PSEG NUCLEAR L.L.C.
SALEM/OPERATIONS

S1.OP-SO.125-0007(Q) REV. 18

1C 125VDC BUS OPERATION

USE CATEGORY: **I**

- Biennial Review Performed: Yes ____ No ____ NA ✓
- DCP Packages and Affected Document Numbers incorporated into this revision: None
- The following OTSCs were incorporated into this revision: None

REVISION SUMMARY:

- Step 3.11, Added 13 Chiller may be considered OPERABLE when the 1C 125VDC Battery Disconnect is open. **[80086263]**

IMPLEMENTATION REQUIREMENTS **Effective Date:** 03/06/07

None

APPROVED: _____ **Operations Director - Salem** 3-2-07 **Date**

1C 125VDC BUS OPERATION

TABLE OF CONTENTS

SECTION	TITLE	PAGE
1.0	PURPOSE	2
2.0	PREREQUISITES	2
3.0	PRECAUTIONS AND LIMITATIONS	6
4.0	EQUIPMENT/MATERIAL REQUIRED	7
5.0	PROCEDURE	8
5.1	Transferring 1C 125VDC Bus Loads to 1B 125VDC Bus	8
5.2	Disconnecting 1C 125VDC Battery from 1C 125VDC Bus	13
5.3	Connecting 1C 125VDC Battery to 1C 125VDC Bus	14
5.4	Returning 1C 125VDC Bus Loads to 1C 125VDC Bus	16
5.5	Completion and Review	23
6.0	RECORDS	24
7.0	REFERENCES	24

ATTACHMENTS

Attachment 1	125VDC Load Shed	26
Attachment 2	Independent Verification Alternate Power Supply Alignment	30
Attachment 3	Independent Verification Breaker Restoration Alignment	33
Attachment 4	Completion Sign-Off Sheet	36

1.0 PURPOSE

1.1 To provide instructions necessary to:

- Transfer 1C 125VDC Bus Loads to 1B 125VDC Bus
- Disconnect 1C 125VDC Battery from 1C 125VDC Bus
- Connect 1C 125VDC Battery to 1C 125VDC Bus
- Return 1C 125VDC Bus Loads to 1C 125VDC Bus

2.0 PREREQUISITES

___ 2.1 **IDENTIFY** Sections of this procedure that are NOT to be performed with "N/A".

___ 2.2 **REVIEW** Components "Off Normal and Off Normal Tagged" list(s) for the system and support system(s) associated with the evolution to be performed in this procedure.

___ 2.3 Unit 1 is in Mode 5, 6, or Defueled.

___ 2.4 IF removing 1C 125VDC Bus from service,
(removing both 1C1 AND 1C2 125VDC Battery Chargers from service)
THEN:

___ 2.4.1 **REVIEW** S1.OP-SO.125-0004(Q), 125VDC Ground Detection, for the effects of transferring power sources to the following 125VDC Distribution Cabinets:

- 1CDC3AX, 1CDC 125VDC Distribution Cabinet
- 1CDC2AX, 1CCDC 125VDC Distribution Cabinet

___ 2.4.2 **ESTABLISH** conditions specified in Attachment 1 as necessary to support required equipment prior to transferring 1C 125VDC Bus loads to 1B 125VDC Bus to prevent exceeding the one-minute design basis loading on 1B 125VDC Bus.

___ 2.4.3 **NOTIFY** the Electric System Operator that position indications for 500KV BS 1-8, BS 2-6, and BS 2-8 breakers will become momentarily inoperable during 1CDC3AX, 1CDC 125VDC Distribution Cabinet, power supply transfers.

(step continued on next page)

2.4 (continued)

___ 2.4.4 **PERFORM** Step 2.4.4A OR Step 2.4.4B IAW S1.OP-SO.115-0013(Q), 1C Vital Instrument Bus UPS System Operation:

___ A. IF 1C 115V Vital Instrument Bus is to be removed from service, THEN **DE-ENERGIZE** 1C 115V Vital Instrument Bus, AND **REMOVE** 1C Vital Instrument Bus UPS System from service.

___ B. IF 1C 115V Vital Instrument Bus is to remain in service, THEN **PERFORM** Step 2.4.4B.1 OR Step 2.4.4B.2:

___ 1. IF 1C 115V Vital Instrument Bus is to be energized from the AC Line Regulator, THEN:

___ a. **TRANSFER** 1C 115V Vital Instrument Bus from Inverter to AC Line Regulator.

___ b. **DE-ENERGIZE** 1C Vital Instrument Bus Rectifier and Inverter with AC Line Regulator supplying the 1C Vital Instrument Bus.

___ 2. IF 1C 115V Vital Instrument Bus is to be energized from the Inverter with DC Power Supply de-energized, THEN **DE-ENERGIZE** DC Power Supply from the Inverter with Inverter Supplying 1C Vital Instrument Bus.

___ 2.4.5 **PERFORM** Step 2.4.5A OR Step 2.4.5B IAW S1.OP-SO.115-0003(Q), 11 And 12 Essential Controls Inverters Operation:

___ A. IF 11 and 12 MAC panels are to be energized from the Essential Control Regulator, THEN:

___ 1. **TRANSFER** 11 MAC from the Inverter to the Essential Control Regulator.

___ 2. **REMOVE** 11 Essential Control Inverter and Rectifier from service.

___ 3. **TRANSFER** 12 MAC from the Inverter to the Essential Control Regulator.

___ 4. **REMOVE** 12 Essential Control Inverter and Rectifier from service.

___ B. IF 11 and 12 MAC panels are to be energized from the Inverters with DC Power Supply de-energized, THEN **DE-ENERGIZE** DC Power Supply from the Inverters with Inverters Supplying 11 and 12 MAC panels.

___ 2.5 IF removing 1C 125VDC Bus from service,
(removing both 1C1 and 1C2 125VDC Battery Chargers from service)
OR disconnecting 1C 125VDC Battery from 1C 125VDC Bus,
(maintaining 1C1 or 1C2 125VDC Battery Chargers in service)
THEN:

___ 2.5.1 **REVIEW** Technical Specifications for applicability:

___ ♦ 3.8.2.4, 125 Volt DC Distribution - Shutdown

___ ♦ 3.8.2.2, A.C. Distribution - Shutdown

___ ♦ 3.7.6.1 Unit 1, (3.7.6 Unit 2) Control Room Emergency Air Conditioning System. (Refer to Step 3.4.5)

___ ♦ Action Statement Tracking Log with respect to current expiration dates and 1C 125VDC Bus outage duration.

___ 2.5.2 **INITIATE** S2.OP-SO.CAV-0001(Q), Control Area Ventilation Operation for Operation With Unit 1 EACS Out-Of-Service (Maintenance Mode) (Refer to Step 3.7).

___ 2.5.3 **PERFORM** the following: (70016538)

___ A. **ENTER** Technical Specification Action Statements 3.7.6.1.f (Unit 1 Mode 5-6) and 3.7.6.e/f (Unit 2 Mode 1-4/Mode 5-6).

___ B. **SECURE** 1CAA48 and 1CAA49 CLOSED IAW S1.OP-SO.CAV-0001(Q), Control Area Ventilation Operation.

___ 2.5.4 **ENSURE** 1A 125VDC Bus is in service.

___ 2.5.5 **ENSURE** 1B 125VDC Bus is in service.

___ 2.5.6 **ENSURE** all redundant equipment required to be OPERABLE, as a result of transferring 1C 125VDC loads to 1B 125VDC Bus OR disconnecting 1C 125VDC Bus from 1C 125VDC Battery, are OPERABLE. 1C 4KV Vital Bus AND 1C 460/230V Vital Buses are inoperable when 1C 125VDC Bus is disconnected from the 1C 125VDC Battery (Safety Evaluation S99-055).

___ 2.5.7 **ENSURE** all Temporary Modifications connecting 1A and 1B 125VDC Buses and equipment are removed to maintain electrical train separation and bus operability requirements. (Refer to Step 3.5)

___ 2.5.8 **PERFORM** the following actions for 12 Emergency Lighting UPS System:

___ A. **ENSURE** 1B1AXZ, 12 Emergency Lighting Distribution Cabinet is powered from the preferred AC source.

___ B. **DE-ENERGIZE** 12 Emergency Lighting Inverter with Preferred AC source supplying 12 Emergency Lighting Distribution Cabinet IAW S1.OP-SO.115-0006(Q), 12 Emergency Lighting UPS System Operation.

