

PSEG NUCLEAR L.L.C.
SALEM/OPERATIONS

S2.OP-AB.4KV-0002(Q) - REV. 10

LOSS OF 2B 4KV VITAL BUS

- A. Biennial Review Performed: Yes ___ No √
- B. Change Package(s) and Affected Document Number(s) incorporated into this revision: None
- C. The following OTSC(s) were incorporated into this revision: None

REVISION SUMMARY:

The following changes were incorporated into this revision:

- ◆ Incorporated the following additional CAS item into the SELECTED CAS ITEMS pages, and Attachment 1, Continuous Action Summary indicating:
 - "IF AT ANY TIME 2A Vital Bus AND 2B Vital Bus are BOTH deenergized, THEN DISPATCH an Operator to manually CLOSE 2SW26, TURB AREA (TG HDR INLET MOV)".
 - "IF AT ANY TIME 2B Vital Bus AND 2C Vital Bus are BOTH deenergized, THEN DISPATCH an Operator to manually CLOSE 2SW26, TURB AREA (TG HDR INLET MOV)".

These changes were incorporated to address the scenario where 2A and 2B (2B and 2C) Vital Busses are deenergized, and 2C (2A) is the only Vital Bus energized supplying either the 25 or 26 (21 or 22) SW Pump. In this situation, a low SW header pressure condition will exist until the Turbine Building SW Header is manually isolated. Johnston Pump Company has indicated that operation of a SW pump at runout conditions for periods up to 30 minutes is acceptable with negligible risk of catastrophic failure due to poor hydraulic conditions. Following identification of the above indicated condition, it is intended an Operator be dispatched, and 2SW26 manually closed within 30 minutes to preclude further pump degradation. [70055569-0070]

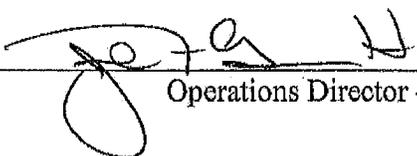
- ◆ Revised SELECTED CAS ITEMS pages to indicate "Refer to EXHIBIT 1 for briefing sheet". This change was incorporated to provide additional clarification regarding usage of EXHIBIT 1, and is considered editorial in nature.

IMPLEMENTATION REQUIREMENTS

Effective Date: 9/18/2007

None

APPROVED:



 Operations Director - Salem

9-13-07

 Date

USER RESPONSIBLE FOR VERIFYING REVISION, STATUS AND CHANGES

SELECTED CAS ITEMS

- ◆ IF AT ANY TIME 2B Vital Bus restoration is NOT expected within 2 hours, THEN:
 - **OPEN** 2BVIB27, 2B SAFEGUARD EMERGENCY CABINET breaker (2B 115V Vital Bus, Elev. 100' Relay Rm).
 - **SHUT DOWN** 2B Diesel Generator IAW S2.OP-SO.DG-0002(Q), 2B Diesel Generator Operation.
- ◆ IF AT ANY TIME 2A Vital Bus AND 2B Vital Bus are BOTH deenergized, THEN DISPATCH an Operator to manually CLOSE 2SW26, TURB AREA (TG HDR INLET MOV).
- ◆ IF AT ANY TIME 2B Vital Bus AND 2C Vital Bus are BOTH deenergized, THEN DISPATCH an Operator to manually CLOSE 2SW26, TURB AREA (TG HDR INLET MOV).

* Refer to EXHIBIT 1 for briefing sheet

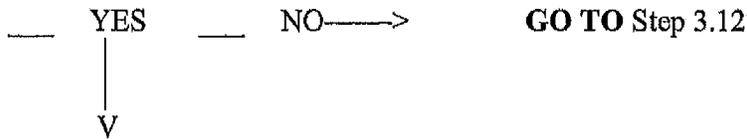
SELECTED CAS ITEMS

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 - **OPEN** 2BVIB27, 2B SAFEGUARD EMERGENCY CABINET breaker (2B 115V Vital Bus, Elev. 100' Relay Rm).
 - **SHUT DOWN** 2B Diesel Generator IAW S2.OP-SO.DG-0002(Q), 2B Diesel Generator Operation.
- ◆ IF AT ANY TIME 2A Vital Bus AND 2B Vital Bus are BOTH deenergized, THEN DISPATCH an Operator to manually CLOSE 2SW26, TURB AREA (TG HDR INLET MOV).
- ◆ IF AT ANY TIME 2B Vital Bus AND 2C Vital Bus are BOTH deenergized, THEN DISPATCH an Operator to manually CLOSE 2SW26, TURB AREA (TG HDR INLET MOV).

