutdown Margin Program is unavailable; otherwise, Attachment II is used.
   2) Caution is unnecessary when applied as a limitation for attachment use in the title description.
   3) This transition description change is required because the IPCS Shutdown margin Program cannot be used when the Shutdown Banks are not inserted.

c. Procedure feedback from Refuel 16 stating that the procedure did not compensate for Mode 1 through 5 conditions when the Station Curve Book had not been updated.

* Failure by the "Additional Reviewers" to provide comments within 5 working days following the comment due date may be considered as "No Comment".

DOCUMENT REVIEW FORM

Page 1 of 1

Document Identification

Originators Name:	Fenstermacher	**Ext:**	5974	**Mail Code:**	410
Date:	10/12/06	**Document No.:**	STP-134.001	**Revision No.:**	12	**Change Letter:**	B

Title: SHUTDOWN MARGIN VERIFICATION ☒ SR ☐ QR ☐ NNS

Development Process:
Permanent: (check one) ☐ Normal Rev/Chg or ☒ Editorial Correction
☐ Temporary Approval

Description: 1) Added Mode 3 to Step 4.1.c (Test Frequency) to clarify test requirements.

Reason/Basis for Change: 1) Feedback (comment from simulator startup).

Is the SCOPE of the procedure affected by this change? NO ☒ YES ☐

Temporary Approval

QR	DC&R (Person Notified)	SS	Date

Final approval required by: (30 days)

Document Reviewers (Enclosure C)

	Position	Type/Print Name	Comments Yes/No		Position	Type/Print Name	Comments Yes/No
Required	QR	MD Jamison	☐ ☒	*Additional			☐ ☐
			☐ ☐				☐ ☐
			☐ ☐				☐ ☐
			☐ ☐				☐ ☐
			☐ ☐				☐ ☐

Concurrence: [signature] 10/12/06
Supervisor/Date

Comment Due Date

Pre- implementation Actions

All Comments Resolved	☒ Yes	[signature] 10-12-06 Originator/Date
Commitments Addressed per SAP-0630	☒ NA	☐ Yes, P/CAP # ____ ☐ MLSA ____ Initial/Date
50.59 Applicability/Review Completed (SAP-0107)	☒ NA	☐ Yes, Attached
Pre-implementation Training Completed	☒ NA	☐ Yes
Training required after implementation	☒ NA	☐ Yes, CER # ____
PSRC Review Completed	☒ NA	☐ Yes, Mtg. No. ____
NSRC Review Completed	☒ NA	☐ Yes, Mtg. No. ____
Other:	☒ NA	☐ Yes

Supervisor/Date	Approval Authority/Date
TA Stoha 10/12/06	TA Stoha 10/12/06

* Failure by the "Additional Reviewers" to provide comments within 5 working days following the comment due date may be considered as "No Comment".

DOCUMENT REVIEW FORM

Page 1 of ___

Document Identification

Originators Name: Eric L. Erickson **Ext:** 55666 **Mail Code:** 410

Date: 05/24/06 **Document No.:** STP-134.001 **Revision No.:** 12 **Change Letter:** A

Title: SHUTDOWN MARGIN VERIFICATION ☒ SR ☐ QR ☐ NNS

Development Process:
Permanent: (check one) ☐ Normal Rev/Chg or ☒ Editorial Correction
☐ Temporary Approval ☐ Restricted Chg (expires: _____)

Description: Corrected typos on Page 3 of both Att. I and Att. III

Reason/Basis for Change: Typos

Is the SCOPE of the procedure affected by this change? NO ☒ YES ☐ If yes, attach SAP-0107 form.

Temporary Approval **Final approval required by: (30 days)**

QR	DC&R (Person Notified)	SS	Date
		/	

Document Reviewers (Enclosure C)

	Position	Type/Print Name	Comments Yes/No		Position	Type/Print Name	Comments Yes/No
Required	OPS	BECKHAM	☐ ☒	*Additional			☐ ☐
			☐ ☐				☐ ☐
			☐ ☐				☐ ☐
			☐ ☐				☐ ☐
			☐ ☐				☐ ☐
			☐ ☐				☐ ☐

Concurrence
_____
Supervisor/Date

Comment Due Date
N/A

Pre- implementation Actions

All Comments Resolved ☒ Yes _____ 05/24/06
Originator/Date

Commitments Addressed per SAP-0630	☒ NA	☐ Yes, P/CAP # _____ ☐ MLSA
50.59 Applicability/Review Completed (SAP-0107)	☒ NA	☐ Yes, Attached
Pre-implementation Training Completed	☒ NA	☐ Yes
Training required after implementation	☒ NA	☐ Yes, CER # _____
PSRC Review Completed	☐ NA	☐ Yes, Mtg. No. _____
NSRC Review Completed	☒ NA	☐ Yes, Mtg. No. _____
Other: _____	☒ NA	☐ Yes

TA Station 5/25/06
Supervisor/Date

N/A
Approval Authority/Date

* Failure by the "Additional Reviewers" to provide comments within 5 working days following the comment due date may be considered as "No Comment".

DOCUMENT REVIEW FORM

Document Identification

Originators Name: Eric L. Erickson **Ext:** 55666 **Mail Code:** 410

Date: 05/03/06 **Document No.:** STP-134.001 **Revision No.:** 12 **Change Letter:** N/A

Title: Shutdown Margin Verification ☒ SR ☐ QR ☐ NNS

Development Process:
Permanent: (check one) ☒ Normal Rev/Chg or ☐ Editorial Correction
☐ Temporary Approval ☐ Restricted Chg (expires: _____)

Description: see Page 2

Reason/Basis for Change: CER-06-1285, change to Station Curve Book Figure II-9.1, verbal comments, the ECR that installed the new IPCS, and a Procedure Feedback

Is the SCOPE of the procedure affected by this change? NO ☒ YES ☐ If yes, attach SAP-0107 form.

Temporary Approval **Final approval required by: (30 days)**

QR	DC&R (Person Notified)	SS	Date
		/	

Document Reviewers (Enclosure C)

	Position	Type/Print Name	Comments Yes/No		Position	Type/Print Name	Comments Yes/No
Required	QR	R Justice	☒ ☐	*Additional	OPS	D Goldstow	☐ ☒
	RE	D Bryson	☒ ☐				☐ ☐
			☐ ☐				☐ ☐
			☐ ☐				☐ ☐
			☐ ☐				☐ ☐
			☐ ☐				☐ ☐

Concurrence T A Stoker 5/4/06
Supervisor/Date

Comment Due Date 5/10/06

Pre- implementation Actions

All Comments Resolved	☒ Yes	05/15/06 Originator/Date
Commitments Addressed per SAP-0630	☒ NA	☐ Yes, P/CAP # _____ ☐ MLSA
50.59 Applicability/Review Completed (SAP-0107)	☒ NA	☐ Yes, Attached
Pre-implementation Training Completed	☒ NA	☐ Yes
Training required after implementation	☒ NA	☐ Yes, CER # _____
PSRC Review Completed	☒ NA	☐ Yes, Mtg. No. _____
NSRC Review Completed	☒ NA	☐ Yes, Mtg. No. _____
Other: _____	☒ NA	☐ Yes

T A Stoker 5/17/06
Supervisor/Date

5/23/06
Approval Authority/Date

* Failure by the "Additional Reviewers" to provide comments within 5 working days following the comment due date may be considered as "No Comment".

DOCUMENT REVIEW FORM

Document No.: STP-134.001 Rev. No.: 12 Chg. Ltr.: N/A

DESCRIPTION CONTINUED: The Shutdown Margin philosophy was altered somewhat to simplify the process, as well as alleviate the potential for being needlessly required by procedure to perform an Emergency Boration following a Reactor Trip. In so doing, the overriding considerations as to which attachment to utilize, especially in Mode 3, became dependent upon whether or not the Low Pressure SI or Steam Line Pressure SI is blocked and the position of the Shutdown Banks. The new IPCS required that the electronic S/D Margin Calculation be modified in order to print the report. Reformatted several steps to remove important information from Notes.

REASON/BASIS FOR CHANGE CONTINUED: N/A

DOCUMENT REVIEWERS CONTINUED:

	Position	Type/Print Name	Comments Yes/No		Position	Type/Print Name	Comments Yes/No
Required			☐ ☐	*Additional			☐ ☐
			☐ ☐				☐ ☐
			☐ ☐				☐ ☐
			☐ ☐				☐ ☐
			☐ ☐				☐ ☐
			☐ ☐				☐ ☐
			☐ ☐				☐ ☐
			☐ ☐				☐ ☐

* Failure by the "Additional Reviewers" to provide comments within 5 working days following the comment due date may be considered as "No Comment".

TABLE OF CONTENTS

1.0 PURPOSE/SCOPE

1.1 This procedure determines if the Limiting Condition For Operation requirements for Reactor Shutdown Margin found in Sections 3.1.1.1 and 3.1.1.2 of Technical Specifications are satisfactorily met by performing Surveillance Requirements 4.1.1.1.1.a, 4.1.1.1.1.d, or 4.1.1.2, as appropriate for the Operational Mode.

1.2 When in Mode 6, this procedure determines if the Limiting Condition For Operation requirement for Reactor Shutdown Margin found in Section 3.9.1 of Technical Specifications is satisfactorily met by performing Surveillance Requirements 4.9.1.1 and 4.9.1.2.

1.3 The SAP-107 Applicability Determination established that 10CFR50.59 Screening is not required as this procedure is classified as a maintenance activity which restores SSCs to their original condition.

1.4 Changes to this procedure that have been determined to comply with the Scope of this procedure will not require screening per 10CFR50.59. However, the following processes will apply:

a. 10CFR50.65a(4).

b. SAP-139 (10CFR50, Appendix B).

2.0 PRECAUTIONS

2.1 Following a plant shutdown, Shutdown Margin may decrease by as much as 3000 pcm due to Xenon decay over a 24 hour period. Any deviation from the conditions used in the Shutdown Margin calculation requires reverification of adequate Shutdown Margin.

2.2 The RCS must be borated to a Cold Shutdown, Xenon-Free concentration whenever the Low Pressurizer Pressure SI below P-11 or the Low Steam Line Pressure SI below P-12 signals are required to be manually blocked per Station Curve Book Figure II-9.1 (Column SI Blocked, Modes 3, 4, 5).

3.0 TEST EQUIPMENT

3.1 None.

4.0 TEST FREQUENCY

4.1 Normal Operations:

a. In Mode 1 or 2, at least once every 12 hours (see NROATC Operating Logs).

b. Upon initial entry into Mode 3 from Modes 1 or 2. A Shutdown Margin calculation shall be performed on demand thereafter to ensure Shutdown Margin is maintained.

c. In Modes 3, 4, and 5, at least once every 24 hours. CHG B

d. Prior to entering Mode 6.

e. In Mode 6, at least once every 72 hours.

f. After each fuel loading, prior to exceeding five percent power.

4.2 While in Modes 1, 2, 3, 4, or 5, during operation with inoperable Control Rod(s), Shutdown Margin should be verified within one hour after detection of the inoperable Control Rod(s) and at least once per 12 hours thereafter while the rod(s) is inoperable.

NOTE 5.0 through 8.0

An asterisk (*) preceding a step indicates that data or a signoff is required on the Attachment identified within that step.

5.0 INITIAL CONDITIONS

5.1 The plant is in any of the Operational Modes as defined in Technical Specifications Section 1.0, Table 1-1.

5.2 The Shift Supervisor/Control Room Supervisor has signed on the appropriate attachment signifying the following:

*a. The Precautions of Section 2.0 have been discussed with the necessary personnel involved in the performance of the test.

*b. All Initial Conditions required for this test have been met.

6.0 PROCEDURE

6.1 Normal Operation:

NOTE 6.1.a through d

When the latest revision to the Station Curve Book is unavailable, Reactor Engineering should be contacted to provide documentation providing updated values required for Shutdown Margin calculations.

CHG C

a. For Mode 1 or 2, verify that all Control Rods are above the Rod Insertion Limit (see NROATC Operating Logs).

b. Prior to the initial entry into Mode 1 after completion of physics testing, perform the following and record on Attachment V:

CHG C

*1) Verify all BOL startup testing acceptance criteria have been met.

*2) Verify all Rods are above the Rod Insertion Limit.

NOTE 6.1.c

The IPCS Shutdown Margin Program (XENON) assumes the Shutdown Banks are inserted.

CHG C

c. For Mode 3 perform either of the following when the Low Pressurizer Pressure SI (below P-11) or the Low Steam Line Pressure SI (below P-12) are unblocked:

*1) If the Shutdown Banks are inserted perform Attachment I.

*2) If the Shutdown Banks are withdrawn perform Attachment II.

*d. For Modes 3, 4, or 5 when either the Low Pressurizer Pressure SI (below P-11) or the Low Steam Line Pressure SI (below P-12) is blocked perform Attachment III.

CHG C

Step 6.1 continued

e. For Mode 6, perform the following:

*1) Request a calculation from Reactor Engineering of the boron concentration sufficient to ensure that the more restrictive of the following is met, and record on Attachment IV: CHG C

a) The required boron concentration which will ensure a K_{eff} less than or equal to 0.95.

b) A boron concentration of greater than or equal to 2000 ppm.

*2) Record the present boron concentration on Attachment IV. CHG C

*3) Verify the present boron concentration is greater than the Reactor Engineering calculated minimum value, and record on Attachment IV. CHG C

NOTE 6.2

In Mode 1, 2, 3, 4, or 5 with one or more untrippable control rod(s), the RCS should be borated per the applicable Abnormal Operating Procedure.

6.2 Operation with one or more inoperable rod(s):

a. For Mode 1 or 2:

1) With one or more untrippable rods, Shutdown Margin requirements can not be verified per this procedure. AOP-403.5, Stuck Or Misaligned Control Rod, must be implemented, which in turn will require emergency boration and verification of shutdown margin in Mode 3.

2) With one control rod below the Rod Insertion Limit (whether misaligned or dropped), Shutdown Margin requirements are met by limiting cycle design calculations, and a Shutdown Margin calculation is not required.

3) With one or more Inoperable rods due to an electrical malfunction (not misaligned, dropped, or untrippable), Shutdown Margin requirements are satisfied by verification of rods above their Rod Insertion Limit and documented on GTP-702, Attachment IV.A.

Step 6.2 continued

*b. For Mode 3, complete Attachment I, Attachment II, or Attachment III, referring to the appropriate figures in the Station Curve Book.

*c. For Mode 4 or 5 complete Attachment III, referring to the appropriate figures in the Station Curve Book. CHG C

7.0 DATA REQUIREMENTS

7.1 All required data will be entered on the applicable Attachment.

7.2 IPCS Shutdown Margin Program printout.

8.0 ACCEPTANCE CRITERIA

8.1 In Mode 1 or 2, all Control Rods are above the Rod Insertion Limit.

*8.2 Prior to initial Mode 1 entry after Refueling, all BOL startup testing acceptance criteria have been met, and Control Rods are above the Rod Insertion Limit.

*8.3 In Mode 3, 4, or 5, Shutdown Margin is above the limits of Technical Specification 3.1.1.2.

*8.4 In Mode 6, the boron concentration is sufficient to ensure the more limiting of:

a. A boron concentration greater than or equal to 2000 ppm, or

b. The boron concentration required to maintain a K_{eff} of 0.95 or less.

8.5 If any Acceptance Criteria is not met, Emergency Borate per AOP-106.1, Emergency Boration.

9.0 REFERENCES

9.1 AOP-106.1, Emergency Boration.

9.2 AOP-403.5, Stuck Or Misaligned Control Rod.

9.3 CGSS-97-547, Cycle 11 N-2 Stuck Rod Worth.

9.4 NROATC Operating Logs.

9.5 V.C. Summer Station Curve Book.

9.6 V.C. Summer Tech Specs, Section 1.0, Table 1-1 and Sections 3.1.1.1, 3.1.1.2, and 3.9.1.

REQUIRED RCS BORON DETERMINATION
FOR MAINTAINING SHUTDOWN MARGIN IN MODE 3

(SAFETY INJECTION UNBLOCKED)

CHG C

STEP	ACTION	DATA
5.2.a	PRECAUTIONS of Section 2.0 reviewed.	_____ SS/CRS Signature
5.2.b	INITIAL CONDITIONS of Section 5.0 met.	_____ SS/CRS Signature

CAUTION

Following a plant shutdown, Shutdown Margin may decrease by as much as 3000 pcm due to Xenon decay over a 24 hour period. Any deviation from the conditions used in the Shutdown Margin calculation requires reverification of adequate Shutdown Margin.

NOTE

If the Shutdown Margin Program (XENON) is not available, Shutdown Margin should be determined manually using Attachment II.

CHG C

1. At an IPCS terminal, enter XENON. ☐
2. Select #6 to start the calculations. ☐

NOTE 3

The following fields are populated by default, and only need to be changed if current conditions need to be adjusted.

3. Enter input data for the calculation, if required: ☐ (Required) ☐ (Not required)
   - 3.a. Year (last two digits). _____
   - 3.b. Month (Two digit number). _____
   - 3.c. Day (Two digit). _____
   - 3.d. Hour (Two digit 24 hour number). _____
   - 3.e. Minute (Two digit). _____

REQUIRED RCS BORON DETERMINATION
FOR MAINTAINING SHUTDOWN MARGIN IN MODE 3

(SAFETY INJECTION UNBLOCKED)

CHG
C

STEP	ACTION	DATA
3.f.	Burn up (MWD/MTU).	_____
3.g.	Number of untrippable Rods.	_____
3.h.	Xenon Correction Factor (0.9)	_____
3.i.	Xenon Concentration (100 at equilibrium).	_____
3.j.	Iodine Concentration.	_____
3.k.	Samarium Concentration.	_____
3.l.	Promethium Concentration.	_____

4. Press F2 to calculate. ☐
5. Press < Esc >. ☐
6. From the menu, select LOGS/REPORTS. ☐
7. Select window 3-4, LOG MANAGER. ☐
8. Click on TIMESTAMP twice to organize the files in descending order by time. ☐
9. Select the most recent SDMC file. ☐
10. Click PRINT to display the available printers. ☐
11. Select the desired printer and click OK. ☐

NOTE 12 and 13

The printed output will list the required boron concentration each hour for the next several days.

12. Attach the IPCS printout to this Attachment. ☐
13. Enter present boron concentration. _____ ppm

8.3 Shutdown Margin is satisfied. Initials: _____

REQUIRED RCS BORON DETERMINATION FOR MAINTAINING SHUTDOWN MARGIN IN MODE 3

SHUTDOWN MARGIN PROGRAM (XENON) NOT AVAILABLE

(SAFETY INJECTION UNBLOCKED)

CHG C

NOTE

When the IPCS Shutdown Margin Program (XENON) becomes available and the Shutdown Banks are inserted, the required RCS boron concentration for maintaining Shutdown Margin in Mode 3 should be determined using Attachment I.

STEP	ACTION	DATA
5.2.a	PRECAUTIONS of Section 2.0 reviewed.	_____ SS/CRS Signature
5.2.b	INITIAL CONDITIONS of Section 5.0 met.	_____ SS/CRS Signature

CAUTION

Following a plant shutdown, Shutdown Margin may decrease by as much as 3000 pcm due to Xenon decay over a 24 hour period. Any deviation from the conditions used in the Shutdown Margin calculation requires reverification of adequate Shutdown Margin.

1.	Enter Cycle Burn-up.	_____ MWD/MTU
2.	Present RCS temperature:	_____ °F
3.	Desired RCS temperature:	_____ °F

REQUIRED RCS BORON DETERMINATION
FOR MAINTAINING SHUTDOWN MARGIN IN MODE 3

SHUTDOWN MARGIN PROGRAM (XENON) NOT AVAILABLE

(SAFETY INJECTION UNBLOCKED)

CHG C

STEP **ACTION** **DATA**

CAUTION 4

a. The RCS must be borated to a Cold Shutdown, Xenon-Free concentration per Attachment IV prior to manually blocking the Low Pressurizer Pressure SI below P-11 or the Low Steam Line Pressure SI below P-12 signals.

b. During EOP/AOP directed rapid cooldowns, boration to a Cold Shutdown, Xenon-Free concentration per Attachment III prior to manually blocking either the Low Pressurizer Pressure SI below P-11 or the Low Steam Line Pressure SI below P-12 is not required, unless directed by the EOP/AOP.

CHG C

4. Using Curve Book Figure II-9.1 (column SHUTDOWN BANKS OUT or SHUTDOWN BANKS IN), enter the required RCS boron concentration to maintain Shutdown Margin based on Burnup at the desired temperature, as well as Shutdown Bank position.

☐ S/D Banks OUT
☐ S/D Banks IN

_____ ppm

NOTE 5 through 7

If no data for Xenon or Samarium is available from the IPCS or Reactor Engineering, zero should be recorded as the value for Xenon and Samarium Worths.

5. Determine Xenon Worth using 5.a or 5.b:

5.a _____ (XENDISP or U1500) X 0.9 (Correction Factor) = (-) _____ pcm

5.b Obtain Xenon Worth from Reactor Engineering. (-) _____ pcm

6. Determine Samarium Worth using 6.a or 6.b:

6.a _____ (XENDISP or U1503) X 0.9 (Correction Factor) = (-) _____ pcm

6.b Obtain Samarium Worth from Reactor Engineering. (-) _____ pcm

7. Calculate the Total Poison Worth:

(-) _____ (Xenon Worth from Step 5) + (-) _____ (Samarium Worth from Step 6) = (-) _____ pcm

REQUIRED RCS BORON DETERMINATION
FOR MAINTAINING SHUTDOWN MARGIN IN MODE 3

SHUTDOWN MARGIN PROGRAM (XENON) NOT AVAILABLE

(SAFETY INJECTION UNBLOCKED)

CHG C

STEP	ACTION	DATA
8.	Enter one of the following Bounding Worths of Untrippable Control Rods: a) If no Control Rods are untrippable, enter a value of zero. b) Enter 2200 pcm if one rod is untrippable. c) Enter 7000 pcm if more than one rod is untrippable).	(+) _____ pcm
9.	Add Step 7 and Step 8: (-) _____ (Total Poison Worth from Step 7) + (+) _____ (Rod Worth from Step 8) =	( ) _____ pcm
10.	Enter the Differential Boron Worth for the boron concentration entered in Step 4 (Curve Book Figure II-7.3 at 557°F).	(-) _____ pcm/ppm
11.	Divide Step 9 by Step 10: ( ) _____ pcm (Step 9) ÷ (-) _____ pcm/ppm (Step 10) =	( ) _____ ppm
12.	Determine required minimum boron concentration to maintain Shutdown Margin (Subtract Step 11 from Step 4): _____ ppm (Step 4) - ( ) _____ ppm (Step 11) =	_____ ppm
13.	Enter present boron concentration.	_____ ppm

CHG A

REQUIRED RCS BORON DETERMINATION
FOR MAINTAINING SHUTDOWN MARGIN IN MODE 3

SHUTDOWN MARGIN PROGRAM (XENON) NOT AVAILABLE

(SAFETY INJECTION UNBLOCKED)

CHG C

STEP	ACTION	DATA
14.	Monitor for Xenon decay as follows:	
14.a	Repeat this calculation every four hours using indicated Xenon (XENDISP or U1500) and Samarium (XENDISP or U1503) values.	☐
14.b	When XENDISP or U1500 indicates Xenon is starting to add positive reactivity, perform one of the following:	
	1) If the Shutdown Banks are inserted, borate the RCS to Mode 3, Xenon-Free (Curve Book Book Figure II-9.1 (column SHUTDOWN BANKS IN).	☐
	2) If the Shutdown Banks are withdrawn, ensure Shutdown Margin is maintained between Shutdown Margin verifications by borating the RCS to 120 ppm greater than the calculated value determined in Step 12 above until the RCS has been borated to Mode 3, Xenon-Free(Curve Book Figure II-9.1 (column SHUTDOWN BANKS OUT): _____ ppm (STEP 12) + 120 ppm = _____ ppm	☐
8.3	Shutdown Margin is satisfied if line 13 is greater than line 12.	YES / NO Initials: _____

Calculated by: _____ Date: _____

Verified by: _____ Date: _____

SHUTDOWN MARGIN VERIFICATION WITH SAFETY INJECTION BLOCKED
(MODES 3, 4, AND 5)

STEP	ACTION	DATA
5.2.a	PRECAUTIONS of Section 2.0 reviewed.	_____ SS/CRS Signature
5.2.b	INITIAL CONDITIONS of Section 5.0 met.	_____ SS/CRS Signature
1.	Enter Cycle Burnup.	_____ MWD/MTU
2.	Using either of the following enter the required RCS boron concentration to maintain Shutdown Margin based on Burnup: a. Curve Book Figure II-9.1 (column SI BLOCKED, MODES 3, 4, 5). b. An EIR supplied by Reactor Engineering.	_____ ppm
3.	Perform the following to calculate the required additional Boron concentration to compensate for untrippable Control Rods:	
3.a	Enter one of the following Bounding Worths of Untrippable Control Rods: 1) If no Control Rods are untrippable, enter a value of zero. 2) Enter 2200 pcm if one rod is untrippable. 3) Enter 7000 pcm if more than one rod is untrippable).	(+)_____ pcm
3.b	Enter the Differential Boron Worth for the boron concentration entered in Step 2 (Curve Book Figure II-7.3 at 557°F).	(-)_____ pcm/ppm
3.c	Divide Step 3.a by Step 3.b: (+)_____ pcm (Step 3.a) ÷ (-)_____ pcm/ppm (Step 3.b) =	(-)_____ ppm

CHG A

SHUTDOWN MARGIN VERIFICATION WITH SAFETY INJECTION BLOCKED
(MODES 3, 4, AND 5)

STEP	ACTION	DATA
4.	Determine required minimum boron concentration to maintain Shutdown Margin (Subtract Step 3.c from Step 2): (+)_____ ppm (Step 2) - (-)_____ ppm (Step 3.c) =	_____ ppm
5.	Enter present boron concentration.	_____ ppm
8.3	Shutdown Margin is satisfied if Step 5 is greater than Step 4.	YES / NO Initials: _____

Calculated by: _____ Date: _____

Verified by: _____ Date: _____

BORON CONCENTRATION VERIFICATION FOR MODE 6

5.2.a PRECAUTIONS of Section 2.0 reviewed. _____ SS/CRS Signature

5.2.b INITIAL CONDITIONS of Section 5.0 met. _____ SS/CRS Signature

6.1.e.1) Reactor Engineering's calculated minimum boron concentration: _____ ppm

6.1.e.2) Present boron concentration: _____ ppm

6.1.e.3) Verify the present boron concentration exceeds the Reactor Engineering calculated value. _____ INITIALS

8.4 Acceptance criteria is met. _____ INITIALS

Prepared by: _____ Date: _____

Reviewed by: _____ Date: _____

SHUTDOWN MARGIN VERIFICATION PRIOR TO INITIAL ENTRY INTO MODE 1 FOLLOWING REFUELING

5.2.a PRECAUTIONS of Section 2.0 reviewed. _____ SS/CRS Signature

5.2.b INITIAL CONDITIONS of Section 5.0 met. _____ SS/CRS Signature

6.1.b.1) All BOL startup testing acceptance criteria met. _____ INITIALS

6.1.b.2) All rods are above the Rod Insertion Limit. _____ INITIALS

8.2 Acceptance Criteria is met. _____ INITIALS

Prepared By: _____ Date: _____

Reviewed By: _____ Date: _____

V.C. SUMMER NUCLEAR STATION
JOB PERFORMANCE MEASURE

JPM NO: **09 SRO A.1.b**

DETERMINE REQUIRED ADMINISTRATIVE ACTIONS

APPROVAL: ***APPROVAL DATE:***

REV NO: 0

CANDIDATE:

EXAMINER:

SRO ONLY

THIS JPM IS NOT APPROVED

TASK:

341-038-03-02 INTERPRET AND ENSURE COMPLIANCE WITH PLANT ADMINISTRATIVE PROCEDURES DURING NORMAL AND OFF NORMAL PLANT OPERATIONS

TASK STANDARD:

The most limiting Technical Specification is determined and the Removal and Restoration Checksheeet is completed satisfactorily.

PREFERRED EVALUATION LOCATION	*PREFERRED EVALUATION METHOD*
CLASSROOM	PERFORM

REFERENCES:		
	OAP 106.1	OPERATING ROUNDS
	SAP-134	CONTROL OF STATION SURVEILLANCE ACTIVITIES
	GTP-702	SURVEILLANCE ACTIVITY TRACKING AND TRIGGER
	SAP-205	Status Control and Removal and Restoration
	T.S.	Technical Specifications
	SOP-304	7.2 kV SWITCHGEAR

TOOLS: SOP-304, 115KV/7.2KV Operations
Technical Specifications
SAP-205, Status Control and Removal and Restoration
GTP-702, Surveillance Activity Tracking and Triggering.
OAP-106.1 Operating Rounds

EVALUATION TIME 30 *TIME CRITICAL* NO *10CFR55:* 55.45(a)13

TIME START: TIME FINISH: PERFORMANCE TIME:

PERFORMANCE RATING: SAT: UNSAT:

EXAMINER:

SIGNATURE DATE

INSTRUCTIONS TO OPERATOR

READ TO OPERATOR:

WHEN I TELL YOU TO BEGIN, YOU ARE TO PERFORM THE ACTIONS AS DIRECTED IN THE INITIATING CUES. I WILL DESCRIBE THE GENERAL CONDITIONS UNDER WHICH THIS TASK IS TO BE PERFORMED AND PROVIDE THE NECESSARY TOOLS WITH WHICH TO PERFORM THIS TASK. BEFORE STARTING, I 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.

SAFETY CONSIDERATIONS: NONE

INITIAL CONDITION:

- 100% Power
- B1 Maintenance Week is in progress
- The Integrated Fire Computer is being fed from Train 'A'
- The Supplemental Instrument Air Compressor is NOT running
- ESF Bus 1DB must be transferred to XTF-4/6 to allow the normal source feeder breaker to be replaced. The work is expected to take approximately two hours. ESF Bus 1DA will remain on the normal source during the work and alarm setpoints will NOT be adjusted since the alignment will only be in effect for approximately two hours.

INITIATING CUES: You are the CRS. Determine the administrative requirements associtated with transferring Bus 1DB to XTF-4/6 and complete any associated paperwork.

HAND JPM BRIEFING SHEET TO OPERATOR AT THIS TIME!

JPM BRIEFING SHEET

OPERATOR INSTRUCTIONS:

SAFETY CONSIDERATIONS: NONE

INITIAL CONDITION:
- 100% Power
- B1 Maintenance Week is in progress
- The Integrated Fire Computer is being fed from Train 'A'
- The Supplemental Instrument Air Compressor is NOT running
- ESF Bus 1DB must be transferred to XTF-4/6 to allow the normal source feeder breaker to be replaced. The work is expected to take approximately two hours. ESF Bus 1DA will remain on the normal source during the work and alarm setpoints will NOT be adjusted since the alignment will only be in effect for approximately two hours.

INITIATING CUES: You are the CRS. Determine the administrative requirements associated with transferring Bus 1DB to XTF-4/6 and complete any associated paperwork.

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

NRC SRO A.1.b KEY

REMOVAL AND RESTORATION CHECKSHEET

Section 1-Summary Data

TYPE: ☑Action ☐Tracking	SERVICE IMPACT: ☑Removed From Service ☐Restricted Service	TRAIN: ☐'A' Train ☐'X' Train ☑'B' Train ☐N/A	R&R NUMBER: NRC Exam Your Name
SYSTEM: ONSITE POWER DISTRIBUTION	EQUIPMENT ID: XSW-1DB	EQUIPMENT NAME: XSW-1DB	
REASON INOPERABLE: XSW-1DB Aligned to XTF-4			

Section 2-Removal Requirements

COMPENSATORY REQUIREMENTS: ☐None	Required By Date/Time	Completed Date/Time
☐Trip/Bypass Bistables?	/	/
☐Backup Fire Suppression?	/	/
☐Roving Fire Watch?	/	/
☐Continuous Fire Watch?	/	/
☐Alternate Radiation Monitoring?	/	/
☐Smoke Detectors Operable?	/	/
☑GTP-702 Att. VI.Y-1	Today/ 1hr	/
☑Other: SEE COMMENTS	/	/

TECHNICAL SPECIFICATIONS:

TECH. SPEC. 3.0.4 APPLIES: ☑Yes ☐No
Restraining Mode: 4
Mode Discovered: 1

REDUNDANT EQUIPMENT OPERABLE: ☑Yes ☐No ☐N/A

SUPPORTING DOCUMENTATION:

REMOVAL COMMENTS: HOURLY BUS 1DB VOLTAGE READINGS

Section 3-Restoration Req./Related Documents

RESTORATION REQUIREMENTS:

Operable STP	STTS #	Completed Date/Time
		/
		/
		/
		/

RELATED DOCUMENTS:

Document Type*	Document #	Completed Initials/Date	Comments
		/	
		/	
		/	
		/	
		/	
		/	

All compensatory requirements restored or terminated? ☐Yes ☐No ☐N/A

ECR Operability Form? ☐Yes ☐No ☐N/A

☐Continued on Attachment VII.
*ECR, MWR, NCN, PMTS, RTO, STTS, WPO, etc.

RESTORATION COMMENTS:

Section 4-Removal/Restoration Status

REMOVAL/RESTORATION STATUS:		SS Authorization	OATC Concurrence	Date/Time	Updated MCB	Updated BISI	Updated EOOS
Declared Inoperable				/	☐Yes ☐No	☐Yes ☐No	☐Yes ☐No
Time Limit to Declare Operable							
Restoration Required By				/			
Downgraded to:	☐Tracking			/			
	☐Restricted Service			/			☐Yes ☐No
Declared Operable				/	☐Yes ☐No	☐Yes ☐No	☐Yes ☐No
Total Time:	Inoperable						
	Non-Functional						

COMMENTS:

STEP: 4

CUES:

Evaluators Note: When the Removal and Restoration Checksheet is handed to the Examiner the JPM is Concluded.

CR	*SEQ*		*STEP STANDARD:*
Yes	No	Completes a Removal and Restoration Checksheet for the transfer of Bus 1DB.	Removal and Restoration Checksheet properly completed. Critical Elements: Type: ACTION Service Impact: REMOVED FROM SERVICE Train: "B" TRAIN Equipment I.D. and Equipment Name: ANY DESIGNATION AS TO BUS 1DB IS ACCEPTABLE Reason Inoperable: XSW-1DB ALIGNED TO XTF-4/6 Compensatory Requirements: GTP-702 Att._____ (VI.Y-1) Required By Date/Time: Time within one hour of transfer accomplished. And Current Date. Other: CHECKED: REMOVAL COMMENTS: Statement reflecting need to record Bus 1DB Voltage Readings Hourly Technical Specifications: 3.8.1.1.a required as a minimum Tech Spec 3.0.4 applies: YES CHECKED Restraining Mode: MODE 4 Annotated. Mode Discovered: MODE 1 Annotated. Redundant Equipment Operable: YES CHECKED

COMMENTS:

SAT

UNSAT

Examiner ends JPM at this point.

JPM SETUP SHEET

JPM NO: 09 SRO A.1.b

DESCRIPTION: DETERMINE REQUIRED ADMINISTRATIVE ACTIONS

IC SET:

INSTRUCTIONS:

COMMENTS:

STEPS

STEP: 1

CUES:

Evaluator's Cue: Provide SOP-304 if electronic or hard copy access is not available.

CR	*SEQ*		*STEP STANDARD:*
Yes	Yes	Review SOP-304 Precautions.	Determines hourly Bus 1DB voltage logs are required per PRECAUTION II.1: Anytime the 7.2KV ESF buses are placed in a lineup other than normal or XTF0006, XTF0004 7.2KV VOLTAGE REGULATOR, is in MANUAL or OFF, hourly Bus Voltage readings should be recorded per OAP-106.1, Operating Logs. Readings should be taken until the alarm setpoint has been reset to new limits for the applicable lineup per Attachment VA and/or Attachment VB.

COMMENTS:

SAT

UNSAT

STEP: 2

CUES:

CR	*SEQ*		*STEP STANDARD:*
Yes	Yes	Review SOP-304 PRECAUTIONS. PRECAUTION II.8 ° To maintain separate offsite circuit operability in Modes 1 through 4, one of the following conditions must be met for BUS 1DA and BUS 1DB: ° Both NORM FEED BREAKERS must be closed. ° Both ALT FEED BREAKERS must be closed.	Determines offsite circuit operablility is affected since both BUS 1DA and 1DB will not meet the requirements of precaution II.8 of SOP-304.

COMMENTS:

SAT

UNSAT

STEP: 3

CUES:

CR	*SEQ*		*STEP STANDARD:*
Yes	Yes	Deterimines actions required by Technical Specifications per precaution II.8 of SOP-304	Determines LCO 3/4.8.1 is not met and action a) is applicable 3.8.1.1 a. Two Physically independent circuits between the offsite transmission network and the onsite Class 1E distribution system, is not met. Action a) With one offsite circuit of 3.8.1.1.a inoperable: Demonstrate the OPERABILITY of the remaining offsite A.C. sources by performing Surveillance Requirement 4.8.1.1.1 within 1 hour and at least once per 8 hours thereafter, and if either EDG has not been successfully tested within the past 24 hours, demonstrate its OPERABILITY by performing Surveillance Requirement 4.8.1.1.2.a.3 separately for each such EDG within 24 hours unless the diesel is already operating, and Restore the offsite circuit to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and COLD SHUTDOWN within the following 30 hours.

COMMENTS:

SAT ____

UNSAT ____

INSTRUCTIONS FOR COMPLETION OF ATTACHMENT I,

REMOVAL AND RESTORATION CHECKSHEET

NOTE

This procedure is applicable when R&Rs are prepared manually or by the Computer Generated R&R program.

1. Section 1, Summary Data.

   A. R&R Type - There are two R&R types - Action and Tracking. The appropriate block should be checked.

      1) Action R&R - An R&R for which any of the following apply:

         a) The Technical Specification LCO requirements are met only by reliance on the Action Statement and action must be completed to restore the equipment to full LCO requirements within a specified time period or additional actions must be initiated (i.e., plant shutdown or additional reporting requirements).

         b) Technical Specification 3.0.4 is identified as being applicable.

         c) Reportability requirements exist as specified in any of the following:

            (1) Technical Specifications.

            (2) FPP-023, FPP-024, FPP-025, and FPP-027.

            (3) Offsite Dose Calculation Manual.

            (4) Other administrative reportability requirements (i.e., AMSAC).

         d) REG GUIDE 1.97 requirements are identified in the Technical Specifications Cross-Reference program.

         e) A GTP-702 Attachment exists to track required actions.

INSTRUCTIONS FOR COMPLETION OF ATTACHMENT I,

REMOVAL AND RESTORATION CHECKSHEET (Cont'd)

2) Tracking R&R - An R&R for which any of the following apply:

a) Reactor Building Door Seal testing requirements following Reactor Building entries.

b) Removal of a Spent Fuel Cooling Pump/Train from service for Maintenance.

c) Removal of a TB Instrument Air Compressor from service for maintenance (XAC0003A(B)).

d) Shift Supervisor's discretion to track systems or components to ensure timely and proper restoration.

B. R&R Service Impact - The appropriate block should be checked.

1) Removed From Service: - This statement is used when alignment of the system or component must be changed such that the system is unavailable to perform its intended function.

2) Restricted Service:

a) This statement is used if the alignment of a system or component can remain such that the system is available to perform its intended function however, associated activities such as open paperwork or work in the near vicinity requires increased operator awareness.

b) This statement must detail conditions for which the operator must be alerted if the system actuates.

c) This statement can apply to either an Action or Tracking R&R. If it is an Action R&R, the clock is still running. Technical Specification credit is not taken for Restricted Service equipment.

C. R&R Train - Check the appropriate block for the train associated with the inoperable equipment. This information is usually located in the CHAMPS equipment record.

INSTRUCTIONS FOR COMPLETION OF ATTACHMENT I,

REMOVAL AND RESTORATION CHECKSHEET (Cont'd)

D. R&R Number - The R&R number is a sequential number consisting of the year followed by four digits. The Removal and Restoration Index, Attachment II, is used to keep track of the numbers.

E. System, Equipment ID, and Equipment Name - Fill in using the information from the CHAMPS equipment record.

F. Reason Inoperable - Enter a short statement describing the inoperable condition.

2. Section 2, Removal Requirements.

A. Compensatory Requirements:

1) If no requirements are identified, check NONE.

2) Check marks by the various items indicate that the specified item applies. N/A's are not required for non-applicable items.

3) Required By Date/Time indicates the time the requirement must be accomplished. The implementing documents, such as Fire Watch Log, GTP-702 Checklist, Bistable Trip Report, etc. will provide documentation as to actual compliance.

4) Completed Date/Time indicates the time that the requirement was completed.

B. Technical Specifications - Enter the applicable LCOs and other documents listed in the Tech Spec Cross-Reference (FPPs, ODCM, REG GUIDE 1.97, etc.).

1) Check the appropriate block specifying whether Technical Specification 3.0.4 applies.

2) Restraining Mode is the lowest mode in which the LCO applies. Example: The restraining mode for Emergency Feedwater System is Mode 3.

3) Mode Discovered - Enter the mode the inoperable condition was initiated or discovered.

INSTRUCTIONS FOR COMPLETION OF ATTACHMENT I,

REMOVAL AND RESTORATION CHECKSHEET (Cont'd)

4) Redundant Equipment Operable - Check the appropriate block. This question refers to the opposite train component, not swing components.

5) Supporting Documentation - Enter any other applicable documentation, such as SAPs, etc.

C. Removal Comments - Enter any comments applicable to the items in Section 2, Removal Requirements, including plant restrictions or other amplifying information. Examples: "Mode 1 <10%" or "Mode 4 > 300°F".

3. Section 3, Restoration Requirements/Related Documents.

A. Restoration Requirements:

1) The STP section records the surveillance tests performed to determine an operable condition. Record the STP and task sheet number. Enter the completion date and time when the surveillance is satisfactorily completed.

2) All Compensatory Requirements shall be terminated or restored to normal alignment and the section marked YES unless another condition not reflected on the R&R exists. A NO answer shall be explained in the Restoration Comments section. If Compensatory Requirements is marked NONE, the N/A block should be checked.

3) ECR Operability Form (ORS) - If the inoperable condition was related to an ECR implementation, an Operability/Return to Service Form may be required:

a) Check YES if the ECR Engineering Change Review/Impact Form affecting system/component operability has been completed.

b) Check NO if there is no system/component operability impact identified on the ECR Engineering Change Review/Impact Form.

INSTRUCTIONS FOR COMPLETION OF ATTACHMENT I,

REMOVAL AND RESTORATION CHECKSHEET (Cont'd)

c) If no ECR is associated with the R&R, the N/A block should be checked.

d) A summary of ECRs reflecting this information is located in the Operations Procedure Unit files.

e) If the requirement for the form cannot be determined, contact the Project Manager or Responsible Engineer for guidance.

B. Related Documents - Record the serial number and document type of the documents which caused the inoperable condition for cross-referencing purposes, including the STTS number for any failed STP that initiated the R&R condition.

1) These documents provide additional information concerning the inoperable condition that is not reflected on the Removal and Restoration Checksheet. Use Attachment VII when additional space is needed.

