

INITIAL SUBMITTAL OF THE WALKTHROUGH JPMS

FOR THE BRAIDWOOD INITIAL EXAMINATION - JULY 2002

JOB PERFORMANCE MEASURE

TASK TITLE: Increase SI Accumulator Pressure

JPM No.: N-03

REV: 10

TPO No.: IV.C.SI-04

K&A No.: (006A4.02)

TASK No.: SI-003

K&A IMP: 4.0/3.8

TRAINEE: _____

EVALUATOR: _____

DATE: _____

The Trainee: PASSED _____ this JPM.

TIME STARTED: _____

FAILED _____

TIME FINISHED: _____

CRITICAL ELEMENTS: (*) 3, 5, 6, 7

JPM TIME: _____ MINUTES

CRITICAL TIME: NA

APPROX COMPLETION TIME 9 MINUTES

EVALUATION METHOD:

LOCATION:

☒ PERFORM
☐ SIMULATE

☐ IN PLANT
☒ SIMULATOR

GENERAL REFERENCES:

1. BWAR 1-5-B2, Rev. 6E3, ACCUM 1B PRESS HIGH LOW
2. BwOP SI-08, Rev. 10E2, Increasing SI Accumulator Pressure
3. ITS 3.5.1

MATERIALS:

Copy of BwOP SI-08

TASK STANDARDS:

1. Return accumulator pressure to within the Tech Spec limits.
2. Demonstrates the use of good Core Work Practices.

TASK CONDITIONS:

1. You are the Assist NSO.
2. Both units are at 100% power.
3. All controls are in automatic.

INITIATING CUES:

1. Annunciator 1-5-B2, "ACCUM 1B PRESS HIGH LOW" has just annunciated. The Unit Supervisor has directed you to respond to the alarm and correct the condition.

PERFORMANCE CHECKLIST		STANDARDS	SAT	UNSAT	N/A
RECORD START TIME _____					
1.	Refer to BWAR 1-5-B2.	Locate and Open BWAR for 1-5-B2.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.	Determine 1B SI Accumulator pressure is low.	Determine 1B SI Accumulator pressure is low: <ul style="list-style-type: none"> • Monitor 1PI-962 and 963. (1B pressure) • Monitor 1LI-952 and 953. (1B level) • Check SER points 2066 and 0603 in alarm. 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
*3.	Enter LCOAR 1BwOL 3.5.1 (CUE: US enters LCO for TS 3.5.1 and directs you to raise pressure to 625 psig.)	Inform the US to enter LCOAR for 3.5.1. due to low pressure in 1B SI Accumulator.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.	Refer to BwOP SI-8, Increasing SI Accumulator Pressure. (Note: After examinee locates correct procedure provide a copy and inform him that all prerequisites are met.)	Locate and Open BwOP SI-8.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
*5.	Align N2 Tube Trailer per BwOP NT-9, step F.1 to pressurize the header up to the vent valve, 1SI8875B. (CUE: N2 tube trailer is aligned.)	Perform the following to pressurize the N2 header up to the 1B SI Accumulator Vent Valve, 1SI8875B: <ul style="list-style-type: none"> o Dispatch NLO to check N2 Tube Trailer per BwOP NT-9, step F.1. o VERIFY/CLOSE 1SIHCV943. • OPEN 1SI8880, N2 Supply Isol Vlv. 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

PERFORMANCE CHECKLIST

STANDARDS

SAT UNSAT N/A

*6. Raise pressure in the 1B
SI Accumulator to within
tech spec limits.

Raise pressure in the 1B
SI Accumulator to within
tech spec limits as
follows:

- Open 1SI8875B
- o Monitor pressure
increase on 1PI-962
and 963.
- o VERIFY alarm 1-5-B2
clears.

☐ ☐ ☐

*7. Secure pressure rise in
the 1B SI Accumulator.

- Close 1SI8875B when
pressure is within
tech spec limits (602-
647 psig).

☐ ☐ ☐

8. Exit LCO for TS 3.5.1

(CUE: US acknowledges
pressure restored,
and exits LCOAR.)

Inform US that pressure
is within the Tech Spec
limit and the LCOAR
(1BwOL 3.5.1) may be
exited.

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9. Restores N2 line-up.

(CUE: NLO reports N2 Tube
Trailer has been
restored.)

Restore N2 line up as
follows:

- CLOSE 1SI8880, N2
Supply Isol Vlv.
- Dispatches NLO to
restore N2 Tube
Trailer per BwOP NT-9.

☐ ☐ ☐

(CUE: THIS COMPLETES THIS JPM.)

RECORD STOP TIME _____

COMMENTS:

TASK CONDITIONS:

1. You are the Assist NSO.
2. Both units are at 100% power.
3. All controls are in automatic.

INITIATING CUES:

1. Annunciator 1-5-B2, "ACCUM 1B PRESS HIGH LOW" has just annunciated. The Unit Supervisor has directed you to respond to the alarm and correct the condition.

SIMULATOR SETUP INSTRUCTIONS

JPM NO: N-03

REQUIRED SIMULATOR MODE(S): 100% power steady state preferred, however Mode 1, 2, or 3 > 1000 psig will work with minor adjustments to the initiating cues.

MALFUNCTION #'S: N/A

COMMENTS:

Either:

1. Open 1SI8875B.
2. Throttle Open 1SIHCV943 until 1B SI Accumulator pressure is slightly less than 602 psig.
3. Close 1SI8875B and 1SIHCV943.
4. Consider snap to 0.
5. Ensure SER has alarm printed, and on screen.

Or:

1. MMP SIMACC[2] 5.807e4
2. MMP SIMN2ACC[2] 1210 (601.4 psig. Note HP alarm is at 637 psig, 1280 mass of N2 at 5.807e4 mass of water. 1262 mass is 628 psig)

INCREASING SI ACCUMULATOR PRESSURE

A. STATEMENT OF APPLICABILITY

The purpose of this procedure is to outline the necessary steps for increasing SI Accumulator pressure.

B. REFERENCES

1. Station Procedures:

- a. BwOP SI-11, Fill and Vent of SI Accumulators.
- b. BwOP NT-9, Nitrogen Tube Trailer Operation.
- c. BwOP NT-M1/2, Operating Mechanical Lineup.
- d. BwVS 0.5-2.SI.2-3, Safety Injection System Check Valve Stroke Test.

2. Station Drawings:

- a. M-61 (M-136), Diagram of Safety Injection System, Sheets 5 and 6.
- b. M-69, Diagram of Radioactive Waste Gas, Sheet 3.

3. Tech Specs: 3.5.1 (I.T.S. 3.5.1)

C. PREREQUISITES

* **NOTE** *
* During an Outage the SI Accumulators may initially be *
* depressurized (ie. for performance of ILRT). The SI *
* Accumulators will then be used for Disk Pressurization. *
* Following all outage maintenance activities and Disk *
* Pressurization requirements, the SI Accumulators will *
* undergo BwVS 0.5-2.SI.2-3, Accumulator Check Valve *
* Stroke Test (Dump Test). It is recommended that *
* BwOP SI-11 not be performed until after the completion *
* of BwVS 0.5-2.SI.2-3, Accumulator Check Valve Stroke *
* Test. *

1. One of the following has been performed:

- a. The SI Accumulators are filled and vented, per BwOP SI-11.

OR,

- b. The UNIT is currently in a MODE that does not require the SI Accumulator to be operable.

2. The N₂ System is lined up per BwOP NT-M1 and BwOP NT-9, section F.1.

3. If N₂ Tube trailer is unavailable, verify H.P. bottle bank pressure available to charge SI Accumulators, and charge accumulators using step F.2.

D. PRECAUTIONS

1. Monitor SI Accumulator pressure, carefully, while pressurizing.
2. Release of N₂ may affect O₂ concentration. If personnel are inside containment verify the area near AOV-SI943, Accum Vent Control valve, is clear and perform the following as applicable.
 - a. NOTIFY Rad Protection to monitor all elevations of containment for proper O₂ concentration.
 - b. VERIFY/START any number of RCFC's available at UNIT Supervisors discretion.
 - c. IF no RCFC's can be started/run THEN UNIT Supervisor SHALL refer to BwAP 100-12 to verify personnel are properly informed of potentially hazardous atmosphere.

E. LIMITATIONS AND ACTIONS

1. When in MODES 1, 2 and 3, with RCS pressure greater than 1000 psig, the SI Accumulator Pressure SHALL be maintained between 602 psig and 647 psig.
2. When in MODE 1,2, or 3, with RCS pressure greater than 1000 psig, the SI Accumulators SHALL NOT be crosstied in any manner.

F. MAIN BODY

* NOTE *
* SI Accumulator _A/B/C/D Pressure Indicator _PI960 *
* & 961/962 & 963/964 & 965/966 & 967, must be monitored, *
* while performing the following steps. *

1. PERFORM the following, at _PM06J.

- a. Align N₂ Tube trailer per BWOP NT-9, step F.1.
- b. VERIFY/CLOSE _SIHCV943, Vent Cont Vlv.
- c. OPEN _SI8880, N₂ Supply Isol Vlv.

* NOTE *
* With RCS > 1000 psig DO NOT OPEN more than one *
* _SI8875A/B/C/D at a time. If RCS > 1000 psig, Steps *
* F.1.d through F.1.e can be repeated for each SI *
* Accumulator that requires increase of pressure. *

- d. OPEN _SI8875A/B/C/D, _A/B/C/D Vent Valve.
 - e. CLOSE _SI8875A/B/C/D, _A/B/C/D Vent Valve, when the desired SI Accumulator pressure is reached. (TECH SPEC Limit for SI Accumulator pressure is 602 - 647 psig.)
 - f. When all SI Accumulators have been pressurized to the desired value, CLOSE _SI8880, N₂ Supply Isol Vlv.
 - g. Restore N₂ Tube trailer per BWOP NT-9, step F.2.
2. If necessary to use High Pressure N₂ Bottles:
- a. CLOSE ONT9338A, then OPEN individual H.P. N₂ Bottle isolations as necessary to fill SI Accumulators using steps F.1.b. thru F.1.f.
 - b. When all SI Accumulators have been pressurized to desired value, CLOSE individual bottle isolations, then OPEN ONT9338A.

(Final)

JOB PERFORMANCE MEASURE

TASK TITLE: Synchronize a SAT to a Bus Being Fed by an Emergency Diesel Generator

JPM No.: N-84

REV: 8

TPO No.: IV.D.AP-03

K&A No.: (064A4.09)

TASK No.: AP-013

K&A IMP: 3.2/3.3

TRAINEE: _____

EVALUATOR: _____

DATE: _____

The Trainee: PASSED _____ this JPM.

TIME STARTED: _____

FAILED _____

TIME FINISHED: _____

CRITICAL ELEMENTS: (*) 5, 6

JPM TIME: _____ MINUTES

CRITICAL TIME: NA

APPROX COMPLETION TIME: 11 MINUTES

EVALUATION METHOD:

LOCATION:

☒ PERFORM
☐ SIMULATE

☐ IN PLANT
☒ SIMULATOR

GENERAL REFERENCES:

1. BwOP AP-32, Rev. 2, Synchronizing a SAT to a Bus Being Fed by a DG.

MATERIALS:

Copy of BwOP AP-32.

TASK STANDARDS:

1. Correctly synchronize SAT 142-2 to a bus being fed by the 1B DG.
2. Demonstrates the use of good Core Work Practices.

TASK CONDITIONS:

1. You are an assist NSO.
2. Both Units are at 100% power.
3. The 1B D/G was manually started, and is currently supplying bus 142.
4. Breaker 1424 is closed to prevent equipment sequencing onto bus 142.

INITIATING CUES:

1. The US has directed you to synchronize SAT 142-2 back to the 1B D/G per BwOP AP-32, step F.4.

PERFORMANCE CHECKLIST

STANDARDS

SAT UNSAT N/A

RECORD START TIME _____

Note: Provide a copy of BwOP AP-32 to the examinee.

1.	Refer to BwOP AP-32. (CUE: All Prerequisites, Precautions, Limitations and Actions have been met.)	Open BwOP AP-32.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.	Verify 1B D/G is operating properly.	VERIFY 1B D/G is operating properly as follows: • 1B D/G frequency is approximately 60 hz. • 1B D/G voltage is approximately 4160 volts.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
*3.	Prepare 1B D/G for parallel operation with SAT 142-2.	Prepare 1B D/G for parallel operations as follows: • TURN ACB 1422 Synchroscope Switch ON. • USING the 1B D/G voltage adjust control, adjust the "RUNNING" voltage slightly HIGHER than the "INCOMING" voltage (0-4 volts). • VERIFY the same voltage on 'AB', 'BC', and 'CA' with the 1B D/G Voltmeter selector switch. • USING the 1B D/G governor adjust control, ADJUST generator speed such that the synchroscope is rotating slowly in the SLOW direction.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
*4.	Parallel the 1B D/G to SAT 142-2.	Parallel the 1B D/G to SAT 142-2 as follows: • When the synchroscope is slightly before the 12 O'clock position, CLOSE ACB 1422. • VERIFY the synchroscope has LOCKED IN at the 12 O'clock position. • TURN the synchroscope switch for ACB 1422 to OFF.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

PERFORMANCE CHECKLIST

STANDARDS

SAT UNSAT N/A

5. Restore breaker positions.

(CUE: When asked, ACB 2424
 is in after trip.)

Restore breaker positions
as follows:

- OPEN ACB 1424
- o PLACE ACB 2424 in
 AFTER TRIP.

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6. Unload 1B D/G per BwOP DG-
 12.

(CUE: The US will direct
 another NSO to unload
 the 1B D/G.)

Refer to BwOP DG-12 to
unload 1B D/G.

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(CUE:) THIS COMPLETES THIS JPM.

RECORD STOP TIME _____

COMMENTS: _____

TASK CONDITIONS:

1. You are an assist NSO.
2. Both Units are at 100% power.
3. The 1B D/G was manually started, and is currently supplying bus 142.
4. Breaker 1424 is closed to prevent equipment sequencing onto bus 142.

INITIATING CUES:

1. The US has directed you to synchronize SAT 142-2 back to the 1B D/G per BwOP AP-32, step F.4.

SIMULATOR SETUP INSTRUCTIONS

JPM NO: N-84

REQUIRED SIMULATOR MODE(S): Any 'At Power' IC.

MALFUNCTION #'S: N/A

COMMENTS:

- 1) Swap to 1B SX pump to put load on Bus 142.
- 2) Start 1B D/G and sync to grid. Leave Synscope Key Switch in 1423 but OFF.
- 3) Load 1B D/G until SAT feed amps = 0.
- 4) Close ACB 1424.
- 5) Open 1422.
- 6) Ensure the Governor Adjuster and the Voltage Adjuster are not "set" at values that happen to be exactly what the examinee needs (i.e. the intent is to force the examinee to manipulate the controls).

SYNCHRONIZING A SAT TO A BUS BEING FED BY A DG

A. STATEMENT OF APPLICABILITY

This procedure outlines the steps necessary to parallel a SAT to a BUS being fed by a Diesel Generator.

B. REFERENCES

1. Station Procedures:
 - a. BwOP DG-12, Diesel Generator Shutdown.
 - b. BwOP DG-13, Trouble Shooting Diesel Generators.
2. Station Drawings:
 - a. 20E-0-4001
 - b. 20E-0-4000B
3. Station Commitment: 456-103-84-0690051 Step D.5.

C. PREREQUISITES

1. The diesel generator is running and feeding its respective bus.
2. Diesel generator control MODE switch in REMOTE.

D. PRECAUTIONS

1. Continuous rating of generator is 5500 Kw.
2. Short term maximum (2 hours) rating of generator is 6050 Kw.
3. Minimum continuous steady-state loading on the diesel generator is 3000 Kw.
4. When a Diesel Generator is in the Emergency MODE and paralleled to the grid DO NOT return the Emergency MODE Speed Voltage C/S to Auto if it is currently in the Manual Emergency position. This will prevent Isochronous operation while in parallel.
- * 5. Operate only ONE Emergency Diesel Generator in parallel with offsite power at any one time. This will prevent damage to more than one Diesel Generator if a fault condition develops on the grid.

E. LIMITATIONS AND ACTIONS

1. Adhere to the following Generator load limits when DG is in parallel with offsite power:
 - a. Continuous rating - 5500 KW and \leq 1000 KVAR.
 - b. 2000 Hour Rating - 5935 KW and \leq 1000 KVAR.
 - c. Two Hour Rating - 6050 KW and \leq 1000 KVAR.
2. Refer to BwOP DG-13 if diesel generator trip/trouble occurs.

F. MAIN BODY

CAUTION

IF THE DIESEL GENERATOR STARTED DUE TO A LOSS OF OFF SITE POWER, THE DIESEL GENERATOR OUTPUT BREAKER MAY TRIP IF THE MODE CONTROL SWITCH IS PLACED IN "MANUAL TEST MODE".

NOTE

If the diesel generator was started manually, Step 1 is not necessary. The MODE control switch may be left in auto.

NOTE

Do not close in SAT Feed Breaker if a Degraded Voltage Condition (<3990 VAC) exists on the off site power source (switchyard).

1. VERIFY/PLACE the Diesel Generator in "Manual Emerg MODE".
2. If synchronizing the SAT to the UNIT 1 ESF Bus perform the following:
 - a. TURN the ACB 1414/1424 Synchroscope Switch to "ON".
 - b. VERIFY/PLACE ACB 2414/2424 CONTROL Switch in the PULL TO LOCK position.
 - c. CLOSE ACB 1414/1424 to place the Diesel Generator in the DROOP MODE.
 - d. TURN the ACB 1414/1424 Synchroscope Switch to "OFF".

- F. 3. If synchronizing the SAT to the UNIT 2 ESF Bus perform the following:
- a. TURN the ACB 2414/2424 Synchroscope Switch to "ON".
 - b. VERIFY/PLACE ACB 1414/1424 CONTROL Switch in the PULL TO LOCK position.
 - c. CLOSE ACB 2414/2424 to place the Diesel Generator in the DROOP MODE.
 - d. TURN the ACB 2414/2424 Synchroscope Switch to "OFF".
4. VERIFY that the diesel generator frequency is approximately 60 hz and voltage is approximately 4160 volts.
 5. TURN the SAT Feed Bkr Synchroscope Switch to "ON".
 6. USING the diesel generator voltage adjust control, adjust the "RUNNING" voltage slightly HIGHER than the "INCOMING" voltage (0-4 volts).
 7. VERIFY the same voltage on "AB", "BC", and "CA" with Diesel Gen Voltmeter selector switch.
 8. USING the diesel generator governor adjust control, ADJUST generator speed such that the synchroscope is rotating slowly in the SLOW direction.
 9. When the synchroscope is slightly before the "12 o'clock" position, CLOSE the SAT Feed Breaker.
 10. VERIFY the synchroscope has LOCKED IN at the "12 o'clock" position.
 11. TURN the SAT Feed Breaker Synchroscope Switch to "OFF".
 12. OPEN the ACB that was closed in step F.2.c./3.c.
 13. VERIFY/PLACE ACB CONTROL Switches for all breakers in steps F.2.b. and F.3.b. to the AFTER TRIP position.
 14. UNLOAD the diesel generator per BwOP DG-12.

