Facility:	FENOC BVPS Unit 2	Date of Examination:	12/2002
Exam Level:	RO / SRO (I)	Operating Test No.:	2002-01

B.1: Control Room Systems

	System	JPM Description	Type Code*	Safety Function
S1	001 Rod Control	Realign a Mispositioned Control Rod	D, S	1
S2	013 ESF Actuation	Respond to a Shutdown LOCA	M, A, S, L	2
S3	068 Liquid Radwaste	Respond to Radiation Monitor Alarm - Leak Collection Tank *(Repeat)*	D, A, S	9
S4	002 RCS	Initiate a Natural Circulation Cooldown - ES-0.2 *(Repeat)*	D, A, S, E	4
S5	026 Containment Spray	Manual Initiation of Quench Spray	D, A, S, E	5
S6	064 EDG	Shutdown No. 1 Diesel Generator	N, S	6
S7	015 NI	Respond To Failed Power Range Channel N-44 *(Repeat)*	D, S	7

B.2 Facility Walk-Through

P1	033 SFP Cooling	Respond to a SFP Low Level Alarm	N, R	8
P2	061 AFW	Reset the Terry Turbine Trip Throttle Valve	D, E	4
P3	012 RPS	Place SSPS Train in Service	D, L	7

* **Type Codes: (D)irect from bank, (M)odified from bank, (N)ew, (A)lternate path, (C)ontrol Room, (S)imulator, (L)ow-Power, RCA, (E)OP/AB**

NOTES

Facility:	FENOC BVPS Unit 2	Date of Examination:	12/2002
Exam Level:	SRO (U)	Operating Test No.:	2002-01

B.1: Control Room Systems

	System	JPM Description	Type Code*	Safety Function
S2	013 ESF Actuation	Respond to a Shutdown LOCA	M, A, S, L	2
S5	026 Containment Spray	Manual Initiation of Quench Spray	D, A,S, E	5
S7	015 NI	Respond To Failed Power Range Channel N-44 *(Repeat)*	D, S	7

B.2 Facility Walk-Through

P1	033 SFP Cooling	Respond to a SFP Low Level Alarm	N, R	8
P2	061 AFW	Reset the Terry Turbine Trip Throttle Valve	D, E	4

* **Type Codes: (D)irect from bank, (M)odified from bank, (N)ew, (A)lternate path, (C)ontrol Room, (S)imulator, (L)ow-Power, RCA, (E)OP/AB**

NOTES

Facility:	**BVPS Unit 2**	Task No.:	0011-019-01-013
Task Title:	Respond to RCCA Misalignment	JPM No.:	2002 NRC S1
K/A Reference:	001A2.03 (3.5/4.2)		

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X

Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

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.

Initial Conditions:

- The plant is in Mode 1, 48% power.
- An incore flux map has determined that Control Bank "D" rod B-8 is at 155 steps. Bank "D" is at 170 steps.
- Control rods are in manual.
- Tavg and Tref are matched.
- The reason for the misalignment has been determined and corrected.
- The General Manager Nuclear Operations and Reactor Engineering personnel have been notified.
- Permission is granted to realign the rod.

Task Standard: The rod realignment is complete with all Bank "D" rods at 170 steps and proper rod movement is verified.

Required Materials: None

General References: 2OM-1.4.P, RCCA Or RCCA Group Misalignment, Rev. 4

Handouts: 2OM-1.4.P, Rev. 4

Initiating Cue: The Unit Supervisor directs you to realign control rod B-8 to 170 steps in accordance with 2OM-1.4.P, Section IV.D. Section IV.A has been completed.

Time Critical Task: No

Validation Time: 15 minutes

(Denote Critical Steps with an asterisk)

* **Performance Step: 1** Place the Rod Control Selector Switch to the 'Bank D' position.

Standard: Locates the Rod Control Bank Selector switch and rotates to the 'Bank D' position.

Comment:

* **Performance Step: 2** Place the lift coil disconnect switches for all control bank "D" rods with EXCEPTION of rod B-8 to 'Rod Disconnect' position.

Standard: Locates lift coil disconnect switches for bank "D" rods EXCEPT rod B-8 and places them in the 'Rod Disconnect' position.

Comment:

Performance Step: 3 Record Bank "D" group position and rod B-8 position.

Standard: Records 170 steps for Bank "D" and 155 steps for rod B-8.

Comment:

Performance Step: 4 Set the Control Bank "D" step counters to the position of rod B-8.

Standard: Sets step counters at 155 steps.

Comment:

Performance Step: 5 Consult General Manager Nuclear Operations and Reactor Engineer to determine rate of control rod movement.

Standard: Candidate simulates contacting the GMNO and Reactor Engineer to determine the rate of allowable control rod movement.

Comment: **Cue: Inform candidate to move control rods at 5 step increments or less.**

*	**Performance Step: 6**	Withdraw rod B-8 to bank demand position in 5 step increments or less.
	Standard:	Locates the rod motion lever and moves it to the 'OUT' position.
	Standard:	Verifies rod motion occurs in 5 step increments or less.
	Comment:	**URGENT FAILURE alarm will occur when demand signal is present for the group with all rods disconnected. This is an expected alarm.**
	Performance Step: 7	Maintain Tavg-Tref as necessary during rod movement.
	Standard:	Maintains Tavg-Tref.
	Comment:	**CUE: Inform Candidate that any turbine load adjustments will be handled by the Examiner.**
	Performance Step: 8	Verify outward motion of rod B-8.
	Standard:	Locates rod direction lamp and verifies that 'UP' arrow is illuminated.
	Standard:	Locates individual DRPIs for Bank "D" and verifies outward motion of rod B-8.
	Comment:	
*	**Performance Step: 9**	Withdraw rod B-8 in 5 step increments or less until it matches Bank D rods recorded demand position.
	Standard:	Stops outward motion when rod B-8 indicates to be at the same position as Bank D demand as verified by reading step counters.
	Standard:	Verifies DRPI indication is the same for all Bank "D" rods.
	Comment:	
*	**Performance Step: 10**	Clear the URGENT FAILURE alarm on the Power Cabinet by depressing the Rod Control Alarm Reset pushbutton.
	Standard:	Locates Rod Control Alarm Reset pushbutton and depresses it.
	Standard:	Verifies [A4-8A], Urgent Failure Alarm clears.
	Comment:	

Performance Step: 11	Reset the P/A Converter.
Standard:	Dispatches operator to reset P/A converter.
Comment:	**CUE: Another operator will reset the P/A Converter.**
Performance Step: 12	Verify core power distribution is normal.
Standard:	Verifies Step 13 actions concerning core power distribution.
Comment:	
Performance Step: 13	Place Bank Selector Switch to 'Auto/Manual' position.
Standard:	Locates and places the Bank Selector switch in 'MANUAL'.
Comment:	**Cue: Place Rod Control in 'MANUAL'.**
Performance Step: 14	Reset Bank D rod position in accordance with 2OM-5A.4.A.50
Standard:	Resets bank D rod position.
Comment:	**Cue: Place Rod Control in 'MANUAL'.**
Performance Step: 15	The requirement for 2OST-1.1, "Control Rod Assembly Partial Movement Test" is performed.
Standard:	Informs the US of the requirement for the test.
Comment:	
Terminating Cue:	When the candidate informs the US of the requirement to perform 2OST-1.1, the evaluation for this JPM is complete.

Job Performance Measure No.: 2002 NRC S1

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

- The plant is in Mode 1, 48% power.
- An incore flux map has determined that Control Bank "D" rod B-8 is at 155 steps. Bank "D" is at 170 steps.
- Control rods are in manual.
- Tavg and Tref are matched.
- The reason for the misalignment has been determined and corrected.
- The General Manager Nuclear Operations and Reactor Engineering personnel have been notified.
- Permission is granted to realign the rod.

INITIATING CUE:

The Unit Supervisor directs you to realign control rod B-8 to 170 steps in accordance with 2OM-1.4.P, Section IV.D. Section IV.A has been completed.

Beaver Valley Power Station

Unit 2

FOR TRAINING USE ONLY

2OM-1.4.P

RCCA OR RCCA GROUP MISALIGNMENT

Revision 4

Prepared by **A. J. Ochs**	Date **11/23/99**	Pages Issued **1 through 5**	Effective Date
Reviewed by **J. E. Burnecke**	Date **11/24/99**	Validated by **N/A**	Date
OSC Meeting No. **Non-Intent**	Date **11/24/99**	Approved by	Date

I. PURPOSE

To provide the necessary instructions for aligning Control Rod(s) in the event a Control Rod(s) is determined to be misaligned from its respective Control Rod Bank. This procedure may be entered from an AOP.

II. PRECAUTIONS & LIMITATIONS

A. Positive reactivity additions, initiated by the operators, shall be limited to one method during subcritical operations and power operation below 20% power. Concurrent dilution and rod withdrawal below 20% power is prohibited.V.C.2

B. Continuous control rod withdrawals, above the point of adding heat, shall be limited to 5 step increments and startup rate shall not exceed a sustained 0.5 dpm (disregarding prompt jump) unless authorized otherwise by procedure.V.C.2

C. The turbine shall be tripped if Tavg drops to 541F.V.C.2

D. The reactor shall be tripped if Tavg has a sustained declining trend, greater than 10 degrees below Tref, whose cause cannot be readily determined and abated.V.C.2

III. INITIAL CONDITIONS

A. One or more of the following symptoms may indicate Control Rod(s) misalignment:

1. One or more of the individual Digital Rod Position Indicators (DRPI's) in disagreement with the associated group step counter or with other position indicators for rods in the same bank by more than 12 steps when no rods are in motion. (Confirmed by AOP 2.1.7.)

2. Rod deviation alarm. Deviation by more than 12 steps when no rods are in motion (computer printout/Ann. Window A4-8G).

3. Power range nuclear instrumentation axial offset indication.

4. The incore thermocouples and/or incore flux map indicates rod out of alignment.

5. An abnormal variation between loop Tavg or Delta-T measurements.

6. One control rod has been dropped.

IV. INSTRUCTIONS

A. **Determine the Position of the Misaligned Control Rod(s) and appropriate Action as follows:**

1. Transfer Rod Control to manual by placing the Auto-Manual Selector switch in MAN.

CAUTION:	ROD MOTION SHOULD BE AVOIDED EXCEPT AS SPECIFIED IN SUBSEQUENT OPERATOR ACTIONS.

2. If the reactor power is greater than 75%, **THEN** perform the following:

   a. Within one hour, reduce reactor power to less than or equal to 75% by increasing the boron concentration. Refer to 2OM-52.4.B, "Load Following".

3. Stabilize the plant as follows:

   a. Adjust turbine load and/or boron concentration to maintain Tavg AND Tref within ± 4F.

   b. Maintain stable plant conditions until rod misalignment cause can be determined and corrective action initiated.

4. Check compliance with T.S. 3.1.3.1.c.3 by ensuring the following has been performed within one hour of the rod inoperability:

   a. Declare the rod inoperable.

   b. Verify SHUTDOWN MARGIN requirements of T.S. 3.1.1.1.

   c. POWER OPERATION may continue provided that:

      1) THERMAL POWER is reduced to less than or equal to 75% of RATED THERMAL POWER within the hour.

      2) Within the next 4 hours, reduce the high neutron flux trip setpoint to less than or equal to 85% of RATED THERMAL POWER.

      3) At least once per 12 hours, verify the SHUTDOWN MARGIN requirement of T.S. 3.1.1.1.

      4) Request Reactor Engineering perform an incore movable flux map. Within 72 hours, verify FQ(Z) and FNΔH within their limits.

      5) Within 5 days, re-evaluate each accident analysis of T.S. Table 3.1-1.

5. When Reactor Power has been reduced to less than or equal to 75% and is stable, verify QPTR is less than 1.02.

   a. If Reactor Power is less than 50%, GO TO Step 5.

b. Perform 2OST-2.4A, "Quadrant Power Tilt Ratio Manual Calculation".

c. If QPTR is greater than 1.02, take action in accordance with T.S. 3.2.4.

6. Investigate the cause of the problem and correct before attempting re-alignment.

7. Carefully monitor the Power Range nuclear instrumentation for the occurrence of abnormal nuclear flux tilts throughout all subsequent maneuvers. DO NOT increase reactor power more than 1% (not to exceed 75%) during recovery.

8. Prior to moving rod(s) to correct the misalignment, notify the General Manager, Nuclear Operations and consult the cognizant Reactor Engineering Group personnel concerning the rate of control rod movement.(V.C.1)

CAUTION:	DURING THE SUBSEQUENT MANEUVERS INVOLVING BANK MOVEMENT, DO NOT VIOLATE THE PRESCRIBED BANK OVERLAP SEQUENCE, BANK ROD INSERTION LIMIT, SHUTDOWN MARGIN REQUIREMENTS, OR DELTA FLUX TECH. SPEC. ACTION STATEMENTS.

9. Request Reactor Engineering obtain a power distribution map from the movable incore detectors.

B. **If a Single RCCA is high with respect to its associated bank, perform the following:**

1. Place Rod Control Selector Switch to the bank with the misaligned rod.

2. Place all Lift coil disconnect switches for the Bank with the misaligned Rod to ROD DISCONNECT (Up Position), except the switch for the misaligned rod which is left in ROD CONNECT (Down position), (Behind VB-B).

3. Record the following data below and in the Daily Journal.

Bank _____ Group I _____ steps

Group II _____ steps

Misaligned Rod Designation _____

Misaligned Rod position has been determined to be positioned at _____ steps. (As determined by AOP 2.1.7)

e. If recommended by Reactor Engineering, perform an incore flux map.

f. If Reactor Power is greater than 50%, perform 2OST-2.4A, "Quadrant Power Tilt Ratio Manual Calculation".

g. Verify the following annunciators are NOT lit:

- A4-3C, "TAVG DEVIATION FROM TREF"
- A4-3F, "LOOP TAVG DEVIATION"
- A4-4C, "LOOP DELTA-T DEVIATION"

11. Adjust the affected Bank to the original Bank position recorded in Step IV.C.4, **THEN** verify that the Bank position display counter, corresponds to this position.

    a. If it is not desirable to raise the Bank, **THEN** reset the Bank position display counter to correspond to the existing Bank position.

12. Return Bank Selector Switch to AUTO or MANUAL as appropriate for current plant operation.

13. Perform 2OST-1.1, "Control Rod Assembly Partial Movement Test".

D. **If a Single RCCA is lower than its associated Bank OR Dropped Rod AND lowering the Bank to the misaligned Rod height may violate Bank Overlap Sequence, Rod Insertion Limit, or Delta Flux Tech. Spec. action, then restore as follows:**

1. Place Rod Control Selector Switch to the Bank with the misaligned/ dropped rod.

2. Place all lift coil disconnect switches for the bank with the misaligned/dropped rod to ROD DISCONNECT (Up position), except the switch for the misaligned/dropped rod, which is left in ROD CONNECT (Down position), (Behind VB-B).

3. Record the step position(s) for the misaligned/dropped rod bank group step counters below and in the Daily Journal.

   Bank _____ Group I _____ steps

   Group II _____ steps

   Misaligned/dropped Rod Designation _____

   Misaligned/dropped Rod position has been determined to be positioned at _____ steps.

4. Set the Group Step Counter for the misaligned/dropped rod group to the position of the misaligned/dropped rod.

CAUTION:	PRIOR TO MOVING ROD(S) TO CORRECT THE MISALIGNMENT, THE GENERAL MANAGER, NUCLEAR OPERATIONS MUST BE NOTIFIED AND THE REACTOR ENGINEER MUST BE CONSULTED CONCERNING THE RATE OF CONTROL ROD MOVEMENT.(V.C.1)

5. Move the Rod Motion lever to OUT (in 5 step increments or less) while adjusting Turbine load to maintain Reactor **AND** Turbine load equal (Tavg-Tref).

   a. If the Turbine is not in operation, **THEN** maintain (Tavg-Tref) by adjusting Steam Dump **OR** Boron Concentration as appropriate to maintain Tavg.