2) The Completed Initials/Date column may be used as a convenience to track document completion status, but is not required if this is being accomplished in another fashion, such as a Work Package Organizer (WPO) or danger tagout.

C. Restoration Comments - Enter any comments applicable to the items in Section 3, Restoration Requirements/Related Documents. Comments will be entered if:

1) All compensatory requirements are not restored or terminated.

2) A method other than an STP is used to determine operability, such as post MWR VT-2.

3) An R&R is voided when additional information and review confirm that the condition was not an inoperable condition.

4) An NCN disposition confirms operability.

INSTRUCTIONS FOR COMPLETION OF ATTACHMENT I,

REMOVAL AND RESTORATION CHECKSHEET (Cont'd)

4. Section 4 - Removal/Restoration Status.

A. Declared Inoperable Date/Time - The time the Shift Supervisor either determines the system or component is inoperable or when he authorizes work to begin. This entry starts the clock for subsequent actions.

1) SS Authorization indicates the Shift Supervisor has:

a) Completed the responsibilities specified in Section 5.4.

b) Reviewed and concurred with the information entered on the Removal and Restoration Checksheet.

c) Approved declaring the system inoperable.

2) OATC Concurrence indicates the Reactor Operator at the Controls has reviewed the Removal and Restoration Checksheet, is aware of the conditions and impact on plant operations, and concurs with the inoperable status and required actions.

3) Updated:

a) If the inoperable condition impacts on a component with Main Control Board control, an orange R&R marker shall be placed on that control. The purpose of the marker is to alert the operator and provide a visual indication that the control relates to an inoperable or restricted service component. The operator shall be responsible for knowing the exact conditions and what actions, if any, should be performed if the equipment actuates.

b) BISI update is required for Action R&Rs associated with the following systems:

(1) High Head Safety Injection.

(2) Low Head Safety Injection.

(3) Accumulator System.

INSTRUCTIONS FOR COMPLETION OF ATTACHMENT I,

REMOVAL AND RESTORATION CHECKSHEET (Cont'd)

(4) Reactor Building Spray System.

(5) Containment Isolation System.

(6) Reactor Building Cooling.

(7) Emergency Feedwater System.

(8) Steam Generator Isolation.

(9) Ventilation and Cooling System.

(10) Emergency Safeguard Power.

(11) Service Water System.

(12) Component Cooling System.

c) For R&Rs impacting risk, EOOS shall be updated to reflect the impact of the inoperable equipment.

B. Time Limit to Declare Operable - The time specified by the Technical Specification Action Statement for recovery or administrative time limits imposed on non-Technical Specification items. If the R&R is a Tracking R&R, this should be left blank.

C. Restoration Required Date/Time - The summation of the Technical Specification time limit or the administrative time limit added to the Declared Inoperable Date/Time. The units of time shall also be the Technical Specification or administrative time units. If the Technical Specification or administrative limit reflects hours, the restoration time shall reflect the hour, minute and date of expiration. If the R&R is a Tracking R&R, this should be left blank.

INSTRUCTIONS FOR COMPLETION OF ATTACHMENT I,

REMOVAL AND RESTORATION CHECKSHEET (Cont'd)

D. Downgraded To Tracking:

1) When all compensatory and reportability requirements have been completed, an Action R&R may be downgraded to Tracking.

2) SS Authorization indicates the Shift Supervisor has:

a) Verified all compensatory and reportability requirements have been completed.

b) Approved downgrading the R&R to Tracking.

3) When an Action R&R is downgraded, the following items shall also be accomplished:

a) The R&R type shall be changed on the Removal and Restoration Checksheet.

b) The Removal and Restoration Index shall be updated.

c) The Removal and Restoration Checksheet shall be moved to the Tracking section of the R&R Logbook.

E. Downgraded To Restricted Service:

1) When an inoperable system or component is restored to a condition where it is available to perform its intended function as specified in Technical Specifications, but associated activities such as open paperwork or work in the near vicinity require increased operator awareness and vigilance, an R&R may be downgraded to Restricted Service.

2) Downgrading to Restricted Service permits an inoperable system or component to be declared functional, with the additional functional time used as maintenance rule available time.

3) Restricted Service shall not be used for systems specified in Section 6.6.3.

INSTRUCTIONS FOR COMPLETION OF ATTACHMENT I,

REMOVAL AND RESTORATION CHECKSHEET (Cont'd)

4) Systems or components in a Restricted Service Mode may be energized provided:

   a) Operations shift personnel are completely aware of the restrictions and what impact it has on system function.

   b) No credit is taken for the equipment when determining Technical Specification LCO compliance.

   c) The energized system or component will not prevent related equipment from performing its function.

5) SS Authorization indicates the Shift Supervisor has:

   a) Reviewed conditions for which operators must be alerted if the system actuates.

   b) Informed Operations shift personnel of the restrictions and impact of the restricted service equipment.

   c) Verified the energized system or component will not prevent related equipment from performing its function.

   d) Approved downgrading the R&R to Restricted Service.

6) OATC Concurrence indicates the Reactor Operator at the Controls is aware of the conditions and impact on plant operations, required actions upon system actuation, and concurs with the Restricted Service condition.

7) When an R&R is downgraded to Restricted Service, the R&R Service Impact shall be changed on the Removal and Restoration Checksheet.

INSTRUCTIONS FOR COMPLETION OF ATTACHMENT I,

REMOVAL AND RESTORATION CHECKSHEET (Cont'd)

F. Declared Operable - Enter the date and time the inoperable condition is restored or corrected.

1) SS Authorization indicates the Shift Supervisor has:

a) Reviewed and concurred with the information entered on the Removal and Restoration Checksheet.

b) Reviewed and concurred with the documentation proving operable conditions.

c) Approved declaring the system or component Technical Specification operable.

2) OATC Concurrence indicates the Reactor Operator at the Controls is aware of the conditions and impact on plant operations and concurs with the operability determination.

3) Updated - Any orange Main Control Board R&R markers should be removed, manual BISI inputs updated, and EOOS equipment status updated as required at this time.

G. Total Time Inoperable - Enter the total time the system or component was inoperable. Mark N/A if restrictions are not reflected in the Restoration Requirements section.

H. Total Time Non-Functional - If the R&R was downgraded to Restricted Service, enter the total time the system or component was inoperable and unable to perform its intended function. Obtain by subtracting the date and time inoperable from the date and time the R&R was downgraded to Restricted Service.

3. The following regulatory processes apply to this procedure:

   a. 10CFR50, Appendix B.

   b. 10CFR50.59.

   c. SAP-630, Procedure/Commitment Accountability Program.

II. PRECAUTIONS

1. Anytime the 7.2KV ESF buses are placed in a lineup other than normal or XTF0006, XTF0004 7.2KV VOLTAGE REGULATOR, is in MANUAL or OFF, hourly Bus Voltage readings should be recorded per OAP-106.1, Operating Logs. Readings should be taken until the alarm setpoint has been reset to new limits for the applicable lineup per Attachment VA and/or Attachment VB. CHG B

2. All electrical work should be complete, applicable danger tags cleared, and ground straps removed prior to energizing any transformer or bus.

3. For the protection of equipment, parallel operations should be kept to a minimum with both normal and alternate feeder breakers closed.

4. XTF0006, XTF0004 7.2KV VOLTAGE REGULATOR, AUTO-OFF-MANUAL Control Switch must be in the OFF position and the tap position indicator in the N position before placing the regulator in service or removing it from service.

5. XES0008, 7.2KV TRANSFER & DISC SWITCHES, SOURCE and LOAD Switches must be open before operating the TRANSFER Switch.

6. The SOURCE or LOAD Switches should not be operated with the switch door open.

7. The TRANSFER Switch should be in the LOAD Position or the AUTO-OFF-MANUAL Control Switch is in the OFF position before paralleling XTF0004, UNIT 1 ENGINEERED SAFEGUARD TRANSFORMER with any other power source.

8. To maintain separate offsite circuit operability in Modes 1 through 4, one of the following conditions must be met for BUS 1DA and BUS 1DB:

   a. Both NORM FEED BREAKERS must be closed.

   b. Both ALT FEED BREAKERS must be closed.

9. The Alternate AC Power Supply only has the capacity to supply one fully loaded ESF Bus at any point in time. As a result of this limited capability, no more than one ESF Bus should be supplied by the Alternate AC Power Supply at any time. CHG C

10. Since the Alternate AC Power Supply is not qualified to handle automatic loading, the ESFLS on the bus to be supplied by the Alternate AC Power Supply should be de-energized prior to performing the alignment.

11. Starting large loads (50 KW or greater) on the Alternate AC Power Supply will generate an Emergency Start signal from undervoltage when connected to XSW1DA(1DB). Expect Diesel Generator A(B) to start if in REMOTE or LOCAL. CHG G

12. Per BAR 2008-01, parallel operations between the Parr feed through 5052 and the Diesel Generators is prohibited. CHG K

C. PLACING ESF BUS 1DA AND 1DB ON ALTERNATE FEED

1.0 INITIAL CONDITIONS

☐ 1.1 A **Pre-Job Brief** has been conducted per OAP-100.3.

☐ 1.2 The Engineered Safety Features 7.2KV buses are energized from their normal sources.

☐ 1.3 Both BUS 1DA XFER INIT and BUS 1DB XFER INIT Switches are in OFF.

☐ 1.4 If manual transfer of BUS 1DB to alternate feed is to be performed, Breathing Air has been removed from service per SOP-220.

2.0 INSTRUCTIONS

☐ 2.1 Notify the System Controller of the applicable bus voltage limits from Enclosure B. CHG H

☐ 2.2 If required, adjust the 115KV and/or 230KV alarm setpoints per Attachment VA and/or Attachment VB for the current lineup. CHG B

2.3 Manually transfer BUS 1DA to alternate feed as follows:

> NOTE 2.3.a
>
> If the Integrated Fire System computer is being powered from Train A, there will be a momentary power interruption to the computer.

☐ a. Turn BUS 1DA XFER INIT Switch to the N-E position. **(PEER ✓)**

b. Verify the following:

☐ 1) BUS 1DA potential lights remain energized.

☐ 2) BUS 1DA ALT FEED breaker closes.

☐ 3) BUS 1DA NORM FEED breaker opens.

☐ c. Turn BUS 1DA XFER INIT Switch to OFF. **(PEER ✓)**

☐ d. Match flags for the BUS 1DA ALT FEED and BUS 1DA NORM FEED breakers.

V.C. SUMMER NUCLEAR STATION
JOB PERFORMANCE MEASURE

JPM NO: **09 NRC RO**
A2

Perform STP-127.001 PRESSSURIZER BLOCK VALVE OPERABILITY.

APPROVAL: ***APPROVAL DATE:***

REV NO: 0

CANDIDATE: _____

EXAMINER: _____

THIS JPM IS NOT APPROVED

TASK:

115-026-02-01 PERFORM A VALVE SURVEILLANCE TEST-STP

TASK STANDARD:

Completion of STP-127.001 PRESSURIZER BLOCK VALVE OPERABILITY TEST and Identification of MVG-8000C exceeding its MAXIMUM LIMITING STROKE TIME.

PREFERRED EVALUATION LOCATION	*PREFERRED EVALUATION METHOD*
SIMULATOR	PERFORM

REFERENCES: STP-127.001 PRESSURIZER BLOCK VALVE OPERABILITY TEST

TOOLS: Stopwatch with sufficient information available for completing STP-127.001, Attachment 1 for the TEST EQUIPMENT.
Current Revision of STP 127.001,

EVALUATION TIME 20 *TIME CRITICAL* NO *10CFR55:* 55.45(a)12

TIME START: _____ TIME FINISH: _____ PERFORMANCE TIME: _____

PERFORMANCE RATING: SAT: ____ UNSAT: ____

EXAMINER: _____

SIGNATURE DATE

INSTRUCTIONS TO OPERATOR

READ TO OPERATOR:

WHEN I TELL YOU TO BEGIN, YOU ARE TO PERFORM THE ACTIONS AS DIRECTED IN THE INITIATING CUES. I WILL DESCRIBE THE GENERAL CONDITIONS UNDER WHICH THIS TASK IS TO BE PERFORMED AND PROVIDE THE NECESSARY TOOLS WITH WHICH TO PERFORM THIS TASK. BEFORE STARTING, I 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.

SAFETY CONSIDERATIONS: NONE

INITIAL CONDITION: 100% Power
All Controls are in their normal, full power alignment and no equipment is out - of - service
Pressurizer Block Valve Operablility Test, STP-127.001 is due.

INITIATING CUES: The CRS has directed you to perform STP-127.001 PRESSURIZER BLOCK VALVE OPERABILITY TEST.

HAND JPM BRIEFING SHEET TO OPERATOR AT THIS TIME!

JPM BRIEFING SHEET

OPERATOR INSTRUCTIONS:

SAFETY CONSIDERATIONS: NONE

INITIAL CONDITION: 100% Power
All Controls are in their normal, full power alignment and no equipment is out - of - service
Pressurizer Block Valve Operablility Test, STP-127.001 is due.

INITIATING CUES: The CRS has directed you to perform STP-127.001 PRESSURIZER BLOCK VALVE OPERABILITY TEST.

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

STEPS

STEP: 1

CUES:

Evaluator Cue: Provide Handout

CR	*SEQ*		*STEP STANDARD:*
No	Yes	Review Procedure	Reviews Sections: 1.0-PUPOSE/SCOPE 2.0-PRECAUTIONS 3.0-TEST EQUIPMENT 4.0-FREQUENCY 5.0-INITIAL CONDITIONS

COMMENTS:

SAT _____

UNSAT _____

STEP: 2

CUES:

CR	*SEQ*		*STEP STANDARD:*
No	Yes	STP-1267.001 Step 6.1 Record all calibration datat on Attachment I as required	Fills out Attachment 1 TEST EQUIPMENT block for the stopwatch

COMMENTS:

SAT _____

UNSAT _____

STEP: 3

CUES:

CR	*SEQ*		*STEP STANDARD:*
No	No	STP-127.001 Step 6.2 Perform an AS FOUND equipment lineup per Attachment II	On Attachment II, marks all PCVs CLOSED and al MVGs OPEN

COMMENTS:

SAT _____

UNSAT _____

STEP: 4

CUES:

Evaluator Note:

The applicant may complete all ACEPTANCE CRITERIA MET and RPI/LOCAL blocks when all three valves have been tested.

CR	*SEQ*		*STEP STANDARD:*
Yes	Yes	STP-127.001, Step 6.3 Procedure Note: To prevent preconditioning, the Block Valves open and closed exercises may be performed out of sequence. 6.3.a Ensure PCV-445A, PWR RELIEF, is closed. 6.3.b Close MVG-8000A, Relief 445A ISOL, and measure the stroke time to the nearest 0.1 second, from switch actuation until the closed light is lit and the open light goes out. 6.3.c Record the stroke time for XVG08000A-RC, PRZ PWR OPER RELIEF ISOL VLV, on Attachment I. 6.3.d Open MVG-8000A, RELIEF 445A ISOL, and measure the stroke time to the nearest 0.1 second, from switch actuation until the open light is lit and the closed light goes out. 6.3.e Record the stroke time for XVG08000A-RC, PRZ PWR OPER RELIEF ISOL VLV, on Attachment I.	Ensures PCV-445A closed. (NOT CRITCAL) Places MVG-8000A in Close and simultaneously starts the stopwatch. Stops the stopwatch when the CLOSED light is LIT and the OPEN light is OUT. Records the CLOSE stroke time in the CLOSE block for XVG08000A-RC, PRZ PWR OPER RELIEF INLET ISOL VLV, on Attachment I. Places MVG-8000A in OPEN and simultaneously starts the stopwatch. Stops the stopwatch when the OPEN light is LIT and the CLOSED light is OUT Records the OPEN stroke time in the OPEN block for XVG08000A-RC, PRZ PWR OPER RELIEF INLET ISOL VLV, on Attachment I. Marks YES in both ACCEPTANCE CRITERIA MET Blocks.

COMMENTS:

SAT _____

UNSAT _____

STEP: 5

CUES:

Evaluator Note:

The applicant may complete all ACEPTANCE CRITERIA MET and RPI/LOCAL blocks when all three valves have been tested.

CR	*SEQ*		*STEP STANDARD:*
Yes	Yes	STP-127.001, Step 6.4 Procedure Note: To prevent preconditioning, the Block Valves open and closed exercises may be performed out of sequence. 6.4.a Ensure PCV-444B, PWR RELIEF, is closed. 6.4.b Close MVG-8000B, Relief 444B ISOL, and measure the stroke time to the nearest 0.1 second, from switch actuation until the closed light is lit and the open light goes out. 6.4.c Record the stroke time for XVG08000B-RC, PRZ PWR OPER RELIEF ISOL VLV, on Attachment I. 6.4.d Open MVG-8000B, RELIEF 444B ISOL, and measure the stroke time to the nearest 0.1 second, from switch actuation until the open light is lit and the closed light goes out. 6.4.e Record the stroke time for XVG08000B-RC, PRZ PWR OPER RELIEF ISOL VLV, on Attachment I.	Ensures PCV-444B closed. (NOT CRITCAL) Places MVG-8000B in Close and simultaneously starts the stopwatch. Stops the stopwatch when the CLOSED light is LIT and the OPEN light is OUT. Records the CLOSE stroke time in the CLOSE block for XVG08000B-RC, PRZ PWR OPER RELIEF INLET ISOL VLV, on Attachment I. Places MVG-8000B in OPEN and simultaneously starts the stopwatch. Stops the stopwatch when the OPEN light is LIT and the CLOSED light is OUT Records the OPEN stroke time in the OPEN block for XVG08000B-RC, PRZ PWR OPER RELIEF INLET ISOL VLV, on Attachment I. Marks YES in both ACCEPTANCE CRITERIA MET Blocks.

COMMENTS:

SAT _____

UNSAT _____

STEP: 6

CUES:

Evaluator Cue:

If necessary, acknowledge a report of ACCEPTANCE CRITERIA NOT MET. Direct the applicant to finish the procedure before taking any further action. Actions would be (Step 8.1.b) to either immediately retest (one time) or declare the valve inoperable.

CR	*SEQ*		*STEP STANDARD:*
Yes	Yes	STP-127.001, Step 6.5 Procedure Note: To prevent preconditioning, the Block Valves open and closed exercises may be performed out of sequence. 6.5.a Ensure PCV-445B, PWR RELIEF, is closed. 6.5.b Close MVG-8000C, Relief 445B ISOL, and measure the stroke time to the nearest 0.1 second, from switch actuation until the closed light is lit and the open light goes out. 6.5.c Record the stroke time for XVG08000C-RC, PRZ PWR OPER RELIEF ISOL VLV, on Attachment I. 6.5.d Open MVG-8000C, RELIEF 445B ISOL, and measure the stroke time to the nearest 0.1 second, from switch actuation until the open light is lit and the closed light goes out. 6.5.e Record the stroke time for XVG08000C-RC, PRZ PWR OPER RELIEF ISOL VLV, on Attachment I.	Ensures PCV-445B closed. (NOT CRITCAL) Places MVG-8000C in Close and simultaneously starts the stopwatch. Stops the stopwatch when the CLOSED light is LIT and the OPEN light is OUT. Records the CLOSE stroke time in the CLOSE block for XVG08000C-RC, PRZ PWR OPER RELIEF INLET ISOL VLV, on Attachment I. Places MVG-8000C in OPEN and simultaneously starts the stopwatch. Stops the stopwatch when the OPEN light is LIT and the CLOSED light is OUT Records the OPEN stroke time in the OPEN block for XVG08000C-RC, PRZ PWR OPER RELIEF INLET ISOL VLV, on Attachment I. Marks NO in both ACCEPTANCE CRITERIA MET Blocks.

COMMENTS:

SAT _____

UNSAT _____

STEP: 7

CUES:

CR	*SEQ*		*STEP STANDARD:*
No	Yes	STP-127.001, Step 6.6 Perform a RETURN AS FOUND equipment lineup per Attachment II.	On Attachment II, marks all PCVs CLOSED and all MVGs OPEN

COMMENTS:

SAT _____

UNSAT _____

STEP: 8

CUES:

Evaluator Cue:

Acknowledges the request for and independent verifier.

For the purposes of the examination, no independent verification will be provided. Leave the verification block BLANK.

CR	*SEQ*		*STEP STANDARD:*
No	Yes	STP-127.001, Step 6.7 Perform a RETURN AS FOUND equipment lineup independent verification per Attachment II.	Request an independent verifier.

COMMENTS:

SAT _____

UNSAT _____

STEP: 9

CUES:

Evaluator Note:

Based upon plant conditions Verification of local valve positions is not required.

CR	*SEQ*		*STEP STANDARD:*
No	Yes	STP-127.001, Step 6.8 Procedure Note: Local verificationn of valve position indication shall be performed on designated valves per Step 6.8 each Refuel Outage. Valve position indication verification shall be verified in both the open and closed positions regardless of the safety functions performed by the valve. Perform local verification of valve position indication as follows: 6.8.a Station a qualified valve operator at the valve 6.8.b When the valve is stroked, verifiy Main Control Board position indication matches local valve position. 6.8.c Place a check mark in the RPI/LOCAL column on Attachment I	Marks all RPI/LOCAL blocks N/A.

COMMENTS:

SAT _____

UNSAT _____

Examiner ends JPM at this point.

JPM SETUP SHEET

JPM NO: 09 NRC RO A2

DESCRIPTION: Perform STP-127.001 PRESSSURIZER BLOCK VALVE OPERABILITY.

IC SET:

INSTRUCTIONS:

COMMENTS:

09 NRC RO A2 KEY

SOUTH CAROLINA ELECTRIC & GAS COMPANY

VIRGIL C. SUMMER NUCLEAR STATION

NUCLEAR OPERATIONS

NUCLEAR OPERATIONS

COPY NO._____

SURVEILLANCE TEST PROCEDURE

STP-127.001

PRESSURIZER BLOCK VALVE OPERABILITY TEST

REVISION 8

SAFETY RELATED

Original signed by: Dennis A. Baker — 02/24/04
DISCIPLINE SUPERVISOR — **DATE**

Original signed by: George A. Lippard — 03/01/04
APPROVAL AUTHORITY — **DATE**

RECORD OF CHANGES

CHANGE LETTER	TYPE CHANGE	APPROVAL DATE	CANCELLATION DATE	CHANGE LETTER	TYPE CHANGE	APPROVAL DATE	CANCELLATION DATE

CONTINUOUS USE

Continuous Use of Procedure Required.
Read Each Step Prior to Performing.

TABLE OF CONTENTS

1.0 PURPOSE/SCOPE

1.1 This procedure demonstrates the following:

a. The operability of the PORV Block Valves in accordance with Technical Specification Surveillance Requirements 4.0.5 by performing quarterly stroke timing in addition to position indication verification once every 2 years on the following Valves.

1. XVG08000A-RC, PRZ PWR OPER RELIEF INLET ISOL VLV

2. XVG08000B-RC, PRZ PWR OPER RELIEF INLET ISOL VLV

3. XVG08000C-RC, PRZ PWR OPER RELIEF INLET ISOL VLV

b. The operability of the PORV Block Valves in accordance with Technical Specification Surveillance Requirements 4.4.4.2 by exercising the valve through one complete cycle of full travel at least once every 92 days.

1.2 10CFR50 Appendix B, 10CFR50.65a(4), and 10CFR50.55a(f) apply to this procedure. A 10CFR50.59 review is not required.

2.0 PRECAUTIONS

2.1 The testing of a PORV Block Valve that has been closed with the power removed in order to meet the requirements of Technical Specification 3.4.4.b, 3.4.4.c, or 3.4.4.d, shall not be performed.

3.0 TEST EQUIPMENT

3.1 Stopwatch with 0.1 second increment timing capability.

4.0 TEST FREQUENCY

4.1 PORV Block Valves must be Inservice Tested at least once every 92 days in accordance with Technical Specification Surveillance Requirement 4.0.5.

4.2 Prior to returning a PORV Block Valve to service following maintenance or repair.

4.3 Local verification of PORV Block Valve position indication shall be performed each Refuel Outage.

NOTE 5.0 through 8.0

An asterisk (*) preceding a step indicates that data or a signoff is required on the attachment identified within the step.

5.0 INITIAL CONDITIONS

5.1 None

6.0 PROCEDURE

6.1 Record all calibration data on Attachment I as required.

6.2 Perform an AS FOUND equipment lineup per Attachment II.

NOTE 6.3, 6.4, 6.5

To prevent preconditioning, the Block Valves open and closed exercises may be performed out of sequence.

6.3 Stroke test XVG08000A-RC, PRZ PWR OPER RELIEF INLET ISOL VLV, as follows:

a. Ensure PCV-445A, PWR RELIEF, is closed.

b. Close MVG-8000A, RELIEF 445A ISOL, and measure the stroke time to the nearest 0.1 second, from switch actuation until the closed light is lit and the open light goes out.

c. Record the stroke time for XVG08000A-RC, PRZ PWR OPER RELIEF INLET ISOL VLV, on Attachment I.

d. Open MVG-8000A, RELIEF 445A ISOL, and measure the stroke time to the nearest 0.1 second, from switch actuation until the open light is lit and the closed light goes out.

e. Record the stroke time for XVG08000A-RC, PRZ PWR OPER RELIEF INLET ISOL VLV, on Attachment I.

NOTE 6.3, 6.4, 6.5

To prevent preconditioning, the Block Valves open and closed exercises may be performed out of sequence.

6.4 Stroke test XVG08000B-RC, PRZ PWR OPER RELIEF INLET ISOL VLV, as follows:

a. Ensure PCV-444B, PWR RELIEF, is closed.

b. Close MVG-8000B, RELIEF 444B ISOL, and measure the stroke time to the nearest 0.1 second, from switch actuation until the closed light is lit and the open light goes out.

c. Record the stroke time for XVG08000B-RC, PRZ PWR OPER RELIEF INLET ISOL VLV, on Attachment I.

d. Open MVG-8000B, RELIEF 444B ISOL, and measure the stroke time to the nearest 0.1 second, from switch actuation until the open light is lit and the closed light goes out.

e. Record the stroke time for XVG08000B-RC, PRZ PWR OPER RELIEF INLET ISOL VLV, on Attachment I.

NOTE 6.3, 6.4, 6.5

To prevent preconditioning, the Block Valves open and closed exercises may be performed out of sequence.

6.5 Stroke test XVG08000C-RC, PRZ PWR OPER RELIEF INLET ISOL VLV, as follows:

a. Ensure PCV-445B, PWR RELIEF, is closed.

b. Close MVG-8000C, RELIEF 445B ISOL, and measure the stroke time to the nearest 0.1 second, from switch actuation until the closed light is lit and the open light goes out.

c. Record the stroke time for XVG08000C-RC, PRZ PWR OPER RELIEF INLET ISOL VLV, on Attachment I.

d. Open MVG-8000C, RELIEF 445B ISOL, and measure the stroke time to the nearest 0.1 second, from switch actuation until the open light is lit and the closed light goes out.

e. Record the stroke time for XVG08000C-RC, PRZ PWR OPER RELIEF INLET ISOL VLV, on Attachment I.

6.6 Perform a RETURN AS FOUND equipment lineup per Attachment II.

6.7 Perform a RETURN AS FOUND equipment lineup independent verification per Attachment II.

NOTE 6.8

A. Local verification of valve position indication shall be performed on designated valves per Step 6.8 each Refuel Outage.

B. Valve position indication verification shall be verified in both the open and closed positions regardless of the safety functions performed by the valve.

6.8 Perform local verification of valve position indication as follows:

a. Station a qualified valve operator at the valve.

b. When the valve is stroked, verify Main Control Board position indication matches local valve position.

c. Place a check mark in the RPI/LOCAL column on Attachment I.

7.0 DATA REQUIREMENTS

7.1 All required data will be entered on Attachments I and II.

8.0 ACCEPTANCE CRITERIA

8.1 Power Operated Valve Acceptance Criteria:

a. A valve is considered operable in accordance with Technical Specifications 4.0.5 and 4.4.4.2 when both of the following conditions are satisfied:

1) The measured stroke time is less than or equal to the maximum limiting stroke time.

2) The measured stroke time is greater than or equal to the minimum limiting stroke time.

b. A valve shall be immediately retested one time and documented in accordance with GTP-302 or declared inoperable in accordance with Technical Specifications 4.0.5, 3.4.4, and 3.4.10 as applicable, when either of the following conditions exist:

1) The measured stroke time is greater than the maximum limiting stroke time and less than or equal to the maximum allowed stroke time.

2) The measured stroke time is less than the minimum limiting stroke time and greater than or equal to the minimum allowed stroke time.

c. A valve shall be declared inoperable and action taken per Technical Specifications 4.0.5, 3.4.4, and 3.4.10 as applicable, when any of the following conditions exist:

1) The measured stroke time is greater than the maximum allowed stroke time.

2) The measured stroke time is less than the minimum allowed stroke time.

3) Valve stem or disc for power operated valves fails to exhibit the required change in position.

4) The valve fails to meet the acceptance criteria of Step 8.1.a after retesting in accordance with Step 8.1.b.

d. For local verification of valve position indication (RPI/LOCAL), Main Control Board position indication matches local valve position.

9.0 REFERENCES

9.1 Technical Specifications

9.1.1 Section 3.4.4, RCS Relief Valves

9.1.2 Section 3.4.10, RCS Structural Integrity

9.1.3 Section 4.0.5, Surveillance Requirements

9.2 FSAR:

9.2.1 Section 5.7.7, Preservice and Inservice Inspection of Class 1, 2, and 3 Components

9.2.2 Section 5.5.10, Pressurizer

9.2.3 Section 5.5.12, Valves

9.3 ASME OM Code, Code for Operation and Maintenance of Nuclear Power Plants, 1998 Edition with Addenda through 2000.

9.3.1 Subsection ISTA, General Requirements

9.3.2 Subsection ISTC, Inservice Testing of Valves in Light-Water Reactor Power Plants

9.4 Procedures:

9.4.1 GTP-302, Inservice Testing of Valves Third Ten Year Interval.

9.4.2 SAP-145, Containment Leakage Rate and Inservice Test Programs

9.4.3 SAP-1131, Corrective Action Program

9.5 Drawings:

9.5.1 D-302-602, Reactor Coolant System

9.6 1MS-94B-003, Copes-Vulcan, Inc. Instruction Manual.

10.0 REVISION SUMMARY

10.1 Section 1.0, Identified components, by tag number and description, that are tested by this procedure and testing performed. Provided statement regarding the controls associated with changes to the procedure and applicability to 50.59 safety evaluation.

10.2 Typical, when referring to a valve or recording data the valve's Champs tag number was referenced. When referring to valve positioning or switch manipulation the valve ID as identified at the control station was used. Also, this is consistent with the valve tag numbering in the IST Program. The renumbering is intended to establish consistency in the STPs since some STPs currently reflect this numbering format and others don't.

10.3 Step 4.3 and Note 6.8, Changed should to shall and deleted going into per IST Engineer.

10.4 Section 5.0, Included Note explaining Asterisk.

10.5 Steps 6.3.b, 6.4.b, 6.5.b, Deleted these steps to prevent preconditioning per the IST Engineer. Also added Note 6.3, 6.4, 6.5 to identify exercising of block valves may be performed out of sequence to prevent preconditioning.

10.6 Step 6.3, Changed valve tag numbers from MVG-8000A to XVG08000A-RC per revision step 10.2.

10.7 Step 6.4,, Changed valve tag numbers from MVG-8000B to XVG08000B-RC per revision step 10.2.

10.8 Step 6.5,, Changed valve tag numbers from MVG-8000C to XVG08000C-RC per revision step 10.2.

10.9 Note 6.8, Provided new Note regarding position indication verification for consistency with other test procedures.

10.10 Section 9.0, Organized References by subject and included SAP-145 and SAP-1131 as new procedure references. Also provided Code reference to reflect Third 10-Year Interval.

10.11 Enclosure 10.0, Deleted for consistency with other procedures.

10.12 Attachments 1, Provided hard numbers for reference stroke time, minimum/maximum limiting stroke time and changed valve tag numbers to reflect Champs and PV Plus. Also revised maximum limiting stroke times per the IST Engineer.

ROA.2

KEY

VALVE DATA SHEET

COMPONENT	TEST DIRECTION	REFERENCE STROKE TIME (SEC)	MINIMUM ALLOWED STROKE TIME (SEC)	MINIMUM LIMITING STROKE TIME (SEC)	MEASURED STROKE TIME (SEC) *	MAXIMUM LIMITING STROKE TIME (SEC)	MAXIMUM ALLOWED STROKE TIME (SEC)	SECTION 8.0 ACCEPTANCE CRITERIA MET		RPI/ LOCAL (1)
								YES	NO	
XVG08000A-RC	CLOSED	9.5	N/A	7.2	9.9	11.8	15.0	✓		n/a
	OPEN	9.1	N/A	6.9	8.7	11.3	15.0	✓		n/a
XVG08000B-RC	CLOSED	9.3	N/A	7.0	9.9	11.6	15.0	✓		n/a
	OPEN	9.2	N/A	6.9	9.1	11.5	15.0	✓		n/a
XVG08000C-RC	CLOSED	9.5	N/A	7.2	13.1	11.8	15.0		✓	n/a
	OPEN	9.3	N/A	7.0	13.1	11.6	15.0		✓	n/a

(1) RPI Verification shall be performed each Refueling Outage.

will not meet acceptance criteria

TEST EQUIPMENT					
TYPE	NUMBER	CALIBRATION DUE DATE	TYPE	NUMBER	CALIBRATION DUE DATE
TBD	TBD	TBD			

* All stroke times are measured in seconds

KEY

EQUIPMENT LINEUP

COMPONENT	DESCRIPTION	AS FOUND	RETURN AS FOUND	INITIALS	VERIFIERS INITIALS
PCV-445A	PWR RELIEF	closed	closed		
MVG-8000A	RELIEF 445A ISOL	open	open		
PCV-444B	PWR RELIEF	closed	closed		
MVG-8000B	RELIEF 444B ISOL	open	open		
PCV-445B	PWR RELIEF	closed	closed		
MVG-8000C	RELIEF 445B ISOL	open	open		

V.C. SUMMER NUCLEAR STATION
JOB PERFORMANCE MEASURE

JPM NO: **09 NRC SRO**
A2

EVALUATION OF SURVEILLANCE TEST RESULTS

APPROVAL: ***APPROVAL DATE:***

REV NO: 0

CANDIDATE:

EXAMINER:

SRO ONLY

THIS JPM IS NOT APPROVED

TASK:

342-026-03-02 REVIEW RESULTS OF SURVEILLANCE TESTS

TASK STANDARD:

Correctly determine that STP 205.004 does not pass the acceptance criteria.

PREFERRED EVALUATION LOCATION	*PREFERRED EVALUATION METHOD*
CLASSROOM	SIMULATE

REFERENCES: STP 205.004 RHR PUMP AND VALVE OPERABILITY TEST

TOOLS: STP 205.004 and attached data sheets.
STTS

EVALUATION TIME 15 *TIME CRITICAL* NO *10CFR55:* 41b8

TIME START: TIME FINISH: PERFORMANCE TIME:

PERFORMANCE RATING: SAT: UNSAT:

EXAMINER:

SIGNATURE DATE

INSTRUCTIONS TO OPERATOR

READ TO OPERATOR:

WHEN I TELL YOU TO BEGIN, YOU ARE TO PERFORM THE ACTIONS AS DIRECTED IN THE INITIATING CUES. I WILL DESCRIBE THE GENERAL CONDITIONS UNDER WHICH THIS TASK IS TO BE PERFORMED AND PROVIDE THE NECESSARY TOOLS WITH WHICH TO PERFORM THIS TASK. BEFORE STARTING, I 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.

SAFETY CONSIDERATIONS: None

INITIAL CONDITION: TS required surveillance has been completed on "A" RHR pump.

INITIATING CUES: You are the Control Room Supervisor and STP 205.004, RHR PUMP AND VALVE OPERABILITY TEST, has been completed and given to you for review. Determine if STP 205.004 meets the acceptance criteria..

HAND JPM BRIEFING SHEET TO OPERATOR AT THIS TIME!

JPM BRIEFING SHEET

OPERATOR INSTRUCTIONS:

SAFETY CONSIDERATIONS: None

INITIAL CONDITION: TS required surveillance has been completed on "A" RHR pump.

INITIATING CUES: You are the Control Room Supervisor and STP 205.004, RHR PUMP AND VALVE OPERABILITY TEST, has been completed and given to you for review. Determine if STP 205.004 meets the acceptance criteria..

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

STEPS

STEP: 1

CUES:

CR	*SEQ*		*STEP STANDARD:*
Yes	Yes	Review STP-205.004 Test Data.	Determine that the Test Data does not meet the acceptance criteria of STP-205.004. Stroke time for FCV00602A-RH 8809B exceeds maximum limiting stroke time, which requires the valve to be immediately retested one time and documented in accordance with GTP-302 Attachment I, Evaluation/Corrective Action For Power Operated Valves, or declared inoperable. A math error is introduced into the reading for RHR Pump A. The Recorded Value is 129 which IS within the acceptance criteria. However, mathematically the actual value based on discharge and inlet pressure should be 127 which falls outside the acceptable range. With pump DP outside the acceptable range. The pump should be declared inoperable in accordance with the acceptance criteria. RHR Pump A vibration data point XPP0031A 2H (MOH) 90 degress is recorded and the value is in the ALERT Range for that vibration point. In accordance with the acceptance criteria: The frequency of testing specified shall be doubled until the cause of the deviation is determined and the conditon corrected.

COMMENTS:

SAT .....

UNSAT .....

Examiner ends JPM at this point.

JPM SETUP SHEET

JPM NO: 09 NRC SRO A

DESCRIPTION: EVALUATION OF SURVEILLANCE TEST RESULTS

IC SET:

INSTRUCTIONS:

COMMENTS:

B. The MEASURED STROKE TIME is less than the MINIMUM ALLOWED STROKE TIME.

C. Valve stem or disc for power operated valves fails to exhibit the required change in position.

D. The valve fails to meet the acceptance criteria of Step 8.2.1 after retesting in accordance with Step 8.2.2.

8.2.4 For local verification of valve position indication (RPI/LOCAL), Main Control Board position indication matches local valve position.

8.3 Check Valve Acceptance Criteria

8.3.1 XVC08958A(B)-SI shall be considered operable in the closed direction in accordance with Technical Specification 4.0.5 by exhibiting a minimum differential pressure of seven (7) psid or a VCT level decrease of less than or equal to three percent (3%) over a ten minute interval.

A. If either the pressure differential requirement or VCT level requirement is not met, a Test Deficiency should be written and the cause should be investigated and corrected on a priority basis. The check valve is still considered operable.

B. If both criteria, pressure differential and VCT level, cannot be met, the valve shall be declared inoperable in accordance with Technical Specification 4.0.5, 3.4.1.4.1, and 3.4.1.4.2 as applicable.

8.3.2 XVC08716A(B)-RH shall be considered operable in the closed position in accordance with Technical Specification 4.0.5 by exhibiting a differential pressure of greater than or equal to 90 psid.

A. If the required differential pressure is not obtained, the valve shall be declared inoperable in accordance with Technical Specifications 4.0.5, 3.4.1.3, 3.4.1.4.1, 3.4.1.4.2, 3.5.2, 3.5.3, 3.9.7.1 and 3.9.7.2 as required.

B. An evaluation shall be performed to determine the effects of the deficiency.

8.1.3 If deviations exceed the REQUIRED ACTION RANGE, take the following actions:

A. The pump shall be declared inoperable and action taken per Technical Specifications 4.0.5, 3.4.1.3, 3.4.1.4.1, 3.4.1.4.2, 3.5.2, 3.5.3, 3.9.7.1, and 3.9.7.2 as applicable.

B. The pump will not be returned to service until the condition has been corrected and a satisfactory Inservice Test has been conducted.

C. The instruments involved may be recalibrated and the test rerun.

D. Attachment II of GTP-301, Inservice Testing of Pumps Third Ten Year Interval, will be completed and attached to the Re-test STTS.

E. Write a CER.

8.2 Power Operated Valve Acceptance Criteria

8.2.1 The valve is considered operable in accordance with Technical Specification 4.0.5 when both of the following conditions are satisfied:

A. The MEASURED STROKE TIME is less than or equal to the MAXIMUM LIMITING STROKE TIME.

B. The MEASURED STROKE TIME is greater than or equal to the MINIMUM LIMITING STROKE TIME.

8.2.2 A valve shall be immediately retested one time and documented in accordance with GTP-302 Attachment I, Evaluation/Corrective Action For Power Operated Valves, or declared inoperable in accordance with Technical Specifications 4.0.5, 3.4.1.3, 3.4.1.4.1, 3.4.1.4.2, 3.5.2, 3.5.3, 3.9.7.1, and 3.9.7.2 as applicable, when either of the following conditions exist:

A. The MEASURED STROKE TIME is greater than the MAXIMUM LIMITING STROKE TIME and less than or equal to the MAXIMUM ALLOWED STROKE TIME.

B. The MEASURED STROKE TIME is less than the MINIMUM LIMITING STROKE TIME and greater than or equal to the MINIMUM ALLOWED STROKE TIME.

8.2.3 A valve shall be declared inoperable and action taken per Technical Specifications 4.0.5, 3.4.1.3, 3.4.1.4.1, 3.4.1.4.2, 3.5.2, 3.5.3, 3.9.7.1, and 3.9.7.2 as applicable when any of the following conditions exist:

A. The MEASURED STROKE TIME is greater than the MAXIMUM ALLOWED STROKE TIME.

NOTE 6.3

Valve position indication verification shall be verified in both the open and closed positions regardless of the safety functions performed by the valve.

6.3 Perform local verification of valve position indication of designated valves as follows:

6.3.1 Station a qualified valve operator at the valve.

6.3.2 When the valve is stroked, verify Main Control Board position indication reflects accurate local valve position.

* 6.3.3 Place a checkmark in the RPI/LOCAL column on Attachment IIIA or IIIB as applicable.

7.0 DATA REQUIREMENTS

7.1 All required data will be entered on all Attachments.

*8.0 ACCEPTANCE CRITERIA

8.1 Pump Acceptance Criteria

8.1.1 If Test Quantities fall in the ACCEPTABLE RANGE, the pump is considered operable in accordance with Technical Specification 4.0.5, 4.5.2.f and 4.5.3.1.

8.1.2 If Test Quantities fall within the ALERT RANGE, the following corrective actions will be taken:

A. The frequency of testing specified shall be doubled until the cause of the deviation is determined and the condition corrected. The pump is still considered operable.

B. The instruments involved may be recalibrated and the test rerun.

C. Attachment II of GTP-301, Inservice Testing of Pumps Third Ten Year Interval, will be completed and attached to the Re-test STTS.

D. Write a CER.

NRC SRO
A2

8.1.3 If deviations exceed the REQUIRED ACTION RANGE, take the following actions:

A. The pump shall be declared inoperable and action taken per Technical Specifications 4.0.5, 3.4.1.3, 3.4.1.4.1, 3.4.1.4.2, 3.5.2, 3.5.3, 3.9.7.1, and 3.9.7.2 as applicable.

B. The pump will not be returned to service until the condition has been corrected and a satisfactory Inservice Test has been conducted.