* Refer to EXHIBIT 1 for briefing sheet

___ 3.7 **START** 22 Charging Pump.

3.8 Is 22 Charging Pump running?



Time

___ 3.9 **ADJUST** 2CV55 to obtain desired flow.

___ 3.10 When PZR Level is stable at the program level:

___ A. **ENSURE** Charging System Master Flow Controller in AUTO.

___ B. **PLACE** 2CV55 in Automatic.

___ 3.11 **GO TO** Step 3.13.

___ 3.12 IF 23 Charging Pump is available to supply Unit 2 Charging System,
THEN START 23 Charging Pump as follows:

___ A. **PLACE** 23 Charging Pump in MANUAL.

___ B. **PLACE** Charging Master Flow Controller in MANUAL.

___ C. **SET** 23 Charging Pump Speed Demand to 10-12%.

___ D. **START** 23 Charging Pump
AND immediately **INCREASE** Speed Demand to couple pump.

___ E. **ADJUST** 23 Charging Pump Speed Demand to obtain desired flow.

___ F. When PZR Level is stable at the program level:

___ 1. **SET** Charging Master Flow Controller Flow Demand to match
23 Charging Pump Speed Demand.

___ 2. **PLACE** Charging Master Flow Controller in AUTO.

___ 3. **PLACE** 23 Charging Pump Speed in AUTO.

___ 3.13 **ENSURE** Seal Injection Flow 6-12 gpm to each Reactor Coolant Pump not to
exceed 40 gpm total Seal Injection Flow.

USER RESPONSIBLE FOR VERIFYING REVISION, STATUS AND CHANGES

SELECTED CAS ITEMS

- ◆ IF AT ANY TIME 2B Vital Bus restoration is NOT expected within 2 hours, THEN:
 - **OPEN** 2BVIB27, 2B SAFEGUARD EMERGENCY CABINET breaker (2B 115V Vital Bus, Elev. 100' Relay Rm).
 - **SHUT DOWN** 2B Diesel Generator IAW S2.OP-SO.DG-0002(Q), 2B Diesel Generator Operation.
- ◆ IF AT ANY TIME 2A Vital Bus AND 2B Vital Bus are BOTH deenergized, THEN DISPATCH an Operator to manually CLOSE 2SW26, TURB AREA (TG HDR INLET MOV).
- ◆ IF AT ANY TIME 2B Vital Bus AND 2C Vital Bus are BOTH deenergized, THEN DISPATCH an Operator to manually CLOSE 2SW26, TURB AREA (TG HDR INLET MOV).

* Refer to EXHIBIT 1 for briefing sheet

3.14 Was 22 RHR Pump providing Core Cooling?

YES NO → **GO TO Step 3.16**
 ↓
 V

Time

3.15 **INITIATE S2.OP-AB.RHR-0001(Q), Loss Of RHR.**

3.16 Is 2B Vital Bus energized from the Diesel Generator?

YES NO → **GO TO Step 3.24**
 ↓
 V

Time

3.17 **RESET EMERGENCY** loading for 2B Diesel Generator.

3.18 **RESET 230V** Control Center.

3.19 Is 2SW26 opened?

NO YES → **GO TO Step 3.21**
 ↓
 V

Time

3.20 **OPEN 2SW26 IAW S2.OP-AB.SW-0002(Q).**

USER RESPONSIBLE FOR VERIFYING REVISION, STATUS AND CHANGES

SELECTED CAS ITEMS

- ◆ IF AT ANY TIME 2B Vital Bus restoration is NOT expected within 2 hours, THEN:
 - **OPEN** 2BVIB27, 2B SAFEGUARD EMERGENCY CABINET breaker (2B 115V Vital Bus, Elev. 100' Relay Rm).
 - **SHUT DOWN** 2B Diesel Generator IAW S2.OP-SO.DG-0002(Q), 2B Diesel Generator Operation.
- ◆ IF AT ANY TIME 2A Vital Bus AND 2B Vital Bus are BOTH deenergized, THEN DISPATCH an Operator to manually CLOSE 2SW26, TURB AREA (TG HDR INLET MOV).
- ◆ IF AT ANY TIME 2B Vital Bus AND 2C Vital Bus are BOTH deenergized, THEN DISPATCH an Operator to manually CLOSE 2SW26, TURB AREA (TG HDR INLET MOV).