Note:	Annunciator A4-8A ROD CONTROL SYSTEM URGENT ALARM will appear on the annunciator and the Urgent Alarm on the Power Cabinet for the group with all the lift coils disconnected. This Group will be locked out and rod motion inhibited.

6. Verify the rod OUT direction lamp is ON **AND** DRPI for the misaligned/dropped rod is moving in the proper direction.

7. Move the misaligned/dropped rod (in 5 step increments or less) until the Group step counter indicates the position recorded for the affected Group in Step IV.D.3

8. Verify the misaligned/dropped rod is at the same position as the other rods in the bank DRPI.

9. Place all disconnect switches for the affected Bank to ROD CONNECT, (Down position).

10. Clear the Urgent Failure Alarm on the Power Cabinet by depressing the Rod Control Alarm Reset pushbutton.

11. Verify Annunciator A4-8A, ROD CONTROL SYSTEM URGENT ALARM is OFF.

12. If the misaligned/dropped rod was in a control bank, **THEN** reset P/A converter as follows: (P/A Cont Cab, Elev 755, Rod Control Area, Key 128)

    a. Place the bank position display selector switch on the P/A converter to the affected Control bank position.

Note:	The Down pushbutton should be pushed the same number of steps the misaligned/dropped rod was moved.

    b. Hold the Auto-Manual switch (spring return to AUTO) in MANUAL position **AND** push the Down pushbutton the required number of times to return the P/A converter display to the position corresponding to the affected bank height.

c. Release the Auto-Manual switch **AND** verify it spring returns to AUTO.

Note:	Reactor power should not be increased without verifying normal flux distribution. The Reactor Engineer should be consulted to determine if a Flux Map is needed prior to increasing reactor power.

13. After the rods have been realigned, check core power distribution normal.

    a. Verify operable power range indications with +/-2% of each other.

    - Verify CHANNEL DEVIATION light on N46 (Comparator and Rate drawer) is NOT lit.
    - Verify Annunciator A4-4F, "NIS POWER RANGE COMPARATOR DEVIATION" is NOT lit.

    b. Verify delta flux indications within target band.

    c. Verify control rod positions are greater than minimum rod insertion limit.

    d. Check incore thermocouples for any unusual or unexpected values.

    e. If recommended by Reactor Engineering, perform an incore flux map.

    f. If Reactor Power is greater than 50%, perform 2OST-2.4A, "Quadrant Power Tilt Ratio Manual Calculation".

    g. Verify the following annunciators are NOT lit:

    - A4-3C, "TAVG DEVIATION FROM TREF"
    - A4-3F, "LOOP TAVG DEVIATION"
    - A4-4C, "LOOP DELTA-T DEVIATION"

14. Return the Rod Bank selector switch to MANUAL or AUTO as appropriate for current plant conditions.

15. Reset rod position for affected bank in accordance with 2OM-5A.4.A.50, "Rod Bank Position (Function 50)". Otherwise take action in accordance with T.S. 3.1.3.2.

16. Perform 2OST-1.1, "Control Rod Assembly Partial Movement Test".

E. **<u>If Rod Group Misaligned with Group in Same Bank (by less than 12 steps), then restore as follows:</u>**

Note:	If two groups within the same bank differ in position, **THEN** the high group should be moved down for alignment **OR, IF** the misaligned group is in a shutdown group, **THEN** the lower group should be manually withdrawn.

1. Place The Rod Control Selector Switch to the bank with the misaligned group.

Appendix C	Job Performance Measure Worksheet	Form ES-C-1

Facility: **BVPS Unit 2** Task No.: 0535-056-04-013

Task Title: Respond to a Shutdown LOCA JPM No.: 2002 NRC S2

K/A Reference: 009 EA1.13 (4.4/4.4)

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: _____ Actual Performance: __X__

Classroom _____ Simulator __X__ Plant _____

READ TO THE EXAMINEE

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.

Initial Conditions:

- The plant was in Mode 4, on RHS, when a LOCA occurred.
- The RCP's have been secured.
- The Shift Manager has decided to enter AOP-2.6.5, Shutdown LOCA to stabilize plant conditions.
- 2CHS*P21A and P21B, Charging Pumps are out of service.
- SI Accumulators are isolated.

Task Standard: Equipment aligned to establish HHSI flow.

Required Materials: Shorting Bar

General References: 2OM-53C.4.2.6.5, Shutdown LOCA, Rev. 11

Handouts: AOP-2.6.5, Rev. 11

Initiating Cue: The Unit Supervisor directs you to perform the first 6 steps of AOP-2.6.5, Shutdown LOCA to establish HHSI flow.

Time Critical Task: No

Validation Time: 15 minutes

(Denote Critical Steps with an asterisk)

Performance Step: 1 Check Safety Injection NOT actuated.

Standard: Checks Safety Injection annunciators. Determines Safety Injection is NOT actuated.

Comment:

* **Performance Step: 2** Isolate RCS letdown.

Standard: Closes or verifies closed letdown orifice isolation valves [2CHS*AOV200A, B, C].

Standard: Closes or verifies closed Regen Heat Exchanger Letdown Inlet valves [2CHS*LCV460A, B].

Standard: Closes RHS Train A Cross connect Isol Valve [2RHS*MOV750A and/or B] (if open).

Comment:

* **Performance Step: 3** Check if charging flow is adequate.

Standard: Opens [2CHS*FCV122] in 'Manual'.

Standard: Checks PRZR level greater than 17%.

Standard: Checks PRZR level stable or rising.

Standard: Verifies PRZR level < 17% and dropping.

Comment:

Performance Step: 4 Alert plant personnel of the Shutdown LOCA.

Standard: Sounds standby alarm.

Standard: Announces Unit 2 Shutdown LOCA.

Standard: Nonessential personnel from containment.

Standard: Notifies SHIFT MANAGER/US to evaluate EPP.

Comment: **CUE:** **SHIFT MANAGER/US will evaluate EPP. If asked, no one is inside containment.**

Note: The following steps represent the alternate path for this JPM.

Performance Step: 5 Check SI equipment status:

- Check two charging/HHSI pumps available.

Standard: Determines only one Charging/HHSI pump available.

Comment: **CUE: Operator has been dispatched to restore 2CHS*P21A and 2CHS*P21C.**

* **Performance Step: 6** Establish alternate SI flowpath.

Standard: Verifies only one Charging/HHSI pump running.

Standard: Verifies [2CHS*LCV115B and/or D] open.

Standard: Verifies [2CHS*LCV115C and/or E] closed.

Standard: Inserts shorting bar for [2SIS*MOV836].

Standard: Opens [2SIS*MOV836].

Standard: Immediately closes [2CHS*MOV289].

Comment: **NOTE: Terminate the JPM at this point.**

Terminating Cue: When the Candidate has established the alternate SI flowpath, the evaluation for this JPM is complete.

Job Performance Measure No.: 2002 NRC S2

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

- The plant was in Mode 4, on RHS, when a LOCA occurred.
- The RCP's have been secured.
- The Shift Manager has decided to enter AOP-2.6.5, Shutdown LOCA to stabilize plant conditions.
- 2CHS*P21A and P21B, Charging Pumps are out of service.
- SI Accumulators are isolated.

INITIATING CUE:

The Unit Supervisor directs you to perform the first 6 steps of AOP-2.6.5, Shutdown LOCA to establish HHSI flow.

Beaver Valley Power Station

UNIT 2

FOR TRAINING USE ONLY

2OM-53C.4.2.6.5

Shutdown LOCA

Revision 11

Prepared by C. Eberle	Date 04/02/02	Pages Issued 1 through 55	
Reviewed by W. Giffrow	Date 04/29/02	Validated by N/A	Date
OSC Meeting No. OSC Not Required	Date	DRR-02-01748 PAF-02-02284 CE 5-1-02	

CONTINUOUS ACTION STEPS

AOP-2.6.5

STEP	DESCRIPTION
1	Check Safety Injection - NOT ACTUATED
10	Check If RCPs Must Be Stopped • Number 1 seal differential pressure - LESS THAN 200 PSID -OR- • Number 1 seal leakoff flow - LESS THAN 0.2 GPM -OR- • Loss of CCP flow to RCP motor coolers
11	Check If Second Charging/HHSI Pump Should Be Started • PRZR level - LESS THAN 17% [38% ADVERSE CNMT] -OR- • RCS subcooling - LESS THAN ATTACHMENT 3
12	Check If Low Head SI Flow Required • RCS subcooling - LESS THAN ATTACHMENT 3
14	Check If One Charging/HHSI Pump Should Be Stopped • PRZR level - GREATER THAN 27% [47% ADVERSE CNMT] • RCS subcooling - GREATER THAN ATTACHMENT 6
24	Check RWST Level - GREATER THAN 460 INCHES
25	Check SG Levels - GREATER THAN 12% [31% ADVERSE CNMT]
26	Check If OPPS Should Be Placed in Service
45	Check If Letdown Can Be Established

Number	Title	Revision
2.6.5	Shutdown LOCA	Revision 11

FOR TRAINING USE ONLY

A. PURPOSE

This procedure provides instructions for protecting the reactor core in the event of a Loss of Coolant Accident (LOCA) that occurs during either Mode 3 (after the accumulators are isolated) or Mode 4.

B. SYMPTOMS OR ENTRY CONDITIONS

The following symptoms may be indicative of a Loss of Coolant Accident (LOCA) during Mode 3 (after the accumulators are isolated) or Mode 4:

1. Uncontrolled drop in PRZR level.
2. Uncontrolled drop in RCS subcooling.
3. Uncontrolled drop in RCS pressure.

C. AUTOMATIC ACTIONS

Letdown isolation.

Number 2.6.5	Title Shutdown LOCA	Revision 11

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

****

CAUTION

Due to the possibility of overpressurizing the RCS, Safety Injection must not be manually actuated.

****

NOTE

- If a reactor trip occurs during the performance of this procedure, recovery should be accomplished by continuing with AOP 2.6.5, "Shutdown LOCA".
- ADVERSE CNMT conditions are defined as:
  - CNMT pressure - GREATER THAN 1.5 PSIG

    -OR-
  - CNMT radiation - GREATER THAN 1E+5 R/HR

    -OR-
  - Integrated CNMT radiation - GREATER THAN 1E+6 R

1. Check Safety Injection - NOT ACTUATED — GO TO EOP E-0, "Reactor Trip Or Safety injection".

2. Isolate RCS Letdown

   a. Close all Letdown Orifice 21,22,23 Isol Vlvs.

      - [2CHS*AOV200A]
      - [2CHS*AOV200B]
      - [2CHS*AOV200C]

   b. Close Regenerative Heat Exch Letdown Inlet Vlvs.

      - [2CHS*LCV460A]
      - [2CHS*LCV460B]

(step continued next page)

Number 2.6.5	Title Shutdown LOCA	Revision 11

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
2.	(continued from previous page)	
	c. Close RHS Train A,B Cross Connect Isol Vlvs. • [2RHS*MOV750A] • [2RHS*MOV750B]	c. Close [2CHS*HCV142], RHR Hx Outlet Flow Control.
3.	Check If Charging Flow Is Adequate	
	a. Adjust [2CHS*FCV122], Charging Pumps Disch Flow Control Vlv as necessary to maintain PRZR level.	
	b. Check PRZR level: • GREATER THAN 17% [38% ADVERSE CNMT] • STABLE OR RISING	b. GO TO Step 4.
	c. RCS subcooling based on core exit TCs - GREATER THAN 41F [59F ADVERSE CNMT]	c. Check RCS subcooling based on core exit TCs - GREATER THAN SUBCOOLING LISTED ON ATTACHMENT 3 IF subcooling less than required subcooling listed on Attachment 3, THEN GO TO Step 4.
	d. [2CHS*FI122A], Charging Line Flow - OFF SCALE HIGH	d. IF PRZR level and RCS subcooling can be maintained, THEN RETURN TO procedure and step in effect.

Number 2.6.5	Title Shutdown LOCA	Revision 11

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

4. Alert Plant Personnel Of The Shutdown LOCA

   a. Sound the standby alarm.

   b. Announce "Unit 2 Shutdown Loss of Coolant Accident".

   c. Evacuate non-essential personnel from containment.

   d. Evaluate if EPP should be initiated.

5. Check SI Equipment Status

   a. Check Charging/HHSI Pumps - TWO AVAILABLE

      a. Restore Charging/HHSI Pump(s) to available status.

   b. High Head SI Cold Leg Isol Vlvs - NONE ENERGIZED

      - [2SIS*MOV867A(B)]
      - [2SIS*MOV867C(D)]

      b. IF [2SIS*MOV867A(B)] AND [2SIS*MOV867C(D)] are energized, THEN GO TO Step 7.

NOTE

In the following instruction, [2CHS*MOV289] should be closed immediately after the alternate SI flowpath starts to align.

6. Establish Alternate SI Flowpath

   a. Charging/HHSI Pump - ONLY ONE RUNNING

      a. Stop Charging/HHSI Pump to establish only one pump running.

(step continued next page)

Number	Title	Revision
2.6.5	Shutdown LOCA	Revision 11

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

6. (continued from previous page)

b. Align Charging/HHSI Pump suction to RWST by performing the following:

1) Open Charging Pumps Suct From RWST.

- [2CHS*LCV115B]
- [2CHS*LCV115D]

2) Close Charging Pumps Suct From Volume Control Tank.

- [2CHS*LCV115C]
- [2CHS*LCV115E]

c. Align an alternate SI flowpath by performing one of the following:

- Perform the following:

1) Insert shorting bar into [2SIS*MOV836], High Head SI Cold Leg Isol Vlv jack.

2) Open [2SIS*MOV836].

d. Immediately close [2CHS*MOV289], Normal Charging Hdr Isol Vlv.

e. Dispatch an operator to re-energize valves:

- [2SIS*MOV867A] - [MCC*2-E03] Cub 7A, (Aux Bldg - 755')
- [2SIS*MOV867B] - [MCC*2-E04] Cub 6D, (Aux Bldg - 755')

(step continued next page)

Number	Title	Revision
2.6.5	Shutdown LOCA	Revision 11

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

6. (continued from previous page)

f. Dispatch an operator to re-energize valves:

- [2SIS*MOV867C] - [MCC*2-E05] Cub 10A, (Rod Control Bldg - 735')
- [2SIS*MOV867D] - [MCC*2-E06] Cub 4A, (Rod Control Bldg - 735')

g. Continue to inject using the alternate SI flowpath. WHEN [2SIS*MOV867A,C(B,D)] become available, THEN simultaneously perform the following:

- Open [2SIS*MOV867A,C(B,D)], High Head SI Cold Leg Isol Vlvs
- Isolate alternate SI flowpath

h. GO TO Step 8.

Facility: **BVPS Unit 2** Task No.: 0431-028-01-013

Task Title: Respond to a Radiation Monitor Alarm – Leak Collection Tank (Faulted) JPM No.: 2002 NRC S3

K/A Reference: 073 A4.02 (3.7/3.7)

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X

Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

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.

Initial Conditions: The plant is at 48% power. Annunciator A4-5C has just been received.

Task Standard: Radiation monitor automatic actions have been verified.

Required Materials: None

General References: 2OM-43.4.AAC, Radiation Monitoring Level High, Issue 4, Rev. 0

2OM-43.4.AEB, Local-Leak Collection Ventilation [2RMR-RQI301] High Alarm Level, Issue 1, Revision 5

Handouts: 2OM-43.4.AAC, Rev. 0 & 2OM-43.4.AEB, Rev. 5

Initiating Cue: The Unit Supervisor directs you to respond to the alarm using the alarm response procedures.