___ C. **C/T** 1BDC1AX24, 12 EMERGENCY LIGHTING INVERTER. (support transferring 1C 125VDC Bus loads to 1B 125VDC Bus).

___ 2.5.9 IF 1C 230V Vital Bus is to remain energized, THEN:

___ A. **ALIGN** 1C 4KV Vital Bus power supply as required to support any SPT maintenance activities planned during the battery maintenance window IAW S1.OP-SO.4KV-0003(Q), 1C 4KV Vital Bus Operation (Refer to Step 3.8).

___ B. **PERFORM** the following IAW S1.OP-SO.115-0010(Q), 13 Emergency Lighting UPS System Operation:

___ 1. IF 1C1AXZ, 13 Emergency Lighting Distribution Cabinet, is energized from 13 Emergency Lighting Inverter, THEN **TRANSFER** 13 Emergency Lighting Distribution Cabinet from 13 Emergency Lighting Inverter to Preferred AC Source.

___ 2. **DE-ENERGIZE** 13 Emergency Lighting Inverter with Preferred AC Source supplying 13 Emergency Lighting Distribution Cabinet.

___ 2.5.10 **PERFORM** the following IAW S1.OP-SO.115-0002(Q), Alternate Shutdown System Inverter Operation:

___ A. **REMOVE** the 1ASDS Inverter from service.

___ B. **REMOVE** the 1ASDS Inverter Power Supply Cabinet from service.

___ 2.5.11 IF 1C 460/230V Bus outage is planned concurrent with 1C 125VDC Battery outage, THEN **PLACE** 1C2 125VDC Battery Charger in service IAW S1.OP-SO.125-0003(Q), 1C 125VDC Battery Charger Operation.

___ 2.6 IF Section 5.3, Connecting 1C 125VDC Battery to 1C 125VDC Bus is to be performed, THEN 1C1 OR 1C2 125VDC Battery Charger is available.

___ 2.7 IF Section 5.4, Returning 1C 125VDC Bus Loads to 1C 125VDC Bus is to be performed, THEN No maintenance or testing is in progress on 1C 125VDC Bus.

3.0 PRECAUTIONS AND LIMITATIONS

___ 3.1 Procedure Use and Adherence Policy as found in NC.NA-AP.ZZ-0001(Q), Nuclear Procedure Program, is applicable to this procedure.

___ 3.2 Independent Verification is required of system components manipulated during the performance of this procedure.

___ 3.3 An electrical AC bus Train is inoperable when its respective inverter is NOT in its normal alignment. In Modes 5 and 6, normal alignment means that the respective inverter is aligned to an OPERABLE diesel generator and connected to its respective DC bus Train (T/S 3.8.2.2).

___ 3.4 Transferring 1CDC2AX, 1CCDC 125VDC Distribution Cabinet power supply to 1B 125VDC Bus will result in the following:

___ 3.4.1 Motor-driven and turbine-driven Aux Feedwater Pumps start signal. **[C0357]**

___ 3.4.2 Containment Pressure-Vacuum Relief valve 1VC6 will close.

___ 3.4.3 Containment APD backup isolation valves 1VC9, 1VC10, 1VC13, and 1VC14 will close.

___ 3.4.4 1WL12 and 1WL16 will close.

___ 3.4.5 Both trains of Control Area Ventilation System (CAV) controls will be powered from the same bus, rendering one train inoperable. Technical Specifications 3.7.6.1.f (Unit 1, Mode 5-6) and 3.7.6.e/f (Unit 2, Mode 1-4/Mode 5-6) are applicable for automatic damper operation.

___ 3.5 When transferring distribution cabinet power supplies, each evolution should be carefully examined to ensure required electrical train separation and operability requirements are maintained since jumpers may be installed throughout the vital and non-vital AC and DC electrical distribution systems.

___ 3.6 The Emergency Diesel Generator (EDG) Turbo Boost will actuate when 125VDC control power is cycled on an operating service water pump with the associated EDG in operation. (PR990419147)

___ 3.7 The Control Area Ventilation System is to be placed in Operation With Unit 1 EACS Out-Of-Service (Maintenance Mode) when 1C 125VDC Battery is disconnected from its bus. 12 EACS Fan is inoperable during the 1C 125VDC maintenance window [80069101].

___ 3.8 Transferring 1C 4KV Vital Bus power supply during the 1C 125VDC Battery maintenance window will result in a momentary deenerization of the associated 115VAC bus and will cause spurious component actuation.

___ 3.9 The following 500KV breaker regular protection circuits and trip coils are powered from 1C 125VDC Bus:

- 500KV BS 1-8 - Regular Protection Circuit - Trip Coil 1
- 500KV BS 2-8 - Regular Protection Circuit - Trip Coil 1
- 500KV BS 2-6 - Regular Protection Circuit - Trip Coil 1

As a result, all work involving testing or maintenance on the following back-up protection circuits and trip coils, powered from 1B 125VDC Bus, should be suspended to prevent inadvertent loss of breaker trip capability during periods when 1C 125VDC Bus is powered solely from a battery charger:

- 500KV BS 1-8 - Back-up Protection Circuit - Trip Coil 2
- 500KV BS 2-8 - Back-up Protection Circuit - Trip Coil 2
- 500KV BS 2-6 - Back-up Protection Circuit - Trip Coil 2

1C 125VDC Bus supplies control power for the 5V1T60DISC, NO. 1 STATION POWER TRANSFORMER 500KV LOAD BREAK DISCONNECT. This circuit switcher receives a trip signal when 1 SPT regular or backup ground fault protection is initiated. To prevent fault protection from cascading into the 500KV system upon the unlikely occurrence of a 1 SPT ground concurrent with a loss of 1C 125VDC Bus, a temporary modification to provide control power to this device should be evaluated for use during periods when 1C 125VDC Bus is powered solely from a battery charger.

___ 3.10 Any system or portion of a system which is NOT aligned to its normal 125VDC power supply cannot be considered OPERABLE unless an evaluation is performed that demonstrates the capability of the system to meet single failure criteria (SER Supplement 3, Section 8.3.2).

___ 3.11 13 Chiller has been evaluated for operation in Modes 5, 6 or Defueled, and may be considered OPERABLE when the 1C 125VDC Battery Disconnect Switch (1CDC1AX39) is OPEN. The 115VAC control circuit is powered from 1CX1AX13X, 13 Chiller. The compressor will continue to run and perform its protective function on a loss of 1C 125VDC Bus.

4.0 EQUIPMENT/MATERIAL REQUIRED

None

5.0 PROCEDURE

5.1 Transferring 1C 125VDC Bus Loads to 1B 125VDC Bus

___ 5.1.1 **CLOSE** 1BDC1AX32, 1C 4KV VITAL BUS EMERGENCY CONTROL POWER (1B 125VDC Bus, 84′ Swgr Rm).

___ 5.1.2 IF a 1C 125VDC Bus outage is planned (both 1C 125VDC Battery Chargers are to be removed from service), THEN **CLOSE** the following breakers, for equipment to remain in service:

- ___ ♦ 1BDC1AX21, 1CCDC 125VDC DISTRIBUTION CABINET EMERGENCY POWER
- ___ ♦ 1BDC1AX27, 1CDC 125VDC DISTRIBUTION CABINET EMERGENCY POWER
- ___ ♦ 1BDC1AX37, 1C 460V VITAL BUS EMERGENCY CONTROL POWER

___ 5.1.3 **ENSURE** 1BDC1AX28, 1DDC 125VDC DISTRIBUTION CABINET REGULAR POWER, is CLOSED.

___ 5.1.4 **ENSURE** 1CDC1AX28, 1DDC 125VDC DISTRIBUTION CABINET EMERGENCY POWER, is OPEN (1C 125VDC Bus, 84′ Swgr Rm).

NOTE

Steps 5.1.5 through 5.1.9 may be performed in any order or concurrently at the SM/CRS discretion. Steps 5.1.7 through 5.1.9 are only performed when a 1C 125VDC Bus outage is planned.

___ 5.1.5 **TRANSFER** 1C 4KV Vital Bus 125VDC control power, as follows (1C 4KV VITAL BUS 4KV PT's Cubicle rear)

- ___ A. **NOTIFY** NCO that 1C 4KV Vital Bus control power is to be transferred from 1C 125VDC Bus to 1B 125VDC Bus.
- ___ B. **OPEN** 1CD1AXX1, 1C 4KV VITAL BUS REGULAR CONTROL POWER FROM 1CDC32.
- ___ C. **OPEN** 1CD1AXX3, 1C 4KV VITAL BUS REGULAR ALARM POWER FROM 1CDC32.
- ___ D. **CLOSE** 1CD1AXX2, 1C 4KV VITAL BUS EMERGENCY CONTROL POWER FROM 1BDC32.