* Refer to EXHIBIT 1 for briefing sheet

CAUTION

Diesel Generator operation is limited by the following KW output ratings:

- ◆ 2600 KW continuous
- ◆ 2750 KW for 2000 hours
- ◆ 2860 KW for 2 hours
- ◆ 3100 KW for 30 minutes

___ 3.21 **START/STOP** the following 2B Vital Bus loads as necessary.

- ◆ 22 Component Cooling Water Pump
- ◆ 23 Service Water Pump
- ◆ 24 Service Water Pump
- ◆ 22 RHR Pump
- ◆ 21 Charging Pump

NOTE

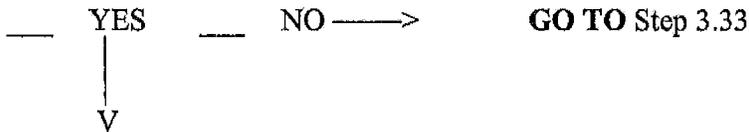
Automatic starting of a CCW pump can cause a DISCHARGE FLOW HI alarm, closing 2CC131, RCP Thermal Barrier Valve.

___ 3.22 **IF** the automatic start of a CCW pump closed 2CC131,
THEN OPEN 2CC131, RCP Thermal Barrier Valve **AND PLACE** in AUTO.

___ 3.23 **GO TO** Step 3.42.

Time

3.24 Is the AFW System required to maintain S/G level?



Time

USER RESPONSIBLE FOR VERIFYING REVISION, STATUS AND CHANGES

SELECTED CAS ITEMS

- ◆ IF AT ANY TIME 2B Vital Bus restoration is NOT expected within 2 hours,
THEN:
 - **OPEN** 2BVIB27, 2B SAFEGUARD EMERGENCY CABINET breaker
(2B 115V Vital Bus, Elev. 100' Relay Rm).
 - **SHUT DOWN** 2B Diesel Generator IAW S2.OP-SO.DG-0002(Q),
2B Diesel Generator Operation.
- ◆ IF AT ANY TIME 2A Vital Bus AND 2B Vital Bus are BOTH deenergized,
THEN DISPATCH an Operator to manually CLOSE 2SW26, TURB AREA
(TG HDR INLET MOV).
- ◆ IF AT ANY TIME 2B Vital Bus AND 2C Vital Bus are BOTH deenergized,
THEN DISPATCH an Operator to manually CLOSE 2SW26, TURB AREA
(TG HDR INLET MOV).

* Refer to EXHIBIT 1 for briefing sheet

___ 3.25 START 21 AFW Pump.

3.26 Is 21 AFW Pump running?

___ YES ___ NO → **GO TO Step 3.29**

 |

 V

Time

___ 3.27 **ESTABLISH AND MAINTAIN** level in 23 and 24 S/Gs between 33% and 44%,
STEAM only 23 and 24 S/Gs.

___ 3.28 **GO TO** Step 3.33

Time

___ 3.29 **CONTINUE** on with this procedure.

CAUTION

Care must be taken when running 23 AFW Pump to prevent a Safety Injection due to Steam Generator ΔP.

___ 3.30 **START** 23 AFW Pump as follows:

- ___ A. **ADJUST** Speed Demand to "0".
- ___ B. **START** 23 AFW Pump.
- ___ C. **MAINTAIN** level in all S/Gs between 33 and 44%.

3.31 Is 23 AFW Pump running?

___ NO ___ YES → **GO TO Step 3.33**

 |

 V

Time

___ 3.32 **COOLDOWN** to reduce S/G pressure to <500 psig ($\approx 470^{\circ}\text{F}$ Tavg),
AND MAINTAIN S/G levels with condensate pump(s) IAW S2.OP-IO.ZZ-0006(Q),
Hot Standby To Cold Shutdown.

___ 3.33 **CONTINUE** on with this procedure.

USER RESPONSIBLE FOR VERIFYING REVISION, STATUS AND CHANGES

SELECTED CAS ITEMS

- ◆ IF AT ANY TIME 2B Vital Bus restoration is NOT expected within 2 hours, THEN:
 - **OPEN** 2BVIB27, 2B SAFEGUARD EMERGENCY CABINET breaker (2B 115V Vital Bus, Elev. 100' Relay Rm).
 - **SHUT DOWN** 2B Diesel Generator IAW S2.OP-SO.DG-0002(Q), 2B Diesel Generator Operation.
- ◆ IF AT ANY TIME 2A Vital Bus AND 2B Vital Bus are BOTH deenergized, THEN DISPATCH an Operator to manually CLOSE 2SW26, TURB AREA (TG HDR INLET MOV).
- ◆ IF AT ANY TIME 2B Vital Bus AND 2C Vital Bus are BOTH deenergized, THEN DISPATCH an Operator to manually CLOSE 2SW26, TURB AREA (TG HDR INLET MOV).