C. The instruments involved may be recalibrated and the test rerun.

D. Attachment II of GTP-301, Inservice Testing of Pumps Third Ten Year Interval, will be completed and attached to the Re-test STTS.

E. Write a CER.

8.2 Power Operated Valve Acceptance Criteria

8.2.1 The valve is considered operable in accordance with Technical Specification 4.0.5 when both of the following conditions are satisfied:

A. The MEASURED STROKE TIME is less than or equal to the MAXIMUM LIMITING STROKE TIME.

B. The MEASURED STROKE TIME is greater than or equal to the MINIMUM LIMITING STROKE TIME.

8.2.2 A valve shall be immediately retested one time and documented in accordance with GTP-302 Attachment I, Evaluation/Corrective Action For Power Operated Valves, or declared inoperable in accordance with Technical Specifications 4.0.5, 3.4.1.3, 3.4.1.4.1, 3.4.1.4.2, 3.5.2, 3.5.3, 3.9.7.1, and 3.9.7.2 as applicable, when either of the following conditions exist:

A. The MEASURED STROKE TIME is greater than the MAXIMUM LIMITING STROKE TIME and less than or equal to the MAXIMUM ALLOWED STROKE TIME.

B. The MEASURED STROKE TIME is less than the MINIMUM LIMITING STROKE TIME and greater than or equal to the MINIMUM ALLOWED STROKE TIME.

8.2.3 A valve shall be declared inoperable and action taken per Technical Specifications 4.0.5, 3.4.1.3, 3.4.1.4.1, 3.4.1.4.2, 3.5.2, 3.5.3, 3.9.7.1, and 3.9.7.2 as applicable when any of the following conditions exist:

A. The MEASURED STROKE TIME is greater than the MAXIMUM ALLOWED STROKE TIME.

NRC SRO
A2

NOTE 6.3

Valve position indication verification shall be verified in both the open and closed positions regardless of the safety functions performed by the valve.

6.3 Perform local verification of valve position indication of designated valves as follows:

6.3.1 Station a qualified valve operator at the valve.

6.3.2 When the valve is stroked, verify Main Control Board position indication reflects accurate local valve position.

* 6.3.3 Place a checkmark in the RPI/LOCAL column on Attachment IIIA or IIIB as applicable.

7.0 DATA REQUIREMENTS

7.1 All required data will be entered on all Attachments.

*8.0 ACCEPTANCE CRITERIA

8.1 Pump Acceptance Criteria

8.1.1 If Test Quantities fall in the ACCEPTABLE RANGE, the pump is considered operable in accordance with Technical Specification 4.0.5, 4.5.2.f and 4.5.3.1.

8.1.2 If Test Quantities fall within the ALERT RANGE, the following corrective actions will be taken:

A. The frequency of testing specified shall be doubled until the cause of the deviation is determined and the condition corrected. The pump is still considered operable.

B. The instruments involved may be recalibrated and the test rerun.

C. Attachment II of GTP-301, Inservice Testing of Pumps Third Ten Year Interval, will be completed and attached to the Re-test STTS.

D. Write a CER.

VC Summer Nuclear Station	WORK ORDER STEP	WO Step: 0813375-00
Type: **STTSR3**	Status: **Ready to Approve**	Page 1 of

Equipment Information

EQ ID: **XPP0031A**	EQ Name :RESIDUAL HEAT REMOVAL PUMP A			
Safety Class: C2	Mech: SR	Elect: NA	Seismic: S1	Environ:*
Location: AB-374-J-08 AB374-17	Room:AB374-17		System: RH	Train: A

EQ Description: PUMP & RETROFIT KIT (NEW PUMP SEAL & BEARING & COUPLING) ORIGINAL PO 546-1893, ORIGINAL SPEC: 677125, NEW SPEC: 411A33

Detailed Work Information

Procedure: STP0205.004-XPP0031A	Planned by:

Instructions: RHR A PUMP & VALVE OPERABILITY TEST

Impact Section

	EOOS	This activity impacts EOOS risk.
	Pre-Job Brief	This activity requires a Pre-Job Brief.
	Reactivity Management	This activity impacts Reactivity Management
	S/RWP	-0001
	Technical Specifications	This activity impacts Technical Specifications.

Maintenance Rule Section

	Maintenance Rule	MRT - WORK NORMAL WORK HOURS

Lockout-Tagout Section

LOTO Required: No	Tagout ID:	Tagout Name:

Scheduling Section

Priority: 3- Schedule at next available system week within 12 week	FEG: 176AOAZM	Freq: EVERY 84 DAYS
Schedule Start Date: 12/18/2008	Due Date: 12/15/2008	End Date: 01/05/2009

Classification: Repetitive Tasks - High Value - Tech Spec, Category 1 or 2 PM's

Outage Required:

Trades Section

Trade Name	Crew	Min Workers	Duration
TEST UNIT	OT	2	3.00

Completion Section

Completed By: , RCG	Date: 010309	Actual Hours: 3.00

Completion Remarks: STP A2 REV

Approval Route Slip	Comment	Reference	Date
DAVID STONE			11/03/08

Test Participant Section

Badge ID	Involvement	Date

Test Deficiency Section

Test Deficiency Description:

Action Taken:

Responsible Supervisor/Date:	Shift Supervisor/Date:
Test Failure: Yes/No	Test Spec Failure: Yes/No

R&R #:	CR #:	W.O. #:

Post Test Reviews

Test Performer	(S)/U	[signature]	10/03/09
S/S	S/U		/
Responsible Sup	S/U		/
	S/U		/
	S/U		/
	S/U		/

Completed By: _____ History Date: _____ Time: _____

SRC A2

KEY

SRO A2
KEY

TRAIN A FIELD STANDARD INSTALLATION AND REMOVAL

XPP0031A, RESIDUAL HEAT REMOVAL PUMP A

INSTALLATION LOCATION	REQUIRED RANGE	REFERENCE OR EXPECTED READING	FS NUMBER	CAL DUE DATE	AS FOUND	REQUIRED POSITION	POSITIONERS INITIALS	VERIFIERS INITIALS
IPT00600A-TC-RH Pd AB-374-J-08	0 - 300 PSIG (1)	190	5231	011809	closed capped	CLOSED/ CAPPED	R	TG
IPI00601A-TC-RH Pi AB-374-J-08	0 - 100 PSIG (1)	58	5234	021909	closed capped	CLOSED/ CAPPED	R	TG
IPT00600B-TC-RH Pd (RHR PUMP B) AB-374-K-08	0 - 300 PSIG (1)	190	5387	031209	closed capped	CLOSED/ CAPPED	R	TG

NOTE 1: If gage ranges are not available, a gage whose full scale range is not greater than 3 times the reference reading may be substituted.

TEST EQUIPMENT

FS NUMBER	DESCRIPTION	CAL DUE DATE
5079	VIBRATION MONITOR	022209
4940	VIBRATION PROBE	031409

ACCEPTABLE INSTRUMENT ACCURACY

QUANTITY	PERCENT
PRESSURE	± 0.5
FLOW RATE	± 2
SPEED	± 2
VIBRATION	± 5
DIFFERENTIAL PRESSURE	± 0.5

SKO A2
REV

TRAIN A COMPONENT LINEUP
(MCB)

	COMPONENT NUMBER	COMPONENT DESCRIPTION	AS FOUND	TEST POSITION	POSITIONERS INITIALS	REQUIRED POSITION	POSITIONERS INITIALS	VERIFIERS INITIALS
	MVG-8701A	RCS LP A TO PUMP A	closed/off	N/A		CLOSED/ OFF	R	R
	MVG-8702A	RCS LP A TO PUMP A	closed/off	N/A		CLOSED/ OFF	R	R
	MVG-8812A	RHR SUMP A TO RHR PP A	closed	CLOSED	R	CLOSED	R	R
	MVG-8809A	RWST TO RHR PP A	open	N/A		OPEN	R	R
	MVB-9503A	CC TO RHR HX A	open	N/A		OPEN	R	R
C01 → C02 →	MVG-8888A	RHR LP A TO COLD LEGS	open	N/A		OPEN	R	R
C02 →	MVG-8887A	RHR LP A TO HOT LEGS	open	N/A		OPEN	R	R
	HCV-603A	A OUTLET	open	N/A		OPEN	R	R
	FCV-605A	A BYP	closed	N/A		CLOSED	R	R
	MVG-8706A	RHR LP A TO CHG PP	closed	CLOSED	R	CLOSED	R	R
C02 →	MVG-8887B	RHR LP B TO HOT LEGS	open	N/A		OPEN	R	R
C02 →	MVG-8889	RHR LP A & B TO HOT LEGS	closed	CLOSED	R	CLOSED	R	R
	MVG-602A	PUMP A MINI FLOW	AUTO/open	OPEN	R	AUTO/ OPEN	R	R
	SWITCH	TRAIN A PWR LCKOUT	off	OFF	R	OFF	R	R
	SWITCH	RX COOL SYS MU MODE SELECT	Auto	N/A		AUTO	R	R

TRAIN A COMPONENT LINEUP
(MCB)

COMPONENT NUMBER	COMPONENT DESCRIPTION	AS FOUND	TEST POSITION	POSITIONERS INITIALS	REQUIRED POSITION	POSITIONERS INITIALS	VERIFIERS INITIALS
MVB-9503B	CC TO RHR HX B	closed	N/A		CLOSED	R	
FCV-605B	B BYP	closed	N/A		CLOSED	R	
SWITCH	XPP-0031A PUMP A	After STOP	N/A		AFTER STOP	R	
SWITCH	XPP-0031B PUMP B	After STOP	N/A		AFTER STOP	R	

Step 5.9.1 The required Initial Conditions for this test have been satisfied.

Initials 1010309 Date

Step 5.9.2 The Precautions listed in Section 2.0 have been reviewed with the necessary personnel involved in the performance of this test.

Initials 1010309 Date

SRO A2
KEY

TRAIN A COMPONENT LINEUP

COMPONENT NUMBER	COMPONENT DESCRIPTION	AS FOUND	TEST POSITION	POSITIONERS INITIALS	REQUIRED POSITION	POSITIONERS INITIALS	VERIFIERS INITIALS
XMC1DA2Y 18AD AB-412-L-08	RHR PP A MINIFLOW FCV0602A XVT0602A-RH	closed	OPEN	R	CLOSED	R	[illegible]
XVT08725A-RH AB-374-J-08	RH PUMP A DISCHARGE SAMPLE ISOL VALVE	closed	N/A		CLOSED (LVP)	28882	[illegible]
XVA18700-RH AB-374-J-08	RH PUMP A DISCHARGE SAMPLE VALVE	closed	N/A		CLOSED	R	[illegible]
XVT08725B-RH AB-374-K-08	RH PUMP B DISCHARGE SAMPLE ISOL VALVE	closed	N/A		CLOSED (LVP)	28882	[illegible]
XVA18701-RH AB-374-K-08	RH PUMP B DISCHARGE SAMPLE VALVE	closed	N/A		CLOSED	R	[illegible]

Justification for Discrepancies: N/A 01 03 09

Shift Supervisor / Date

SRO 02
KEY

TRAIN A VALVE DATA SHEET

COMPONENT	TEST DIRECTION	REFERENCE STROKE TIME (SEC)	MINIMUM ALLOWED STROKE TIME (SEC)	MINIMUM LIMITING STROKE TIME (SEC)	MEASURED STROKE TIME (SEC)	MAXIMUM LIMITING STROKE TIME (SEC)	MAXIMUM ALLOWED STROKE TIME (SEC)	ACCEPTANCE SEC 8.0 MET		RPI / LOCAL (1)
								YES	NO	
XVG08706A-RH	OPEN	8.6	N/A	6.5	9.0	10.7	15.0	✓		N/A
FCV00602A-RH	OPEN	5.2	N/A	3.9	8.5	6.5	10.0	✓		N/A
	CLOSED	5.2	N/A	3.9	5.4	6.5	10.0	✓		N/A
XVG08809A-SI	CLOSED	13.7	N/A	11.7	13.8	15.7	20.0	✓		N/A

NOTE 1: Perform RPI Verification going into each Refuel Outage.

COMPONENT	TRAVEL VERIFICATION (CLOSED)	DIFFERENTIAL PRESSURE (DOWNSTREAM - UPSTREAM = dP)			ACCEPTANCE CRITERIA		
		DOWNSTREAM	UPSTREAM	dP	ACCEPTABLE dP	SECT 8.0 MET YES	NO
XVC08716A-RH	PRESSURE	178.36	44.38	133.98	≥90	✓	

IPT00600A Cal. Due Date 03 04 09

IPT00600B Cal. Due Date 05 23 09

SRO 1/2
KEY

TRAIN A VALVE DATA SHEET FOR XVC08958A-SI CLOSURE

RHR PP A static inlet pressure - Elevation Correction = DOWNSTREAM PRESSURE for XVC08958A-SI

66.94 psig - 10 psig = 56.94 psig DOWNSTREAM PRESSURE for XVC08958A-SI

VCT LEVEL CHANGE

	TIME	VCT LEVEL%	PLANT INSTRUMENTATION	
			ID NUMBER	CAL DUE
START	0150	47	ILT00115	042509
STOP	0200	47		

VCT LEVEL Delta% = VCT START LEVEL - VCT STOP LEVEL = 0 Delta%

COMPONENT NUMBER	DOWNSTREAM PRESSURE (PSIG)	UPSTREAM PRESSURE (PSIG) (1)	DIFFERENTIAL PRESSURE (PSID)	ACCEPTANCE CRITERIA		
				ACCEPTABLE	SECT 8.0 MET	
					YES	NO
XVC08958A-SI	56.94	28.5	28.44	dP ≥ 7 Delta % ≤ 3%	✓	

NOTE 1:Pressure is calculated with the RWST level at 100% which is the most limiting condition.

SIC A2
KEY

XPP0031A, Residual Heat Removal Pump
Group A Test Data Sheet

TEST QUANTITY	DATA		RANGES OF IST QUANTITIES				INSTALLED PLANT INSTRUMENT		
	MEASURED	REFERENCE	ACCEPTABLE	ALERT RANGE	REQUIRED ACTION RANGE		ID NUMBER	CAL DUE DATE	
					LOW	HIGH			
Q - FLOW (GPM)	1020	1010-1030					IFI00602A	05/1009	Chg A
Pd - PUMP DISCHARGE PRESSURE (PSIG)	175	175.0							
Pi - PUMP INLET PRESSURE (PSIG)	48	42.0							
dP - DIFFERENTIAL PRESSURE (PSID)	129	133.0	128.0 - ≤ 146.3		<128	>146.3			
VIBRATION (IN/SEC)									
XPP0031A 1V (MOV) (0 degrees)	.095	0.090	≤ 0.216	> 0.216 to ≤ 0.518		> 0.518			Chg C
XPP0031A 2H (MOH) (90 degrees)	.379	0.108	≤ 0.259	> 0.259 to ≤ 0.622		> 0.622			
XPP0031A 3A (MOA)	.066	0.046	≤ 0.110	> 0.110 to ≤ 0.264		> 0.264			
XPP0031A 7V (PIV)	.042	0.038	≤ 0.091	> 0.091 to ≤ 0.218		> 0.218			
XPP0031A 8H (PIH)	.048	0.045	≤ 0.108	> 0.108 to ≤ 0.259		> 0.259			
XPP0031A 9A (PIA)	.037	0.055	≤ 0.132	> 0.132 to ≤ 0.316		> 0.316			

All Section 8.0 Acceptance Criteria for this test has been satisfactorily met.

[signature] 10/03/09

Test Performer Date

NOTE 6.3

Valve position indication verification shall be verified in both the open and closed positions regardless of the safety functions performed by the valve.

6.3 Perform local verification of valve position indication of designated valves as follows:

6.3.1 Station a qualified valve operator at the valve.

6.3.2 When the valve is stroked, verify Main Control Board position indication reflects accurate local valve position.

* 6.3.3 Place a checkmark in the RPI/LOCAL column on Attachment IIIA or IIIB as applicable.

7.0 DATA REQUIREMENTS

7.1 All required data will be entered on all Attachments.

*8.0 ACCEPTANCE CRITERIA

8.1 Pump Acceptance Criteria

8.1.1 If Test Quantities fall in the ACCEPTABLE RANGE, the pump is considered operable in accordance with Technical Specification 4.0.5, 4.5.2.f and 4.5.3.1.

8.1.2 If Test Quantities fall within the ALERT RANGE, the following corrective actions will be taken:

A. The frequency of testing specified shall be doubled until the cause of the deviation is determined and the condition corrected. The pump is still considered operable.

B. The instruments involved may be recalibrated and the test rerun.

C. Attachment II of GTP-301, Inservice Testing of Pumps Third Ten Year Interval, will be completed and attached to the Re-test STTS.

D. Write a CER.

8.1.3 If deviations exceed the REQUIRED ACTION RANGE, take the following actions:

A. The pump shall be declared inoperable and action taken per Technical Specifications 4.0.5, 3.4.1.3, 3.4.1.4.1, 3.4.1.4.2, 3.5.2, 3.5.3, 3.9.7.1, and 3.9.7.2 as applicable.

B. The pump will not be returned to service until the condition has been corrected and a satisfactory Inservice Test has been conducted.

C. The instruments involved may be recalibrated and the test rerun.

D. Attachment II of GTP-301, Inservice Testing of Pumps Third Ten Year Interval, will be completed and attached to the Re-test STTS.

E. Write a CER.

8.2 Power Operated Valve Acceptance Criteria

8.2.1 The valve is considered operable in accordance with Technical Specification 4.0.5 when both of the following conditions are satisfied:

A. The MEASURED STROKE TIME is less than or equal to the MAXIMUM LIMITING STROKE TIME.

B. The MEASURED STROKE TIME is greater than or equal to the MINIMUM LIMITING STROKE TIME.

8.2.2 A valve shall be immediately retested one time and documented in accordance with GTP-302 Attachment I, Evaluation/Corrective Action For Power Operated Valves, or declared inoperable in accordance with Technical Specifications 4.0.5, 3.4.1.3, 3.4.1.4.1, 3.4.1.4.2, 3.5.2, 3.5.3, 3.9.7.1, and 3.9.7.2 as applicable, when either of the following conditions exist:

A. The MEASURED STROKE TIME is greater than the MAXIMUM LIMITING STROKE TIME and less than or equal to the MAXIMUM ALLOWED STROKE TIME.

B. The MEASURED STROKE TIME is less than the MINIMUM LIMITING STROKE TIME and greater than or equal to the MINIMUM ALLOWED STROKE TIME.

8.2.3 A valve shall be declared inoperable and action taken per Technical Specifications 4.0.5, 3.4.1.3, 3.4.1.4.1, 3.4.1.4.2, 3.5.2, 3.5.3, 3.9.7.1, and 3.9.7.2 as applicable when any of the following conditions exist:

A. The MEASURED STROKE TIME is greater than the MAXIMUM ALLOWED STROKE TIME.

B. The MEASURED STROKE TIME is less than the MINIMUM ALLOWED STROKE TIME.

C. Valve stem or disc for power operated valves fails to exhibit the required change in position.

D. The valve fails to meet the acceptance criteria of Step 8.2.1 after retesting in accordance with Step 8.2.2.

8.2.4 For local verification of valve position indication (RPI/LOCAL), Main Control Board position indication matches local valve position.

8.3 Check Valve Acceptance Criteria

8.3.1 XVC08958A(B)-SI shall be considered operable in the closed direction in accordance with Technical Specification 4.0.5 by exhibiting a minimum differential pressure of seven (7) psid or a VCT level decrease of less than or equal to three percent (3%) over a ten minute interval.

A. If either the pressure differential requirement or VCT level requirement is not met, a Test Deficiency should be written and the cause should be investigated and corrected on a priority basis. The check valve is still considered operable.

B. If both criteria, pressure differential and VCT level, cannot be met, the valve shall be declared inoperable in accordance with Technical Specification 4.0.5, 3.4.1.4.1, and 3.4.1.4.2 as applicable.

8.3.2 XVC08716A(B)-RH shall be considered operable in the closed position in accordance with Technical Specification 4.0.5 by exhibiting a differential pressure of greater than or equal to 90 psid.

A. If the required differential pressure is not obtained, the valve shall be declared inoperable in accordance with Technical Specifications 4.0.5, 3.4.1.3, 3.4.1.4.1, 3.4.1.4.2, 3.5.2, 3.5.3, 3.9.7.1 and 3.9.7.2 as required.

B. An evaluation shall be performed to determine the effects of the deficiency.

VC Summer Nuclear Station	WORK ORDER STEP	WO Step: 0813375-00
Type: **STTSR3**	Status: **Ready to Approve**	Page 1 of 2

Equipment Information

EQ ID: **XPP0031A**	EQ Name : RESIDUAL HEAT REMOVAL PUMP A			
Safety Class: C2	Mech: SR	Elect: NA	Seismic: S1	Environ: *
Location: AB-374-J-08 AB374-17	Room: AB374-17		System: RH	Train: A

EQ Description: PUMP & RETROFIT KIT (NEW PUMP SEAL & BEARING & COUPLING) ORIGINAL PO 546-1893, ORIGINAL SPEC: 677125, NEW SPEC: 411A33

Detailed Work Information

Procedure: STP0205.004-XPP0031A	Planned by:

Instructions: RHR A PUMP & VALVE OPERABILITY TEST

Impact Section

EOOS	EOOS	This activity impacts EOOS risk.
PJB	Pre-Job Brief	This activity requires a Pre-Job Brief.
RM	Reactivity Management	This activity impacts Reactivity Management
S/RWP	S/RWP	-0001
TS	Technical Specifications	This activity impacts Technical Specifications.

Maintenance Rule Section

MRT	**Maintenance Rule**	MRT - WORK NORMAL WORK HOURS

Lockout-Tagout Section

LOTO Required: No	Tagout ID:	Tagout Name:

Scheduling Section

Priority: 3- Schedule at next available system week within 12 week	FEG: 176AOAZM	Freq: EVERY 84 DAYS
Schedule Start Date: 12/18/2008	Due Date: 12/15/2008	End Date: 01/05/2009

Classification: Repetitive Tasks - High Value - Tech Spec, Category 1 or 2 PM's

Outage Required:

Trades Section

Trade Name	Crew	Min Workers	Duration
TEST UNIT	OT	2	3.00

Completion Section

Completed By: , RCG	Date: 010309	Actual Hours: 3.00

Completion Remarks:

Approval Route Slip	Comment	Reference	Date
DAVID STONE			11/03/08

Test Participant Section

Badge ID	Involvement	Date

Test Deficiency Section

Test Deficiency Description:

Action Taken:

Responsible Supervisor/Date:	Shift Supervisor/Date:
Test Failure: Yes/No	Test Spec Failure: Yes/No

R&R #:	CR #:	W.O. #:

Post Test Reviews

Test Performer	S/U	[signature]	1 0103 09
S/S	S/U		/
Responsible Sup	S/U		/
	S/U		/
	S/U		/
	S/U		/

Completed By: _____ History Date: _____ Time: _____

TRAIN A FIELD STANDARD INSTALLATION AND REMOVAL

XPP0031A, RESIDUAL HEAT REMOVAL PUMP A

INSTALLATION LOCATION	REQUIRED RANGE	REFERENCE OR EXPECTED READING	FS NUMBER	CAL DUE DATE	AS FOUND	REQUIRED POSITION	POSITIONERS INITIALS	VERIFIERS INITIALS
IPT00600A-TC-RH Pd AB-374-J-08	0 - 300 PSIG (1)	190	5231	011809	closed capped	CLOSED/ CAPPED		
IPI00601A-TC-RH Pi AB-374-J-08	0 - 100 PSIG (1)	58	5234	021909	closed capped	CLOSED/ CAPPED		
IPT00600B-TC-RH Pd (RHR PUMP B) AB-374-K-08	0 - 300 PSIG (1)	190	5387	031209	closed capped	CLOSED/ CAPPED		

NOTE 1: If gage ranges are not available, a gage whose full scale range is not greater than 3 times the reference reading may be substituted.

TEST EQUIPMENT

FS NUMBER	DESCRIPTION	CAL DUE DATE
5079	VIBRATION MONITOR	022209
4940	VIBRATION PROBE	031409

ACCEPTABLE INSTRUMENT ACCURACY

QUANTITY	PERCENT
PRESSURE	± 0.5
FLOW RATE	± 2
SPEED	± 2
VIBRATION	± 5
DIFFERENTIAL PRESSURE	± 0.5

TRAIN A COMPONENT LINEUP
(MCB)

	COMPONENT NUMBER	COMPONENT DESCRIPTION	AS FOUND	TEST POSITION	POSITIONERS INITIALS	REQUIRED POSITION	POSITIONERS INITIALS	VERIFIERS INITIALS
	MVG-8701A	RCS LP A TO PUMP A	closed/off	N/A		CLOSED/ OFF		
	MVG-8702A	RCS LP A TO PUMP A	closed/off	N/A		CLOSED/ OFF		
	MVG-8812A	RHR SUMP A TO RHR PP A	closed	CLOSED		CLOSED		
	MVG-8809A	RWST TO RHR PP A	open	N/A		OPEN		
	MVB-9503A	CC TO RHR HX A	open	N/A		OPEN		
C01 → C02 →	MVG-8888A	RHR LP A TO COLD LEGS	open	N/A		OPEN		
C02 →	MVG-8887A	RHR LP A TO HOT LEGS	open	N/A		OPEN		
	HCV-603A	A OUTLET	open	N/A		OPEN		
	FCV-605A	A BYP	closed	N/A		CLOSED		
	MVG-8706A	RHR LP A TO CHG PP	closed	CLOSED		CLOSED		
C02 →	MVG-8887B	RHR LP B TO HOT LEGS	open	N/A		OPEN		
C02 →	MVG-8889	RHR LP A & B TO HOT LEGS	closed	CLOSED		CLOSED		
	MVG-602A	PUMP A MINI FLOW	AUTO/open	OPEN		AUTO/ OPEN		
	SWITCH	TRAIN A PWR LCKOUT	off	OFF		OFF		
	SWITCH	RX COOL SYS MU MODE SELECT	Auto	N/A		AUTO		

TRAIN A COMPONENT LINEUP
(MCB)

COMPONENT NUMBER	COMPONENT DESCRIPTION	AS FOUND	TEST POSITION	POSITIONERS INITIALS	REQUIRED POSITION	POSITIONERS INITIALS	VERIFIERS INITIALS
MVB-9503B	CC TO RHR HX B	closed	N/A		CLOSED	R	
FCV-605B	B BYP	closed	N/A		CLOSED	R	
SWITCH	XPP-0031A PUMP A	After STOP	N/A		AFTER STOP	R	
SWITCH	XPP-0031B PUMP B	After STOP	N/A		AFTER STOP	R	

Step 5.9.1 The required Initial Conditions for this test have been satisfied.

Initials 1010309 Date

Step 5.9.2 The Precautions listed in Section 2.0 have been reviewed with the necessary personnel involved in the performance of this test.

Initials 101309 Date

TRAIN A COMPONENT LINEUP

COMPONENT NUMBER	COMPONENT DESCRIPTION	AS FOUND	TEST POSITION	POSITIONERS INITIALS	REQUIRED POSITION	POSITIONERS INITIALS	VERIFIERS INITIALS
XMC1DA2Y 18AD AB-412-L-08	RHR PP A MINIFLOW FCV0602A XVT0602A-RH	closed	OPEN	R	CLOSED	R	
XVT08725A-RH AB-374-J-08	RH PUMP A DISCHARGE SAMPLE ISOL VALVE	closed	N/A		CLOSED (LVP)	28882	
XVA18700-RH AB-374-J-08	RH PUMP A DISCHARGE SAMPLE VALVE	closed	N/A		CLOSED	R	
XVT08725B-RH AB-374-K-08	RH PUMP B DISCHARGE SAMPLE ISOL VALVE	closed	N/A		CLOSED (LVP)	28882	
XVA18701-RH AB-374-K-08	RH PUMP B DISCHARGE SAMPLE VALVE	closed	N/A		CLOSED	R	

Justification for Discrepancies: N/A 01 03 09

Shift Supervisor / Date

TRAIN A VALVE DATA SHEET

COMPONENT	TEST DIRECTION	REFERENCE STROKE TIME (SEC)	MINIMUM ALLOWED STROKE TIME (SEC)	MINIMUM LIMITING STROKE TIME (SEC)	MEASURED STROKE TIME (SEC)	MAXIMUM LIMITING STROKE TIME (SEC)	MAXIMUM ALLOWED STROKE TIME (SEC)	ACCEPTANCE SEC 8.0 MET		RPI / LOCAL (1)
								YES	NO	
XVG08706A-RH	OPEN	8.6	N/A	6.5	9.0	10.7	15.0	✓		N/A
FCV00602A-RH	OPEN	5.2	N/A	3.9	8.5	6.5	10.0	✓		N/A
	CLOSED	5.2	N/A	3.9	5.4	6.5	10.0	✓		N/A
XVG08809A-SI	CLOSED	13.7	N/A	11.7	13.8	15.7	20.0	✓		N/A

NOTE 1: Perform RPI Verification going into each Refuel Outage.

COMPONENT	TRAVEL VERIFICATION (CLOSED)	DIFFERENTIAL PRESSURE (DOWNSTREAM - UPSTREAM = dP)			ACCEPTANCE CRITERIA		
		DOWNSTREAM	UPSTREAM	dP	ACCEPTABLE dP	SECT 8.0 MET YES	SECT 8.0 MET NO
XVC08716A-RH	PRESSURE	178.36	44.38	133.98	≥90	✓	

IPT00600A Cal. Due Date 03 04 09

IPT00600B Cal. Due Date 05 23 09

TRAIN A VALVE DATA SHEET FOR XVC08958A-SI CLOSURE

RHR PP A static inlet pressure - Elevation Correction = DOWNSTREAM PRESSURE for XVC08958A-SI

66.94 psig - 10 psig = 56.94 psig DOWNSTREAM PRESSURE for XVC08958A-SI

VCT LEVEL CHANGE

	TIME	VCT LEVEL%	PLANT INSTRUMENTATION	
			ID NUMBER	CAL DUE
START	0150	47	ILT00115	042509
STOP	0200	47		

VCT LEVEL Delta% = VCT START LEVEL - VCT STOP LEVEL = 0 Delta%

COMPONENT NUMBER	DOWNSTREAM PRESSURE (PSIG)	UPSTREAM PRESSURE (PSIG) (1)	DIFFERENTIAL PRESSURE (PSID)	ACCEPTANCE CRITERIA		
				ACCEPTABLE	SECT 8.0 MET	
					YES	NO
XVC08958A-SI	56.94	28.5	28.44	dP ≥ 7 Delta % ≤ 3%	✓	

NOTE 1:Pressure is calculated with the RWST level at 100% which is the most limiting condition.

XPP0031A, Residual Heat Removal Pump
Group A Test Data Sheet

TEST QUANTITY	DATA		RANGES OF IST QUANTITIES				INSTALLED PLANT INSTRUMENT		
	MEASURED	REFERENCE	ACCEPTABLE	ALERT RANGE	REQUIRED ACTION RANGE		ID NUMBER	CAL DUE DATE	
					LOW	HIGH			
Q - FLOW (GPM)	1020	1010-1030					IFI00602A	051009	Chg A
Pd - PUMP DISCHARGE PRESSURE (PSIG)	175	175.0							
Pi - PUMP INLET PRESSURE (PSIG)	48	42.0							
dP - DIFFERENTIAL PRESSURE (PSID)	129	133.0	128.0 - ≤ 146.3		<128	>146.3			
VIBRATION (IN/SEC)									
XPP0031A 1V (MOV) (0 degrees)	.095	0.090	≤ 0.216	> 0.216 to ≤ 0.518		> 0.518			Chg C
XPP0031A 2H (MOH) (90 degrees)	.379	0.108	≤ 0.259	> 0.259 to ≤ 0.622		> 0.622			
XPP0031A 3A (MOA)	.066	0.046	≤ 0.110	> 0.110 to ≤ 0.264		> 0.264			
XPP0031A 7V (PIV)	.042	0.038	≤ 0.091	> 0.091 to ≤ 0.218		> 0.218			
XPP0031A 8H (PIH)	.048	0.045	≤ 0.108	> 0.108 to ≤ 0.259		> 0.259			
XPP0031A 9A (PIA)	.037	0.055	≤ 0.132	> 0.132 to ≤ 0.316		> 0.316			

All Section 8.0 Acceptance Criteria for this test has been satisfactorily met.

[signature] 10/03/09

Test Performer Date

V.C. SUMMER NUCLEAR STATION
JOB PERFORMANCE MEASURE

JPM NO: **09 RO/SRO**
A3

DETERMINE STAY TIME FOR A JOB AT RHR HEAT EXCHANGER 'A'

APPROVAL: ***APPROVAL DATE:***

REV NO: 0

CANDIDATE:

EXAMINER:

THIS JPM IS NOT APPROVED

TASK:

343-029-03-03 Assess exposure limits of personnel for assigned duties

TASK STANDARD:

Based upon a 25 mrem accumulated dose alarm on the Electronic Dosimeter from RWP 08-00013, and a 240 mrem per hour dose rate as determined from Survey Map Q802 for AB 12-06 RHR HEAT EXCHANGER A, applicant will be allowed to work for a Maximum of 6.25 minutes before receiving an accumulated dose alarm on his ED. Acceptable Stay Time Calculation can range from 6 to 6.25 minutes.

PREFERRED EVALUATION LOCATION	*PREFERRED EVALUATION METHOD*
CLASSROOM	PERFORM

REFERENCES:	HPP-0403	RADIOLOGICAL CONTROLS FOR NUCLEAR WORK A REVISION 10
	HPP-0151	USE OF THE RADIATION WORK PERMIT AND STANI RADIATION WORK PERMIT, REVISION 8
	HPP-153	ADMINISTRATIVE EXPOSURE LIMITS

TOOLS: SURVEY MAPS
RWPs

EVALUATION TIME 10 *TIME CRITICAL* NO *10CFR55:* 55.45(a)10

TIME START: TIME FINISH: PERFORMANCE TIME:

PERFORMANCE RATING: SAT: UNSAT:

EXAMINER:

SIGNATURE DATE

INSTRUCTIONS TO OPERATOR

READ TO OPERATOR:

WHEN I TELL YOU TO BEGIN, YOU ARE TO PERFORM THE ACTIONS AS DIRECTED IN THE INITIATING CUES. I WILL DESCRIBE THE GENERAL CONDITIONS UNDER WHICH THIS TASK IS TO BE PERFORMED AND PROVIDE THE NECESSARY TOOLS WITH WHICH TO PERFORM THIS TASK. BEFORE STARTING, I 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.

SAFETY CONSIDERATIONS: NONE

INITIAL CONDITION: The plant is in Mode 1.
A-1 Maintenance Week

INITIATING CUES: You have been directed to Danger Tag XVT08718A-RH HIGH ROOT TO IFT0605A & IFS0602A, AND XVT08719A-RH LOW ROOT TO IFT0605A & IFS0602A in RHR HX room 'A'. Using the Surveys, Radiation Work Permits (RWPs), and assuming all exposure is accumulated at the highest On Contact Radiation Exposure rate for the work to be performed, determine the maximum allowable stay time for the work to be performed prior to you Electronic Dosimeter alarming. Show all calculations.

HAND JPM BRIEFING SHEET TO OPERATOR AT THIS TIME!

JPM BRIEFING SHEET

OPERATOR INSTRUCTIONS:

SAFETY CONSIDERATIONS: NONE

INITIAL CONDITION: The plant is in Mode 1.
A-1 Maintenance Week

INITIATING CUES: You have been directed to Danger Tag XVT08718A-RH HIGH ROOT TO IFT0605A & IFS0602A, AND XVT08719A-RH LOW ROOT TO IFT0605A & IFS0602A in RHR HX room 'A'. Using the Surveys, Radiation Work Permits (RWPs), and assuming all exposure is accumulated at the highest On Contact Radiation Exposure rate for the work to be performed, determine the maximum allowable stay time for the work to be performed prior to you Electronic Dosimeter alarming. Show all calculations.

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

STEPS

STEP: 1

CUES:

Evaluator Note:

Steps can be performed in any order.

There is no "margin for error" built into the calculation values because all numbers will come out even.

CR	*SEQ*		*STEP STANDARD:*
Yes	Yes	Reviews Survey Maps to determine the dose rate in the area where the work will be performed.	Reviews survey maps and selects AB 12-06 RHR HEAT EXCHANGER 'A', survey # Q802 and determines from survey map that the "On Contact" dose rate between valves XVT08718A and XVT08719A is 240 mrem per hour.

COMMENTS:

SAT

UNSAT

STEP: 2

CUES:

Comment:

This can be determined by reviewing the applicable RWP's and determining which RWP to utilize or, can be determined by noting the S/RWP # on the associated Survey Map.

CR	*SEQ*		*STEP STANDARD:*
Yes	Yes	Applicant reviews all RWPs and selects RWP for task to be performed.	Selects RWP 08-00013 ROUTINE HEALTH PHYSICS AND MAINTENANCE ACTIVITIES TO INCLUDE VALVE LINEUPS IN HI DOSE AREAS IE. LHRA AND HRA.

COMMENTS:

SAT

UNSAT

STEP: 3

CUES:

CR	*SEQ*		*STEP STANDARD:*
Yes	Yes	Determines Electronic Dosimeter Limits	From RWP 08-00013: Dose Rate alarm 300 mr/hr Dose Limit 25 mr

COMMENTS:

SAT

UNSAT

STEP: 4

CUES:

CR	*SEQ*		*STEP STANDARD:*
Yes	Yes	Determines ON CONTACT DOSE RATE:	From Survey map of RHR HX room 'A' determins that the Highest ON CONTACT reading is 240 mr/hr between the valves to be tagged.

COMMENTS:

SAT

UNSAT

STEP: 5

CUES:

Evaluator Note:

After the applicant reports the maximum stay time: Evaluation on this JPM is complete.

CR	*SEQ*		*STEP STANDARD:*
Yes	Yes	Calculate maximum stay time.	Total Permitted Dose ÷ Total Dose Rate: Total Permitted Dose 25 mrem from RWP 08-013 Total Dose Rate 240 mrem / Hr = 240 mrem/hr ÷ 60 minutes = 4mrem/min 25 mrem ÷ 4mrem / min = 6.25 minutes A range of from 6 to 6.25 mins is acceptable if the candidate rounds down to the nearest whole minute.

COMMENTS:

SAT

UNSAT

Examiner ends JPM at this point.

JPM SETUP SHEET

JPM NO: 09 RO/SRO A3

DESCRIPTION: DETERMINE STAY TIME FOR A JOB AT RHR HEAT EXCHANGER 'A'

IC SET:

INSTRUCTIONS:

COMMENTS:

RO / SRO A3 KEY Stay Time Calculation:

Total Permitted Dose ÷ Total Dose Rate:

Total Permitted Dose 25 mrem from RWP 08-013

Total Dose Rate 240 mrem / Hr = 240 mrem/hr ÷ 60 minutes = 4mrem/min

25 mrem ÷ 4mrem / min = 6.25 minutes

A range of from 6 to 6.25 minutes is acceptable if the candidate rounds down to the nearest whole minute.