(step continued on next page)

5.1.5 (continued)

___ E. **CLOSE** 1CD1AXX4, 1C 4KV VITAL BUS EMERGENCY ALARM POWER FROM 1BDC32.

___ F. Notify NCO to **ENSURE** the following:

___ ♦ Aux. Annunciator Point 0604, 1C 4KV VITAL BUS, LOSS OF 125VDC, alarmed and cleared.

___ ♦ Aux. Annunciator Point 0613, 1C VITAL BUS CIRCUIT ENERGIZED, is in alarm.

___ ♦ Aux. Annunciator Point 0614, 1C 4KV VITAL BUS/LOSS OF NORMAL 125VDC, is in alarm.

___ 5.1.6 IF a 1C 125VDC Bus outage is NOT planned (1C1 OR 1C2 125VDC Battery Charger is to remain in service), THEN **MARK** Steps 5.1.7 through 5.1.9 as N/A.

___ 5.1.7 **TRANSFER** power to 1CDC3AX, 1CDC 125VDC Distribution Cabinet, as follows (84′ Swgr Rm):

___ A. **NOTIFY** NCO that power to 1CDC3AX, 1CDC 125VDC Distribution Cabinet is to be transferred from 1C 125VDC Bus to 1B 125VDC Bus.

___ B. **OPEN** 1CDC3AXX1, 1CDC 125VDC DIST CABINET REGULAR POWER FROM 1CDC27.

___ C. **CLOSE** 1CDC3AXX2, 1CDC 125VDC DIST CABINET EMERGENCY POWER FROM 1BDC27.

___ D. Notify NCO to **ENSURE** Aux. Annunciator Point 0045, 1CDC 125VDC DISTR. CABINET, LOSS OF VOLT alarmed and cleared.

___ 5.1.8 **TRANSFER** 1C 460V Vital Bus 125VDC control power, as follows (1C 460V Vital Bus, 84′ Swgr Rm):

___ A. **NOTIFY** NCO that 1C 460V Vital Bus control power is to be transferred from 1C 125VDC Bus to 1B 125VDC Bus.

___ B. **OPEN** 1CX1AXX1, 1C 460V VITAL BUS REGULAR CONTROL POWER FROM 1CDC37.

___ C. **CLOSE** 1CX1AXX2, 1C 460V VITAL BUS EMERGENCY CONTROL POWER FROM 1BDC37.

___ D. Notify NCO to **ENSURE** Aux. Annunciator Point 0805, 1C 460 VITAL BUS, LOSS OF VOLTAGE, alarmed and cleared.

___ 5.1.9 **TRANSFER** power to 1CDC2AX, 1CCDC 125VDC Distribution Cabinet, as follows (Relay Rm):

CAUTION

De-energizing 1CDC2AX, 1CCDC 125VDC Distribution Cabinet, will cause the motor-driven AFW Pumps to start (if available), and cause turbine-driven AFW Pump START indication. **[C0357]**

___ A. IF motor-driven AFW Pumps are available AND are NOT required to be in service, THEN **OPEN** the following 125VDC control power breakers:

___ ♦ 1AD1AX1D*, CONTROL POWER

___ ♦ 1BD1AX1D*, CONTROL POWER

___ B. **NOTIFY** NCO that power to 1CDC2AX, 1CCDC 125VDC Distribution Cabinet, is to be transferred from 1C 125VDC Bus to 1B 125VDC Bus.

NOTE

The following valves will close when 1CDC2AX, 1CCDC 125VDC Distribution Cabinet is de-energized during power supply transfers:

- ♦ Containment pressure-vacuum relief valve 1VC6
- ♦ Containment APD backup isolation valves 1VC9, 1VC10, 1VC13, and 1VC14
- ♦ 1WL12, RC DR PMP ISOL V
- ♦ 1WL16, CONT SUMP PUMP DISCH INLET VALVE

___ C. Notify NCO to **PERFORM** the following:

___ 1. **ENSURE** Containment APD Sample Normal Isolation valves 1VC7, 1VC8, 1VC11, and 1VC12 are OPEN.

___ 2. IF Containment Pressure or Vacuum Relief is in progress, THEN **TERMINATE** IAW S1.OP-SO.CBV-0002(Q).

(step continued on next page)

5.1.9 (continued)

CAUTION

The Control Area Ventilation System must be in the NORMAL Mode while placing the system in the Maintenance Mode. Transferring 1CCDC 125VDC Distribution Cabinet may have to wait until after the system is placed in the Maintenance Mode.

___ D. Notify NCO to **PLACE** the Control Room Ventilation System in ACCIDENT PRESSURIZED mode IAW S1.OP-SO.CAV-0001(Q), Control Area Ventilation Operation.

___ E. **OPEN** 1CDC2AXX1, 1CCDC 125VDC DIST CABINET REGULAR POWER FROM 1CDC21.

___ F. **CLOSE** 1CDC2AXX2, 1CCDC 125VDC DIST CABINET EMERGENCY POWER FROM 1BDC21.

___ G. Notify NCO to **PERFORM** the following:

___ 1. **ENSURE** Aux. Annunciator Point 0030, 1CCDC 125VDC DISTR. CABINET, LOSS OF VOLT., alarmed and cleared.

___ 2. **PLACE** 1WL12, RC DR PMP ISOL V, in AUTO.

___ 3. **OPEN** 1WL16, CONT SUMP PUMP DISCH INLET VALVE.

___ 4. **PLACE** Control Room Ventilation System in NORMAL mode IAW S1.OP-SO.CAV-0001(Q).

___ 5. IF Containment Pressure-Vacuum Relief is required, THEN **ESTABLISH** IAW S1.OP-SO.CBV-0002(Q).

___ H. IF 125VDC control power breakers for the motor-driven AFW Pumps were opened at Step 5.1.9A to support 1CCDC power supply transfer, THEN **CLOSE** the following 125VDC control power breakers:

___ ♦ 1AD1AX1D*, CONTROL POWER

___ ♦ 1BD1AX1D*, CONTROL POWER

___ 5.1.10 **OPEN** the following breakers (1C 125VDC Bus, 84′ Swgr Rm):

___ ♦ 1CDC1AX4, ALTERNATE SHUTDOWN SYSTEM 125VDC DISTRIBUTION PANEL 1ASDS-DC

___ ♦ 1CDC1AX11, 13 EMERGENCY LIGHTING INVERTER (ALTERNATE FEED)

___ ♦ 1CDC1AX32, 1C 4KV VITAL BUS REGULAR CONTROL POWER

___ 5.1.11 IF a 1C 125VDC Bus outage is planned AND all 1C 125VDC Bus loads have been transferred to 1B 125VDC Bus, THEN:

___ A. **OPEN** the following breakers (84′ Swgr Room):

___ ♦ 1CDC1AX1, 11 & 12 STATION ESSENTIAL CONTROLS INVERTER

___ ♦ 1CDC1AX3, 1C VITAL INSTRUMENT BUS INVERTER

___ ♦ 1CDC1AX17, 1C 125VDC BUS CONTROL ROOM GROUND OHMMETER

___ ♦ 1CDC1AX18, 1C 125VDC BUS UNDERVOLTAGE RELAY & CONTROL ROOM VOLTMETER

___ ♦ 1CDC1AX21, 1CCDC 125VDC DISTRIBUTION CABINET REGULAR POWER

___ ♦ 1CDC1AX22, 1CDCDG DIESEL GEN STAND-BY 125VDC DISTRIBUTION PANEL

___ ♦ 1CDC1AX23, 1C 125VDC BUS GROUND OHMMETER (BATTERY CHARGER AREA)

___ ♦ 1CDC1AX27, 1CDC 125VDC DISTRIBUTION CABINET REGULAR POWER

___ ♦ 1CDC1AX31, SPDS 1C 125VDC BATTERY VOLTAGE

___ ♦ 1CDC1AX37, 1C 460V VITAL BUS REGULAR CONTROL POWER

___ B. **ENSURE** OHA B-18, 1C 125VDC CNTRL BUS VOLT LO, is in alarm.

5.2 **Disconnecting 1C 125VDC Battery from 1C 125VDC Bus**

___ 5.2.1 **ENSURE** Section 5.1, Transferring 1C 125VDC Bus Loads to 1B 125VDC Bus is completed.

___ 5.2.2 **COMPLETE** S2.OP-SO.CAV-0001(Q), Control Area Ventilation Operation for Operation With Unit 1 EACS Out-Of-Service (Maintenance Mode) (Refer to Step 3.7).