* Refer to EXHIBIT 1 for briefing sheet

NOTE

If all of the following conditions exist:

- ◆ A Service Water Bay is Out of Service
- ◆ Unit is in Modes 1-4
- ◆ 2B 4KV Vital Bus is de-energized

then Unit is in LCO 3.0.3.

3.34 Are all Service Water low pressure alarms clear?

NO YES → **GO TO** Step 3.38
 ↓
 V

Time

3.35 **START** additional Service Water Pumps as necessary to clear the low pressure alarms.

3.36 Are all Service Water low pressure alarms clear?

NO YES → **GO TO** Step 3.38
 ↓
 V

Time

3.37 **INITIATE** S2.OP-AB.SW-0001(Q), Loss of Service Water Header Pressure.

3.38 Are all Component Cooling Water low Flow alarms clear?

NO YES → **GO TO** Step 3.42
 ↓
 V

Time

USER RESPONSIBLE FOR VERIFYING REVISION, STATUS AND CHANGES

SELECTED CAS ITEMS

- ◆ IF AT ANY TIME 2B Vital Bus restoration is NOT expected within 2 hours, THEN:
 - **OPEN** 2BVIB27, 2B SAFEGUARD EMERGENCY CABINET breaker (2B 115V Vital Bus, Elev. 100' Relay Rm).
 - **SHUT DOWN** 2B Diesel Generator IAW S2.OP-SO.DG-0002(Q), 2B Diesel Generator Operation.
- ◆ IF AT ANY TIME 2A Vital Bus AND 2B Vital Bus are BOTH deenergized, THEN DISPATCH an Operator to manually CLOSE 2SW26, TURB AREA (TG HDR INLET MOV).
- ◆ IF AT ANY TIME 2B Vital Bus AND 2C Vital Bus are BOTH deenergized, THEN DISPATCH an Operator to manually CLOSE 2SW26, TURB AREA (TG HDR INLET MOV).

* Refer to EXHIBIT 1 for briefing sheet

___ 3.39 **START** additional Component Cooling Water Pumps as necessary to clear the low flow alarms.

3.40 Are all Component Cooling Water low flow alarms clear?

___ NO ___ YES → **GO TO** Step 3.42
 ↓
 V

Time

___ 3.41 **INITIATE** S2.OP-AB.CC-0001(Q), Component Cooling Abnormality.

___ 3.42 IF letdown is isolated,
THEN:

- ___ A. **OPEN** 2CV2 and 2CV277 AND PLACE in Automatic.
- ___ B. **ENSURE** Charging flow ≈80 gpm.
- ___ C. Simultaneously **OPEN** 2CV3, 2CV4 or 2CV5 AND ADJUST 2CV18 to maintain letdown pressure at ≈ 300 psig.
- ___ D. **PLACE** 2CV18 in Automatic.

___ 3.43 IF Blackout Loading started 22 Aux Feed Pump,
THEN:

- ___ A. **VERIFY** Steam Generator levels are being maintained above low level trip setpoint.
- ___ B. **DEPRESS** 22 AFW Pump **START** pushbutton to reset AFW Interlock.
- ___ C. **OPEN** 21-24SS94 to restore SGBD sampling to the 2R19 RMS.
- ___ D. IF SGBD is required to be established,
THEN RESTORE IAW S2.OP-SO.GBD-0002(Q), Steam Generator Blowdown - Normal Operation

___ 3.44 IF 22 Aux Feed Pump is running and not required to maintain S/G levels,
THEN:

- ___ A. **STOP** 22 Aux Feed Pump.
- ___ B. **PERFORM** backleakage surveillance IAW S2.OP-PT.AF-0002(Q), Auxiliary Feed Backleakage.