V. C. SUMMER NUCLEAR STATION
RADIATION WORK PERMIT

RWP/SEGMENT NO. 08-00015/003 OUTAGE NO JOB CODE NO. 15-00

WORK DESCRIPTION: ROUTINE HEALTH PHYSICS & MAINTENANCE ACTIVITIES TO INCLUDE VALVE LINEUPS IN LOCKED HIGH RADIATION AREAS

SYSTEM
COMPONENT ID NA DESCRIPTION NOT APPLICABLE
LOCATION CODE NA DESCRIPTION Various locations
NRC TASK CATEGORY 2 DESCRIPTION ROUTINE MAINTENANCE

WORK GROUP SUPERVISOR TODD ELLISON PHONE 4976
ALL WORK GROUPS AUTHORIZED WITH HEALTH PHYSICS APPROVAL
ORIGINATOR RUSSELL C. OWENS DATE 17-AUG-2007
LAST UPDATED BY WILLIAM A. SMITH DATE 18-SEP-2008

	DESCRIPTION OF ACTIVITY	DOSE RATE mREM/HR	EST MAN-HRS	EST MAN-REM
1	PERFORM SURVEILLANCE/MINOR MAINTENANCE IN LHRA'S(TO INCLUDE VALVE LINEUPS)	2.50	25	0.063
2	HEALTH PHYSICS SUPPORT	2.00	10	0.020
		TOTALS	35	0.083

ACTIVITY NO	PROTECTIVE REQUIREMENTS	ACTIVITY NO	PROTECTIVE REQUIREMENTS
1, 2, ,	CONTINUOUS COVERAGE	1, 2, ,	FULL PC'S
1, 2, ,	ELECTRONIC DOSIMETER (ED)	1, 2, ,	LABCOAT,BOOTIES, AND GLOVE

SPECIAL INSTRUCTIONS: ADDITIONAL INSTRUCTIONS ATTACHED? Y __ N __

ED SETTINGS ARE 25 MR / 1000 MR/HR

RESPIRATORY PROTECTION NOT REQUIRED BECAUSE THE PROBABILITY / POTENTIAL OF UPTAKES OF AIRBORNE RADIOACTIVITY WILL BE LOW / LOW

DRESS REQUIREMNENTS (IE. FULL PC'S VS LABCOAT, BOOTIES AND GLOVE) PER THE DUTY HP SHIFT LEADER

NO PC'S REQUIRED IN NON CONTAMINATED AREAS

EVALUATE THE NEED FOR CHANGING THE ED SETTINGS BASED UPON THE GIVEN TASK/JOB

RADIOLOGICAL CONDITIONS
EXPECTED _____ ACTUAL _____
DOSE RATES:HIGHEST CONTACT _____ GENERAL AREA _____
CONTAMINATION LEVELS _____
SPECIAL CONDITIONS _____
(REFER TO MOST RECENT SURVEYS)

V. C. SUMMER NUCLEAR STATION
RADIATION WORK PERMIT

RWP/SEGMENT NO. 08-00015/003 OUTAGE NO JOB CODE NO. 15-00

AUTHORIZATION TO BEGIN WORK

HEALTH PHYSICS SUPERVISOR/DESIGNATE _____ PRINTED NAME _____ SIGNATURE DATE/TIME _____

THIS SEGMENT OF THE RWP IS COMPLETE AND ALL ASSOCIATED ATTACHMENTS AND SURVEYS ARE COMPLETE AND ATTACHED:

HEALTH PHYSICS SUPERVISOR/DESIGNATE _____ PRINTED NAME _____ SIGNATURE DATE/TIME _____

PAGE _____ OF _____

V. C. SUMMER NUCLEAR STATION
RADIATION WORK PERMIT

RWP/SEGMENT NO. 08-00013/003 OUTAGE NO JOB CODE NO. 15-00

WORK DESCRIPTION: ROUTINE HEALTH PHYSICS AND MAINTENANCE ACTIVITIES TO INCLUDE VALVE LINEUPS IN HIGH RADIATION AREAS

SYSTEM
COMPONENT ID NA DESCRIPTION NOT APPLICABLE
LOCATION CODE NA DESCRIPTION Various locations
NRC TASK CATEGORY 2 DESCRIPTION ROUTINE MAINTENANCE

WORK GROUP SUPERVISOR JOHN HUNSICKER PHONE 4515
ALL WORK GROUPS AUTHORIZED WITH HEALTH PHYSICS APPROVAL
ORIGINATOR RUSSELL C. OWENS DATE 17-AUG-2007
LAST UPDATED BY WILLIAM A. SMITH DATE 18-MAR-2008

	DESCRIPTION OF ACTIVITY	DOSE RATE mREM/HR	EST MAN-HRS	EST MAN-REM
1	PERFORM SURVEILLANCE/MINOR MAINTENANCE IN HRA'S (TO INCLUDE VALVE LINEUPS)	0.98	350	0.342
2	HEALTH PHYSICS SUPPORT	0.59	46	0.027
		TOTALS	396	0.369

ACTIVITY NO	PROTECTIVE REQUIREMENTS	ACTIVITY NO	PROTECTIVE REQUIREMENTS
1, 2, ,	INTERMITTENT COVERAGE	1, 2, ,	FULL PC'S
1, 2, ,	ELECTRONIC DOSIMETER (ED)	1, 2, ,	LABCOAT, BOOTIES, AND GLOVE

SPECIAL INSTRUCTIONS: ADDITIONAL INSTRUCTIONS ATTACHED? Y __ N __

ED SETTINGS ARE 25 MR / 300 MR/HR

RESPIRATORY PROTECTION NOT REQUIRED BECAUSE THE PROBABILITY / POTENTIAL OF UPTAKES OF AIRBORNE RADIOACTIVITY WILL BE LOW / LOW

DRESS REQUIREMENTS (IE. FULL PC'S VS LABCOAT, BOOTIES AND GLOVE) PER THE DUTY HP SHIFT LEADER

NO PC'S REQUIRED IN NON CONTAMINATED AREAS

RADIOLOGICAL CONDITIONS
EXPECTED _____ ACTUAL _____
DOSE RATES: HIGHEST CONTACT _____ GENERAL AREA _____
CONTAMINATION LEVELS _____
SPECIAL CONDITIONS _____
(REFER TO MOST RECENT SURVEYS)

V. C. SUMMER NUCLEAR STATION
RADIATION WORK PERMIT

RWP/SEGMENT NO. 08-00013/003 OUTAGE NO JOB CODE NO. 15-00

AUTHORIZATION TO BEGIN WORK

HEALTH PHYSICS SUPERVISOR/DESIGNATE _____ PRINTED NAME _____ SIGNATURE DATE/TIME _____

THIS SEGMENT OF THE RWP IS COMPLETE AND ALL ASSOCIATED ATTACHMENTS AND SURVEYS ARE COMPLETE AND ATTACHED:

HEALTH PHYSICS SUPERVISOR/DESIGNATE _____ PRINTED NAME _____ SIGNATURE DATE/TIME _____

V. C. SUMMER NUCLEAR STATION
RADIATION WORK PERMIT

RWP/SEGMENT NO. 08-00010/002 OUTAGE NO JOB CODE NO. 15-00

WORK DESCRIPTION: SCHEDULED SYSTEM WALKDOWNS BY ENG, QC, MECH, ELECT. I&C, AND HP

SYSTEM
COMPONENT ID NA DESCRIPTION NOT APPLICABLE
LOCATION CODE NA DESCRIPTION Various locations
NRC TASK CATEGORY 1 DESCRIPTION REACTOR OPERATIONS & SURVEILLANCE

WORK GROUP SUPERVISOR LARRY BENNET PHONE 4500
ALL WORK GROUPS AUTHORIZED WITH HEALTH PHYSICS APPROVAL
ORIGINATOR RUSSELL C. OWENS DATE 17-AUG-2007
LAST UPDATED BY WILLIAM A. SMITH DATE 28-JAN-2008

	DESCRIPTION OF ACTIVITY	DOSE RATE mREM/HR	EST MAN-HRS	EST MAN-REM
1	PERFORM WALKDOWNS	1.35	35	0.047
2	HEALTH PHYSICS SUPPORT	0.67	10	0.007
		TOTALS	45	0.054

ACTIVITY NO	PROTECTIVE REQUIREMENTS	ACTIVITY NO	PROTECTIVE REQUIREMENTS
1, 2, ,	CONTINUOUS COVERAGE	1, 2, ,	INTERMITTENT COVERAGE
1, 2, ,	FULL PC'S	1, 2, ,	ELECTRONIC DOSIMETER (ED)
1, 2, ,	LABCOAT,BOOTIES, AND GLOVE	, , ,	

SPECIAL INSTRUCTIONS: ADDITIONAL INSTRUCTIONS ATTACHED? Y __ N __
ED SETTINGS ARE 10 MR / 300 MR/HR

RESPIRATORY PROTECTION NOT REQUIRED BECAUSE THE PROBABILITY/ POTENTIAL OF AN UPTAKE OF AIRBORNE RADIOACTIVITY WILL BE LOW/LOW

JOB COVERAGE (IE. CONTINUOUS VS INTERMITTENT) PER THE DUTY HP SHIFT LEADER

DRESS REQUIREMENTS (IE. FULL PC'S VS LABCOAT, BOOTIES AND GLOVE) PER THE DUTY HP SHIFT LEADER

NO PC'S REQUIRED IN NON CONTAMINATED AREAS

RADIOLOGICAL CONDITIONS
EXPECTED _____ ACTUAL _____
DOSE RATES:HIGHEST CONTACT _____ GENERAL AREA _____
CONTAMINATION LEVELS _____
SPECIAL CONDITIONS _____
(REFER TO MOST RECENT SURVEYS)

V. C. SUMMER NUCLEAR STATION
RADIATION WORK PERMIT

RWP/SEGMENT NO. 08-00010/002 OUTAGE NO JOB CODE NO. 15-00

AUTHORIZATION TO BEGIN WORK

HEALTH PHYSICS SUPERVISOR/DESIGNATE _____ DATE/TIME _____
PRINTED NAME SIGNATURE

THIS SEGMENT OF THE RWP IS COMPLETE AND ALL ASSOCIATED ATTACHMENTS AND SURVEYS ARE COMPLETE AND ATTACHED:

HEALTH PHYSICS SUPERVISOR/DESIGNATE _____ DATE/TIME _____
PRINTED NAME SIGNATURE

PAGE _____ OF _____

V. C. SUMMER NUCLEAR STATION
RADIATION WORK PERMIT

RWP/SEGMENT NO. 08-00011/002 OUTAGE NO JOB CODE NO. 15-00

WORK DESCRIPTION: RHR VENTING, VALVE LINE-UP, AND SURVEILLANCE

SYSTEM
COMPONENT ID NA DESCRIPTION NOT APPLICABLE
LOCATION CODE NA DESCRIPTION Various locations
NRC TASK CATEGORY 2 DESCRIPTION ROUTINE MAINTENANCE

WORK GROUP SUPERVISOR SHIFT SUPERVISOR PHONE 0226
ALL WORK GROUPS AUTHORIZED WITH HEALTH PHYSICS APPROVAL
ORIGINATOR RUSSELL C. OWENS DATE 17-AUG-2007
LAST UPDATED BY WILLIAM A. SMITH DATE 28-JAN-2008

	DESCRIPTION OF ACTIVITY	DOSE RATE mREM/HR	EST MAN-HRS	EST MAN-REM
1	ALL ACTIVITIES ASSOCIATED WITH RHR VENTING	1.83	100	0.183
2	HP SUPPORT	2.02	50	0.101
		TOTALS	150	0.284

ACTIVITY NO	PROTECTIVE REQUIREMENTS	ACTIVITY NO	PROTECTIVE REQUIREMENTS
1, 2, ,	CONTINUOUS COVERAGE	1, 2, ,	INTERMITTENT COVERAGE
1, 2, ,	FULL PC'S	1, 2, ,	ELECTRONIC DOSIMETER (ED)
1, 2, ,	LABCOAT,BOOTIES, AND GLOVE	, , ,	

SPECIAL INSTRUCTIONS: ADDITIONAL INSTRUCTIONS ATTACHED? Y __ N __
ED SETTING ARE 50 MR / 300 MR/HR

RESPIRATORY PROTECTION NOT REQUIRED BECAUSE THE PROBABILITY / POTIENTIAL OF UPTAKES OF AIRBORNE RADIOACTIVITY WILL BE LOW / LOW

JOB COVERAGE (IE. CONTINUOUS VS INTERMITTENT) PER THE DUTY HP SHIFT LEADER

DRESS REQUIREMENTS (IE. FULL PC'S VS LABCOAT, BOOTIES AND GLOVE) PER THE DUTY HP SHIFT LEADER

NO PC'S REQUIRED IN NON CONTAMINATED AREAS

RADIOLOGICAL CONDITIONS
EXPECTED _____ ACTUAL _____
DOSE RATES:HIGHEST CONTACT _____ GENERAL AREA _____
CONTAMINATION LEVELS _____
SPECIAL CONDITIONS _____
(REFER TO MOST RECENT SURVEYS)

V. C. SUMMER NUCLEAR STATION
RADIATION WORK PERMIT

RWP/SEGMENT NO. 08-00011/002 OUTAGE NO JOB CODE NO. 15-00

AUTHORIZATION TO BEGIN WORK

HEALTH PHYSICS SUPERVISOR/DESIGNATE _____ DATE/TIME _____
PRINTED NAME SIGNATURE

THIS SEGMENT OF THE RWP IS COMPLETE AND ALL ASSOCIATED ATTACHMENTS AND SURVEYS ARE COMPLETE AND ATTACHED:

HEALTH PHYSICS SUPERVISOR/DESIGNATE _____ DATE/TIME _____
PRINTED NAME SIGNATURE

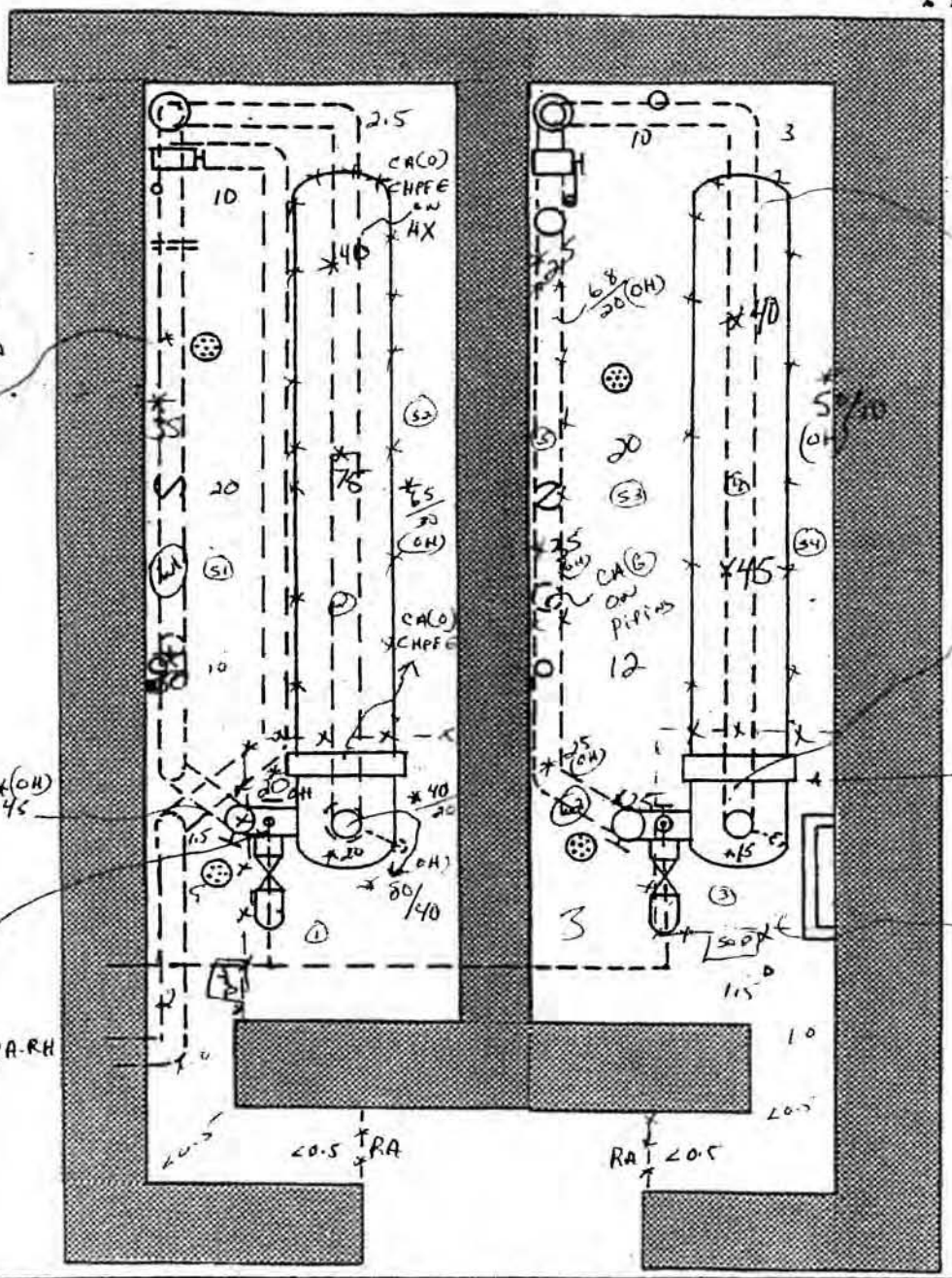
SURVEY # ~~0 820~~ 0802

S/RWP # 08-13

% POWER 100

AB 12-06
RHR HEAT EXCHANGER A

AB 12-05
RHR HEAT EXCHANGER B

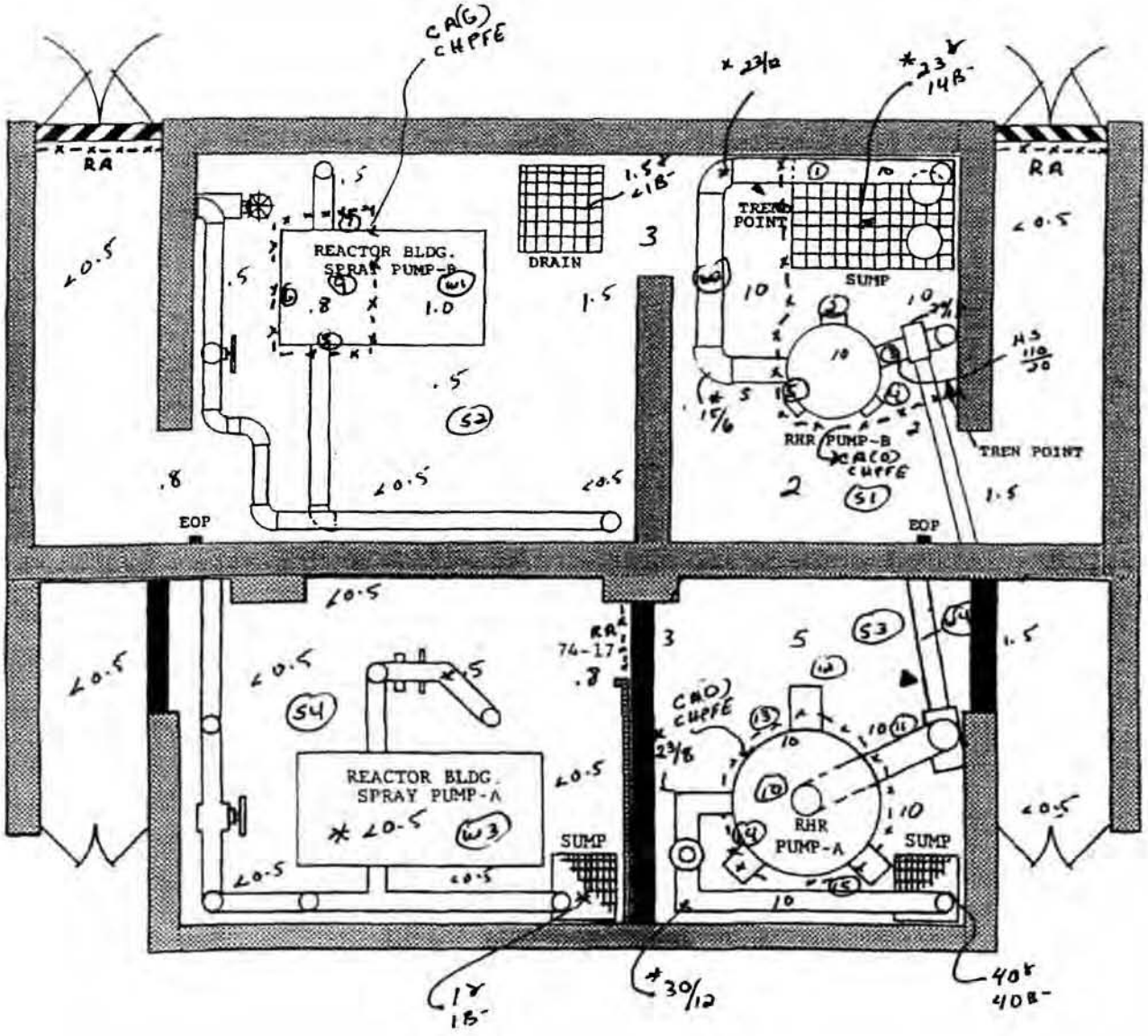


CONTAMINATION IN DPM/100 CM²:								COUNTER: Rm 14 SER.# 4500	INST. TYPE: Ro-20 SER.# 3161
1	1K	9			17			COUNTER: SER.#	INST. TYPE: Telepole SER.# 015
2	1K	10			18			COMMENTS: BKG = 100 cpm	SURVEYED BY: R. Saunders
3	2K	11	P		19	P		Sweep & wipes = BKG	TIME: 09:15 DATE: 8-20-08
4	<1K	12		A	20		A		REVIEWED BY: SR/SI
5	<1K	13			21				TIME: 1230 DATE: 8/20/08
6		14			22				
7	P A	15			23			HS = Hot spot	
8		16			24			OH = over head	R. Saunders

* DENOTES CONTACT READINGS, ALL OTHERS IN mR/hr UNLESS OTHERWISE NOTED.

Survey #:	Q-8039
S/RWP #:	08-01
% Rx Power:	100

AB 374-16/17
A & B RHR PUMPS



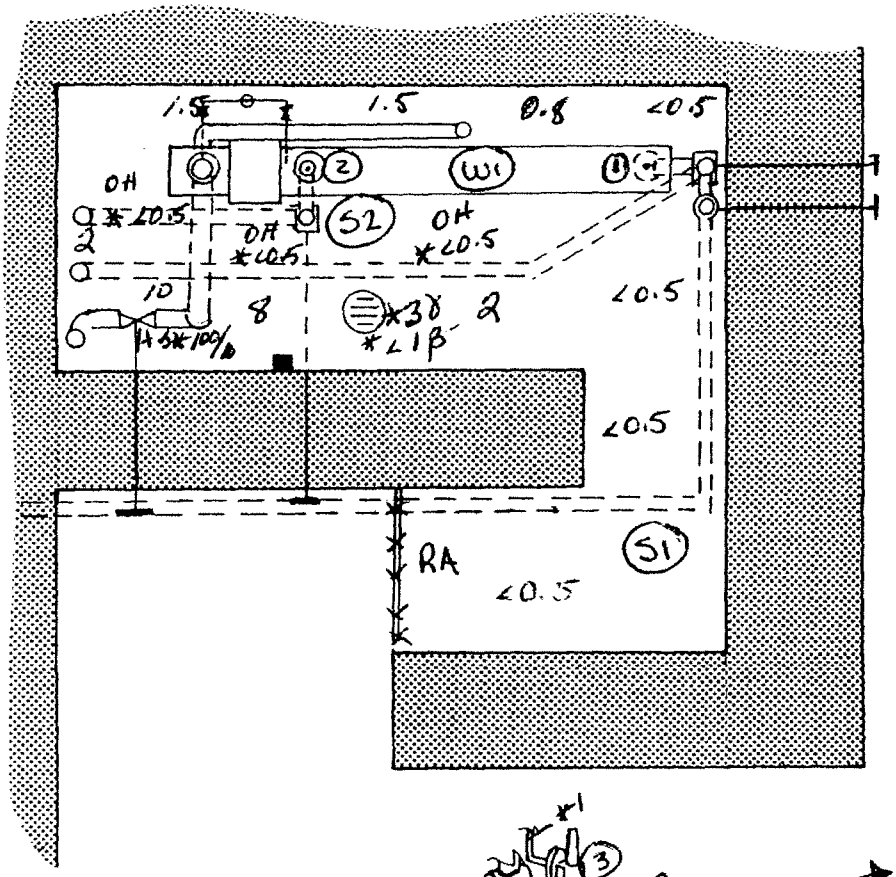
Contamination in DPM/100cm2						
1	<1K	9	<1K	17		
2	↑	10	1K	18		
3		11	<200	19	N	
4		12	↕	20		
5		13	<200	21	17	
6		14	<1K	22		
7	↓	15	<200	23		
8	<1K	16	NA	24		

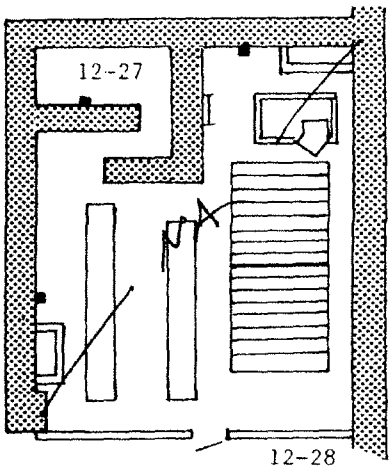
Counter: Rm14	Ser.# 3475 (1)	Inst. Type: RO-20	Ser.# 4747
Counter: MSD	Ser.# 963	Inst. Type: —	Ser.# —
Rm14	Ser.# 445 (4)	Surveyed By: D. Scott	
Bkg. = 80	CPM (1)	R. Saunders	R Saunders
Bkg = 100	cpm (2)	Time: 11:30	Date: 8-22-08
		Reviewed By:	
Sweep & wipes = BKG			
		Time: 1510	Date: 8-21-08
Dose Received =			

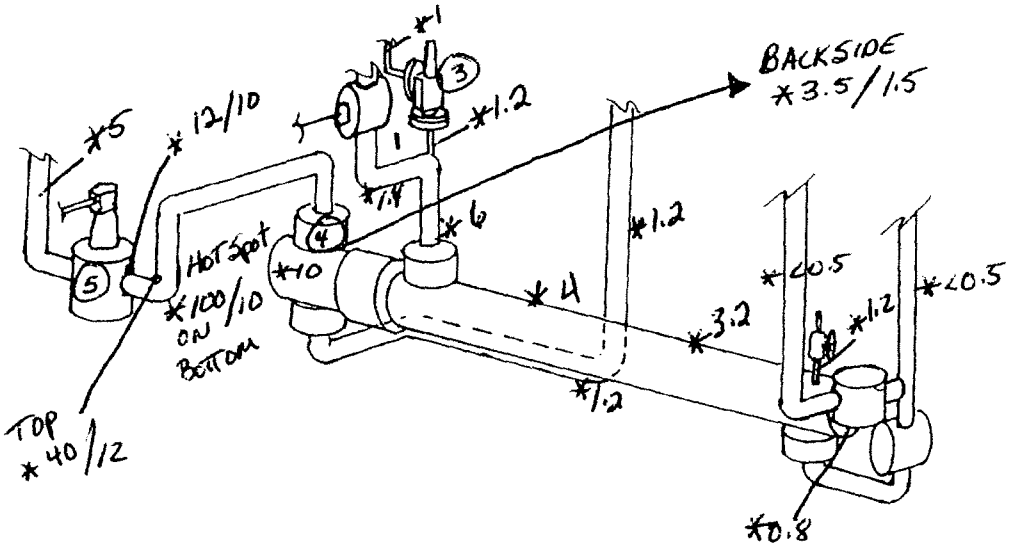
* Denotes Contact Readings — All Readings are in MR/HR unless otherwise noted.

Survey #:	6006
S/RWP #:	08-01
% Rx Power:	100

AB 12-27
LETDOWN REHEAT HEAT EXCHANGER







Contamination in DPM/100cm2					
1	<200	9		17	
2		10		18	
3		11		19	
4		12		20	
5	<200	13		21	
6		14		22	
7	N/A	15		23	
8		16		24	

Counter: KM 14 Ser.# 4500
Counter: Pic Ser.# 1
Bkg. = 100 CPM
HS = Hot Spot
OH = OVERHEAD
SLEEPS/LIMPES = BKG
Dose Received = 0

Inst. Type: RO2 Ser.# 3137
Inst. Type: N/A Ser.# N/A
Surveyed By: Lisa Hall | Lisa Hall
Time: 0945 Date: 8/8/08
Reviewed By: SHERMAN
Time: 1250 Date: 8-8-08
mjl 8-8-08

* Denotes Contact Readings — All Readings are in MR/HR unless otherwise noted.

Survey #:	M-6021,441
S/RWP #:	08-01
% Rx Power:	100

AB 412-01PA
WEST PENETRATION

NOTE: Telepole used for overhead piping survey.

OVERHEAD RHR PIPING *35-45 mR/hr / 15-20 mR/hr

OVERHEAD LETDOWN PIPING *100-250 mR/hr / 40-60 mR/hr

Smear Locations

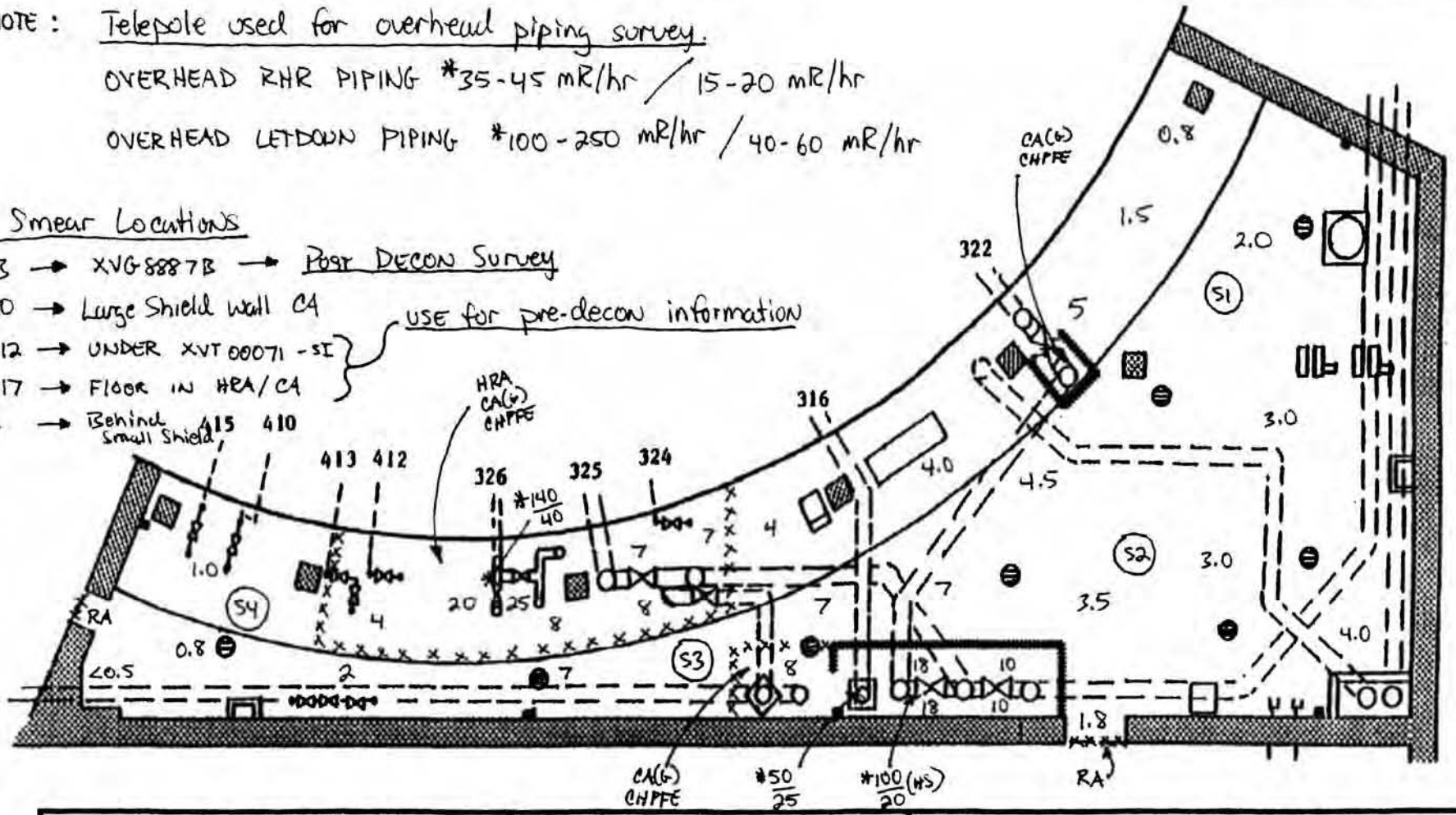
1-3 → XVG8887B → Post DECON Survey

4-10 → Large Shield Wall C4

11-12 → UNDER XVT00071-SI } use for pre-decon information

13-17 → FLOOR IN HRA/C4

18 → Behind Small Shield



Contamination in DPM/100cm2					
1	2K	9	<1K	17	<1K
2	9K	10	<1K	18	3K
3	3K	11	3K	19	N/A
4	2K	12	5K	20	
5	2K	13	<1K	21	
6	<1K	14	<1K	22	
7	<1K	15	<1K	23	
8	<1K	16	<1K	24	

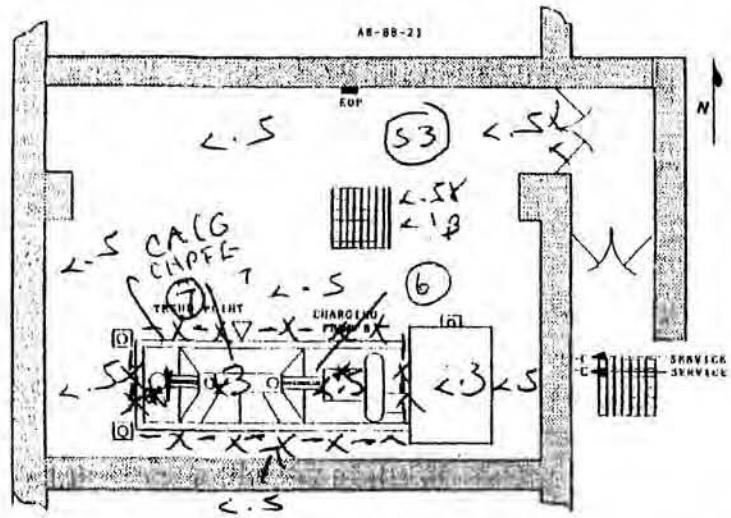
Counter: RM14	Ser.# 4500	Inst. Type: RO20	Ser.# 4747
Counter: –	Ser.# –	Inst. Type: telepole	Ser.# 6600-043
		Surveyed By: W PRICE	
Bkg. = 100 CPM			
SWEEPS = BKG		Time: 0915	Date: 8-19-08
Smear #2 Sent for ∝ Count		Reviewed By:	
Trucking # 2412			
(HS) = HOT SPOT (XVT00046-SI)		Time: 0950	Date: 08-19-08
Dose Received = 4 mR			

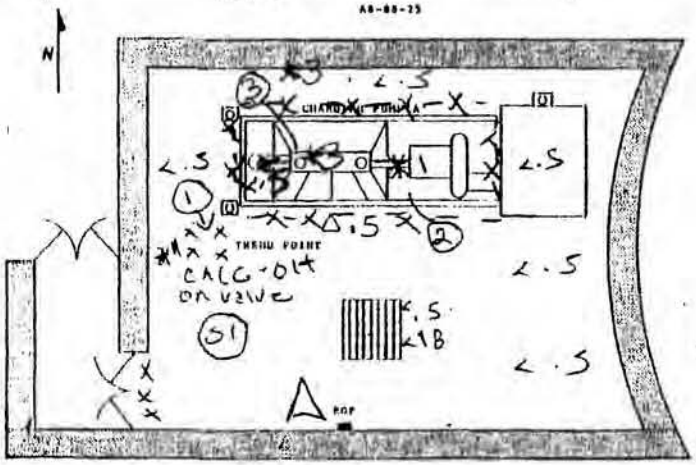
* Denotes Contact Readings – All Readings are in MR/HR unless otherwise noted.

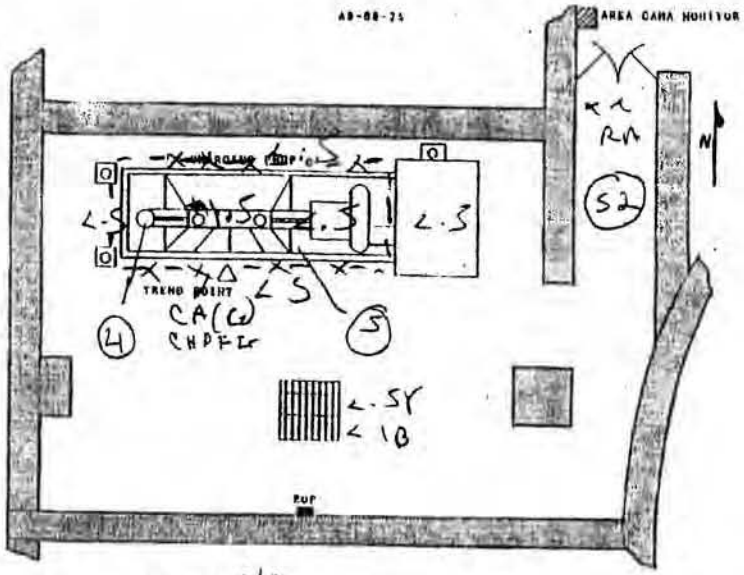
SURVEY # 465

SWP/RWP# 68-01

% POWER 100







4. <1K

5. <1K

CONTAMINATION IN DPM/100 CM²:														
1	<1K	8		15		22		29						
2	1K	9		16		23		30						
3	<1K	10		17		24		31						
4		11		18		25		32						
5		12		19		26		33						
6		13		20		27		34						
7		14		21		28		35						

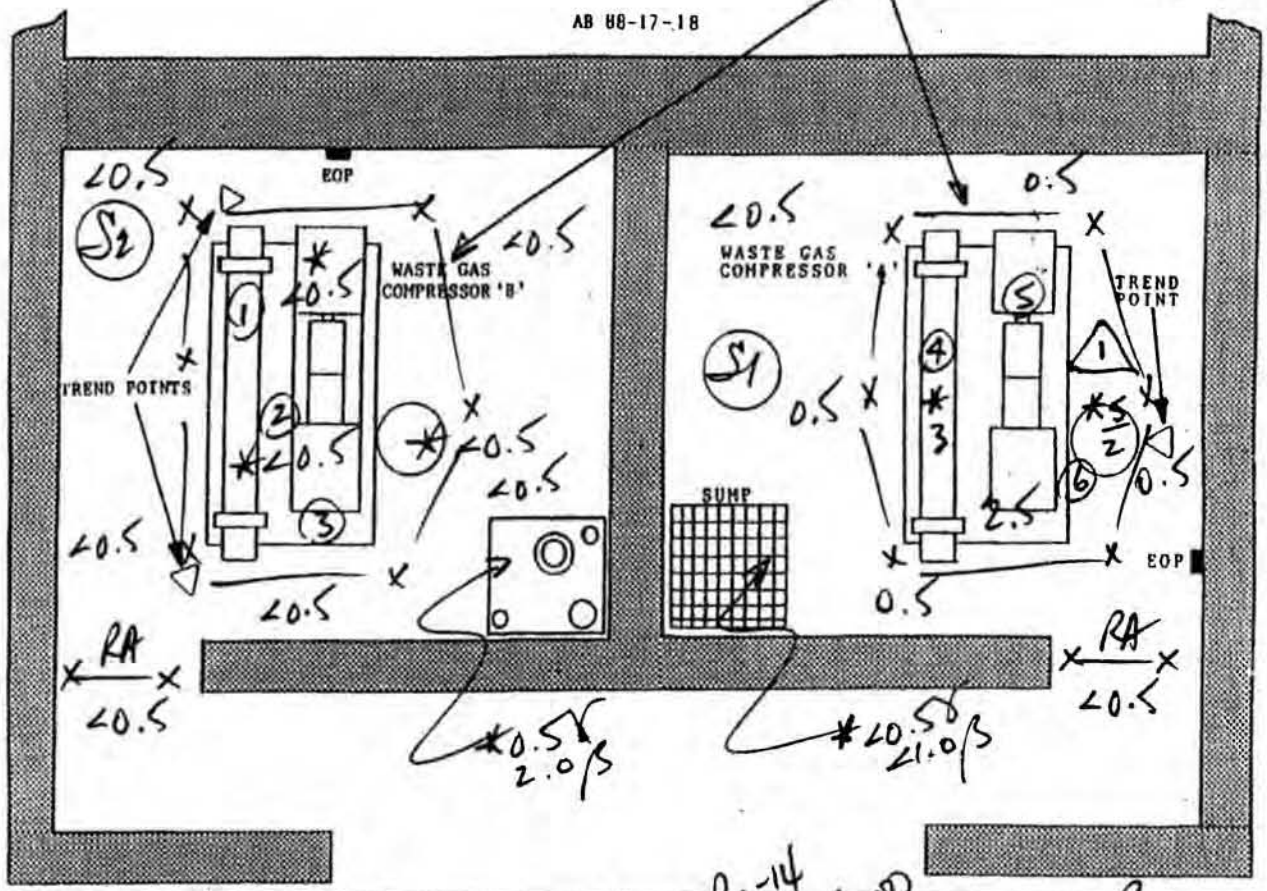
COUNTER: RM 45 SER.# 465	INST. TYPE: RO20 SER.# 3161
COUNTER: N/A SER.# N/A	INST. TYPE: N/A SER.# N/A
COMMENTS: BKG = 150	SURVEYED BY: J. Saunders/J. Saunders
SWEEPS = BKG	TIME: 1700 DATE: 8-20-98
	REVIEWED BY: [illegible]
	TIME: 1735 DATE: 8-20-98

* DENOTES CONTACT READINGS, ALL OTHERS IN mR/hr UNLESS OTHERWISE NOTED (Beta/Gamma)

CA(G) CHASE

SURVEY # W-4090
S/RWP# 08-01
% POWER 100

AB 88-17-18



1 = AIR SAMPLE

CONTAMINATION IN DPM/100 CM²														
1	AIR	8		15		22		29						
2		9		16		23		30						
3		10		17		24		31						
4		11		18	NA	25		32						
5		12		19		26		33						
6		13		20		27		34						
7		14		21		28		35						

COUNTER: RM-14 SER#: 4580	INST. TYPE: RO-20 SER#: 4747
COUNTER: SER#	INST. TYPE: SER#
COMMENTS:	SURVEYED BY: Rucci-Rucci
BKG = 100 CPM	TIME: 1405 DATE: 08-23-08
SWEEP = BKG	REVIEWED BY: SHERMAN
	TIME: 1945 DATE: 8-23-08

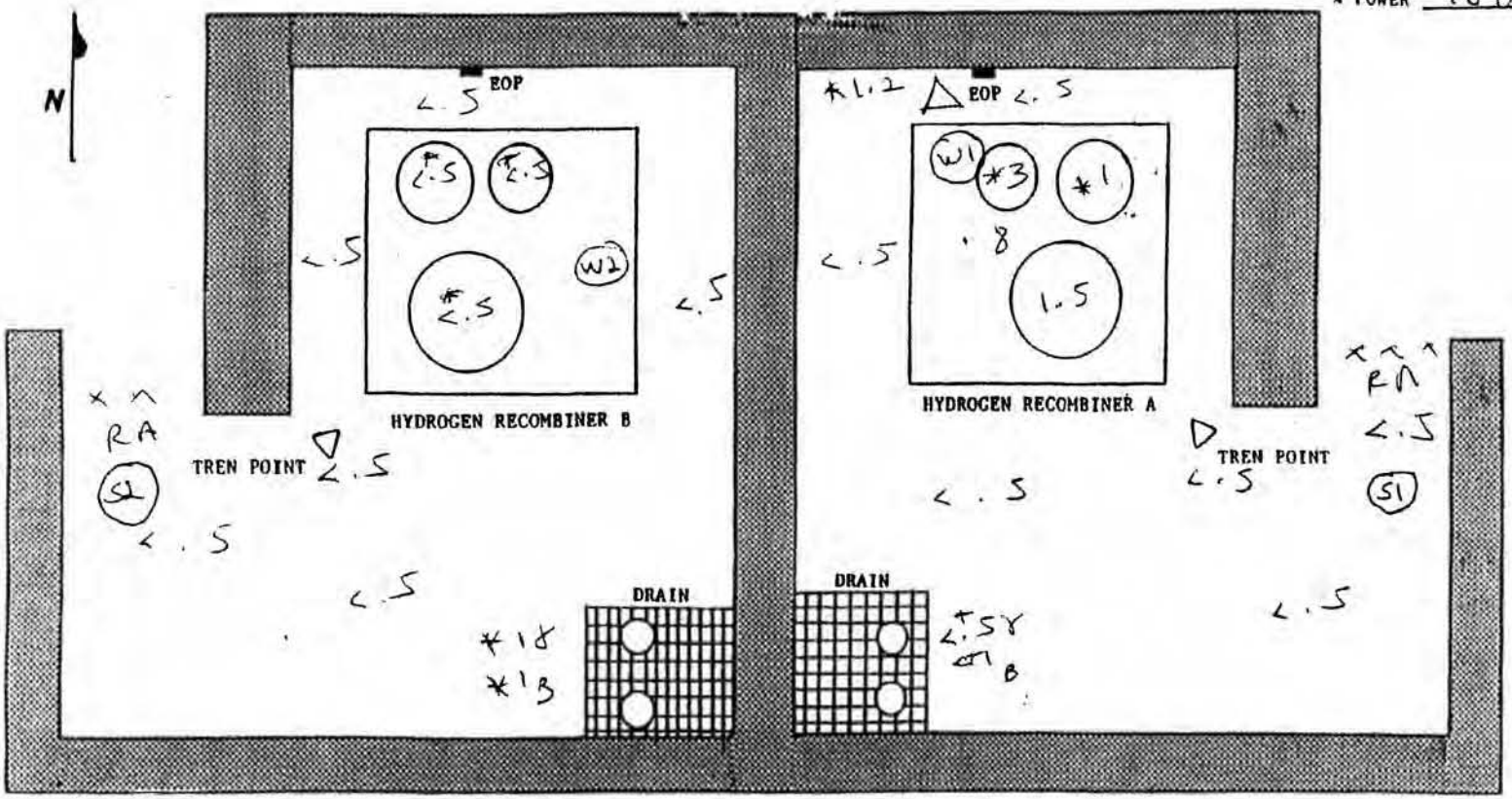
*DENOTES CONTACT READINGS, ALL OTHERS IN mR/hr UNLESS OTHERWISE NOTED (Beta/Gamma)

SURVEY # 468

SWP/RWP# OR D1

% POWER 100

AB-88-14-15



CONTAMINATION IN DPM/100 CM²														
1		8		15		22		29						
2		9		16		23		30						
3		10		17		24		31						
4		11		18		25		32						
5		12		19		26		33						
6		13		20		27		34						
7		14		21		28		35						