Time Critical Task: No

Validation Time: 20 minutes

(Denote Critical Steps with an asterisk)

Performance Step: 1	Verify or depress the grid six pushbutton and determine which radiation monitor is in alarm at the RM-11 console.
Standard:	Locates the grid six pushbutton and depresses it, OR verifies that the grid is already displayed.
Comment:	
Performance Step: 2	At RM-11 console type in the four digit numerical code for the monitor in alarm and press the 'SELECT' pushbutton.
Standard:	Locates the four digit code for 2RMR-RI301.
Standard:	Enters the four digit code and presses the 'SELECT' pushbutton.
Comment:	**NOTE: Candidate may press 'SELECT' only to access monitor alarm.**
Performance Step: 3	Depress the 'STATUS' pushbutton.
Standard:	Locates and depresses the 'STATUS' pushbutton.
Comment:	
Performance Step: 4	Silence the alarm console.
Standard:	Depresses the 'SYSTEM ACK' pushbutton to silence the alarm.
Comment:	**NOTE: The audible alarm may be defeated and not sound.**
Performance Step: 5	Check if radiation level is at or approaching 1000 times background.
Standard:	Compares reading against background or notifies Shift Manager.
Comment:	**CUE: The Shift Manager is aware of the alarm level.**

Performance Step: 6 Candidate determines that [2RMR-RQI301] Leak Collection Ventilation Radiation Monitor is in alarm and then refers to local alarm response procedure for the corrective actions.

Standard: Determines 2RMR-RQI301 is in alarm.

NOTE: Candidate may verbalize monitor in alarm or may just use the correct procedure. Either action satisfies the critical step.

Comment: **CUE: Provide Candidate a copy of 2OM-43.4.AEB.**

Performance Step: 7 At the RM-11 console, verify the indicating box turns red and moves to the right of 'CHANNEL IN HIGH ALARM'.

Standard: Verifies that the red box moves to the right.

Comment:

* **Performance Step: 8** Depress the 'CHANNEL ITEMS' pushbutton and verify that the actual level is higher than the high alarm setpoint.

Standard: Depresses the 'CHANNEL ITEMS' pushbutton.

Standard: Compares actual level to high alarm setpoint.

Comment:

Performance Step: 9 Notify the US/Shift Manager and obtain directions.

Standard: Notifies Shift Manager of the HIGH radiation monitor alarm and asks for direction.

Comment: **CUE: The Shift Manager is aware of the alarm and has notified RADCON.**

NOTE: The following steps represents the alternate path for this JPM.

	Performance Step: 10	Verify 2HVS*MOD201A & B are closed, and that 2HVS*MOD202A & B are open.
	Standard:	Locates 2HVS*MOD201A & B and 2HVS*MOD202A & B on BSP.
	Standard:	Verifies that 2HVS*MOD201A & B are closed and that 2HVS*MOD202A & B are open.
	Standard:	Verifies that the damper green or red lights are lit.
	Comment:	**CUE: If asked for guidance, act as Supervisor and direct Candidate to place the dampers in their required position.**
*	**Performance Step: 11**	Position dampers by placing either or both control switch(es) to 'FILT' position.
	Standard:	Locates Train "A" and Train "B" control switches on the Building Service Panel.
	Standard:	Places either or both control switches to the 'FILT' position.
	Standard:	Verifies that the damper green and red lights are lit.
	Comment:	**NOTE: If Candidate continues with procedure, conclude JPM at this point.**

Terminating Cue: When the Candidate verifies the damper green and red lights are lit, the evaluation for this JPM is complete.

Job Performance Measure No.: 2002 NRC S3

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS: The plant is at 48% power. Annunciator A4-5C has just been received.

INITIATING CUE: The Unit Supervisor directs you to respond to the alarm using the alarm response procedures.

Beaver Valley Power Station

Unit 2

FOR TRAINING USE ONLY

2OM-43.4.AAC

RADIATION MONITORING LEVEL HIGH

Revision 0

Prepared by **R. Plummer**	Date **10/29/96**	Pages Issued **1 through 4**	Effective Date
Reviewed by **C. O'Neill**	Date **10/30/96**	Validated by **N/A**	Date
OSC Meeting No. **Non-Intent**	Date **10/30/96**	Approved by	Date

RADIATION MONITORING LEVEL HIGH

A4-5C

DESCRIPTION	CRT NO.	COMPUTER ADDRESS	PAGE
A. HIGH RADIATION	2	R0004D	AAC2

A. HIGH RADIATION

SETPOINTS: Refer to RMS Log

DISCONNECT SWITCH: 594

INITIATING DEVICE: K-1 (Relay in Rm-11)

PROBABLE CAUSE

A high radiation condition being detected by any radiation monitor.

CORRECTIVE ACTIONS

1. Perform the following at the RM-11 operators console:

   a. Press the grid 6 pushbutton **AND** Determine which radiation monitor in alarm (blinking and has turned red).

Note:	The four digit number is the radiation monitor number less the letters (i.e. 1PA234 will be 1234).

   b. Type in the 4-digit numerical code number of the alarming monitor **AND** Press the SEL pushbutton.

   c. Press the STATUS pushbutton.

   d. Press SYSTEM ACK to silence the console alarm.

   e. If any radiation monitor is at **OR** approaching, 1000 times normal background, Immediately notify the NSS **AND** Refer to 1/2OM-57, "Emergency Preparedness Plan" for further actions.

   f. Refer to local alarm response procedures 2OM-43.4.ACN through 2OM-43.4.AEJ for corrective actions.

Beaver Valley Power Station

Unit 2

FOR TRAINING USE ONLY

2OM-43.4.AEB(ISS1)

LOCAL-LEAK COLLECTION VENTILATION [2RMR-RQI301] HIGH ALARM LEVEL

Revision 5

Prepared by	Date	Pages Issued	Effective Date
R. Plummer	**10/13/95**	**1 through 3**	
Reviewed by	Date	Validated by	Date
C. O'Neill	**10/13/95**	**N/A**	
OSC Meeting No.	Date	Approved by	Date
Non-Intent	**10/13/95**		

Setpoint	Computer Pt. R0004D Device
See Setpoint Log	[2RMR-DAU301]

PROBABLE CAUSE

1. Radioactive gases and/or particulates in the Safeguards area, Cable Vaults, or Equipment Hatch Area.

CORRECTIVE ACTIONS

1. If radioactive gases **AND/OR** particulates in the Safeguards area, Cable Vaults, **OR** Equipment Hatch are suspected:

   a. At the RM-11 operators console, Verify the indicating box turns red **AND** moves to the right of CHANNEL IN HIGH ALARM.

   b. Press CHANNEL ITEMS **AND** Verify the actual radiation level (top right hand corner) is greater than line item 9 (HIGH setpoint).

   c. Notify the NSS and at his direction, Perform any of the following steps.

   d. Notify Health Physics of the activity level.

   e. Verify [2HVS*MOD201A and B] Contiguous Area Normal Unfiltered Leak Coll. Dampers, are Closed (2BSC).

      1) If dampers are **NOT** Closed, Place control switch in the FILT position.

   f. Verify [2HVS*MOD202A and B], Contiguous Area Normal Filtered Leak Collection Dampers, are Open (2BSC).

      1) If dampers are **NOT** Open, Place control switch in the FILT position.

   g. Instruct all affected personnel to report to Health Physics for possible dose assessment **AND** decontamination.

   h. Investigate to locate the source of the activity, **IF** possible.

   i. Refer to 1/2OM-57, "Emergency Preparedness Plan", for further actions.

REFERENCES

Note:	All references used prior to Issue 1 Revision 2 are located in Section 5.

1. OMDR 2-88-1239 (Rev. 2).
2. OMDR 2-88-1790 (Rev. 3).
3. OMDR 2-91-0962 (Rev. 4).

Appendix C	Job Performance Measure Worksheet	Form ES-C-1

Facility:	**BVPS Unit 2**	Task No.:	0061-009-01-013 0061-011-01-013
Task Title:	Initiate a Cooldown per ES-0.2	JPM No.:	2002 NRC S4
K/A Reference:	002 A4.02 (4.3/4.5) EA1.1 (3.5/3.5)		

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X

Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

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.

Initial Conditions:

- The reactor was manually tripped due to a CCP leak that required stopping all RCPs.
- The plant is now in natural circulation cooldown mode.
- E-0, ES-0.1, and ES-0.2 through Step 5 have been completed.
- The plant is stable with condenser steam dumps in automatic in the Steam Pressure Mode and the bypass feedwater regulating valves in automatic maintaining SG levels.

Task Standard: Natural circulation cooldown established at a rate of < 25°F/hr.

Required Materials: None

General References: 2OM-53A-ES-0.2, Natural Circulation Cooldown Issue 1C, Rev. 0
2OM-53A.1.A-4.1, RCS Cooldown Limits - Technical Specifications, Issue 1C, Rev. 0

Handouts: 2OM-53A-ES-0.2, Issue 1C, Rev. 0
2OM-53A.1.A-4.1, Issue 1C, Rev. 0

Initiating Cue: The Unit Supervisor directs you to initiate a cooldown of the RCS in accordance with ES-0.2, Step 6.

Time Critical Task: No

Validation Time: 20 minutes

(Denote Critical Steps with an asterisk)

NOTE: **It may be necessary to reduce letdown, manually operate 2CHS-FCV122, or use a PRZR PORV to control pressure. Also, AFW starts are inhibited, so no actuation will occur if SG levels are low.**

Performance Step: 1 Trend RCS temperature and pressure at 10 minute intervals.

Standard: Acknowledges report to trend RCS cold leg temperatures and RCS pressure.

Standard: Refers to Attachment A-4.1 and ensures the following cooldown rate does not exceed 25°F/hr.

Comment:

Performance Step: 2 Maintain SG level between 30% and 50%.

Standard: Locates appropriate SG NR level indication.

Standard: Checks SG narrow range level indication.

Comment: NOTE: **SG levels may have to be adjusted. Inform the Candidate that the Examiner will be responsible for SG level control.**

Performance Step: 3 Dump steam to condenser.

Standard: Checks MSIV's open.

Standard: Checks Annunciator A12-4C "Condenser Unavailable (C-9)" - NOT LIT.

Comment:

* **Performance Step: 4** Set steam header pressure setpoint to initiate dumping steam.

Standard: Sets 'STEAM HEADER' pressure setpoint on [2MSS*PK464] MAIN STM MANIFOLD pressure control above existing steam header pressure.

Standard: Places 2MSS*PK464 in 'MANUAL'.

Standard: Verifies demand on 2MSS*PK464 at zero.

Standard: Places/verifies the "Steam Dump Control Mode" selector switch in the 'STM PRESS MODE'.

Comment:

NOTE: The following steps represent the alternate path for this JPM.

* **Performance Step: 5** Depresses raise pushbutton to open the steam dump valves.

Standard: Notes failure of condenser steam dumps and informs Supervisor.

CUE: **As Supervisor, acknowledge condenser steam dump failure and direct Candidate to use 2SVS*HCV104 to dump steam.**

Standard:

Comment:

* **Performance Step: 6** Refers to RNO and manually dumps steam using [2SVS*HCV104], Residual Heat Release Valve.

Standard: Slowly opens 2SVS*HCV104.

Comment:

* **Performance Step: 5** Establish desired cooldown rate.

Standard: Monitors cooldown rate.

Standard: Adjusts cooldown rate as necessary to establish a cooldown rate less than 25°F/hr.

Comment: **NOTE:** **A final stable cooldown rate is NOT critical to the performance of the JPM.**

Terminating Cue: When the candidate begins manually dumping steam using 2SVS*HCV104, the evaluation for this JPM is complete.

Job Performance Measure No.: 2002 NRC S4

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

- The reactor was manually tripped due to a CCP leak that required stopping all RCPs.
- The plant is now in natural circulation cooldown mode.
- E-0, ES-0.1, and ES-0.2 through Step 5 have been completed.
- The plant is stable with condenser steam dumps in automatic in the Steam Pressure Mode and the bypass feedwater regulating valves in automatic maintaining SG levels.

INITIATING CUE: The Unit Supervisor directs you to initiate a cooldown of the RCS in accordance with ES-0.2, Step 6.

Beaver Valley Power Station

UNIT 2

FOR TRAINING USE ONLY

2OM-53A.1.ES-0.2(ISS1C)

Natural Circulation Cooldown

Issue 1C Revision 1

Prepared by M. P. Flynn	Date 11/14/01	Pages Issued 1 through 17	
Reviewed by C. Eberle	Date 11/14/01	Validated by N/A	Date
OSC Meeting No. OSC Not Required	Date	DRR-01-04436	

Number	Title	
ES-0.2	Natural Circulation Cooldown	Issue 1C Revision 1

FOR TRAINING USE ONLY

A. PURPOSE

This procedure provides actions to perform a natural circulation RCS cooldown depressurization to cold shutdown, with no accident in progress, under requirements that will preclude any upper head void formation.

B. SYMPTOMS OR ENTRY CONDITIONS

This procedure is entered from:

1. ES-0.1, "Reactor Trip Response", Step 19 when it has been determined that a natural circulation cooldown is required.
2. ECA-0.1, "Loss Of All AC Power Recovery Without SI Required", Step 21 after the plant conditions have been stabilized following the restoration of AC emergency power.
3. ES-1.1, "SI Termination", Step 32 when it has been determined that a natural circulation cooldown is required.

C. APPLICABLE MODES

ES-0.2, "Natural Circulation Cooldown", is applicable in Modes 1, 2 and 3. Refer to 1/2OM-53B.2, "User's Guide", Section V, "Modes Of Applicability Of The EOPs", for a detailed discussion of this subject.

SYMPTOMATIC RESPONSE/UNEXPECTED CONDITIONS

ES-0.2 (Issue 1C, Revision 1)

1. SI ACTUATION CRITERIA

Actuate SI and GO TO E-0, "Reactor Trip Or Safety Injection", Step 1, if either condition listed below occurs:

- RCS subcooling based on core exit TCs - LESS THAN 41F (If less, refer to Attachment A-5.1)
- PRZR level - CANNOT BE MAINTAINED GREATER THAN 5%

2. AFW SUPPLY SWITCHOVER CRITERION

Monitor PPDWST [2FWE*TK210] level for AFW pumps supply. Upon reaching low level alarm, 85 INCHES, refer to Attachment A-1.8 for makeup.

Number ES-0.2	Title Natural Circulation Cooldown	Issue 1C Revision 1

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
6.	Initiate RCS Cooldown To Cold Shutdown	
	a. Trend RCS Tcold and pressure on the main computer at 10 minute intervals. 1) Initial the trend every half-hour. 2) Ensure cooldown in RCS cold legs does not exceed 25F/HR. 3) Refer to Attachment A-4.1.	a. Verify cooldown rate in RCS cold legs less than 25F/HR and initial [2RCS*TR410] RCS Temperature Recorder every half-hour.
	b. Maintain SG narrow range level - BETWEEN 30% AND 50%	b. Control feed flow to restore level.