USER RESPONSIBLE FOR VERIFYING REVISION, STATUS AND CHANGES

SELECTED CAS ITEMS

- ◆ IF AT ANY TIME 2B Vital Bus restoration is NOT expected within 2 hours, THEN:
 - **OPEN** 2BVIB27, 2B SAFEGUARD EMERGENCY CABINET breaker (2B 115V Vital Bus, Elev. 100' Relay Rm).
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- ◆ IF AT ANY TIME 2B Vital Bus AND 2C Vital Bus are BOTH deenergized, THEN DISPATCH an Operator to manually CLOSE 2SW26, TURB AREA (TG HDR INLET MOV).

* Refer to EXHIBIT 1 for briefing sheet

- ___ 3.45 **IF** Blackout Loading stopped 22 Spent Fuel Pit Pump,
THEN RESTORE Spent Fuel Cooling IAW S2.OP-SO.SF-0002(Q),
Spent Fuel Cooling System Operation.
- ___ 3.46 **DISPATCH** an operator to record any flags on the breaker relays.
- ___ 3.47 **NOTIFY** System Engineering and Electrical Maintenance to investigate the cause of
the loss of bus.
- ___ 3.48 **NOTIFY** the SM/CRS to refer to the following:
- ◆ Attachment 2, Applicable ODCM and Technical Specifications
Requiring Action - 8 Hours or Less Modes 1-4
 - ◆ Attachment 3, Applicable ODCM and Technical Specifications
Requiring Action - 8 Hours or Less Modes 5-6
 - ◆ Event Classification Guide
- ___ 3.49 **IF** 2A 460/230V Vital Buses are deenergized,
THEN INITIATE S2.OP-AB.460-0002(Q), Loss of 2B 460/230V Vital Buses.
- ___ 3.50 When the problem is resolved **AND** bus de-energized,
PERFORM the following:
- ___ A. **OPEN** 2BVIB27, 2B SAFEGUARD EMERGENCY CABINET Breaker
(2B 115V Vital Bus, Elev. 100' Relay Rm).
 - ___ B. **RESTORE** 2B Vital Bus to Normal Operation IAW S2.OP-SO.4KV-0002(Q),
2B 4KV Vital Bus Operation.
- ___ 3.51 When the problem is resolved **AND** the bus is energized from 2B Diesel Generator,
ALIGN 2B Diesel Generator for automatic operation following SEC actuation IAW
S2.OP-SO.DG-0002(Q), 2B Diesel Generator Operation.

SELECTED CAS ITEMS

- ◆ IF AT ANY TIME 2B Vital Bus restoration is NOT expected within 2 hours, THEN:
 - **OPEN** 2BVIB27, 2B SAFEGUARD EMERGENCY CABINET breaker (2B 115V Vital Bus, Elev. 100' Relay Rm).
 - **SHUT DOWN** 2B Diesel Generator IAW S2.OP-SO.DG-0002(Q), 2B Diesel Generator Operation.
- ◆ IF AT ANY TIME 2A Vital Bus AND 2B Vital Bus are BOTH deenergized, THEN DISPATCH an Operator to manually CLOSE 2SW26, TURB AREA (TG HDR INLET MOV).
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* Refer to EXHIBIT 1 for briefing sheet

4.0 COMPLETION AND REVIEW

- ___ 4.1 **CIRCLE** Entry Condition number in Section 1.0,
OR EXPLAIN Entry Condition in Comments Section of Attachment 4.

- ___ 4.2 **COMPLETE** Attachment 4, Sections 1.0 and 2.0,
AND FORWARD this procedure to SM/CRS for review and approval.

- ___ 4.3 SM/CRS **PERFORM** the following:
 - ___ A. **REVIEW** this procedure with Attachment 4 for completeness and accuracy.
 - ___ B. **COMPLETE** Attachment 4, Section 3.0.
 - ___ C. **FORWARD** completed procedure to Operations Staff.

END OF PROCEDURE

ATTACHMENT 1
(Page 1 of 1)

CONTINUOUS ACTION SUMMARY

NOTE

Extended "No Load" operation of 2B Emergency Diesel Generator will result in excessive carbon buildup. If a generator load can not be applied, then running time should be limited to ≤ 2 hours. Diesel Generator operation without electrical load for > 2 hours requires loading to 1500KW at 1125KVAR for a minimum of 1 hour prior to shutdown.