___ 5.2.3 IF a 1C 125VDC Bus outage is planned,
AND all 1C 125VDC Bus loads have been transferred to 1B 125VDC Bus,
THEN:

___ A. **REMOVE** 1C1 AND 1C2 125VDC Battery Charger from service IAW S1.OP-SO.125-0003(Q), 1C 125VDC Battery Charger Operation.

___ B. IF 1C 125VDC Battery ammeter indicates >0 amps,
THEN **EVALUATE** 1C 125VDC Battery loading prior to opening 1CDC1AX39, 1C 125VDC VITAL BATT DISC SWT.

___ C. **OPEN** 1CDC1AX39, 1C 125VDC VITAL BATT DISC SWT (located inside, rear 1CDC1AX cabinet).

___ D. **PERFORM** Independent Verification of components specified in Attachment 2, Sections 1.0 through 4.0.

___ 5.2.4 IF a 1C 125VDC Bus outage is NOT planned,
(planned 1C 125VDC Battery outage only)
THEN:

___ A. **ENSURE** 1C1 OR 1C2 125VDC Battery Charger is in service IAW S1.OP-SO.125-0003(Q), 1C 125VDC Battery Charger Operation.

___ B. IF 1C 125VDC Battery ammeter indicates >0 amps,
THEN **EVALUATE** 1C 125VDC Battery loading prior to opening 1CDC1AX39, 1C 125VDC VITAL BATT DISC SWT.

___ C. **OPEN** 1CDC1AX39, 1C 125VDC VITAL BATT DISC SWT (located inside, rear 1CDC1AX cabinet).

___ D. **PERFORM** Independent Verification of components specified in Attachment 2, Sections 5.0 through 7.0.

___ 5.2.5 **UPDATE** WCM to reflect component positions IAW Attachment 2.

5.3 **Connecting 1C 125VDC Battery to 1C 125VDC Bus**

NOTE

Maintenance may have connected a 1C 125VDC Battery Charger to the battery side of 1CDC1AX39, 1C 125VDC VITAL BATT DISC SWT to raise battery voltage to ≥117VDC.

___ 5.3.1 **ENSURE** Maintenance has disconnected the 1C 125VDC Battery Charger from the battery side of 1CDC1AX39, 1C 125VDC VITAL BATT DISC SWT.

CAUTION

When 1C 125VDC Bus loads are powered from 1C 125VDC Bus, connecting the bus to a partially discharged battery may cause bus voltage to drop to an unacceptable level. The minimum acceptable battery terminal voltage for this condition is 117VDC. Closing the disconnect switch with battery terminal voltage <117VDC with loads connected to the bus may result in spurious component actuations. For this reason, the disconnect switch is NOT to be closed until all 1C 125VDC Bus loads are transferred to 1B 125VDC Bus OR battery terminal voltage is raised to ≥117VDC.

___ 5.3.2 IF 1C1 OR 1C2 125VDC Battery Charger is supplying power to the 1C 125VDC Bus loads,
THEN **ENSURE** 1C 125VDC Battery Terminal Voltage is ≥117VDC.
(actual battery terminal voltage is provided by Maintenance)

___ 5.3.3 **CLOSE** 1CDC1AX39, 1C 125VDC VITAL BATT DISC SWT (located inside, rear 1CDC1AX cabinet).

___ 5.3.4 IF restoring 1C 125VDC Bus following a bus outage,
THEN:

___ A. **ENSURE** 1C 125V D-C Bus Blown Main Fuses Alarm Cabinet [+] toggle switch and [-] toggle switch are ON.

___ B. **CLOSE** 1CDC1AX18, 1C 125VDC BUS UNDERVOLTAGE RELAY & CONTROL ROOM VOLTMETER (84′ Swgr Room).

___ C. **PLACE** 1C1 OR 1C2 125VDC Battery Charger in service IAW S1.OP-SO.125-0003(Q), 1C 125VDC Battery Charger Operation.

(step continued on next page)

5.3.4 (continued)

___ D. **ENSURE** the following:

___ ♦ 1C 125VDC Bus voltage is >129VDC.

___ ♦ OHA B-18, 1C 125VDC CNTRL BUS VOLT LO, is clear.

___ ♦ 1C 125VDC Battery Blown Fuse lamps are extinguished (1C 125V D-C Bus Blown Main Fuses Alarm Cabinet).

___ 5.3.5 **ALIGN** 1C1 AND 1C2 125VDC Battery Chargers as required to support current plant conditions IAW S1.OP-SO.125-0003(Q), 1C 125VDC Battery Charger Operation.

___ 5.3.6 **PERFORM** Section 5.4, Returning 1C 125VDC Bus Loads to 1C 125VDC Bus.

___ 5.3.7 IF 1C 125VDC Bus was removed from service, THEN **PERFORM** Independent Verification of components specified in Attachment 3, Sections 1.0 through 5.0.

___ 5.3.8 IF 1C 125VDC Battery was disconnected from 1C 125VDC Bus AND 1C 125VDC Bus was NOT removed from service, THEN **PERFORM** Independent Verification of components specified in Attachment 3, Sections 5.0 through 8.0.

___ 5.3.9 **UPDATE** WCM to reflect component positions IAW Attachment 3.

___ 5.3.10 When 1C 125VDC Bus is OPERABLE, as determined by the SM/CRS, **PERFORM** the following:

___ ♦ **INITIATE** S2.OP-SO.CAV-0001(Q), Control Area Ventilation for Restoration From Operation With Unit 1 EACS Out-Of-Service (Maintenance Mode).

___ ♦ **RESTORE** 1CAA48 and 1CAA49 to Remote Operation IAW S1.OP-SO.CAV-0001(Q).

___ ♦ **ALIGN** Chilled Water System "Non-Essential Heat Loads" as required to support current operating conditions IAW S1.OP-SO.CH-0001(Q), Chilled Water System Operation.

___ ♦ **REFER** to T/S Action Statements entered as a result of this procedure for continued applicability.

5.4 **Returning 1C 125VDC Bus Loads to 1C 125VDC Bus**

___ 5.4.1 **ENSURE** 1CDC1AX39, 1C 125VDC VITAL BATT DISC SWT is CLOSED IAW Section 5.3, Connecting 1C 125VDC Battery to 1C 125VDC Bus.

___ 5.4.2 **CLOSE** OR **ENSURE** CLOSED the following breakers (1CDC1AX, 84′ Swgr Rm):

___ ♦ 1CDC1AX1, 11 & 12 STATION ESSENTIAL CONTROLS INVERTER

___ ♦ 1CDC1AX3, 1C VITAL INSTRUMENT BUS INVERTER

___ ♦ 1CDC1AX4, ALTERNATE SHUTDOWN SYSTEM 125VDC DISTRIBUTION PANEL 1ASDS-DC

___ ♦ 1CDC1AX11, 13 EMERGENCY LIGHTING INVERTER (ALTERNATE FEED)

___ ♦ 1CDC1AX32, 1C 4KV VITAL BUS REGULAR CONTROL POWER

___ 5.4.3 IF all 1C 125VDC Bus loads are presently powered from 1B 125VDC Bus, THEN **CLOSE** the following breakers:

___ ♦ 1CDC1AX17, 1C 125VDC BUS CONTROL ROOM GROUND OHMMETER

___ ♦ 1CDC1AX21, 1CCDC 125VDC DISTRIBUTION CABINET REGULAR POWER

___ ♦ 1CDC1AX22, 1CDCDG DIESEL GEN STAND-BY 125VDC DISTRIBUTION PANEL

___ ♦ 1CDC1AX23, 1C 125VDC BUS GROUND OHMMETER (BATTERY CHARGER AREA)

___ ♦ 1CDC1AX27, 1CDC 125VDC DISTRIBUTION CABINET REGULAR POWER

___ ♦ 1CDC1AX31, SPDS 1C 125VDC BATTERY VOLTAGE

___ ♦ 1CDC1AX37, 1C 460V VITAL BUS REGULAR CONTROL POWER

NOTE

Steps 5.4.4 through 5.4.8 may be performed in any order or concurrently at the SM/CRS discretion. Equipment identified in Steps 5.4.6 through 5.4.8 may NOT have been transferred IAW Section 5.1, Transferring 1C 125VDC Bus Loads to 1B 125VDC Bus.