COUNTER: RM 145 SER# 445	INST. TYPE: RM 20 SER# 3161
COUNTER: SER#	INST. TYPE: SER#
COMMENTS: BKG ~ 150	SURVEYED BY: J. Saunders
Sweeps & Wipes	TIME: 1645 DATE: 8-20-08
= BKG	REVIEWED BY: SRI51
	TIME: 1730 DATE: 8-20-08
	g Saunders

*DENOTES CONTACT READINGS, ALL OTHERS IN mR/hr UNLESS OTHERWISE NOTED (Beta/Gamma)

V. C. SUMMER NUCLEAR STATION
RADIATION WORK PERMIT

RWP/SEGMENT NO. 08-00010/002 OUTAGE NO JOB CODE NO. 15-00

WORK DESCRIPTION: SCHEDULED SYSTEM WALKDOWNS BY ENG, QC, MECH, ELECT. I&C, AND HP

SYSTEM
COMPONENT ID NA DESCRIPTION NOT APPLICABLE
LOCATION CODE NA DESCRIPTION Various locations
NRC TASK CATEGORY 1 DESCRIPTION REACTOR OPERATIONS & SURVEILLANCE

WORK GROUP SUPERVISOR LARRY BENNET PHONE 4500
ALL WORK GROUPS AUTHORIZED WITH HEALTH PHYSICS APPROVAL
ORIGINATOR RUSSELL C. OWENS DATE 17-AUG-2007
LAST UPDATED BY WILLIAM A. SMITH DATE 28-JAN-2008

	DESCRIPTION OF ACTIVITY	DOSE RATE mREM/HR	EST MAN-HRS	EST MAN-REM
1	PERFORM WALKDOWNS	1.35	35	0.047
2	HEALTH PHYSICS SUPPORT	0.67	10	0.007
		TOTALS	45	0.054

ACTIVITY NO	PROTECTIVE REQUIREMENTS	ACTIVITY NO	PROTECTIVE REQUIREMENTS
1, 2, ,	CONTINUOUS COVERAGE	1, 2, ,	INTERMITTENT COVERAGE
1, 2, ,	FULL PC'S	1, 2, ,	ELECTRONIC DOSIMETER (ED)
1, 2, ,	LABCOAT,BOOTIES, AND GLOVE	, , ,	

SPECIAL INSTRUCTIONS: ADDITIONAL INSTRUCTIONS ATTACHED? Y __ N __
ED SETTINGS ARE 10 MR / 300 MR/HR

RESPIRATORY PROTECTION NOT REQUIRED BECAUSE THE PROBABILITY/ POTENTIAL OF AN UPTAKE OF AIRBORNE RADIOACTIVITY WILL BE LOW/LOW

JOB COVERAGE (IE. CONTINUOUS VS INTERMITTENT) PER THE DUTY HP SHIFT LEADER

DRESS REQUIREMENTS (IE. FULL PC'S VS LABCOAT, BOOTIES AND GLOVE) PER THE DUTY HP SHIFT LEADER

NO PC'S REQUIRED IN NON CONTAMINATED AREAS

RADIOLOGICAL CONDITIONS
EXPECTED _____ ACTUAL _____
DOSE RATES:HIGHEST CONTACT _____ GENERAL AREA _____
CONTAMINATION LEVELS _____
SPECIAL CONDITIONS _____
(REFER TO MOST RECENT SURVEYS)

V. C. SUMMER NUCLEAR STATION
RADIATION WORK PERMIT

RWP/SEGMENT NO. 08-00010/002 OUTAGE NO JOB CODE NO. 15-00

AUTHORIZATION TO BEGIN WORK

HEALTH PHYSICS SUPERVISOR/DESIGNATE _____ DATE/TIME _____
PRINTED NAME SIGNATURE

THIS SEGMENT OF THE RWP IS COMPLETE AND ALL ASSOCIATED ATTACHMENTS AND SURVEYS ARE COMPLETE AND ATTACHED:

HEALTH PHYSICS SUPERVISOR/DESIGNATE _____ DATE/TIME _____
PRINTED NAME SIGNATURE

PAGE _____ OF _____

V. C. SUMMER NUCLEAR STATION
RADIATION WORK PERMIT

RWP/SEGMENT NO. 08-00011/002 OUTAGE NO JOB CODE NO. 15-00

WORK DESCRIPTION: RHR VENTING, VALVE LINE-UP, AND SURVEILLANCE

SYSTEM
COMPONENT ID NA DESCRIPTION NOT APPLICABLE
LOCATION CODE NA DESCRIPTION Various locations
NRC TASK CATEGORY 2 DESCRIPTION ROUTINE MAINTENANCE

WORK GROUP SUPERVISOR SHIFT SUPERVISOR PHONE 0226
ALL WORK GROUPS AUTHORIZED WITH HEALTH PHYSICS APPROVAL
ORIGINATOR RUSSELL C. OWENS DATE 17-AUG-2007
LAST UPDATED BY WILLIAM A. SMITH DATE 28-JAN-2008

	DESCRIPTION OF ACTIVITY	DOSE RATE mREM/HR	EST MAN-HRS	EST MAN-REM
1	ALL ACTIVITIES ASSOCIATED WITH RHR VENTING	1.83	100	0.183
2	HP SUPPORT	2.02	50	0.101
		TOTALS	150	0.284

ACTIVITY NO	PROTECTIVE REQUIREMENTS	ACTIVITY NO	PROTECTIVE REQUIREMENTS
1, 2, ,	CONTINUOUS COVERAGE	1, 2, ,	INTERMITTENT COVERAGE
1, 2, ,	FULL PC'S	1, 2, ,	ELECTRONIC DOSIMETER (ED)
1, 2, ,	LABCOAT,BOOTIES, AND GLOVE	, , ,	

SPECIAL INSTRUCTIONS: ADDITIONAL INSTRUCTIONS ATTACHED? Y __ N __
ED SETTING ARE 50 MR / 300 MR/HR

RESPIRATORY PROTECTION NOT REQUIRED BECAUSE THE PROBABILITY / POTIENTIAL OF UPTAKES OF AIRBORNE RADIOACTIVITY WILL BE LOW / LOW

JOB COVERAGE (IE. CONTINUOUS VS INTERMITTENT) PER THE DUTY HP SHIFT LEADER

DRESS REQUIREMENTS (IE. FULL PC'S VS LABCOAT, BOOTIES AND GLOVE) PER THE DUTY HP SHIFT LEADER

NO PC'S REQUIRED IN NON CONTAMINATED AREAS

RADIOLOGICAL CONDITIONS
EXPECTED _____ ACTUAL _____
DOSE RATES:HIGHEST CONTACT _____ GENERAL AREA _____
CONTAMINATION LEVELS _____
SPECIAL CONDITIONS _____
(REFER TO MOST RECENT SURVEYS)

V. C. SUMMER NUCLEAR STATION
RADIATION WORK PERMIT

RWP/SEGMENT NO. 08-00011/002 OUTAGE NO JOB CODE NO. 15-00

AUTHORIZATION TO BEGIN WORK

HEALTH PHYSICS SUPERVISOR/DESIGNATE _____ DATE/TIME _____
PRINTED NAME SIGNATURE

THIS SEGMENT OF THE RWP IS COMPLETE AND ALL ASSOCIATED ATTACHMENTS AND SURVEYS ARE COMPLETE AND ATTACHED:

HEALTH PHYSICS SUPERVISOR/DESIGNATE _____ DATE/TIME _____
PRINTED NAME SIGNATURE

PAGE _____ OF _____

V. C. SUMMER NUCLEAR STATION
RADIATION WORK PERMIT

RWP/SEGMENT NO. 08-00013/003 OUTAGE NO JOB CODE NO. 15-00

WORK DESCRIPTION: ROUTINE HEALTH PHYSICS AND MAINTENANCE ACTIVITIES TO INCLUDE VALVE LINEUPS IN HIGH RADIATION AREAS

SYSTEM
COMPONENT ID NA DESCRIPTION NOT APPLICABLE
LOCATION CODE NA DESCRIPTION Various locations
NRC TASK CATEGORY 2 DESCRIPTION ROUTINE MAINTENANCE

WORK GROUP SUPERVISOR JOHN HUNSICKER PHONE 4515
ALL WORK GROUPS AUTHORIZED WITH HEALTH PHYSICS APPROVAL
ORIGINATOR RUSSELL C. OWENS DATE 17-AUG-2007
LAST UPDATED BY WILLIAM A. SMITH DATE 18-MAR-2008

	DESCRIPTION OF ACTIVITY	DOSE RATE mREM/HR	EST MAN-HRS	EST MAN-REM
1	PERFORM SURVEILLANCE/MINOR MAINTENANCE IN HRA'S (TO INCLUDE VALVE LINEUPS)	0.98	350	0.342
2	HEALTH PHYSICS SUPPORT	0.59	46	0.027
		TOTALS	396	0.369

ACTIVITY NO	PROTECTIVE REQUIREMENTS	ACTIVITY NO	PROTECTIVE REQUIREMENTS
1, 2, ,	INTERMITTENT COVERAGE	1, 2, ,	FULL PC'S
1, 2, ,	ELECTRONIC DOSIMETER (ED)	1, 2, ,	LABCOAT, BOOTIES, AND GLOVE

SPECIAL INSTRUCTIONS: ADDITIONAL INSTRUCTIONS ATTACHED? Y __ N __

ED SETTINGS ARE 25 MR / 300 MR/HR

RESPIRATORY PROTECTION NOT REQUIRED BECAUSE THE PROBABILITY / POTENTIAL OF UPTAKES OF AIRBORNE RADIOACTIVITY WILL BE LOW / LOW

DRESS REQUIREMENTS (IE. FULL PC'S VS LABCOAT, BOOTIES AND GLOVE) PER THE DUTY HP SHIFT LEADER

NO PC'S REQUIRED IN NON CONTAMINATED AREAS

RADIOLOGICAL CONDITIONS
EXPECTED _____ ACTUAL _____
DOSE RATES: HIGHEST CONTACT _____ GENERAL AREA _____
CONTAMINATION LEVELS _____
SPECIAL CONDITIONS _____
(REFER TO MOST RECENT SURVEYS)

V. C. SUMMER NUCLEAR STATION
RADIATION WORK PERMIT

RWP/SEGMENT NO. 08-00013/003 OUTAGE NO JOB CODE NO. 15-00

AUTHORIZATION TO BEGIN WORK

HEALTH PHYSICS SUPERVISOR/DESIGNATE _____ DATE/TIME _____
PRINTED NAME SIGNATURE

THIS SEGMENT OF THE RWP IS COMPLETE AND ALL ASSOCIATED ATTACHMENTS AND SURVEYS ARE COMPLETE AND ATTACHED:

HEALTH PHYSICS SUPERVISOR/DESIGNATE _____ DATE/TIME _____
PRINTED NAME SIGNATURE

V. C. SUMMER NUCLEAR STATION
RADIATION WORK PERMIT

RWP/SEGMENT NO. 08-00015/003 OUTAGE NO JOB CODE NO. 15-00

WORK DESCRIPTION: ROUTINE HEALTH PHYSICS & MAINTENANCE ACTIVITIES TO INCLUDE VALVE LINEUPS IN LOCKED HIGH RADIATION AREAS

SYSTEM
COMPONENT ID NA DESCRIPTION NOT APPLICABLE
LOCATION CODE NA DESCRIPTION Various locations
NRC TASK CATEGORY 2 DESCRIPTION ROUTINE MAINTENANCE

WORK GROUP SUPERVISOR TODD ELLISON PHONE 4976
ALL WORK GROUPS AUTHORIZED WITH HEALTH PHYSICS APPROVAL
ORIGINATOR RUSSELL C. OWENS DATE 17-AUG-2007
LAST UPDATED BY WILLIAM A. SMITH DATE 18-SEP-2008

	DESCRIPTION OF ACTIVITY	DOSE RATE mREM/HR	EST MAN-HRS	EST MAN-REM
1	PERFORM SURVEILLANCE/MINOR MAINTENANCE IN LHRA'S(TO INCLUDE VALVE LINEUPS)	2.50	25	0.063
2	HEALTH PHYSICS SUPPORT	2.00	10	0.020
		TOTALS	35	0.083

ACTIVITY NO	PROTECTIVE REQUIREMENTS	ACTIVITY NO	PROTECTIVE REQUIREMENTS
1, 2, ,	CONTINUOUS COVERAGE	1, 2, ,	FULL PC'S
1, 2, ,	ELECTRONIC DOSIMETER (ED)	1, 2, ,	LABCOAT,BOOTIES, AND GLOVE

SPECIAL INSTRUCTIONS: ADDITIONAL INSTRUCTIONS ATTACHED? Y __ N __

ED SETTINGS ARE 25 MR / 1000 MR/HR

RESPIRATORY PROTECTION NOT REQUIRED BECAUSE THE PROBABILITY / POTENTIAL OF UPTAKES OF AIRBORNE RADIOACTIVITY WILL BE LOW / LOW

DRESS REQUIREMNENTS (IE. FULL PC'S VS LABCOAT, BOOTIES AND GLOVE) PER THE DUTY HP SHIFT LEADER

NO PC'S REQUIRED IN NON CONTAMINATED AREAS

EVALUATE THE NEED FOR CHANGING THE ED SETTINGS BASED UPON THE GIVEN TASK/JOB

RADIOLOGICAL CONDITIONS
EXPECTED _____ ACTUAL _____
DOSE RATES:HIGHEST CONTACT _____ GENERAL AREA _____
CONTAMINATION LEVELS _____
SPECIAL CONDITIONS _____
(REFER TO MOST RECENT SURVEYS)

V. C. SUMMER NUCLEAR STATION
RADIATION WORK PERMIT

RWP/SEGMENT NO. 08-00015/003 OUTAGE NO JOB CODE NO. 15-00

AUTHORIZATION TO BEGIN WORK

HEALTH PHYSICS SUPERVISOR/DESIGNATE _____ DATE/TIME _____
PRINTED NAME SIGNATURE

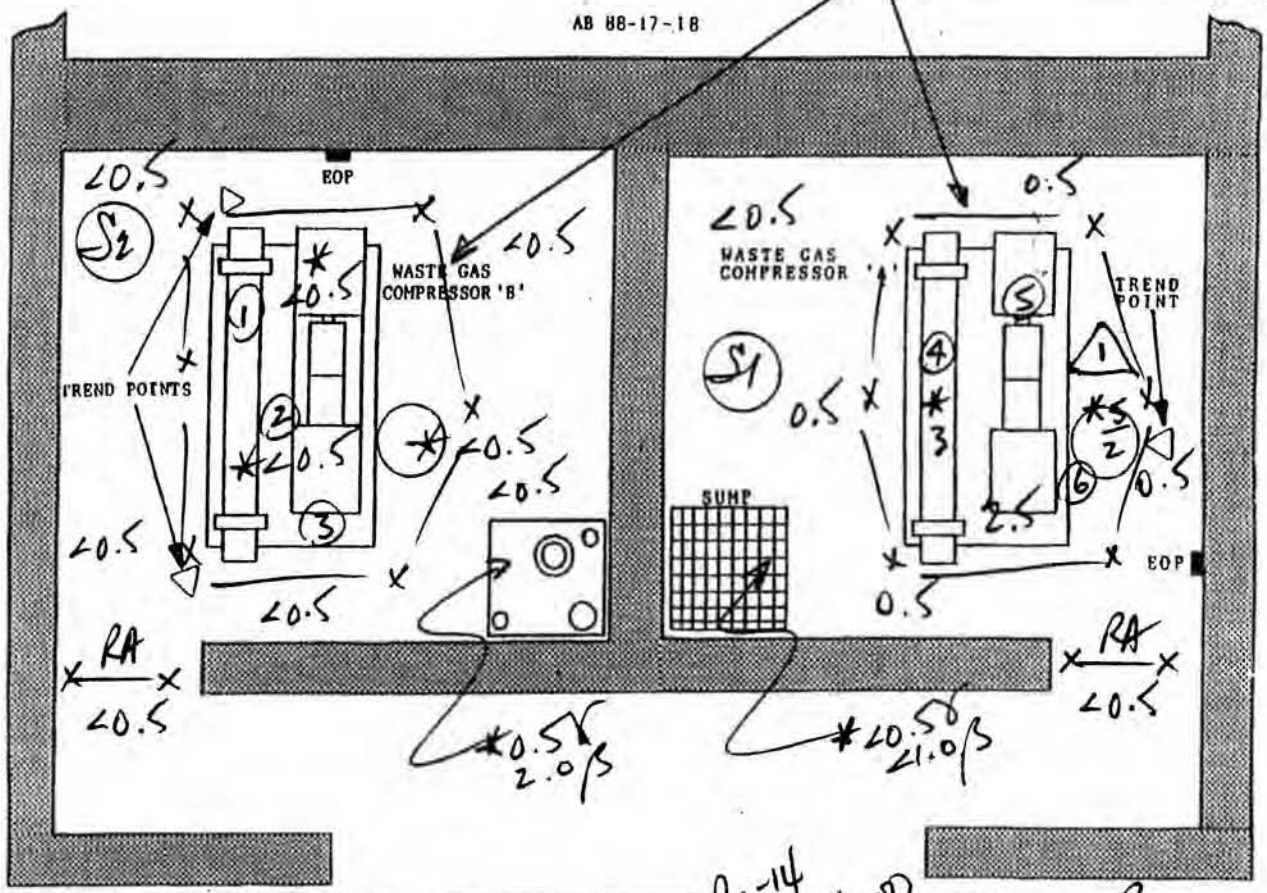
THIS SEGMENT OF THE RWP IS COMPLETE AND ALL ASSOCIATED ATTACHMENTS AND SURVEYS ARE COMPLETE AND ATTACHED:

HEALTH PHYSICS SUPERVISOR/DESIGNATE _____ DATE/TIME _____
PRINTED NAME SIGNATURE

PAGE _____ OF _____

CA(G) CHOFF

SURVEY # W-4090
S/RWP# 09-01
% POWER 100



1 = AIR SAMPLE

CONTAMINATION IN DPM/100 CM²										
1	<1K	8		15		22		29		
2		9		16		23		30		
3		10		17		24		31		
4		11		18	NA	25		32		
5		12		19		26		33		
6	↓	13		20		27		34		
7		14		21		28		35		

COUNTER RM-14 SER# 4500	INST. TYPE: RO-20 SER# 4747
COUNTER: SER#	INST. TYPE: SER#
COMMENTS:	SURVEYED BY: Rucci-Rucci
BKG = 100 CPM	TIME: 1405 DATE: 08-23-08
SWEEP = BKG	REVIEWED BY: SHELLIN
	TIME: 1945 DATE: 8-23-08

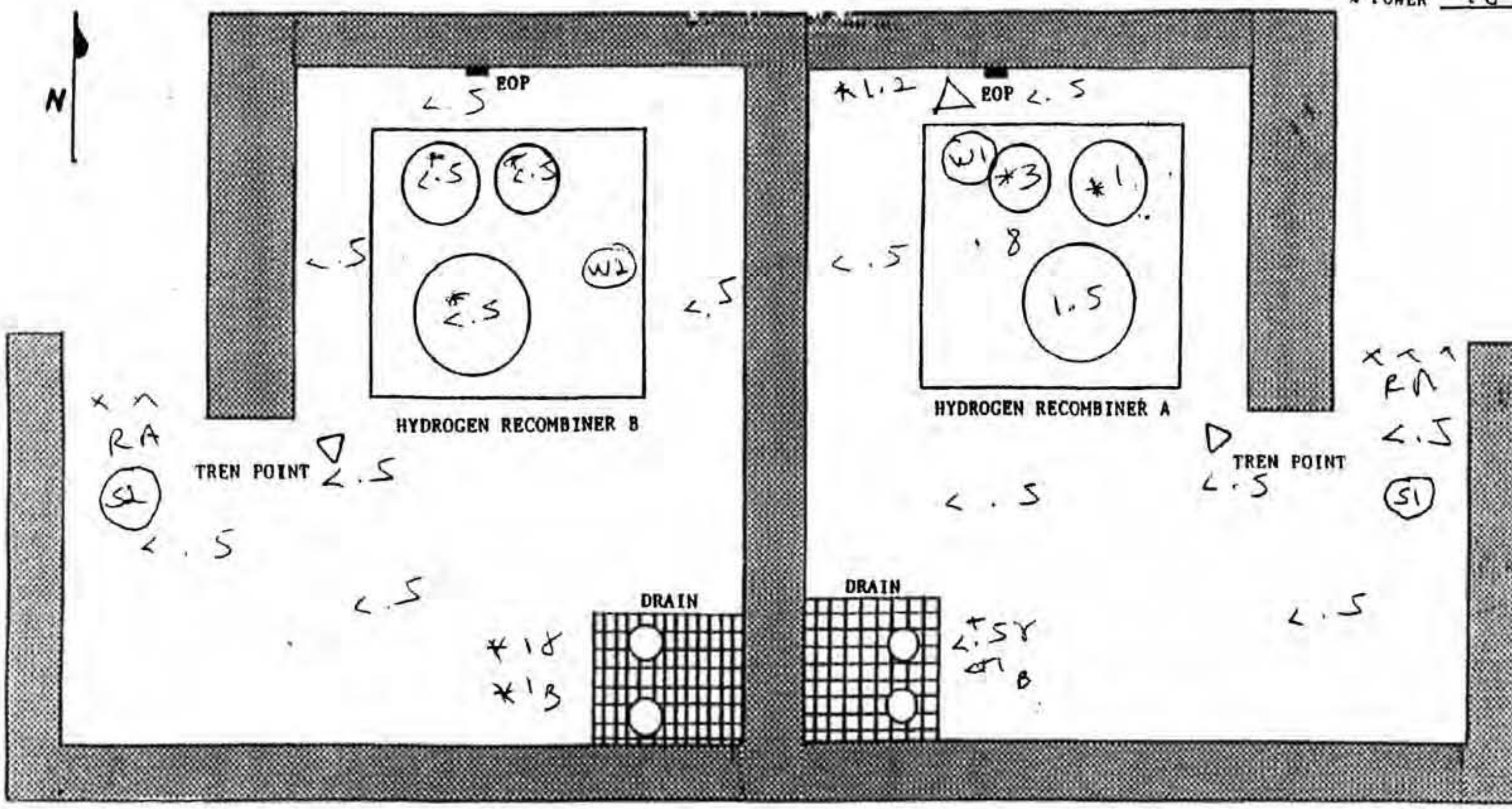
*DENOTES CONTACT READINGS, ALL OTHERS IN mR/hr UNLESS OTHERWISE NOTED (Beta/Gamma)

SURVEY # 468

SWP/RWP# 08-01

% POWER 100

AB-88-14-15



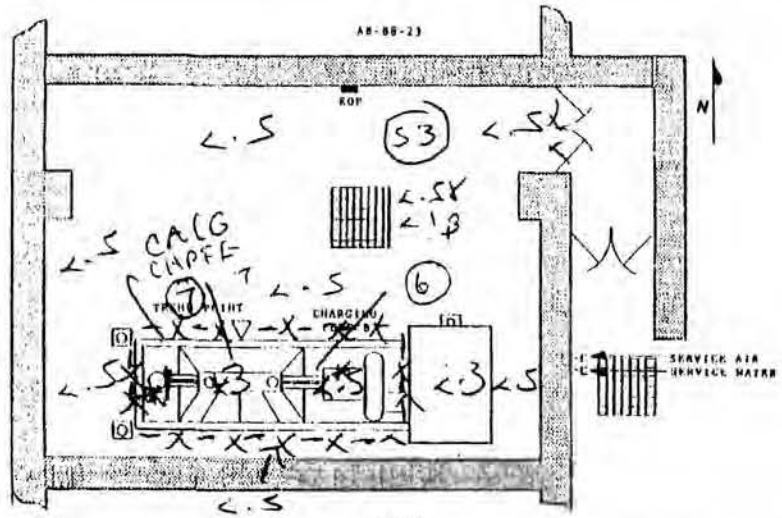
CONTAMINATION IN DPM/100 CM^2										COUNTER: RM14S SER# 445	INST. TYPE: RA20 SER# 3161
1		8		15		22		29		COUNTER: SER#	INST. TYPE: / SER# /
2		9		16		23		30		COMMENTS: BKG - 150	SURVEYED BY: J. Saunders
3		10		17		24		31		Sweeps & Wipes	TIME: 1645 DATE: 8-20-08
4		11		18		25		32		= BKG	REVIEWED BY: [illegible]
5		12		19		26		33			TIME: 1230 DATE: 8-23-08
6		13		20		27		34			J Saunders
7		14		21		28		35			

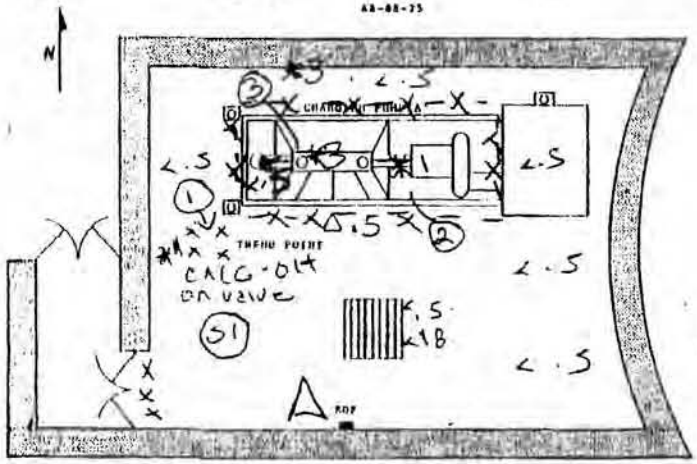
*DENOTES CONTACT READINGS, ALL OTHERS IN mR/hr UNLESS OTHERWISE NOTED (Beta/Gamma)

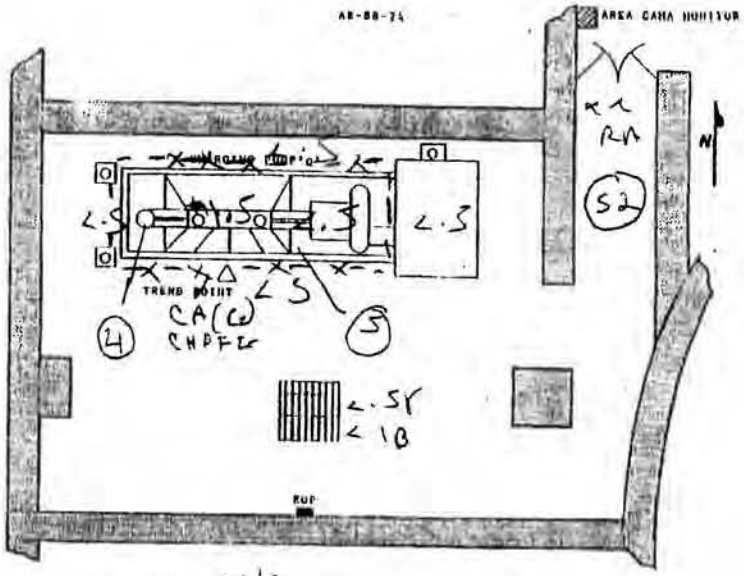
SURVEY # 465

SWP/RWP# 08-01

% POWER 100







4. <1K

5. <1K

CONTAMINATION IN DPM/100 CM²:														
1	<1K	8		15		22		29						
2	1K	9		16		23		30						
3	<1K	10	N	17		24		31						
4		11		18		25		32						
5	N	12		19		26		33	A					
6	A	13		20		27		34						
7		14		21		28		35						

COUNTER: RM 45 SER.# 465	INST. TYPE: RO20 SER.# 3161
COUNTR: N/A SER.# N/A	INST. TYPE: N/A SER.# N/A
COMMENTS: BKG = 1.50	SURVEYED BY: J. SZYNDERS/J. Saunders
SWEEPS = BKG	TIME: 1700 DATE: 8-28-88
	REVIEWED BY: S. Russi
	TIME: 1735 DATE: 8-28-88

* DENOTES CONTACT READINGS, ALL OTHERS IN mR/hr UNLESS OTHERWISE NOTED (Beta/Gamma)

Survey #:	M-6021,441
S/RWP #:	08-01
% Rx Power:	100

AB 412-01PA
WEST PENETRATION

NOTE : Telepole used for overhead piping survey.

OVERHEAD RHR PIPING *35-45 mR/hr / 15-20 mR/hr

OVERHEAD LETDOWN PIPING *100-250 mR/hr / 40-60 mR/hr

Smear Locations

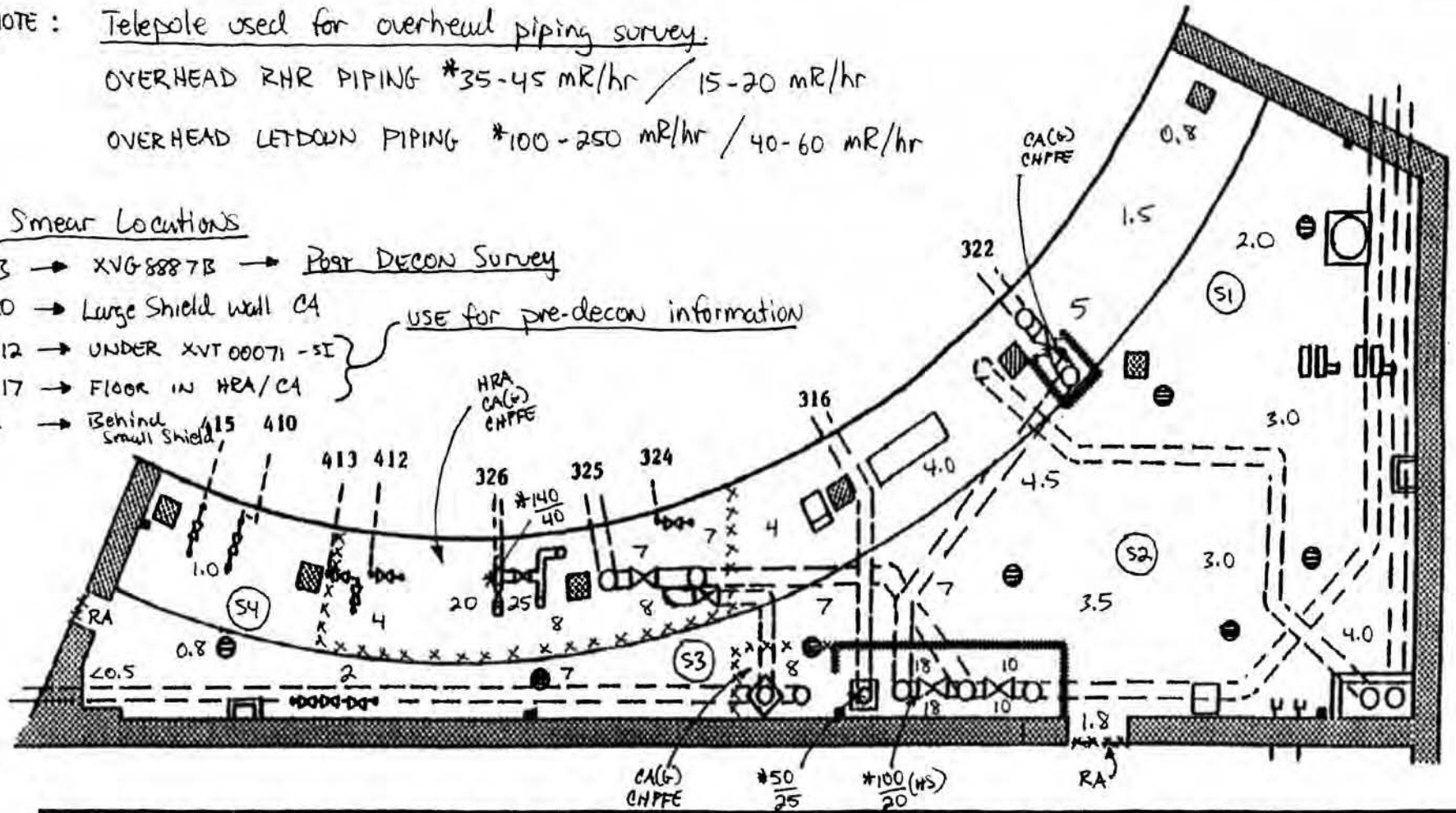
1-3 → XVG8887B → Post DECON Survey

4-10 → Large Shield wall C4

11-12 → UNDER XVT00071-SI } USE for pre-decon information

13-17 → FLOOR IN HRA/C4

18- → Behind Small Shield



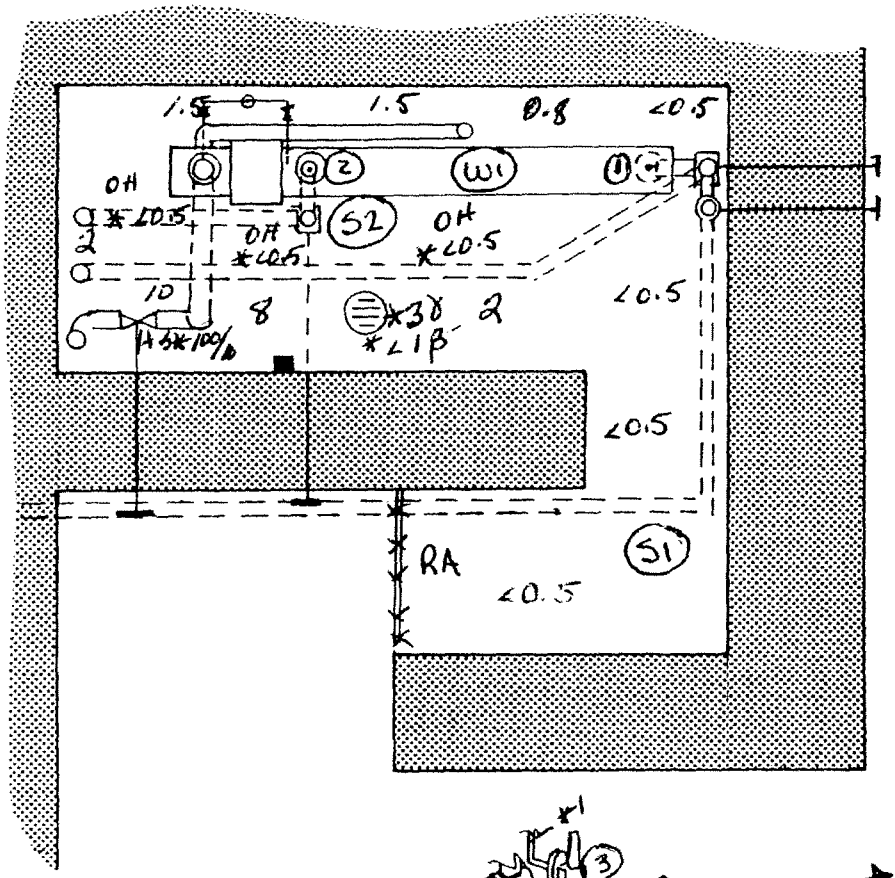
Contamination in DPM/100cm2					
1	2K	9	<1K	17	<1K
2	9K	10	<1K	18	3K
3	3K	11	3K	19	N/A
4	2K	12	5K	20	
5	2K	13	<1K	21	
6	<1K	14	<1K	22	
7	<1K	15	<1K	23	
8	<1K	16	<1K	24	

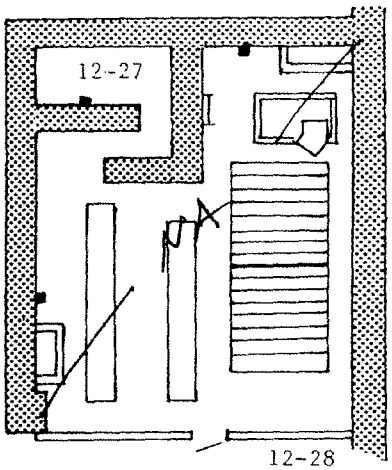
Counter: RM14	Ser.# 4500	Inst. Type: RO20	Ser.# 4747
Counter: –	Ser.# –	Inst. Type: Telepole	Ser.# 6600-043
		Surveyed By: W PRICE	
Bkg. = 100	CPM		
SWEEPS = BKG		Time: 0915	Date: 8-19-08
Smear #2 Sent for ∝ Count		Reviewed By: RAUCH	RAUCH
Trucking # 2412			
(HS) = HOT SPOT (XVT00046-SI)		Time: 0950	Date: 08-19-08
Dose Received = 4 mR			

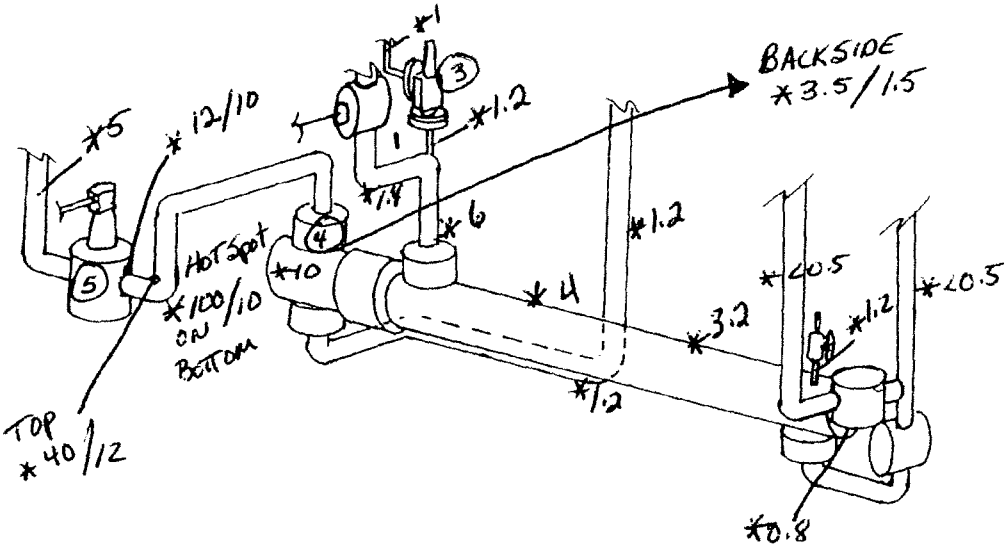
* Denotes Contact Readings – All Readings are in MR/HR unless otherwise noted.

Survey #:	6006
S/RWP #:	08-01
% Rx Power:	100

AB 12-27
LETDOWN REHEAT HEAT EXCHANGER







Contamination in DPM/100cm2					
1	<200	9		17	
2	↓	10		18	
3		11		19	
4	↓	12		20	
5	<200	13	N/A	21	
6		14		22	
7	N/A	15		23	
8		16		24	

Counter: RM 14 Ser.# 4500
Counter: PIC Ser.# 1
Bkg. = 100 CPM
H.S = Hot Spot
OH = OVERHEAD
SWEEPS/WIPES = BKG
Dose Received = 0

Inst. Type: RO2 Ser.# 3137
Inst. Type: N/A Ser.# N/A
Surveyed By: Lisa Hall | Lisa Hall
Time: 0945 Date: 8/8/08
Reviewed By: SHERMAN
Time: 1250 Date: 8-8-08
mjl 8-8-08

* Denotes Contact Readings — All Readings are in MR/HR unless otherwise noted.