- ___ 1.0 IF AT ANY TIME 2B Vital Bus restoration is NOT expected within 2 hours,
THEN:
- ___ 1.1 **OPEN** 2BVIB27, 2B SAFEGUARD EMERGENCY CABINET breaker
(2B 115V Vital Bus, Elev. 100' Relay Rm).
- ___ 1.2 **SHUT DOWN** 2B Diesel Generator IAW S2.OP-SO.DG-0002(Q),
2B Diesel Generator Operation.
- ___ 2.0 IF AT ANY TIME 2A Vital Bus AND 2B Vital Bus are BOTH deenergized,
THEN DISPATCH an Operator to manually CLOSE 2SW26, TURB AREA
(TG HDR INLET MOV).
- ___ 3.0 IF AT ANY TIME 2B Vital Bus AND 2C Vital Bus are BOTH deenergized,
THEN DISPATCH an Operator to manually CLOSE 2SW26, TURB AREA
(TG HDR INLET MOV).

ATTACHMENT 2
(Page 1 of 1)

APPLICABLE ODCM AND TECHNICAL SPECIFICATIONS
REQUIRING ACTION - 8 HOURS OR LESS
MODES 1-4

NOTE

All conditions must be evaluated in terms of the operability of redundant equipment to determine if T/S 3.0.3 or T/S 3.8.1.1 is applicable.

<u>LCO #</u>	<u>TSAS</u>	<u>TITLE</u>
3.9.12	Immediate	Fuel Handling Area Ventilation System, (Suspend Fuel Handling)
3.4.5	1-Hour	Relief Valves (PORVs), Loss of power to 2PR7
3.5.3	1-Hour	ECCS Subsystems - Tavg < 350°F, Loss of 21 Charging Pump
3.6.1.1	1-Hour	Containment Integrity - due to inoperable 2SW26
3.8.1.1	1-Hour	A.C. Sources
3.8.2.3	2-Hour	125 VDC Distribution - Operating (Battery Chargers)
3.8.2.5	2-Hour	28 VDC Distribution - Operating (Battery Chargers)
3.6.3	4-Hour	Containment Isolation Valves
3.8.2.1	8-Hour	A.C. Distribution - Operating
ODCM	-	Radioactive Liquid Effluent Monitoring Instrumentation (S/G Blowdown Line)

USER RESPONSIBLE FOR VERIFYING REVISION, STATUS AND CHANGES

**ATTACHMENT 3
(Page 1 of 1)**

**APPLICABLE ODCM AND TECHNICAL SPECIFICATIONS
REQUIRING ACTION - 8 HOURS OR LESS
MODES 5-6**

<u>LCO #</u>	<u>TITLE</u>
3.1.2.1	Boration Systems Flow Paths - Shutdown (Suspend core alterations or positive reactivity changes)
3.4.1.4	Cold Shutdown (RHR Loop Operability), (Suspend Boron Dilution operations)
3.8.1.2	A.C. Sources - Shutdown (Suspend core alterations or positive reactivity changes)
3.9.8.1	Coolant Circulation (RHR Loop Operability), (Suspend operations increasing decay heat or reducing Boron concentration)
3.9.12	Fuel Handling Area Ventilation System, (Suspend fuel movement or crane operation with loads over fuel pool)
3.8.2.2	A.C. Distribution - Shutdown, (Establish containment integrity within 8 hours)
3.8.2.4	125 VDC Distribution - Shutdown (Battery chargers), (Establish containment integrity within 8 hours)
3.8.2.6	28 VDC Distribution - Shutdown (Battery Chargers), (Establish containment integrity within 8 hours)
ODCM	Radioactive Liquid Effluent Monitoring Instrumentation (S/G Blowdown Line)

**EXHIBIT 1
(Page 1 of 1)**

BRIEFING SHEET

NOTE

The following items are a list of potential topics which should be covered during the briefing at SM/CRS discretion.

1) **SAFETY**

- ◆ Exercise appropriate industrial safety in the vicinity of operating diesel generators.

2) **TECHNICAL SPECIFICATIONS AND ECGs**

- ◆ Refer to Attachment 2 or Attachment 3, as applicable.
- ◆ If 2B 4KV Vital Bus is deenergized, and the unit is in Modes 1-4 with a SW bay out of service, Tech Spec 3.0.3 applies.

3) **PARAMETERS TO BE MONITORED**

- ◆ Diesel Generator loading.
- ◆ Reactor Power to ensure it remains <100% if 22 AFP started.

4) **CONTINGENCIES**

- ◆ Refer to Attachment 1 of S2.OP-AB.460-0002(Q) for a list of 460V equipment lost.
- ◆ All Tech Spec considerations must be evaluated in terms of redundant equipment operability to determine if T/S 3.0.3 or T/S 3.8.1.1 are applicable (refer to S2.OP-SO.DG-0005(Q)).
- ◆ Reactivity affects of running 22 AFP.
- ◆ Limit unloaded running time of Diesel Generator to <2 hrs.