___ 5.4.4 **TRANSFER** 1CD1AX, 1C 4KV Vital Bus 125VDC control power, as follows (1C 4KV VITAL BUS 4KV PT's Cubicle rear)

___ A. **NOTIFY** NCO that 1C 4KV Vital Bus control power is to be transferred from 1B 125VDC Bus to 1C 125VDC Bus.

___ B. **OPEN** 1CD1AXX2, 1C 4KV VITAL BUS EMERGENCY CONTROL POWER FROM 1BDC32.

___ C. **OPEN** 1CD1AXX4, 1C 4KV VITAL BUS EMERGENCY ALARM POWER FROM 1BDC32.

___ D. **CLOSE** 1CD1AXX1, 1C 4KV VITAL BUS REGULAR CONTROL POWER FROM 1CDC32.

___ E. **CLOSE** 1CD1AXX3, 1C 4KV VITAL BUS REGULAR ALARM POWER FROM 1CDC32.

___ F. Notify NCO to **ENSURE** the following:

___ ♦ Aux. Annunciator Point 0604, 1C 4KV VITAL BUS, LOSS OF 125VDC, alarmed and cleared.

___ ♦ Aux. Annunciator Point 0613 1C 4KV VITAL BUS CIRCUIT ENERGIZED, is clear.

___ ♦ Aux. Annunciator Point 0614, 1C 4KV VITAL BUS/LOSS OF NORMAL 125VDC, is clear.

NOTE

Equipment identified in Steps 5.4.6 through 5.4.8 may NOT have been transferred IAW Section 5.1, Transferring 1C 125VDC Bus Loads to 1B 125VDC Bus.

___ 5.4.5 IF all 1C 125VDC Bus loads are currently aligned to 1C 125VDC Bus, THEN **MARK** Steps 5.4.6 through 5.4.8 as N/A.

___ 5.4.6 **TRANSFER** power to 1CDC3AX, 1CDC 125VDC Distribution Cabinet, as follows (84′ Swgr Rm):

___ A. **NOTIFY** NCO that power to 1CDC3AX, 1CDC 125VDC Distribution Cabinet is to be transferred from 1B 125VDC Bus to 1C 125VDC Bus.

___ B. **OPEN** 1CDC3AXX2, 1CDC 125VDC DIST CABINET EMERGENCY POWER FROM 1BDC27.

___ C. **CLOSE** 1CDC3AXX1, 1CDC 125VDC DIST CABINET REGULAR POWER FROM 1CDC27.

___ D. Notify NCO to **ENSURE** Aux. Annunciator Point 0045, 1CDC 125VDC DISTR. CAB, LOSS OF VOLT., alarmed and cleared.

___ 5.4.7 **TRANSFER** 1CX1AX, 1C 460V Vital Bus 125VDC control power, as follows (1C 460V Vital Bus, 84′ Swgr Rm):

___ A. **NOTIFY** NCO that 1C 460V Vital Bus control power is to be transferred from 1B 125VDC Bus to 1C 125VDC Bus.

___ B. **OPEN** 1CX1AXX2, 1C 460V VITAL BUS EMERGENCY CONTROL POWER FROM 1BDC37.

___ C. **CLOSE** 1CX1AXX1, 1C 460V VITAL BUS REGULAR CONTROL POWER FROM 1CDC37.

___ D. Notify NCO to **ENSURE** Aux. Annunciator Point 0805, 1C 460 VITAL BUS, LOSS OF VOLTAGE, alarmed and cleared.

___ 5.4.8 **TRANSFER** power to 1CDC2AX, 1CCDC 125VDC Distribution Cabinet, as follows (Relay Room):

CAUTION

De-energizing 1CDC2AX, 1CCDC 125VDC Distribution Cabinet, will cause the motor-driven AFW Pumps to start (if available), and cause turbine-driven AFW Pumps START indication. **[C0357]**

___ A. IF motor-driven AFW Pumps are available AND are NOT required to be in service, THEN **OPEN** the following 125VDC control power breakers:

___ ♦ 1AD1AX1D*, CONTROL POWER

___ ♦ 1BD1AX1D*, CONTROL POWER

___ B. **NOTIFY** NCO that power to 1CDC2AX, 1CCDC 125VDC Distribution Cabinet is to be transferred from 1B 125VDC Bus to 1C 125VDC Bus.

NOTE

The following valves will close when 1CDC2AX, 1CCDC 125VDC Distribution Cabinet is de-energized during power supply transfers:

- ♦ Containment pressure-vacuum relief valve 1VC6
- ♦ Containment APD backup isolation valves 1VC9, 1VC10, 1VC13, and 1VC14
- ♦ 1WL12, RC DR PMP ISOL V
- ♦ 1WL16, CONT SUMP PUMP DISCH INLET VALVE

___ C. Notify NCO to **PERFORM** the following:

___ 1. **ENSURE** Containment APD Sample Normal Isolation valves 1VC7, 1VC8, 1VC11, and 1VC12 are OPEN.

___ 2. IF Containment Pressure-Vacuum Relief is in progress, THEN **TERMINATE** IAW S1.OP-SO.CBV-0002(Q).

___ 3. **PLACE** Control Room Ventilation System in ACCIDENT PRESSURIZED mode IAW S1.OP-SO.CAV-0001(Q), Control Area Ventilation Operation.

(step continued on next page)

5.4.8 (continued)

___ D. **OPEN** 1CDC2AXX2, 1CCDC 125VDC DIST CABINET EMERGENCY POWER FROM 1BDC21.

___ E. **CLOSE** 1CDC2AXX1, 1CCDC 125VDC DIST CABINET REGULAR POWER FROM 1CDC21.

___ F. Notify NCO to **PERFORM** the following:

___ 1. **ENSURE** Aux. Annunciator Point 0030, 1CCDC 125VDC DISTR. CABINET, LOSS OF VOLT., alarmed and cleared.

___ 2. **PLACE** 1WL12, RC DR PMP ISOL V, in AUTO.

___ 3. **OPEN** 1WL16, CONT SUMP PUMP DISCH INLET VALVE.

___ 4. IF Containment Pressure-Vacuum Relief is required, THEN **ESTABLISH** IAW S1.OP-SO.CBV-0002(Q).

___ 5. **PLACE** Control Room Ventilation System in NORMAL mode IAW S1.OP-SO.CAV-0001(Q).

___ G. IF 125VDC control power breakers for the motor-driven AFW Pumps were opened at Step 5.4.8A to support 1CCDC power supply transfer, THEN **CLOSE** the following 125VDC control power breakers:

___ ♦ 1AD1AX1D*, CONTROL POWER

___ ♦ 1BD1AX1D*, CONTROL POWER

___ 5.4.9 **OPEN** 1BDC1AX32, 1C 4KV VITAL BUS EMERGENCY CONTROL POWER (1B 125VDC Bus, 84′ Swgr Rm).

___ 5.4.10 **OPEN** OR **ENSURE** OPEN the following breakers (84′ Swgr Room):

___ ♦ 1BDC1AX21, 1CCDC 125VDC DISTRIBUTION CABINET EMERGENCY POWER

___ ♦ 1BDC1AX27, 1CDC 125VDC DISTRIBUTION CABINET EMERGENCY POWER

___ ♦ 1BDC1AX37, 1C 460V VITAL BUS EMERGENCY CONTROL POWER

___ 5.4.11 IF 1C 230V Vital Bus is energized,
THEN:

NOTE

Steps 5.4.11A through 5.4.11D may be performed in any order.

___ A. **PERFORM** the following IAW S1.OP-SO.115-0013(Q), 1C Vital Instrument Bus UPS System Operation:

___ 1. IF 1C 115V Vital Instrument Bus is de-energized,
THEN **PLACE** 1C Vital Instrument Bus UPS System in service
AND **ENERGIZE** 1C 115V Vital Instrument Bus.

___ 2. IF 1C 115V Vital Instrument Bus is energized from the AC Line Regulator,
THEN:

___ a. **ENERGIZE** 1C Vital Instrument Bus Rectifier and Inverter with AC Line Regulator Supplying 1C 115V Vital Instrument Bus.

___ b. **TRANSFER** 1C Vital Instrument Bus from AC Line Regulator to Inverter.

___ 3. IF 1C 115V Vital Instrument Bus is energized from the Inverter with DC Power Supply de-energized,
THEN **ENERGIZE** DC Power Supply to Inverter.