(step continued next page)

Beaver Valley Power Station

UNIT 2

FOR TRAINING USE ONLY

2OM-53A.1.A-4.1(ISS1C)

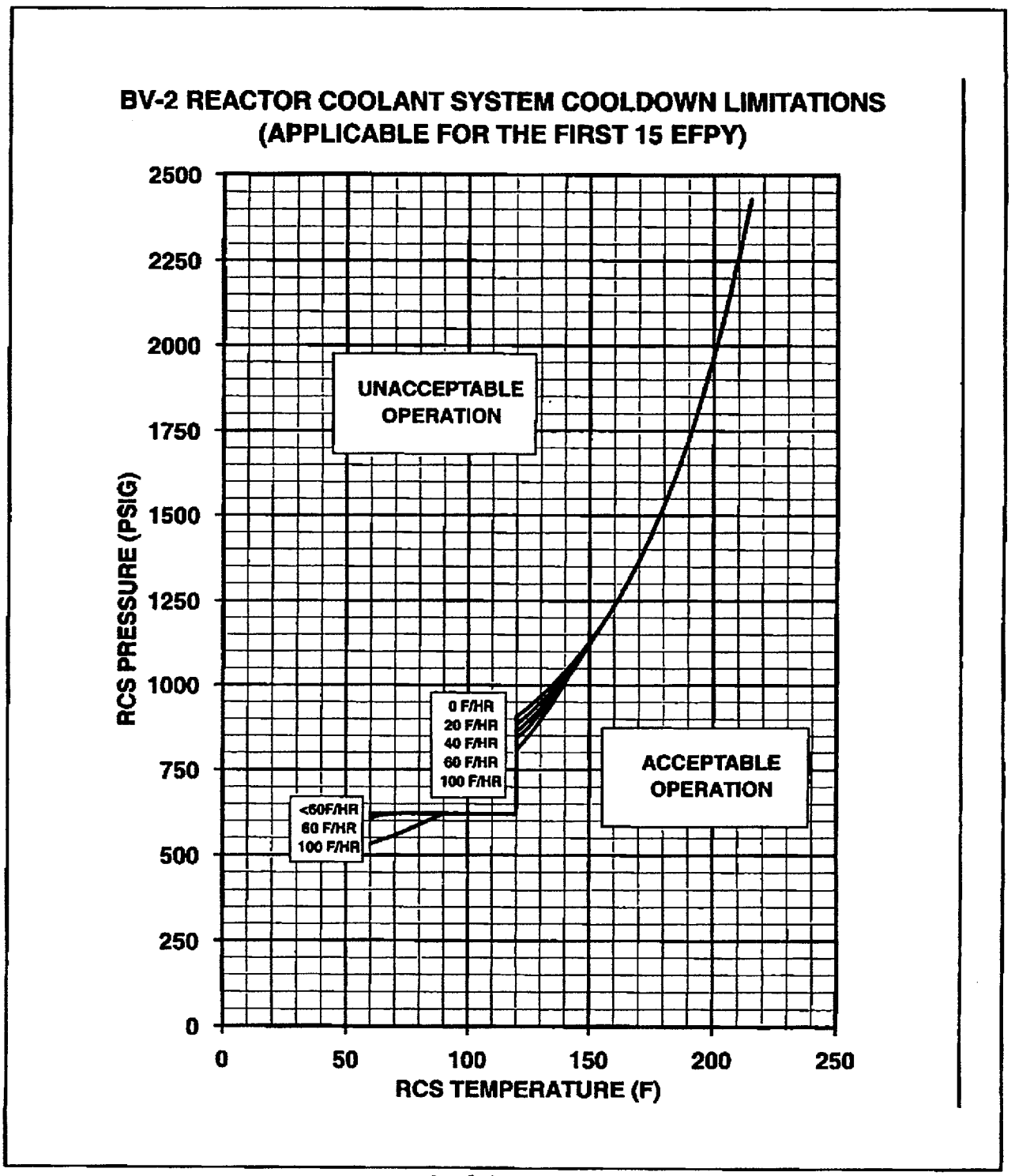
RCS Cooldown Limits - Technical Specifications

Issue 1C Revision 0

Prepared by C. O'Neill	Date 06/26/00	Pages Issued 1 of 1	Effective Date MAR 2 9 2001
Reviewed by M. P. Flynn	Date 06/26/00	Validated by N/A	Date
OSC Meeting No. BV-OSC-02-01	Date 01/09/01	Approved by	Date 3-25-01

Number	Title	
A-4.1	RCS Cooldown Limits - Technical Specifications	Issue 1C Revision 0

FOR TRAINING USE ONLY



Appendix C	Job Performance Measure Worksheet	Form ES-C-1

Facility:	**BVPS Unit 2**	Task No.:	0531-005-05-013
Task Title:	Manual Initiation of Quench Spray	JPM No.:	2002 NRC S5
K/A Reference:	026A2.03 (4.1/4.4) 026K4.03 (3.7/4.1)	026A2.04 (3.9/4.2)	

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X

Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

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.

Initial Conditions:
- A reactor trip and safety injection have occurred.
- The actions of E-0 have been completed through Step 7.
- Steamline isolation has actuated due to high containment pressure and all indicating lights that have yellow SLI markers are energized.

Task Standard: CIB and Containment Spray requirements are satisfied in accordance with A.0.11, Step 6.

Required Materials: None

General References: 2OM-53A.1.E-0, Reactor Trip Or Safety Injection, Issue 1C, Rev. 3
2OM-53A.1.A.0.11, Verification Of Automatic Actions, Issue 1C, Rev. 2

Handouts: Attachment A-0.11, Issue 1C, Rev. 2

Initiating Cue: The Unit Supervisor directs you to verify Containment Isolation Phase "B" and Containment Spray requirements are satisfied according to Step 6 of Attachment A-0.11.

Time Critical Task: No

Validation Time: 5 minutes

(Denote Critical Steps with an asterisk)

	Performance Step: 1	Check CIB and Containment Spray status.
	Standard:	Checks whether annunciator "CONTAINMENT ISOLATION PHASE B" [A1-2H] is LIT.
	Standard:	Locates [2LMS*PR950], Containment Pressure Recorder.
	Standard:	Checks whether containment pressure has remained less than 8 psig (at least one pen).
	Comment:	
	Performance Step: 2	Verify Containment Isolation Phase "B" has occurred.
	Standard:	Determines BLUE CIB marked indicating lights are NOT energized.
	Comment:	
*	**Performance Step: 3**	Manually initiate CIB (both switches for both trains).
	Standard:	Locates switches (2 per train) for Train "A" Spray Actuation. (Benchboard Section A).
	Standard:	Turns both switches (2 of 2) to the 'ACTUATE' position.
	Standard:	Locates switches (2 per train) for Train "B" Spray Actuation (Benchboard Section A).
	Standard:	Turns both switches (2 of 2) to the 'ACTUATE' position.
	Comment:	NOTE: **Order of switch manipulation may be reversed. Only one set of switches is required to be actuated.**

Note: The following steps represent the alternate path for this JPM.

* **Performance Step: 4** Check all indicating lights with BLUE CIB marks LIT.

Standard: Determines 21A and 21B Quench Spray pumps are not running.

Standard: Locates control switches for Quench Spray pumps.

Standard: Places control switches to the 'START' position (both pumps).

Standard: Verifies red lights are energized (both pumps).

Comment:

Terminating Cue: When the Candidate has started the Quench Spray pumps, the evaluation for this JPM is complete

Job Performance Measure No.: 2002 NRC S5

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

- A reactor trip and safety injection have occurred.
- The actions of E-0 have been completed through Step 7.
- Steamline isolation has actuated due to high containment pressure and all indicating lights that have yellow SLI markers are energized.

INITIATING CUE:

The Unit Supervisor directs you to verify Containment Isolation Phase "B" and Containment Spray requirements are satisfied according to Step 6 of Attachment A-0.11.

Beaver Valley Power Station

UNIT 2

FOR TRAINING USE ONLY

2OM-53A.1.A-0.11(ISS1C)

Verification Of Automatic Actions

Issue 1C Revision 2

Prepared by C. Eberle	Date 04/19/02	Pages Issued 1 through 8	
Reviewed by W. Giffrow	Date 04/19/02	Validated by N/A	Date
OSC Meeting No. OSC Not Required	Date	DRR-02-02136	

Number	Title	
A-0.11	Verification Of Automatic Actions	Issue 1C Revision 2

FOR TRAINING USE ONLY

A. PURPOSE

To verify the automatic actions of E-0, "Reactor Trip Or Safety Injection". This will reduce the time to perform the actions in E-0 and allow quicker transition for inadvertent SI scenarios.

B. SYMPTOMS OR ENTRY CONDITIONS

This attachment is entered from E-0, "Reactor Trip Or Safety Injection", Step 8 and should be performed as time permits.

Number	Title	
A-0.11	**Verification Of Automatic Actions**	**Issue 1C Revision 2**

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE

The RSS pumps will not start until 10.5 MINUTES after the CIB signal is initiated.

6.	Check CIB And CNMT Spray Status • Containment pressure (at least one pen) - HAS REMAINED LESS THAN 8 PSIG ON [2LMS*PR950] REACTOR CNMT PRESS RECORDER	Verify CIB initiated: a. Check all indicating lights with BLUE CIB mark - LIT IF NOT, THEN manually initiate CIB (both switches for both trains). Check all indicating lights with BLUE CIB mark - LIT IF CIB NOT actuated, THEN manually align equipment. b. Stop all RCPs. c. Request BV-1 operator verify CREBAPS equipment actuation.

Appendix C	Job Performance Measure Worksheet	Form ES-C-1

Facility:	**BVPS Unit 2**	Task No.:	0362-007-01-013
Task Title:	Shutdown No. 1 Diesel Generator	JPM No.:	2002 NRC S6
K/A Reference:	064A4.06 (3.9/3.9)		

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X

Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

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.

Initial Conditions:	The 2-1 Emergency Diesel Generator is running and supplying Emergency 4KV Bus "2AE" due to a spurious trip of ACB "2A10". "2A10" has been checked by Electrical Maintenance and the relays are reset.
Task Standard:	2EGS*EG2-1 is shutdown in accordance with 2OM-36.4.E
Required Materials:	None
General References:	20M-36.4.E, Transferring 4KV Emergency Bus 2AE To Bus 2A, Rev. 8
Handouts:	20M-36.4.E, Rev. 8 (markup copy)
Initiating Cue:	The Unit Supervisor directs you to transfer 4KV Bus "2AE" to Bus "2A" in accordance with 2OM-36.4.E Step IV.A. The Initial Conditions are satisfied.
Time Critical Task:	No
Validation Time:	20 minutes

(Denote Critical Steps with an asterisk)

* **Performance Step: 1** Close [ACB-2A10], 4KV Bus 2A to Emer Bus 2AE.

Standard: ACB-2A10 closed.

Comment:

* **Performance Step: 2** Place 2-1 Emer Gen Synchronizing Selector Switch to Bus 2A position.

Standard: Selector Switch in Bus "2A" position.

Comment:

* **Performance Step: 3** Adjust [2EGS*EG2-1], Emergency Diesel Generator 2-1 speed with the 2-1 Emerg Gen Governor Control such that the 2-1 Emergency Generator Synchroscope (VB-C) needle rotates slowly in the FAST direction.

Standard: Synchroscope needle rotating slowly in the fast direction.

Comment:

* **Performance Step: 4** Adjust [EGS*EG2-1], Emergency Diesel Generator 2-1 output voltage as indicated on 2-1 Emer Gen Volts to read slightly higher than the 4KV Bus 2A Volts (VB-C) using Emer Gen 2-1 Voltage Adjust.

Standard: Voltage adjusted.

Comment:

* **Performance Step: 5** With the synchroscope rotating slowly in the FAST direction, **WHEN** both synchronizing lights are completely dark **AND** the synchroscope needle is at the 12 o'clock position, place [ACB-2E7], 4KV Emer Bus 2AE to Bus 2A in the CLOSE position.

Standard: ACB-2E7 closed.

Comment:

	Performance Step: 6	Place 2-1 Emer Gen Synchronizing Selector switch to 'OFF'.
	Standard:	Selector Switch in 'OFF' position.
	Comment:	
	Performance Step: 7	Maintain generator power factor between .8 and 1.0 lagging by adjusting 2-1 Emer Gen Voltage Adjust.
	Standard:	Power factor between 0.8 and 1.0 lagging.
	Comment:	
*	**Performance Step: 8**	Reduce [EGS*EG2-1], Emergency Diesel Generator 2-1, load **UNTIL** < 100 KW is indicated on 2-1 Emergency Generator Watts by placing 2-1 Emer Gen Governor Control to 'LOWER'.
	Standard:	2EGS*EG2-1 load < 100 KW.
	Comment:	
*	**Performance Step: 9**	Open [ACV-2E10], 2-1 Emer Gen Output Breaker.
	Standard:	ACB-2E10 open.
	Comment:	
	Terminating Cue:	When the Candidate opens the diesel generator output breaker, the evaluation for this JPM is complete.

Job Performance Measure No.: 2002 NRC S6

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS: The 2-1 Emergency Diesel Generator is running and supplying Emergency 4KV Bus "2AE" due to a spurious trip of ACB "2A10". "2A10" has been checked by Electrical Maintenance and the relays are reset.

INITIATING CUE: The Unit Supervisor directs you to transfer 4KV Bus "2AE" to Bus "2A" in accordance with 2OM-36.4.E Step IV.A. The Initial Conditions are satisfied.

Beaver Valley Power Station

Unit 2

FOR TRAINING USE ONLY

2OM-36.4.E

TRANSFERRING 4KV EMERGENCY BUS 2AE TO BUS 2A

Revision 8

Prepared by **W. K. Giffrow**	Date **09/19/01**	Pages Issued **1 through 6**	Effective Date
Reviewed by **F. J. Schaffner**	Date **09/19/01**	Validated by **N/A**	Date
OSC Meeting No. **OSC Not Required**	Date	Approved by	Date

I. PURPOSE

This procedure describes the steps for transferring 4KV Emergency Bus 2AE to Bus 2A from the [2EGS*EG2-1], Emergency Diesel Generator 2-1. This procedure may be entered from an EOP.

II. PRECAUTIONS & LIMITATIONS

A. The emergency diesel generator should be manually tripped if a loss of offsite power is experienced while the emergency diesel generator is paralleled on the Bus. If the emergency diesel generator trips first on electrical protection, then the electrical protection relay (PNL 243 for DG 2-1, Emerg Swgr) should be reset manually as soon as possible (not to exceed one hour) to ensure that the emergency diesel generator will be available for an Auto start.

B. At no time should the diesel generator be operated if the lube oil pressure is below 70 psi.

C. The emergency diesel generators should not be paralleled with offsite power when anticipating a loss of offsite power because it would increase the potential for a loss of all AC power.

D. Voltage on [4KVS*2AE(2DF)] should be maintained within the limits listed in 2OM-36.2.A, "Precautions And Limitations". If 4KV emergency bus voltage drops below 3885V (111V on VB-C), the 90-second degraded bus undervoltage timer will start. Bus voltage must be raised to > 3990V (114V on VB-C) to reset the timer.

If 480V emergency bus voltage drops below 450V, the 90-second degraded bus undervoltage timer will start. Bus voltage must be raised to > 460V to reset the timer. 480V emergency bus voltage can be read on the SPDS computer.

E. If the diesels are solely supplying the emergency busses due to a loss of offsite power, re-alignment of the emergency busses to the offsite sources shall not be performed until confirmation of grid stability is obtained from system operations and permission received from Operations management. This will avoid returning to an unstable grid and possible challenges to the onsite emergency power system. (C.2)

III. INITIAL CONDITIONS

A. [2EGS*EG2-1], Emergency Diesel Generator 2-1, is supplying the Emergency Bus 2AE.

B. Normal 4KV Bus 2A is being supplied by either USST-2C or SSST-2A.

C. [ACB-2E7], 4KV Emer Bus 2AE to 4KV Bus 2A, is open.

D. If the diesels are solely supplying the emergency busses due to a loss of offsite power, confirmation of grid stability has been received from system operations, and permission to return to the grid has been granted by Operations management. (C.2)

IV. INSTRUCTIONS

Note:	All switches, controls and meters are located on BB-C unless otherwise noted.

