PSEG NUCLEAR L.L.C.
SALEM/OPERATIONS

S2.OP-SO.125-0006(Q) REV. 22

2B 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:

- Added Steps 5.1.9.B & E, and Steps 5.4.6.B & E, incorporates lessons learned in Unit 1 Refueling Outage, (1R18). Adds substeps to place the #1 & #2 ECACS in MANUAL when transferring 2G 4KV Bus 125VDC Control Power. #1 & #2 ECACS will AUTO start if #2 Station Air Compressor is in service. **[70067892]**

- Step 3.10, Systems or portions of systems OPERABILITY evaluations: **[80086263]**

  - Combined existing P&Ls associated with component OPERABILITY (RHR & FHV) when the 125VDC Battery Disconnect is OPEN or the component is aligned to its 125VDC power supply.

  - Added Chilled Water System components may be considered OPERABLE when the 125VDC Battery Disconnect is open.

IMPLEMENTATION REQUIREMENTS

Effective Date: October 23, 2007

None

2B 125VDC BUS OPERATION

TABLE OF CONTENTS

ATTACHMENTS

1.0 PURPOSE

1.1 Provide instructions necessary to:

- ♦ Transfer 2B 125VDC Bus Loads to 2A and 2C 125VDC Buses
- ♦ Disconnect 2B 125VDC Battery from 2B 125VDC Bus
- ♦ Connect 2B 125VDC Battery to 2B 125VDC Bus
- ♦ Return 2B 125VDC Bus Loads to 2B 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 **ENSURE** Unit 2 is in Mode 5, 6, or Defueled.

___ 2.4 IF removing 2B 125VDC Bus from service,
(removing both 2B1 AND 2B2 125VDC Battery Chargers from service)
THEN:

___ 2.4.1 **REVIEW** S2.OP-SO.125-0004(Q), 125VDC Ground Detection, for the effects of transferring power sources to the following 125VDC Distribution Cabinets:

- 2BDC2AX, 2BBDC 125VDC Distribution Cabinet
- 2BDC3AX, 2BDC 125VDC Distribution Cabinet
- 2DDC2AX, 2DDC 125VDC Distribution Cabinet

___ 2.4.2 **ESTABLISH** conditions specified in Attachment 1 as necessary to support required equipment prior to transferring 2B 125VDC Bus loads to 2A and 2C 125VDC Buses to prevent exceeding the one-minute design basis loading on 2A and 2C 125VDC Buses.

(step continued on next page)

2.4 (Continued)

___ 2.4.3 **PERFORM** Step 2.4.3A OR Step 2.4.3B IAW S2.OP-SO.115-0012(Q), 2B Vital Instrument Bus UPS System Operation:

___ A. IF 2B 115V Vital Instrument Bus is to be removed from service, THEN **DE-ENERGIZE** 2B 115V Vital Instrument Bus, AND **REMOVE** 2B Vital Instrument Bus UPS System from service.

___ B. IF 2B 115V Vital Instrument Bus is to remain in service, THEN **PERFORM** Step 2.4.3B.1 OR Step 2.4.3B.2:

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

___ a. **TRANSFER** 2B 115V Vital Instrument Bus from Inverter to AC Line Regulator.

___ b. **DE-ENERGIZE** 2B Vital Instrument Bus Rectifier and Inverter with AC Line Regulator supplying the 2B Vital Instrument Bus.

___ 2. IF 2B 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 2B Vital Instrument Bus.

___ 2.4.4 **PERFORM** Step 2.4.4A OR Step 2.4.4B IAW S2.OP-SO.115-0014(Q), 2D Vital Instrument Bus UPS System Operation:

___ A. IF 2D 115V Vital Instrument Bus is to be removed from service, THEN **DE-ENERGIZE** 2D 115V Vital Instrument Bus, AND **REMOVE** 2D Vital Instrument Bus UPS System from service.

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

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

___ a. **TRANSFER** 2D 115V Vital Instrument Bus from Inverter to AC Line Regulator.

___ b. **DE-ENERGIZE** 2D Vital Instrument Bus Rectifier and Inverter with AC Line Regulator supplying the 2D Vital Instrument Bus.

___ 2. IF 2D 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 2D Vital Instrument Bus.

___ 2.5 IF removing 2B 125VDC Bus from service,
(removing both 2B1 AND 2B2 125VDC Battery Chargers from service)
(maintaining 2B1 or 2B2 125VDC Battery Charger in service)
OR disconnecting 2B 125VDC Battery from 2B 125VDC Bus,
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 Unit 2, (3.7.6.1 Unit 1) Control Room Emergency Air Conditioning System.

___ ♦ 3.7.10 (Units 1 and 2), Chilled Water System

___ ♦ Action Statement Tracking Log with respect to current expiration dates and 2B 125VDC Bus outage duration.

___ 2.5.2 **INITIATE** S1.OP-SO.CAV-0001(Q), Control Area Ventilation Operation for Operation With Unit 2 EACS Out-Of-Service (Maintenance Mode) (Refer to Step 3.9).

___ 2.5.3 **PERFORM** the following (70016538 / 70068226):

___ ♦ **ENTER** T/S 3.7.6, ACTION f (Unit 2 Modes 5-6) AND T/S 3.7.6.1 ACTION e/f (Unit 1, Modes 1-4/Modes 5-6).

___ ♦ **SECURE** 2CAA50 OR 2CAA51 CLOSED IAW S2.OP-SO.CAV-0001(Q), Control Area Ventilation Operation.

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

___ 2.5.5 **ENSURE** 2A 125VDC Bus is in service.

___ 2.5.6 **ENSURE** 2C 125VDC Bus is in service.

___ 2.5.7 **ENSURE** 2CCDC Distribution Cabinet is aligned to 2C 125VDC Bus.

___ 2.5.8 **ENSURE** 21 FHB Exhaust Fan aligned to 2AX1AX5X & 2AX1AX5X* is aligned to their normal power source (Refer to Step 3.4).

___ 2.5.9 **ENSURE** all Temporary Modifications connecting 2A and 2C 125VDC Buses and equipment are removed to maintain electrical train separation and bus operability requirements (Refer to Step 3.4)

___ 2.5.10 **ENSURE** all redundant equipment required to be OPERABLE, as a result of transferring 2B 125VDC loads to 2A and 2C 125VDC Bus OR disconnecting 2B 125VDC Battery from 2B 125VDC Bus, are OPERABLE. 2B 4KV Vital Bus AND 2B 460/230V Vital Buses are inoperable when 2B 125VDC Battery is disconnected from 2B 125VDC Bus (Safety Evaluation S99-055).

___ 2.5.11 **ISOLATE** Chilled Water System "Non-Essential Heat Loads" as required to support current operating conditions IAW S2.OP-SO.CH-0001(Q), Chilled Water System Operation.

___ 2.5.12 **PERFORM** the following actions for 21 Emergency Lighting UPS System:

___ A. **ENSURE** 2AZ1AX, 21 Emergency Lighting Distribution Cabinet is powered from the preferred AC source.

___ B. **DE-ENERGIZE** 21 Emergency Lighting Inverter with preferred AC source supplying 21 Emergency Lighting Distribution Cabinet IAW S2.OP-SO.115-0005(Q), 21 Emergency Lighting UPS System Operation.

___ C. **C/T** 2ADC1AX24, 21 EMERGENCY LIGHTING INVERTER (support transferring 2B 125VDC Bus loads to 2A 125VDC Bus).

___ 2.5.13 IF 2B 230V Vital Bus is to remain energized, THEN:

___ A. **ALIGN** 2B 4KV Vital Bus power supply as required to support any SPT maintenance activities planned during the battery maintenance window IAW S2.OP-SO.4KV-0002(Q), 2B 4KV Vital Bus Operation. (Refer to Step 3.10).

___ B. **PERFORM** the following IAW S2.OP-SO.115-0006(Q), 22 Emergency Lighting UPS System Operation:

___ 1. IF 2BZ1AX, 22 Emergency Lighting Distribution Cabinet, is energized from 22 Emergency Lighting Inverter, THEN **TRANSFER** 22 Emergency Lighting Distribution Cabinet from 22 Emergency Lighting Inverter to Preferred AC Source.