**LOSS OF 2B 4KV VITAL BUS
TECHNICAL BASES DOCUMENT**

1.0 REFERENCES

1.1 Technical Documents

A. Salem Generating Station Updated Final Safety Analysis Report:

1. Section 8.3.1.2

B. Salem Generating Station Technical Specifications Unit 2:

1. 3.1.1.3 Reactor Coolant Flow Rate for Boron Changes
2. 3.1.2.1 Boration System Flow Paths - Shutdown
3. 3.1.2.2 Boration Systems Flow Paths - Operating
4. 3.1.2.3 Charging Pump - Shutdown
5. 3.1.2.4 Charging Pumps - Operating
6. 3.1.2.5 Borated Water Sources
7. 3.1.2.6 Boric Acid Storage System Operability
8. 3.4.1.4 Cold Shutdown (RHR Loop Operability)
9. 3.4.4 Pressurizer (Heater Emergency Power Supply)
10. 3.4.5 Relief Valves (PORVs)
11. 3.5.2 ECCS Subsystems - $T_{avg} \geq 350^{\circ}F$
12. 3.5.3 ECCS Subsystems - $T_{avg} < 350^{\circ}F$
13. 3.6.1.1 Containment Integrity
14. 3.6.2.1 Containment Spray System
15. 3.6.2.2 Spray Additive System
16. 3.6.2.3 Containment Cooling System
17. 3.6.3 Containment Isolation Valves
18. 3.6.4.2 Electric Hydrogen Recombiners - W
19. 3.7.1.2 Auxiliary Feedwater System
20. 3.7.3 Component Cooling Water System
21. 3.7.4 Service Water System
22. 3.7.6 Control Room Emergency Conditioner Operability
23. 3.7.7 Auxiliary Building Exhaust Air Filtration System
24. 3.8.1.1 A.C. Sources
25. 3.8.1.2 A.C. Sources
26. 3.8.2.1 A.C. Distribution - Operating
27. 3.8.2.2 A.C. Distribution - Shutdown system operability
28. 3.8.2.3 125 VDC Distribution - Operating (Battery Chargers)
29. 3.8.2.4 125 VDC Distribution - Shutdown (Battery Chargers)
30. 3.8.2.5 28 VDC Distribution - Operating (Battery Chargers)
31. 3.8.2.6 28 VDC Distribution - Shutdown (Battery Chargers)
32. 3.9.8.1 Coolant Circulation (RHR Loop Operability)
33. 3.9.8.2 Low Water Level (RHR Loop Operability)
34. 3.9.12 Fuel Handling Area Ventilation System
35. 6.8.4.g Radioactive Effluent Control Program (ODCM)

1.2 Procedures

- A. S2.OP-AB.CC-0001(Q), Component Cooling Abnormality
- B. S2.OP-AB.SW-0002(Q), Loss of Service Water - Turbine Header.
- C. S2.OP-AB.460-0002(Q), Loss of 2B 460/230 Vital Buses
- D. S2.OP-SO.DG-0001(Q), 2A Diesel Generator Operation
- E. S2.OP-SO.DG-0002(Q), 2B Diesel Generator Operation
- F. S2.OP-SO.DG-0003(Q), 2C Diesel Generator Operation
- G. S2.OP-SO.GBD-0002(Q), Steam Generator Blowdown - Normal Operation
- H. S2.OP-SO.4KV-0002(Q), 2B 4KV Vital Bus Operation
- I. S2.OP-SO.RHR-0001(Q), Initiating RHR
- J. S2.OP-PT.AF-0002(Q), Aux Feed Backleakage.
- K. S2.OP-AB.RHR-0001(Q), Loss of RHR
- L. S2.OP-AB.RHR-0002(Q), Loss of RHR at Reduced Inventory
- M. S2.OP-SO.CVC-0002(Q), Charging Pump Operation
- N. S2.OP-AB.SW-0001(Q), Loss of Service Water Header Pressure
- O. S2.OP-IO.ZZ-0006(Q), Hot Standby To Cold Shutdown

1.3 Drawings

- A. 203061, 4160V Vital Buses

1.4 Conformance Documents

- A. None

1.5 Other

- A. DCP 80029150 and 80029155, Unit CVC System Cross-Tie
- B. Offsite Dose Calculation Manual (ODCM)
- C. DCP 80065299, Restoration Of The Positive Displacement Pump
As The Normal Charging Pump

2.0 DISCUSSION

- 2.1 This procedure provides the direction necessary for plant operation with a loss of 2B 4KV Vital Bus power. It is the intent of this discussion to provide the reasoning behind the logic and flowpath of the procedure. It is not intended to provide additional direction to the procedure.