JOB PERFORMANCE MEASURE

TASK TITLE: Perform an Emergency Boration with a plugged AB filter, for 2 stuck rods following a normal reactor trip.

JPM No.: N-27c

REV: 0

TPO No.: IV.D.OA-8

K&A No.: (024AA1.17)

TASK No.: OA-099

K&A IMP: 3.9/3.9

TRAINEE: _____

EVALUATOR: _____

DATE: _____

The Trainee: PASSED _____ this JPM.

FAILED _____

TIME STARTED: _____

TIME FINISHED: _____

CRITICAL ELEMENTS: (*) 3,4,7,8

JPM TIME: _____ MINUTES

CRITICAL TIME: NA

APPROX COMPLETION TIME 16 MINUTES

EVALUATION METHOD:

☒ PERFORM
☐ SIMULATE

LOCATION:

☐ IN PLANT
☒ SIMULATOR

GENERAL REFERENCES:

1. 1BWOA PRI-2, Emergency Boration.
2. 1BwEP ES-0.1, Reactor Trip Response

MATERIALS:

Copy of 1BWOA PRI-2. and Copy of Step 4 of 1BwEP ES-0.1

TASK STANDARDS:

1. Perform actions necessary to initiate emergency boration flow of 30 gpm of 7000 ppm Boric Acid or equivalent to raise RCS Boron concentration.

TASK CONDITIONS:

1. You are the Unit NSO.
2. Unit 1 is in Mode 3 following a turbine trip / reactor trip.
3. Shutdown Bank B has two rod at bottom lights that are NOT lit.
4. Current RCS Boron Concentration is 1030 ppm.

INITIATING CUES:

1. Following a turbine trip / reactor trip, the crew is performing 1BwEP ES-0.1, step 4, Verify All Control Rods Fully Inserted. Shutdown Bank B has two rod at bottom lights that are NOT lit. You have been directed to Emergency Borate the RCS per 1BWOA PRI-2, Emergency Boration, for 2 stuck rods.

RECORD START TIME _____

1. Refer to 1BwEP ES-0.1 step 4 and open and refer to 1BwOA PRI-2.

Locate and Open 1BwEP ES-0.1 and 1BwOA PRI-2.

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(CUE: After the correct procedure is located, provide a copy.)

2. Check at least 1 Charging pump is running.

Determine at least 1 Charging pump is running:

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- RUN light lit, and amps or flow indicated.

PERFORMANCE CHECKLIST

STANDARDS

SAT UNSAT N/A

*3. Establish Boration Flow from the BAT.

Perform the following to establish boration flow from the BAT:

- OPEN 1CV8104, or 1CV110A and 1CV110B.
- START boric Acid Transfer Pump.
- o CHECK emergency boration flow > 30 gpm.
- Determine < 30 gpm boration flow is occurring.
- o Dispatch Operator to locally check lineup.

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*4. Align alternate boration flow path from the RWST.

Perform the following to align an alternate boration flow path from the RWST:

- STOP the Boric Acid Transfer pump.
- OPEN 1CV112D and /or 1CV112E.
- CLOSE 1CV112B and /or 1CV112C.
- Verify Letdown flow is 120 gpm.
- Maximize Charging flow while maintaining 1FI-121A indication on scale.
- Mark time and flowrate boration from RWST commenced.

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(Note: Time and flowrate are necessary to determine when 11,000 gallons have been added (per 1BwGP 100-2A1 step 1.)

5. Align CV pump discharge flowpath.

Perform the following to align CV pump discharge flowpath:

- Check OPEN 1CV8105 and 1CV8106.
- Check OPEN 1CV8324A or 1CV8324B.
- Check OPEN 1CV8146 or 1CV8147.
- THROTTLE 1CV121 to Establish maximum normal charging header flow on 1FI-121A.

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6. Turn on Pzr Backup Heaters.

Energize PZR Backup heaters.

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PERFORMANCE CHECKLIST

STANDARDS

SAT

UNSAT

N/A

- *7. Check if Boration flow can be stopped.

Determine if boration can be stopped:

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(Note: At 150 gallons per minute it will take almost 74 minutes to add 11,000 gals from the RWST.)

- Calculate flowrate and time remaining to add 11,000 gals, inform US.

(CUE: When examinee has determined how much time remains to borate from the RWST, use time compression to proceed.)

(5500 gal per rod if borating from the RWST)

- *8. Stop Emergency Boration Flow.

Stop Emergency Boration flow from the RWST without losing suction to the CV pump:

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- VERIFY/OPEN 1CV112B and 1CV112C.
- VERIFY/CLOSE 1CV112D and 1CV112E.

9. Notify Chemistry to sample the RCS and the PZR to determine Boron Concentrations.

Determine RCS and PZR boron concentrations are within 50 ppm of each other:

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(CUE: If asked as chemistry, acknowledge the need to sample.)

- Request chemistry sample RCS and PZR.
- Maintain PZR Level.

(CUE: CRS will assign another operator to align RMCS to AUTO makeup)

(CUE:) THIS COMPLETES THIS JPM.

RECORD STOP TIME _____

COMMENTS:

TASK CONDITIONS:

1. You are the Unit NSO.
2. Unit 1 is in Mode 3 following a turbine trip / reactor trip.
3. Shutdown Bank B has two rod at bottom lights that are NOT lit.
4. Current RCS Boron Concentration is 1030 ppm.

INITIATING CUES:

1. Following a turbine trip / reactor trip, the crew is performing 1BwEP ES-0.1, step 4, Verify All Control Rods Fully Inserted. Shutdown Bank B has two rod at bottom lights that are NOT lit. You have been directed to Emergency Borate the RCS per 1BWOA PRI-2, Emergency Boration, for 2 stuck rods.

SIMULATOR SETUP INSTRUCTIONS

JPM NO: N-27B

REQUIRED SIMULATOR MODE(S):

MALFUNCTION #'S: N/A

COMMENTS:

1. Set BA pot for 4.41 (1030 ppm)
2. On SDG CV8, throttle 1AB8460 to 10% to prevent > 30 gpm BA flow.
3. Provide cues/feedback from local operator at boric acid skid that lineup is correct.
4. Provide info when BA transfer pump running that filter dp is 25 psid.
5. Bypass filter if directed and report normal filter DP. (5 psid), by opening 1AB8458 on SDG CV8.

A. PURPOSE

This procedure provides the actions required to borate the RCS under abnormal conditions requiring rapid but controlled insertion of negative reactivity.

B. SYMPTOMS OR ENTRY CONDITIONS

1) The following conditions require emergency boration:

- o Failure of more than one RCCA to fully insert following a reactor trip or shutdown.
- o Uncontrolled cooldown when the reactor is shutdown.
- o Inadequate shutdown margin in Mode 2 (with k_{eff} less than 1.0), 3, 4, or 5.
- o During Mode 6 when boron concentration is less than COLR limit in the refueling canal, refueling cavity, or any filled portions of the RCS.

2) This procedure may be entered from:

- o 1BWEP ES-0.1, REACTOR TRIP RESPONSE, if temperature decreases to less than 545°F.
- o 1BWEP ES-0.1, REACTOR TRIP RESPONSE or 1BWGP 100-5 if 2 or more rods are not fully inserted.
- o 1BWOA PRI-12, UNCONTROLLED DILUTION, when shutdown margin is not adequate in Mode 2 (with k_{eff} less than 1.0), 3, 4, or 5.
- o 1BWGP 100-2 or 1BWGP 100-2A1, if criticality was achieved with the control banks below the low-low rod insertion limit, or if eight-fold curve indicates criticality will occur with the control banks below the low-low rod insertion limit.
- o 1BWGP 100-6, REFUELING OUTAGE, if the RCS boron concentration decreases to less than COLR limit.

APPROVED**FEB 28 2000****BRADWOOD**

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

* **NOTE** *
* With this procedure in effect notify *
* the Station Director who will *
* evaluate for GSEP conditions per *
* BWZP 200-1, BRAIDWOOD EMERGENCY *
* ACTION LEVELS. *

1 CHECK CENT CHG PUMP STATUS:

a. Check at least one CENT CHG
pump - **RUNNING**

a. **IF** no CENT CHG pump is
available,
THEN GO TO ATTACHMENT B,
Step 1 (Page 9).

IF a CENT CHG pump is
available,
THEN perform the following
for the available pump:

- 1) Clear the admin OOS if
necessary.
- 2) Verify a suction source
aligned to the CENT CHG
pump.
- 3) Verify CENT CHG pump(s)
miniflow isol valves are
open:
 - o CENT CHG Pump 1A:
 - 1CV8111
 - 1CV8114
 - o CENT CHG Pump 1B:
 - 1CV8110
 - 1CV8116
- 4) Start the CENT CHG pump.
- 5) **IF** no CENT CHG pump can
be started,
THEN GO TO
ATTACHMENT B, Step 1
(Page 9).

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

 * **NOTE** *
 * To avoid lifting a PZR PORV it is *
 * desirable to balance 1FI-121A flow *
 * with letdown flow. *

 * **NOTE** *
 * Containment evacuation may be *
 * necessary if the RCS is NOT intact. *

2 EMERGENCY BORATE RCS:

a. Establish boration flow from
BAT:

1) Align boration flowpath:

- o Open emergency boration valve:
 - 1CV8104
- o Open normal boration valves:
 - 1CV110A
 - 1CV110B

2) Start boric acid transfer pump

*3) Check emergency boration flow - GREATER THAN 30 GPM

a. Align alternate boration flow from the RWST:

1) Stop the boric acid transfer pump.

2) Open at least ONE RWST to CENT CHG pumps suction valve:

- o 1CV112D
- o 1CV112E

3) Close at least ONE VCT outlet valve:

- o 1CV112B
- o 1CV112C

4) Maximize letdown flow.

*5) Maximize charging flow while maintaining 1FI-121A indication on scale.

Step continued on next page

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

Step 2 (continued)

IF alternate boration from the RWST can NOT be established,
THEN locally align emergency boration from the BAT:

1) IF the boric acid filter is plugged,
THEN bypass the filter by opening the boric acid filter supply to boric acid tank valve:

- 1AB8458 (401' N17)

2) Manually or locally open emergency boration valve:

- 1CV8104 (426' Q16 VCT valve aisle)
(MCC 132X5 B1)

3) Start the boric acid transfer pump.

b. Align CV pump discharge flowpath:

1) Check charging line Cnmt isol valves - OPEN:

- 1CV8105
- 1CV8106

2) Check in service charging to REGEN HX isol valve - OPEN:

- o 1CV8324A
- o 1CV8324B

3) Check in service charging to RC loop isol valve - OPEN:

- o 1CV8146
- o 1CV8147

b. Manually align valves.

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Step continued on next page

INFORMATION ONLY

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

Step 2 (continued)

*c. Throttle 1CV121 to - ESTABLISH 1FI-121A FLOW:

- o Greater than 30 GPM if BAT is source of boron
- o At maximum for normal charging header if RWST is source of boron

c. IF flow is indicated on 1FI-121A OR 1CV121 is bypassed with flow maintained, THEN GO TO Step 3.

IF no flow is indicated on 1FI-121A, THEN GO TO ATTACHMENT A, Step 1 (Page 7).

3 EQUALIZE RCS AND PZR BORON:

- a. Check if PZR bubble - EXISTS
- b. Energize PZR backup heaters

a. GO TO Step 4.

4 CHECK IF BORATION FLOW CAN BE STOPPED:

- a. Required gallons of boron - ADDED

a. Continue boration. WHEN the required gallons of boron have been added, THEN do Step 4b.

- b. Stop emergency boration flow

5 CHECK RCS AND PRESSURIZER BORON CONCENTRATION:

- a. Notify Chemistry to sample the RCS and pressurizer for boron concentration
- b. Check RCS and pressurizer boron concentrations - WITHIN 50 PPM
- c. Maintain PZR level as necessary

b. IF a PZR bubble exists, THEN maintain pressurizer backup heaters energized.

6 REFER TO TECH SPECS:

- 3.1.1
- 3.9.1
- TRM 3.1.i

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

7 VERIFY AUTOMATIC RCS MAKEUP CONTROL:

Adjust controls as required.

- a. Boric Acid flow controller set for - CURRENT RCS BORON CONCENTRATION
- b. Boric Acid flow controller in - AUTO
- c. MODE SELECT switch in - AUTO
- d. MAKEUP CONTROL switch to - START

8 CHECK SHUTDOWN MARGIN ADEQUATE:

RETURN TO Step 1 (Page 2).

- o Unit in Mode 2 (with Keff less than 1.0), 3, 4, OR 5:
 - Shutdown margin - GREATER THAN REQUIRED PER 1BwOSR 3.1.1.1-1, SHUTDOWN MARGIN VERIFICATION DURING SHUTDOWN
- o Unit in Mode 6:
 - Boron concentration in the refueling canal, refueling cavity, and all filled portions of the RCS - GREATER THAN COLR LIMIT (1BwOSR 3.9.1.1)

9 RETURN TO PROCEDURE AND STEP IN EFFECT

-END-

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

ATTACHMENT A (PG 1 OF 2)EMERGENCY BORATION VIA CHARGING PUMP COLD LEG INJECTION**1 VERIFY CENT CHG PUMP SUCTION**
ALIGNED TO RWST:**a. Check at least ONE RWST to CENT
CHG pumps suction valve - OPEN:**

- o 1CV112D
- o 1CV112E

**b. Check at least ONE VCT outlet
valve - CLOSED:**

- o 1CV112B
- o 1CV112C

**c. Check boric acid transfer
pump - STOPPED****a. Open at least one valve.****IF neither valve can be
opened,
THEN GO TO. ATTACHMENT B,
Step 1 (Page 9).****b. Close at least one valve.****c. Stop the pump.****APPROVED****FEB 28 2000****BRAIDWOOD**

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

ATTACHMENT A (PG 2 OF 2)EMERGENCY BORATION VIA CHARGING PUMP COLD LEG INJECTION**2 ALIGN CENT CHG PUMP FOR COLD LEG INJECTION:**

- a. Maximize letdown flow
- b. Dispatch an operator to obtain key and locally close selected CENT CHG pump discharge valve:
 - o 1CV8485A (364' U15 1A CENT CHG pump room)
 - o 1CV8485B (364' Y14 1B CENT CHG pump room)
- c. Locally open selected CENT CHG pump discharge valve to - RAISE VALVE STEM ONE INCH
- d. Open ONE CENT CHG pumps to cold legs injection isol valve:
 - o 1SI8801A
 - o 1SI8801B
- e. Locally throttle selected CENT CHG pump discharge valve to - BALANCE 1FI-917 FLOW WITH LETDOWN FLOW
- e. IF flow can NOT be established from a CENT CHG pump,
THEN GO TO ATTACHMENT B, Step 1 (Next Page).

IF letdown is NOT available,
THEN establish 100 GPM injection flow.

IF the CENT CHG pump discharge valve can NOT be throttled,
THEN perform the following:
 - 1) Stop the CENT CHG pump.
 - 2) Locally throttle selected CENT CHG pump discharge valve to desired position.
 - 3) Restart CENT CHG pump.
- f. RETURN TO MAIN BODY, Step 3 (Page 5)

-END-

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INFORMATION ONLY

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

ATTACHMENT B (PG 1 OF 4)
EMERGENCY BORATION USING AN SI PUMP

1 CHECK IF SI PUMP IS CAPABLE OF INJECTING:

RETURN TO procedure and step in effect.

- SI pump(s) - AT LEAST ONE AVAILABLE
- RCS pressure - LESS THAN 1700 PSIG

2 RESTORE AN AVAILABLE SI PUMP:

a. SI pumps - ANY AVAILABLE:

- o SI Pump 1A
- o SI Pump 1B

a. Restore one pump.
IF no pump can be restored,
THEN RETURN TO procedure and step in effect.

b. Dispatch operator to - RTS/RACK IN BREAKER FOR AN AVAILABLE SI PUMP:

- o Bus 141 Cub 3 (SI pump 1A)
- o Bus 142 Cub 3 (SI pump 1B)

c. Check following control switches for selected train - CLOSED:

- o 480V FEED TO BUS 131X1A/X2A
- o 480V FEED TO BUS 132X2A/X4A

c. Close switches.

d. Check following valves - ENERGIZED:

- 1SI8806
- 1SI8813

d. Locally energize valve(s):

- o 1SI8806
MCC 131X1A P3
(364' S12 CWA)
- o 1SI8813
MCC 132X4A L3
(426' S12 CWA)

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

ATTACHMENT B (PG 2 OF 4)
EMERGENCY BORATION USING AN SI PUMP3 CHECK VALVE ALIGNMENT FOR
SELECTED SI PUMP:

- | | |
|--|--|
| <p>a. SI pump suction valve - <u>OPEN</u>:</p> <ul style="list-style-type: none"> o 1SI8923A o 1SI8923B | <p>a. Manually open valve.</p> |
| <p>b. SI pump to cold legs common isolation valve - <u>CLOSED</u>:</p> <ul style="list-style-type: none"> • 1SI8835 | <p>b. Manually or locally close valve.</p> |
| <p>c. SI pump to cold legs isolation valve - <u>CLOSED</u>:</p> <ul style="list-style-type: none"> o 1SI8821A o 1SI8821B | <p>c. Manually close valve.</p> |
| <p>d. SI pump suction from RWST isolation valve - <u>OPEN</u>:</p> <ul style="list-style-type: none"> • 1SI8806 | <p>d. Manually or locally open valve.</p> |
| <p>e. SI pump miniflow common isolation valve - <u>OPEN</u>:</p> <ul style="list-style-type: none"> • 1SI8813 | <p>e. Manually or locally open valve.</p> |
| <p>f. SI pump miniflow isolation valve - <u>OPEN</u>:</p> <ul style="list-style-type: none"> o 1SI8814 o 1SI8920 | <p>f. Manually open valve.</p> |
| <p>g. RCS hot leg injection valve - <u>ENERGIZED</u>:</p> <ul style="list-style-type: none"> o 1SI8802A o 1SI8802B | <p>g. Dispatch an operator to energize valve:</p> <ul style="list-style-type: none"> o 1SI8802A
MCC 131X1A P1
(364' S12 CWA) o 1SI8802B
MCC 132X4A L2
(426' S12 CWA) |

Step continued on next page

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

ATTACHMENT B (PG 3 OF 4)
EMERGENCY BORATION USING AN SI PUMP

Step 3 (continued)

h. RCS hot leg injection valve -
OPEN:

- o 1SI8802A
- o 1SI8802B

h. Manually or locally open
valve.