___ 2. **DE-ENERGIZE** 22 Emergency Lighting Inverter with Preferred AC Source supplying 22 Emergency Lighting Distribution Cabinet.

___ 2.5.14 IF 2B 460/230V Bus outage is planned concurrent with 2B 125VDC Battery outage, THEN **PLACE** 2B2 125VDC Battery Charger in service IAW S2.OP-SO.125-0002(Q), 2B 125VDC Battery Charger Operation.

___ 2.6 IF Section 5.3, Connecting 2B 125VDC Battery to 2B 125VDC Bus is to be performed, THEN **ENSURE** 2B1 OR 2B2 125VDC Battery Charger is available.

___ 2.7 IF Section 5.4, Returning 2B 125VDC Bus Loads to 2B 125VDC Bus is to be performed, THEN **ENSURE** no maintenance or testing is in progress on 2B 125VDC Bus.

3.0 **PRECAUTIONS AND LIMITATIONS**

___ 3.1 Transferring 2BDC2AX, 2BBDC Distribution Cabinet, power supply will result in the following:

___ 3.1.1 Containment Purge valves 2VC1 and 2VC4 will close.

___ 3.1.2 Containment Pressure-Vacuum relief valve 2VC5 will close.

___ 3.1.3 Containment Radiation Monitor sample valves 2VC7 and 2VC11 will close.

___ 3.1.4 Pressurizer Power Operated Relief valve 2PR2 will close.

___ 3.1.5 22SW122 will receive a sealed in CLOSE signal. Therefore, following each restoration of 2BBDC (2BDC2AX) 125VDC Distribution Cabinet, 22SW122 will be required to be reset by momentarily placing the 43-2 switch to AUTO (located in 22 CCHX Room, Aux Bldg).

___ 3.2 Transferring 2BDC2AX, 2BBDC Distribution Cabinet, power supply to 2A 125VDC Bus will result in the following:

___ 3.2.1 POPS CH I and CH II solenoid valves will be powered from the same bus, rendering one channel inoperable. A subsequent failure of 2A 125VDC Bus will render both channels inoperable. Establishing a RCS vent path should be evaluated prior to removing 2B 125VDC Bus from service. (Refer to T/S 3.4.10.3)

___ 3.2.2 21SW122 AND 22SW122 will be powered from the same bus. A subsequent failure of 2A 125VDC Bus will isolate service water from both Component Cooling Heat Exchangers. To preclude this situation:

___ A. IF 22 CCHX is to remain in-service, THEN 22SW122 will be placed in mechanical MANUAL to maintain CCW temperature and to ensure 10,000 gpm is NOT exceeded.

___ B. IF 21 CCHX is to remain in-service, THEN 21SW122 will be placed in mechanical MANUAL to maintain CCW temperature and to ensure 10,000 gpm is NOT exceeded.

___ 3.2.3 An Operator Action Log will be initiated IAW SC.OP-AP.ZZ-0110(Q), Use and Development of Operating Logs, to maintain Service Water flow to the in-service CCHX <10,000 gpm, AND Component Cooling temperature within 3°F of the desired temperature as indicated on 2TA5072 (2TA5074). The log will direct action to manually throttle the associated valve(s), as required to maintain parameters.

___ 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 (Technical Specification 3.8.2.2).

___ 3.4 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.

___ 3.5 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]**

___ 3.6 Transferring 2DDC2AX, 2DDC Distribution Cabinet, power supply to 2C 125VDC Bus will result in both trains of Control Area Ventilation System (CAV) controls being powered from the same bus, rendering one train inoperable. Technical Specifications 3.7.6.f (Unit 2 Mode 5-6) and 3.7.6.1.e/f (Unit 1 Mode 1-4/Mode 5-6) are applicable for automatic damper operation requirements.

___ 3.7 The Control Area Ventilation System is to be placed in Operation With Unit 2 EACS Out-Of-Service (Maintenance Mode) when 2B 125VDC Battery is disconnected from its bus. CRIX relay (Train B) is inoperable during the 2B 125VDC maintenance window **[80069101]**.

___ 3.8 Transferring 2B 4KV Vital Bus power supply during the 2B 125VDC Battery maintenance window will result in a momentary de-enerization of the associated 115VAC bus and will cause spurious component actuation.

___ 3.9 The following 500KV breaker back-up protection circuits and trip coils are powered from 2B 125VDC Bus:

- 500KV BS 1-9 - Backup Protection Circuit - Trip Coil 2
- 500KV BS 9-10 - Backup Protection Circuit - Trip Coil 2
- 500KV BS 2-10 - Backup Protection Circuit - Trip Coil 2

As a result, all work involving testing or maintenance on the following regular protection circuits and trip coils, powered from 2A* and 2C# 125VDC Bus, should be suspended to prevent inadvertent loss of breaker trip capability during periods when 2B 125VDC Bus is powered solely from a battery charger:

- 500KV BS 1-9 - Regular Protection Circuit - Trip Coil 1*
- 500KV BS 9-10 - Regular Protection Circuit - Trip Coil 1*
- 500KV BS 2-10 - Regular Protection Circuit - Trip Coil 1#

___ 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). The following components have been evaluated for operation in Modes 5, 6 or Defueled, and may be considered OPERABLE when the 2B 125VDC Battery Disconnect Switch (2BDC1AX39) is OPEN, OR the component is aligned to its backup 125VDC power supply:

___ ♦ Chilled Water System components [80086263]:

___ • 22 Chiller - The 115VAC control circuit is powered from 2BX1AX13X, 22 Chiller. The compressor will continue to run and perform its protective function on a loss of 2B 125VDC Bus.

___ • 22 Chilled Water Pump - The 115VAC control circuit is powered from 2BY3AX2H, 22 Chilled Water Pump. The pump will continue to run and perform its protective function on a loss of 2B 125VDC Bus.

___ • Chilled Water Isolation valves (1CH117/2CH151) - The valves fail closed and perform their protective function on a loss of 2B 125VDC Bus.

___ ♦ 22 FHB Exhaust Fan - The control circuit has been evaluated and it has been determined that 125VDC control power is NOT required for the system to perform its protective function. The fan will continue to run on a loss of 125VDC control power [Safety Evaluation S99-055].

___ ♦ 22 RHR Pump - Control power must be supplied by a 125VDC Battery Charger. This configuration places the plant in a more vulnerable position for a loss of RHR and should be assessed IAW SC.OM-AP.ZZ-0001(Q), Shutdown Safety Management Program [80065730].

4.0 EQUIPMENT/MATERIAL REQUIRED

None

5.0 **PROCEDURE**

5.1 **Transferring 2B 125VDC Bus Loads to 2A and 2C 125VDC Buses**

___ 5.1.1 **CLOSE** the following breakers for equipment to remain in service (2ADC1AX 125VDC Bus, Elev. 84′ Swgr Rm):

___ ♦ 2ADC1AX12, NO. 2F & 2G 4KV BUSES CONTROL POWER 2F (REG), 2G (EMER)

___ ♦ 2ADC1AX31, 2B 4KV VITAL BUS CONTROL POWER (EMERGENCY)

___ 5.1.2 IF a 2B 125VDC Bus outage is planned (both 2B 125VDC Battery Chargers are to be removed from service), THEN:

___ A. At 2A 125VDC Bus, **CLOSE** the following breakers, for equipment to remain in service:

___ ♦ 2ADC1AX10, NO. 2F & 2H 460V BUSES CONTROL POWER 2F (REG), 2H (EMER)

___ ♦ 2ADC1AX20, 2BBDC 125VDC DISTRIBUTION CABINET (EMERGENCY)

___ ♦ 2ADC1AX26, 2BDC 125VDC DISTRIBUTION CABINET (EMERGENCY)

___ ♦ 2ADC1AX36, 2B 460V VITAL BUS CONTROL POWER (EMERGENCY)

___ B. At 2C 125VDC Bus, **CLOSE** 2CDC1AX28, 2DDC 125VDC DISTRIBUTION CABINET EMERGENCY POWER.

___ 5.1.3 **ENSURE** the following breakers are CLOSED for equipment to remain in service: (2ADC1AX 125VDC Bus, Elev. 84′ Swgr Rm):