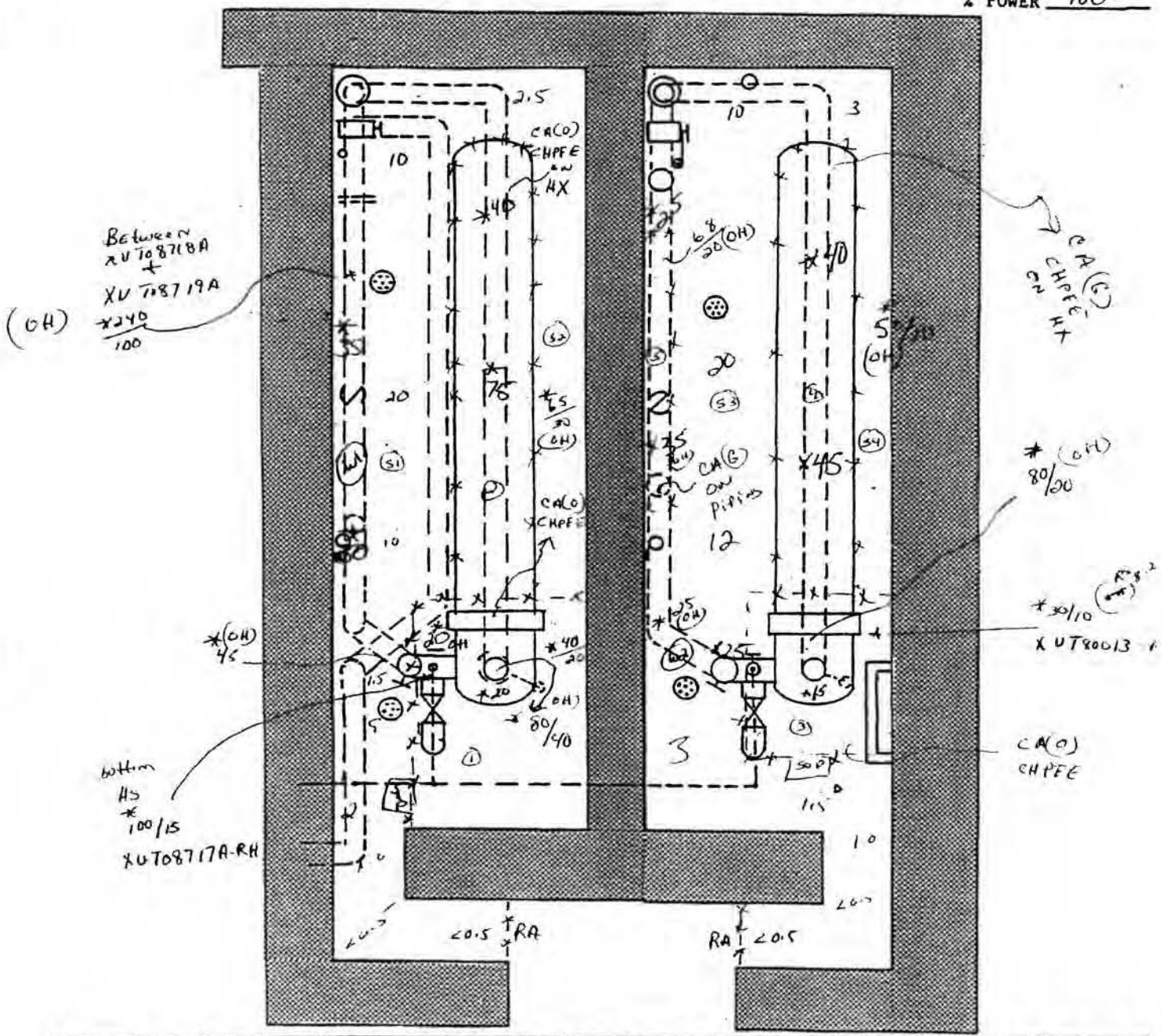
SURVEY # ~~0 800~~ 0802

S/RWP # 08-13

% POWER 100

AB 12-06
RHR HEAT EXCHANGER A

AB 12-05
RHR HEAT EXCHANGER B

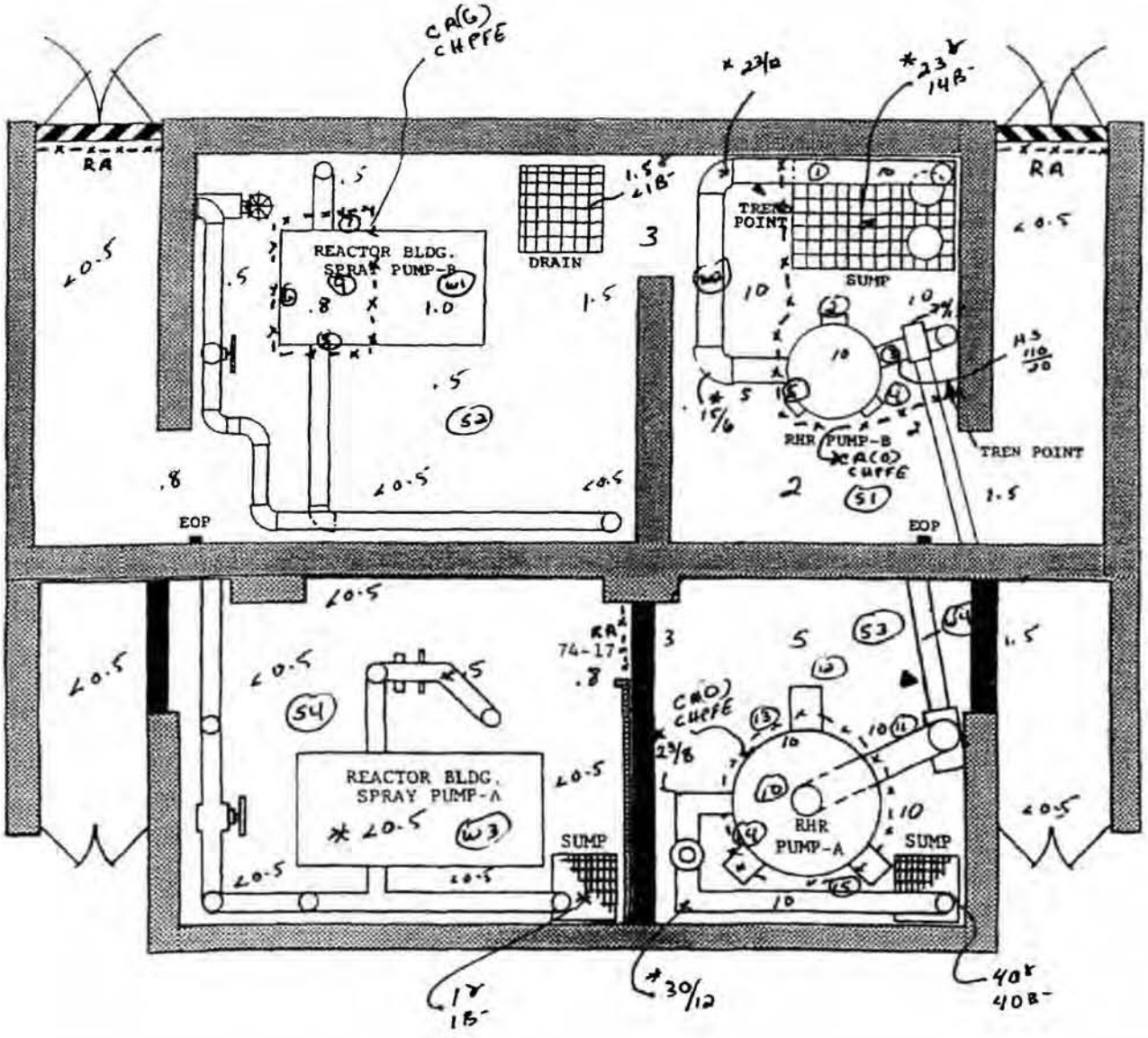


CONTAMINATION IN DPM/100 CM²:								COUNTER: Rm 14 SER.# 4500	INST. TYPE: Ro-20 SER.# 3161
1	1K	9			17			COUNTER: SER.#	INST. TYPE: Telepole SER.# 015
2	1K	10			18			COMMENTS: BKG = 100 cpm	SURVEYED BY: R. Saunders
3	2K	11	P		19	P		Sweep & wipes = BKG	TIME: 09:15 DATE: 8-20-08
4	<1K	12		A	20		A		REVIEWED BY: SR Wisi
5	<1K	13			21				TIME: 1230 DATE: 8-20-08
6		14			22				
7	P A	15			23			HS = Hot spot	
8		16			24			OH = over head	R Saunders

* DENOTES CONTACT READINGS, ALL OTHERS IN mR/hr UNLESS OTHERWISE NOTED.

Survey #:	Q-8039
S/RWP #:	08-01
% Rx Power:	100

AB 374-16/17
A & B RHR PUMPS



Contamination in DPM/100cm2					
1	<1K	9	<1K	17	
2	↑	10	1K	18	
3		11	<200	19	N
4		12	↕	20	
5		13	<200	21	14
6		14	<1K	22	
7	↓	15	<200	23	
8	<1K	16	NA	24	

Counter: Rm14 Ser.# 3475 (1)	Inst. Type: RO-20 Ser.# 4747
Counter: MSO Ser.# 963	Inst. Type: — Ser.# —
Rm14 Ser# 445 (2)	Surveyed By: D. Scott R. Saunders R Saunders
Bkg. = 80 CPM (1)	Time: 11:30 Date: 8-22-08
Bkg = 100 cpm (2)	Reviewed By:
Sweep & wipes = BKG	
	Time: 1510 Date: 8-21-08
Dose Received =	

* Denotes Contact Readings ~ All Readings are in MR/HR unless otherwise noted.

V.C. SUMMER NUCLEAR STATION
JOB PERFORMANCE MEASURE

JPM NO: **09 SRO A4**

Classify an Emegency Event and complete the Emergency Notification Form Within the Required Time

APPROVAL: *APPROVAL DATE:*

REV NO: 0

CANDIDATE:

EXAMINER: _____

SRO ONLY

THIS JPM IS NOT APPROVED

TIME CRITICAL JPM

TASK:

344-019-03-02 CLASSIFY EMERGENCY EVENTS REQUIRING EMERGENCY PLAN IMPLEMENTATION

TASK STANDARD:

Correct EAL Determination and minimum required information on the Initial Notification Form; all completed within the time critical requirements.

PREFERRED EVALUATION LOCATION	*PREFERRED EVALUATION METHOD*
CLASSROOM	SIMULATE

REFERENCES:

EPP-002	COMMUNICATION AND NOTIFICATION
EPP-001	ACTIVATION AND IMPLEMENTATION OF THE EMER(

TOOLS: EPP-001 ACTIVATION AND IMPLEMENTATION OF EMERGENCY PLAN
EPP-002 COMMUNICATION AND NOTIFICATION

EVALUATION TIME 30 *TIME CRITICAL* YES *10CFR55:* 55.45(a)11

TIME START: _____ TIME FINISH: _____ PERFORMANCE TIME: _____

PERFORMANCE RATING: SAT: _____ UNSAT: _____

EXAMINER: _____ _____
SIGNATURE DATE

INSTRUCTIONS TO OPERATOR

READ TO OPERATOR:

WHEN I TELL YOU TO BEGIN, YOU ARE TO PERFORM THE ACTIONS AS DIRECTED IN THE INITIATING CUES. I WILL DESCRIBE THE GENERAL CONDITIONS UNDER WHICH THIS TASK IS TO BE PERFORMED AND PROVIDE THE NECESSARY TOOLS WITH WHICH TO PERFORM THIS TASK. BEFORE STARTING, I 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.

SAFETY CONSIDERATIONS: None

INITIAL CONDITION:

° 100% Power
° EDG 'B' is tagged out
° An Inadvertent Turbine trip occurs.
° The Reactor does not trip automatically or manually from the MCB hand switches.
° Reactor Trip Breakers cannot be manually opened.
° Safety Injection is actuated.
° A subsequent Loss of ALL Offsite Power occurs.
° DG 'A' output breaker fails to close.
° The EOF at the Nuclear Learning Center is available.
° Current wind direction is from 270 degrees.
° Current wind speed is 3 mph.
* Current precipitation is none.
° Current stability class is Delta

INITIATING CUES: You are the Duty Shift Supervisor. Perform the duties of the Interim Emergendy Director

THIS IS A TIME CRITICAL JPM!

HAND JPM BRIEFING SHEET TO OPERATOR AT THIS TIME!

JPM BRIEFING SHEET

OPERATOR INSTRUCTIONS:

SAFETY CONSIDERATIONS: None

INITIAL CONDITION:
- ° 100% Power
- ° EDG 'B' is tagged out
- ° An Inadvertent Turbine trip occurs.
- ° The Reactor does not trip automatically or manually from the MCB hand switches.
- ° Reactor Trip Breakers cannot be manually opened.
- ° Safety Injection is actuated.
- ° A subsequent Loss of ALL Offsite Power occurs.
- ° DG 'A' output breaker fails to close.
- ° The EOF at the Nuclear Learning Center is available.
- ° Current wind direction is from 270 degrees.
- ° Current wind speed is 3 mph.
- * Current precipitation is none.
- ° Current stability class is Delta

INITIATING CUES: You are the Duty Shift Supervisor. Perform the duties of the Interim Emergendy Director

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

STEPS

STEP: 1

CUES:

CR	*SEQ*		*STEP STANDARD:*
No	Yes	Locate the appropriate "EAL Topic" and "Initiating Condition" and turn to the referenced page in Attachment II of EPP-001	Applicant determins that Section E-ENGINEERED SAFETY FEATURE (Failure of Reactor to Trip) applies

COMMENTS:

SAT _____

UNSAT _____

STEP: 2

CUES:

CR	*SEQ*		*STEP STANDARD:*
Yes	Yes	The Interim Emergency Director (IED)/Emergency Director (ED) shall: Determine the EAL by comparing the verified plant parameters or conditions to the detection method for each initiating condition. This evaluation period should not exceed 15 minutes from the occurrence of the event. Time Critical Start Time: _____ Time Critical Stop Time: _____	Applicant makes declaration of GENERAL EMERGENCY Initiating Condition (431) 1. AND 2.c: Transient requiring operation of shutdown systems with failure to trip which results in core damage or additional failure of core cooling and makeup systems which could lead to core melt. 1. Reactor remains critical after attempted trip. AND 2.c Flow indicators on safety injection systems and RHR systems show zero flow with safety injection initiated. Initiating Condition (431) Time Critical portion is from accepting the task until the event is declared is 15 minutes

COMMENTS:

SAT _____

UNSAT _____

STEP: 3

CUES:

CR	*SEQ*		*STEP STANDARD:*
Yes	Yes	Declare the appropriate EAL classification. Perform additional actions in accordance with the Emergency Operating Procedures (EOP) and the appropriate Emergency Plan Procedures (EPP).	Applicant implements EPP-001.4 (GENERAL EMERGENCY):

COMMENTS:

SAT _____

UNSAT _____

STEP: 4

CUES:

CR	*SEQ*		*STEP STANDARD:*
No	Yes	Determine the location to which non-essential personnel will be evacuated. (Refer to Attachment 4)	Applicant makes determination to evacuate non-essential personnel and Fairfield Pumped Storage Facility to their personal residence.

COMMENTS:

SAT _____

UNSAT

STEP: 5

CUES:

Simulate all actions until going to EPP-002, COMMUNICATION AND NOTIFICATION.

CR	*SEQ*		*STEP STANDARD:*
No	Yes	Announce the emergency condition and site evacuation to all plant personnel over the plan paging system.	Applicant should make the following announcement. Announces emergency condition over plant page: Attention in the Plant. Attention in the Plant. The station is in an GENERAL EMERGENCY Condition. The initiating event is (some general statement as to Initiating Condition 431). All Emergency Response Personnel report to your duty stations. All non-essential personnel evacuate the site. Proceed to Your Private Residence. All essential personnel in the Radiation Control Area assemble at the RCA Checkpoint. All personnel shall refrain from eating, drinking, smoking, or chewing until further notice. Sounds Radiation Emergency Alarm Repeats the previous announcement Determines EOF will be utilized. Proceeds to EPP-002

COMMENTS:

SAT _____

UNSAT _____

STEP: 6

CUES:

Acknowledge direction to activate the pager system.

CR	*SEQ*		*STEP STANDARD:*
Yes	Yes	Upon initial declaration of an emergency classification, the Interim Emergency Director (IED) shall: For an Alert or higher emergency classification, inform the Shift Communicator to activate the Pager System Statewide and Local group calls for the utility's Emergency Response Organization (ERO), designating whether the Emergency Operations Facility (EOF) or Backup EOF is to be used.	Applicant directs shift communicator to activate the pager system. (√)

COMMENTS:

SAT _____

UNSAT _____

STEP: 7

CUES:

CR	*SEQ*		*STEP STANDARD:*
Yes	Yes	Applicant completes lines 1 through 13 on Attachment I, Page 1, Nuclear Power Plant Emergency Notification Form, with all the available information. Direct the Shift Communicator to make the initial notification to the State and local governments.	Completes Attachment 1 Critical Elements: Step 1 DRILL OR ACTUAL EVENT Step 4 EMERGENCY CLASSIFICATION: GENERAL EMERGENCY Step 4 BASED ON EAL #: 431 Step 4 EAL DESCRIPTION: TRANSIENT REQUIRING OPERATION OF SHUTDOWN SYSTEMS WITH FAILURE TO TRIP WHICH RESULTS IN CORE DAMAGE OR ADDITIONAL FAILURE OF CORE COOLING AND MAKEUP SYSTEM WHICH COULD LEAD TO CORE MELT Step 5 PROTECTIVE ACTION RECOMMENDATIONS: Step 5 EVACUATE: A-0; B-1; C-1 Step 5 SHELTER: A-1; D-1; E-1; F-1; A-2; B-2; C-2; D-2; E-2; F-2 Step 6 EMERGENCY RELEASE: NONE Step 9 METEOROLOGICAL DATA: Step 9 WIND DIRECTION FROM: 270 degrees Step 9 WIND SPEED: 3 mph Step 9 PRECIPITATION: None Step 9 STABILITY CLASS: {D} Step 10: DECLARATION; DECLARATION TIME, TODAY's DATE

COMMENTS:

SAT _____

UNSAT _____

STEP: 8

CUES:

Evaluator Note: Mark the time that Attachment 1 is handed to the Shift Communicator _____. This is the Critical STOP TIME.

Evaluator CUE: Acknowledges the request to make the initial notifications.

CR	*SEQ*		*STEP STANDARD:*
Yes	Yes	Hands EPP-002, Attachment 1 to Shift Communicator and directs him/her to make Initial Notifications. Time Critical Start Time:_____. Time of Declaration in Step 2 Time Critical Stop Time:_____. Time Attachment 1 given to Shift Communicator	Hands Attachment 1 to Shift Communicator in less than 15 minutes after the Event Declaration Time in JPM Step 2.

COMMENTS:

SAT

UNSAT _____

Examiner ends JPM at this point.

JPM SETUP SHEET

JPM NO: 09 SRO A4

DESCRIPTION: Classify an Emegency Event and complete the Emergency Notification Form Within the Required Time

IC SET:

INSTRUCTIONS:

COMMENTS:

NRC 2009 SRO A.4 FOR TRAINING USE ONLY

KEY

EPP-002
ATTACHMENT I
PAGE 1 of 11
REVISION 34

NUCLEAR POWER PLANT EMERGENCY NOTIFICATION FORM

1. [X] DRILL OR [X] ACTUAL EVENT MESSAGE # 001
2. [X] INITIAL [ ] FOLLOW-UP NOTIFICATION: TIME_____ DATE___/___/___ AUTHENTICATION # _____
3. SITE: V. C. Summer Confirmation Phone # (___)_____

4. **EMERGENCY CLASSIFICATION:** [ ] A UNUSUAL EVENT [ ] B ALERT [ ] C SITE AREA EMERGENCY [X] D GENERAL EMERGENCY
   BASED ON EAL # 431 EAL DESCRIPTION: TRANSIENT REQUIRING operation of Shutdown systems with failure to trip which Results IN core damage or Additional Failure of core cooling AND makeup system which could lead to CORE MELT.
5. **PROTECTIVE ACTION RECOMMENDATIONS:** [ ] A NONE
   [X] EVACUATE A-0, B-1, C-1
   [X] SHELTER A-1, D-1, E-1, F-1, A-2, B-2, C-2, D-2, E-2, F-2
   [ ] D CONSIDER THE USE OF KI (POTASSIUM IODIDE) IN ACCORDANCE WITH STATE PLANS AND POLICY.
   [ ] E OTHER_____
6. **EMERGENCY RELEASE:** [X] A None [ ] B Is Occurring [ ] C Has Occurred
7. RELEASE SIGNIFICANCE: [X] A Not applicable [ ] B Within normal operating limits [ ] C Above normal operating limits [ ] D Under evaluation
8. EVENT PROGNOSIS: [ ] A Improving [X] B Stable OR [X] C Degrading
9. METEOROLOGICAL DATA: Wind Direction* from 270 degrees Wind Speed* 3 mph
   (*May not be available for Initial Notifications) Precipitation* NONE Stability Class* [ ] A [ ] B [ ] C [X] D [ ] E [ ] F [ ] G
10. [X] DECLARATION [ ] B TERMINATION Time _____ Date ___/___/___
    Declaration Time CURRENT DATE
11. AFFECTED UNIT(S): [X] 1 [ ] 2 [ ] 3 [ ] All
12. UNIT STATUS: (Unaffected Unit(s) Status Not Required for Initial Notifications)
    [X] A U1 0 % Power Shutdown at Time 0930 Date ___/___/___ current DATE
    [ ] B U2 ____% Power Shutdown at Time _____ Date ___/___/___
    [ ] C U3 ____% Power Shutdown at Time _____ Date ___/___/___
13. REMARKS: NO Additional Remarks N/A or LEFT BLANK

FOLLOW-UP INFORMATION (Lines 14 through 16 Not Required for Initial Notifications)
EMERGENCY RELEASE DATA. NOT REQUIRED IF LINE 6 A IS SELECTED.

14. RELEASE CHARACTERIZATION: TYPE: [ ] A Elevated [ ] B Mixed [ ] C Ground UNITS: [ ] A Ci [ ] B Ci/sec [ ] C µCi/sec
    MAGNITUDE: Noble Gases:_____ Iodines:_____ Particulates:_____ Other: _____
    FORM: [ ] A Airborne Start Time _____ Date ___/___/___ Stop Time _____ Date ___/___/___
    [ ] B Liquid Start Time _____ Date ___/___/___ Stop Time _____ Date ___/___/___
15. PROJECTION PARAMETERS: Projection period: _____Hours Estimated Release Duration _____Hours
    Projection performed: Time _____ Date ___/___/___
16. PROJECTED DOSE:

DISTANCE	TEDE (mrem)	Adult Thyroid CDE (mrem)
Site boundary		
2 Miles		
5 Miles		
10 Miles		

17. APPROVED BY: Rusty Ellis Title CRS Time Form APPROVED Time ~~0955~~ Date ___/___/___ current DATE
    NOTIFIED BY:_____ RECEIVED BY: _____ Time _____ Date ___/___/___

SOUTH CAROLINA ELECTRIC & GAS COMPANY

VIRGIL C. SUMMER NUCLEAR STATION

NUCLEAR OPERATIONS

NUCLEAR OPERATIONS

COPY NO._____

EMERGENCY PLAN PROCEDURE

EPP-001

ACTIVATION AND IMPLEMENTATION OF EMERGENCY PLAN

REVISION 29

SAFETY RELATED

RECORD OF CHANGES

CHANGE LETTER	TYPE CHANGE	APPROVAL DATE	CANCELLATION DATE	CHANGE LETTER	TYPE CHANGE	APPROVAL DATE	CANCELLATION DATE
A	P	2/13/08					
B	P	5/23/08					

INFORMATION USE

Procedure may Be Performed From Memory.
User Retains Accountability For Proper Performance.

DOCUMENT REVIEW FORM

Page 1 of 1

Document Identification

Originators Name: Leonard Bouknight **Ext:** 54089 **Mail Code:** 507

Date: 05/05/08 **Document No.:** EPP-001 **Revision No.:** 29 **Change Letter:** B

Title: Activation and Implementation of Emergency Plan ☒ SR ☐ QR ☐ NNS

Development Process:
Permanent: (check one) ☒ Normal Rev/Chg or ☐ Editorial Correction
☐ Temporary Approval

Description: Revise Section 4 2

Reason/Basis for Change: Clarify guidance that all Detection Methods must me met to declare and Emergency Action Level. Ref CR-08-00916 Action # 02

Is the SCOPE of the procedure affected by this change? NO ☒ YES ☐

Temporary Approval **Final approval required by: (30 days)**

QR	DC&R (Person Notified)	SS	Date
		/	

Document Reviewers (Enclosure C)

Required	Position	Type/Print Name	Comments Yes/No	*Additional	Position	Type/Print Name	Comments Yes/No
	QR	T. McCullough	☐ ☑				☐ ☐
	~~NL~~ aw SS w/o		☐ ☐				☐ ☐
			☐ ☐				☐ ☐
			☐ ☐				☐ ☐
			☐ ☐				☐ ☐

Concurrence 5/11/08
Supervisor/Date

Comment Due Date 5/25/08

Pre- implementation Actions

All Comments Resolved	☑ Yes	Leonard Bouknight 05-22-08 Originator/Date
Commitments Addressed per SAP-0630	☑ NA	☐ Yes, P/CAP # _____ ☐ MLSA _____ Initial/Date
50.59 Applicability/Review Completed (SAP-0107)	☑ NA	☐ Yes, Attached
Pre-implementation Training Completed	☑ NA	☐ Yes
Training required after implementation	☑ NA	☐ Yes, CR # _____
PSRC Review Completed	☑ NA	☐ Yes, Mtg. No. _____
NSRC Review Completed	☑ NA	☐ Yes, Mtg. No. _____
CHAMPS Update Required	☑ NA	☐ Yes Planner Notified _____ Initial/Date

5/22/08
Supervisor/Date

5/23/08
Approval Authority/Date

* Failure by the "Additional Reviewers" to provide comments within 5 working days following the comment due date may be considered as "No Comment"

DOCUMENT REVIEW FORM

Page 1 of ____

Document Identification

Originators Name: Leonard Bouknight **Ext:** 54089 **Mail Code:** 507

Date: 01/03/08 **Document No.:** EPP-001 **Revision No.:** 29 **Change Letter:** A

Title: Activation and Implementation of Emergency Plan ☒ SR ☐ QR ☐ NNS

Development Process:
Permanent: (check one) ☒ Normal Rev/Chg or ☐ Editorial Correction
☐ Temporary Approval

Description: Attachment II- Restored Diesel Building and Intermediate Building to Detection Method

Reason/Basis for Change: Restore Detection Method to an approved EAL.

Is the SCOPE of the procedure affected by this change? NO ☒ YES ☐

Temporary Approval

Final approval required by: (30 days)

QR	DC&R (Person Notified)	SS	Date

Document Reviewers (Enclosure C)

	Position	Type/Print Name	Comments Yes/No		Position	Type/Print Name	Comments Yes/No
Required	QR	McCullough	☐ ☑	*Additional			☐ ☐
	NL	A. Cribb	☑ ☐				☐ ☐
			☐ ☐				☐ ☐
			☐ ☐				☐ ☐
			☐ ☐				☐ ☐

Concurrence
Supervisor/Date 1/4/08

Comment Due Date 1/18/08

Pre- implementation Actions

All Comments Resolved	☒ Yes	Originator/Date 2/6/08	
Commitments Addressed per SAP-0630	☒ NA	☐ Yes, P/CAP # ____ ☐ MLSA	Initial/Date
50.59 Applicability/Review Completed (SAP-0107)	☒ NA	☐ Yes, Attached	
Pre-implementation Training Completed	☒ NA	☐ Yes	
Training required after implementation	☒ NA	☐ Yes, CR #	G
PSRC Review Completed	☒ NA	☐ Yes, Mtg No	
NSRC Review Completed	☒ NA	☐ Yes, Mtg. No	
CHAMPS Update Required	☒ NA	☐ Yes Planner Notified	C

Supervisor/Date 2/6/08

Approval Authority/Date 2/13/08

* Failure by the "Additional Reviewers" to provide comments within 5 working days following the comment due date may be considered as "No Comment".

DOCUMENT REVIEW FORM

Document Identification

Originators Name: Bob Williamson **Ext:** 54464 **Mail Code:** 507

Date: 8/24/07 **Document No.:** EPP-001 **Revision No.:** 29 **Change Letter:**

Title: ACTIVATION AND IMPLEMENTATION OF EMERGENCY PLAN ☒ SR ☐ QR ☐ NNS

Development Process:
Permanent: (check one) ☒ Normal Rev/Chg or ☐ Editorial Correction
☐ Temporary Approval

Description: Revision of Attachment II based on the review done IAW RIS 2007-01

Reason/Basis for Change: RIS 2007-01

Is the SCOPE of the procedure affected by this change? NO ☒ YES ☐

Temporary Approval **Final approval required by: (30 days)**

QR	DC&R (Person Notified)	SS	Date
		/	

Document Reviewers (Enclosure C)

	Position	Type/Print Name	Comments Yes/No		Position	Type/Print Name	Comments Yes/No
Required	QR	McCullough	☒ ☐	*Additional			☐ ☐
			☐ ☐				☐ ☐
			☐ ☐				☐ ☐
			☐ ☐				☐ ☐
			☐ ☐				☐ ☐

Concurrence: [signature] 8/27/07
Supervisor/Date

Comment Due Date: 8/29/07

Pre- implementation Actions

All Comments Resolved	☒ Yes	[signature] 8/28/07 Originator/Date	
Commitments Addressed per SAP-0630	☒ NA	☐ Yes, P/CAP # ____ ☐ MLSA	Initial/Date
50.59 Applicability/Review Completed (SAP-0107)	☒ NA	☐ Yes, Attached	
Pre-implementation Training Completed	☐ NA	☒ Yes CR cc 9.4.07	
Training required after implementation	☒ NA	☐ Yes, ~~CER~~ #	
PSRC Review Completed	☒ NA	☐ Yes, Mtg. No.	
NSRC Review Completed	☒ NA	☐ Yes, Mtg. No.	
~~Other~~: CHAMPS Update Required	☒ NA	☐ Yes Planner Notified — Initial/Date	

9-4-07 cc

[signature] 8/28/07
Supervisor/Date

[signature] 8/30/07
Approval Authority/Date

* Failure by the "Additional Reviewers" to provide comments within 5 working days following the comment due date may be considered as "No Comment".

TABLE OF CONTENTS

1.0 PURPOSE AND SCOPE

1.1 To define the Emergency Action Levels (EALs) that will activate and implement the Emergency Plan and to provide a means of classifying the emergency.

1.2 Changes and revisions to this procedure must ensure compliance with the requirements of 10CFR50.54.q, 10CFR50 Appendix B, and SAP-630. A 10CFR50.59 review is not required.

2.0 REFERENCES

2.1 Virgil C. Summer Nuclear Station FSAR, Appendix 13A, "South Carolina Electric and Gas Company Virgil C. Summer Nuclear Station Radiation Emergency Plan".

2.2 NUREG-0654, Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants.

2.3 10CFR50, Appendix E.

2.4 10CFR50.54 (x) and (y), Applicability of License Conditions and Technical Specifications in an Emergency.

C03 →

3.0 DEFINITIONS

3.1 NOTIFICATION OF UNUSUAL EVENT - Events are in process or have occurred which indicate a potential degradation in the level of safety of the plant or indicate a security threat to facility protection has been initiated. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occurs.

3.2 ALERT - Events are in process, or have occurred, which involve an actual or potential substantial degradation of the level of safety of the plant or a security event that involves probable life threatening risk to site personnel or damage to site equipment because of hostile action. Any releases are expected to be small fractions of the EPA Protective Action Guideline exposure levels.

3.3 SITE AREA EMERGENCY - Events are in process or have occurred which involve actual or likely major failures of plant functions needed for protection of the public or hostile actions that result in intentional damage or malicious acts; (1) toward site personnel or equipment that could lead to the likely failure of or; (2) that prevent effective access to equipment needed for the protection of the public. Any releases are not expected to result in exposure levels which exceed EPA Protective Action Guidelines exposure levels beyond the site boundary.

3.4 GENERAL EMERGENCY - Events are in process or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity or hostile actions that result in an actual loss of physical control of the facility. Releases can be reasonably expected to exceed EPA Protective Action Guideline exposure levels offsite for more than the immediate site area.

3.5 HOSTILE ACTION – An act toward a nuclear power plant or its personnel that includes the use of violent force to destroy equipment, take hostages, and/or intimidates the licensee to achieve an end. This includes attack by air, land or water using guns, explosives, projectiles, vehicles or other devices used to deliver destructive force. Other acts that satisfy the overall intent may be included. Hostile Action should not be construed to include acts of civil disobedience or felonious acts that are not part of a concerted attack on the plant. Non-terrorism-based EALs should be used to address such activities, (e.g., violent acts between individuals in the owner controlled area.

3.6 HOSTILE FORCE – One or more individuals who are engaged in a determined assault, overtly or by stealth and deception, equipped with suitable weapons capable of killing, maiming or causing destruction.

3.7 OWNER CONTROL AREA – The area between the Vehicle Barrier System and the Protected Area Barrier.

4.0 CONDITIONS AND PREREQUISITES

4.1 The Emergency Plan shall be implemented whenever an "Initiating Condition" (as identified in Attachment II) has occurred.

> NOTE 4.2
>
> The implementation of any specific Emergency Plan Procedure (except this procedure) does not necessarily implement the Emergency Plan, but may do so at the discretion of the IED/ED. For example: a small chlorine leak would implement the toxic release procedure but not necessitate implementation of the Emergency Plan, whereas a large release with the potential of affecting the level of safety of the plant would implement the toxic release procedure and the Emergency Plan due to the declaration of a NUE.

4.2 The "Initiating Condition" and "Detection Method" shall be used to determine the applicable Emergency Action Level (EAL). All Detection Methods must be met prior to declaring an EAL

Chg. B

4.3 The 3 digit number in parenthesis associated with EALs on Attachment II is only used for quick reference by VCS personnel.

> NOTE 4.4
>
> When the plant is in a security related event, deviation from the guidance in the Emergency Plan Procedures is allowed when the safety of plant personnel and/or plant equipment must be considered. EPP-027 must be implemented for Security-related events.

4.4 The Duty Shift Supervisor must concur with any actions that depart from a license condition or technical specification in an emergency when such actions are immediately needed to protect the public health and safety (Reference 2.4).

4.5 Attachment I provides a cross reference for the EAL Classification and should only be used as a guide to locate the "EAL Topic" and the "Initiating Condition" in Attachment II, Emergency Action Levels.

5.0 PROCEDURE

5.1 Upon recognition of an abnormal plant or site condition, the observer shall notify the Duty Shift Supervisor of the potential emergency plan condition.

> NOTE 5.2
>
> When the TSC is activated, the ED is responsible for determining the appropriate EAL and emergency classification.

5.2 The Interim Emergency Director (IED)/Emergency Director (ED) shall:

A. Using Attachment I for guidance, locate the appropriate "EAL Topic" and "Initiating Condition" and turn to the referenced page in Attachment II.

B. Determine the EAL by comparing the verified plant parameters or conditions to the detection method for each initiating condition. This evaluation period should not exceed 15 minutes from the occurrence of the event.

C. Declare the appropriate EAL classification. Perform additional actions in accordance with the Emergency Operating Procedures (EOP) and the appropriate Emergency Plan Procedures (EPP).

Notification of Unusual Event	-	EPP-001.1
Alert	-	EPP-001.2
Site Area Emergency	-	EPP-001.3
General Emergency	-	EPP-001.4

D. When the plant is in a security related event, deviation from the guidance in the Emergency Plan Procedures is allowed when the safety of plant personnel and/or plant equipment must be considered. EPP-027 must be implemented for Security-related events.

5.3 Undeclared or Misclassified Events

C01→ A. When it is discovered that an event or condition had existed which met the criteria for Emergency Plan activation but no emergency had been declared and the basis for the EAL classification no longer exists, the IED/ED shall ensure that an ENS notification to the NRC and ESSX notification to the State and local governments is made within one hour of the discovery of the undeclared or misclassified event. No "after-the-fact" emergency declaration is necessary.

6.0 RECORDS

6.1 There are no records generated by this procedure.

7.0 REVISION SUMMARY

7.1 Complete revision Attachment II to incorporate changes made IAW RIS 2007-01.

7.2 Revision 29 Change A includes the following:

7.2.1 Revised Attachment II to reflect the EAL Detection Method change to EAL #392A in Revision 55 of the Radiation Emergency Plan.

EMERGENCY ACTION LEVEL CROSS REFERENCE GUIDE

NOTE: This Attachment is not to be used for EAL Classification. Refer to Attachment II.

EAL TOPIC **PAGE**

EMERGENCY ACTION LEVEL CROSS REFERENCE GUIDE

NOTE: This Attachment is not to be used for EAL Classification. Refer to Attachment II.

EAL TOPIC **PAGE**

EMERGENCY ACTION LEVELS
REACTOR COOLANT SYSTEM LEAKAGE OR LOCA (1 of 3)

NOTIFICATION OF UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
INITIATING CONDITION (101) **RCS LEAKAGE** Detection Method: ANY of the following exceeded (1 OR 2 OR 3): 1. Unidentified Leakage greater than 10 gpm. OR 2. Pressure Boundary Leakage greater than 10 gpm. OR 2. Identified Leakage greater than 25 gpm.	**INITIATING CONDITION (201)** **REACTOR COOLANT LEAKAGE RATE EXCEEDS 50 GALLONS PER MINUTE** Detection Method: Evaluation of the following to determine leakage rate: Note: This excludes SG Tube Leakage. (See Specific Table for SG Tube Leakage) 1. Excessive Makeup to the Volume Control Tank. 2. IPCS CHG_{NET} 3. STP-114.002, Operational Leak Test.	**INITIATING CONDITION (301)** **KNOWN LOCA GREATER THAN CHARGING PUMP CAPACITY** Detection Method: 1. ALL of the following: a. Pressurizer low pressure reactor trip. b. Pressurizer low pressure safety injection signal. c. High Reactor Building pressure. d. High Reactor Building Sump level. e. Abnormal radiation levels as indicated on RM-A2 (if unisolated) **OR** RM-G5, **OR** RM-G7 **OR** RM-G18. f. Reactor Building Cooling Units Drain Flow High.	**INITIATING CONDITION (401)** **SMALL AND LARGE LOCA'S WITH FAILURE OF ECCS TO PERFORM LEADING TO SEVERE CORE DEGRADATION OR MELT. ULTIMATE FAILURE OF REACTOR BUILDING POSSIBLE FOR MELTDOWN SEQUENCES** Detection Method: 1. Safety Injection signal with reactor trip. **AND** 2. EITHER of the following: a. Status lamps indicate safety injection system and RHR pumps not running. **OR** b. Flow indicators for safety injection systems read zero. **AND** 3. RMG-5, **AND** RMG-7, **AND** RMG-18 High Alarms. **AND** 4. RM-A2 High Range Alarm (if unisolated).

EMERGENCY ACTION LEVELS
REACTOR COOLANT SYSTEM LEAKAGE OR LOCA (2 OF 3)

NOTIFICATION OF UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
INITIATING CONDITION (102) **FAILURE OF A PRESSURIZER OR STEAM GENERATOR SAFETY OR RELIEF VALVE TO RESEAT (EXCEEDING NORMAL WEEPAGE)** Detection Method: Pressurizer or Steam Generator Safety or Relief Valve opens and then fails to reseat as indicated by: EITHER 1 OR 2 OR 3: --- 1. Valid open indication on ANY of the following: EITHER (a OR b OR c) a) Unisolable Pressurizer Relief Valve OR b) Pressurizer Safety Valve OR c) Valid Acoustical Monitor Indication ---OR--- 2. Valid open indication on EITHER of the following: a.) Unisolable Steam Generator Relief Valve. OR b.) Stuck open Steam Generator Safety Valve. ---OR--- 3. Excess feedwater flow to and steam flow from the affected Steam Generator.			**INITIATING CONDITION (402)** **SMALL LOCA AND INITIALLY SUCCESSFUL ECCS. SUBSEQUENT FAILURE OF REACTOR BUILDING HEAT REMOVAL SYSTEMS OVER SEVERAL HOURS COULD LEAD TO CORE MELT AND POSSIBLE FAILURE OF THE REACTOR BUILDING** Detection Method: 1. a. Pressurizer low pressure reactor trip. **AND** b. Pressurizer low pressure safety injection signal. **AND** 2. a. RHR flow indicators show zero flow after shift to RHR is attempted. **AND** b. RHR flow indicators continue to show zero flow for greater than 2 hours. **AND** c. RCS temperature rising. **AND** 3. Reactor Building spray and Reactor Building air handling system fail to function.

EMERGENCY ACTION LEVELS
REACTOR COOLANT SYSTEM LEAKAGE OR LOCA (3 OF 3)

NOTIFICATION OF UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
			INITIATING CONDITION (403) **LOSS OF TWO OF THREE FISSION PRODUCT BARRIERS WITH POTENTIAL LOSS OF THE THIRD BARRIER (E.G., LOSS OF FUEL INTEGRITY AND PRIMARY COOLANT BOUNDARY AND HIGH POTENTIAL FOR RADIOACTIVITY RELEASE FROM CONTAINMENT)** Detection Method: 1. a. Primary coolant dose equivalent I-131 activity ≥ 300 μCi/ml. **OR** b. RM-L1 High Range Alarm (if unisolated). **AND** c. LOCA in progress. **AND** d. Reactor Building pressure > 30 psig for at least 2 minutes. **OR** 2. a. Primary coolant dose equivalent I-131 activity ≥ 300 μCi/ml. **OR** b. RM-L1 High Range Alarm (If unisolated). **AND** c. Breach of containment integrity. **AND** d. EITHER of the following: 1) RCS leakage greater than Technical Specification allowable. 2) RCS pressure >2335 psig. **OR** 3. a. LOCA as identified in Site Area Emergency(301) **AND** b. Breach of containment integrity. **AND** c. EITHER of the following: 1) Dose Equivalent 1-131 activity > 1 μCi/ml in primary coolant. **OR** 2) Core Exit temperature > 700° F.

EMERGENCY ACTION LEVELS
STEAM GENERATOR TUBE LEAK OR RUPTURE

NOTIFICATION OF UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
INITIATING CONDITION (103) **EXCEEDING TECHNICAL SPECIFICATION PRIMARY TO SECONDARY LEAK RATE LIMIT** Detection Method: Primary to Secondary Leak Rate Exceeds Technical Specification 3.4.6.2 Limits: Greater than 150 gallons per day from any one Steam Generator. -	**INITIATING CONDITION (203)** **RAPID FAILURE OF SEVERAL STEAM GENERATOR TUBES (e.g., SEVERAL HUNDRED GALLONS PER MINUTE PRIMARY-TO-SECONDARY LEAK RATE)** Detection Method: 1. ALL of the following: a. Pressurizer low pressure alarm. b. Reactor trip. c. Pressurizer low level alarm. d. RM-A9 high alarm (if unisolated). e. Steam generator water level rapidly increasing in one or more steam generator(s), falling in the others. f. RM-L3, **OR** RM-L7, **OR** RM-L10 high alarms (if unisolated). g. Possible lifting of steam generator PORV's and/or safety valves. **ALERT** **INITIATING CONDITION (202)** **RAPID GROSS FAILURE OF ONE STEAM GENERATOR TUBE WITH LOSS OF OFFSITE POWER** Detection Method: 1. ALL of the following: a. Pressurizer low pressure alarm. b. Reactor trip. c. Pressurizer low level alarm. d. RM-A9 high alarm (if unisolated). e. Pressurizer low pressure safety injection signal. f. Undervoltage alarms on 1DA and 1DB. g. RM-L3, **OR** RM-L7, **OR** RM-L10 high alarms (if unisolated).	**INITIATING CONDITION (302)** **RAPID FAILURE OF SEVERAL STEAM GENERATOR TUBES (SEVERAL HUNDRED GPM PRIMARY-TO-SECONDARY LEAK RATE) WITH LOSS OF OFFSITE POWER** Detection Method: 1. a. Pressurizer low pressure alarm and reactor trip. **OR** b. Pressurizer level rapidly decreasing. **AND** 2. ALL of the following: a. Pressurizer low-level alarm. b. RM-A9 High Alarm (if unisolated). c. Undervoltage alarms on 1DA and 1DB. d. Steam Generator water level rapidly increasing in one or more steam generators, falling in the others. e. RM-L3 **OR** RM-L7 **OR** RM-L10 high alarm (if unisolated). f. Possible lifting of steam generator PORV's and/or safety valves.	

EMERGENCY ACTION LEVELS
MAIN STEAM LINE BREAKS OR SECONDARY DEPRESSURIZATION

NOTIFICATION OF UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
INITIATING CONDITION (104) **RAPID SECONDARY SYSTEM DEPRESSURIZATION** Detection Method: 1. Increased steam flow. **AND** 2. Reduced RCS temperature and pressure. **AND** 3. Observation of break or steam dump, relief or safety-valve inadvertently opened.	**INITIATING CONDITION (204)** **MAJOR STEAM LINE BREAK (e.g., GREATER THAN 6 INCHES EQUIVALENT DIAMETER) WITH A SIGNIFICANT (E.G., GREATER THAN 10 GPM) PRIMARY-TO-SECONDARY LEAK RATE** Detection Method: 1. ALL of the following: a. Rapidly decreasing reactor coolant Tavg. b. Rapidly decreasing pressurizer pressure. c. Rapidly decreasing pressurizer level. d. RM-L3, **OR** RM-L7, **OR** RM-L10 high alarms (if unisolated). **AND** 2. a. ALL of the following: 1) Steam line differential pressure safety injection signal. 2) High Reactor Building pressure alarm. 3) RM-A2 high alarm for rupture in Reactor Building (if unisolated). **OR** b. EITHER 1) High steam flow and Lo-Lo Tavg. 2) Low steam pressure safety injection signal for rupture downstream of MSIV's.	**INITIATING CONDITION (303)** **MAJOR STEAM LINE BREAK WITH GREATER THAN 50 GALLONS PER MINUTE PRIMARY-TO-SECONDARY LEAKAGE AND INDICATION OF FUEL DAMAGE** Detection Method: 1. Rapidly decreasing reactor coolant Tavg/ pressurizer pressure and pressurizer level. **AND (Either 2 or 3)** 2. a. Steam line differential pressure safety injection signal. **AND** b. High Reactor Building pressure alarm. **AND** c. RM-A2 high alarm (if unisolated). **AND** d. Failed Fuel Monitor (RM-L1) Alarm for rupture in Reactor Building (if unisolated). **OR** e. Primary coolant dose equivalent I-131 activity ≥300 μCi/ml. **OR** 3. a. High steam flow. **AND** b. EITHER of the following: 1) Lo-Lo Tavg. 2) Low steam pressure safety injection signal. **AND** c. RM-A9 high alarm (if unisolated). **AND** d. Failed Fuel Monitor (RM-L1) high alarm (if unisolated). **OR** e. Primary coolant dose equivalent I-131 activity ≥300 μCi/ml.	