A. Parallel the 4KV Bus 2A and Emergency 4KV Bus 2AE as follows:

1. Close [ACB-2A10], 4KV Bus 2A to Emer Bus 2AE.

(1) _____/_____
Initial / Date
(2) _____/_____
Initial / Date

Note:	When Synchronizing Selector switch is placed in the Bus 2A position, diesel speed will drop due to introduction of speed droop.

2. Place 2-1 Emer Gen Synchronizing Selector switch to Bus 2A position.

3. Adjust [2EGS*EG2-1], Emergency Diesel Generator 2-1 speed with the 2-1 Emer Gen Governor Control to cause the 2-1 Emergency Generator Synchroscope (VB-C) needle to rotate slowly in the fast direction.

4. Adjust [2EGS*EG2-1], Emergency Diesel Generator 2-1 output voltage, as indicated on 2-1 Emer Gen Volts, to read slightly higher than the 4KV Bus 2A Volts (VB-C), using Emer Gen 2-1 Voltage Adjust.

CAUTION:	THERE IS NO OUT-OF-PHASE PROTECTION RELAYING TO PREVENT AN OUT-OF-PHASE SYNCHRONIZATION ATTEMPT. AN OUT-OF-PHASE ATTEMPT WILL JEOPARDIZE AND/OR DAMAGE THE EMERGENCY POWER SYSTEM.

5. With the synchroscope rotating slowly in the fast direction (VB-C), **WHEN** both synchronizing lights are completely dark **AND** the synchroscope needle is at the 12 o'clock position, place [ACB-2E7], 4KV Emer Bus 2AE to Bus 2A (BB-C), in the CLOSE position.

(1) _____/_____
Initial / Date
(2) _____/_____
Initial / Date

6. Place 2-1 Emer Gen Synchronizing Selector switch to OFF.

(1) _____/_____
Initial / Date
(2) _____/_____
Initial / Date

7. Maintain generator power factor between .8 and 1.0 lagging by adjusting 2-1 Emer Gen Voltage Adjust.

B. Remove the [2EGS*EG2-1], Emergency Diesel Generator 2-1, from service as follows:

1. Reduce [2EGS*EG2-1], Emergency Diesel Generator 2-1, load **UNTIL** < 100 KW is indicated on 2-1 Emergency Generator Watts (VB-C) by placing 2-1 Emer Gen Governor Control to LOWER.

2. Open [ACB-2E10], 2-1 Emer Gen Output Bkr.

3. Verify 4KV Bus 2AE Volts is within the limits listed in 2OM-36.2.A, "Precautions And Limitations".

(1) _____/_____
Initial / Date
(2) _____/_____
Initial / Date

4. Shutdown [2EGS*EG2-1], Emergency Diesel Generator 2-1, in accordance with 2OM-36.4.AF, "Emergency Diesel Generator [2EGS*EG2-1] Start-up And Shutdown".(C.1)

Performed By _____

Verified By _____

Reviewed By _____ **Date** _____
NSS/ANSS

Route the completed copy of this procedure to document control via the Operations clerk's daily transmittal.

Appendix C	Job Performance Measure Worksheet	Form ES-C-1

Facility: **BVPS Unit 2** Task No.: 0535-010-04-013
0021-004-01-013

Task Title: Respond to Failed Power Range Channel N-44 JPM No.: 2002 NRC S7

K/A Reference: 051A2.01 (3.5/3.9)
015A2.02 (3.1/3.5)

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X

Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

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.

Initial Conditions:

- The plant is operating at 46% power following the failure of a power range channel.
- The actions required to stabilize the plant following the failure have been taken.
- Reactor power, turbine power and Tavg are all stable at their current values.
- Tavg is within one degree of Tref, and the control rods are in 'Manual'.
- The bypass feedwater regulating valves are in 'Manual'.
- All other systems are operating normally.

Task Standard: The failed power range channel is bypassed per AOP-2.2.1C.

Required Materials: None

General References: 2OM-53C.4.2.2.1C, Power Range Channel Malfunction, Issue 1A, Rev. 6

Handouts: 2OM-53C.42.2.1C, Rev. 6

Initiating Cue: The Unit Supervisor directs you to bypass the failed power range channel in accordance with AOP-2.2.1C.

Time Critical Task: No

Validation Time: 15 minutes

(Denote Critical Steps with an asterisk)

Performance Step: 1 Check if malfunction of one power range channel has occurred.
Standard: Candidate verifies N-44 has failed high.
Standard: Candidate determines no other power range channel has failed.

Comment:

* **Performance Step: 2** Within 6 hours remove control power fuses from Drawer "A" of channel N-44.
Standard: Removes control power fuses from N-44 Drawer "A".

Comment:

* **Performance Step: 3** Place "Rod Stop Bypass Switch" in 'N-44' position.
Standard: Places "Rod Stop Bypass Switch" in 'N-44' position.
Standard: Verifies Overpower Rod Stop Bypass Status Light is lit.

Comment:

Performance Step: 4 Check reactor power greater than 50%.
Standard: Locates NIS channels and verifies power is less than 50%.

Comment:

* **Performance Step: 5** Place "Comparator Channel Defeat Switch" in 'N-44' position.
Standard: Places "Comparator Channel Defeat Switch" in N-44 position.

Comment:

Performance Step: 6 Ensure Vertical Board recorders are selected to monitor only operable detectors.

Standard: Checks NIS vertical board recorders to ensure N-44 is not selected.

Comment:

Performance Step: 7 Refer to T.S. 4.2.1.1.b.

Standard: Reports N-44 bypassed and states that axial flux needs to be monitored per T.S. 4.2.1.1.b.

Comment: CUE: **As Supervisor, inform Candidate that another Operator will be asked to monitor axial flux and refer to Technical Specifications.**

Terminating Cue: When the Candidate reports that N-44 is bypassed refers to the T.S. actions, evaluation for this JPM is complete.

Job Performance Measure No.: 2002 NRC S7

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

- The plant is operating at 46% power following the failure of a power range channel.
- The actions required to stabilize the plant following the failure have been taken.
- Reactor power, turbine power and Tavg are all stable at their current values.
- Tavg is within one degree of Tref, and the control rods are in 'Manual'.
- The bypass feedwater regulating valves are in 'Manual'.
- All other systems are operating normally.

INITIATING CUE: The Unit Supervisor directs you to bypass the failed power range channel in accordance with AOP-2.2.1C.

Record Type #A9.350C

DUQUESNE LIGHT COMPANY

Beaver Valley Power Station

UNIT 2

FOR TRAINING USE ONLY

2OM-53C.4.2.2.1C(ISS1A)

Power Range Channel Malfunction

Issue 1A Revision 6

Prepared by M. P. Flynn	Date 09/06/96	Pages Issued 1 through 6	Effective Date SEP 2 3 1996
Reviewed by C. O'Neill	Date 09/06/96	Validated by N/A	Date
OSC Meeting No. BV-OSC-38-96	Date 09/18/96	Approved by for BVT	Date 9/19/96

Number	Title	
2.2.1C	Power Range Channel Malfunction	Issue 1A Revision 6

FOR TRAINING USE ONLY

A. PURPOSE

This procedure provides instructions for power range channel malfunctions in Modes 1 and 2.

B. SYMPTOMS OR ENTRY CONDITIONS

Failure of channel may be evidenced by any of the following:

1. Erratic indication
2. Loss of indication
3. Drift of indication or trip settings
4. Unexplained trips
5. Loss of supply voltages
6. Annunciator alarms

C. AUTOMATIC ACTIONS

Depending on type of failure, any of the following may occur:

1. Reactor trip
2. Rod withdrawal stop

Number 2.2.1C	Title Power Range Channel Malfunction	Issue 1A Revision 6

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
1.	Check If Malfunction Of One Power Range Channel (N-41, N-42, N-43, N-44) Has Occurred	IF malfunction of more than one Power Range Channel, THEN refer to T.S. 3.3.1.1, "Reactor Trip System Instrumentation".
	a. Within 6 hours, trip nuclear bistables by removing control power supply fuses from drawer A of failed channel.	
	b. IF Power Range Channel 4 (N-44) fails, THEN perform the following: 1) Place Control Rod Group Selector switch in MAN. 2) Place [2FWS*FCV479,489,499], 21A(B)(C) SG Feedwater Bypass Control Vlvs in MANUAL.	
	c. At NIS Rack N50, "Detector Current Comparator," turn Rod Stop Bypass Switch to BYPASS on the failed channel. 1) Verify appropriate Status Light, "Overpwr Rod Stop Bypass" (Status Light Panel 308, A-14, B-14, C-14, D-14) - LIT FOR FAILED CHANNEL	
	d. Check reactor power - GREATER THAN 50%	d. GO TO Step 1.g.
	e. Determine if Power Range Channel upper and lower detector inputs to QPTR are operable in accordance with 20ST-2.4A, "Quadrant Power Tilt Ratio Manual Calculation".	

(step continued next page)

Number	Title	
2.2.1C	Power Range Channel Malfunction	Issue 1A Revision 6

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
1.	(continued from previous page)	
	f. All Power Range Channel upper and lower detector inputs to QPTR - OPERABLE	f. Perform the following: 1) Turn Upper Section Comparator Defeat Switch to failed channel (NIS Rack). 2) Turn Lower Section Comparator Defeat Switch to failed channel (NIS Rack).
	g. At NIS Rack N37/N46, "Comparator and Rate", turn Comparator Channel Defeat Switch to failed channel.	
	h. Ensure vertical board recorders are selected to monitor only operable detectors.	
	i. For failure of Power Range Channels N-41, N-42, N-43, place appropriate Delta T protection bistable switches in tripped position as follows: 1) Obtain Keys 117(118) for process rack doors. 2) Refer to Attachment 1, "Delta T Protection Bistable Switch List".	
	j. Check reactor power - GREATER THAN 50%	j. GO TO Step 1.1.

(step continued next page)

Number 2.2.1C	Title Power Range Channel Malfunction	Issue 1A Revision 6

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

1. (continued from previous page)

k. Perform one of the following (refer to T.S. 3.3.1.1):

- If 4 power range channel inputs to QPTR remain operable, perform Technical Specification Surveillance Requirement 4.2.4.a.

- OR -

- With THERMAL POWER greater than 75% RATED THERMAL POWER AND less than 4 power range channel inputs to QPTR operable, perform Technical Specification Surveillance Requirement 4.2.4.b.

- OR -

- Reduce THERMAL POWER to less than or equal to 75% RATED THERMAL POWER within 6 hours of placing failed channel in trip AND perform Technical Specification Surveillance Requirement 4.2.4.a.

- OR -

- Place plant in MODE 3 within 12 hours of channel malfunction.

l. Refer to T.S. 4.2.1.1.b.

1) Monitor and trend Axial Flux Difference in accordance with 20M-49.4.C, "Axial Flux Difference Monitoring".

- END -

Number	Title	
2.2.1C	Power Range Channel Malfunction	Issue 1A Revision 6

Attachment 1

Delta T Protection Bistable Switch List

1. Power Range Channel I (N-41)
   Protection - Channel 1 Protection Cabinet No. 1
   C1-421 BS-3 and BS-4

   - 2TS/412C-1 (BS-3) Protection Rack C1
     CF-4 Slot 21
     Over Temp Delta T Rx Trip

   - 2TS/412C-2 (BS-4) Protection Rack C1
     CF-4 Slot 21
     Over Temp Delta T Rod Stop

2. Power Range Channel II (N-42)
   Protection - Channel 2 Protection Cabinet No. 2
   C2-421 BS-3 and BS-4

   - 2TS/422C-1 (BS-3) Protection Rack C2
     CF-4 Slot 21
     Over Temp Delta T Rx Trip

   - 2TS/422C-2 (BS-4) Protection Rack C2
     CF-4 Slot 21
     Over Temp Delta T Rod Stop

3. Power Range Channel III (N-43)
   Protection - Channel 3 Protection Cabinet No. 3
   C3-721 BS-3 and BS-4

   - 2TS/432C-1 (BS-3) Protection Rack C3
     CF-7 Slot 21
     Over Temp Delta T Rx Trip

   - 2TS/432C-2 (BS-4) Protection Rack C3
     CF-7 Slot 21
     Over Temp Delta T Rod Stop

Facility:	**BVPS UNIT 2**	Task No.:	0201-004-01-013
Task Title:	Respond to a SFP Low Level Alarm	JPM No.:	2002 NRC P1
K/A Reference:	033A2.03 (3.1/3.5)		

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: X Actual Performance: _____

Classroom _____ Simulator _____ Plant X

READ TO THE EXAMINEE

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.

Initial Conditions: The plant is in Mode 1 and the Spent Fuel Pool Level Low alarm is LIT. Spent Fuel Pool level indicates less than 172". The cause of the Spent Fuel Pool low level is normal evaporation.

The running and standby Fuel Pool Purification Pumps have been placed in Pull-To-Lock.

Task Standard: Respond to a Spent Fuel Pool Level Low alarm, performing corrective actions until makeup can begin using the RWST cooling water pump.

Required Materials: None

General References: 2OM-20.4.AAB, Spent Fuel Pool Level High/Low, Rev. 2
2OM-20.4.G, Makeup To the Spent Fuel Pool, Rev. 7

Handouts: 2OM-20.4.G, Revision 7

Initiating Cue: The US directs you to coordinate with the PO and perform the actions of procedure 2OM-20.4.G, Makeup To The Spent Fuel Pool to add water to the Spent Fuel Pool from the RWST.

Time Critical Task: NO

Validation Time: 15 minutes

(Denote Critical Steps with an asterisk)

(Denote Critical Steps with an asterisk)

Performance Step: 1 Obtain the Power Station key for [2QSS-26], Refueling Water Cooling Pumps Discharge to Fuel Pool Cooling.

Standard: Obtains key.

Comment: **CUE: Simulate providing Candidate with key.**

Performance Step: 2 If necessary, Secure Fuel Pool Purification.

Standard: No action required. Task already performed.

Comment:

Performance Step: 3 Check Open [2FNC-40(41)], Purif Pump [2FNC-P24A(B)] to Ion Exch [2FNCIOE21] Isol.

Standard: Locates valve(s) in Fuel Bldg 733' and checks open.

Comment:

* **Performance Step: 4** Open [2QSS-26] (LS), Refueling Wtr Cooling Pump Disch to Fuel Pool Cool Sys, (SFGDS North 718') to begin makeup to the Spent Fuel Pool.

Standard: Locates and opens [2QSS-26].

Comment: **CUE: After the valve has been opened, inform the candidate that the desired quantity of water has been added.**

* **Performance Step: 5** Close AND Lock [2QSS-26], Refueling Water Cooling Pumps Disch to Fuel Pool Cool Sys, (SFGDS North 718').

Standard: Closes [2QSS-26] and secures lock in place.

Requests a second operator verify lock is in place. (Not critical)

Comment: **CUE: Inform the candidate that an independent verification will be performed as requested.**

Terminating Cue: When the candidate requests an independent verification for 2QSS-26, the evaluation for this JPM is complete.

Job Performance Measure No.: 2002 NRC P1

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

The plant is in Mode 1 and the Spent Fuel Pool Level Low alarm is LIT. Spent Fuel Pool level indicates less than 172". The cause of the Spent Fuel Pool low level is normal evaporation.

The running and standby Fuel Pool Purification Pumps have been placed in Pull-To-Lock.

INITIATING CUE:

The US directs you to coordinate with the PO and perform the actions of procedure 2OM-20.4.G, Makeup To The Spent Fuel Pool to add water to the Spent Fuel Pool from the RWST.

Beaver Valley Power Station

Unit 2

FOR TRAINING USE ONLY

2OM-20.4.G

MAKEUP TO THE SPENT FUEL POOL

Revision 7

Prepared by **C. R. Kuhn**	Date **03/21/02**	Pages Issued **1 through 8**	
Reviewed by **J. L. Popp**	Date **03/25/02**	Validated by **N/A**	Date
OSC Meeting No. **OSC Not Required**	Date	**DRR-01-04008**	

I. PURPOSE

This procedure provides the steps necessary to makeup to the Spent Fuel Pool using the CHS Blender or the RWST cooling water pumps supplying water from the RWST.