___ ♦ 2ADC1AX13, NO. 2H & 2E 4KV BUSES CONTROL POWER 2H (REG), 2E (EMER)

___ ♦ 2ADC1AX19, 2AADC 125VDC DISTRIBUTION CABINET (REGULAR)

___ ♦ 2ADC1AX25, 2ADC 125VDC DISTRIBUTION CABINET (REGULAR)

___ ♦ 2ADC1AX29, NO. 2E & 2G 460V BUSES CONTROL POWER 2E (REG), 2G (EMERG)

___ ♦ 2ADC1AX30, 2A 4KV VITAL BUS CONTROL POWER (REGULAR)

___ ♦ 2ADC1AX35, 2A 460V VITAL BUS CONTROL POWER (REGULAR)

___ 5.1.4 **ENSURE** the following breakers are CLOSED (2CD1AX 125VDC Bus, Elev. 84′ Swgr Rm):

___ ♦ 2CDC1AX21, 2CCDC 125VDC DISTRIBUTION CABINET REGULAR POWER

___ ♦ 2CDC1AX27, 2CDC 125VDC DISTRIBUTION CABINET REGULAR POWER

___ ♦ 2CDC1AX32, 2C 4KV VITAL BUS REGULAR CONTROL POWER

___ ♦ 2CDC1AX37, 2C 460V VITAL BUS REGULAR CONTROL POWER

___ 5.1.5 **ENSURE** 1ADC1AX22, A7G (REG) & B7G (EMER) 125VDC DISTRIBUTION PANELS, is ON (1A 125VDC Bus, Elev. 84′ Swgr Rm).

___ 5.1.6 **ENSURE** the following breakers are OPEN (2BDC1AX 125VDC Bus, Elev. 84′ Swgr Rm):

___ ♦ 2BDC1AX9, 2GP (REG) & 2EP (EMER) PZR HTR BUSES CONTROL POWER

___ ♦ 2BDC1AX13, NO. 2E & 2H 4KV BUSES CONTROL POWER 2E (REG), 2H (EMER)

___ ♦ 2BDC1AX19, 2AADC 125VDC DISTRIBUTION CABINET EMERGENCY POWER

___ ♦ 2BDC1AX21, 2CCDC 125VDC DISTRIBUTION CABINET EMERGENCY POWER

___ ♦ 2BDC1AX22, B7G (REG) & A7G (EMER) 125VDC DIST PANELS

___ ♦ 2BDC1AX25, 2ADC 125VDC DIST CABINET EMERGENCY POWER

___ ♦ 2BDC1AX27, 2CDC 125VDC DIST CABINET EMERGENCY POWER

___ ♦ 2BDC1AX29, NO. 2G & 2E 460V BUSES CONTROL POWER 2G (REG), 2E (EMER)

___ ♦ 2BDC1AX30, 2A 4KV VITAL BUS EMER CONTROL POWER

___ ♦ 2BDC1AX32, 2C 4KV VITAL BUS EMER CONTROL POWER

___ ♦ 2BDC1AX35, 2A 460V VITAL BUS EMER CONTROL POWER

___ ♦ 2BDC1AX37, 2C 460V VITAL BUS EMER CONTROL POWER

NOTE

Steps 5.1.7 through 5.1.16 may be performed in any order or concurrently at the SM/CRS discretion. Steps 5.1.11 through 5.1.16 are only performed when a 2B 125VDC Bus outage is planned.

___ 5.1.7 **TRANSFER** 2B 4KV Vital Bus 125VDC control power, as follows (2B 4KV VITAL BUS 4KV PT's Cubicle rear)

___ A. **NOTIFY** NCO that 2B 4KV Vital Bus control power is to be transferred from 2B 125VDC Bus to 2A 125VDC Bus.

___ B. **OPEN** 2BD1AXX1, 2B 4KV VITAL BUS REG CONTROL POWER FROM 2BDC31.

___ C. **OPEN** 2BD1AXX3, 2B 4KV VITAL BUS REG ALARM POWER FROM 2BDC31.

___ D. **CLOSE** 2BD1AXX2, 2B 4KV VITAL BUS EMER CONTROL POWER FROM 2ADC31.

___ E. **CLOSE** 2BD1AXX4, 2B 4KV VITAL BUS EMER ALARM POWER FROM 2ADC31.

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

___ ♦ Aux. Annunciator Point 0544, 2B 4KV VITAL BUS, LOSS OF 125VDC, alarmed and cleared.

___ ♦ Aux. Annunciator Point 0554, 2B 4KV VITAL BUS, LOSS OF NORMAL 125VDC, is in alarm.

___ ♦ Aux. Annunciator Point 0553, 2B 4KV VITAL CIRCUIT ENERGIZED, is in alarm.

___ 5.1.8 **TRANSFER** 2F 4KV Group Bus 125VDC control power, as follows (2F 4KV Group Bus PT Cubicle):

___ A. **NOTIFY** NCO that 2F 4KV Bus control power is to be transferred from 2B 125VDC Bus to 2A 125VDC Bus.

___ B. **OPEN** 2FD1TBX2, 2F 4KV GROUP BUS EMER CONTROL POWER FROM 2BDC12.

___ C. **CLOSE** 2FD1TBX1, 2F 4KV GROUP BUS REG CONTROL POWER FROM 2ADC12.

___ D. Notify NCO to **ENSURE** Aux. Annunciator Point 0671, 2F 4KV GROUP BUS, LOSS OF 125VDC, alarmed and cleared.

___ 5.1.9 **TRANSFER** 2G 4KV Group Bus 125VDC control power, as follows (2G 4KV Group Bus PT Cubicle):

___ A. **NOTIFY** NCO that 2G 4KV Bus control power is to be transferred from 2B 125VDC Bus to 2A 125VDC Bus.

___ B. IF #2 Station Air Compressor (SAC) is in service, THEN: **[70067892]**

___ ♦ Direct Unit 1 NCO to **PLACE** #1 ECAC in MANUAL.

___ ♦ Direct Unit 2 NCO to **PLACE** #2 ECAC in MANUAL.

___ C. **OPEN** 2GD1TBX1, 2G 4KV GROUP BUS REG CONTROL POWER FROM 2BDC12.

___ D. **CLOSE** 2GD1TBX2, 2G 4KV GROUP BUS EMER CONTROL POWER FROM 2ADC12.

___ E. IF #2 Station Air Compressor (SAC) is in service AND #1 or #2 ECAC was placed in MANUAL in Step 5.1.9B, THEN: **[70067892]**

___ ♦ Direct Unit 1 NCO to **RETURN** #1 ECAC to AUTO.

___ ♦ Direct Unit 2 NCO to **RETURN** #2 ECAC to AUTO.

___ F. Notify NCO to **ENSURE** Aux. Annunciator Point 0676, 2G 4KV GROUP BUS, LOSS OF 125VDC, alarmed and cleared.

___ 5.1.10 IF a 2B 125VDC Bus outage is NOT planned (2B1 OR 2B2 125VDC Battery Charger is to remain in service), THEN **MARK** Steps 5.1.11 through 5.1.16 as N/A.