IF the hot leg injection
valve can NOT be opened,
THEN establish cold leg
injection:

1) IF the SI pump to cold
legs common isolation
valve is deenergized,
THEN dispatch an
operator to energize the
valve:

- 1SI8835
MCC 131X1A P4
(364' S12 CWA)

2) Open the SI pump to cold
legs common isolation
valve:

- 1SI8835

3) Open SI pump to cold
legs isolation valve for
selected pump:

- o 1SI8821A
- o 1SI8821B

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

ATTACHMENT B (PG 4 OF 4)
EMERGENCY BORATION USING AN SI PUMP

* NOTE *
* Containment evacuation may be *
* necessary if the RCS is NOT intact. *

4 ESTABLISH SI PUMP INJECTION:

- a. Maximize letdown flow
- b. Dispatch an operator to obtain key and locally close selected SI pump discharge valve:
 - o 1SI8921A (364' Q16 1A SI Pump Rm)
 - o 1SI8921B (364' Y13 1B SI Pump Rm)
- c. Locally open selected SI pump discharge valve to - RAISE VALVE STEM ONE INCH
- d. Start selected SI pump
- e. Locally throttle selected SI pump discharge valve to - BALANCE 1FI-918/922 FLOW WITH LETDOWN FLOW
- d. **RETURN TO Step 2 (Page 9) to use the other SI pump.**
 IF no SI pump can be started,
THEN RETURN TO procedure and step in effect.
- e. IF letdown is **NOT** available,
THEN establish 200 GPM injection flow.

 IF the SI pump discharge valve can **NOT** be throttled,
THEN perform the following:
 - 1) Stop the SI pump.
 - 2) Locally throttle selected SI pump discharge valve to desired position.
 - 3) Restart SI pump.
- f. **RETURN TO MAIN BODY, Step 3 (Page 5)**

-END-

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

4 VERIFY ALL CONTROL RODS FULLY
INSERTED:

- Rod bottom lights - ALL LIT

Perform the following:

- a. IF two or more rods are NOT fully inserted, THEN emergency borate 1320 GAL (5500 GAL FROM RWST) for each rod NOT fully inserted per 1BwOA PRI-2, EMERGENCY BORATION.
- *b. Within 1 HOUR calculate Shutdown Margin per 1BwOSR 3.1.1.1-1, SHUTDOWN MARGIN VERIFICATION DURING SHUTDOWN.

JOB PERFORMANCE MEASURE

TASK TITLE: Establish Excess Letdown to the Volume Control Tank, CC cooling water failure

JPM No.: N-11a

REV: 9

TPO No.: IV.C.CV-07

K&A No.: (APE022AK3.03)

TASK No.: CV-007

K&A IMP: 3.1 / 3.3

TRAINEE: _____

EVALUATOR: _____

DATE: _____

The Trainee: PASSED _____ this JPM.

TIME STARTED: _____

FAILED _____

TIME FINISHED: _____

CRITICAL ELEMENTS: (*)3,4,5,6

JPM TIME: _____ MINUTES

CRITICAL TIME: NA

APPROX COMPLETION TIME 9 MINUTES

EVALUATION METHOD:

LOCATION:

☒ PERFORM
☐ SIMULATE

☐ IN PLANT
☒ SIMULATOR

GENERAL REFERENCES:

1. BWOP CV-15, Rev. 9, Excess Letdown Operations.

MATERIALS: None

TASK STANDARDS:

1. Perform the actions required to place Excess Letdown in service.
2. Isolate Excess Letdown flow following loss of CC Cooling
3. Demonstrates the use of good Core Work Practices (CWP).

TASK CONDITIONS:

1. You are the Unit NSO.
2. The Unit is at steady state power.
3. Normal Letdown is in service at 120 gpm.

INITIATING CUES:

1. You have been directed by the US to establish Excess Letdown to the VCT using all loop drains and both excess letdown heat exchangers due to a suspected 0.5 gpm leak in the normal letdown line.
2. Estimated time for Excess Letdown operations will be approximately 2 hours.
3. The SM does NOT desire flow directed to the VCT spray nozzle.

PERFORMANCE CHECKLIST

STANDARDS

SAT UNSAT N/A

RECORD START TIME _____

- | | | | | |
|--|--|---------------------------------|---------------------------------|---------------------------------|
| <p>1. Determine correct procedure</p> <p>(CUE: After examinee locates correct procedure, provide a copy.)</p> <p>All prereqs, precautions and limits are met</p> | <p>Locate and Open BwOP CV-15.</p> | <p><input type="checkbox"/></p> | <p><input type="checkbox"/></p> | <p><input type="checkbox"/></p> |
| <p>2. Ensure thermal power limits are not exceeded.</p> <p>(CUE: Calorimetric power is 99.6% or indicated power if not at full power.)</p> | <p>VERIFY Rx Power is at least 0.1% below the applicable power limit for plant operating conditions.</p> | <p><input type="checkbox"/></p> | <p><input type="checkbox"/></p> | <p><input type="checkbox"/></p> |
| <p>*3. Establish Excess Letdown to the VCT.</p> <p>(Note: Initiating cue was to align to the VCT.)</p> | <p>Perform the following:</p> <ul style="list-style-type: none"> ◦ VERIFY/OPEN 1CV8100 & 1CV8112, Seal Water Return Cnmt Isolation Valves • OPEN 1CC9437A, CC to Excess Letdown HX Isol Vlv at 1PM06J • OPEN 1CC9437B, CC from Excess Letdown HX Isol Vlv at 1PM06J ◦ VERIFY/CLOSE 1HCV-CV123, Excess Letdown HX Flow Control Vlv at 1PM05J ◦ VERIFY/PLACE 1CV8143, excess Letdown to Seal Filter or RCDT Vlv, in the VCT position. | <p><input type="checkbox"/></p> | <p><input type="checkbox"/></p> | <p><input type="checkbox"/></p> |

PERFORMANCE CHECKLIST

STANDARDS

SAT UNSAT N/A

*4. Align Excess Letdown
Lineup.

Perform the following:

☐ ☐ ☐

- OPEN 1RC8037A-D, Loop Drain Valves, for the desired loop(s).
- OPEN 1CV8153A&B, Excess Letdown HX 1A/B Inlet Isol Vlv.

*5. Initiate Excess Letdown flow.

Perform the following:

☐ ☐ ☐

- SLOWLY OPEN 1HCV-CV123, Excess Letdown HX Flow Cont Vlv, as required to obtain desired flow.
- ENSURE Excess Letdown Outlet Temperature is < 165 °F as indicated on 1TI-122A, Excess Letdown HX Temperature.

Note: When excess letdown flow has been fully established, CC to letdown Hx valve, 1CC9437A, will close. This will result in increasing excess letdown temperatures.

*6. Respond to increasing Excess Letdown Hx Outlet temperature.

Determine CC Cooling flow is inadequate.

☐ ☐ ☐

- Determine 1CC9437A is closed and attempt to reopen.
- Isolate Excess letdown before RCP Lower Bearing Temp Alarm comes in, (1-7-C2) at 184°F by either:
 - Closing all RC Loop Drain Valves 1RC8037A-D
 - Closing flow control valve 1HCV123
 - Closing Hx isolation valves 1CV8153A&B

(CUE:) THIS COMPLETES THIS JPM.

RECORD STOP TIME _____

COMMENTS: _____

TASK CONDITIONS:

1. You are the Unit NSO.
2. The Unit is at steady state power.
3. Normal letdown is in service at 120 gpm.

INITIATING CUES:

1. You have been directed by the US to establish Excess Letdown to the VCT using all loop drains and both excess letdown heat exchangers due to a suspected 0.5 gpm leak in the normal letdown line.
2. Estimated time for Excess Letdown operations will be approximately 2 hours.
3. The SM does NOT desire flow directed to the VCT spray nozzle.

SIMULATOR SETUP INSTRUCTIONS

JPM NO: N-11

REQUIRED SIMULATOR MODE(S): NOP-NOT or above

MALFUNCTION #'S: N/A

COMMENTS:

- 1) When excess letdown flow is fully established (monitor flow and 1CV-123), then override CS for 1CC9437A to CLOSE (ZDI1CC9437A)

EXCESS LETDOWN OPERATIONS

A. STATEMENT OF APPLICABILITY

This procedure provides the steps necessary for placing the Excess Letdown in service and removing it from service.

B. REFERENCES

1. Station Procedure: _BwOA PRI-6, Component Cooling Malfunction.
2. Station Drawings:
 - a. M-64 (M-138), Diagram of Chemical & Volume Control and Boron Thermal Regeneration.
 - b. M-60 (M-135), Diagram of Reactor Coolant.
 - c. M-66 (M-139), Diagram of Component Cooling.
3. FSAR: Section 9.3.
4. Technical Manual: Westinghouse Precautions, Limitations, and Setpoints Book.

C. PREREQUISITES

1. Component Cooling Water is available to the Excess Letdown HX.
2. The Reactor Coolant Drain System is available for service, if flow is to be directed to the RCDT.
3. Seal Water Return is in Service and the SEAL WATER HX CC FLOW LOW alarm (_-2-A7) is NOT LIT, if flow is to be directed to the VCT.
4. NOTIFY the Radiation Protection Department that this procedure is being performed and the purpose of it's performance.

D. PRECAUTIONS

1. RCP Seal Leakoff Flows should be closely monitored while Excess Letdown is in Service to the VCT.
2. CC Flow through the Excess Letdown HX should be established prior to establishing Letdown Flow.

- D. 3. _CC9503, Spent Fuel Pit Hx CC Outlet Vlv, can be throttled to maintain CC pressure between 120 & 140 psig.
4. Rx Power should be reduced below the existing power limit by 0.1% prior to placing Excess Letdown on service.

E. LIMITATIONS AND ACTIONS

1. Do not exceed 165°F on the outlet of the Excess Letdown HX to avoid seal injection temperature exceeding its limits which will lead to RCP seal degradation.
2. If Excess Letdown is placed in service in lieu of the normal Letdown Flow, RCS cleanup via the Demin Beds will be unavailable. If the UNIT is at Power, Chemistry should be notified to increase RCS sampling frequency for Gross Activity to every 6 hours.
3. Operation of _CC9437A/B, CC to Excess Ltdwn Isol Vlv, may cause operation of the associated CC Supply Relief Valves (150 psig), which will result in decreasing CC Surge Tank level. Refer to BwOA PRI-6, Component Cooling Malfunction.
4. VCT Pressure Guidelines and Setpoints:
 - a. VCT normal system pressure range is 15 psig to 65 psig.
 - b. Do not decrease VCT pressure below 15 psig with RCPs in operation, as this may adversely affect RCP seal operation.
 - c. Nominal VCT pressure should be maintained between 15 psig to 25 psig when ever a gas blanket is established.
 - d. Ideal VCT pressure for chemistry consideration should be maintained between 15 psig to 20 psig. This is for optimum hydrogen concentration when a hydrogen blanket has been established in order to minimize the effects of accelerated stress corrosion cracking of the RCS.
 - e. Over pressurizing the VCT can cause the VCT 75 psig relief to lift inducing a loss of inventory to the RHUT.
 - f. When establishing a nitrogen or hydrogen blanket or during degassing operations maintain VCT pressure < 25 psig to minimize the amount of gas forced into solution.
 - g. If no RCPs are in operation, then VCT pressure can be maintained between 5 psig and 10 psig. This is also desirable during degassing operations or VCT float operation.

F. MAIN BODY

NOTE

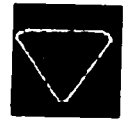
Step F.1 Establishes Excess Letdown Flow.
Step F.2 Removes Excess Letdown From Service.

1. Establishing Excess Letdown Flow, at _PM05J:
 - a. VERIFY Rx Power is at least 0.1% below the applicable power limit for plant operating conditions.
 - b. VERIFY/OPEN _CV8100, Seal Water Return Cnmt Isolation Valve.
 - c. VERIFY/OPEN _CV8112, Seal Water Return Cnmt Isolation Valve.
 - d. OPEN _CC9437A, CC to Exc Ltdwn HX Isol Vlv, at _PM06J.
 - e. OPEN _CC9437B, CC from Exc Ltdwn HX Isol Vlv, at _PM06J.
 - f. VERIFY/CLOSE _HCV-CV123, Exc Ltdwn HX Flow Cont Vlv at _PM05J.
 - g. To direct flow to the VCT, PLACE _CV8143, Exc Ltdwn to Seal Filter or RCDT Vlv, in the VCT position at _PM05J.
 - h. IF Excess Letdown is to remain in service for any extended period of time, it may be desirable to direct the Seal Return Flow to the VCT Spray Nozzles by performing the following, at the Shift Manager's discretion:
 - 1) OPEN _CV8482, Seal Wtr HX Outlet to VCT Isol Vlv.
 - 2) CLOSE _CV8484, Seal Wtr HX Outlet to CV Pp Suct Hdr.
 - i. To direct flow to the RCDT, PLACE _CV8143, Exc Ltdwn to Seal Filter or RCDT Vlv, in the RCDT position.
 - j. OPEN _RC8037A/B/C/D, Loop Drain Valve, for the desired loop(s).
 - k. OPEN _CV8153A/B, Exc Ltdwn HX _A/B Inlet Isol Vlv.



CAUTION

RCP seal leakoff flows must be closely monitored while establishing excess letdown flow.



- F. 1. I. SLOWLY OPEN _HCV-CV123, Exc. Ltdwn HX Flow Cont Vlv, as required to obtain the desired flow.
- m. ENSURE that Excess Letdown outlet temperature is < 165°F, as indicated on _TI-122A, Exc Ltdwn HX Temp.
2. Removing Excess Letdown From Service
- a. SLOWLY CLOSE _HCV-CV123, Exc Ltdwn HX Flow Cont Vlv.
- b. CLOSE _CV8153A/B, Exc Ltdwn HX _A/B Inlet Isol Vlv.
- c. CLOSE _RC8037A/B/C/D, Loop Drain Valve.
- d. CLOSE _CC9437A, CC to Exc Ltdwn HX Isol Vlv, at _PM06J.
- e. CLOSE _CC9437B, CC from Exc Ltdwn HX Isol Vlv, at _PM06J.
- f. VERIFY/PLACE _CV8143, Exc Ltdwn to Seal Filter or RCDT Vlv, in the VCT position.
- g. IF the Excess Letdown Flow was changed in Step F.1.h., PERFORM the following:
- 1) OPEN _CV8484, Seal Wtr HX Outlet to CV Pp Suct Hdr.
- 2) CLOSE _CV8482, Seal Wtr HX Outlet to VCT Isol Vlv.

RCP
LOWER BRNG
TEMP
HIGH

ALARM NO: 1-7-C2

SETPOINT: 184°F

A. PROBABLE CAUSE

1. Low or no Seal Injection Flow.
2. High #1 Seal leak rate.
3. Low #1 Seal leak rate in conjunction with a loss of Injection Flow.
4. High Seal Injection Water temperature.
5. High Component Cooling Water inlet temperature to Thermal Barrier.
6. Low Component Cooling Water flow to Thermal Barrier.
7. Radial Bearing failure.

B. AUTOMATIC ACTIONS

None.

C. IMMEDIATE OPERATOR ACTIONS

1. CHECK Seal Injection flow and temperature.
2. If Seal Injection flow is lost, REFER to 1BWOA RCP-2, Loss of Seal Cooling.

D. SUBSEQUENT OPERATOR ACTIONS

1. MONITOR Component Cooling flow and temperature to Thermal Barrier.
2. MONITOR Seal Leakoff flow and temperature.

E. S.E.R. PRINTOUT

1. 0609 RCP 1A LOWER BEARING TEMP HIGH
2. 2060 RCP 1B LOWER BEARING TEMP HIGH
3. 0589 RCP 1C LOWER BEARING TEMP HIGH
4. 2034 RCP 1D LOWER BEARING TEMP HIGH

F. REFERENCES

1. S&L INSTRUMENT NUMBER: 1UL-AN005.
2. S&L BOX NUMBER: 05.
3. SENSOR DESIGNATION: 1TE-0172, 1TE-0170, 1TE-0168, 1TE-0166.
4. ELECTRICAL PRINT: 20E-1-4031CV09, 10, 11, 12.

(Final)

SEAL WTR
HX OUTLET
TEMP
HIGH

ALARM NO: 1-7-E1

SETPOINT: 175°F

A. PROBABLE CAUSE

1. Inadequate component cooling flow.
2. Abnormally high Seal Wtr Return flow.

B. AUTOMATIC ACTIONS

None.

C. IMMEDIATE OPERATOR ACTIONS

1. CHECK 1TI-0177, Seal Wtr HX Outlet temp.
2. Monitor CV pump for cavitation.

D. SUBSEQUENT OPERATOR ACTIONS

1. If CV pump suction temperature is excessive or onset of cavitation is suspected consider:
 - a. Aligning seal return to top of VCT & monitor VCT and,
 - b. Align CV pump suction to RWST.
2. If Seal Wtr HX outlet temp high.
 - a. VERIFY proper CC vlv lineup per 1BWOP CC-M1.
 - b. REFER to 1BWOA PRI-6 in the event of a CC System malfunction.
3. MONITOR RCP bearing temperatures and REFER to 1BWOA RCP-1 if seal failure suspected.
4. INITIATE corrective action.

E. S.E.R. PRINTOUT

0538 SEAL WTR HX OUTLET (SEAL FLOW) TEMP HIGH

F. REFERENCES

1. S&L INSTRUMENT NUMBER: 1UL-AN005.
2. S&L BOX NUMBER: 05.
3. SENSOR DESIGNATION: 1TE-177.
4. ELECTRICAL PRINT: 20E-1-4031CV38.

(Final)

15/8/97

JOB PERFORMANCE MEASURE

TASK TITLE: Respond to RCP Thermal Barrier Leak with CC Valve Failure

JPM No.: N-118

REV: 2a

TPO No.: IV.D.OA-51

K&A No.: (008K1.04)

TASK No.: OA-061

K&A IMP: 3.3/3.3

TRAINEE: _____

EVALUATOR: _____

DATE: _____

The Trainee: PASSED _____ this JPM.

FAILED _____

TIME STARTED: _____

TIME FINISHED: _____

CRITICAL ELEMENTS: (*) 5, 6

JPM TIME: _____ MINUTES

CRITICAL TIME: NA

APPROX COMPLETION TIME 10 MINUTES

EVALUATION METHOD:

☒ PERFORM
☐ SIMULATE

LOCATION:

☐ IN PLANT
☒ SIMULATOR

GENERAL REFERENCES:

1. 1BWOA PRI-6, Rev. 100, Component Cooling Malfunction
2. BWAR 1-7-E4, Rev. 51E2, RCP THERM BARR CC WTR FLOW HIGH LOW

MATERIALS:

None

TASK STANDARDS:

1. Determine RCS Thermal Barrier is leaking, and close 1CC685.
2. Isolate affected RCP thermal barrier, and restore CC cooling to unaffected thermal barriers
2. Demonstrates the use of good Core Work Practices (CWP).

TASK CONDITIONS:

1. You are the Assist NSO.
2. The Unit is at 100% power.

INITIATING CUES:

1. Annunciator 1-7-E4 RCP THERM BARR CC WTR FLOW HIGH LOW has just alarmed. Using appropriate procedures, respond to the annunciator alarm.