II. PRECAUTIONS & LIMITATIONS

A. During makeup to the spent fuel pool from the CHS blender, automatic makeup, boration, dilution and alternate dilution of the volume control tank/reactor coolant system will not be available.

III. INITIAL CONDITIONS

A. Makeup using the CHS blender

1. The Boric Acid Blender [2CHS*BL21] is aligned for automatic operation in accordance with 2OM-7.4.J, "Blender Automatic Makeup Operation".

2. The boric acid tanks contain sufficient boric acid solution to perform a makeup to the spent fuel pool without reducing the inventory below Licensing Requirements 2.7 **OR** 2.8 requirements.

3. The CHS blender is not required for other usage during the operation of this procedure.

B. Makeup from the RWST using the RWST cooling water pump

1. The RWST contains sufficient inventory to fill the spent fuel pool without violating Technical Specification 3.1.2.8 **OR** Licensing Requirement 2.7 requirements.

2. The RWST cooling portion of the quench spray system is available for service with a RWST cooling pump operating.

3. The boron concentration of the RWST has been checked to ensure that makeup will not dilute the spent fuel pool boron concentration below the minimum requirements.

C. The purification portion of the fuel pool cooling/purification system is lined up for operation in accordance with section A of either 2OM-20.4.A, "Spent Fuel Pool Cooling/Purification System Startup", **OR** 2OM-20.4.D, "Refueling Cavity Purification".

D. Color coded T-handle wrenches are available in the Auxiliary Building, Elev. 718', for valve operations.

IV. INSTRUCTIONS

A. Makeup Using Primary Grade Water

Note:
- Refer to Tech. Spec. 3.9.15 for minimum boron concentration requirements in the Spent Fuel Pool.
- A one foot level change in the spent fuel pool is 8000 gallons. A one foot level change in the spent fuel pool and cask area is 10,000 gallons. (Ref. Unit 2 Curve Book)
- Each 1000 gallons of primary grade water added to the fuel pool reduces the boron concentration by approximately 7.5 ppm assuming a 2400 ppm initial concentration.
- Selection of makeup source should be based upon the results of the most recent Chemistry boron analysis results.

1. Verify at least one Spent Fuel Pool cooling pump [2FNC*P21A and/or 2FNC*P21B] is in service.
2. Obtain BV-2 key.
3. Inform Unit 1 that PG water will be used for spent fuel pool makeup and the approximate volume to be used.
4. Throttle Open [2FNC-118], PG Water Supply To Spent Fuel Pool (Fuel Bldg 735').
5. When the spent fuel pool level reaches 765'10" Close **AND** Lock [2FNC-118], PG Water Supply To Spent Fuel Pool (Fuel Bldg 735').
   a. Independently Verify that [2FNC-118], PG Water Supply To Spent Fuel Pool, is Locked Closed **AND** Document in the Daily Journal.
6. Inform Chemistry of the time and volume of PG Water addition.

B. Makeup Using the CHS Blender [2CHS-BL2]

1. Obtain the RBIX key from the NSS/ANSS for access to the blender cubicle.
2. If operating, Secure fuel pool purification flow as follows:
   a. If necessary, Place the control switch for the standby [2FNC-P24B (A)], Fuel Pool Purif Pump, in PULL-TO-LOCK (BB-B).
   b. Stop the running [2FNC-P24A (B)], Fuel Pool Purif Pump, by placing its control switch in PULL-TO-LOCK (BB-B).

3. Verify Closed, the following valves:

   a. [2FNC-47], Supply to Refueling Water Storage Tank Isol, (MSVA & CV Pen A 718').

   b. [2FNC-28 (29)], Filter [2FNC-FLT21A (B)] to Spent Fuel Pool Isol, (Aux Bldg 718').

   c. [2FNC-35 (36)], Filter [2FNC-FLT21A (B)] to Refueling Cavity Isol, (Aux Bldg 718').

   d. [2FNC-84 (24)], Filter [2FNC-FLT 21B (A)] Inlet Isol, (Aux Bldg 718').

4. Place the control switch for [2CHS*FCV113B], Boric Acid Blender Disch to Chg Pumps, in the CLOSE position, (BB-A).

   a. Verify that its green (closed) indicating light is ON.

5. Place the control switch for [2CHS*FCV114B], Blender Outlet to Volume Control Tank, in the CLOSE position, (BB-A).

   a. Verify that its green (closed) indicating light is ON.

6. Verify Open the following valves:

   a. [2CHS*87], Blender to Refueling Cavity Isolation (Aux Bldg 710' Blender Rm).

   b. [2CHS*89], Blender to RWST Isolation (Aux Bldg 710' Blender Rm).

   c. [2FNC-36 (35)], Filter [2FNC-FLT21B (21A)] to Refueling Cavity Isol (Aux Bldg 718').

   d. [2FNC-29 (28)], Filter [2FNC-FLT21B (A)] to Spent Fuel Pool, (Aux Bldg 718').

7. Refer to 2OM-7.4.N, "Blender Manual Makeup Operations" and carry out the steps for Manual Blended Makeup with the following exceptions:

   a. Use spent fuel pool boron concentration instead of the RCS boron concentration.

   b. DO NOT open [2CHS*FCV113B], Boric Acid Blender Disch to Chg Pumps. Makeup to the spent fuel pool will start when the Boric Acid Makeup Blender Control Switch is placed in the START position.

8. When makeup is complete, Close the following valves:

   a. [2CHS*87], Blender to Refueling Cavity Isolation (Aux Bldg 710' Blender Rm).

      1) Independently Verify that [2CHS*87], Blender to Refueling Cavity Isolation, is Closed **AND** Document in the Daily Journal.

b. [2CHS*89], Blender to RWST Isolation (Aux Bldg 710' Blender Rm).

1) Independently Verify that [2CHS*89], Blender to RWST Isolation, is Closed **AND** Document in the Daily Journal.

9. Place the makeup control system in automatic in accordance with 2OM-7.4.J, "Blender Automatic Makeup Operation".

10. Place **OR** Verify fuel pool purification valves in the specified positions as follows:

a. Open [2FNC-28], Filter [2FNC-FLT21A] to Spent Fuel Pool Isol, (Aux Bldg 718').

b. Open [2FNC-29], Filter [2FNC-FLT21B] to Spent Fuel Pool Isol, (Aux Bldg 718').

c. Open [2FNC-24], Filter [2FNC-FLT 21A] Inlet Isol, (Aux Bldg 718').

d. Open [2FNC-84], Filter [2FNC-FLT 21B] Inlet Isol, (Aux Bldg 718').

e. Close [2FNC-35], Filter [2FNC-FLT21A] to Refueling Cavity Isol (Aux Bldg 718').

f. Close [2FNC-36], Filter [2FNC-FLT21B] to Refueling Cavity Isol (Aux Bldg 718').

11. If desired, Resume operation of the fuel pool purification system in accordance with 2OM-20.4.A, "Fuel Pool Cooling/Purification System Startup", **OR** 2OM-20.4.D, "Refueling Cavity Purification".

C. **Makeup From the RWST Using the RWST Cooling Water Pump**

1. Obtain the power station key for [2QSS-26], Refueling Water Cooling Pumps Discharge to Fuel Pool Cooling.

2. If operating, Secure fuel pool purification flow as follows:

a. If necessary, place the control switch for the standby [2FNC-P24B (A)], Fuel Pool Purif Pump, in PULL-TO-LOCK (BB-B).

b. Stop the running [2FNC-P24A (B)], Fuel Pool Purif Pump, by placing its control switch in PULL-TO-LOCK (BB-B).

3. Check Open [2FNC-40 (41)], Purif Pump [2FNC-P24A (B)] to Ion Exch [2FNC-IOE21] Isol (Fuel Bldg 733').

4. Open [2QSS-26](LS), Refueling Wtr Cooling Pump Disch to Fuel Pool Cool Sys, (SFGDS North 718'), to begin makeup to the spent fuel pool.

5. When the spent fuel pool reaches the desired level, Close **AND** Lock [2QSS-26], Refueling Water Cooling Pumps Discharge to Fuel Pool Cool Sys, (SFGDS North 718').

   a. Independently Verify that [2QSS-26], Refueling Wtr Cooling Pump Disch to Fuel Pool Cool Sys, is Locked Closed **AND** Document in the Daily Journal.

6. If desired, Resume operation of the fuel pool purification system in accordance with 2OM-20.4.A, "Fuel Pool Cooling/Purification System Startup", **OR** 2OM-20.4.D, "Refueling Cavity Purification".

Appendix C	Job Performance Measure Worksheet	Form ES-C-1

Facility: **BVPS Unit 2** Task No.: 0241-024-01-043

Task Title: Reset the Terry Turbine Trip/Throttle Valve JPM No.: 2002 NRC P2

K/A Reference: 061A2.04 (3.4/3.8)

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: X Actual Performance: _____

Classroom _____ Simulator _____ Plant X

READ TO THE EXAMINEE

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.

Initial Conditions:

- The plant is in Mode 1 at 50% power.
- The turbine driven auxiliary feedwater pump has tripped due to an overspeed condition.
- The problem has been corrected.
- A Plant Operator has verified that the trip and throttle valve is closed.
- No start signal exists for 2FWE*P22 and the pump is stopped.
- The pump is not required to feed the steam generators.

Task Standard: 2FWE*P22 trip and throttle valve reset per 2OM-24.4.

Required Materials: None

General References: 2OM-24.4.R, Resetting And Opening TDAFW Pump Trip And Throttle Valve, Rev. 15

Handouts: 2OM-24.4.R, Rev. 15

Initiating Cue: The Unit Supervisor directs you to reset the trip and throttle valve for 2FWE*P22.

Time Critical Task: No

Validation Time: 10 minutes

(Denote Critical Steps with an asterisk)

Performance Step: 1 Verify tripped or manually trip overspeed mechanism.

Standard: Locates manual emergency trip lever and simulates pressing it.

Comment: **CUE: The steam supply valves 2MSS*SOV105A, (B), (C), (D), (E) and (F) are closed.**

* **Performance Step: 2** To open the trip and throttle valve, turn the handwheel in the clockwise direction until it is fully down (CLOSED).

Standard: Locates the trip and throttle valve handwheel.

Standard: Simulates turning it in the clockwise direction to raise the latch to engage the valve.

Comment:

* **Performance Step: 3** Reset overspeed trip device.

Standard: Candidate simulates resetting overspeed trip device by:

- Holding overspeed trip connecting rod to the left.
- Ensuring overspeed tappet washer flat side line up with the overspeed trip lever (scribe mark on washer is aligned with punch mark on tappet housing).
- Release connecting rod, allowing spring tension to maintain reset condition.
- Ensuring washer flat edge is flush against vertical side of overspeed trip lever.

Comment:

Performance Step: 4 Verify the valve is latched by observing the latch on the right side of the valve.

Standard: Locates the latch on the right side of the valve.

Standard: Verifies that it has engaged the latch hook.

Standard: Calls US to tell him that this requires an independent verification.

Comment: **CUE: The US will assign another Operator to perform independent verification.**

*	**Performance Step: 5**	Reopen the trip throttle valve by turning the handwheel counterclockwise.
	Standard:	Locates throttle valve handwheel.
	Standard:	Simulates turning it counterclockwise.
	Standard:	Continues turning until the valve stops in the full open position.
	Standard:	Informs US of need for independent verification.
	Comment:	**CUE: The US will assign another Operator to perform independent verification.**
*	**Performance Step: 6**	To prevent thermal binding of Trip Throttle valve, crack valve off its back seat by ¼ turn.
	Standard:	Locates trip throttle valve.
	Standard:	Simulates 1/4-turn clockwise to prevent thermal binding.
	Comment:	
*	**Performance Step: 7**	Push both pushbuttons to dump oil from the governor to preclude overspeed of the Terry Turbine on a restart. Observe governor linkage until movement ceases or hold for 15 seconds.
	Standard:	Locates pushbuttons for governor oil dump.
	Standard:	Simulates depressing both pushbuttons simultaneously.
	Standard:	Holds pushbuttons until linkage movement ceases or 15 seconds has elapsed.
	Comment:	**CUE: All governor linkage movement has stopped. (15 seconds has elapsed, if asked).** **CUE: 2FWE*P22 is not needed to control steam generator level.**
	Terminating Cue:	When the candidate has verified that linkage movement stops, the evaluation for this JPM is complete.

Job Performance Measure No.: 2002 NRC P2

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

- The plant is in Mode 1 at 50% power.
- The turbine driven auxiliary feedwater pump has tripped due to an overspeed condition.
- The problem has been corrected.
- A Plant Operator has verified that the trip and throttle valve is closed.
- No start signal exists for 2FWE*P22 and the pump is stopped.
- The pump is not required to feed the steam generators.

INITIATING CUE:

The Unit Supervisor directs you to reset the trip and throttle valve for 2FWE*P22.

Beaver Valley Power Station

Unit 2

FOR TRAINING USE ONLY

2OM-24.4.R

RESETTING AND OPENING TDAFW PUMP TRIP AND THROTTLE VALVE

Revision 15

Prepared by **W. K. Giffrow**	Date **09/17/01**	Pages Issued **1 through 12**	Effective Date
Reviewed by **J. Burnecke**	Date **09/18/01**	Validated by **N/A**	Date
OSC Meeting No. **OSC Not Required**	Date	Approved by	Date

I. PURPOSE

This procedure provides instructions to perform the following:

- Reset the [2FWE-P22], Steam Driven Auxiliary Feedwater Pump, overspeed trip device.
- Relatch and Open [2FWE-TTV22], Trip and Throttle Valve for 2FWE*P22.
- Close and Open [2FWE*TTV22], Trip and Throttle Valve for 2FWE*P22, to support testing.

This procedure may be entered from an EOP or an AOP.

II. PRECAUTIONS AND LIMITATIONS

A. **WHEN** resetting the overspeed trip device tappet assembly, the FLAT SIDE of the overspeed tappet washer must be flush against the vertical side of the overspeed trip lever (Figure 1). If the overspeed mechanism is **NOT** in this configuration when reset, it may result in bowing of the tappet, which could render the overspeed trip device inoperable.

B. If [2FWE*TTV22], Trip and Throttle Valve for 2FWE*P22, is being reset following a trip, the valve should be opened slowly to ensure any trapped pressure does not cause an overspeed trip.[C.1]

C. Opening [2MSS*SOV105A or B], Turb Driven AFW Pump Stm Hdr A(B) Supply Isol, will cause isolation of steam generator blowdown and blowdown sample lines.

D. Relieving the governor oil pressure prior to opening [2FWE*TTV22], Trip and Throttle Valve for 2FWE*P22, will preclude an overspeed condition during a startup within 15-20 minutes of a pump shutdown.

III. INITIAL CONDITIONS

A. [2FWE*TTV22], Trip and Throttle Valve for 2FWE*P22, **AND/OR** the Overspeed Trip Device, is required to be restored to its normal configuration.

OR

B. It is necessary to close [2FWE*TTV22], Trip and Throttle Valve for 2FWE*P22, to support testing.

OR

C. The overspeed trip device is suspected of being **NOT** properly reset **AND/OR** [2FWE*TTV22], Trip and Throttle Valve for 2FWE*P22, is suspected of being **NOT** properly latched.

IV. INSTRUCTIONS

A. Resetting The Overspeed Trip Device

Note:	"Initial/Date" Verification signoffs in Part A may be left blank if Part A is not performed.