___ 5.1.11 **TRANSFER** 2B 460V Vital Bus 125VDC control power, as follows (2B 460V Vital Bus, Elev. 84′ Swgr Rm):

___ A. **NOTIFY** NCO that 2B 460V Vital Bus control power is to be transferred from 2B 125VDC Bus to 2A 125VDC Bus.

___ B. **OPEN** 2BX1AXX1, 2B 460V VITAL BUS REG CONTROL POWER FROM 2BDC36.

___ C. **CLOSE** 2BX1AXX2, 2B 460V VITAL BUS EMER CONTROL POWER FROM 2ADC36.

___ D. Notify NCO to **ENSURE** Aux. Annunciator Point 0792, 2B 460V VITAL BUS, LOSS OF VOLTAGE, alarmed and cleared.

___ 5.1.12 **TRANSFER** power to 2BDC3AX, 2BDC 125VDC Distribution Cabinet, as follows (Elev. 84′ Swgr Rm):

___ A. **NOTIFY** NCO that power to 2BDC3AX 125VDC Distribution Cabinet is to be transferred from 2B 125VDC Bus to 2A 125VDC Bus.

___ B. **OPEN** 2BDC3AXX1, 2BDC 125VDC DISTRIBUTION CABINET REGULAR POWER FROM 2BDC26.

___ C. **CLOSE** 2BDC3AXX2, 2BDC 125VDC DISTRIBUTION CABINET EMERGENCY POWER FROM 2ADC26.

___ D. Notify NCO to **ENSURE** Aux. Annunciator Point 0040, 2BDC 125VDC DISTR. CABINET, LOSS OF VOLTAGE, alarmed and cleared.

CAUTION

The Control Area Ventilation System must be in the NORMAL Mode while placing the system in the Maintenance Mode. Transferring 2DDC 125VDC Distribution Cabinet may have to wait until after the system is placed in the Maintenance Mode.

___ 5.1.13 **TRANSFER** power to 2DDC2AX, 2DDC 125VDC Distribution Cabinet, as follows (Elev. 84' Swgr Rm):

___ A. **NOTIFY** NCO that power to 2DDC2AX 125VDC Distribution Cabinet is to be transferred from 2B 125VDC Bus to 2C 125VDC Bus.

___ B. Notify NCO to **PLACE** the Control Room Ventilation System in ACCIDENT PRESSURIZED mode IAW S2.OP-SO.CAV-0001(Q), Control Area Ventilation Operation.

___ C. When the Control Room Ventilation System is placed in ACCIDENT PRESSURIZED mode,

___ 1. **OPEN** 2DDC2AXX1, 2DDC 125VDC DISTRIBUTION CABINET REGULAR POWER FROM 2BDC28.

___ 2. **CLOSE** 2DDC2AXX2, 2DDC 125VDC DISTRIBUTION CABINET EMERGENCY POWER FROM 2CDC28.

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

___ ♦ **ENSURE** Aux. Annunciator Point 0035, 2DDC 125VDC DISTR. CABINET, LOSS OF VOLTAGE, alarmed and cleared.

___ ♦ **PLACE** the Control Room Ventilation System in NORMAL mode IAW S2.OP-SO.CAV-0001(Q).

___ 5.1.14 **TRANSFER** power to 2BDC2AX, 2BBDC 125VDC Distribution Cabinet, as follows (Relay Room):

___ A. IF 21 CCHX is to remain in service, THEN:

___ 1. **RECORD** Service Water flow through 21 CCHX.

2FA3891 _____ gpm

___ 2. **RECORD** 21 CCHX outlet temperature.

2TA5072 _____ °F

___ 3. **NOTIFY** NCO that 21SW122, 21 CCHX SW INLET VLV, is to be locally disengaged from AUTO control.

___ 4. **ENGAGE** (MANUAL) 21SW122 IAW Attachment 3, Section 1.0.

___ 5. **THROTTLE** 21SW122 to maintain flow and temperature recorded in Steps 5.1.14A.1 and 5.1.14A.2

___ B. IF 22 CCHX is to remain in service, THEN:

___ 1. **RECORD** Service Water flow through 22 CCHX:

2FA3892 _____ gpm

___ 2. **RECORD** 22 CCHX outlet temperature:

2TA5074 _____ °F

___ 3. **NOTIFY** NCO that 22SW122, 22 CC HX SW INLET VLV, is to be locally disengaged from AUTO control.

___ 4. **ENGAGE** 22SW122 IAW Attachment 3, Section 1.0.

___ 5. **THROTTLE** 22SW122 to maintain flow and temperature recorded in Steps 5.1.14B.1 and 5.1.14B.2.

___ C. **IMPLEMENT** Operator Action Log IAW SC.OP-AP.ZZ-0110(Q) for manual control of applicable valves (21SW122 OR 22SW122).

(step continued on next page)

5.1.14 (Continued)

___ D. **NOTIFY** NCO that power to 2BDC2AX 2BBDC 125VDC Distribution Cabinet is to be transferred from 2B 125VDC Bus to 2A 125VDC Bus.

NOTE

The following valves will close when 2BDC2AX, 2BBDC 125VDC Distribution Cabinet is de-energized during power supply transfers:

- ♦ Containment Purge valves 2VC1 and 2VC4
- ♦ Containment Pressure-Vacuum Relief valve 2VC5
- ♦ Containment Radiation Monitor sample valves 2VC7 and 2VC11
- ♦ Pressurizer Power Operated Relief valve 2PR2
- ♦ 22SW122, 22 CCHX SW INLET VLV (when in AUTO)

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

___ 1. IF Containment Purge is in progress, THEN **TERMINATE** IAW S2.OP-SO.WG-0006(Q), Containment Purge to the Plant Vent.

___ 2. IF Containment Pressure-Vacuum Relief is in progress, THEN **TERMINATE** IAW S2.OP-SO.CBV-0002(Q), Containment Pressure-Vacuum Relief System Operation.

___ 3. **OPEN** Containment APD Sample Backup Isolation Valves.

___ ♦2VC13, RMS SAMPL E SUCT VLV

___ ♦2VC14, RMS SAMPL E SUCTION VLV

___ ♦2VC9, RMS SAMPL E DISCHARGE VLV

___ ♦2VC10, RMS SAMPL E DISCHARGE VLV

___ 4. **CLOSE** Containment APD Sample Regular Isolation Valves:

___ ♦2VC11, RMS SAMPL E INLET VLV

___ ♦2VC12, RMS SAMPL E INLET VLV

___ ♦2VC7, RMS SAMPL E OUTLET VLV

___ ♦2VC8, RMS SAMPL E OUTLET VLV

___ 5. **EVALUATE** Technical Specification 3.4.10.3 (Refer to Step 3.2.1).

(step continued on next page)

5.1.14 (Continued)

___ F. **OPEN** 2BDC2AXX1, 2BBDC 125VDC DISTRIBUTION CABINET REGULAR POWER FROM 2BDC20.

___ G. **CLOSE** 2BDC2AXX2, 2BBDC 125VDC DISTRIBUTION CABINET EMERGENCY POWER FROM 2ADC20.

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

___ 1. **ENSURE** Aux. Annunciator Point 0029, 2BBDC 125VDC DISTR CABINET LOSS OF VOLT., alarmed and cleared.

___ 2. **OPEN** Containment APD Sample Regular Isolation Valves:

___ ♦2VC11

___ ♦2VC12

___ ♦2VC7

___ ♦2VC8

___ 3. **CLOSE** Containment APD Sample Backup Isolation Valves:

___ ♦2VC13

___ ♦2VC14

___ ♦2VC9

___ ♦2VC10

___ 4. IF Containment Purge was terminated due to 2BDC2AX power supply transfer, THEN **ESTABLISH** IAW S2.OP-SO.WG-0006(Q).

___ 5. IF Containment Pressure-Vacuum Relief was terminated due to 2BDC2AX power supply transfer, THEN **ESTABLISH** IAW S2.OP-SO.CBV-0002(Q).

___ I. **RESET** 22SW122, 22 CCHX SW INLET VLV, by momentarily placing the 43-2 switch to AUTO (located in 22 CCHX Room, Aux Bldg).