PERFORMANCE CHECKLIST

STANDARDS

SAT UNSAT N/A

RECORD START TIME _____

Note: Examinee may take the control switch for 1CC685 to CLOSE at any time (see step 6), when it is noted that the valve did not automatically close on high flow.

Note: Examinee may refer to BWAR 1-7-E4 which directs responses per 1BWOA Pri-6 (below) and 1BWOA PRI-1. If examinee notes reference to 1BWOA PRI-1, provide CUE: Another Operator will initiate actions of 1BWOA-PRI-1, you are to perform actions of 1BWOA PRI-6.

Note: Time compression will be used to enter containment. Cue as necessary.

1. Refer to 1BWOA PRI-6, Component Cooling Malfunction.

Locate and Open 1BWOA PRI-6.

☐ ☐ ☐

(CUE: If asked, All Operator Action Summary elements have been reviewed and NONE currently require action.)

(CUE: Another operator will be assigned to review 1BWOA PRI-1)

2. Check surge tank level > 13% and increasing.

Checks Surge tank level:

- 1LIT-670/676
- Determines level > 13%
- Determines level is increasing
- Goes to Attachment B, per step 1.b RNO.
- Goes to Step 5 of Attachment B.

☐ ☐ ☐

3. Checks for leakage from RCP Thermal Barrier.

Checks for leakage from RCP Thermal Barrier:

- Annunciator 1-7-E4 LIT.
- Seal Injection Flows any abnormally high.
- Determines 1A RCP has abnormally high flows.

☐ ☐ ☐

4. Manually throttles 1CV121 and 1CV182 to maintain seal injection flow.

Adjusts 1CV121 and 1CV182 to obtain between 8 and 13 gpm seal injection flow per RCP (as possible)

☐ ☐ ☐

PERFORMANCE CHECKLIST

*5. Check 1CC685 Closed.

STANDARDS

- Determines corrective action to be taken:
 - o Checks position indication for 1CC685
 - o Determines 1CC685 is OPEN.
 - Takes control switch for 1CC685 to CLOSED.
 - Manually Closes 1CC9438.

SAT UNSAT N/A

☐ ☐ ☐

*6. Restore CC to unaffected RCPs by locally closing RCP Thermal Barrier CC outlet valve to isolate affected RCP.

Dispatch operator to enter cnmt and locally close 1CC9496A.

☐ ☐ ☐

(CUE: SM desires affected RCP to be isolated and CC restored to unaffected RCPs.)

☐ ☐ ☐

(CUE: Local operator reports 1CC9496A Closed)

After 1CC9496A closure, reopen 1CC9438.

(CUE:) THIS COMPLETES THIS JPM.

RECORD STOP TIME _____

COMMENTS:

TASK CONDITIONS:

1. You are the Assist NSO.
2. The Unit is at 100% power.

INITIATING CUES:

1. Annunciator 1-7-E4 RCP THERM BARR CC WTR FLOW HIGH LOW has just alarmed. Using appropriate procedures, respond to the annunciator alarm.

SIMULATOR SETUP INSTRUCTIONS

JPM NO: N-118

REQUIRED SIMULATOR MODE(S): 100% steady state.

MALFUNCTION #'S: Malf CC09 231 gpm. (flow x-mitter failure)
Malf CC07A 25 gpm. (RCP therm barrier leak)

COMMENTS:

- 1) Override 1CC685, ZDI1CC685 OPEN (SDG CC7 or 1PM06J(A1)CS override)
- 2) Note: adjust severity of malf CC07A to ensure actuation of HIGH FLOW alarm, 1-7-E4, but minimize RCS leak rate.
- 3) To locally operate/close 1CC9496A (SDG CC7)
- 4) Note: Time compression to perform containment entry to locally close 1CC9496A will be used. Cue as necessary.
- 5) If desired to simulate the alarm that comes in for operating the Cnmt hatch personnel door, override the annunciator at 1-1-B2, PN1148 ON/OFF as necessary.
- 6) Drain VCT / reset setup to 56% via drn valves 1CC2020A&B

RCP
THERM BARR
CC WTR FLOW
HIGH LOW

ALARM NO: 1-7-E4

SETPOINT: High - 231 gpm
Low - 150 gpm

A. PROBABLE CAUSE

1. High Flow: RCP Thermal Barrier leak to Component Cooling System.
2. Low Flow: Loss of Component Cooling flow to pump.

B. AUTOMATIC ACTIONS

High flow CLOSES 1MOV-CC685, Thermal Barrier Component Cooling Outlet, common to all 4 pumps.

C. IMMEDIATE OPERATOR ACTIONS

1. REFER to 1BWOA PRI-6, Component Cooling Malfunction.
2. IF high flow, Refer to 1BWOA PRI-1.

D. SUBSEQUENT OPERATOR ACTIONS

None.

E. S.E.R. PRINTOUT

1. 1991 RCP THERMAL BARRIER CC WATER FLOW HIGH
2. 2051 RCP THERMAL BARRIER CC WATER FLOW LOW

F. REFERENCES

1. S&L INSTRUMENT NUMBER: 1UL-AN005.
2. S&L BOX NUMBER: 05.
3. SENSOR DESIGNATION: 1FIS-0685.
4. ELECTRICAL PRINT: 20E-1-4030CC04.

(Final)

A. PURPOSE

This procedure provides actions required in the event of a Component Cooling malfunction.

B. SYMPTOMS OR ENTRY CONDITIONS

- 1) The following symptoms may cause entry into this procedure:
 - o High radiation on UNIT 1 CC HX process monitor 1RT-PR009.
 - o High radiation on UNIT 0 CC HX process monitor 0RT-PR009.
- 2) The following annunciators may cause entry into this procedure:
 - o CC PUMP TRIP (1-2-A4)
 - o CC SURGE TANK LEVEL HIGH LOW (1-2-A5)
 - o RH HX CC WTR FLOW HIGH LOW (1-2-A6)
 - o SEAL WTR HX CC FLOW LOW (1-2-A7)
 - o CC PUMP AUTO START (1-2-B4)
 - o CC PUMP DSCH PRESS LOW (1-2-B5)
 - o PD CHG PUMP CC WTR FLOW LOW (1-9-C3)
 - o CC HX OUTLET TEMP HIGH (1-2-C5)
 - o CNMT PEN CLG FLOW HIGH LOW (1-2-D7)
 - o CC SURGE TANK AUTO M/U ON (1-2-E4)
 - o RCP THERMAL BARR CC WTR TEMP HIGH (1-7-E3)
 - o RCP THERM BARR CC WTR FLOW HIGH LOW (1-7-E4)
 - o RCP 1_ BRNG CC WTR FLOW LOW (1-7-_5)
- 3) This procedure may also be entered from:
 - o 1BWOA PRI-10, LOSS OF RHR COOLING, when the CC system is adversely affecting RH HX operation.

REV. 100	COMPONENT COOLING MALFUNCTION UNIT 1	1Bw0A PRI-6
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
	<p>*****</p> <p>* <u>NOTE</u> *</p> <p>* With this procedure in effect, the *</p> <p>* Station Director shall evaluate for *</p> <p>* GSEP conditions. *</p> <p>*****</p>	
1	<u>CHECK CC SURGE TANK LEVEL:</u>	
	a. Surge tank level - <u>GREATER THAN</u> <u>13%</u>	a. <u>GO TO ATTACHMENT A</u> , Step 1 (Page 10).
	b. Surge tank level - <u>STABLE</u>	b. <u>GO TO ATTACHMENT B</u> , Step 1 (Page 25).

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

2 CHECK CC SYSTEM STATUS:a. CC pumps - AT LEAST ONE RUNNINGa. IF NO RH trains are in the shutdown cooling mode, THEN perform the following:

1) Start a standby CC pump.

2) IF NO CC pump can be started,
THEN GO TO
ATTACHMENT A, Step 1
(Page 10).IF ANY RH train is in the shutdown cooling mode, THEN perform the following:

1) Trip any running RCP(s).

2) GO TO ATTACHMENT C,
Step 1 (Page 31).

Step continued on next page

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

Step 2 (continued)

b. CC PUMP DSCH PRESS LOW
(1-2-B5) - NOT LIT

b. Perform the following:

1) IF LETDOWN HX OUTLET
TEMP HIGH (1-8-C5) is
lit,
THEN isolate letdown:a) Close letdown orifice
isol valves:

- 1CV8149A
- 1CV8149B
- 1CV8149C

b) Close letdown line
isol valves:

- 1CV459
- 1CV460

2) Dispatch an operator to
investigate any tripped
CC pump.3) IF a tripped CC pump is
locally observed to be
spinning backwards,
THEN perform the
following to isolate a
failed discharge check
valve:a) Place any tripped CC
pump in PULL OUT.b) Close the tripped
pump's discharge
valve:

- o 1CC9466A (364' M18)
(CC pump 1A)
- o 1CC9466B (364' M18)
(CC pump 1B)
- o 0CC9465 (364' L18)
(CC pump 0)

Step continued on next page

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

Step 2 (continued)

4) Perform the following to
raise pressure:

- o Start a standby CC
pump.
- o Align the 0 CC pump
per BwOP CC-10,
ALIGNMENT OF THE 0 CC
PUMP TO A UNIT.
- o Locally adjust Spent
Fuel Pool heat
exchanger outlet CC
flow control valve:
 - 1CC9503 (408' Z15)
- o Transfer cooling
loads to UNIT 2 per
BwOP CC-8, ISOLATION
OF CC BETWEEN UNITS 1
AND 2.
- o Close CC to RH heat
exchanger isolation
valve for any RH
train NOT required
for shutdown cooling:
 - o 1CC9412A (1A RH HX)
 - o 1CC9412B (1B RH HX)
 - o 2CC9412A (2A RH HX)

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

3 CHECK CC SYSTEM TEMPERATURE:

a. Check CC PUMP SUCTION TEMP HIGH
(1- 2-D5) - NOT LIT

b. CC heat exchanger outlet
temperature - LESS THAN 120°F

c. CC heat exchanger outlet
temperature - LESS THAN 105°F

a. Concurrently perform the
following:

1) **GO TO** 1BWOA PRI-6,
COMPONENT COOLING
MALFUNCTION,
ATTACHMENT A, Step 1
(Page 10).

2) **GO TO** 1BWOA PRI-8,
ESSENTIAL SERVICE WATER
MALFUNCTION.

b. IF EITHER RH train is in
the shutdown cooling mode,
THEN reduce the cooldown
rate.

c. Perform the following:

o Reduce the cooldown
rate.

o Locally adjust SX outlet
from CC heat exchanger
valve(s):

o 1HS-SX048 (346' M16)
1SX007 (346' +12'
M16)

o 0HS-SX051 (346' M16)
0SX007 (346' +12'
M16)

o Align the UNIT 0 CC heat
exchanger per BwOP CC-8,
ISOLATION OF CC BETWEEN
UNITS 1 AND 2.

o Close CC to RH heat
exchanger isolation
valve for any RH train
NOT required for
shutdown cooling:

o 1CC9412A (1A RH HX)

o 1CC9412B (1B RH HX)

o 2CC9412A (2A RH HX)

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

4 CHECK RCP COOLING:

a. Check RCPs - ANY RUNNING

a. GO TO Step 4c.

b. CC flow to RCPs - NORMAL WITH THE FOLLOWING ALARMS NOT LIT:

b. Perform the following:

- RCP 1 THERM BAR CC WTR FLOW LOW (1-7-4)

1) Verify CC to RCP isolation valves OPEN:

- RCP 1 BRNG CC WTR FLOW LOW (1-7-5)

- o 1CC9413A
- o 1CC9413B

- RCP THERM BARR CC WTR TEMP HIGH (1-7-E3)

2) Verify CC from RCP isolation valves OPEN:

- RCP THERM BARR CC WTR FLOW HIGH LOW (1-7-E4)

- o 1CC9414
- o 1CC9416
- o 1CC9438

- RCP BRNG CC WTR TEMP HIGH (1-7-E5)

c. Check CC heat exchanger outlet rad monitor trends (HMI or RM11) - NORMAL:

c. GO TO ATTACHMENT B, Step 5 (Page 29).

- 1PR09J Grid 1 1PS109 (Unit 1)

- 0PR09J Grid 1 0PS109 (Unit 0)

d. Check RCP thermal barrier isolation valve - OPEN:

d. Open the valve.

- 1CC685

IF it recloses,
THEN GO TO ATTACHMENT B,
Step 5 (Page 29).

e. Check RCP temperatures:

e. Perform the following:

- Motor bearing(s) - LESS THAN 195°F

1) Trip the reactor.

- Lower radial bearing(s) - LESS THAN 225°F

2) Trip the affected RCP(s).

- Seal outlet(s) - LESS THAN 235°F

3) Perform 1BwEP-0, REACTOR TRIP OR SAFETY INJECTION, Step 1 while continuing with this procedure.

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

5 CHECK LETDOWN TEMPERATURE:a. Check letdown - IN SERVICEb. LTDWN HX OUTLET TEMP HIGH
(1-8-C5) - NOT LITc. LTDWN TEMP HIGH (1-9-E2) - NOT LIT

a. Establish letdown:

- o Normal letdown per 1BwOA ESP-2, REESTABLISHING CV LETDOWN DURING ABNORMAL CONDITIONS

- o RH letdown per BwOP CV-17, ESTABLISHING AND SECURING NORMAL AND RH LETDOWN FLOW

b. Perform the following:

- o Adjust 1CC130 to maintain letdown temperature less than 125°F.

- o Align the standby letdown heat exchanger per BwOP CV-22, SWITCHING INSERVICE LETDOWN HEAT EXCHANGERS.

- o Reduce flow by closing letdown orifice isolation valve(s):

- o 1CV8149A
- o 1CV8149B
- o 1CV8149C

- o Reduce RH letdown by throttling RH to CV system letdown flow control valve:

- o 1CV128

c. Verify 1CV129 has diverted to the VCT.

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

6 CHECK CC SURGE TANK STATUS:a. Surge tank level - BETWEEN 50% AND 65%a. IF surge tank level is stable,
THEN restore level to between 50% and 65%.IF surge tank level is NOT stable,
THEN GO TO ATTACHMENT B,
Step 1 (Page 25).7 REFER TO TECH SPECS:

- 3.7.7
- 3.6.3
- Perform a risk assessment

8 RETURN TO PROCEDURE AND STEP IN EFFECT

-END-

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

ATTACHMENT A (PG 1 OF 15)
LOSS OF COMPONENT COOLING1 SHUTDOWN RCPS:

- a. Place ALL CC pumps in -
PULL OUT
- b. Check reactor trip breakers - CLOSED b. GO TO Step 1e.
- c. Trip the reactor
- d. Perform 1BwEP-0, REACTOR TRIP
OR SAFETY INJECTION, while
continuing with this procedure
- e. Trip ALL RCPs

2 CHECK RH STATUS:

- a. Check at least one RCS loop to
RH pump suction isol valve on
each train - CLOSED:
 - 1RH8701A or 1RH8701B
 - 1RH8702A or 1RH8702B
- a. IF an RH train is running
in shutdown cooling,
THEN GO TO ATTACHMENT C,
Step 1 (Page 31).

REV. 100	COMPONENT COOLING MALFUNCTION UNIT 1	1B-0A PRI-6
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p align="center"><u>ATTACHMENT A (PG 2 OF 15)</u> <u>LOSS OF COMPONENT COOLING</u></p> <p align="center">***** * <u>NOTE</u> * * If at any time the CC system is * * available for starting, * * GO TO Step 9 (Page 19). * *****</p> <p>3 <u>ISOLATE LETDOWN:</u></p> <p>· Normal letdown:</p> <p>1) Close letdown orifice isolation valves:</p> <p>· 1CV8149A · 1CV8149B · 1CV8149C</p> <p>2) Close letdown line isolation valves:</p> <p>· 1CV459 · 1CV460</p> <p>· Excess letdown:</p> <p>1) Check excess letdown isolation valves - <u>CLOSED</u>:</p> <p>· 1CV8153A · 1CV8153B</p> <p>2) Check RCS loop drain valves - <u>CLOSED</u>:</p> <p>· 1RC8037A · 1RC8037B · 1RC8037C · 1RC8037D</p> <p>1) Close the valve(s).</p> <p>2) Close the valve(s).</p>		

REV. 100	COMPONENT COOLING MALFUNCTION UNIT 1	1B-0A PRI-6
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p align="center"><u>ATTACHMENT A (PG 3 OF 15)</u> <u>LOSS OF COMPONENT COOLING</u></p> <p>UAAA; CAUTION Seal injection flow MUST be maintained to the RCPs with a loss of CC to the thermal barriers. AAU</p>		
4	<u>ISOLATE NORMAL CHARGING:</u>	
	a. Close charging line containment isolation valve(s): o 1CV8105 o 1CV8106 b. Check seal injection - <u>ESTABLISHED</u>	a. Close 1CV182. b. <u>IF</u> seal injection is isolated for outage activities, <u>THEN</u> perform the following: 1) Stop any running CENT CHG pump. 2) GO TO Step 8 (Page 16).
	c. Throttle 1CV121 to maintain RCP seal injection flow - <u>BETWEEN 8 GPM AND 13 GPM PER PUMP</u>	
	d. Cycle PZR heaters to maintain PZR pressure	

Page 13 of 38

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

ATTACHMENT A (PG 5 OF 15)
LOSS OF COMPONENT COOLING

 * NOTE *
 * Seal water heat exchanger outlet *
 * temperature is used to measure CENT *
 * CHG pump fluid temperature. *

6 MAINTAIN CENT CHG PUMP AND RCP
COOLING:

a. Adjust seal injection flow to:

- Maintain seal water heat exchanger outlet temperature - LESS THAN 160°F:

· 1TI-0177

-AND-

- Maintain seal injection flow - GREATER THAN 6 GPM PER PUMP

-AND-

- Minimize PZR fill rate

a. IF unable to maintain seal water heat exchanger outlet temperature less than 180°F OR PZR level less than 50%, THEN perform the following:

1) Open RWST to CENT CHG pump suction valve(s):

- o 1CV112D
- o 1CV112E

2) Close VCT outlet valve(s):

- o 1CV112B
- o 1CV112C

IF unable to maintain seal water heat exchanger outlet temperature less than 200°F OR PZR level less than 70%, THEN GO TO ATTACHMENT D, Step 1 (Page 35).

b. Check VCT level - GREATER THAN 37%

b. Open RWST to CENT CHG pump suction valves:

- o 1CV112D
- o 1CV112E

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

ATTACHMENT A (PG 6 OF 15)
LOSS OF COMPONENT COOLING7 CONTROL PZR LEVEL:a. Check PZR level - AT PROGRAM
LEVEL

- a. Perform the following to maintain PZR at program level, while continuing with this procedure:
- o Cooldown per 1BwEP ES-0.2, NATURAL CIRCULATION COOLDOWN.
 - o Cooldown per 1BWOA PRI-10, LOSS OF RHR COOLING.
 - o Reduce RCP seal injection flow to between 6 GPM and 8 GPM per pump to minimize PZR level rise.