___ 4. IF 1C 115V Vital Instrument Bus is powered from a temporary power supply,
THEN:

___ a. **REMOVE** all loads from 1C 115V Vital Instrument Bus.

___ b. Direct Maintenance Technician to **DE-ENERGIZE** the temporary power supply AND **REMOVE** temporary power leads.

___ c. **PLACE** 1C Vital Instrument Bus UPS System in service,
AND **ENERGIZE** 1C 115V Vital Instrument Bus.

___ B. **RESTORE** 11 and 12 Essential Controls Inverters and the Essential Controls Regulator to normal operation IAW S1.OP-SO.115-0003(Q), 11 and 12 Essential Controls Inverters Operation.

(step continued on next page)

5.4.11 (continued)

___ C. **PERFORM** the following IAW S1.OP-SO.115-0002(Q), Alternate Shutdown System Inverter Operation:

___ 1. **PLACE** the 1ASDS Inverter Power Supply Panel in service.

___ 2. **PLACE** the 1ASDS Inverter in service.

___ D. **PERFORM** the following IAW S1.OP-SO.115-0010(Q), 13 Emergency Lighting UPS System Operation:

___ 1. IF 1C1AXZ, 13 Emergency Lighting Distribution Cabinet is powered from the preferred AC source,
THEN **ENERGIZE** 13 Emergency Lighting Inverter with Preferred AC Source Supplying 13 Emergency Lighting Distribution Cabinet.

___ 2. IF 1C1AXZ, 13 Emergency Lighting Distribution Cabinet, is de-energized,
THEN **PLACE** 13 Emergency Lighting UPS System in service,
AND **ENERGIZE** 13 Emergency Lighting Distribution Cabinet.

___ 5.4.12 IF components specified in Attachment 1, Load Shed are tagged to support transferring 1C 125VDC Bus loads,
THEN **RELEASE** the tags.

___ 5.4.13 **RELEASE** tag from 1BDC1AX24, 12 EMERGENCY LIGHTING INVERTER
AND **RESTORE** 12 Emergency Lighting UPS System to normal operation IAW S1.OP-SO.115-0006(Q), 12 Emergency Lighting UPS System Operation.

___ 5.4.14 **COMPLETE** Section 5.3, Connecting 1C 125VDC Battery to 1C 125VDC Bus.

5.5 **Completion and Review**

___ 5.5.1 **COMPLETE** Attachment 4, Section 1.0 and 2.0, AND **FORWARD** this procedure to the SM/CRS for review and approval.

___ 5.5.2 SM/CRS **PERFORM** the following:

___ A. **REVIEW** this procedure with Attachments 1-4 for completeness and accuracy.

___ B. **COMPLETE** Attachment 4, Section 3.0.

___ C. **FORWARD** completed procedure to Operations Staff.

END OF PROCEDURE SECTION

6.0 RECORDS

6.1 Retain the following IAW RM-AA-101, Records Management Program:

Attachments 1-4

7.0 REFERENCES

7.1 **Updated Final Safety Analysis Report**:

7.1.1 Section 8.3.2, DC Power

7.2 **Technical Specifications - Unit 1**:

7.2.1 3.7.6.1, Control Room Emergency Air Conditioning System
7.2.2 3.8.2.4, 125 Volt DC Distribution - Shutdown

7.3 **Technical Specifications - Unit 2**:

7.3.1 3.7.6, Control Room Emergency Air Conditioning System

7.4 **Procedures**:

7.4.1 NC.NA-AP.ZZ-0005(Q), Station Operating Practices
7.4.2 NC.NA-AP.ZZ-0015(Q), Safety Tagging Program
7.4.3 S1.OP-SO.125-0006(Q), 1B 125VDC Bus Operation

7.5 **Drawings**:

7.5.1 203007, 125 V.D.C. One Line
7.5.2 211370, 115V. Control System

7.6 **PSBPs**:

None

7.7 **Others**:

7.7.1 1EC-3245, Cyberex Emergency Lighting Inverter Installation
7.7.2 1EC-3385, Emergency Lighting Inverter Power Supply Modification
7.7.3 1EC-3637, Molded Case Circuit Breaker Replacement
7.7.4 DE-CB.125-0018(Q), Low Voltage DC Electrical Systems
7.7.5 Engineering Evaluation S-1-125-EEE-1018, Transfer of 1C 125V DC Bus to 1B 125V DC Bus in Modes 5, 6 or Defueled
7.7.6 NSO INCI 94-072, 2A 125VDC Bus UV Relay Not Installed
7.7.7 Safety Evaluation Report, Section 8.3.2, D-C System
7.7.8 Safety Evaluation Report, Supplement 3, Section 8.3.2, Direct Current Power Systems
7.7.9 Safety Evaluation Report, Supplement 4, Section 8.3.2, Direct Current Power Systems
7.7.10 PIRS Item 961214064, Unplanned Actuation of the Emergency Air Conditioning System (ACCIDENT PRESSURIZED Mode)

7.8 **Cross-References**:

7.8.1 NC.NA-AP.ZZ-0001(Q), Nuclear Procedure Program
7.8.2 RM-AA-101, Records Management Program
7.8.3 S1.OP-SO.CAV-0001(Q), Control Area Ventilation Operation.
7.8.4 S1.OP-SO.CBV-0002(Q), Containment Pressure - Vacuum Relief System Operation
7.8.5 S1.OP-SO.115-0002(Q), Alternate Shutdown Panel Inverter Operation
7.8.6 S1.OP-SO.115-0003(Q), 11 And 12 Essential Controls Inverter Operation
7.8.7 S1.OP-SO.115-0006(Q), 12 Emergency Lighting UPS System Operation
7.8.8 S1.OP-SO.115-0010(Q), 13 Emergency Lighting UPS System Operation
7.8.9 S1.OP-SO.115-0013(Q), 1C Vital Instrument Bus UPS System Operation
7.8.10 S1.OP-SO.125-0003(Q), 1C 125VDC Battery Charger Operation
7.8.11 S1.OP-SO.125-0004(Q), 125VDC Ground Detection

7.9 **Commitments**:

7.9.1 C0357, NSO LER 272/91-007-00

ATTACHMENT 1
(Page 1 of 4)

125VDC LOAD SHED

NOTES

- At the occurrence of a Loss Of Off-site Power (LOOP) the station batteries are the only 125VDC power available and must carry the combined loads for one minute until the Emergency Diesel Generators start and load. The intent of this attachment is to minimize the 125VDC electrical loading during a transient which trips the listed AC loads and causes the associated charging spring motors to recharge simultaneously.
- Each 4KV breaker selected for load shed is to be C/T in the DISCONNECT (OPEN) position. This will prevent the use of the 125VDC Racking Power when the breaker is selected for load shed. The Control Power Breaker may be substituted for selected 460V Breakers.
- The combined load, spring charging motor/trip coil, associated with each 4KV breaker is ≈6.0 amps AND each 460V breaker is ≈10.0 amps.

___ 1.0 **C/T** at least 266 amps of 125VDC controlled loads specified in Steps 1.1, 1.2, and 1.3 to support transferring 1C 125VDC Bus loads to 1B 125VDC Bus.

ATTACHMENT 1
(Page 2 of 4)

125VDC LOAD SHED

___ 1.1 1C-DF-ECP-1, 1C DIESEL GENERATOR LOCKOUT [40 amps].

___ 1.2 4KV BUS LOADS - [each breaker listed is 6.0 amps. 102 amps total]:

- ___ ♦ 1BD1AX1D, 12 AUXILIARY FEEDWATER PUMP
- ___ ♦ 1BD1AX3D, 13 SERVICE WATER PUMP
- ___ ♦ 1BD1AX6D, 1B DIESEL GENERATOR BREAKER
- ___ ♦ 1BD1AX7D, 12 RESIDUAL HEAT REMOVAL PUMP
- ___ ♦ 1BD1AX8D, 14 SERVICE WATER PUMP
- ___ ♦ 1BD1AX9D, 11 CHARGING PUMP
- ___ ♦ 1BD1AX10D, 12 COMPONENT COOLING WATER PUMP
- ___ ♦ 1CD1AX2D, 12 CONTAINMENT SPRAY PUMP
- ___ ♦ 1CD1AX3D, 11 SERVICE WATER PUMP
- ___ ♦ 1CD1AX5D, 12 SAFETY INJECTION PUMP
- ___ ♦ 1CD1AX6D, 1C DIESEL GENERATOR BREAKER
- ___ ♦ 1CD1AX8D, 12 SERVICE WATER PUMP
- ___ ♦ 1CD1AX9D, 12 CHARGING PUMP
- ___ ♦ 1CD1AX10D, 13 COMPONENT COOLING WATER PUMP
- ___ ♦ 1FD1TB1D, 13 CONDENSATE PUMP
- ___ ♦ 1FD1TB4D, 13 REACTOR COOLANT PUMP
- ___ ♦ 1GD1TB4D, 14 REACTOR COOLANT PUMP