___ J. IF 21 CCHX is in service, THEN **PERFORM** Independent Verification IAW Attachment 2, Section 1.0.

___ K. IF 22 CCHX is in service, THEN **PERFORM** Independent Verification IAW Attachment 2, Section 2.0.

___ 5.1.15 **TRANSFER** 2H 460V Bus 125VDC control power, as follows (2H 460V Bus, Elev. 120′ TGA):

___ A. **NOTIFY** NCO that 2H 460V Bus control power is to be transferred from 2B 125VDC Bus to 2A 125VDC Bus.

___ B. **OPEN** 2HX1TBX1, 2H 460 VOLT BUS REGULAR CONTROL POWER FROM 2BDC10.

___ C. **CLOSE** 2HX1TBX2, 2H 460 VOLT BUS EMERGENCY CONTROL POWER FROM 2ADC10.

___ D. Notify NCO to **ENSURE** Aux. Annunciator Point 0065, 2H 460V BUS, LOSS OF 125VDC CONTROL VOLT, alarmed and cleared.

___ 5.1.16 **TRANSFER** 2F 460V Bus 125VDC control power, as follows (2F 460V Bus, Elev. 120′ TGA):

___ A. **NOTIFY** NCO that 2F 460V Bus control power is to be transferred from 2B 125VDC Bus to 2A 125VDC Bus.

___ B. **OPEN** 2FX1TBX2, 2F 460 VOLT BUS EMERGENCY CONTROL POWER FROM 2BDC10.

___ C. **CLOSE** 2FX1TBX1, 2F 460 VOLT BUS REGULAR CONTROL POWER FROM 2ADC10.

___ D. Notify NCO to **ENSURE** Aux. Annunciator Point 0074, 2F 460V BUS, LOSS OF 125VDC CONTROL VOLT, alarmed and cleared.

___ 5.1.17 **OPEN** the following breakers (2B 125VDC Bus, Elev. 84′ Swgr Rm):

___ ♦ 2BDC1AX12, NO. 2G & 2F 4KV BUSES CONTROL POWER 2G (REG), 2F (EMER)

___ ♦ 2BDC1AX24, 22 EMERGENCY LIGHTING INVERTER (ALTERNATE FEED)

___ ♦ 2BDC1AX31, 2B 4KV VITAL BUS REGULAR CONTROL POWER

___ 5.1.18 IF a 2B 125VDC Bus outage is planned
AND all 2B 125VDC Bus loads have been transferred to 2A and 2C 125VDC Buses,
THEN:

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

___ ♦ 2BDC1AX3, 2B VITAL INSTRUMENT BUS INVERTER

___ ♦ 2BDC1AX4, 2D VITAL INSTRUMENT BUS INVERTER

___ ♦ 2BDC1AX10, NO. 2H & 2F 460V BUSES CONTROL POWER 2H (REG), 2F (EMER)

___ ♦ 2BDC1AX11, SPDS 2B 125VDC BUS BATTERY VOLTAGE

___ ♦ 2BDC1AX17, 2B 125VDC BUS CONTROL ROOM GROUND OHMMETER

___ ♦ 2BDC1AX18, 2B 125VDC BUS UNDERVOLTAGE RELAY & CONTROL ROOM VOLTMETER

___ ♦ 2BDC1AX20, 2BBDC 125VDC DISTRIBUTION CABINET REGULAR POWER

___ ♦ 2BDC1AX23, 2B 125VDC BUS GROUND OHMMETER (BATTERY CHARGER AREA)

___ ♦ 2BDC1AX26, 2BDC 125VDC DISTRIBUTION CABINET REGULAR POWER

___ ♦ 2BDC1AX28, 2DDC 125VDC DISTRIBUTION CABINET REGULAR POWER

___ ♦ 2BDC1AX36, 2B 460V VITAL BUS REGULAR CONTROL POWER

___ B. **ENSURE** OHA B-10, 2B 125VDC CNTRL BUS VOLT LO, is in alarm.

5.2 **Disconnecting 2B 125VDC Battery from 2B 125VDC Bus**

___ 5.2.1 **ENSURE** Section 5.1, Transferring 2B 125VDC Bus Loads to 2A and 2C 125VDC Buses is completed.

___ 5.2.2 **COMPLETE** S1.OP-SO.CAV-0001(Q), Control Area Ventilation Operation for Operation With Unit 2 EACS Out-Of-Service (Maintenance Mode) (Refer to Step 3.9).

___ 5.2.3 IF a 2B 125VDC Bus outage is planned,
AND all 2B 125VDC Bus loads have been transferred to 2A and 2C 125VDC Buses,
THEN:

___ A. **REMOVE** 2B1 AND 2B2 125VDC Battery Charger from service IAW S2.OP-SO.125-0002(Q), 2B 125VDC Battery Charger Operation.

___ B. IF 2B 125VDC Battery ammeter indicates >0 amps,
THEN **EVALUATE** 2B 125VDC Battery loading prior to opening 2BDC1AX39, 2B 125VDC VITAL BATT DISC SWT.

___ C. **OPEN** 2BDC1AX39, 2B 125VDC VITAL BATT DISC SWT (located inside, rear 2BDC1AX cabinet).

___ D. **PERFORM** Independent Verification of components specified in Attachment 2, Sections 3.0 through 7.0.

___ 5.2.4 IF a 2B 125VDC Bus outage is NOT planned,
(planned 2B 125VDC Battery outage only)
THEN:

___ A. **ENSURE** 2B1 OR 2B2 125VDC Battery Charger is in service IAW S2.OP-SO.125-0002(Q), 2B 125VDC Battery Charger Operation.

___ B. IF 2B 125VDC Battery ammeter indicates >0 amps,
THEN **EVALUATE** 2B 125VDC Battery loading prior to opening 2BDC1AX39, 2B 125VDC VITAL BATT DISC SWT.

___ C. **OPEN** 2BDC1AX39, 2B 125VDC VITAL BATT DISC SWT (located inside, rear 2BDC1AX cabinet).

___ D. **PERFORM** Independent Verification of components specified in Attachment 2, Sections 8.0 through 10.0.

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

5.3 **Connecting 2B 125VDC Battery to 2B 125VDC Bus**

NOTE

Maintenance may have connected a 2B 125VDC Battery Charger to the battery side of 2BDC1AX39, 2B 125VDC VITAL BATT DISC SWT to raise battery voltage to ≥117VDC.

___ 5.3.1 **ENSURE** Maintenance has disconnected the 2B 125VDC Battery Charger from the battery side of 2BDC1AX39, 2B 125VDC VITAL BATT DISC SWT.

CAUTION

When 2B 125VDC Bus loads are powered from 2B 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 2B 125VDC Bus loads are transferred to 2A and 2C 125VDC Buses OR battery terminal voltage is raised to ≥117VDC.

___ 5.3.2 IF 2B1 OR 2B2 125VDC Battery Charger is supplying power to the 2B 125VDC Bus loads,
THEN **ENSURE** 2B 125VDC Battery Terminal Voltage is ≥117VDC.
(actual battery terminal voltage is provided by Maintenance)

___ 5.3.3 **CLOSE** 2BDC1AX39, 2B 125VDC VITAL BATT DISC SWT (located inside, rear 2BDC1AX cabinet).

___ 5.3.4 IF restoring 2B 125VDC Bus following a bus outage,
THEN:

___ A. **ENSURE** 2B 125V D-C Bus Blown Main Fuses Alarm Cabinet [+] toggle switch and [-] toggle switch are ON.

___ B. **CLOSE** 2BDC1AX18, 2B 125VDC BUS UNDERVOLTAGE RELAY & CONTROL ROOM VOLTMETER (Elev. 84′ Swgr Room).

___ C. **PLACE** 2B1 OR 2B2 125VDC Battery Charger in service IAW S2.OP-SO.125-0002(Q), 2B 125VDC Battery Charger Operation.

(step continued on next page)

5.3.4 (Continued)

___ D. **ENSURE** the following:

___ ♦ 2B 125VDC Bus voltage is >129VDC.

___ ♦ OHA B-10, 2B 125VDC CNTRL BUS VOLT LO, is clear.

___ ♦ 2B 125VDC Battery Blown Fuse lamps are extinguished (2B 125V D-C Bus Blown Main Fuses Alarm Cabinet).

___ 5.3.5 **ALIGN** 2B1 AND 2B2 125VDC Battery Chargers as required to support current plant conditions IAW S2.OP-SO.125-0002(Q), 2B 125VDC Battery Charger Operation.