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

ATTACHMENT A (PG 7 OF 15)
LOSS OF COMPONENT COOLING**8 PREPARE CC SYSTEM FOR
RESTORATION:****a. Locate and isolate outleakage:**

- o Contact Rad Waste for sump indication
- o CC heat exchangers
- o Spent fuel pool heat exchangers
- o Waste gas compressor heat exchangers
- o Boron recycle evaporators
- o PD pump oil coolers
- o CC system relief valves
- o RCP motor bearing oil coolers
- o Containment penetration cooling coils
- o CC Rad Monitors:
 - o OPR09J (364' N17)
 - o 1PR09J (364' P15)
- o HRSS sample coolers
- o Aux building general area
- o Isolate CC system per
BwOP CC-8, ISOLATION OF CC
BETWEEN UNITS 1 AND 2

a. IF CC surge tank level is
less than 13%,
THEN isolate makeup by
locally closing:

- Demin water isolation
valve:
 - 1CC185 (426' N11)
- Manual isolation from
primary water valve:
 - 1CC184 (426' P11)

Step continued on next page

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

ATTACHMENT A (PG 8 OF 15)
LOSS OF COMPONENT COOLING

Step 8 (continued)

b. Locally isolate CC to inservice
letdown HX(s):

o Heat Exchanger 1A:

- 1CC9452A (383' U16)
- 1CC9452B (383' U16)

o Heat Exchanger 1B:

- 1CC9452C (383' U16)
- 1CC9452D (383' U16)

c. Check RCP thermal barrier
isolation valve - CLOSED:

- 1CC685

d. Check CC system - INTACT

e. Check SX flow - ESTABLISHED TO
ANY CC HEAT EXCHANGER

c. Close 1CC685.

d. RETURN TO Step 6
(Page 14).

e. Perform the following:

o Locally adjust SX outlet
from CC heat exchanger
valve(s) to maintain CC
temperature less than
105°F:

- o 1HS-SX048 (346' M16)
1SX007 (346' +12'
M16)
- o 0HS-SX051 (346' M16)
0SX007 (346' +12'
M16)

o Establish SX flow to U-0
CC HX from Unit-2 per
BwOP CC-10, ALIGNMENT OF
THE 0 CC PUMP TO A UNIT.

Step continued on next page

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

ATTACHMENT A (PG 9 OF 15)
LOSS OF COMPONENT COOLING

Step 8 (continued)

f. Check surge tank level -
GREATER THAN 35%

IF SX flow can NOT be
established to a CC heat
exchanger,
THEN RETURN TO Step 6
(Page 14).

f. Restore surge tank level
to greater than 35%:

- IF CC surge tank is
greater than 13%,
THEN unisolate make up
valves:
 - Demin water isolation
valve:
 - 1CC185 (426' N11)
 - Manual isolation from
primary water valve:
 - 1CC184 (426' P11)
- IF CC surge tank level
is less than 13%,
THEN perform BwOP CC-3,
COMPONENT COOLING SYSTEM
FILLING AND VENTING.

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

ATTACHMENT A (PG 10 OF 15)
LOSS OF COMPONENT COOLING9 START CC SYSTEM:a. Refer to the following to
establish CC flow:

- o Start ONE CC pump per BwOP
CC-1, COMPONENT COOLING WATER
SYSTEM STARTUP
- o Transfer Unit 0 CC heat
exchanger per BwOP CC-8,
ISOLATION OF CC BETWEEN UNITS
1 AND 2
- o Align Unit 0 CC pump breaker
per BwOP CC-10, ALIGNMENT OF
THE 0 CC PUMP TO A UNIT
- o Isolate affected train per
BwOP CC-14, *POST LOCA
ALIGNMENT OF THE CC SYSTEM

b. Check CC flow - RESTOREDb. RETURN TO Step 6
(Page 14).10 CHECK RH COOLING NOT REQUIRED:a. RH system - NOT PREVIOUSLY
RUNNING IN SHUTDOWN COOLINGa. GO TO ATTACHMENT C, Step
3 (Page 33) to restore CC
to RH heat exchanger(s).11 RESTORE CC TO AFFECTED
EQUIPMENT:

- o Spent fuel pool cooling
- o Waste gas compressor
- o Letdown heat exchanger per
BwOP CV-22, SWITCHING INSERVICE
LETDOWN HEAT EXCHANGERS
- o Seal water heat exchanger

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

ATTACHMENT A (PG 11 OF 15)
LOSS OF COMPONENT COOLING**12 ESTABLISH RCP THERMAL BARRIER
COOLING:****a. Check RCP temperatures:**

- RCP lower radial bearing temperatures - LESS THAN 225°F
- RCP seal outlet temperatures - LESS THAN 235°F

b. Open CC from thermal barrier isolation valve:

- 1CC685

a. Perform the following:

- 1) Close affected RCP seal injection isolation valve(s):
 - o 1CV8355A
 - o 1CV8355B
 - o 1CV8355C
 - o 1CV8355D
- 2) Open charging line containment isol valves:
 - 1CV8105
 - 1CV8106
- 3) Perform 1BwOA RCP-2, LOSS OF SEAL COOLING, ATTACHMENT A, while continuing with this procedure.
- 4) Establish letdown per BwOP CV-17, ESTABLISHING AND SECURING NORMAL AND RH LETDOWN FLOW.
- 5) **GO TO** Step 16c (Page 22).

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

ATTACHMENT A (PG 12 OF 15)
LOSS OF COMPONENT COOLING**13** ESTABLISH NORMAL CHARGING:

- a. Open charging line containment isolation valves:

- 1CV8105
- 1CV8106

- b. Check seal injection -
ESTABLISHED

- b. IF seal injection is isolated for outage activities, THEN perform the following:

- 1) Start a CENT CHG pump if necessary.
- 2) Establish letdown per BwOP CV-17, ESTABLISHING AND SECURING NORMAL AND RH LETDOWN FLOW, if desired.
- 3) **GO TO** Step 18 (Page 23).

- c. Throttle 1CV182 to maintain seal injection flow - BETWEEN 8 GPM AND 13 GPM

14 ESTABLISH LETDOWN:

- a. Establish letdown per BwOP CV-17, ESTABLISHING AND SECURING NORMAL AND RH LETDOWN FLOW

- a. Establish excess letdown per BwOP CV-15, EXCESS LETDOWN OPERATIONS.

15 RESTORE SEAL RETURN FLOW:

- a. Open seal water return containment isolation valves:

- 1CV8100
- 1CV8112

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

ATTACHMENT A (PG 13 OF 15)
LOSS OF COMPONENT COOLING16 ESTABLISH PZR PRESSURE CONTROL:a. Check RH system - NOT RUNNING
IN SHUTDOWN COOLINGa. IF RCP restart is NOT
desired,
THEN GO TO Step 17.b. Start ONE RCP per 1BwOA ESP-1,
REACTOR COOLANT PUMP STARTUP
DURING ABNORMAL CONDITIONSb. Start an RCP per BwOP
RC-1, STARTUP OF A RCP.c. Cycle PZR heaters to maintain
saturated conditions in the PZRd. Control PZR pressure using
normal sprayd. IF normal letdown is in
service,
THEN use aux spray to
control PZR pressure:1) Close normal PZR spray
valves:

- 1RY455B
- 1RY455C

2) Open PZR aux spray
valve:

- 1CV8145

3) Close charging to loop
isolation valves:

- 1CV8146
- 1CV8147

IF normal letdown is NOT
in service,
THEN use a PZR PORV while
maintaining PRT integrity.17 CHECK CENT CHG PUMP RECIRC
STATUS:a. Recirc flowpath - NOT
PREVIOUSLY ALIGNED TO HUTa. GO TO ATTACHMENT D, Step
4 (Page 37).

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

ATTACHMENT A (PG 14 OF 15)
LOSS OF COMPONENT COOLING**18** ALIGN CENT CHG PUMP SUCTION TO VCT:a. Check VCT level - GREATER THAN 37%

a. Perform the following:

1) Adjust VCT level.

2) Continue with Step 19 (Next Page).

WHEN VCT level is greater than 37%,
THEN do Steps 18b, 18c and 18d.b. Check VCT pressure - BETWEEN 15 PSIG AND 65 PSIG

b. Restore VCT pressure.

c. Open VCT outlet valves:

c. Locally open any closed valve:

- 1CV112B
- 1CV112C

- o 1CV112B (426' Q16 VCT valve aisle)
- o 1CV112C (426' Q16 VCT valve aisle)

d. Close RWST to CENT CHG pump suction valves:

d. Locally close any open valve:

- 1CV112D
- 1CV112E

- o 1CV112D (364' +12' U13 CWA)
- o 1CV112E (364' +10' U13 CWA)

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

ATTACHMENT A (PG 15 OF 15)
LOSS OF COMPONENT COOLING**19 RESTORE AUTO PZR LEVEL CONTROL:**a. Check PZR level at - PROGRAM
LEVELa. Adjust 1CV121 to restore
pressurizer level to
program level.Continue with Step 20.
WHEN pressurizer level is
at program level,
THEN do Steps 19b and 19c.b. Place 1CV121 controller in -
AUTOc. Place Master PZR level
controller in - AUTO**20 RETURN TO MAIN BODY, Step 3**
(Page 6)

-END-

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

ATTACHMENT B (PG 1 OF 6)
ABNORMAL CC SURGE TANK LEVEL

1 CHECK CC SURGE TANK LEVEL:

a. Surge tank level - DECREASING

a. GO TO Step 5 (Page 29).

b. Surge tank level - GREATER THAN
50%

b. Verify CC surge tank demin
water makeup valve is
OPEN:

· 1CC183

IF surge tank level is
less than 45%,
THEN verify CC surge tank
primary water makeup valve
is OPEN:

· 1CC182

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

ATTACHMENT B (PG 2 OF 6)
ABNORMAL CC SURGE TANK LEVEL**2 ISOLATE CC SYSTEM OUTLEAKAGE:**

a. Check for seal water heat exchanger leakage:

a. **GO TO** Step 2e (Next Page).

· VCT level - INCREASING UNEXPECTEDLY

b. Locally isolate seal water heat exchanger:

1) Close CC to seal water heat exchanger isolation valves:

· 1CC9449A (383' U17)
· 1CC9449B (383' U16)

2) Open seal water heat exchanger to top of VCT isolation valve:

· 1CV8482 (426' Q16 VCT valve aisle)

3) Close seal water heat exchanger outlet to bottom of VCT isolation valve:

· 1CV8484 (426' Q16 VCT valve aisle)

c. Initiate boration as necessary to maintain RCS temperature

d. **GO TO** Step 3 (Page 28)

Step continued on next page

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

ATTACHMENT B (PG 3 OF 6)
ABNORMAL CC SURGE TANK LEVEL

Step 2 (continued)

e. Locate and isolate outleakage:

- o Contact Rad Waste for sump indication
- o CC heat exchangers
- o Spent fuel pool heat exchangers
- o Waste gas compressor heat exchangers
- o Boron recycle evaporators
- o PD pump oil coolers
- o CC system relief valves
- o RCP motor bearing oil coolers
- o Containment penetration cooling coils
- o CC Rad Monitors:
 - o OPR09J (364' N17)
 - o 1PR09J (364' P15)
- o HRSS sample coolers
- o Aux building general area
- o Isolate CC system per BWOP CC-8, ISOLATION OF CC BETWEEN UNITS 1 AND 2

e. IF surge tank level can NOT be maintained greater than 13%, THEN GO TO ATTACHMENT A, Step 1 (Page 10).

REV. 100

COMPONENT COOLING MALFUNCTION
UNIT 1

1B-0A
PRI-6

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

ATTACHMENT B (PG 4 OF 6)
ABNORMAL CC SURGE TANK LEVEL

3 CHECK OUTLEAKAGE ISOLATED:

RETURN TO Step 1 (Page 25).

- Surge tank level - STABLE

-AND-

- Surge tank makeup valves -
CLOSED:

- 1CC182
- 1CC183

4 RETURN TO MAIN BODY, Step 2
(Page 3)

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

ATTACHMENT B (PG 5 OF 6)
ABNORMAL CC SURGE TANK LEVEL5 CHECK FOR LEAKAGE FROM RCP
THERMAL BARRIER:

a. Check either of the following:

- o RCP THERM BARR CC WTR FLOW
HIGH/LOW (1-7-E4) - LIT

-OR-

- o Seal injection flow - ANY
ABNORMALLY HIGH

b. Check seal injection flow -
BETWEEN 8 GPM AND 13 GPM PER
PUMPc. Check 1CC685 - CLOSEDd. Restore CC to unaffected RCPs
at Shift Manager's discretion:1) Locally close RCP thermal
barrier CC outlet valve to
isolate affected pump:

- o 1CC9496A (390' R12 OMB)
- o 1CC9496B (390' R1 OMB)
- o 1CC9496C (377' R4 OMB)
- o 1CC9496D (395' R11 OMB)

2) Check RCP thermal barrier
return valves - OPEN:

- : 1CC685
- : 1CC9438

e. RETURN TO MAIN BODY, Step 6
(Page 9)a. GO TO Step 6 (Next Page).b. Throttle 1CV121 and 1CV182
to maintain seal
injection.

c. Close 1CC685.

IF 1CC685 can NOT be
closed,
THEN close 1CC9438.IF NEITHER the 1CC685 or
the 1CC9438 can be closed,
THEN perform the
following:1) Deenergize 1CC685 at MCC
132X4 D4.2) Locally close 1CC685
(395' CWA P-24).d. RETURN TO MAIN BODY, Step
6 (Page 9).

2) Open valve(s).

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

ATTACHMENT B (PG 6 OF 6)
ABNORMAL CC SURGE TANK LEVEL

6 ISOLATE CC SYSTEM INLEAKAGE:a. Check inleakage - FROM RCS:

- CC heat exchanger outlet radiation - AT ALERT ALARM OR INCREASING:

- 1PR09J Grid 1 1PS109 (UNIT 1)
- 0PR09J Grid 1 0PS109 (UNIT 0)

b. Notify Chemistry to sample CC system for activity

c. Locate and isolate inleakage from heat exchanger(s):

- Letdown
- Excess letdown
- RH
- HRSS sample coolers

7 CHECK INLEAKAGE ISOLATED:

- Surge tank level - STABLE

-AND-

- Surge tank drain valves - CLOSED:

- 1CC2020A (426' M10)
- 1CC2020B (426' M10)

**8 RETURN TO MAIN BODY, Step 6
(Page 9)**

a. Perform the following:

1) Locate and isolate inleakage:

- Surge tank makeup
- Surge tank loop seal fill
- CC heat exchanger(s)

2) GO TO Step 7.

RETURN TO Step 5 (Previous Page).

-END-

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

ATTACHMENT C (PG 1 OF 4)
LOSS OF CC WHEN RH IN SHUTDOWN COOLING

1 CHECK RH STATUS:

- a. Close RH to CV system letdown flow control valve:

o 1CV128

- a. Locally close RH letdown isolation valve(s):

- o 1RH8734A (364' S14 CWA
25' West of door)
o 1RH8734B (364' V14 CWA
6' East of door)

- b. RH pump discharge temperature -
GREATER THAN 200°F

- b. Continue with Step 2 (Next Page).

IF RH pump discharge temperature increases greater than 200°F, THEN do Steps 1c, 1d, 1e and 1f.

- c. Stop the running RH pump

- d. Close affected RH heat exchanger flow control valve:

- o 1RH606 (1A RH HX)
o 1RH607 (1B RH HX)

- e. Close affected CC to RH heat exchanger isolation valve:

- o 1CC9412A (1A RH HX)
o 1CC9412B (1B RH HX)

- f. Establish an alternate method of core cooling per 1BwOA PRI-10, LOSS OF RHR COOLING while continuing with this procedure

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

ATTACHMENT C (PG 2 OF 4)LOSS OF CC WHEN RH IN SHUTDOWN COOLING2 RESTORE COMPONENT COOLING:a. Check CC PUMP SUCTION TEMP HIGH
(1-2-D5) - NOT LIT

b. Start a standby CC pump

a. **GO TO ATTACHMENT A, Step
4 (Page 12).**

b. Perform the following:

· Place ALL CC pumps in
Pull Out.· **GO TO ATTACHMENT A,
Step 4 (Page 12).**

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

ATTACHMENT C (PG 3 OF 4)LOSS OF CC WHEN RH IN SHUTDOWN COOLING**3 RESTORE RH COOLING:**

a. Check RCS hot leg temperature -
LESS THAN 260°F

a. **GO TO** Step 3d.

b. Place the previously
non-running RH train in
shutdown cooling per - BwOP
RH-6, PLACING THE RH SYSTEM IN
SHUTDOWN COOLING

b. IF both RH trains were
previously running,
THEN GO TO Step 3d.

c. **RETURN TO** procedure and step
in effect

d. Align previously running RH
train:

1) Locally close RH heat
exchanger CC outlet flow
control valve:

- o 1CC9507A (1A RH HX)
(364' +10' S17)
- o 1CC9507B (1B RH HX)
(364' +10' V17)

2) Open CC to RH heat exchanger
isolation valve:

- o 1CC9412A (1A RH HX)
- o 1CC9412B (1B RH HX)

Step continued on next page

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

ATTACHMENT C (PG 4 OF 4)
LOSS OF CC WHEN RH IN SHUTDOWN COOLING

Step 3d (continued)

3) Concurrently perform the following:

a) Slowly open CC to RH heat exchanger flow control valve to establish cooling:

- o 1CC9507A (1A RH HX)
(364' +10' S17)
- o 1CC9507B (1B RH HX)
(364' +10' V17)

b) Locally check CC to RH heat exchanger flow - NO SIGNS OF WATER HAMMER4) Check desired CC flow - RESTORED TO RH HEAT EXCHANGERe. Place RH train in service per - BWOP RH-6, PLACING THE RH SYSTEM IN SHUTDOWN COOLING4 RETURN TO STEP IN EFFECT:a. Check this attachment entered from - MAIN BODY, Step 2a RNOb. RETURN TO MAIN BODY, Step 2b
(Page 4)

b) Maintain current RH heat exchanger CC outlet flow until water hammer stops.

4) Do NOT proceed until desired CC flow is established to the RH heat exchanger.a. RETURN TO ATTACHMENT A, Step 11 (Page 19).