ATTACHMENT 1
(Page 3 of 4)

125VDC LOAD SHED

___ 1.3 460V BUS LOADS - [each breaker listed is 10.0 amps. 320 amps total]:

___ ♦ 1BX1AX2X, 12 CONTAINMENT FAN COIL UNIT LOW SPEED

___ ♦ 1BX1AX3X, 12 CONTAINMENT FAN COIL UNIT HIGH SPEED

___ ♦ 1BX1AX4X, 12 CONTAINMENT FAN COIL UNIT HIGH SPEED

___ ♦ 1BX1AX5X, 12 FUEL HANDLING BUILDING EXHAUST FAN

___ ♦ 1BX1AX6X, 14 CONTAINMENT FAN COIL UNIT LOW SPEED

___ ♦ 1BX1AX7X, 14 CONTAINMENT FAN COIL UNIT HIGH SPEED

___ ♦ 1BX1AX8X, 14 CONTAINMENT FAN COIL UNIT HIGH SPEED

___ ♦ 1BX1AX9X, 12 SWGR RETURN/EXHAUST FAN

___ ♦ 1BX1AX10X, 12 SWITCHGEAR ROOM SUPPLY FAN

___ ♦ 1BX1AX11X, 12 AUX BUILDING VENTILATION SUPPLY FAN

___ ♦ 1BX1AX12X, 12 AUX BUILDING VENTILATION EXHAUST FAN

___ ♦ 1BX1AX13X, 12 CHILLER

___ ♦ 1BX1AX14X, 12 SPENT FUEL PIT PUMP

___ ♦ 1BX1AX15X, 12 HYDROGEN RECOMBINER

___ ♦ 1CX1AX2X, 13 CONTAINMENT FAN COIL UNIT LOW SPEED

___ ♦ 1CX1AX3X, 13 CONTAINMENT FAN COIL UNIT HIGH SPEED

___ ♦ 1CX1AX4X, 13 CONTAINMENT FAN COIL UNIT HIGH SPEED

___ ♦ 1CX1AX5X, 11 SPENT FUEL PIT PUMP

___ ♦ 1CX1AX6X, 15 CONTAINMENT FAN COIL UNIT LOW SPEED

___ ♦ 1CX1AX7X, 15 CONTAINMENT FAN COIL UNIT HIGH SPEED

___ ♦ 1CX1AX8X, 15 CONTAINMENT FAN COIL UNIT HIGH SPEED

(step continued on next page)

ATTACHMENT 1
(Page 4 of 4)

125VDC LOAD SHED

1.3 (continued)

___ ♦ 1CX1AX10X, 12 PRIMARY WATER MAKE-UP PUMP

___ ♦ 1CX1AX12X, 13 AUX BUILDING VENTILATION EXHAUST FAN

___ ♦ 1CX1AX13X, 13 CHILLER

___ ♦ 1CX1AX14X, 1 EMERGENCY CONTROL AIR COMPRESSOR

___ ♦ 1CX1AX15X, 11 AUX BUILDING VENTILATION SUPPLY FAN

___ ♦ 1CX1AX16X, 13 SWITCHGEAR ROOM SUPPLY FAN

___ ♦ 1CX2AX23X, PZR HTR B/U GRP 1GP (EMER)

___ ♦ 1FX1TB14X, 1 RAW WATER PUMP

___ ♦ 1FX1TB22X, 3 DEAERATOR VACUUM PUMP

___ ♦ 1HX1TB11X, 1 DEAERATOR VACUUM PUMP

___ ♦ 1HX1TB22X, 3 RAW WATER PUMP

ATTACHMENT 2
(Page 1 of 3)

INDEPENDENT VERIFICATION
ALTERNATE POWER SUPPLY ALIGNMENT

1.0 **1CDC1AX 125VDC BUS**: (84′ Swgr Rm)

BREAKER	NAME	POS.	IV
1CDC1AX1	11 & 12 STATION ESSENTIAL CONTROLS INVERTER	OFF	
1CDC1AX3	1C VITAL INSTRUMENT BUS INVERTER	OFF	
1CDC1AX4	ALTERNATE SHUTDOWN SYSTEM 125VDC DISTRIBUTION PANEL 1ASDS-DC	OFF	
1CDC1AX11	13 EMERGENCY LIGHTING INVERTER (ALTERNATE FEED)	OFF	
1CDC1AX17	1C 125VDC BUS CONTROL ROOM GROUND OHMMETER	OFF	
1CDC1AX18	1C 125VDC BUS UNDERVOLTAGE RELAY & CONTROL ROOM VOLTMETER	OFF	
1CDC1AX21	1CCDC 125VDC DISTRIBUTION CABINET REGULAR POWER	OFF	
1CDC1AX22	1CDCDG DIESEL GEN STAND-BY 125VDC DISTRIBUTION PANEL	OFF	
1CDC1AX23	1C 125VDC BUS GROUND OHMMETER (BATTERY CHARGER AREA)	OFF	
1CDC1AX27	1CDC 125VDC DISTRIBUTION CABINET REGULAR POWER	OFF	
1CDC1AX31	SPDS 1C 125VDC BATTERY VOLTAGE	OFF	
1CDC1AX32	1C 4KV VITAL BUS REGULAR CONTROL POWER	OFF	
1CDC1AX37	1C 460V VITAL BUS REGULAR CONTROL POWER	OFF	
1CDC1AX39	1C 125VDC VITAL BATTERY DISCONNECT SWITCH (located inside, rear 1CDC1AX cabinet)	OFF	

2.0 **1BDC1AX 125VDC BUS**: (84′ Swgr Rm)

BREAKER	NAME	POS.	IV
1BDC1AX21	1CCDC 125VDC DISTRIBUTION CABINET EMERGENCY POWER	ON	
1BDC1AX27	1CDC 125VDC DISTRIBUTION CABINET EMERGENCY POWER	ON	
1BDC1AX32	1C 4KV VITAL BUS EMERGENCY CONTROL POWER	ON	
1BDC1AX37	1C 460V VITAL BUS EMERGENCY CONTROL POWER	ON	

ATTACHMENT 2
(Page 2 of 3)

INDEPENDENT VERIFICATION
ALTERNATE POWER SUPPLY ALIGNMENT

3.0 DC DISTRIBUTION CABINETS MAIN BREAKER ALIGNMENT

BREAKER	NAME	POS.	IV
1CDC2AXX1	1CCDC 125VDC DIST CABINET REGULAR POWER FROM 1CDC21 (Relay Room)	OFF	
1CDC2AXX2	1CCDC 125VDC DIST CABINET EMERGENCY POWER FROM 1BDC21	ON	
1CDC3AXX1	1CDC 125VDC DIST CABINET REGULAR POWER FROM 1CDC27 (84′ Switchgear Room)	OFF	
1CDC3AXX2	1CDC 125VDC DIST CABINET EMERGENCY POWER FROM 1BDC27	ON	

4.0 AC BUSES CONTROL POWER BREAKER ALIGNMENT

BREAKER	NAME	POS.	IV
1CX1AXX1	1C 460V VITAL BUS REGULAR CONTROL POWER FROM 1CDC37 (84′ Switchgear Room)	OFF	
1CX1AXX2	1C 460V VITAL BUS EMERGENCY CONTROL POWER FROM 1BDC37	ON	
1CD1AXX1	1C 4KV VITAL BUS REGULAR CONTROL POWER FROM 1CDC32 (1C 4KV VITAL BUS 4KV PT's Cubicle rear)	OFF	
1CD1AXX2	1C 4KV VITAL BUS EMERGENCY CONTROL POWER FROM 1BDC32 (1C 4KV VITAL BUS 4KV PT's Cubicle rear)	ON	
1CD1AXX3	1C 4KV VITAL BUS REGULAR ALARM POWER FROM 1CDC32 (1C 4KV VITAL BUS 4KV PT's Cubicle rear)	OFF	
1CD1AXX4	1C 4KV VITAL BUS EMERGENCY ALARM POWER FROM 1BDC32 (1C 4KV VITAL BUS 4KV PT's Cubicle rear)	ON	

ATTACHMENT 2
(Page 3 of 3)