___ 5.3.6 **PERFORM** Section 5.4, Returning 2B 125VDC Bus Loads to 2B 125VDC Bus.

___ 5.3.7 IF 2B 125VDC Bus was removed from service, THEN **PERFORM** Independent Verification of components specified in Attachment 4, Sections 3.0 through 8.0.

___ 5.3.8 IF 2B 125VDC Battery was disconnected from 2B 125VDC Bus AND 2B 125VDC Bus was NOT removed from service, THEN **PERFORM** Independent Verification of components specified in Attachment 4, Sections 8.0 through 11.0.

___ 5.3.9 **UPDATE** WCM to reflect component positions IAW Attachment 4.

___ 5.3.10 When 2B 125VDC Bus is OPERABLE, as determined by the SM/CRS, **PERFORM** the following:

___ ♦ **INITIATE** S1.OP-SO.CAV-0001(Q), Control Area Ventilation for Restoration From Operation With Unit 2 EACS Out-Of-Service (Maintenance Mode).

___ ♦ **RESTORE** 2CAA50 and 2CAA51 to Remote Operation IAW S2.OP-SO.CAV-0001(Q).

___ ♦ **ALIGN** Chilled Water System "Non-Essential Heat Loads" as required to support current operating conditions IAW S2.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 2B 125VDC Bus Loads to 2B 125VDC Bus**

___ 5.4.1 **ENSURE** 2BDC1AX39, 2B 125VDC VITAL BATT DISC SWT is CLOSED IAW Section 5.3, Connecting 2B 125VDC Battery to 2B 125VDC Bus.

___ 5.4.2 **CLOSE** OR **ENSURE** CLOSED the following breakers (2BDC1AX 125VDC Bus, Elev. 84′ Swgr Rm):

___ ♦ 2BDC1AX3, 2B VITAL INSTRUMENT BUS INVERTER

___ ♦ 2BDC1AX4, 2D VITAL INSTRUMENT BUS INVERTER

___ ♦ 2BDC1AX12, NO. 2G & 2F 4KV BUSES CONTROL POWER 2G (REG), 2F (EMER)

___ ♦ 2BDC1AX24, 22 EMERGENCY LIGHTING INVERTER (ALTERNATE FEED)

___ ♦ 2BDC1AX31, 2B 4KV VITAL BUS REGULAR CONTROL POWER

___ 5.4.3 IF all 2B 125VDC Bus loads are presently powered from 2A and 2C 125VDC Buses,
THEN **CLOSE** the following breakers:

___ ♦ 2BDC1AX36, 2B 460V VITAL BUS REGULAR CONTROL POWER

___ ♦ 2BDC1AX10, NO. 2H & 2F 460V BUSES CONTROL POWER 2H (REG), 2F (EMER)

___ ♦ 2BDC1AX11, SPDS 2B 125VDC BUS BATTERY VOLTAGE

___ ♦ 2BDC1AX17, 2B 125VDC BUS CONTROL ROOM GROUND OHMMETER

___ ♦ 2BDC1AX20, 2BBDC 125VDC DISTRIBUTION CABINET REGULAR POWER

___ ♦ 2BDC1AX23, 2B 125VDC BUS GROUND OHMMETER (BATTERY CHARGER AREA)

___ ♦ 2BDC1AX26, 2BDC 125VDC DISTRIBUTION CABINET REGULAR POWER

___ ♦ 2BDC1AX28, 2DDC 125VDC DISTRIBUTION CABINET REGULAR POWER

NOTE

Steps 5.4.4 through 5.4.13 may be performed in any order or concurrently at the SM/CRS discretion. Equipment identified in Steps 5.4.8 through 5.4.13 may NOT have been transferred IAW Section 5.1, Transferring 2B 125VDC Bus Loads to 2A and 2C 125VDC Buses.

___ 5.4.4 **TRANSFER** 2B 4KV Vital Bus 125VDC control power, as follows (2B 4KV VITAL BUS 4KV PT's Cubicle rear):

___ A. **NOTIFY** NCO that 2B 4KV Vital Bus control power is to be transferred from 2A 125VDC Bus to 2B 125VDC Bus.

___ B. **OPEN** 2BD1AXX2, 2B 4KV VITAL BUS EMER CONTROL POWER FROM 2ADC31.

___ C. **OPEN** 2BD1AXX4, 2B 4KV VITAL BUS EMER ALARM POWER FROM 2ADC31.

___ D. **CLOSE** 2BD1AXX1, 2B 4KV VITAL BUS REG CONTROL POWER FROM 2BDC31.

___ E. **CLOSE** 2BD1AXX3, 2B 4KV VITAL BUS REG ALARM POWER FROM 2BDC31.

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

___ ♦ Aux. Annunciator Point 0544, 2B 4KV VITAL BUS, LOSS OF 125VDC, alarmed and cleared.

___ ♦ Aux. Annunciator Point 0553, 2B 4KV VITAL CIRCUIT ENERGIZED, is clear.

___ ♦ Aux. Annunciator Point 0554, 2B 4KV VITAL BUS, LOSS OF NORMAL 125VDC, is clear.

___ 5.4.5 **TRANSFER** 2F 4KV Group Bus 125VDC control power, as follows (2F 4KV Group Bus PT Cubicle):

___ A. **NOTIFY** NCO that 2F 4KV Bus control power is to be transferred from 2A 125VDC Bus to 2B 125VDC Bus.

___ B. **OPEN** 2FD1TBX1, 2F 4KV GROUP BUS REG CONTROL POWER FROM 2ADC12.

___ C. **CLOSE** 2FD1TBX2, 2F 4KV GROUP BUS EMER CONTROL POWER FROM 2BDC12.

___ D. Notify NCO to **ENSURE** Aux. Annunciator Point 0671, 2F 4KV GROUP BUS, LOSS OF 125VDC, alarmed and cleared.

___ 5.4.6 **TRANSFER** 2G 4KV Group Bus 125VDC control power, as follows (2G 4KV Group Bus PT Cubicle):

___ A. **NOTIFY** NCO that 2G 4KV Bus control power is to be transferred from 2A 125VDC Bus to 2B 125VDC Bus.

___ B. IF #2 Station Air Compressor (SAC) is in service, THEN: **[70067892]**

___ ♦ Direct Unit 1 NCO to **PLACE** #1 ECAC in MANUAL.

___ ♦ Direct Unit 2 NCO to **PLACE** #2 ECAC in MANUAL.

___ C. **OPEN** 2GD1TBX2, 2G 4KV GROUP BUS EMER CONTROL POWER FROM 2ADC12.

___ D. **CLOSE** 2GD1TBX1, 2G 4KV GROUP BUS REG CONTROL POWER FROM 2BDC12.

___ E. IF #2 Station Air Compressor (SAC) is in service AND #1 or #2 ECAC was placed in MANUAL in Step 5.4.6B, THEN: **[70067892]**

___ ♦ Direct Unit 1 NCO to **RETURN** #1 ECAC to AUTO.

___ ♦ Direct Unit 2 NCO to **RETURN** #2 ECAC to AUTO.

___ F. Notify NCO to **ENSURE** Aux. Annunciator Point 0676, 2G 4KV GROUP BUS, LOSS OF 125VDC, alarmed and cleared.

NOTE

Equipment identified in Steps 5.4.8 through 5.4.13 may NOT have been transferred IAW Section 5.1, Transferring 2B 125VDC Bus Loads to 2A and 2C 125VDC Buses.

___ 5.4.7 IF all 2B 125VDC Bus loads are currently aligned to 2B 125VDC Bus, THEN **MARK** Steps 5.4.8 through 5.4.13 as N/A.