-END-

REV. 100	COMPONENT COOLING MALFUNCTION UNIT 1	1BMOA PRI-6
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p align="center"><u>ATTACHMENT D (PG 1 OF 4)</u> <u>ALTERNATE CENT CHARGING SUCTION ALIGNMENT</u></p> <p align="center">***** * <u>NOTE</u> * * Steps 1 and 2 align CENT CHG pump * * suction to the RWST and recirc flow * * to the HUT to cool CV pump suction. * *****</p> <p>1 <u>ALIGN CV PUMP MINIFLOW TO VCT:</u></p> <p>a. Locally open seal water HX outlet to VCT isolation valve:</p> <p>· 1CV8482 (426' Q16 VCT valve aisle)</p> <p>b. Locally close seal water HX to bottom of VCT isolation valve:</p> <p>· 1CV8484 (426' Q16 VCT valve aisle)</p>		

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

ATTACHMENT D (PG 2 OF 4)ALTERNATE CENT CHARGING SUCTION ALIGNMENT2 ALIGN CENT CHG PUMP RECIRC FLOW
TO HUT VIA VCT AND RMCS:

- a. Obtain key and locally open
recycle holdup tank makeup
isolation valve:
 - 1CV8553 (364' +20' S13 CWA)
- b. Place MAKEUP CONTROL switch
to - OFF
- c. Place the following RMCS valve
control switches to - CLOSE:
 - 1CV110A
 - 1CV111A
 - 1CV111B
- d. Locally open RWST and recycle
holup tank makeup isolation
valve:
 - 1CV8432 (426' Q16 VCT valve
aisle)
- e. Cycle 1CV110B to maintain VCT
level - BETWEEN 20% AND 95%

e. IF VCT level can NOT be
maintained less than 95%,
THEN locally open VCT
drain isolation valve as
necessary:

- 1CV8419 (426' Q16 VCT
valve aisle)

3 RETURN TO ATTACHMENT A, Step 7
(Page 15)

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

ATTACHMENT D (PG 3 OF 4)
ALTERNATE CENT CHARGING SUCTION ALIGNMENT

4 LOCALLY RESTORE CENT CHG PUMP
RECIRC FLOW TO VCT OUTLET:

a. Open seal water heat exchanger
outlet to bottom of VCT
isolation valve:

· 1CV8484 (426' Q16 VCT valve
aisle)

b. Close seal water heat exchanger
outlet to top of VCT isolation
valve:

· 1CV8482 (426' Q16 VCT valve
aisle)

c. Close RWST and HUT isolation
valves:

· 1CV8432, RWST and recycle
holdup tank makeup isolation,
(426' Q16 VCT valve aisle)

· 1CV8553, recycle holdup tank
makeup isolation, (364' +20'
S13 CWA)

d. Check VCT drain isolation
valve - CLOSED:

· 1CV8419 (426' Q16 VCT valve
aisle)

d. Close valve when desired
VCT level is attained.

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

ATTACHMENT D (PG 4 OF 4)
ALTERNATE CENT CHARGING SUCTION ALIGNMENT

5 RESTORE MAKEUP CONTROL SYSTEM:

a. Place RMCS valve control
switches to - AUTO:

- . 1CV110A
- . 1CV110B
- . 1CV111A
- . 1CV111B

b. Check boric acid flow
controller set for - GREATER
THAN CURRENT RCS BORON
CONCENTRATION

b. Adjust flow controller
setting.

c. Check boric acid flow
controller in - AUTO

c. Place controller in AUTO.

d. Place MODE SELECT switch in -
AUTO

e. Place MAKEUP CONT switch to -
START

6 RETURN TO ATTACHMENT A, Step 18
(Page 23)

-END-

IF SURGE TANK LEVEL CAN NOT
BE MAINTAINED GREATER THAN 13%
OR CC PUMP SUCT TEMP HIGH (1-2-D5)
ANNUNCIATES,
THEN PERFORM THE FOLLOWING:

1. Place ALL CC pumps
in PULL OUT.
2. Trip the reactor.
3. Trip ALL RCPs.
4. Concurrently perform the following:
 - 1BwEP-0, REACTOR TRIP OR
SAFETY INJECTION
 - ATTACHMENT A Step 2 (Page 10).

JOB PERFORMANCE MEASURE

TASK TITLE: Drain the Pressurizer Relief Tank (PRT)

JPM No.: N-119

REV: 2a

TPO No.: IV.C.RY-03

K&A No.: (007A1.01)

TASK No.: RY-003

K&A IMP: 2.9/3.1

TRAINEE: _____

EVALUATOR: _____

DATE: _____

The Trainee: PASSED _____ this JPM.

TIME STARTED: _____

FAILED _____

TIME FINISHED: _____

CRITICAL ELEMENTS: (*) 3,4,6,7

JPM TIME: _____ MINUTES

CRITICAL TIME: NA

APPROX COMPLETION TIME: 10 MINUTES

EVALUATION METHOD:

☒ PERFORM
☐ SIMULATE

LOCATION:
☐ IN PLANT
☒ SIMULATOR

GENERAL REFERENCES:

1. BwOP RY-4 Rev. 8, Draining the Pressurizer Relief Tank

MATERIALS:

None

TASK STANDARDS:

1. Decrease PRT level to $\leq 80\%$, but $\geq 75\%$.
2. Restores PRT Pressure to > 0 psig, if reduced to ≤ 0 psig.
3. Demonstrates the use of good Core Work Practices.

TASK CONDITIONS:

1. You are the Assist NSO.
2. The Unit is at power.

INITIATING CUES:

1. PRT level has risen to 81% due to inadvertent opening of a PZR PORV. The US has directed you to lower PRT level to $78-79\%$.

PERFORMANCE CHECKLIST

STANDARDS

SAT UNSAT N/A

RECORD START TIME _____

Note: Examinee may refer to BWAR 1-12-A7 "PRT LEVEL HIGH LOW." Actions here will direct 1) Checking PORVs and Safety Valves NOT open, 2) Drain the PRT per BwOP RY-4, 3) Check RCS leakage. It is not required for the examinee to perform these actions, but is acceptable if actions are completed.

- | | | | | | |
|-----|---|---|--------------------------|--------------------------|--------------------------|
| 1. | Refer to BwOP RY-4,
"Draining the PRT." | Locate and Open BwOP RY-4. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | (CUE: All Prerequisites,
Precautions,
Limitations and
Actions have been
met.) | | | | |
| 2. | Verify/ Open 1AOV-RY8033,
Nitrogen Supply to PRT
Isolation valve. | At 1PM05J, VERIFY/OPEN:
• 1AOV-RY8033 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| *3. | Verify/ Open 1RE1003, RCDT
Pumps Discharge Cnmt
Isolation Valve. | At 1PM11J, OPEN:
• 1RE1003 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| *4. | Open 1AOV-RY8031, PRT
Drain Isolation Valve. | At 1PM05J, OPEN:
• 1AOV-RY8031 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. | Verify/Start 1RE01PA/B,
RCDT Pump. | At 1PM05J:
• VERIFY/START 1RE01PB.

• VERIFY PRT pressure
remains > 0 psig on
1PI-469. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

NOTE: The following step will be CRITICAL, if during the lowering of PRT level, the PRT pressure drops to ≤ 0 psig and the operator does NOT stop draining the PRT.

PERFORMANCE CHECKLIST

*6. Verify PRT Pressure remains > 0 psig.

STANDARDS

- On 1PM05J:
- o Monitors PRT pressure indicator 1PI-469
 - Ensures PRT pressure remains > 0 psig while draining.

SAT UNSAT N/A

☐ ☐ ☐

If PRT pressure falls to 0 psig, then immediately:

- Stops draining PRT by stopping the running RCDT pump.
- Allows PRT pressure to rise to ~3 psig, before restarting RCDT pump.

*7. Close 1AOV-RY8031, PRT Drain Isolation Valve, when desired level is reached.

When PRT level is between 75-80%, on 1PM05J, takes control switch for 1AOV-RY8031 to CLOSE.

☐ ☐ ☐

8. Stop running RCDT pump.

On 1PM05J, VERIFY/STOP RCDT pump when 1AOV RY-8031 CLOSES:

- o 1RE01PA
- 1RE01PB

☐ ☐ ☐

(CUE:) THIS COMPLETES THIS JPM.

RECORD STOP TIME _____

COMMENTS:

TASK CONDITIONS:

1. You are the Assist NSO.
2. The Unit is at power.

INITIATING CUES:

1. PRT level has risen to 81% due to inadvertent opening of a PZR PORV. The US has directed you to lower PRT level to 78-79%.

SIMULATOR SETUP INSTRUCTIONS

JPM NO: N-119

REQUIRED SIMULATOR MODE(S): At power, steady state

MALFUNCTION #'S: N/A

COMMENTS:

- 1) Vent PRT, then start filling PRT.
- 2) Fill PRT to 81% level.
- 3) Ensure RCDT pump controls in AUTO on 1PM05J.
- 4) Ensure 1RE1003 is closed and in AUTO on 1PM11J.
- 5) Stop PRT Venting.

DRAINING THE PRESSURIZER RELIEF TANK

A. STATEMENT OF APPLICABILITY

This procedure outlines the steps necessary to drain the Pressurizer Relief Tank (PRT).

B. REFERENCES

1. Station procedures:
 - a. BwOP RE-1, Reactor Coolant Drain Tank Pump Startup.
 - b. BwOP RE-2, Reactor Coolant Drain Tank Pump Shutdown.
2. Station Drawing: M-60/135 Sheet 6, Diagram of Reactor Coolant.

C. PREREQUISITES

1. RCDT pumps are available for operation.
2. The Nitrogen header is capable of supplying the PRT.
3. Sufficient storage capacity exists in the Recycle Holdup Tanks.
4. Notify the Radiation Protection Department that this procedure is being performed and the purpose of the performance.

D. PRECAUTIONS

None.

E. LIMITATIONS AND ACTIONS

1. Water level in the Pressurizer Relief Tank should be maintained between 59% and 88% in Modes 1-4.
2. Control PRT draining such that PRT pressure does not decrease below 0 psig.
3. Frequent need for draining the PRT indicates excessive leakage into the tank. Check for possible sources of in leakage:
 - a. Primary Water Make-Up.
 - b. Pressurizer Safeties and Reliefs.
 - c. Relief Valves.
 - 1) Letdown relief.
 - 2) RCP seal return line relief (from RCP seals or excess letdown).
 - d. RCS Valve leakoff.

F. MAIN BODY

1. VERIFY/OPEN, at _PM05J, _AOV-RY8033, N₂ to PRT Isol Vlv.
2. VERIFY/OPEN, at _PM11J, _RE1003, RCDT Pumps Discharge Cnmt Isol. Vlv.
3. OPEN, at _PM05J, _AOV-RY8031, PRT Drain Isol. Vlv.
4. VERIFY/START _RE01PA/B, RCDT Pump, at _PM05J.

NOTE

The rate at which the PRT is drained is greater than the rate at which N₂ is supplied. Verify that PRT pressure remains above 0 psig as indicated on _PI-469 at _PM05J.

5. IF the PRT pressure reaches approximately 0 psig, PERFORM the following:
 - a. STOP _RE01PA/B, RCDT Pump, at _PM05J.
 - b. AFTER PRT pressure is restored to approximately 3 psig, START _RE01PA/B, RCDT Pump, at _PM05J.
 - c. CONTINUE with the draindown of the PRT UNTIL the desired level is reached.
6. WHEN desired level is reached, CLOSE _AOV-RY8031, Drn. Isol. Vlv. at _PM05J.
7. VERIFY/STOP _RE01PA/B when _AOV-RY8031 closes.

(Final)

JOB PERFORMANCE MEASURE

TASK TITLE: Restore from Auxiliary Feedwater Check Valve Leakage

JPM No.: N-57a

REV: 0

TPO No.:

K&A No.: (035K1.01)

TASK No.:

K&A IMP: 4.2/4.5

TRAINEE: _____

EVALUATOR: _____

DATE: _____

The Trainee: PASSED _____ this JPM.

FAILED _____

TIME STARTED: _____

TIME FINISHED: _____

CRITICAL ELEMENTS: (*)4

JPM TIME: _____ MINUTES

CRITICAL TIME: NA

APPROX COMPLETION TIME 8 MINUTES

EVALUATION METHOD:

☒ PERFORM
☐ SIMULATE

LOCATION:
☐ IN PLANT
☒ SIMULATOR

GENERAL REFERENCES:

1. 1BWOA SEC-7, Rev. 4A, Auxiliary Feedwater Check Valve Leakage

MATERIALS:

Copy of 1BWOA SEC-7.

TASK STANDARDS:

1. Recover AFW line temperatures.
2. Demonstrates the use of good Core Work Practices (CWP).

TASK CONDITIONS:

1. You are the Assist NSO.
2. Unit 1 is at 100% power.

INITIATING CUES:

1. Auxiliary Feedwater line temperature failed to return to normal following a Train A AFW flow path operability non routine surveillance. 1BWOA SEC-7, "Auxiliary Feedwater Check Valve Leakage" is in progress to address suspected check valve leakage on the Train A, loop 1B injection line. The crew has completed performing step 2. AFW piping has cooled to <130°F. You have been directed by the US to complete steps 3&4 of 1BWOA SEC-7.

PERFORMANCE CHECKLIST

STANDARDS

SAT UNSAT N/A

RECORD START TIME _____

Note: When examinee locates correct procedure, provide a copy for placekeeping.

- | | | |
|---|---|---|
| <p>1. Refer to 1BWOA SEC-7.</p> <p>(CUE: US acknowledges entry into 1BWOA SEC-7. SM has previously evaluated for GSEP.)</p> <p>Affected temp is 98°F if asked)</p> | <p>Locate and Open 1BWOA SEC-7.</p> <p>o Inform US of entry</p> | <p><input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/></p> |
| <p>2. Verify 1AF013B Closed</p> | <p>Verify closed affected SG isolation valve:</p> <p>• 1AF013B</p> | <p><input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/></p> |
| <p>*3. Start 1A AFW Pump</p> <p>(CUE: All Prereqs, precautions, Limits and actions of BwOP AF-5 are met. An operator is standing by locally and ready to start 1A AFW Pump. Through step 9 of AF-5 is complete. Step 10 is NA per SM.</p> <p>(CUE: LOCAL/REMOTE switch at 1PL04J is in REMOTE)</p> <p>(CUE: Recirc flow is 98 gpm)</p> <p>(CUE: Local operator will complete AF-5T1 if asked)</p> | <p>Start 1A AFW Pump per BwOP AF-5</p> <p>o Review Prereqs, precautions, limits and actions</p> <p>• Start the 1A AFW Pump from 1PM06J</p> <p>o Verify recirc flow >84 gpm locally at FI-AF095</p> <p>o Perform applicable steps of AF-5T1</p> | <p><input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/></p> |
| <p>*5. Establish 15-20 gpm AFW flow</p> <p>(CUE: Operators will not be able to control AF013B valve position well enough to limit AF Flow to 15-20 gpm and will have to throttle AF005B to maintain this flow rate.)</p> <p>(CUE: Use time compression if flow is stabilized.</p> | <p>o Throttle open 1AF013B</p> <p>Identify failure of 1AF013B to adequately control flow rate to 15-20 gpm.</p> <p>o Open 1AF013B</p> <p>• throttle 1AF005B to establish 15-20 gpm flow rate.</p> <p>o Maintain flow for a minimum of 10 minutes.</p> | <p><input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/></p> |

PERFORMANCE CHECKLIST

*6. Shutdown the 1A AFW Pump

(CUE: AF 1A lube oil pump is running.

(CUE: AF004A is OPEN and in AUTO at local control panel)

*7. Restore AF Alignment

(CUE: Crew will wait 6 hours to check AF piping <130°F. The JPM should be ended here.

STANDARDS

Locate and open BwOP AF-6 and shutdown the 1A AFW Pump.

- Direct local start of lube oil pump
- Place control switch at 1PM06J to NORM/AFTER TRIP
- o Verify open AF004A

AT 1PM06J:

- Verify 1AF013B OPEN
- Set 1AF05B Potentiometer at 6.8
- o Inform US of need to wait 6 hours to recheck AF Temps.

SAT

UNSAT

N/A

☐

☐

☐

☐

☐

☐

(CUE:) THIS COMPLETES THIS JPM.

RECORD STOP TIME _____

COMMENTS:

TASK CONDITIONS:

1. You are the Assist NSO.
2. Unit 1 is at 100% power.

INITIATING CUES:

1. Auxiliary Feedwater line temperature failed to return to normal following a Train A AFW flow path operability non routine surveillance. 1BWOA SEC-7, "Auxiliary Feedwater Check Valve Leakage" is in progress to address suspected check valve leakage on the Train A, loop 1B injection line. The crew has completed performing step 2. AFW piping has cooled to 98°F. You have been directed by the US to complete steps 3&4 of 1BWOA SEC-7.

SIMULATOR SETUP INSTRUCTIONS

JPM NO: N-57

REQUIRED SIMULATOR MODE(S): N/A

MALFUNCTION #'S: N/A

COMMENTS:

Close 1AF013B (Train A, Loop 1B AF isolation valve)

Start 1A AFW Pump Aux Oil Pump. Ensure run light lit on 1PM06J

When AF013B begins to open, override CS to OPEN (1PM06J(A1) or (ZDI1AF013B) to force AF flow > 20 gpm. DELETE override when this is accomplished. REPEAT if further attempts at 1AF013B control is made. The object is to NOT allow control at 15-20 gpm and force throttling of 1AF005B.

A. PURPOSE

This procedure provides actions required to prevent steam binding of AF Pumps and potential waterhammer of AF piping due to check valve leakage.

B. SYMPTOMS OR ENTRY CONDITIONS

- 1) The following conditions may cause entry into this procedure:
 - o AF piping temperature greater than 130°F
 - o AF pump discharge temperature greater than 130°F

REV. 4A	*AUXILIARY FEEDWATER CHECK VALVE LEAKAGE UNIT 1	1Bw0A SEC-7
---------	---	----------------

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
	<p>*****</p> <p>* NOTE *</p> <p>* With this procedure in effect, *</p> <p>* notify the Station Director who will *</p> <p>* evaluate for GSEP conditions per *</p> <p>* BwZP 200-1, BRAIDWOOD EMERGENCY *</p> <p>* ACTION LEVELS. *</p> <p>*****</p>	
	<p>DETERMINE AF LINE WITH LEAKAGE</p>	
	<p>a. Locally check AF piping temperatures - <u>ANY GREATER THAN 130°F</u>:</p> <p>o Train A:</p> <p>o 1AF005A (364' P10)</p> <p>o 1AF005B (364' P10)</p> <p>o 1AF005C (364' P10)</p> <p>o 1AF005D (364' P10)</p> <p>o Train B:</p> <p>o 1AF005E (364' P10)</p> <p>o 1AF005F (364' P10)</p> <p>o 1AF005G (364' P10)</p> <p>o 1AF005H (364' P10)</p>	<p>a. RETURN TO procedure and step in effect.</p>

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

UAAA
 , CAUTION ,
 , Closing an AF013 valve makes the ,
 , associated AF pump inoperable ,
 AA

ISOLATE AFFECTED LINE(S)

a. Refer to Tech Spec 3.7.1.2
(ITS 3.7.5)

b. Close affected SG AF isol
valve(s):

o **Train A:**

- o 1AF013A
- o 1AF013B
- o 1AF013C
- o 1AF013D

o **Train B:**

- o 1AF013E
- o 1AF013F
- o 1AF013G
- o 1AF013H

c. Allow piping to cool to less
than 130°F before continuing
with this procedure:

• Affected AF piping
temperatures:

o **Train A:**

- o 1AF005A (364' P10)
- o 1AF005B (364' P10)
- o 1AF005C (364' P10)
- o 1AF005D (364' P10)

o **Train B:**

- o 1AF005E (364' P10)
- o 1AF005F (364' P10)
- o 1AF005G (364' P10)
- o 1AF005H (364' P10)

• Affected AF pump discharge
temperatures:

- o 1TI-AF126 (1A AF Pp room)
- o 1TI-AF127 (1B AF Pp room)

c. IF piping temperature will
NOT decrease,
THEN close the associated
1AF004 valve.