INDEPENDENT VERIFICATION
ALTERNATE POWER SUPPLY ALIGNMENT

5.0 **1CDC1AX 125VDC BUS**: (84′ Swgr Rm)

BREAKER	NAME	POS.	IV
1CDC1AX4	ALTERNATE SHUTDOWN SYSTEM 125VDC DISTRIBUTION PANEL 1ASDS-DC	OFF	
1CDC1AX11	13 EMERGENCY LIGHTING INVERTER (ALTERNATE FEED)	OFF	
1CDC1AX32	1C 4KV VITAL BUS REGULAR CONTROL POWER	OFF	
1CDC1AX39	1C 125VDC VITAL BATTERY DISCONNECT SWITCH (located inside, rear 1CDC1AX cabinet)	OFF	

6.0 **1BDC1AX 125VDC BUS**: (84′ Swgr Rm)

BREAKER	NAME	POS.	IV
1BDC1AX32	1C 4KV VITAL BUS EMERGENCY CONTROL POWER	ON	

7.0 **AC BUSES CONTROL POWER BREAKER ALIGNMENT**

BREAKER	NAME	POS.	IV
1CD1AXX1	1C 4KV VITAL BUS REGULAR CONTROL POWER FROM 1CDC32 (1C 4KV VITAL BUS 4KV PT's Cubicle rear)	OFF	
1CD1AXX2	1C 4KV VITAL BUS EMERGENCY CONTROL POWER FROM 1BDC32 (1C 4KV VITAL BUS 4KV PT's Cubicle rear)	ON	
1CD1AXX3	1C 4KV VITAL BUS REGULAR ALARM POWER FROM 1CDC32 (1C 4KV VITAL BUS 4KV PT's Cubicle rear)	OFF	
1CD1AXX4	1C 4KV VITAL BUS EMERGENCY ALARM POWER FROM 1BDC32 (1C 4KV VITAL BUS 4KV PT's Cubicle rear)	ON	

ATTACHMENT 3
(Page 1 of 3)

INDEPENDENT VERIFICATION
BREAKER RESTORATION ALIGNMENT

1.0 **1CDC1AX 125VDC BUS**: (84′ Swgr Rm)

BREAKER	NAME	POS.	IV
1CDC1AX4	ALTERNATE SHUTDOWN SYSTEM 125VDC DISTRIBUTION PANEL 1ASDS-DC	ON	
1CDC1AX17	1C 125VDC BUS CONTROL ROOM GROUND OHMMETER	ON	
1CDC1AX18	1C 125VDC BUS UNDERVOLTAGE RELAY & CONTROL ROOM VOLTMETER	ON	
1CDC1AX21	1CCDC 125VDC DISTRIBUTION CABINET REGULAR POWER	ON	
1CDC1AX22	1CDCDG DIESEL GEN STAND-BY 125VDC DISTRIBUTION PANEL	ON	
1CDC1AX23	1C 125VDC BUS GROUND OHMMETER (BATTERY CHARGER AREA)	ON	
1CDC1AX27	1CDC 125VDC DISTRIBUTION CABINET REGULAR POWER	ON	
1CDC1AX31	SPDS 1C 125VDC BATTERY VOLTAGE	ON	
1CDC1AX32	1C 4KV VITAL BUS REGULAR CONTROL POWER	ON	
1CDC1AX37	1C 460V VITAL BUS REGULAR CONTROL POWER	ON	
1CDC1AX39	1C 125VDC VITAL BATTERY DISCONNECT SWITCH (located inside, rear 1CDC1AX cabinet)	ON	

2.0 **1BDC1AX 125VDC BUS**: (84′ Swgr Rm)

BREAKER	NAME	POS.	IV
1BDC1AX21	1CCDC 125VDC DISTRIBUTION CABINET EMERGENCY POWER	OFF	
1BDC1AX27	1CDC 125VDC DISTRIBUTION CABINET EMERGENCY POWER	OFF	
1BDC1AX32	1C 4KV VITAL BUS EMERGENCY CONTROL POWER	OFF	
1BDC1AX37	1C 460V VITAL BUS EMERGENCY CONTROL POWER	OFF	

ATTACHMENT 3
(Page 2 of 3)

INDEPENDENT VERIFICATION
BREAKER RESTORATION ALIGNMENT

3.0 DC DISTRIBUTION CABINETS MAIN BREAKER ALIGNMENT

BREAKER	NAME	POS.	IV
1CDC2AXX1	1CCDC 125VDC DIST CABINET REGULAR POWER FROM 1CDC21	ON	
1CDC2AXX2	1CCDC 125VDC DIST CABINET EMERGENCY POWER FROM 1BDC21	OFF	
1CDC3AXX1	1CDC 125VDC DIST CABINET REGULAR POWER FROM 1CDC27	ON	
1CDC3AXX2	1CDC 125VDC DIST CABINET EMERGENCY POWER FROM 1BDC27	OFF	

4.0 AC BUSES CONTROL POWER BREAKER ALIGNMENT

BREAKER	NAME	POS.	IV
1CX1AXX1	1C 460V VITAL BUS REGULAR CONTROL POWER FROM 1CDC37	ON	
1CX1AXX2	1C 460V VITAL BUS EMERGENCY CONTROL POWER FROM 1BDC37	OFF	
1CD1AXX1	1C 4KV VITAL BUS REGULAR CONTROL POWER FROM 1CDC32 (1C 4KV VITAL BUS 4KV PT's Cubicle rear)	ON	
1CD1AXX2	1C 4KV VITAL BUS EMERGENCY CONTROL POWER FROM 1BDC32 (1C 4KV VITAL BUS 4KV PT's Cubicle rear)	OFF	
1CD1AXX3	1C 4KV VITAL BUS REGULAR ALARM POWER FROM 1CDC32 (1C 4KV VITAL BUS 4KV PT's Cubicle rear)	ON	
1CD1AXX4	1C 4KV VITAL BUS EMERGENCY ALARM POWER FROM 1BDC32 (1C 4KV VITAL BUS 4KV PT's Cubicle rear)	OFF	

5.0 BATTERY DISCONNECT SWITCH ALIGNMENT:

BREAKER	NAME	POS.	IV
1CDC1AX39	1C 125VDC VITAL BATT DISC SWT (located inside, rear 1CDC1AX cabinet)	ON	

ATTACHMENT 3
(Page 3 of 3)

INDEPENDENT VERIFICATION
BREAKER RESTORATION ALIGNMENT

6.0 **1CDC1AX 125VDC BUS**: (84′ Swgr Rm)

BREAKER	NAME	POS.	IV
1CDC1AX32	1C 4KV VITAL BUS REGULAR CONTROL POWER	ON	

7.0 **1BDC1AX 125VDC BUS**: (84′ Swgr Rm)

BREAKER	NAME	POS.	IV
1BDC1AX32	1C 4KV VITAL BUS EMERGENCY CONTROL POWER	OFF	

8.0 **AC BUSES CONTROL POWER BREAKER ALIGNMENT**

BREAKER	NAME	POS.	IV
1CD1AXX1	1C 4KV VITAL BUS REGULAR CONTROL POWER FROM 1CDC32 (1C 4KV VITAL BUS 4KV PT's Cubicle rear)	ON	
1CD1AXX2	1C 4KV VITAL BUS EMERGENCY CONTROL POWER FROM 1BDC32 (1C 4KV VITAL BUS 4KV PT's Cubicle rear)	OFF	
1CD1AXX3	1C 4KV VITAL BUS REGULAR ALARM POWER FROM 1CDC32 (1C 4KV VITAL BUS 4KV PT's Cubicle rear)	ON	
1CD1AXX4	1C 4KV VITAL BUS EMERGENCY ALARM POWER FROM 1BDC32 (1C 4KV VITAL BUS 4KV PT's Cubicle rear)	OFF	

ATTACHMENT 4
(Page 1 of 2)

COMPLETION SIGN-OFF SHEET

1.0 **COMMENTS**:

(Include procedure deficiencies and corrective actions.)

ATTACHMENT 4
(Page 2 of 2)

COMPLETION SIGN-OFF SHEET

2.0 **SIGNATURES**:

Print	Initials	Signature	Date

INDEPENDENT VERIFICATION

3.0 **SM/CRS FINAL REVIEW AND APPROVAL**:

This procedure with Attachments 1-4 is reviewed for completeness and accuracy.
All deficiencies, including corrective actions, are clearly recorded in the COMMENTS Section.

Signature:_____ Date:_____
SM/CRS