___ 5.4.8 **TRANSFER** 2B 460V Vital Bus 125VDC control power, as follows (2B 460V Vital Bus, Elev. 84′ Swgr Rm):

___ A. **NOTIFY** NCO that 2B 460V Vital Bus control power is to be transferred from 2A 125VDC Bus to 2B 125VDC Bus.

___ B. **OPEN** 2BX1AXX2, 2B 460V VITAL BUS EMER CONTROL POWER FROM 2ADC36.

___ C. **CLOSE** 2BX1AXX1, 2B 460V VITAL BUS REG CONTROL POWER FROM 2BDC36.

___ D. Notify NCO to **ENSURE** Aux. Annunciator Point 0792, 2B 460V VITAL BUS, LOSS OF VOLTAGE, alarmed and cleared.

___ 5.4.9 **TRANSFER** power to 2BDC3AX, 2BDC 125VDC Distribution Cabinet, as follows (Elev. 84′ Swgr Rm):

___ A. **NOTIFY** NCO that power to 2BDC3AX 125VDC Distribution Cabinet is to be transferred from 2A 125VDC Bus to 2B 125VDC Bus.

___ B. **OPEN** 2BDC3AXX2, 2BDC 125VDC DISTRIBUTION CABINET EMERGENCY POWER FROM 2ADC26.

___ C. **CLOSE** 2BDC3AXX1, 2BDC 125VDC DISTRIBUTION CABINET REGULAR POWER FROM 2BDC26.

___ D. Notify NCO to **ENSURE** Aux. Annunciator Point 0040, 2BDC 125VDC DISTR. CABINET, LOSS OF VOLTAGE, alarmed and cleared.

___ 5.4.10 **TRANSFER** power to 2DDC2AX, 2DDC 125VDC Distribution Cabinet, as follows (Elev. 84′ Swgr Rm):

___ A. **NOTIFY** NCO that power to 2DDC2AX 125VDC Distribution Cabinet is to be transferred from 2C 125VDC Bus to 2B 125VDC Bus.

___ B. Notify NCO to **PLACE** the Control Room Ventilation System in ACCIDENT PRESSURIZED mode IAW S2.OP-SO.CAV-0001(Q), Control Area Ventilation Operation.

___ C. When the Control Room Ventilation System is placed in ACCIDENT PRESSURIZED mode,

___ 1. **OPEN** 2DDC2AXX2, 2DDC 125VDC DISTRIBUTION CABINET EMERGENCY POWER FROM 2CDC28.

___ 2. **CLOSE** 2DDC2AXX1, 2DDC 125VDC DISTRIBUTION CABINET REGULAR POWER FROM 2BDC28.

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

___ 1. **ENSURE** Aux. Annunciator Point 0035, 2DDC 125VDC DISTR. CABINET, LOSS OF VOLTAGE, alarmed and cleared.

___ 2. **PLACE** the Control Room Ventilation System in NORMAL mode IAW S2.OP-SO.CAV-0001(Q).

___ 5.4.11 **TRANSFER** power to 2BDC2AX, 2BBDC 125VDC Distribution Cabinet, as follows (Relay Room):

___ A. IF 21 CCHX is in service,
THEN **ENSURE** 21SW122, 21 CCHX SW INLET VLV, valve actuator is manually engaged IAW Attachment 3, Section 1.0.

___ B. IF 22 CCHX is in service,
THEN **ENSURE** 22SW122, 22 CCHX SW INLET VLV, valve actuator is manually engaged IAW Attachment 3, Section 1.0.

___ C. **NOTIFY** NCO that power to 2BDC2AX 125VDC Distribution Cabinet is to be transferred from 2A 125VDC Bus to 2B 125VDC Bus.

NOTE

The following valves will close when 2BDC2AX, 2BBDC 125VDC Distribution Cabinet is de-energized during power supply transfers:

- ♦ Containment purge valves 2VC1 and 2VC4
- ♦ Containment pressure-vacuum relief valve 2VC5
- ♦ Containment rad monitor sample valves 2VC7 and 2VC11
- ♦ Pressurizer Power Operated Relief valve 2PR2
- ♦ 22SW122, 22 CCHX SW INLET VLV (when in AUTO)

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

___ 1. IF Containment Purge is in progress,
THEN **TERMINATE** IAW S2.OP-SO.WG-0006(Q).

___ 2. IF Containment Pressure-Vacuum Relief is in progress,
THEN **TERMINATE** IAW S2.OP-SO.CBV-0002(Q).

___ 3. **OPEN** Containment APD Sample Backup Isolation Valves.

___ ♦2VC13, RMS SAMPL E SUCT VLV

___ ♦2VC14, RMS SAMPL E SUCTION VLV

___ ♦2VC9, RMS SAMPL E DISCHARGE VLV

___ ♦2VC10, RMS SAMPL E DISCHARGE VLV

___ 4. **CLOSE** Containment APD Sample Regular Isolation Valves:

___ ♦2VC11, RMS SAMPL E INLET VLV

___ ♦2VC12, RMS SAMPL E INLET VLV

___ ♦2VC7, RMS SAMPL E OUTLET VLV

___ ♦2VC8, RMS SAMPL E OUTLET VLV

(step continued on next page)

5.4.11 (Continued)

___ E. **OPEN** 2BDC2AXX2, 2BBDC 125VDC DISTRIBUTION CABINET EMERGENCY POWER FROM 2ADC20.

___ F. **CLOSE** 2BDC2AXX1, 2BBDC 125VDC DISTRIBUTION CABINET REGULAR POWER FROM 2BDC20.

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

___ 1. **ENSURE** Aux. Annunciator Point 0029, 2BBDC 125VDC DISTR CABINET LOSS OF VOLT., alarmed and cleared.

___ 2. **OPEN** Containment APD Sample Regular Isolation Valves:

___ ♦2VC11

___ ♦2VC12

___ ♦2VC7

___ ♦2VC8

___ 3. **CLOSE** Containment APD Sample Backup Isolation Valves:

___ ♦2VC13

___ ♦2VC14

___ ♦2VC9

___ ♦2VC10

___ 4. IF Containment Purge was terminated due to 2BDC2AX power supply transfer, THEN **ESTABLISH** IAW S2.OP-SO.WG-0006(Q).

___ 5. IF Containment Pressure-Vacuum Relief was terminated due to 2BDC2AX power supply transfer, THEN **ESTABLISH** IAW S2.OP-SO.CBV-0002(Q).

___ 6. **EVALUATE** Technical Specification 3.4.10.3 for restoration of POPS CH II solenoid valve. (Refer to Step 3.2.1.)

(step continued on next page)

5.4.11 (Continued)

___ H. **RESET** 22SW122, 22 CCHX SW INLET VLV, by momentarily placing the 43-2 switch to AUTO (located in 22 CCHX Room, Aux. Bldg.)

___ I. IF 21 CCHX is in service,
THEN:

___ 1. **NOTIFY** NCO that 21SW122, 21 CCHX INLET VLV, is to be restored to AUTO control.

___ 2. **DISENGAGE** (MANUAL) 21SW122 IAW Attachment 3, Section 2.0.

___ 3. **PERFORM** Independent Verification IAW Attachment 4, Section 1.0.

___ J. IF 22 CCHX is in service,
THEN:

___ 1. **NOTIFY** NCO that 22SW122, 22 CCHX INLET VLV, is to be restored to AUTO control.

___ 2. **DISENGAGE** (MANUAL) 22SW122 IAW Attachment 3, Section 2.0.

___ 3. **PERFORM** Independent Verification IAW Attachment 4, Section 2.0.

___ K. **DISCONTINUE** Operator Action Log IAW SC.OP-AP.ZZ-0110(Q) for manual control of the in service CCHX.

___ 5.4.12 **TRANSFER** 2H 460V Bus 125VDC control power, as follows (2H 460V Bus, Elev. 120′ TGA):

___ A. **NOTIFY** NCO that 2H 460V Bus control power is to be transferred from 2A 125VDC Bus to 2B 125VDC Bus.

___ B. **OPEN** 2HX1TBX2, 2H 460 VOLT BUS EMERGENCY CONTROL POWER FROM 2ADC10.

___ C. **CLOSE** 2HX1TBX1, 2H 460 VOLT BUS REGULAR CONTROL POWER FROM 2BDC10.

___ D. Notify NCO to **ENSURE** Aux. Annunciator Point 0065, 2H 460V BUS, LOSS OF 125VDC CONTROL VOLT, alarmed and cleared.