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

3 FLUSH AUXILIARY FEEDWATER PIPING
ON AFFECTED TRAINo **Train A:**

- 1) Check AF isolation valves -
-
- CLOSED
- :

- . 1AF013A
- . 1AF013B
- . 1AF013C
- . 1AF013D

- 1) Manually close valve(s).

- 2) Start AF pump 1A per BwOP
-
- AF-5, MOTOR DRIVEN AUXILIARY
-
- FEEDWATER PUMP _A STARTUP ON
-
- RECIRC with the discharge
-
- valve -
- OPEN
- :

- . 1AF004A

- 3) Establish
- 15 GPM
- to
- 20 GPM
-
- flow by throttling the AF
-
- valves for the affected
-
- line(s):

- o 1AF013A
- o 1AF013B
- o 1AF013C
- o 1AF013D

- 3) Throttle flow with the
-
- associated AF005 valve.

- 4) Maintain flow for a minimum
-
- of -
- 10 MINUTES

- 5) Shutdown AF pump 1A per
-
- BwOP AF-6, MOTOR DRIVEN
-
- AUXILIARY FEEDWATER PUMP _A
-
- SHUTDOWN

Step continued on next page

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

Step 3 (continued)

6) Check AF alignment - RESTORED:a) AF isolation valves - OPEN:

- . 1AF013A
- . 1AF013B
- . 1AF013C
- . 1AF013D

a) Manually open valve(s).

b) AF005A-D flow control potentiometers at - 6.8

b) Manually adjust valve(s).

7) After 6 HOURS locally check AF piping temperature - LESS THAN 130°F:

7) RETURN TO Step 2 (Page 3).

- . 1AF005A (364' P10)
- . 1AF005B (364' P10)
- . 1AF005C (364' P10)
- . 1AF005D (364' P10)

o **TRAIN B:**1) Check Train B AF isolation valves - CLOSED:

1) Manually close valve(s).

- . 1AF013E
- . 1AF013F
- . 1AF013G
- . 1AF013H

2) Start AF pump 1B per BwOP AF-7, AUXILIARY FEEDWATER PUMP B (DIESEL) STARTUP ON RECIRC with the discharge valve - OPEN:

- . 1AF004B

Step continued on next page

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

Step 3 (continued)

- 3) Establish 15 GPM to 20 GPM flow by throttling the AF valves for the affected lines:

- o 1AF013E
- o 1AF013F
- o 1AF013G
- o 1AF013H

- 4) Maintain flow for a minimum of - 10 MINUTES

- 5) Shutdown AF pump 1B per BwOP AF-8, AUXILIARY FEEDWATER PUMP _B (DIESEL) SHUTDOWN

- 6) Check AF alignment - RESTORED:

- a) AF isolation valves - OPEN:

- . 1AF013E
- . 1AF013F
- . 1AF013G
- . 1AF013H

- b) Set AF005E-H flow control potentiometers at - 6.8

- 7) After 6 HOURS locally check AF piping temperatures - LESS THAN 130°F:

- . 1AF005E (364' P10)
- . 1AF005F (364' P10)
- . 1AF005G (364' P10)
- . 1AF005H (364' P10)

- 3) Throttle flow with the associated AF005 valve.

- a) Manually open valve(s).

- b) Manually adjust valve(s).

- 7) RETURN TO Step 2 (Page 3).

4 RETURN TO PROCEDURE AND STEP IN EFFECT

-END-

MOTOR DRIVEN AUXILIARY FEEDWATER PUMP _A STARTUP ON RECIRC

A. STATEMENT OF APPLICABILITY

This procedure outlines the steps necessary to startup the Motor Driven Auxiliary Feedwater Pump.

B. REFERENCES

1. Station Procedures:
 - a. BwOP AF-3, Filling and Venting the Auxiliary Feedwater System.
 - b. BwVS 4.10.4-1.
 - c. _BwOL 3.7.5, LCOAR-Plant Systems-Auxiliary Feedwater System.
 - d. BwOP AF-5T1, Motor Driven Auxiliary Feedwater Pump Operating Log.
2. Station Drawings:
 - a. M-37/122, Auxiliary Feedwater System.
 - b. M-42-3, Essential Service Water.
 - c. 20E-1/2-4030AF01, 02, 03, 12, 13, & 17.
 - d. 20E-1/2-4030AF01, 05, 08, 11, & 60.
3. Tech Specs:
 - a. 3.7.5
 - b. 3.7.6
4. UFSAR; Chapter 10.4.9.
5. Station Commitments:
 - a. 020-251-83-171, Step E.1.
 - b. 456-200-89-15202, Step F.8.
 - c. 456-100-98-0020104, BwOP AF-5T1 AF Pump Recirc Flow.

C. PREREQUISITES

1. Auxiliary Feedwater System has been filled and vented in accordance with BwOP AF-3.
2. CST has sufficient level to support Auxiliary Feedwater Pump Operation.
3. Essential Service Water System is capable of supporting Auxiliary Feedwater Pump Operation.
4. Obtain a copy of BwOP AF-5T1.

D. PRECAUTIONS

1. AF Pump operation, at minimum flow rates, should be minimized, to prevent pump damage.
2. At low S/G pressures, the Aux Feedwater Pump Discharge Valves to the S/G's may not fully close. When the Aux Feedwater Pumps are started, water may enter the S/G's.
3. If water is to be added to the S/G's, VERIFY _AF013A/B/C/D OPEN prior to opening _AOV-AF004A to prevent possible pressure oscillations which may trip the _A Aux Feed Pump.
4. If CST level is less than 66%, possible suction transients during pump startup could cause a pump trip or SX switchover.
5. In MODES where the AF System is not required by Tech Specs, DE-ENERGIZE the breakers for _AF017A/B and _AF006A/B to prevent SX switchover in these MODES.

E. LIMITATIONS AND ACTIONS

- *
1. The Auxiliary Feedwater Pumps are not to be utilized for normal startup and shutdown of the Unit.
 2. When pump is being operated in the recirculation MODE for test purposes, either _AOV-AF004A, A AF Pp Dsch Vlv, or _MOV-AF013A/B/C and D, _S/G A, B, C, and D Isol Vlv's, SHALL be used for discharge isolation. Closure of either _AOV-AF004A or _MOV-AF013A/B/C/D makes the AF Train INOPERABLE. Notify the Shift Manager to initiate LCOAR _BwOL 3.7.5 when any of these valves are closed.

- E. 3. Do NOT exceed Auxiliary Feed Pump starting duties.
- a. A motor is allowed 2 starts without any conditions if the first start is at a Cold Start condition. A Cold Start is defined as follows: The motor has SAT IDLE for GREATER THAN 3 hours.
 - b. All other starts must meet Hot Start conditions prior to attempting a start. A Hot Start is defined as follows: The motor has RUN for GREATER THAN 20 minutes OR, the motor has SAT IDLE for GREATER THAN 45 minutes.
 - c. Starts should not exceed 8 per day.
4. Maximum bearing oil temperatures are: Bearing Inlet 128°F, Oil Drain 155°F.
5. The minimum level required by Tech Spec 3.7.6 in the Condensate Storage Tanks is 66%.
6. The _A Aux Feed Pump will auto start and _AF004A, AF Pump _A Dsch Test Valve, will open on any of the following:
- a. Lo-Lo S/G Level.
 - b. SI Initiation.
 - c. Reactor Coolant Pump bus undervoltage.
 - d. AMS Initiation.
 - e. Undervoltage condition on BUS _41 following the start of the _A D/G and its sequencer.
7. A low pump suction pressure of 18.1 psia, in coincidence with any of the following will open _MOV-AF006A and _MOV-AF017A, _A Aux Feed Pump SX Suction Valves:
- a. Lo-Lo S/G Level.
 - b. SI Initiation.
 - c. Reactor Coolant Pump bus undervoltage.

- E.
8. A low pump suction pressure of 16.5 psia will trip the _A Aux Feed Pump. The pump will restart when the pressure returns to normal if any auto start signal is still present.
 9. At least two independent Steam Generator Auxiliary Feedwater Pumps and associated flowpaths SHALL per operable, as per Tech Spec LCO 3.7.5 and 3.7.6 in MODES 1, 2, and 3 with:
 - a. ONE operable motor driven Aux Feed Pump.
 - b. ONE operable diesel driven Aux Feed Pump with an operable Diesel Fuel Supply System consisting of a day tank containing a minimum of 420 gallons (74% level in the day tank).
 10. When starting the _A Aux Feed Pump in Modes when not required to be operable, VERIFY that _MOV-AF006A and/or _MOV-AF017A, Auxiliary Feedwater pp _A SX Suction Valves, are DEENERGIZED CLOSED. This will prevent injecting SX water into the Steam Generators if a spurious Aux Feed Actuation occurs.
 11. BwOP AF-5T1 must be performed and forwarded to the AF System Engineer, SED Secondary Group, for ALL pump starts, regardless of run duration.
 12. Starting duties for _MOV-AF013A/B/C/D/E/F/G/H is a maximum of 5 times in a one minute period.

F. MAIN BODY

1. VERIFY/LOCKED OPEN _SX2103A, Motor Driven AF Pp _A Oil Clr Inlet Isol Vlv.
2. VERIFY/LOCKED OPEN _SX2102, Motor Driven AF Pp _A Oil Clr Outlet Isol Vlv.
3. VERIFY/THROTTLED 1/4 turn open _AF018A, SX Hdr to AF Pump _A Tell Tale Drain Isol.
4. VERIFY/OPEN _AF022A, AF Pump _A Cnds Recirc Vlv.
5. VERIFY/LOCK OPEN _AF009A, Cnds Recirculating Man Isol for Pp _A.
6. CHECK lube oil inventory in the motor bearings and pump sump.
7. START _AF01PA-A, _A Aux FW Pp Lube Oil Pp, at the Local Control Panel to verify operation and prime bearings.
- * 8. VERIFY Lube Oil Filter differential pressure less than 4 psid.

NOTE

The Shift Manager must be notified to initiate LCOAR _BwOL 3.7.5, when _AOV-AF004A or _MOV-AF013A/B/C/D is closed.

NOTE

The UNIT Supervisor SHALL determine whether step F.9 or F.10 will be performed. PERFORM step F.9 only when it is desired to pressurize the entire Auxiliary Feedwater header. PERFORM step F.10 for all other recirc operations. If the AF pump is being started to inject into the SGs during emergency conditions, then steps F.9 and F.10 should NOT be performed.

9. CLOSE _MOV-AF-13A/B/C and D, Steam Gen A, B, C, and D Isol Vlvs.
10. CLOSE _AOV-AF004A, _A AF Pp Dsch Vlv.

- F. 11. To start _AF01PA, _A Auxiliary Feedwater Pump, from the Control Room, PERFORM the following:
- a. VERIFY/PLACE the REMOTE/LOCAL Selector Switch to REMOTE at _PL04J.
 - b. START _AF01PA, _A Auxiliary Feedwater Pump, at _PM06J.
12. To start _AF01PA, _A Auxiliary Feedwater Pump, from the Remote Shutdown Panel, PERFORM the following at _PL04J:
- a. PLACE the REMOTE/LOCAL Selector Switch to LOCAL.
 - b. START _AF01PA, _A Auxiliary Feedwater Pump.
13. VERIFY Auxiliary Feedwater Pump Recirc Flow is ≥ 85 gpm, locally at _FI-AF095.
14. VERIFY _SOV-SX101A, _A AF Pp Oil Clr Outlet Vlv OPENS by MONITORING Motor and Pump Bearing temperatures locally to verify adequate cooling water flow.
15. PERFORM the applicable steps of BwOP AF-5T1, Motor Driven Auxiliary Feedwater Pump Operating Log, after the start of the pump, one half hour after the start of the pump, and continuing every one hour thereafter until the pump is shutdown. FORWARD the completed BwOP AF-5T1, Motor Driven Auxiliary Feedwater Pump Operating Log, to the AF System Engineer, SED Secondary Group.

MOTOR DRIVEN AUXILIARY FEEDWATER PUMP OPERATING LOG

NOTE

Perform the applicable steps of this Data Sheet after the start of the pump, one half hour after the start of the pump, and every one hour thereafter.

Forward the completed BwOP AF-5T1 to the AF System Engineer, SED Secondary Group. If pump has forward flow, recirculation flow may be less than 85 gpm, however, total flow shall be ≥ 85 gpm to satisfy minimum pump flow requirement.

__A AF Pump

Date: _____

EQUIPMENT DESCRIPTION									EXPECTED VALUES
TIME									N/A
INITIALS									N/A
* PUMP RECIRC FLOW (_FI-AF095)									85-100 GPM
THRUST BRG OIL TEMP (_TI-AF103)									$\leq 155^{\circ}\text{F}$
LUBE OIL COOLER OUTLET TEMP (_TI-AF104)									$< 128^{\circ}\text{F}$
TURN PP OIL FILTER									YES
OIL FILTER DIFF PRESS									≤ 4 PSID
LUBE OIL FILTER OUTLET PRESS (_PI-AF098)									10-15 PISG
OIL COOLER, SX OUTLET TEMP (_TI-SX066)									N/A
PUMP SUCT PRESS (PI-AF150)									6-30 PSIG
PUMP DISCH PRESS (_PI-AF054)									N/A

* NRC Commitment: 456-100-98-0020104

(Final)

MOTOR DRIVEN AUXILIARY FEEDWATER PUMP _A SHUTDOWN

A. STATEMENT OF APPLICABILITY

This procedure provides the steps necessary to shutdown _AF01PA, _A Auxiliary Feedwater Pump.

B. REFERENCES

1. Station Procedures:

- a. _BwGP 100-1A1, Controller Setpoints.
- b. BwOP AF-5T1, Motor Driven Auxiliary Feedwater Pump Operating Log.

2. Station Drawings:

- a. M-37/122, Auxiliary Feedwater.
- b. M-42-3, Essential Service Water.
- c. 20E-1/2-4030AF01.
- d. 20E-1/2-4030EF01, 05, 11.

3. Tech Specs:

- a. 3.7.5.
- b. 3.7.6.

4. UFSAR: Chapter 10.

5. Station Commitments:

- a. 020-251-84-157 Step F.10
- b. 020-251-84-140 Step F.7

C. PREREQUISITES

None.

D. PRECAUTIONS

None.

E. LIMITATIONS AND ACTIONS

1. _AOV-AF004A, _A AF Pump Dsch Test Valve, will open on any Aux Feed Pump actuation signal.
2. The Auxiliary Feedwater System will initiate on any of the following:
 - a. Lo-Lo S/G level.
 - b. SI Initiation.
 - c. Reactor Coolant Pump bus undervoltage.
 - d. AMS Initiation.
 - e. _A Auxiliary Feedwater Pump will start on an undervoltage condition on BUS _41 following the start of the _A DG and its sequencer.
3. A low pump suction pressure of 18.1, in coincidence with any of the following will open _MOV-AF006A and _MOV-AF017A, _A Auxiliary Feedwater Pump SX Suction Valves.
 - a. SI Initiation.
 - b. Lo-Lo S/G level.
 - c. Reactor Coolant Pump bus undervoltage.
4. A low low pump suction pressure of 16.5 psia, will trip the _A Auxiliary Feedwater Pump. The pump will restart when pressure returns if any auto start signal is still present.
5. The minimum level required by Tech Spec 3.7.6 in the Condensate Storage Tanks is 66%.
6. At least two independent steam generator auxiliary feedwater pumps and associated flow paths SHALL be operable, as per Tech Spec 3.7.5 in MODES 1, 2, and 3.

F. MAIN BODY

1. PLACE the Local Control Switch for Aux Feed Pump _A Lube Oil Pump, _AF01PA-A, to the START position at the Local Control Panel.
2. To shutdown the Aux Feed Pump from the Control Room, STOP _AF01PA, _A Auxiliary Feedwater Pump, at _PM06J.
3. To shutdown the Aux Feed Pump from the Remote Shutdown Panel, PERFORM the following:
 - a. PLACE Local/Remote Selector Switch to LOCAL.
 - b. STOP _AF01PA, _A Auxiliary Feedwater Pump, at _PL04J.
4. VERIFY/OPEN _AOV-AF004A, _A AF Pp Discharge Valve, at Local Control panel.
5. VERIFY/PLACE _AF004A, _A AF Pp Discharge Valve Control Switch to AUTO at Local Control panel.

NOTE

Performance of Step F.6 is dependent upon current plant conditions and the UNIT Supervisor may choose to leave the _MOV-AF013's CLOSED to satisfy plant requirements.

6. VERIFY/OPEN _MOV-AF013A/B/C/D, _S/G A, B, C, and D Isol Vlvs.

NOTE

If performance of Step F.7 causes AF FLOW CONTROL SETTING LOW Alarm, then increase Pot setting as required to clear alarm.

7. VERIFY/PLACE _AOV-AF005A,B,C, & D, S/G Flow Cont Vlvs, pot setting as required per _BwGP 100-1A1, at _PM06J.
8. STOP _AF01PA-A, _A Aux FW Pump Lube Oil Pump, by placing Aux FW Pump _A Lube Oil Pump, _AF01PA-A, Control Switch to the STOP position at the Local Control Panel when _AF01PA, _A Aux Feedwater Pump, has coasted to a full stop.

- F. 9. CHECK _A Auxiliary Feedwater Pump discharge temperature as indicated locally on _TI-AF126 (A hand held pyrometer may be used if the local indicator is not in service).

a. RECORD the temperature in the Unit_ Log.

NOTE

An increase in Auxiliary Feedwater Pump discharge temperatures is indicative of S/G Feedwater Check Valve back leakage, which could possibly cause steam binding of the Auxiliary Feedwater Pumps and piping.

- * 10. 30 minutes after the Auxiliary Feedwater Pump has been secured, PERFORM the following:
- a. CHECK _A Auxiliary Feedwater Pump discharge temperature as indicated locally on _TI-AF126 (A hand held pyrometer may be used if the local indicator is not in service).
- 1) RECORD the temperature in the Unit_ Log.
- b. IF _A Auxiliary Feedwater Pump discharge temperature has increased from that taken in Step F.9.a, THEN NOTIFY the Shift Supervisor.
11. RESTORE breakers to CLOSE for _AF006A and _AF017A, if desired.
12. FORWARD a completed copy of BwOP AF-5T1, Motor Driven Auxiliary Feedwater Pump Operating Log, to the AF System Engineer, SED Secondary Group.