1. If [2FWE*P22], Turbine Driven Aux Feed Pump, is being placed in standby, Close or Verify Closed the following valves:
   a. [2MSS*SOV105A], Turbine Driven AFW Pump Stm Hdr A Supply Isol.
   b. [2MSS*SOV105B], Turbine Driven AFW Pump Stm Hdr B Supply Isol.
   c. [2MSS*SOV105C], Turbine Driven AFW Pump Stm Hdr C Supply Isol.
   d. [2MSS*SOV105D], Turbine Driven AFW Pump Stm Hdr A Supply Isol.
   e. [2MSS*SOV105E], Turbine Driven AFW Pump Stm Hdr B Supply Isol.
   f. [2MSS*SOV105F], Turbine Driven AFW Pump Stm Hdr C Supply Isol.
2. Verify tripped **OR** manually trip the Overspeed Trip Mechanism by performing one of the following:
   a. To perform a trip locally, press the Manual Emergency Trip Lever.

      OR

   b. To perform a trip from the Unit 2 Control Room, depress the Turbine Driven AFW Pump Trip pushbutton. (BB-C)
3. Verify [2FWE*TTV22], Trip and Throttle Valve for 2FWE*P22, is unlatched.
4. If [2FWE*P22], Turbine Driven Auxiliary Feedwater Pump, will be restarted within the next 15 to 20 minutes, Relieve the governor oil pressure by performing the following:
   a. Loosen wingnuts and remove cover for access to [2FWE-CSSOV101], Governor Oil Dump pushbuttons.
   b. Depress **AND** Hold [2FWE-CSSOV101], Governor Oil Dump pushbuttons simultaneously for at least 15 seconds.
   c. Release the pushbuttons and replace the cover for [2FWE-CSSOV101].

Note:	Refer to Figure 1, for detailed view of the overspeed trip device.

5. Reset the Overspeed Trip Mechanism by performing the following:
   a. Hold the overspeed trip connecting rod to the left.

b. Verify the overspeed tappet washer flat side directly faces the overspeed trip lever.

c. Gently release the connecting rod and allow the spring tension to maintain the reset condition.

d. Verify that the flat side of the washer is flush against the vertical side of the overspeed trip lever.

6. Latch [2FWE*TTV22], Trip and Throttle Valve for 2FWE*P22, by turning the handwheel in the clockwise direction **UNTIL** the sliding nut and trip lever raise **AND** engage with the trip hook.

Note:
- The following instruction will start [2FWE*P22], Turbine Driven Aux Feed Pump, if steam is aligned from [2MSS*SOV105F and C(E and B)(D and A)], Turb Driven AFW Pump Stm Hdr Supply Isol Valves.
- The pump will accelerate when [2FWE*TTV22], Trip and Throttle Valve for 2FWE*P22, is opened, regardless of whether steam is aligned. Residual pressure in the steam supply line is sufficient to cause acceleration after the steam supply has been isolated.

7. Slowly Open [2FWE*TTV22], Trip and Throttle Valve for 2FWE*P22, by turning the handwheel counterclockwise **AND** Verify pump does **NOT** accelerate in an uncontrolled manner.

Note: Concurrent verification of [2FWE*TTV22], Trip and Throttle Valve for 2FWE*P22, shall be completed with 4 hours of completion of adjustment in the following instruction.

8. Perform the following:

a. Adjust [2FWE*TTV22], Trip and Throttle Valve for 2FWE*P22, ¼ turn off of the backseat.

b. Verify the overspeed trip mechanism is reset.

c. Verify PCS Computer Point Y5172D, "TURB DR AFW PP TRIPPED FWE*P22", indicates OPER.

9. If not previously performed, Relieve the governor oil pressure by performing the following:

a. Loosen wingnuts and remove cover for access to [2FWE-2CSSOV101], Governor Oil Dump Pushbuttons.

b. Depress **AND** Hold [2FWE-2CSSOV101], Governor Oil Dump Pushbuttons (2) simultaneously.

c. **WHEN** 15 seconds has passed **AND** all governor linkage movement has ceased, Release the pushbuttons.

d. Replace cover and tighten wingnuts on access cover for [2FWE-2CSSOV101], Governor Oil Dump Pushbuttons.

10. Notify the Unit 2 Control Room Operator that [2FWE*P22], Turbine Driven Aux Feed Pump, is available.

11. **WHEN** the plant is stable and operators are available, perform the following:

a. Adjust and Concurrently Verify [2FWE*TTV22], Trip and Throttle Valve for 2FWE*P22, ¼ turn off of the backseat.

(1)_____/_____
Initial / Date

(2)_____/_____
Initial / Date

b. Verify the overspeed trip mechanism is reset.

(1)_____/_____
Initial / Date

(2)_____/_____
Initial / Date

c. Verify PCS Computer Point Y5172D, "TURB DR AFW PP TRIPPED FWE*P22", indicates OPER.

_____/_____
Initial / Date

12. Verify the following:

a. [2MSS*SOV105A], Turbine Driven AFW Pump Stm Hdr A Supply Isol, is Closed.

(1)_____/_____
Initial / Date

(2)_____/_____
Initial / Date

b. [2MSS*SOV105B], Turbine Driven AFW Pump Stm Hdr B Supply Isol, is Closed.

(1)_____/_____
Initial / Date

(2)_____/_____
Initial / Date

c. [2MSS*SOV105C], Turbine Driven AFW Pump Stm Hdr C Supply Isol, is Closed.

(1)_____/_____
Initial / Date

(2)_____/_____
Initial / Date

d. [2MSS*SOV105D], Turbine Driven AFW Pump Stm Hdr A Supply Isol, is Closed.

(1)_____/_____
Initial / Date

(2)_____/_____
Initial / Date

e. [2MSS*SOV105E], Turbine Driven AFW Pump Stm Hdr B Supply Isol, is Closed.

(1)_____/_____
Initial / Date

(2)_____/_____
Initial / Date

f. [2MSS*SOV105F], Turbine Driven AFW Pump Stm Hdr C Supply Isol, is Closed.

(1)_____/_____
Initial / Date

(2)_____/_____
Initial / Date

FIGURE 1

SDAFW OVERSPEED RESET

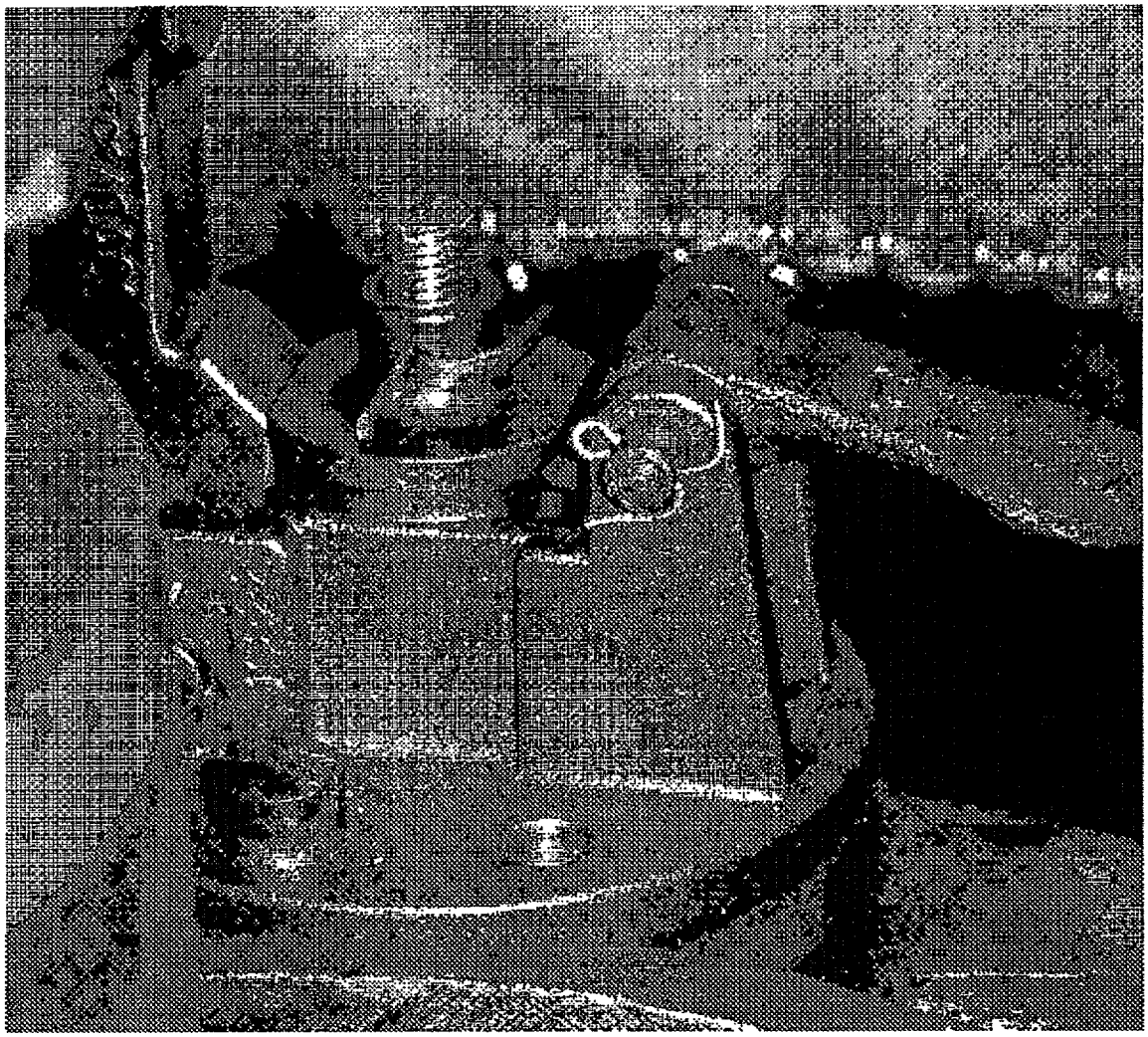
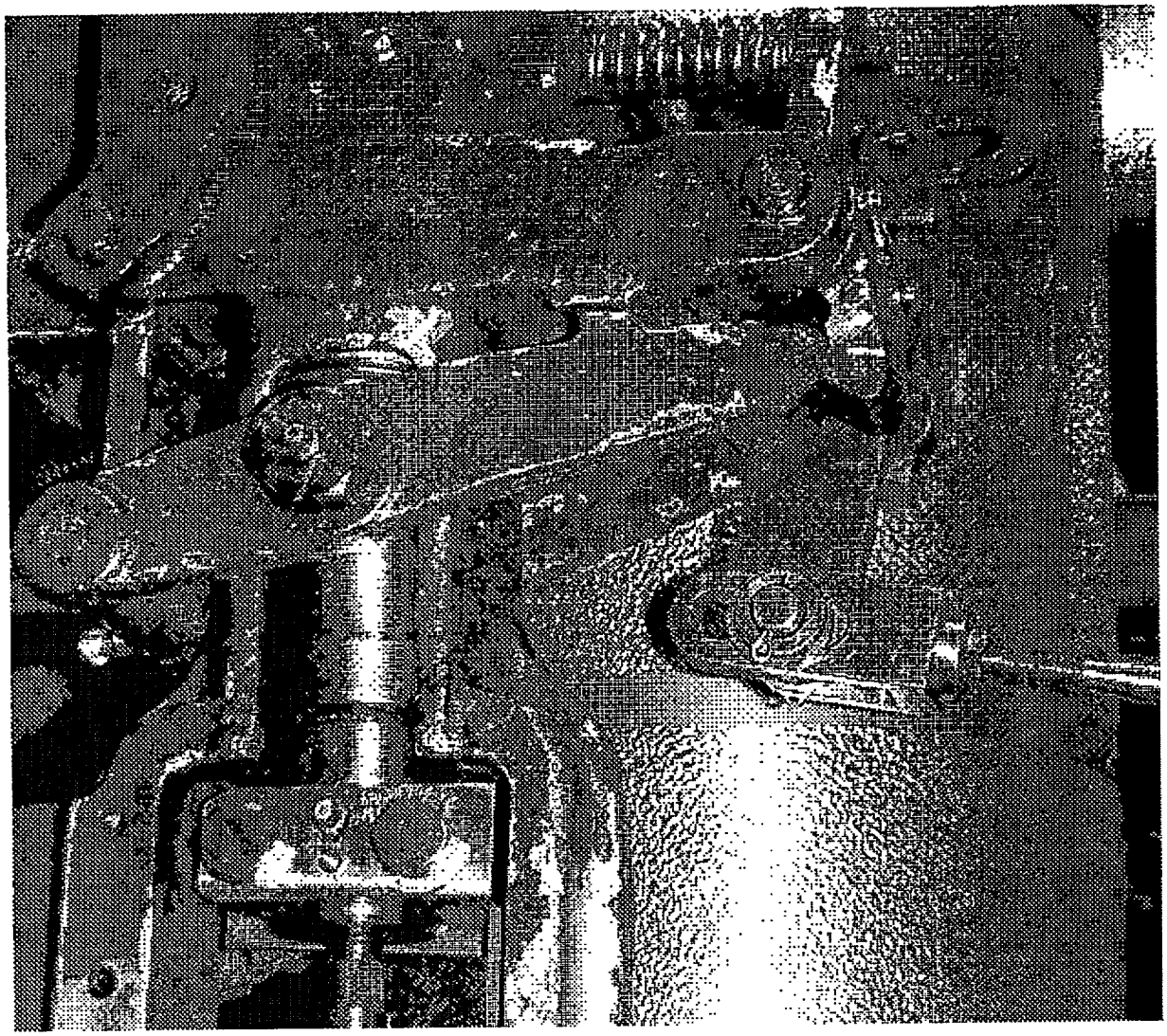


FIGURE 2

TERRY TURBINE TRIP VALVE LATCH



V.

Facility: **BVPS Unit 2** Task No.: 0011-059-01-013

Task Title: Place SSPS Train in Service JPM No.: 2002 NRC P3

K/A Reference: 012A4.02 (3.3/3.4)

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: X Actual Performance: _____

Classroom _____ Simulator _____ Plant X

READ TO THE EXAMINEE

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.

Initial Conditions:

- The plant is in Mode 5.
- The Unit Supervisor has determined that Train "A" of SSPS is to be placed in service.
- Train "B" of SSPS is already in service. The initial conditions of 2OM-1.4.I, have been satisfactorily completed.
- No ESF instrumentation is being tested.

Task Standard: Train "A" of SSPS returned to service per 2OM-1.4.I.

Required Materials: Simulated Keys

General References: 2OM-1.4.I, Solid State Protection System Alignments, Issue 4, Rev. 13

Handouts: 2OM-1.4.I, Rev. 13 (markup copy)

Initiating Cue: The Unit Supervisor directs you to place Train "A" of SSPS into service by performing 2OM-1.4.I, Attachment "D", Steps 3 through 14.a.

Time Critical Task: NO

Validation Time: 15 minutes

(Denote Critical Steps with an asterisk)

	CAUTION	**Inform Candidate that ONLY the Cabinet Doors are to opened, all other manipulations are to be SIMULATED.**
*	**Performance Step: 1**	Place SSPS Train "A" Multiplexer Test Switch in 'NORMAL'.
	Standard:	Locates [RK*2RC-PRT-A] Logic Cabinet.
	Standard:	Places Train "A" Multiplexer Test Switch in 'NORMAL'.
	Comment:	
*	**Performance Step: 2**	Place SSPS Train "B" Multiplexer Test Switch in 'NORMAL'.
	Standard:	Locates [RK*2RC-PRT-B] Logic Cabinet.
	Standard:	Places Train "B" Multiplexer Test Switch in 'NORMAL'.
	Comment:	
	Performance Step: 3	Verify the following status lights are illuminated (BB'B). • PRZR LOW PRESS SI BLOCK PERM-CHAN I • PRZR LOW PRESS SI BLOCK PERM-CHAN II • PZRZ LOW PRESS SI BLOCK PERM-CHAN III
	Standard:	Locates and verifies illuminated: • PRZR LOW PRESS SI BLCIK PER-CHAN II • PRZR LOW PRESS SI BLOCK PERM-CHAN II • PZRZ LOW PRESS SI BLOCK PERM-CHAN III
	Comment:	
	Performance Step: 4	Verify all status lights are extinguished on Safeguards System Status Panel (464).
	Standard:	Contacts Control Room to verify all status lights are extinguished.
	Standard:	
	Comment:	**CUE: Act as the RO and inform the Candidate that all status lights are extinguished.**

* **Performance Step: 5** At [RK*2RC-PRT-A] Logic Cabinet, place the Input Error Inhibit Switch to the 'INHIBIT' position.