EMERGENCY ACTION LEVELS
LOSS OF HEAT SINK

NOTIFICATION OF UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
		SEE INITIATING CONDITION 301 (REACTOR COOLANT SYSTEM LOCA)	**INITIATING CONDITION (411)** **TRANSIENT INITIATED BY LOSS OF FEEDWATER AND CONDENSATE SYSTEMS (PRINCIPAL HEAT REMOVAL SYSTEM) FOLLOWED BY FAILURE OF EMERGENCY FEEDWATER SYSTEM FOR EXTENDED PERIOD. CORE MELTING POSSIBLE IN SEVERAL HOURS. ULTIMATE FAILURE OF REACTOR BUILDING POSSIBLE IF CORE MELTS** Detection Method: 1. a. Reactor trip. **AND** b. Decreasing wide-range steam generator levels toward off-scale low on all steam generators. **AND** 2. a. Emergency feedwater flow indicators indicate zero flow 2 min. after required. **OR** b. Status lamps indicate emergency feedwater pumps not running 2 min. after required. **AND** 3. Emergency feedwater cannot be restored within 30 min.

EMERGENCY ACTION LEVELS
TURBINE OR GENERATOR FAILURE

NOTIFICATION OF UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
INITIATING CONDITION (105) **OTHER HAZARDS BEING EXPERIENCED OR PROJECTED WHICH HAVE THE POTENTIAL FOR ENDANGERING THE FACILITY** **TURBINE-GENERATOR ROTATING COMPONENT FAILURE CAUSING RAPID PLANT SHUTDOWN** Detection Method: 1. Turbine trip and observation of turbine malfunction or failure.	**INITIATING CONDITION (292)** **OTHER HAZARDS BEING EXPERIENCED OR PROJECTED WHICH HAVE A SIGNIFICANT POTENTIAL FOR AFFECTING PLANT SAFETY** **TURBINE TRIP AND OBSERVATION OF PENETRATION OF CASING** Detection Method: 1. Turbine generator failure causing casing penetration.		

EMERGENCY ACTION LEVELS
FUEL

NOTIFICATION OF UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
INITIATING CONDITION (106) **FUEL DAMAGE INDICATION** Detection Method: ALL of the following (1 AND 2): 1. RM-L1 High Range Alarm, **AND** 2. Primary coolant dose equivalent I-131 activity ≥ 30 μCi/ml.	**INITIATING CONDITION (221)** **POSSIBLE FUEL DAMAGE** Detection Method: 1. Primary coolant sample indicates equivalent 1-131 concentration > 300 μCi/ml. **OR** 2. a. Failed Fuel Monitor High Range alarm RM-L1 (if unisolated). **AND** b. Laboratory analysis which indicates EITHER of the following: 1) Increase in failed fuel of 1 percent in 30 min. 2) A total failed fuel of 5%.	**INITIATING CONDITION (321)** **DEGRADED CORE WITH POSSIBLE LOSS OF COOLABLE GEOMETRY** Detection Method: 1. Valid readings on in core thermocouples above 700° F. **AND** 2. a. T_{hot} and T_{cold} rapidly diverging (ΔT rapidly increasing). **OR** b. No ΔT across core. **AND** 3. RM-L1 High Range Alarm off scale (greater than 10^6 cpm) (if unisolated).	

EMERGENCY ACTION LEVELS
FUEL HANDLING

NOTIFICATION OF UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
	INITIATING CONDITION (222) **FUEL HANDLING ACCIDENT WITH RELEASE OF RADIOACTIVITY TO REACTOR OR FUEL HANDLING BUILDING** Detection Method: 1. Observation of damage to spent fuel assembly. **AND** 2. EITHER of the following: a. RM-A2 high alarm and/or RMG-17A, 17B high alarm after accident in Reactor Building. **OR** b. RM-A6 high alarm OR RMG-8 high alarm; after accident in Fuel Handling Building.	**INITIATING CONDITION (322)** **MAJOR DAMAGE TO MORE THAN ONE SPENT FUEL ASSEMBLY IN REACTOR BUILDING OR FUEL HANDLING BUILDING LEADING TO CLAD RUPTURE (e.g., LARGE OBJECT DAMAGES FUEL OR WATER LOSS BELOW FUEL LEVEL)** Detection Method: 1. Observations of major damage to more than one spent fuel assembly. **OR** 2. a. Spent fuel pool water below fuel level. **AND** b. EITHER of the following: 1) RM-A2 and/or RMG-17A, 17B high alarm for accident in Reactor Building. **OR** 2) RM-A6 and/or RMG-8 high alarm for accident in Fuel Handling Building.	

EMERGENCY ACTION LEVELS
ENGINEERED SAFETY FEATURE (FAILURE OF REACTOR TO TRIP)

NOTIFICATION OF UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
	INITIATING CONDITION (231) **FAILURE OF THE REACTOR PROTECTION SYSTEM TO INITIATE AND COMPLETE A TRIP WHICH BRINGS THE REACTOR SUBCRITICAL** Detection Method: ALL of the following (1 AND 2): 1. An automatic reactor trip fails when required, AND 2. A manual reactor trip from either MCB handswitch is successful.	**INITIATING CONDITION (331)** **TRANSIENT REQUIRING OPERATION OF SHUTDOWN SYSTEMS WITH FAILURE TO TRIP (CONTINUED GENERATION, NO FUEL DAMAGE EVIDENT)** Detection Method: ALL of the following (1 and 2): 1. An automatic Reactor trip fails when required. **AND** 2. Reactor remains critical after attempted manual trip from MCB handswitches.	**INITIATING CONDITION (431)** **TRANSIENT REQUIRING OPERATION OF SHUTDOWN SYSTEMS WITH FAILURE TO TRIP WHICH RESULTS IN CORE DAMAGE OR ADDITIONAL FAILURE OF CORE COOLING AND MAKEUP SYSTEMS WHICH COULD LEAD TO CORE MELT** Detection Method: 1. Reactor remains critical after attempted trip. **AND** 2. ANY of the following: a. RM-L1 High Range Alarm (if unisolated). **OR** b. Primary coolant dose equivalent I-131 activity >300 μCi/ml. **OR** c. Flow indicators on safety injection systems and RHR systems show zero flow with safety injection initiated. **OR** d. Status lights show safety injection systems and RHR pumps not running with safety injection initiated.

EMERGENCY ACTION LEVELS
LOSS OF STATION AC POWER

NOTIFICATION OF UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
INITIATING CONDITION (107) **TOTAL LOSS OF OFFSITE POWER OR LOSS OF ONSITE AC POWER CAPABILITY** Detection Method: ANY of the following (1 or 2): 1. a. Undervoltage alarms on 1DA and 1DB buses. **OR** 2. a. Loss of 115KV ESF Potential lights. **AND** b. Loss of 230KV ESF Potential lights.	**INITIATING CONDITION (241)** **LOSS OF OFFSITE POWER AND LOSS OF ALL ONSITE AC POWER FOR MORE THAN 5 MINUTES** Detection Method: ALL of the following (1 AND 2 AND 3): Lost for a period of **greater than 5 minutes**. 1. Undervoltage alarms on 1 DA and 1DB buses. **AND** 2. Loss of 115KV ESF Potential lights. **AND** 3. Loss of 230KV ESF Potential lights.	**INITIATING CONDITION (341)** **LOSS OF OFFSITE POWER AND LOSS OF ONSITE AC POWER FOR MORE THAN 15 MINUTES** Detection Method: ALL of the following (1 AND 2 AND 3): Lost for a period **greater than 15 minutes**. 1. Undervoltage alarms on 1DA and 1DB buses. **AND** 2. Loss of 115KV ESF Potential Lights. **AND** 3. Loss of 230KV ESF Potential Lights.	**INITIATING CONDITION (441)** **FAILURE OF OFFSITE AND ONSITE POWER ALONG WITH TOTAL LOSS OF EMERGENCY FEEDWATER MAKEUP CAPABILITY FOR SEVERAL HOURS. COULD LEAD TO EVENTUAL CORE MELT AND POSSIBLE FAILURE OF THE REACTOR BUILDING.** Detection Method: 1. Undervoltage alarms on 1DA and 1DB buses for greater than 2 hours. **AND** 2. Steam driven Emergency Feedwater pump fails to start.

EMERGENCY ACTION LEVELS
LOSS OF STATION DC POWER

NOTIFICATION OF UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
	INITIATING CONDITION (242) **LOSS OF ALL ONSITE DC POWER FOR A PERIOD GREATER THAN 5 MINUTES** Detection Method: ALL of the following (1 AND 2 AND 3): Lost for a period of from **5 to 15 minutes** ---------- 1. DC bus undervoltage alarms on all ESF buses, ----------AND---------- 2. 480V ESF Channel A **OR** B Loss of DC Alarm. ----------AND---------- 3. DG A **OR** B Loss of DC Alarm.	**INITIATING CONDITION (342)** **LOSS OF ALL VITAL ONSITE DC POWER FOR MORE THAN 15 MINUTES** Detection Method: ALL of the following (1 AND 2 AND 3): Lost for a period **greater than 15 minutes** ---------- 1. DC bus undervoltage alarms on all ESF buses, ----------AND---------- 2. 480V ESF Channel A **OR** B Loss of DC Alarm, ----------AND---------- 3. DG A **OR** B Loss of DC Alarm.	

EMERGENCY ACTION LEVELS
RADIOLOGICAL EFFLUENTS (1 OF 2)

NOTIFICATION OF UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
INITIATING CONDITION (108) **GASEOUS EFFLUENT INSTANTANEOUS RELEASE RATE TECHNICAL SPECIFICATION LIMITS EXCEEDED FOR 1 HOUR (APPENDIX B TABLE II, COLUMN 1 10CFR20)** Detection Method: 1. ANY of the following gaseous effluent monitors in valid alarm mode for more than 1 hr.: a. RM-A3 b. RM-A4 c. RM-A9 d. RM-A10 e. RM-A13 (due to radioactivity releases to the environment).	**INITIATING CONDITION (261)** **SUSTAINED HIGH RADIATION LEVELS OR HIGH AIRBORNE CONTAMINATION WHICH INDICATES A SEVERE DEGRADATION IN THE CONTROL OF RADIOACTIVE MATERIALS (e.g., INCREASE BY A FACTOR OF 1000 IN DIRECT RADIATION READINGS)** Detection Method: 1. ANY of the following valid RMG readings for more than 15 minutes: a. RM-G 2-4, 8-13, or 16; greater than 2.5 R/hr. b. RM-G 7, 17A, 17B, or 18 greater than 100 R/hr. c. RM-G 1; greater than 1 R/hr. **OR** 2. Unexpected plant area iodine or particulate airborne concentration greater than 1000 DAC (as per 10CFR20 Appendix B, Table 1).	**INITIATING CONDITION (361)** **RADIATION MONITORS DETECT LEVELS CORRESPONDING TO GREATHER THAN 50 MREM/HR WHOLE BODY FOR 0.5 HR. OR GREATER THAN 500 MREM/HR WHOLE BODY FOR 2 MIN. (OR FIVE TIMES THESE LEVELS TO THE THYROID) AT THE EXCLUSION AREA BOUNDARY FOR ADVERSE METEOROLOGY (PASQUILL F STABILITY, 1 M/SEC WIND VELOCITY).** 1. ANY of the following valid Atmospheric Radiation Monitor readings: a. RM-A3, RM-A4, RM-A9, RM-A10, RM-A13 readings and analysis shows equivalent I-131 release rate greater than: 1) 1.14 Ci/hr for 0.5 hr. **OR** 2) 11.4 Ci/hr for 2 minutes. **b.** RM-A3, RM-A4, RM-A9, RM-A10, RM-A13 readings and analysis shows equivalent Xe-133 release rate greater than: 1) 489 Ci/hr for 0.5 hr. **OR** 2) 4890 Ci/hr for 2 min.	**INITIATING CONDITION (461)** **EFFLUENT MONITORS DETECT LEVELS CORRESPONDING TO 1 REM TEDE (WHOLE BODY) OR 5 REM CDE (THYROID) AT THE EXCLUSION AREA BOUNDARY UNDER ACTUAL METEOROLOGICAL CONDITIONS.** Detection Method: ALL of the following (1 AND 2): 1. Radiation Monitor levels exceed those specified for Site Area Emergency, AND 2. Calculation on Dose Assessment Forms indicates levels exceeding 1 Rem TEDE (whole body) or 5 Rem CDE (thyroid) at the exclusion area boundary using radiation monitor readings and effluent stream flow rates (measured or assumed) for actual meteorological conditions; or using field measurements.

EMERGENCY ACTION LEVELS
RADIOLOGICAL EFFLUENTS (2 OF 2)

NOTIFICATION OF UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
INITIATING CONDITION (109) **LIQUID EFFLUENT CONCENTRATIONS TECHNICAL SPECIFICATIONS LIMITS EXCEEDED FOR 15 MINUTES (APPENDIX B TABLE II COLUMN 1 10CFR20)** Detection Method: 1. ANY of the following valid liquid effluent monitor readings for longer than 15 min. which are greater than: a. RM-L5 or RM-L9 high alarm setpoint established in discharge permit and isolation valve fails to close. **OR** b. RM-L3, RM-L7 or RM-L10 while steam generator blowdown is directed to the nuclear blowdown system and isolation valves fail to close (due to radioactivity releases to the environment).	**INITIATING CONDITION (262)** **RADIOLOGICAL EFFLUENT RELEASE RATE EXCEEDING 10 TIMES TECHNICAL SPECIFICATION INSTANTANEOUS LIMITS** Detection Method: ANY of the following valid radiation monitor readings for longer than 15 minutes (1 OR 2 OR 3 OR 4 OR 5): 1. RM-A3 (Gas) is off scale high. OR 2. RM-A3 (Iodine) is off scale high. OR 3. RM-A4 (Gas) exceeds 40 times high alarm setpoint. OR 4. RM-A4 (Iodine) exceeds 10 times high alarm setpoint. OR 5. RM-L5, RM-L7, or RM-L9 exceeds 10 times high alarm setpoint and isolation valve(s) fail to close.	**INITIATING CONDITION (362)** **DOSE RATES LISTED BELOW ARE PROJECTED BASED ON GAMMA RADIATION MONITOR (RMG) READINGS AND/OR OTHER PLANT PARAMETERS OR ARE MEASURED AT THE EXCLUSION AREA BOUNDARY** Detection Method: EITHER 1 OR 2 OR 3: 1. Reactor Building leak rate results in calculated dose rate at exclusion area boundary greater than EITHER (a OR b): a. 50 mrem/hr whole body for 0.5 hour. **OR** b. 500 mrem/hr whole body for 2 minutes. OR 2. Radiation Monitoring Teams measure dose rates at one mile or greater from the plant at greater than EITHER (a OR b): a. 50 mrem/hr for 0.5 hour. **OR** b. Greater than 500 mrem/hr for 2 minutes (beta + gamma) OR 3. Radiation Monitoring Teams measure thyroid dose rates (equivalent I-131 concentrations) at one mile or greater from the plant at greater than EITHER (a or b): a. 250 mrem/hr (1.3×10^{-7} μCi/cc) for 0.5 hour. OR b. 2500 mrem/hr (1.3×10^{-6} μCi/cc) for 2 minutes.	

EMERGENCY ACTION LEVELS
FIRE

NOTIFICATION OF UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
INITIATING CONDITION (110) **FIRE WITHIN THE PROTECTED AREA OR THE SWITCHYARD LASTING MORE THAN 15 MINUTES** Detection Method: Observation of Fire lasting more than 15 minutes within: EITHER 1 OR 2: --- 1. Protected Area ---OR--- 2. Switchyard	**INITIATING CONDITION (271)** **FIRE POTENTIALLY AFFECTING SAFETY SYSTEMS.** Detection Method: 1. Observation of a fire that has the potential for rendering a safety system inoperable per the Technical Specifications. ---OR--- 2. Implementation of FEP 1.0	**INITIATING CONDITION (371)** **FIRE AFFECTING SAFETY TRAINS OR FUNCTIONS** Detection Method: Observation of a fire that renders both trains of a safety system or function inoperable per the Technical Specifications.	

EMERGENCY ACTION LEVELS
SECURITY

NOTIFICATION OF UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
INITIATING CONDITION (111) 1. SECURITY THREAT OR ATTEMPTED ENTRY OR ATTEMPTED SABOTAGE ---------- **OR** ---------- 2. A CREDIBLE SITE SPECIFIC SECURITY THREAT NOTIFICATION ---------- **OR** ---------- 3. A VALID NOTIFICATION FROM NRC PROVIDING INFORMATION ON AN AIRCRAFT THREAT. Detection Method: Report to the Control Room by Security, observer or NRC. See EPP-027 for additional guidance.	**INITIATING CONDITION (281)** 1. ONGOING SECURITY COMPROMISE ---------- **OR** ---------- 2. A VALIDATED NOTIFICATION FROM NRC OF AN AIRLINER ATTACK THREAT LESS THAN 30 MINUTES AWAY. ---------- **OR** ---------- 3. A NOTIFICATION FROM THE SITE SECURITY FORCE OF AN ARMED ATTACK, EXPLOSIVE ATTACK, AIRLINER IMPACT OR OTHER HOSTILE ACTION WITHIN THE OWNER CONTROLLED AREA. Detection Method: Report to the Control Room by Security, observer or NRC. See EPP-027 for additional guidance.	**INITIATING CONDITION (381)** 1. SECURITY THREAT INVOLVING IMMINENT LOSS OF PHYSICAL CONTROL OF THE PLANT ---------- **OR** ---------- 2. A NOTIFICATION FROM THE SITE SECURITY FORCE OF AN ARMED ATTACK, EXPLOSIVE ATTACK, AIRLINER IMPACT OR OTHER HOSTILE ACTION IS OCCURRING OR HAS OCCURRED WITHIN THE PROTECTED AREA Detection Method: Report to the Control Room by Security or observer. See EPP-027 for additional guidance.	**INITIATING CONDITION (481)** A HOSTILE FORCE HAS TAKEN CONTROL OF PLANT EQUIPMENT SUCH THAT PLANT PERSONNEL ARE UNABLE TO OPERATE EQUIPMENT REQUIRED TO MAINTAIN SAFETY FUNCTIONS Detection Method: Report to the Control Room by Security or observer. See EPP-027 for additional guidance.

EMERGENCY ACTION LEVELS
EARTHQUAKE

NOTIFICATION OF UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
INITIATING CONDITION (112A) **NATURAL EVENTS NEAR SITE** Earthquake. Detection Method: 1. Seismic Recording System Start indication.	**INITIATING CONDITION (291A)** **EARTHQUAKE GREATER THAN THE 2/3 OPERATING BASIS EARTHQUAKE LEVEL** Detection Method: BOTH 1 AND 2 1. Seismic Event Annunciator 2/3 OBE exceeded (one or more yellow lights lit), **AND** 2. Confirmation of a seismic event through observation (felt or heard) in the Control Room.	**INITIATING CONDITION (391A)** **EARTHQUAKE GREATER THAN OPERATING BASIS EARTHQUAKE LEVEL BEING EXPERIENCED OR PROJECTED WITH PLANT NOT IN COLD SHUTDOWN** Detection Method: BOTH 1 AND 2 1. Observation of the event (felt or heard) lasting >2 seconds, **AND** 2. EITHER a OR b: a. RB Foundation Seismic Switch OBE exceeded. **OR** b. Seismic Event Annunciator OBE exceeded (one or more red lights lit).	

EMERGENCY ACTION LEVELS
TORNADO OR WIND

NOTIFICATION OF UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
INITIATING CONDITION (112B) **TORNADO ONSITE** Detection Method 1. Observation of event within the Exclusion Area.	**INITIATING CONDITION (291B)** **TORNADO STRIKING FACILITY** Detection Method: Observation of a Tornado within EITHER a or b: a) Protected Area **OR** b) Switchyard.	**INITIATING CONDITION (391B)** **SUSTAINED WINDS IN EXCESS OF 100 MILES PER HOUR ONSITE BEING EXPERIENCED OR PROJECTED WITH PLANT NOT IN COLD SHUTDOWN** Detection Method: Sustained winds in excess of **100 mph** onsite: As measured by EITHER a or b: a) Onsite meteorological instrumentation **OR** b) The National Weather Service.	

HURRICANE

NOTIFICATION OF UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
INITIATING CONDITION (112C) **HURRICANE ONSITE** Detection Method: 1. Observation of event within the Exclusion Area.	**INITIATING CONDITION (291C)** **SUSTAINED HURRICANE WINDS GREATER THAN 75 MILES PER HOUR NEAR SITE** Detection Method: Sustained winds in excess of **75 mph** onsite due to a hurricane: As measured by EIITHER a or b: a. Onsite meteorological instrumentation, ----------OR---------- b. The National Weather Service.	**INITIATING CONDITION (391C)** **SUSTAINED WINDS IN EXCESS OF 100 MILES PER HOUR ONSITE BEING EXPERIENCED OR PROJECTED WITH PLANT NOT IN COLD SHUTDOWN** Detection Method: Sustained winds in excess of **100 mph** onsite: As measured by EITHER a or b: a) Onsite meteorological instrumentation **OR** b) The National Weather Service.	

EMERGENCY ACTION LEVELS
AIRCRAFT CRASH

NOTIFICATION OF UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
INITIATING CONDITION (113A) **ONSITE AIRCRAFT CRASH BEING EXPERIENCED OR PROJECTED WHICH HAVE THE POTENTIAL FOR ENDANGERING THE FACILITY** Detection Method: Observation of Aircraft Crash within the Exclusion Area.	**INITIATING CONDITION (292A)** **AIRCRAFT CRASH ON FACILITY BEING EXPERIENCED OR PROJECTED WHICH HAVE A SIGNIFICANT POTENTIAL FOR AFFECTING PLANT SAFETY** Detection Method: Observation of a Aircraft Crash within: EITHER a or b: a. Protected Area ----------OR---------- b. Switchyard. ----------	**INITIATING CONDITION (392A)** **AIRCRAFT CRASH INTO VITAL STRUCTURES BEING EXPERIENCED OR PROJECTED WITH PLANT NOT IN COLD SHUTDOWN** Detection Method: Aircraft crash causing damage or fire in ANY of the following areas: a. Reactor Building. b. Control Building. c. Auxiliary Building. d. Fuel Handling Building. e. Turbine Building. f. Intake Structures. g. DG Building h. Intermediate Building	

Chg. A

TRAIN DERAILMENT

NOTIFICATION OF UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
INITIATING CONDITION (113B) **ONSITE TRAIN DERAILMENT BEING EXPERIENCED OR PROJECTED WHICH HAVE THE POTENTIAL FOR ENDANGERING THE FACILITY** Detection Method: 1. Observation of Train Derailment within the Exclusion Area.			

EMERGENCY ACTION LEVELS
MISSLE IMPACTS OR EXPLOSION

NOTIFICATION OF UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
	INITIATING CONDITION (292B) **MISSILE IMPACTS ON FACILITY WITH RESULTANT MAJOR DAMAGE BEING EXPERIENCED OR PROJECTED WHICH HAVE A SIGNIFICANT POTENTIAL FOR AFFECTING PLANT SAFETY** Detection Method: Observation of missile impacts on Plant structures or components with major damage.	**INITIATING CONDITION (392B)** **OTHER HAZARDS BEING EXPERIENCED OR PROJECTED WITH PLANT NOT IN COLD SHUTDOWN** **MISSILE OR EXPLOSION IMPACT RENDERING SEVERE DAMAGE TO FACILITY SHUTDOWN** Detection Method: 1. Loss of functions needed for hot shutdown (see Initiating Condition 394 for Site Area Emergency).	
NOTIFICATION OF UNUSUAL EVENT	**ALERT**		
INITIATING CONDITION (113C) **ONSITE EXPLOSION (EXCLUDING PLANNED ACTIVITIES) BEING EXPERIENCED OR PROJECTED WHICH HAVE THE POTENTIAL FOR ENDANGERING THE FACILITY** **ONSITE EXPLOSION (EXCLUDING PLANNED ACTIVITIES).** Detection Method: 1. Observation of explosion or warning from offsite.	**INITIATING CONDITION (292C)** **KNOWN EXPLOSION AT FACILITY RESULTING IN MAJOR DAMAGE TO PLANT STRUCTURES OR EQUIPMENT BEING EXPERIENCED OR PROJECTED WHICH HAVE A SIGNIFICANT POTENTIAL FOR AFFECTING PLANT SAFETY** Detection Method: Observation of Major Damage by Explosion.		

EMERGENCY ACTION LEVELS
TOXIC OR FLAMMABLE GAS

NOTIFICATION OF UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
INITIATING CONDITION (113D) **NEAR OR ONSITE TOXIC OR FLAMMABLE GAS RELEASE OF A MAGNITUDE THAT THREATENS PERSONNEL BEING EXPERIENCED OR PROJECTED WHICH HAVE THE POTENTIAL FOR ENDANGERING THE FACILITY** **NEAR OR ONSITE TOXIC OR FLAMMABLE GAS RELEASE OF A MAGNITUDE THAT THREATENS PERSONNEL.** Detection Method: 1. Observation of release or warning from offsite.	**INITIATING CONDITION (292D)** **ENTRY INTO FACILITY ENVIRONS OF TOXIC OR FLAMMABLE GASES IN CONCENTRATION WHICH EXCEEDS THE LIMITS OF FLAMMABILITY OR TOXICITY BEING EXPERIENCED OR PROJECTED WHICH HAVE A SIGNIFICANT POTENTIAL FOR AFFECTING PLANT SAFETY** Detection Method: Observation or credible warning of an unplanned release of toxic or flammable gas within: EITHER a OR b: a. Protected Area, **OR** b. Switchyard.	**INITIATING CONDITION (392C)** **OTHER HAZARDS BEING EXPERIENCED OR PROJECTED WITH PLANT NOT IN COLD SHUTDOWN** **ENTRY OF TOXIC OR FLAMMABLE GASES INTO VITAL AREAS WHICH INVOLVE A SIGNIFICANT DEGRADATION OF PLANT SAFETY.** Detection Method: 1. Entry of toxic or flammable gases into: a. Control Room b. Cable spreading rooms c. Reactor Building d. Switchgear room e. Safe shutdown panels f. Emergency diesel generator rooms As detected by portable instrumentation and renders a train of a safety related system inoperable.	

EMERGENCY ACTION LEVELS
LOSS OR RHR AT HALF PIPE OPERATIONS

NOTIFICATION OF UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
	INITIATING CONDITION (297) **LOSS OF RESIDUAL HEAT REMOVAL FLOW FOR MORE THAN 20 MINUTES DURING HALF-PIPE OPERATIONS WITH VESSEL HEAD INSTALLED** Detection Method: **ALL** of the following (1 THROUGH 4) For a period of **20 to 40 minutes**: --- 1. Both RHR Loop A FLO LO AND RHR Loop B FLO LO annunciators in alarm, ---AND--- 2. NEITHER RHR Pump is running, ---AND--- 3. Core exit thermocouple temperatures increasing or at saturation temperature for the current RCS pressure ---AND--- 4. Reactor Vessel Head is in place and RCS loops are drained to 434'-7.43" or less.	**INITIATING CONDITION (397)** **LOSS OF RESIDUAL HEAT REMOVAL FLOW FOR MORE THAN 40 MINUTES DURING HALF-PIPE OPERATIONS WITH VESSEL HEAD INSTALLED AND HIGH HEAD SAFETY INJECTION/CHARGING UNAVAILABLE.** Detection Method: **ALL** of the following (1 THROUGH 5) For a period **greater than 40 minutes:** --- 1. Both RHR Loop A FLO LO AND RHR Loop B FLO LO annunciators in alarm, ---AND--- 2. NEITHER RHR pump is running, ---AND--- 3. Core exit thermocouple temperatures increasing or at saturation temperature for the current RCS pressure ---AND--- 4. Reactor Vessel Head is in place and RCS loops are drained to 434'-7.43" or less. ---AND--- 5. NEITHER train of Charging/SI is available.	

EMERGENCY ACTION LEVELS
LOSS OF PLANT ANNUNCIATORS

NOTIFICATION OF UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
	INITIATING CONDITION (296) **MOST OR ALL ANNUNCIATOR ALARMS LOST** Detection Method: Greater than 75% of the MCB annunciators inoperable.	**INITIATING CONDITION (396)** **MOST OR ALL ANNUNCIATORS LOST AND PLANT TRANSIENT INITIATED OR IN PROGRESS** Detection Method: **ALL** of the following (1 AND 2): 1. Greater than 75% of the MCB Annunciators inoperable, **AND** 2. Reactor Trip or Safety Injection actuation initiated or in progress.	

CONTROL ROOM EVACUATION

NOTIFICATION OF UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
	INITIATING CONDITIONS (295) **EVACUATION OF CONTROL ROOM ANTICIPATED OR REQUIRED WITH CONTROL OF SHUTDOWN SYSTEMS ESTABLISHED FROM LOCAL STATIONS** Detection Method: Same as Initiating Condition.	**INITIATING CONDITION (395)** **EVACUATION OF CONTROL ROOM AND CONTROL OF SHUTDOWN SYSTEMS NOT ESTABLISHED FROM LOCAL STATIONS IN 15 MINUTES.** Detection Method: Same as Initiating Condition.	

EMERGENCY ACTION LEVELS
EMERGENCY DIRECTOR DISCRETION

NOTIFICATION OF UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
INITIATING CONDITION (193) **OTHER PLANT CONDITIONS EXIST REQUIRING OTHER THAN NORMAL PLANT SHUTDOWN AND REQUIRING INCREASED AWARENESS ON THE PART OF STATE OFFICIALS** Detection Method: As determined by IED/ED.	**INITIATING CONDITION (293)** **OTHER PLANT CONDITIONS EXIST THAT WARRANT ACTIVATION OF TECHNICAL SUPPORT CENTER AND EMERGENCY OPERATIONS FACILITY** Detection Method: As determined by IED/ED.	**INITIATING CONDITION (393)** **OTHER PLANT CONDITIONS EXIST THAT WARRANT ACTIVATION OF EMERGENCY FACILITIES AND RADIATION MONITORING TEAMS AND A PRECAUTIONARY PUBLIC WARNING** Detection Method: As determined by IED/ED.	**INITIATING CONDITION (493)** **OTHER PLANT CONDITIONS EXIST THAT WARRANT ACTIVATION OF EMERGENCY FACILITIES AND RECOMMENDED PROTECTIVE MEASURES FOR THE PUBLIC** Detection Method: As determined by IED/ED.

EMERGENCY ACTION LEVELS
OTHER

NOTIFICATION OF UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
INITIATING CONDITION (115) **UNPLANNED LOSS OF ALL ONSITE OR OFFSITE COMMUNICATIONS CAPABILITY.** Detection Method: Unplanned loss of EITHER 1 OR 2: --- 1. **ALL** of the following onsite communications capability affecting the ability to perform routine operations. a. Internal telephone system, b. Gai-Tronics system and c. Radio System ---------- OR ---------- 2. **All** offsite communications capability. (When extraordinary means must be used to make communications.) a. Internal telephone system, b. Bell Lines, c. Fiberoptic Links and d. Radio System	**INITIATING CONDITION (294)** **LOSS OF ALL FUNCTIONS NEEDED FOR PLANT COLD SHUTDOWN** Detection Method: ALL of the following lost (1 AND 2): 1. RHR system not functional in Modes 1 to 4, **AND** 2. Inability to reject heat to the condenser and atmosphere.	**INITIATING CONDITION (394)** **LOSS OF FUNCTIONS NEEDED FOR PLANT HOT SHUTDOWN** Detection Method: 1. a. Inability to establish charging pump injection. **AND** b. Inability to establish emergency feedwater flow. **OR** 2. a. Inability to establish service water flow. **AND** b. Inability to establish component cooling water flow.	
NOTIFICATION OF UNUSUAL EVENT			
INITIATING CONDITION (114) **INABILITY TO REACH REQUIRED SHUTDOWN WITHIN TECHNICAL SPECIFICATION LIMITS** Detection Method: Same as Initiating Condition			

3.1.2 Timely: Classifications which are made consistently within the goal of 15 minutes once plant parameters reach an Emergency Action Level (EAL). Offsite notifications are initiated (verbal contact) within 15 minutes of event classification and/or PAR development. PARs are developed within 15 minutes of data availability.

3.1.3 Accurate: Classification and PAR appropriate to the event as specified by the approved plan and implementing procedure. Initial notification form completed appropriately for the event to include the following:

- Class of emergency
- Description of emergency
- Wind direction and speed
- Whether offsite protective measures are necessary
- Potentially affected population and areas
- Whether a release is taking place
- Date and time of declaration of emergency
- Whether the event is a drill or actual event

3.1.4 Communicator: The person who fills out the Emergency Notification Form and is responsible for the accuracy and timeliness of notifications. The communicator is not expected to be just a phone talker who is not responsible for the accuracy or timeliness.

3.1.5 Siren Tests: Number of sirens multiplied by the number of times they are tested.

3.1.6 Successful Siren Tests: The sum of sirens that performed their function when tested.

3.1.7 Drill: Proficiency enhancing evolution (exercise, functional drill, table top drill, mini drill, etc.) that reasonably simulate, the interactions between appropriate centers or individuals that would be expected to occur during emergencies.

4.0 CONDITIONS AND PREREQUISITES

4.1 The data that is measured on the last calendar day of the quarter is reported to the Nuclear Regulatory Commission.

4.2 Drill/Exercise Performance (DEP) monitors timely and accurate performance in drills, exercises, and actual events that presents opportunities for classification of emergencies, notification of offsite authorities, and development of Protective Action Recommendations (PARs). It is the ratio, in percent, of timely and accurate performance of those actions to total opportunities.

SOUTH CAROLINA ELECTRIC & GAS COMPANY

VIRGIL C. SUMMER NUCLEAR STATION

NUCLEAR OPERATIONS

NUCLEAR OPERATIONS

COPY NO._____

EMERGENCY PLAN PROCEDURE

EPP-001.4

GENERAL EMERGENCY

REVISION 7

SAFETY RELATED

Original signed by Robert E. Williamson for M.P. Findlay **7/1/05**
DISCIPLINE SUPERVISOR DATE

Original signed by Shaun Zarandi, DA **7/5/05**
APPROVAL AUTHORITY DATE

RECORD OF CHANGES

CHANGE LETTER	TYPE CHANGE	APPROVAL DATE	CANCELLATION DATE	CHANGE LETTER	TYPE CHANGE	APPROVAL DATE	CANCELLATION DATE
A	P	1/18/06		E	P	5/23/08	
B	P	4/25/06		F	P	7/1/08	
C	P	7/2/07					
D	P	2/13/08					

INFORMATION USE

Procedure May Be Performed From Memory.
User Retains Accountability For Proper Performance.

DOCUMENT REVIEW FORM

Document Identification

Originators Name: Leonard Bouknight **Ext:** 54089 **Mail Code:** 507

Date: 06/02/08 **Document No.:** EPP-001.4 **Revision No.:** 7 **Change Letter:** F

Title: GENERAL EMERGENCY ☒ SR ☐ QR ☐ NNS

Development Process:
Permanent: (check one) ☒ Normal Rev/Chg or ☐ Editorial Correction
☐ Temporary Approval

Description: See Attached.

Reason/Basis for Change: See attached

Is the SCOPE of the procedure affected by this change? NO ☒ YES ☐

Temporary Approval **Final approval required by: (30 days)**

QR	DC&R (Person Notified)	SS	Date
		/	

Document Reviewers (Enclosure C)

	Position	Type/Print Name	Comments Yes/No		Position	Type/Print Name	Comments Yes/No
Required	QR	McCullough	☐ ☑	*Additional			☐ ☐
	OPS		☐ ☑				☐ ☐
			☐ ☐				☐ ☐
			☐ ☐				☐ ☐
			☐ ☐				☐ ☐

Concurrence _____ 6/2/08
Supervisor/Date

Comment Due Date 6/16/08

Pre- implementation Actions

All Comments Resolved	☑ Yes	JLBouknight 06/19/08 Originator/Date	
Commitments Addressed per SAP-0630	☒ NA	☐ Yes, P/CAP # _____	☐ MLSA _____ Initial/Date
50.59 Applicability/Review Completed (SAP-0107)	☒ NA	☐ Yes, Attached	
Pre-implementation Training Completed	☒ NA	☐ Yes	
Training required after implementation	☒ NA	☐ Yes, CR # _____	
PSRC Review Completed	☒ NA	☐ Yes, Mtg. No _____	
NSRC Review Completed	☒ NA	☐ Yes, Mtg. No _____	
CHAMPS Update Required	☒ NA	☐ Yes Planner Notified _____ Initial/Date	

_____ 6/27/08
Supervisor/Date

_____ 7-1-08
Approval Authority/Date

* Failure by the "Additional Reviewers" to provide comments within 5 working days following the comment due date may be considered as "No Comment"

DOCUMENT REVIEW FORM

Procedure Change: Revised Attachment I deleting the Step for the Shift Supervisor to Complete the NRC Notification Form, this form is being eliminated and the State and local ENF will be used to notify the NRC, also added guidance for the SS to ensure completion of the ENF. Added announcing the emergency over the "NLC Spkr" radio channel to notify site personnel.

Reason for Change: INPO AFI OP.1-2 Shortfalls exist with shift supervisor (SS) oversight during a few transient and normal plant operations. Problems include the SS being distracted from oversight responsibilities during a simulated reactor trip and safety injection.

10CFR 50.54(q) Evaluation: See evaluation completed on the attached SAP-127 Attachment II.

Procedure Change: Revised Attachment III providing guidance for the Shift Communicator to activate ERDS.

Reason for Change: ERDs is required to be activated with one hour of the declaration of an Alert or greater emergency. This will ensure the ERDs is activated as required and provide information to the NRC quicker.

10CFR 50.54(q) Evaluation: See evaluation completed on the attached SAP-127 Attachment II.

* Failure by the "Additional Reviewers" to provide comments within 5 working days following the comment due date may be considered as "No Comment".

DOCUMENT REVIEW FORM

Page 1 of 1

Document Identification

Originators Name: Leonard Bouknight **Ext:** 54089 **Mail Code:** 507

Date: 04/28/08 **Document No.:** EPP-001.4 **Revision No.:** 7 **Change Letter:** E

Title: GENERAL EMERGENCY ☒ SR ☐ QR ☐ NNS

Development Process:
Permanent: (check one) ☒ Normal Rev/Chg or ☐ Editorial Correction
☐ Temporary Approval

Description: 1. Revise Attachment II deleting "NO" from the flowchart.

Reason/Basis for Change: This NO is not required in the decision making process

Is the SCOPE of the procedure affected by this change? NO ☒ YES ☐

Temporary Approval **Final approval required by: (30 days)**

QR	DC&R (Person Notified)	SS	Date
		/	

Document Reviewers (Enclosure C)

	Position	Type/Print Name	Comments Yes/No		Position	Type/Print Name	Comments Yes/No
Required	QR	T. McCullough	☐ ☑	*Additional			☐ ☐
	NL		☐ ☑				☐ ☐
			☐ ☐				☐ ☐
			☐ ☐				☐ ☐
			☐ ☐				☐ ☐

Concurrence 4/29/08
Supervisor/Date

Comment Due Date

Pre- implementation Actions

All Comments Resolved	☑ Yes	Originator/Date	
Commitments Addressed per SAP-0630	☑ NA	☐ Yes, P/CAP # ____ ☐ MLSA	Initial/Date
50.59 Applicability/Review Completed (SAP-0107)	☑ NA	☐ Yes, Attached	
Pre-implementation Training Completed	☑ NA	☐ Yes	
Training required after implementation	☑ NA	☐ Yes, CR #	
PSRC Review Completed	☑ NA	☐ Yes, Mtg. No.	
NSRC Review Completed	☑ NA	☐ Yes, Mtg. No.	
CHAMPS Update Required	☑ NA	☐ Yes Planner Notified	Initial/Date

5/13/08
Supervisor/Date

5/23/08
Approval Authority/Date

* Failure by the "Additional Reviewers" to provide comments within 5 working days following the comment due date may be considered as "No Comment"

DOCUMENT REVIEW FORM

Document Identification

Originators Name: Leonard Bouknight **Ext:** 54089 **Mail Code:** 507

Date: 01/03/08 **Document No.:** EPP-001.4 **Revision No.:** 7 **Change Letter:** D

Title: General Emergency ☒ SR ☐ QR ☐ NNS

Development Process:
Permanent: (check one) ☒ Normal Rev/Chg or ☐ Editorial Correction
☐ Temporary Approval

Description: Revised to add flow path from block "Modify Protective Actions as Necessary. Do not relax protective actions in any EPZ zones that were previously evacuated" to the block "Continue Assessment of Containment fission product inventory, dose assessment, etc"

Reason/Basis for Change: Correct potential problem with the flow chart by providing additional path to continue assessing potential releases. This was a comment from the NRC during review of flowchart.
Is the SCOPE of the procedure affected by this change? NO ☒ YES ☐

Temporary Approval **Final approval required by: (30 days)**

QR	DC&R (Person Notified)	SS	Date
		/	

Document Reviewers (Enclosure C)

	Position	Type/Print Name	Comments Yes/No			Position	Type/Print Name	Comments Yes/No	
Required	QR	McCullough	☐	☑	*Additional			☐	☐
	NRC RW 1/4/08		☐	☐				☐	☐
			☐	☐				☐	☐
			☐	☐				☐	☐
			☐	☐				☐	☐

Concurrence
Supervisor/Date 1/4/08

Comment Due Date 1/18/08

Pre- implementation Actions

All Comments Resolved	☑ Yes	Originator/Date 02-06-08	
Commitments Addressed per SAP-0630	☑ NA	☐ Yes, P/CAP # ____ ☐ MLSA	Initial/Date
50.59 Applicability/Review Completed (SAP-0107)	☑ NA	☐ Yes, Attached	
Pre-implementation Training Completed	☑ NA	☐ Yes	
Training required after implementation	☑ NA	☐ Yes, CR # ____	G
PSRC Review Completed	☑ NA	☐ Yes, Mtg. No. ____	
NSRC Review Completed	☑ NA	☐ Yes, Mtg. No. ____	
CHAMPS Update Required	☑ NA	☐ Yes Planner Notified ____ Initial/Date	C

Supervisor/Date 2/6/08

Approval Authority/Date 2-13-08

* Failure by the "Additional Reviewers" to provide comments within 5 working days following the comment due date may be considered as "No Comment".

DOCUMENT REVIEW FORM

Document Identification

Originators Name: Leonard Bouknight **Ext:** 54089 **Mail Code:** 507

Date: 06/06/07 **Document No.:** EPP-001.4 **Revision No.:** 7 **Change Letter:** C

Title: General Emergency ☒ SR ☐ QR ☐ NNS

Development Process:
Permanent: (check one) ☒ Normal Rev/Chg or ☐ Editorial Correction
☐ Temporary Approval

Description: Added Instructions to recommend Potassium Iodide as part of Protective Action Recommendations in Attachment II. Correct Typo in Section 6.1.

Reason/Basis for Change: Update the Attachment to required Protective Actions Recommendations. This was Identified during training drill CR-07-00964 Action #1. Correct Typo..