JOB PERFORMANCE MEASURE

TASK TITLE: Align Fire Protection Cooling to the 2A Centrifugal Charging Pump

JPM No.: N-138

REV: 0

TPO No.: IV.D.OA-69

K&A No.: 062AK3.03

TASK No.:

K&A IMP: 4.0/4.2

TRAINEE: _____

EVALUATOR: _____

DATE: _____

The Trainee: PASSED _____ this JPM.

TIME STARTED: _____

FAILED _____

TIME FINISHED: _____

CRITICAL ELEMENTS: (*) 2

JPM TIME: _____ MINUTES

CRITICAL TIME: NA

APPROX COMPLETION TIME: 13 MINUTES

EVALUATION METHOD:

____ PERFORM
 X SIMULATE

LOCATION:
 X IN PLANT
____ SIMULATOR

GENERAL REFERENCES:

1. 2BWOA PRI-8, Essential Service Water Malfunction

MATERIALS:

None

TASK STANDARDS:

1. Perform the actions necessary to align FP cooling to the 2A CV Pump
2. Demonstrates the use of good Core Work Practices.

TASK CONDITIONS:

1. You are an extra NSO.
2. Unit 2 is experiencing a loss of Essential Service Water and cannot be cross-tied.

INITIATING CUES:

1. The Unit Supervisor has directed you to perform the actions necessary to align Fire Protection Cooling to ONLY the 2A Centrifugal Charging Pump per 2BWOA PRI-8, Attachment C

PERFORMANCE CHECKLIST
RECORD START TIME _____

STANDARDS

SAT UNSAT N/A

1. Refer to 2BWOA PRI-8,
Essential Service Water
Malfunction.

Locate and open 2BWOA
PRI-8, Attachment C

☐ ☐ ☐

NOTE: This step may be
performed at any time

- *2. Locally align FP to CHG
PUMP Lube Oil Cooler

(CUE: FP Supply Hose Connected.

Simulate hose hookup - do
NOT remove it from the
locker)

- CONNECT fire hose
(located in 2A CV Pump
room) to CV Pump 2A
lube oil cooler AND FP
connection outside 2A
CV Pump room (364'
V18)

☐ ☐ ☐

(CUE: OFF840 is OPEN)

- OPEN FP hose supply
isolation valve OFF840
(364' V18)

☐ ☐ ☐

(CUE: Hose is not pinched by
room door. No kinks in hose)

- VERIFY fire hose
CHARGED

☐ ☐ ☐

(CUE: 2SX259A is OPEN)

- OPEN CENT CHG Pump oil
cooler FP Supply valve
2SX259A

☐ ☐ ☐

(CUE: 2SX258A is CLOSED)

- CLOSE CENT CHG Pump
oil cooler SX Supply
valve 2SX258A

☐ ☐ ☐

3. CHECK CENT CHG Pump 2A
Operation.

INFORM NSO 2A CV Pump is
ready to start

☐ ☐ ☐

(CUE: 2A CV Pump is ready to
start)

(CUE:) THIS COMPLETES THIS JPM.

RECORD STOP TIME _____

COMMENTS:

TASK CONDITIONS:

1. You are an extra NSO.
2. The Unit 2 is experiencing a loss of Essential Service Water and cannot be cross-tied.

INITIATING CUES:

1. The Unit Supervisor has directed you to perform the actions necessary to align Fire Protection Cooling to ONLY the 2A Centrifugal Charging Pump per 2BWOA PRI-8, Attachment C

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

ATTACHMENT C (PG 1 OF 4)ALIGNMENT OF FP TO CENT CHG PUMP LUBE OIL COOLER**1 LOCALLY ALIGN FP TO CENT CHG PUMP
2A LUBE OIL COOLER:**

- a. Check CENT CHG pump 2A -
SELECTED FOR FP ALIGNMENT
- b. Connect fire hose (located in
2A CV pump room) to CENT CHG
pump 2A lube oil cooler AND FP
connection outside **2A** CV pump
room (364' V18)
- c. Check FP hose - CONNECTED TO
CENT CHG PUMPS ON BOTH UNITS:
 - CENT CHG pump 2A
 - CENT CHG pump 1A
- d. Open FP hose supply isolation
valve:
 - OFP840 (364' V18)
- e. Verify fire hose - CHARGED:
 - Hose NOT pinched by room door
 - No kinks in hose
- f. Open CENT CHG pump oil cooler
FP supply isolation valve:
 - 2SX259A (364' U20 2A CENT
CHG pump room)
- g. Close CENT CHG pump oil cooler
SX supply isolation valve:
 - 2SX258A (364' U20 2A CENT
CHG pump room)

- a. **GO TO** Step 3 (Page 23) to
align CENT CHG pump 2B.

- c. IF only CENT CHG pump 2A
is being aligned to FP,
THEN GO TO Step 1d.

IF CENT CHG pump 1A is
also being aligned,
THEN do NOT continue until
hose connections are
complete to BOTH CENT CHG
pumps.

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

ATTACHMENT C (PG 2 OF 4)
ALIGNMENT OF FP TO CENT CHG PUMP LUBE OIL COOLER

2 CHECK CENT CHG PUMP 2A
OPERATION:

a. CENT CHG pump 2A - RUNNING

a. IF CENT CHG pump 2A is
being aligned for standby
operation,
THEN GO TO Step 3 (Next
Page).

IF CENT CHG pump 2A is
desired to be running,
THEN Start CENT CHG pump
2A per either of the
following:

- o BwOP CV-19, SWITCHING
CHARGING PUMPS

-OR-

- o BwOP CV-1, CV SYSTEM
STARTUP

b. Monitor temperatures listed in
TABLE A (Page 27) for CENT CHG
pump 2A

c. Place a portable fan in door
opening as necessary to
maintain CENT CHG pump 2A room
temperature - NORMAL

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

ATTACHMENT C (PG 3 OF 4)ALIGNMENT OF FP TO CENT CHG PUMP LUBE OIL COOLER3 LOCALLY ALIGN FP TO CENT CHG PUMP
2B LUBE OIL COOLER:

- | | |
|--|--|
| a. Check CENT CHG pump 2B -
<u>SELECTED FOR FP ALIGNMENT</u> | a. RETURN TO procedure and
step in effect |
| b. Connect fire hose (located in
2B CV pump room) to CENT CHG
pump 2B lube oil cooler <u>AND</u> FP
connection outside 2B CV pump
room (364' Y21) | |
| c. Open FP hose supply isolation
valve: <ul style="list-style-type: none">• 2FP384 (364' Y21) | |
| d. Verify fire hose - <u>CHARGED</u> : <ul style="list-style-type: none">• Hose <u>NOT</u> pinched by room door• No kinks in hose | |
| e. Open CENT CHG pump oil cooler
FP supply isolation valve: <ul style="list-style-type: none">• 2SX259B (364' Y22 2B CENT
CHG pump room) | |
| f. Close CENT CHG pump oil cooler
SX supply isolation valve: <ul style="list-style-type: none">• 2SX258B (364' Y22 2B CENT
CHG pump room) | |

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

ATTACHMENT C (PG 4 OF 4)
ALIGNMENT OF FP TO CENT CHG PUMP LUBE OIL COOLER

4 CHECK CENT CHG PUMP 2B
OPERATION:

a. CENT CHG pump 2B - RUNNING

a. IF CENT CHG pump 2B is
being aligned for standby
operation,
THEN RETURN TO procedure
and step in effect.

IF CENT CHG pump 2B is
desired to be running,
THEN Start CENT CHG pump
2B per either of the
following:

- o BWOP CV-19, SWITCHING
CHARGING PUMPS

-OR-

- o BWOP CV-1, CV SYSTEM
STARTUP

b. Monitor temperatures listed in
TABLE A (Page 27) for CENT CHG
pump 2B

c. Place a portable fan in door
opening as necessary to
maintain CENT CHG pump 2B room
temperature - NORMAL

d. RETURN TO procedure and step
in effect

-END-

JOB PERFORMANCE MEASURE

TASK TITLE: Align the Fire Hazards Panel

JPM No.: N-34

REV: 9

TPO No.: IV.D.OA-27

K&A No.: (APE068AA1.03)

TASK No.: OA-112

K&A IMP: 4.1/4.3

TRAINEE: _____

EVALUATOR: _____

DATE: _____

The Trainee: PASSED _____ this JPM.

TIME STARTED: _____

FAILED _____

TIME FINISHED: _____

CRITICAL ELEMENTS: (*) 2

JPM TIME: _____ MINUTES

CRITICAL TIME: NA

APPROX COMPLETION TIME: 13 MINUTES

EVALUATION METHOD:

_____	PERFORM
<u> X </u>	SIMULATE

LOCATION:

<u> X </u>	IN PLANT
_____	SIMULATOR

GENERAL REFERENCES:

1. 2BWOA PRI-5, Rev. 100, Control Room Inaccessibility

MATERIALS:

Copy of 2BWOA PRI-5

TASK STANDARDS:

1. Activate the Fire Hazards Panel
2. Demonstrates the use of good Core Work Practices.

TASK CONDITIONS:

1. You are an extra NSO.
2. A fire is ongoing in the Main Control Room and the Unit 2 AEER.
3. The Remote Shutdown Panels have been manned.
4. 1BWOA PRI-5 and 2BWOA PRI-5 are in progress.

INITIATING CUES:

1. You have been directed to align the Fire Hazards Panel in order to establish the capability to monitor Unit 2 S/G Levels, S/G Pressures, PZR Level, and PZR Pressure per step 7.c. RNO of 2BWOA PRI-5.

PERFORMANCE CHECKLIST

STANDARDS

SAT UNSAT N/A CWP

RECORD START TIME _____

1. Refer to procedure and proceed to 2PL10J, Fire hazards Panel.

Locate and obtain 2BWOA PRI-5, step 7.c RNO and proceed to Fire Hazards Panel.

☐ ☐ ☐

(CUE: When examinee locates correct procedure, provide a copy.)

(Note: 426' CWA U-12 Unit 1, S-24 on Unit 2.)

- *2. Activate the Fire Hazards Panel.

Place the following panel switches to the FIRE position:

☐ ☐ ☐

(CUE: 2HS-FW309 is in FIRE position. If asked for indication 60%.)

- 2HS-FW309 - SG 2A WR Level

(CUE: 2HS-FW310 is in FIRE position. If asked for indication 60%.)

- 2HS-FW310 - SG 2B WR Level

(CUE: 2HS-MS193 is in FIRE position. If asked for indication 1080 psig.)

- 2HS-MS193 - SG 2A Pressure

(CUE: 2HS-MS194 is in FIRE position. If asked for indication 1080 psig.)

- 2HS-MS194 - SG 2B Pressure

(CUE: 2HS-RY034 is in FIRE position. If asked for indication 30%.)

- 2HS-RY034 - PZR Level

(CUE: 2HS-RY033 is in FIRE position. If asked for indication 2200 psig.)

- 2HS-RY033 - PZR Pressure

(CUE:) THIS COMPLETES THIS JPM.

RECORD STOP TIME _____

COMMENTS:

TASK CONDITIONS:

1. You are an extra NSO.
2. A fire is ongoing in the Main Control Room and the Unit 2 AEER.
3. The Remote Shutdown Panels have been manned.
4. 1BWOA PRI-5 and 2BWOA PRI-5 are in progress.

INITIATING CUES:

1. You have been directed to align the Fire Hazards Panel in order to establish the capability to monitor Unit 2 S/G Levels, S/G Pressures, PZR Level, and PZR Pressure per step 7.c.RNO of 2BWOA PRI-5.

SIMULATOR SETUP INSTRUCTIONS

JPM NO: N-34

REQUIRED SIMULATOR MODE(S): N/A, IN PLANT

MALFUNCTION #'S: N/A

COMMENTS:

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

CAUTION

Taking ANY control switch on the Fire Hazards Panel to the FIRE position:

- Removes ALL indications from the RSP and MCR.
- Feeds a low signal to the affected loop.
- May cause ESF actuations if another channel is already tripped OR in test.

7 ACTIVATE RSP:

a. Unit Supervisor and NSO go to RSP

b. Align RSP per ATTACHMENT A
(Page 46)

c. Check following indications -
AVAILABLE:

- Source Range NI
- Intermediate Range NI
- SG pressures
- SG wide range levels
- PZR pressure
- PZR level
- RCS hot leg temperatures
- RCS cold leg temperatures

c. Dispatch an operator to the Fire Hazards Panel (426' S24 CWA) to align needed instrumentation.

d. Maintain log of:

- All jumpers installed
- All local actions taken

JOB PERFORMANCE MEASURE

TASK TITLE: Perform Local Reset of Feedwater Isolation Signal

JPM No.: N-91

REV: 6

TPO No.: IV.D.EF-03

K&A No.: (013A4.02)

TASK No.: EF-003

K&A IMP: 4.3/4.4

TRAINEE: _____

EVALUATOR: _____

DATE: _____

The Trainee: PASSED _____ this JPM.

TIME STARTED: _____

FAILED _____

TIME FINISHED: _____

CRITICAL ELEMENTS: (*) 3, 4

JPM TIME: _____ MINUTES

CRITICAL TIME: NA

APPROX COMPLETION TIME: 7 MINUTES

EVALUATION METHOD:

LOCATION:

_____ PERFORM
 X SIMULATE

 X IN PLANT
_____ SIMULATOR

GENERAL REFERENCES:

1. 2BwFR-H.1, Rev. 100, WOG 1C, Response to Loss of Secondary Heat Sink

MATERIALS:

Keys for 2PA27J and 2PA28J, Laser pointer.
Copy of 2BwFR-H.1, step 7.

TASK STANDARDS:

1. Correctly RESET Feedwater Isolation Signal as required by 2BwFR-H.1, step 7.
2. Demonstrates the use of good Core Work Practices.

TASK CONDITIONS:

1. You are an extra NSO.
2. Unit 2 NSOs are responding to a steamline break inside containment after a safety injection.
3. Conditions have deteriorated to the point that an entry into 2BwFR-H.1, Loss of Secondary Heat Sink has been made.

INITIATING CUES:

1. The Unit Supervisor has directed you to locally reset FW Isolation by performing the actions of 2BwFR-H.1 step 7.f.

RECORD START TIME _____

Note: Prompt the use of a laser pointer to identify components located inside electrical cabinets.

- | | | | | | |
|----|------------------------------|--------------------------------------|--------------------------|--------------------------|--------------------------|
| 1. | Refer to 2BwFR H.1 step 7.f. | Locate and open 2BwFR H.1, step 7.f. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|----|------------------------------|--------------------------------------|--------------------------|--------------------------|--------------------------|

(CUE: After examinee locates procedure, provide a copy.)

- | | | | | | |
|----|---|---|--------------------------|--------------------------|--------------------------|
| 2. | Obtain keys for and locate Safeguards Cabinets 2PA27J and 2PA28J. | Obtains keys for and proceed to Safeguards Cabinets 2PA27J and 2PA28J: <ul style="list-style-type: none">• Obtain keys for Cabinets 2PA27J and 2PA28J from the Shift Office.• Proceed to 2PA27J/ 2PA28J (U2 AEER). | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|----|---|---|--------------------------|--------------------------|--------------------------|

Note: JPM steps 3 and 4 may be performed in any order. Prompt use of laser pointer vice breaking plane of cabinet.

- | | | | | | |
|-----|--|--|--------------------------|--------------------------|--------------------------|
| *3. | De-energize Feedwater Isolation Aux Relays by removing fuses at Aux. Safeguard Relay Cabinet 2PA27J. | At 2PA27J, De-energize Feedwater Isolation Aux Relays by removing: | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|-----|--|--|--------------------------|--------------------------|--------------------------|

(CUE: Fuse FU-24 is removed.
Fuse FU-27 is removed.)

- Fuse FU-24
- Fuse FU-27

- | | | | | | |
|-----|--|--|--------------------------|--------------------------|--------------------------|
| *4. | De-energize Feedwater Isolation Aux Relays by removing fuses at Aux. Safeguard Relay Cabinet 2PA28J. | At 2PA28J, De-energize Feedwater Isolation Aux Relays by removing: | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|-----|--|--|--------------------------|--------------------------|--------------------------|

(CUE: Fuse FU-24 is removed.
Fuse FU-27 is removed.)

- Fuse FU-24
- Fuse FU-27

(CUE: THIS COMPLETES THIS JPM.)

RECORD STOP TIME _____

TASK CONDITIONS:

1. You are an extra NSO.
2. Unit 2 NSOs are responding to a steamline break inside containment after a safety injection.
3. Conditions have deteriorated to the point that an entry into 2BwFR-H.1, Loss of Secondary Heat Sink has been made.

INITIATING CUES:

1. The Unit Supervisor has directed you to locally reset FW Isolation by performing the actions of 2BwFR-H.1 step 7.f.

SIMULATOR SETUP INSTRUCTIONS

JPM NO: N-91

REQUIRED SIMULATOR MODE(S): N/A Inplant.

MALFUNCTION #'S: N/A

COMMENTS:

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

7 RESET FW ISOLATION:

- | | |
|---|--|
| a. Check FW isolation AUX RELAY lights - <u>ANY LIT</u> | a. GO TO Step 7f. |
| b. Check SI - <u>NOT ACTUATED</u> | b. GO TO Step 7f. |
| c. Depress both FW ISOLATION reset pushbuttons | |
| d. Depress both FW Isolation AUX RELAYS reset pushbuttons | |
| e. Check FW ISOL ACTD relay lights - <u>NOT LIT</u> | e. Perform the following:

1) Pull Feedwater Isolation fuses:

• 2PA27J:

• FU-24
• FU-27

• 2PA28J:

• FU-24
• FU-27

2) GO TO Step 8 (Next Page). |
| f. Dispatch an operator to pull Feedwater Isolation fuses while continuing with this procedure:

• 2PA27J:

• FU-24
• FU-27

• 2PA28J:

• FU-24
• FU-27 | |

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

**8 TRY TO ESTABLISH MAIN FW FLOW TO
AT LEAST ONE SG:**

a. Open FW tempering isol valve on
selected SG(s):

- o 2FW035A
- o 2FW035B
- o 2FW035C
- o 2FW035D

b. Check FW pump available:

- o Startup FW pump

-OR-

- o FW pump 2A

c. Check CD/CB pumps - AT LEAST
TWO RUNNING

b. **GO TO** Step 10 (Page 17).
OBSERVE CAUTION PRIOR TO
STEP 10.

c. Start a second CD/CB pump.

IF a second CD/CB pump can
NOT be started, AND the
Startup FW pump is
AVAILABLE,
THEN perform the
following:

1) Locally start aux oil
pump for Startup FW
pump.

2) Close Main FW pump
recirc valves:

- 2FW012A
- 2FW012B
- 2FW012C

3) Open the Startup FW pump
recirc valve by placing
the control switch to
MODULATE:

- 2FW076

Step continued on next page