Standard: Locates [RK*2RC-PRT-A] Logic Cabinet.

Standard: Places Input Error Inhibit Switch to 'INHIBIT'.

Comment:

* **Performance Step: 6** At [RK*2RC-PRT-A] Output Cabinet, place the Mode Selector Switch to the 'OPERATE' position.

Standard: Locates [RK*2RC-PRT-A] Output Cabinet.

Standard: Places the Mode Selector Switch to the 'OPERATE' position.

Comment:

Performance Step: 7 Verify the green light above the Mode Selector Switch has illuminated.

Standard: Locates the green light above the Mode Selector Switch.

Standard: Verifies it is illuminated.

Comment: CUE: **Green light is illuminated.**

Performance Step: 8 Place the following switches to the 'BLOCK' position:

- PRZR Press SI Train "A".
- Steam Line SI Train "A".

Standard: Candidate asks RO to place PRZR Press SI Train "A" and Steam Line SI Train "A". switches to Block.

Comment: CUE: **Act as the RO and inform the Candidate that the switches were placed in the 'BLOCK' position.**

Performance Step: 9 Depress the following pushbuttons:

- Safety Injection Signal Train "A" Reset
- SI Recirc Mode Reset Train "A"

Standard: Candidate asks RO to depress the Safety Injection Signal Train A Reset and SI Recirc Mode Reset Train A pushbuttons.

Comment: **CUE: Act as the RO and inform the Candidate that the pushbuttons have been depressed.**

Performance Step: 10 Verify SI signals are blocked.

Standard: Candidate checks or ask RO to check:

- PRCS point Y3190D, PRZR SI Blocked Train "A" shows 'BLOCK'.
- PCS point P0402D SLI/SI Blk Train "A" shows 'SET'.

Comment: **CUE: Computer point Y3190D shows block and P0402D shows set.**

Performance Step: 11 At [RK*2RC-PRT-A] Logic Cabinet, place the Input Error Inhibit Switch to 'NORMAL'.

Standard: Candidate:

- Locates [RK*2RC-PRT-A] Logic Cabinet.
- Places the Input Error Inhibit Switch to 'NORMAL'.

Comment:

* **Performance Step: 12** At [RK*2RC-PRT-A] Logic Cabinet, place the Multiplexer Test Switch to the 'A+B' position.

Standard: Candidate places the Multiplexer Test Switch to the 'A+B' position.

Comment:

Terminating Cue: When the candidate has completed the alignment through step C.14.a, the evaluation for this JPM is complete.

Job Performance Measure No.: 2002 NRC P3

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

- The plant is in Mode 5.
- The Unit Supervisor has determined that Train "A" of SSPS is to be placed in service.
- Train "B" of SSPS is already in service. The initial conditions of 2OM-1.4.I, have been satisfactorily completed.
- No ESF instrumentation is being tested.

INITIATING CUE:

The Unit Supervisor directs you to place Train "A" of SSPS into service by performing 2OM-1.4.I, Attachment "D", Steps 3 through 14.a.

Beaver Valley Power Station

Unit 2

FOR TRAINING USE ONLY

2OM-1.4.I

SOLID STATE PROTECTION SYSTEM ALIGNMENTS

Revision 13

Prepared by **J. E. Burnecke**	Date **12/09/01**	Pages Issued **1 through 43**	
Reviewed by **J. L. Popp**	Date **12/ /01**	Validated by **N/A**	Date
OSC Meeting No. **OSC Not Required**	Date	**DRR-01-04592**	

I. PURPOSE

To provide the steps necessary to remove from service or place in service a train of the Solid State Protection System (SSPS), or to align for Instrument and Control testing, in Modes 5 or 6 without inadvertent safeguards actuation.

This procedure may be entered from an Abnormal Operating Procedure.

List of Attachments in this Procedure:

Attachment A: Removing Train A SSPS from Service

Attachment B: Removing Train A Output Relay Power Fuses

Attachment C: Reinserting Train A Output Relay Power Fuses

Attachment D: Returning Train A SSPS to Service

Attachment E: Removing Train B SSPS from Service

Attachment F: Removing Train B Output Relay Power Fuses

Attachment G: Reinserting Train B Output Relay Power Fuses

Attachment H: Returning Train B SSPS to Service

Attachment J: Removal of SSPS Demultiplexer Relays for I&C Testing

Attachment K: Restoration of SSPS Demultiplexer Relays after I&C Testing

Attachment L: Input Error Inhibit Switch Continuity Checks

II. PRECAUTIONS & LIMITATIONS

A. Placing the SSPS Mode Selector switch in the TEST position will reset (remove) steamline and pressurizer safety injection signal blocks and in Modes 5 and 6 generate a reactor trip signal to the breakers. ESF actuations are prevented by another function of this switch which is to remove 120VAC power from the output (slave) relays.

B. Placing any of the following switches out of their normal position will cause a General Warning and alarm ANN A5-2A (3A), 'REACTOR PROTECTION SYSTEM TRAIN A(B) TROUBLE":

- Mode Selector Switch (Output Cabinet)
- Multiplexer Test Switch (Logic Cabinet) (white)
- Input Error Inhibit Switch (Logic Cabinet) (red)

C. CREBAPS manual actuation from the Chlorine Detection CR Isolation Train A and B pushbuttons on 2BSC will be unavailable with both trains of Unit 2 SSPS out of service. Manual Control Room isolation on a toxic gas release (ref. AOP 1/2.44A.1) is available from the Unit 1 Control Room 1BSP, independent of Unit 1 or Unit 2 SSPS status.

D. Placing the Source Range HV Manual ON/OFF switch in the HV ON position will prevent de-energizing the Source Range instrumentation when the Input Error Inhibit switch is placed in INHIBIT. The Source Range High Flux At Shutdown alarm is not affected by placing the Mode Selector Switch in TEST or by removing the Output Relay Power Fuses.

E. OPPS and the RHS Valve Pressure interlocks will not be affected when the Train A Output Relay Test Mode Selector switch is placed in TEST, provided the 120VAC Output Relay Power fuses remain installed.

F. Placing the Input Error Inhibit Switch in INHIBIT will cause any non-latching output relay held in by 15 VDC present in "TEST" to drop out.

III. INITIAL CONDITIONS

A. Plant Status Changes

1. Made INOPERABLE (Technical Specification Items)

   a. If a Solid State Protection System Train is to have its output fuses removed, the Over Pressure Protection System PORVs [2RCS*PCV455C, 456] are INOPERABLE (T.S. 3.4.9.3).

2. Removed From Service (Non-Technical Specification Items)

   NONE

3. Placed in Failed Condition (Technical Specification Items)

   a. If a Solid State Protection System Train is to be removed from service, **THEN**:

      1) All Safeguards and Reactor Trip signals from the affected Train are defeated.

      2) CREBAPS initiation from Unit 2 Containment Isolation Phase B will be defeated.

4. Alignments Affected

   NONE

5. Special Considerations

   NONE

B. NSS/ANSS Sign-on

1. Unit 2 is in Mode 5, 6 or an undefined mode.

2. RTA and RTB, Reactor Trip breakers, **AND** BYA and BYB, Bypass Trip breakers, are open.

3. Unit 2 NSS/ANSS verifies the following:

   a. Section III.A, Plant Status Changes, has been reviewed.

   b. Requirements of Section III.B, NSS/ANSS Sign-on have been verified.

   c. Performance of this procedure is authorized.

d. Indicate in the NSS/ANSS COMMENTS Section, which attachment(s) is to be performed.

DATE:	TIME:	CURRENT PLANT MODE:
NSS/ANSS COMMENTS:		

UNIT 2 NSS/ANSS SIGNATURE_____

4. Unit 1 NSS/ANSS verifies the following:

   a. If Unit 1 is in Mode 1, 2, 3 or 4, the Unit 1 CREBAPS initiating signal from Containment Isolation Phase B is OPERABLE **OR** the applicable action is satisfied.

   b. Requirements of Section III.B, NSS/ANSS Sign-on, have been verified.

   c. Performance of this procedure is authorized.

DATE:	TIME:	CURRENT PLANT MODE:
NSS/ANSS COMMENTS:		

UNIT 1 NSS/ANSS SIGNATURE_____

C. **Reactor Operator Sign-on**

1. Reactor Operator acknowledge procedure performance.

Reactor Operator Signature_____

D. **Procedure Performer Initial Conditions**

1. The operator(s) performing this test have reviewed this procedure.

_____/_____
Initial / Date

_____/_____
Initial / Date

_____/_____
Initial / Date

_____/_____
Initial / Date

I&C _____/_____
Initial / Date

I&C _____/_____
Initial / Date

IV. INSTRUCTIONS

A. Preparations

1. Obtain the following for the performance of this procedure:

   - Key No. 79, SSPS Train A.
   - Key No. 126, SSPS Train B.

_____/_____
Initial / Date

2. If performing Attachment A(E), "Removing SSPS Train A(B) From Service", perform the following: (Otherwise N/A)

   a. Verify [TRS-1VS-01,02,03,04 and 05], CREBAPS Transfer Switches, are in the UNIT 1 position by checking the following:

      - Transfer Switch placard in Unit 1 NSS Office. ([TRS-1VS-01 and 02] only)
      - Most recent performance copy of 1/2OST-44A.1, "Unit ½ Control Room Emergency Habitability Check".

_____/_____
Initial / Date

Note:	Blocking out of Attachments which are not used is not required. When preparing procedure for transmittal to Document Control, do not include pages which have not been used.

3. Indicate the Attachment(s) to be performed by initialing the associated instruction(s) below and marking the remaining instructions "N/A":

   a. Attachment A: Removing Train A SSPS from Service.

_____/_____
Initial / Date

   b. Attachment B, Removing Train A Output Relay Power Fuses.

_____/_____
Initial / Date

   c. Attachment C: Reinserting Train A Output Relay Power Fuses.

_____/_____
Initial / Date

ATTACHMENT D

Returning Train A SSPS to Service

CAUTION:	WITH SSPS IN OPERATION, LOSS OF POWER TO 2/3 PRESSURIZER PRESSURE TRANSMITTERS 2RCS-PT455, 456, 457 OR PLACING THE CHANNEL BISTABLES IN TEST FOR AN MSP WILL REMOVE THE SI BLOCK AND RESULT IN A SAFETY INJECTION.

Note:	[2SIS*MOV867A and C] are maintained closed and de-energized to prevent an RCS overpressure condition from an inadvertent SIS signal. Ref 2OM-51.4.D.

1. Verify the following MCC breaker operating handles are in the OFF position:

   a. [MCC*2-E03] Cub 7A for [2SIS*MOV867A].

   _____/_____
   Initial / Date

   b. [MCC*2-E05] Cub 10A for [2SIS*MOV867C].

   _____/_____
   Initial / Date

2. If SSPS Train A was de-energized, perform the applicable portions of 2OM-1.4.A, "Reactor Protection System Startup". (Otherwise N/A)

   _____/_____
   Initial / Date

3. Verify or Place SSPS Train A white Multiplexer Test Switch in NORMAL. ([RK*2RC-PRT-A], Logic Cabinet)

   _____/_____
   Initial / Date

4. Verify or Place SSPS Train B white Multiplexer Test Switch in NORMAL. ([RK*2RC-PRT-B], Logic Cabinet)

   _____/_____
   Initial / Date

5. Verify the following status lights are ON: (BB-B, Status Panel 308)

   a. A3, "PRZR LOW PRESS SI BLOCK PERM CHAN I".

   _____/_____
   Initial / Date

b. B3, "PRZR LOW PRESS SI BLOCK PERM CHAN II".

_____/_____
Initial / Date

c. C3, "PRZR LOW PRESS SI BLOCK PERM CHAN III".

_____/_____
Initial / Date

6. Verify all status lights on Safeguards System Status Panel 464 are OFF. (BB-A)

_____/_____
Initial / Date

7. Verify that no greater than one ESF instrument is being tested (MSP, ICP, LCP) for any instrument group which actuates an ESF function (example: Pressurizer pressure, steamline pressure, chlorine).

_____/_____
Initial / Date

8. Place the SSPS Train A red Input Error Inhibit Switch in INHIBIT. ([RK*2RC-PRT-A], Logic Cabinet)

(1) _____/_____
Initial / Date
(2) _____/_____
Initial / Date

CAUTION:	THE RED INPUT ERROR INHIBIT SWITCH MUST BE IN THE "INHIBIT" POSITION BEFORE PLACING THE MODE SELECTOR SWITCH IN THE "OPERATE" POSITION.

9. Place the SSPS Train A Mode Selector Switch in OPERATE. ([RK*2RC-PRT-A], Output Cabinet)

_____/_____
Initial / Date

a. Verify the Mode Selector switch green light is ON.

_____/_____
Initial / Date

10. Reinstate memory circuit blocks by placing the following switches to the BLOCK position: (BB-B)

    a. Przr Press SI Train A Block/Reset switch.

    _____/_____
    Initial / Date

    b. Stm Line SI Train A Block/Reset switch.

    _____/_____
    Initial / Date

11. Reinstate memory circuit blocks by depressing the following pushbuttons: (BB-A)

    a. Safety Injection Signal Train A Reset pushbutton.

    _____/_____
    Initial / Date

    b. SI Recirc Mode Reset Train A pushbutton.

    _____/_____
    Initial / Date

12. Verify Safety Injection automatic actuation is blocked by checking the state of the following:

    a. Y3190D, "PRZR SI BLOCKED TRN A", indicates BLOCK. (N/A if PCS is not available)

    _____/_____
    Initial / Date

    b. P0402D, "SLI/SI BLK TRN A" indicates SET. (N/A if PCS is not available)

    _____/_____
    Initial / Date

    c. If the PCS is not available, Verify Blocks by performing the applicable portion of 2MSP-1.04-I, "Solid State Protection System Train A Bi-Monthly Test". (N/A if PCS is available)

    _____/_____
    Initial / Date

13. Place the SSPS Train A red Input Error Inhibit Switch in NORMAL. ([RK*2RC-PRT-A], Logic Cabinet)

_____/_____
Initial / Date

14. If both Train A **AND** Train B of SSPS have been returned to service, perform the following: (Otherwise N/A)

    a. Place white Multiplexer Test switch in "A+B". ([RK*2RC-PRT-A], Logic Cabinet)

    _____/_____
    Initial / Date

    b. Remove Caution Tags from the following switches that state "Notify I&C prior to Changing Switch Position" **OR** that state "Restore to OPERATE position using 2OM-1.4.I only":

        1) Train A red Input Error Inhibit Switch

        _____/_____
        Initial / Date

        2) Train A white Multiplexer Test Switch

        _____/_____
        Initial / Date

        3) Train A Output Mode Selector Switch

        _____/_____
        Initial / Date

        4) Train B red Input Error Inhibit Switch

        _____/_____
        Initial / Date

        5) Train B white Multiplexer Test Switch

        _____/_____
        Initial / Date

        6) Train B Output Mode Selector Switch

        _____/_____
        Initial / Date