Is the SCOPE of the procedure affected by this change? NO ☒ YES ☐

Temporary Approval **Final approval required by: (30 days)**

QR	DC&R (Person Notified)	SS	Date
		/	

Document Reviewers (Enclosure C)

	Position	Type/Print Name	Comments Yes/No		Position	Type/Print Name	Comments Yes/No
Required	QR	McCullough	☐ ☑	*Additional			☐ ☐
			☐ ☐				☐ ☐
			☐ ☐				☐ ☐
			☐ ☐				☐ ☐
			☐ ☐				☐ ☐

Concurrence: 6/7/07
Supervisor/Date

Comment Due Date: 6/21/07

Pre- implementation Actions

All Comments Resolved	☑ Yes	6-11-07 Originator/Date
Commitments Addressed per SAP-0630	☑ NA	☐ Yes, P/CAP # ____ ☐ MLSA ____ Initial/Date
50.59 Applicability/Review Completed (SAP-0107)	☑ NA	☐ Yes, Attached
Pre-implementation Training Completed	☑ NA	☐ Yes
Training required after implementation	☐ NA	☑ Yes, CER # 07-1852
PSRC Review Completed	☑ NA	☐ Yes, Mtg. No. ____
NSRC Review Completed	☑ NA	☐ Yes, Mtg. No. ____
CHAMPS Update Required	☑ NA	☐ Yes Planner Notified ____ Initial/Date

C

6/19/07
Supervisor/Date

7/2/07
Approval Authority/Date

* Failure by the "Additional Reviewers" to provide comments within 5 working days following the comment due date may be considered as "No Comment".

DOCUMENT REVIEW FORM

Page 1 of 1

Document Identification

Originators Name: Mark Counts **Ext:** 54099 **Mail Code:** 507

Date: 4/18/06 **Document No.:** EPP-001.4 **Revision No.:** 7 **Change Letter:** B

Title: General Emergency ☒ SR ☐ QR ☐ NNS

Development Process:
Permanent: (check one) ☒ Normal Rev/Chg or ☐ Editorial Correction
☐ Temporary Approval ☐ Restricted Chg (expires: _____)

Description: Editorial change to Attachment II. Enlarged a text box that was hiding some text.

Reason/Basis for Change: Correct an error.

Is the SCOPE of the procedure affected by this change? NO ☒ YES ☐ **If yes, attach SAP-0107 form.**

Temporary Approval **Final approval required by: (30 days)**

QR	DC&R (Person Notified)	SS	Date
		/	

Document Reviewers (Enclosure C)

	Position	Type/Print Name	Comments Yes/No		Position	Type/Print Name	Comments Yes/No
Required	QR	B. Williamson	☐ ☒	*Additional			☐ ☐
			☐ ☐				☐ ☐
			☐ ☐				☐ ☐
			☐ ☐				☐ ☐
			☐ ☐				☐ ☐
			☐ ☐				☐ ☐

Concurrence: for MAF 4/24/06
Supervisor/Date

Comment Due Date **ASAP**

Pre- implementation Actions

All Comments Resolved	☒ Yes	Originator/Date
Commitments Addressed per SAP-0630	☒ NA	☐ Yes, P/CAP # _____ ☐ MLSA
50.59 Applicability/Review Completed (SAP-0107)	☒ NA	☐ Yes, Attached
Pre-implementation Training Completed	☒ NA	☐ Yes
Training required after implementation	☒ NA	☐ Yes, CER # _____
PSRC Review Completed	☒ NA	☐ Yes, Mtg. No. _____
NSRC Review Completed	☒ NA	☐ Yes, Mtg. No. _____
Other: _____	☒ NA	☐ Yes

for MAF 4/24/06
Supervisor/Date

4/25/06
Approval Authority/Date

* Failure by the "Additional Reviewers" to provide comments within 5 working days following the comment due date may be considered as "No Comment".

DOCUMENT REVIEW FORM

Document Identification

Originators Name: Mark Counts **Ext.:** 54099 **Mail Code:** 507

Date: 11/03/05 **Document No.:** EPP-001.4 **Revision No.:** 7 **Change Letter:** A

Title: General Emergency ☒ SR ☐ QR ☐ NNS

Development Process:
Permanent: (check one) ☒ Normal Rev/Chg or ☐ Editorial Correction
☐ Temporary Approval ☐ Restricted Chg (expires: _____)

Description: Changed definition of a General Emergency. Added guidance on OEC responsibility.

Reason/ Basis for Change: Performed this change in accordance with NRC Bulletin 2005-02 and CER 05-2864. This change does not alter the scope of this procedure.

Temporary Approval **Final approval required by:**
QR _____ **DC&R** _____ (Person Notified) **SS** ____/____ **(30 days)** ___/___/___ (Date)

Document Reviewers (Enclosure C)

	Position	Type/ Print Name	Comments Yes/No
Required	QR	B. Williamson	☐☐
	Ops		☐☐
			☐☐
			☐☐
			☐☐
			☐☐
Additional	GMNSS	K. Nettles	☐☐
			☐☐
			☐☐
			☐☐
			☐☐
			☐☐

Concurrence: [signature] 12/8/05
Discipline Supervisor/ Date

Comment Due Date: **12/22/05**

Pre- implementation Actions

All Comments Resolved	☒ Yes	[signature] 1-3-06 Originator/ Date
Commitments Addressed per SAP-0630	☐ NA	☒ Yes, P/CAP # COI ☐ MLSA
50.59 Applicability/ Review Completed (SAP0107)	☒ NA	☐ Yes, Attached
Pre-implementation Training Completed	☐ NA	☒ Yes
Training required after implementation	☒ NA	☐ Yes, CER # _____
PSRC Review Completed	☒ NA	☐ Yes, Mtg. No. _____
NSRC Review Completed	☒ NA	☐ Yes, Mtg. No. _____
Other: _____	☐ NA	☐ Yes

[signature] 1/17/06
Discipline Supervisor / Date

[signature] 1-18-06
Approval Authority / Date

* Failure by the "Additional Reviewers" to provide comments within 5 working days following the comment due date may be considered as "No Comment".

DOCUMENT REVIEW FORM

Page 1 of 1

Document Identification

Originators Name: Mark Counts **Ext.:** 54099 **Mail Code:** 507

Date: 4/25/05 **Document No.:** EPP-001.4 **Revision No.:** 7 **Change Letter:** N/A

Title: General Emergency ☒ SR ☐ QR ☐ NNS

Development Process:
Permanent: (check one) ☒ Normal Rev/Chg or ☐ Editorial Correction
☐ Temporary Approval ☐ Restricted Chg (expires: _____)

Description: Revised Attachment I, Attachment II, Attachment III and removed reference to EIS. This revision does not alter the scope of this procedure.

Reason/ Basis for Change: RIS 2004-13 Supplement 1 and other changes to enhance the procedure.

Temporary Approval
QR _____ **DC&R** _____ (Person Notified) **SS** ____/____ **Final approval required by:** **(30 days)** ___/___/___ (Date)

Document Reviewers (Enclosure C)

	Position	Type/ Print Name	Comments Yes/No		Position	Type/ Print Name	Comments Yes/No
Required	QR	BH. Schwartz	☒ ☐	Additional	GM, NSS	K. Nettles	☐ ☐
	Ops.	D. BAKER	☒ ☐				☐ ☐
			☐ ☐				☐ ☐
			☐ ☐				☐ ☐
			☐ ☐				☐ ☐
			☐ ☐				☐ ☐

Concurrence: for MPF 7/11/05
Discipline Supervisor/ Date

Comment Due Date: **6/16/05**

Pre- implementation Actions

All Comments Resolved	☒ Yes	7/11/05 (Originator/ Date)
Commitments Addressed per SAP-0630	☒ NA	☐ Yes, P/CAP # _____ ☐ MLSA
50.59 Applicability/ Review Completed (SAP0107)	☒ NA	☐ Yes, Attached
Pre-implementation Training Completed	☐ NA	☒ Yes
Training required after implementation	☒ NA	☐ Yes, CER # _____
PSRC Review Completed	☒ NA	☐ Yes, Mtg. No. _____
NSRC Review Completed	☒ NA	☐ Yes, Mtg. No. _____
Other:	☒ NA	☐ Yes

7/11/05 for MPF
Discipline Supervisor / Date

DA 7-5-05
Approval Authority / Date

* Failure by the "Additional Reviewers" to provide comments within 5 working days following the comment due date may be considered as "No Comment".

TABLE OF CONTENTS

1.0 PURPOSE AND SCOPE

1.1 This procedure describes the actions to be taken in the event that a General Emergency condition has been declared at the V. C. Summer Nuclear Station.

1.2 Changes and revisions to this procedure must ensure compliance with the requirements of SAP-630, 10CFR50.54.q and 10CFR50 Appendix B. A 10CFR50.59 review is not required.

2.0 REFERENCES

2.1 V. C. Summer Nuclear Station, Radiation Emergency Plan, FSAR, Section 13A.

2.2 NUREG-0654, Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants.

2.3 10CFR50, Applicability of License Conditions and Technical Specifications in an Emergency.

2.4 EPP-001, Activation and Implementation of Emergency Plan.

2.5 NUREG-0396, Planning Basis for the Development of State and Local Government Radiological Emergency Response Plans in Support of Light Water Nuclear Power Plants, December 1978.

2.6 IN 83-28, Criteria for Protective Action Recommendations for General Emergencies.

2.7 RIS 04-13 Supplement 1, Consideration of Sheltering in Licensee's Range of Protective Action Recommendations.

2.8 WCAP-14696-A Revision 1, Westinghouse Owners Group Core Damage Assessment Guidance.

3.0 DEFINITIONS

C01→ 3.1 General Emergency - Events are in process or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity or hostile actions that result in an actual loss of physical control of the facility. Releases can be reasonably expected to exceed EPA Protective Action Guideline exposure levels offsite for more than the immediate site area. Chg. A

3.2 Early Warning Siren System (EWSS) - The primary means for alerting the public within the 10 mile Emergency Planning Zone around the nuclear plant.

3.3 Severe Core Damage – Fuel over-temperature condition where fuel pellets have reached a temperature where there is a rapid movement of fission products from the fuel pellet matrix to the reactor coolant system.

4.0 CONDITIONS AND PREREQUISITES

4.1 The Duty Shift Supervisor shall concur with any actions that depart from a license condition or technical specification in an emergency when such actions are immediately needed to protect the public health and safety.

4.2 Attachment II should be used by the Interim Emergency Director/Emergency Director/Offsite Emergency Coordinator (IED/ED or OEC) as an aid in determining which Protective Actions should be recommended to government officials when a General Emergency is declared.

5.0 PROCEDURE

5.1 A General Emergency has been declared in accordance with EPP-001.

5.2 Initial Actions (Initial Actions Summary, see Attachment I).

5.2.1 The Interim Emergency Director (IED) or the Emergency Director (ED) shall accomplish, or cause to be accomplished, the following:

A. Determine the location to which non-essential personnel will be evacuated. (Refer to Attachment IV for guidance).

NOTE 5.2.1.B

The plant page announcement should be modified by the IED/ED as is appropriate for current conditions.

B. Announce the emergency condition and site evacuation to all plant personnel over the plant paging system.

Attention in the Plant. Attention in the Plant:

The station is in a General Emergency Condition. The initiating event is _____ . All Emergency Response Personnel report to your duty stations. All non-essential personnel evacuate the site. Proceed to (choose one):

Your Private Residence.
or
The Southern Offsite Holding Area.
or
The Northern Offsite Holding Area.

All Essential personnel in the Radiation Control Area assemble at the RCA Checkpoint. All personnel shall refrain from eating, drinking, smoking or chewing until further notice. Chg. A

C. Sound the Radiation Emergency Alarm.

D. Repeat the announcement.

NOTE 5.2.1.E

Guidance for the Shift Communicator may be found on Attachment III and is performed concurrently with IED initial actions.

E. Direct the Shift Communicator to complete the initial notifications in accordance with EPP-002. Designate to the Shift Communicator whether the Emergency Operations Facility (EOF) or Backup EOF will be utilized. (Refer to Attachment V for guidance.)

NOTE 5.2.1.F

The information in Attachment II intended as guidance and may not include all situations. The IED/ED/OEC should use best judgment when recommending Protective Actions to offsite officials.

F. Refer to Attachment II for Protective Action Recommendations for offsite areas.

G. Activate the EWSS in accordance with EPP-021.

H. Notify Security of call-in.

I. Ensure on-shift personnel have responded to their emergency response stations as follows:

1. When the Operations Support Center (OSC) is not activated, assign a Maintenance person to record names and badge numbers of all essential shift workers, including Operations personnel.

2. Provide names of all essential shift workers to the Technical Support Center (TSC)/Security.

NOTE 5.2.1.J

Consideration should be given to access routes taken.

J. Request Offsite Emergency Services (Fire, Medical, Law Enforcement, etc.) if required, in accordance with EPP-002.

K. Repeat Steps 5.2.1.B, C, and D.

L. Ensure the Emergency Log Book or the TSC AutoLog is established and maintained. Attachment I should be used as the log of those items listed on Attachment I. Any other pertinent items should be noted in the Emergency Log Book or the TSC AutoLog.

M. Update the OEC as conditions warrant.

N. Ensure TSC/OSC/EOF/Backup EOF is being activated in accordance with EPP-023 and EPP-051.

O. If non-essential personnel have been evacuated to an Offsite Holding Area, ensure HP personnel are assigned to report to that Offsite Holding Area.

P. If actions depart from license conditions and Technical Specifications, refer to Step 4.1. Document in the Emergency Log Book or the TSC AutoLog and notify Plant Management. Notify the NRC Operations Center as soon as possible.

5.2.2 Initial Actions for All Other Personnel

A. Emergency Response Personnel report to their designated stations.

B. Non-essential personnel evacuate the site, proceed to their private residence or offsite holding area as designated by the IED/ED, and await further instructions.

C. Personnel in the Radiation Control Area (RCA) report to the RCA Control Point on the 412' level of the Control Building, unless otherwise directed.

D. Perform accountability of Protected Area personnel in accordance with EPP-012.

NOTE 5.2.2.E

Essential shift workers who are involved with maintenance on essential equipment must notify the Control Room (CR) to determine if the work should proceed.

E. When the OSC is not activated, essential shift workers report to the Control Room.

5.3 Follow-up Actions

5.3.1 IED

A. Ensure updated follow-up notifications are made in accordance with EPP-002 hourly and when conditions change that could affect offsite areas and/or emergency response activities.

B. Update the ED of the status of the emergency and current plant conditions, as necessary.

C. Ensure plant page announcements are made periodically to update personnel on emergency conditions, as appropriate.

D. Continue assessments and corrective actions to mitigate the emergency condition and place the plant into a safe and controlled condition.

E. Make assignments to the staff to mitigate the emergency conditions in accordance with established procedures, or as required for conditions.

F. Dispatch essential shift workers to the OSC when the OSC is activated.

G. Continually assess the status of the General Emergency condition for possible recommendation to the ED to enter the recovery phase.

5.3.2 ED

A. Assume the duties of the IED as soon as possible when onsite and thoroughly cognizant of the situation.

B. Ensure updated follow-up notifications are made in accordance with EPP-002, hourly and when conditions change that could affect offsite areas and/or emergency response activities. These notifications will be accomplished by the EOF when the EOF is activated.

C. Ensure plant page announcements are made periodically to update personnel on emergency conditions, as appropriate.

D. Update the OEC of the status of the emergency and current plant conditions, as necessary.

E. Verify the TSC/OSC are manned and activated in accordance with EPP-023.

F. Continually assess the status of the General Emergency condition.

5.3.3 OEC

A. Maintain awareness of the plant status and potential offsite consequences of the emergency.

B. Ensure updated follow-up notifications are made in accordance with EPP-002, hourly and when conditions change that could affect offsite areas and/or emergency response activities. This includes development and approval of dose projections and Protective Action Recommendations. Chg A

C. Verify the EOF is manned and activated in accordance with EPP-051.

D. Keep the ED informed of offsite radiological conditions.

5.4 Final Actions

5.4.1 The ED will determine when plant conditions warrant entry into the recovery phase. The NRC and Department of Health and Environment Control (DHEC) must agree with this decision.

5.4.2 The ED/OEC shall ensure that offsite authorities are:

A. Notified verbally by normal emergency communications in accordance with EPP-002.

B. Provided a written summary within 8 hours of the closeout of the emergency. This is the responsibility of Nuclear Licensing.

5.4.3 Initiate EPP-017 as required.

6.0 RECORDS

6.1 Forward all written material or copies of written material generated as a result of an emergency to the Emergency Services Unit (ESU). The ESU will ensure appropriate written material included in the applicable Condition Evaluation Report. Chg C

7.0 REVISION SUMMARY

7.1 Incorporated Changes A through D.

7.2 Deleted the references in Section 2.0 that did not pertain to the development or revision of this procedure in accordance with SAP-139.

7.3 Added references 2.5 through 2.8 that included basis for development of plant-based Protective Action Recommendations.

7.4 Added Step 3.1.3 – Added the definition for Severe Core Damage.

7.5 Step 5.2.1.L., P. and Attachment I – Replaced the word EIS with AutoLog. AutoLog is the current method for logging plant activities.

7.6 Revised Attachment I to include the plant announcement from the body of the procedure. This is an enhancement to this attachment.

7.7 Attachment I, Line 17 – Added the words "Ensure the Communicator has" to indicate that the Communicator is the individual who activated the sirens, not the IED/ED/OEC.

7.8 Revised Attachment II to provide more detailed guidance for the determination of Protective Actions that will be recommended to State and local officials.

7.9 Revised Attachment III to indicate that Fairfield County is the controlling county for siren activation, not Newberry County.

7.10 Change A revisions include:

7.10.1 Step 3.1.1 – Revised the definition of a General Emergency as required by NRC Bulletin 2005-02 and CER 05-2864.

7.10.2 Step 5.2.1 B and Attachment I – Added statement in the announcement for personnel to refrain from eating, drinking, smoking or chewing until further notice.

7.10.3 Step 5.3.3 B – Added statement concerning approval of dose projections and Protective Action Recommendations.

7.11 Change B revisions include:

7.11.1 Attachment II – Enlarged a text box that was hiding some text.

7.12 Change F revisions include:

7.12.1 Revised Attachment I deleting the Step for the Shift Supervisor to Complete the NRC Notification Form, this form is being eliminated and the State and local ENF will be used to notify the NRC, also added guidance for the SS to ensure completion of the ENF.

Chg. F

7.12.2 Revised Attachment III providing guidance for the Shift Communicator to activate ERDS.

GENERAL EMERGENCY
INITIAL ACTIONS SUMMARY

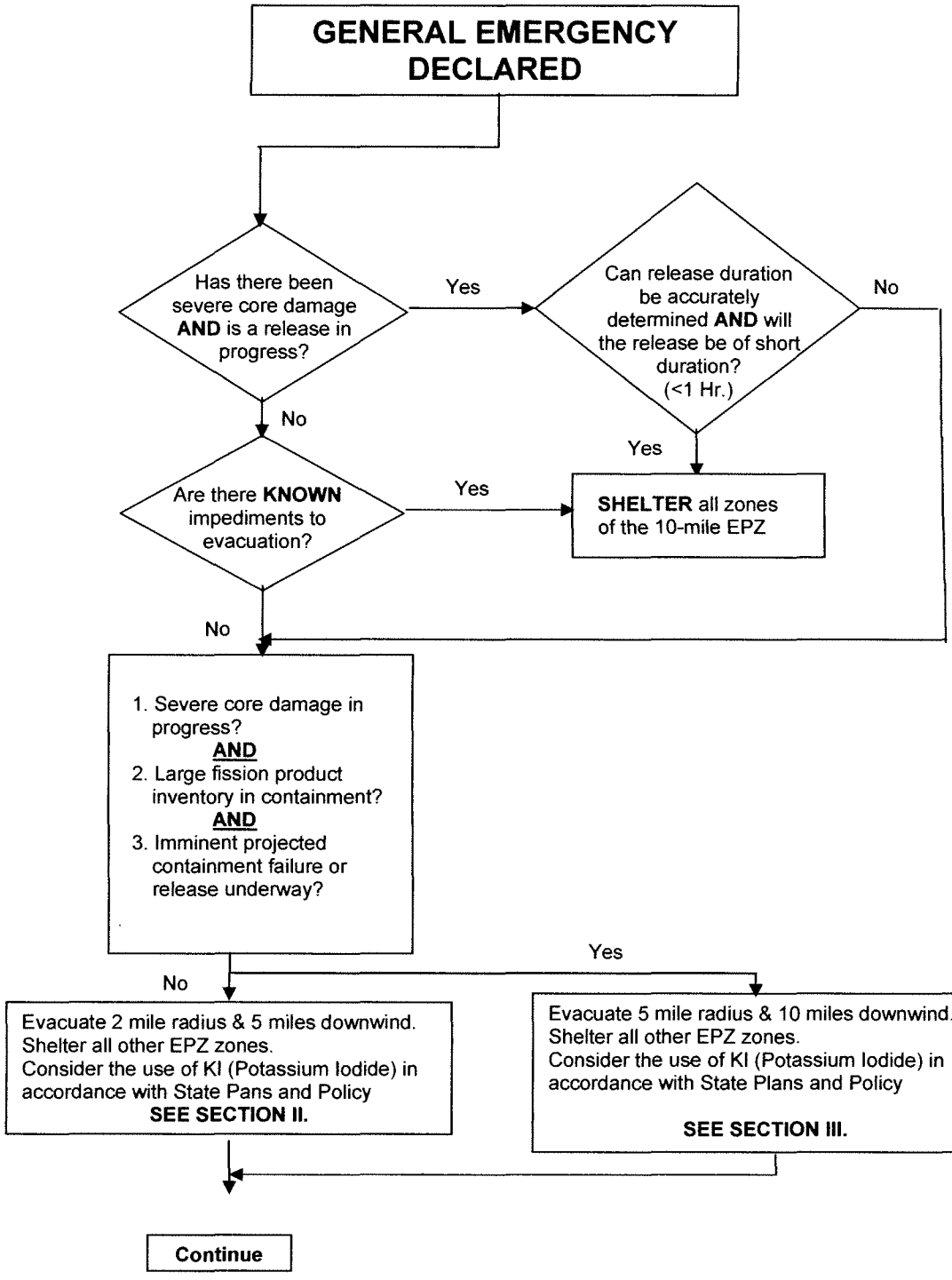
DATE: XX/XX/XX

		INITIAL ACTIONS	TIME
	1.	Assess Conditions and Classify Emergency	XXXX
	2.	Announce to Plant Personnel Attention in the Plant. Attention in the Plant: The station is in a General Emergency Condition. The initiating event is Detection Methods from IC (431) All Emergency Response Personnel report to your duty stations. All non-essential personnel evacuate the site. Proceed to (choose one): Your Private Residence. or The Southern Offsite Holding Area. or The Northern Offsite Holding Area.	
Chg. A		All Essential personnel in the Radiation Control Area assemble at the RCA Checkpoint. All personnel shall refrain from eating, drinking, smoking or chewing until further notice.	XXXX
	3.	Sound Radiation Emergency Alarm	
	4.	Repeat Announcement to Plant Personnel	
	5.	Determine the EOF location (EPP-001.4 Att V)	
	6.	Ensure Shift Communicator activates beepers Notify Security of call-in	
	7.	Ensure completion of Emergency Notification Form (EPP-002 Att. I) Found in EP Tool Box.	
	8.	Refer to EPP-001.4 Att. II for determining Protective Action Recommendations and Enter on the Emergency Notification Form	
	9.	Ensure Communicator performs "Recommendation for Actuation of the EWSS" (EPP-021 Att. I) Found in EP Tool Box	
	10.	Ensure Fairfield Pumped Storage has been Notified to Evacuate to the same Location as the Plant Non-Essentials	
	*11.	Ensure Essential Shift Workers have reported to CR Area	
	*12.	Assign Person (Maintenance) To Record Names and Badge Numbers of All Essential Personnel (including Operations personnel) - Provide to TSC/Security	
	13.	Repeat Announcement to Plant Personnel and make announcement over the "NLC Spkr" radio channel.	
	14.	Sound Radiation Emergency Alarm	
	15.	Repeat Announcement to Plant Personnel and make announcement over the "NLC Spkr" radio channel.	
	16.	Ensure Communicator has Activated EWSS In Coordination with EAS Activation (EPP-021)	
	17.	Request Offsite Emergency Services if Required (ESSX *42) - Notify Security	
	18.	Commence record-keeping in the ED log book or in the TSC AutoLog	

*Off-Normal Hours Only.

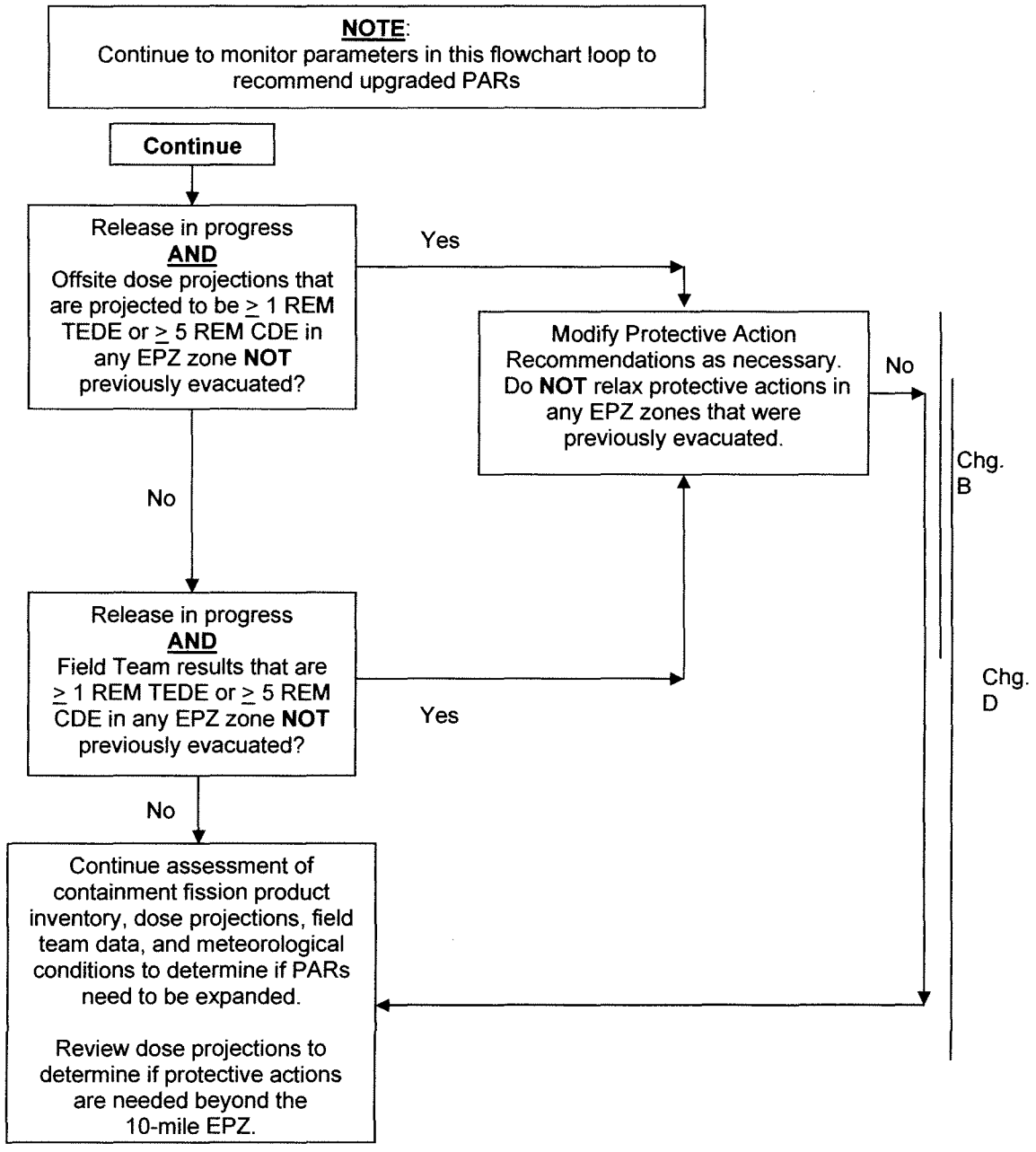
Signature _____

PROTECTIVE ACTION RECOMMENDATIONS



Chg. C

PROTECTIVE ACTION RECOMMENDATIONS



PROTECTIVE ACTION RECOMMENDATIONS

I. DEFINITIONS

A. Severe Core Damage is indicated by **ANY** of the following:

1. Containment Rad. Monitor > 10,000 R/Hr. without RB Spray operating.
   OR
   Containment Rad. Monitor >4,000 R/Hr. with RB Spray operating.
2. Core Exit Thermocouple > 2000°F.
3. Core uncovered > 30 minutes.
4. Containment H_2 >1%
5. Emergency Director Judgment.

B. Large fission product inventory in the containment is indicated by **ANY** of the following:

1. A Loss of Coolant Accident > Charging Pump capacity.
2. Containment H_2 > 1 %.
3. An unplanned, unexplained rapid primary system depressurization with corresponding containment pressure increase.
4. Emergency Director Judgment.

C. Imminent projected containment failure or release underway is indicated by **ANY** of the following:

1. Containment pressure > 57 psig.
2. Rapid uncontrolled decrease in containment pressure following an initial increase due to RCS failure.
3. Failure of containment isolation system resulting in a direct path from the containment to the environment.
4. Containment H_2 concentration > 4%.
5. Unisolable faulted/ruptured S/G.
6. Emergency Director Judgment.

D. Known Impediments – events or conditions recognized to exist prior to or during the event. It is not intended that VCS personnel attempt to obtain information on travel conditions beyond what is already established.

1. External natural emergencies (e.g. Tornado, hurricane, ice storm)
2. Road damage that could prevent flow of traffic (e.g. bridge damage, road construction)

PROTECTIVE ACTION RECOMMENDATIONS

II. 2-MILE RADIUS, 5 MILES DOWNWIND EVACUATION / SHELTERING

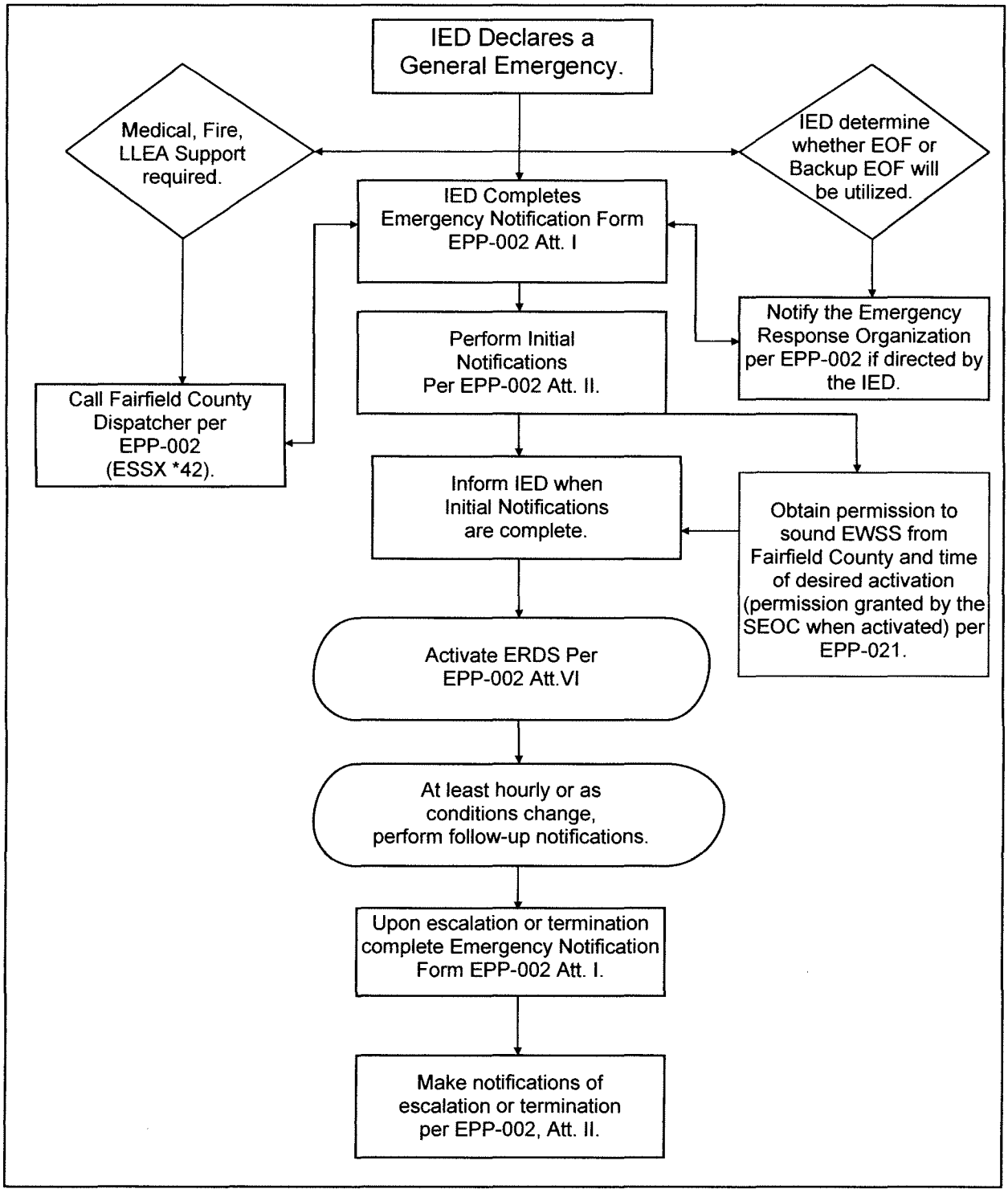
Wind Direction (From)	Compass Bearing	Evacuate EPZ Zones	Shelter EPZ Zones
348.76° - 11.25°	N	A-0, C-1, D-1, E-1	A-1, B-1, F-1, A-2, B-2, C-2, D-2, E-2, F-2
11.26° - 33.75°	NNE	A-0, C-1, D-1, E-1	A-1, B-1, F-1, A-2, B-2, C-2, D-2, E-2, F-2
33.76° - 56.25°	NE	A-0, E-1	A-1, B-1, C-1, D-1, F-1, A-2, B-2, C-2, D-2, E-2, F-2
56.26° - 78.75°	ENE	A-0, E-1, F-1	A-1, B-1, C-1, D-1, A-2, B-2, C-2, D-2, E-2, F-2
78.76° -101.25°	E	A-0, E-1, F-1	A-1, B-1, C-1, D-1, A-2, B-2, C-2, D-2, E-2, F-2
101.26° - 123.75°	ESE	A-0, A-1, F-1	B-1, C-1, D-1, E-1, A-2, B-2, C-2, D-2, E-2, F-2
123.76° - 146.25°	SE	A-0, A-1, F-1	B-1, C-1, D-1, E-1, A-2, B-2, C-2, D-2, E-2, F-2
146.26° - 168.75°	SSE	A-0, A-1, F-1	B-1, C-1, D-1, E-1, A-2, B-2, C-2, D-2, E-2, F-2
168.76° - 191.25°	S	A-0, A-1, B-1	C-1, D-1, E-1, F-1, A-2, B-2, C-2, D-2, E-2, F-2
191.26° - 213.75°	SSW	A-0, A-1, B-1	C-1, D-1, E-1, F-1, A-2, B-2, C-2, D-2, E-2, F-2
213.76° - 236.25°	SW	A-0, A-1, B-1, C-1	D-1, E-1, F-1, A-2, B-2, C-2, D-2, E-2, F-2
236.26° - 258.75°	WSW	A-0, A-1, B-1, C-1	D-1, E-1, F-1, A-2, B-2, C-2, D-2, E-2, F-2
258.76° - 281.25°	W	A-0, B-1, C-1	A-1, D-1, E-1, F-1, A-2, B-2, C-2, D-2, E-2, F-2
281.26° - 303.75°	WNW	A-0, C-1	A-1, B-1, D-1, E-1, F-1, A-2, B-2, C-2, D-2, E-2, F-2
303.76° - 326.25°	NW	A-0, C-1	A-1, B-1, D-1, E-1, F-1, A-2, B-2, C-2, D-2, E-2, F-2
326.26° - 348.75°	NNW	A-0, C-1, D-1	A-1, B-1, E-1, F-1, A-2, B-2, C-2, D-2, E-2, F-2

PROTECTIVE ACTION RECOMMENDATIONS

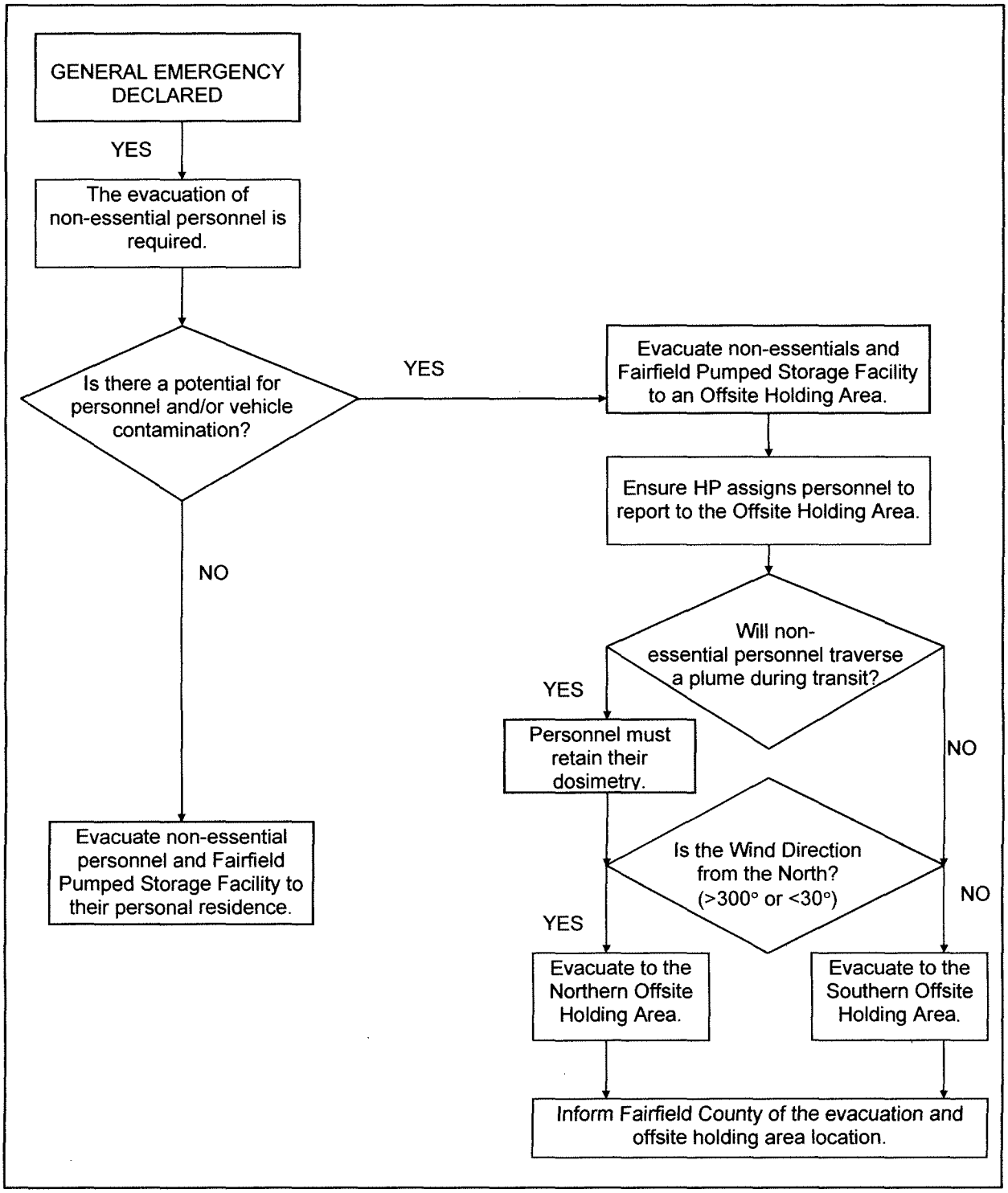
III. 5-MILE RADIUS, 10 MILES DOWNWIND EVACUATION / SHELTERING

Wind Direction (From)	Compass Bearing	Evacuate EPZ Zones	Shelter EPZ Zones
348.76° - 11.25°	N	A-0, A-1, B-1, C-1, D-1, E-1, F-1, D-2	A-2, B-2, C-2, E-2, F-2
11.26° - 33.75°	NNE	A-0, A-1, B-1, C-1, D-1, E-1, F-1, D-2, E-2	A-2, B-2, C-2, F-2
33.76° - 56.25°	NE	A-0, A-1, B-1, C-1, D-1, E-1, F-1, D-2, E-2	A-2, B-2, C-2, F-2
56.26° - 78.75°	ENE	A-0, A-1, B-1, C-1, D-1, E-1, F-1, E-2, F-2	A-2, B-2, C-2, D-2
78.76° -101.25°	E	A-0, A-1, B-1, C-1, D-1, E-1, F-1, E-2, F-2	A-2, B-2, C-2, D-2
101.26° - 123.75°	ESE	A-0, A-1, B-1, C-1, D-1, E-1, F-1, F-2	A-2, B-2, C-2, D-2 E-2
123.76° - 146.25°	SE	A-0, A-1, B-1, C-1, D-1, E-1, F-1, A-2, F-2	B-2, C-2, D-2, E-2
146.26° - 168.75°	SSE	A-0, A-1, B-1, C-1, D-1, E-1, F-1, A-2, F-2	B-2, C-2, D-2, E-2
168.76° - 191.25°	S	A-0, A-1, B-1, C-1, D-1, E-1, F-1, A-2	B-2, C-2, D-2, E-2, F-2
191.26° - 213.75°	SSW	A-0, A-1, B-1, C-1, D-1, E-1, F-1, A-2, B-2	C-2, D-2, E-2, F-2
213.76° - 236.25°	SW	A-0, A-1, B-1, C-1, D-1, E-1, F-1, A-2, B-2	C-2, D-2, E-2, F-2
236.26° - 258.75°	WSW	A-0, A-1, B-1, C-1, D-1, E-1, F-1, B-2, C-2	A-2, D-2, E-2, F-2
258.76° - 281.25°	W	A-0, A-1, B-1, C-1, D-1, E-1, F-1, B-2, C-2	A-2, D-2, E-2, F-2
281.26° - 303.75°	WNW	A-0, A-1, B-1, C-1, D-1, E-1, F-1, C-2	A-2, B-2, D-2, E-2, F-2
303.76° - 326.25°	NW	A-0, A-1, B-1, C-1, D-1, E-1, F-1, C-2	A-2, B-2, D-2, E-2, F-2
326.26° - 348.75°	NNW	A-0, A-1, B-1, C-1, D-1, E-1, F-1, D-2	A-2, B-2, C-2, E-2, F-2

GENERAL EMERGENCY
SHIFT COMMUNICATOR ACTIONS
FLOW CHART



EVACUATION OF NON-ESSENTIAL PERSONNEL DECISION TREE



EOF -vs.- BACKUP EOF
DECISION FLOW CHART