2.2 Entry Conditions

- A. Entry conditions are based on operator recognition that a single Vital Bus has been lost. The symptoms available to the Operator are as follows:
- ◆ 2B 4KV Vital Bus Voltmeter
 - ◆ Numerous alarms associated with bus undervoltage, bus trip.

2.3 Immediate Actions

- A. None

2.4 Subsequent Actions

- A. The initial steps in this section has the Operator initiating operating checks of any running Diesel Generators followed by checking for the loss of Service Water to the Turbine Header. If the 2SW26 is closed because of the Loss of 2B Vital Bus, due to Blackout loading on 2B Vital Bus only, then Turbine Trending will be required immediately. Step 3.4 implements S2.OP-AB.SW-0002(Q) which will be required due to Low Service Water Header pressure from the 2SW26 closing.
- B. The next actions in this section have the operators starting redundant equipment, powered from another source, to replace those loads which could have been lost if the bus remains de-energized.
- C. The next actions check to see if the bus power is restored. If power is back on the bus the operators are directed to the end of the procedure for notifications, troubleshooting and restoration.
- D. The next systems to be looked at are Auxiliary Feedwater, Service Water, Component Cooling Water and Letdown in that order due to the priority of the need for operation of those systems.
- E. At this point the plant is in a stable condition. The operators are reminded to reset Aux Feedwater Interlock to regain control of the S/G blowdown and sampling valves. Remove from service any Aux Feedwater Pump not required to prevent an overpower condition and thermal shock with the addition of cold water to the system. Time can now be spent making notifications to System Engineering and maintenance. An operator can be sent out to record breaker relay status.
- F. The instructions necessary to start/load the Diesel Generator if it had failed to do so automatically, are not needed in this procedure. The decision on when and how to do so would be made by the SM/CRS as deemed necessary.

2.5 Attachments:

- A. Attachment 1, Continuous Action Summary - Provides actions to be continuously monitored during procedure use.
- CAS 1.0 - This CAS ensures extended "no load" operation of the EDG is precluded to prevent excessive carbon buildup. When vital bus restoration is not expected to occur within two hours, the diesel generator is secured.
 - CAS 2.0 - This CAS addresses the scenario where 2A and 2B Vital Busses are deenergized, and 2C is the only Vital Bus energized supplying either the 25 or 26 SW Pump. In this situation, a low SW header pressure condition will exist until the Turbine Building SW Header is manually isolated. Johnston Pump Company has indicated that operation of a SW pump at runout conditions for periods up to 30 minutes is acceptable with negligible risk of catastrophic failure due to poor hydraulic conditions. Following identification of the above indicated condition, it is intended an Operator be dispatched, and 2SW26 manually closed within 30 minutes to preclude further pump degradation. [70055569]
 - CAS 3.0 - This CAS addresses the scenario where 2B and 2C Vital Busses are deenergized, and 2A is the only Vital Bus energized supplying either the 21 or 22 SW Pump. In this situation, a low SW header pressure condition will exist until the Turbine Building SW Header is manually isolated. Johnston Pump Company has indicated that operation of a SW pump at runout conditions for periods up to 30 minutes is acceptable with negligible risk of catastrophic failure due to poor hydraulic conditions. Following identification of the above indicated condition, it is intended an Operator be dispatched, and 2SW26 manually closed within 30 minutes to preclude further pump degradation. [70055569]
- B. Attachment 2, Applicable ODCM and Technical Specifications Requiring Action - 8 Hours or Less Modes 1- 4 - Self-Explanatory
- C. Attachment 3, Applicable ODCM and Technical Specifications Requiring Action - 8 Hours or Less Modes 5- 6 - Self-Explanatory
- D. Attachment 4, Completion Sign-Off Sheet - Self-Explanatory
- E. Exhibit 1, Briefing Sheet - Brief Sheet that indicates various topics including Safety, Technical Specifications and ECGs, Parameters to be Monitored, and Contingencies to be discussed during a shift briefing.

END OF DOCUMENT