___ 5.4.13 **TRANSFER** 2F 460V Bus 125VDC control power, as follows (2F 460V Bus, Elev. 120′ TGA):

___ A. **NOTIFY** NCO that 2F 460V Bus control power is to be transferred from 2A 125VDC Bus to 2B 125VDC Bus.

___ B. **OPEN** 2FX1TBX1, 2F 460 VOLT BUS REGULAR CONTROL POWER FROM 2ADC10.

___ C. **CLOSE** 2FX1TBX2, 2F 460 VOLT BUS EMERGENCY CONTROL POWER FROM 2BDC10.

___ D. Notify NCO to **ENSURE** Aux. Annunciator Point 0074, 2F 460V BUS, LOSS OF 125VDC CONTROL VOLT., alarmed and cleared.

___ 5.4.14 **OPEN** OR **ENSURE** OPEN the following breakers (Elev. 84′ Swgr Rm):

___ ♦ 2ADC1AX12, NO. 2F & 2G 4KV BUSES CONTROL POWER 2F (REG), 2G (EMER)

___ ♦ 2ADC1AX31, 2B 4KV VITAL BUS CONTROL POWER (EMERGENCY)

___ ♦ 2ADC1AX10, NO. 2F & 2H 460V BUSES CONTROL POWER 2F (REG), 2H (EMER)

___ ♦ 2ADC1AX20, 2BBDC 125VDC DISTRIBUTION CABINET (EMERGENCY)

___ ♦ 2ADC1AX26, 2BDC 125VDC DISTRIBUTION CABINET (EMERGENCY)

___ ♦ 2ADC1AX36, 2B 460V VITAL BUS CONTROL POWER (EMERGENCY)

___ 5.4.15 **OPEN** 2CDC1AX28, 2DDC 125VDC DISTRIBUTION CABINET EMERGENCY POWER (2C 125VDC Bus, Elev. 84′ Swgr Rm).

___ 5.4.16 IF 2B 230V Vital Bus is energized,
THEN:

NOTE

Steps 5.4.16A through 5.4.16C may be performed in any order.

___ A. **PERFORM** the following IAW S2.OP-SO.115-0012(Q), 2B Vital Instrument Bus UPS System Operation:

___ 1. IF 2B 115V Vital Instrument Bus is de-energized,
THEN **PLACE** 2B Vital Instrument Bus UPS System in service
AND **ENERGIZE** 2B 115V Vital Instrument Bus.

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

___ a. **ENERGIZE** 2B Vital Instrument Bus Rectifier and Inverter with AC Line Regulator Supplying 2B 115V Vital Instrument Bus.

___ b. **TRANSFER** 2B Vital Instrument Bus from AC Line Regulator to Inverter.

___ 3. IF 2B 115V Vital Instrument Bus is energized from the Inverter with DC Power Supply de-energized,
THEN **ENERGIZE** DC Power Supply to Inverter.

___ 4. IF 2B 115V Vital Instrument Bus is powered from a temporary power supply,
THEN:

___ a. **REMOVE** all loads from 2B 115V Vital Instrument Bus.

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

___ c. **PLACE** 2B Vital Instrument Bus UPS System in service, AND **ENERGIZE** 2B 115V Vital Instrument Bus.

(step continued on next page)

5.4.16 (Continued)

___ B. **PERFORM** the following IAW S2.OP-SO.115-0014(Q), 2D Vital Instrument Bus UPS System Operation:

___ 1. IF 2D 115V Vital Instrument Bus is de-energized, THEN **PLACE** 2D Vital Instrument Bus UPS System in service AND **ENERGIZE** 2D 115V Vital Instrument Bus.

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

___ a. **ENERGIZE** 2D Vital Instrument Bus Rectifier and Inverter with AC Line Regulator Supplying 2D 115V Vital Instrument Bus.

___ b. **TRANSFER** 2D Vital Instrument Bus from AC Line Regulator to Inverter.

___ 3. IF 2D 115V Vital Instrument Bus is energized from the Inverter with DC Power Supply de-energized, THEN **ENERGIZE** DC Power Supply to Inverter.

___ 4. IF 2D 115V Vital Instrument Bus is powered from a temporary power supply, THEN:

___ a. **REMOVE** all loads from 2D 115V Vital Instrument Bus.

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

___ c. **PLACE** 2D Vital Instrument Bus UPS System in service, AND **ENERGIZE** 2D 115V Vital Instrument Bus.

(step continued on next page)

5.4.16 (Continued)

___ C. **PERFORM** the following IAW S2.OP-SO.115-0006(Q), 22 Emergency Lighting UPS System Operation:

___ 1. IF 2BZ1AX, 22 Emergency Lighting Distribution Cabinet, is powered from the preferred AC source, THEN **ENERGIZE** 22 Emergency Lighting Inverter with Preferred AC Source Supplying 22 Emergency Lighting Distribution Cabinet.

___ 2. IF 2BZ1AX, 22 Emergency Lighting Distribution Cabinet, is de-energized, THEN **PLACE** 22 Emergency Lighting UPS System in service, AND **ENERGIZE** 22 Emergency Lighting Distribution Cabinet.

___ 5.4.17 IF components specified in Attachment 1, Load Shed are tagged to support transferring 2B 125VDC Bus loads, THEN **RELEASE** the tags.

___ 5.4.18 **RELEASE** tag from 2ADC1AX24, 21 EMERGENCY LIGHTING INVERTER AND **RESTORE** 21 Emergency Lighting UPS System to normal operation IAW S2.OP-SO.115-0005(Q), 21 Emergency Lighting UPS System Operation.

___ 5.4.19 **COMPLETE** Section 5.3, Connecting 2B 125VDC Battery to 2B 125VDC Bus.

5.5 **Completion and Review**

___ 5.5.1 **COMPLETE** Attachment 5, Sections 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 1-5 for completeness and accuracy.

___ B. **COMPLETE** Attachment 5, 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:

Attachment 1-5

7.0 REFERENCES

7.1 Updated Final Safety Analysis Report:

7.1.1 Section 8.3.2, DC Power

7.2 Technical Specifications - Unit 2:

None

7.3 Procedures:

7.3.1 S2.OP-SO.125-0005(Q), 2A 125VDC Bus Operation
7.3.2 S2.OP-SO.125-0007(Q), 2C 125VDC Bus Operation

7.4 Drawings:

7.4.1 203007, No. 1 Unit 125 V.D.C. One Line
7.4.2 211370, 115V. Control System
7.4.3 223720, No. 2 Unit 125 V.D.C. One Line

7.5 PSBPs:

None

7.6 Others:

7.6.1 DCP 2EC-3332, Emergency Lighting Inverter Logic Card Replacement
7.6.2 DCP 2EC-3567, Molded Case Circuit Breaker Replacement (125 VDC Battery Disconnect Switch)
7.6.3 DE-CB.125-0018(Q), Low Voltage DC Electrical Systems
7.6.4 NSO INCI 94-072, 2A 125VDC Bus Undervoltage Relay Not Installed
7.6.5 Safety Evaluation Report, Section 8.3.2, D-C System
7.6.6 Safety Evaluation Report, Supplement 3, Section 8.3.2, Direct Current Power Systems
7.6.7 Safety Evaluation Report, Supplement 3, Section 8.3.2, Direct Current Power Systems
7.6.8 Engineering Evaluation Report, S-2-125-EEE-1101, Rev.0, Transfer of 2B 125V DC Bus IN MODES 5, 6, OR DEFUELED
7.6.9 DCP 2EC-3590, Generic Letter 96-06 Modifications
7.6.10 DCP 80057549, Integrated Head Assembly

7.7 **Cross-References**:

7.7.1 Technical Specifications:

A. 3.4.10.3, Overpressure Protection Systems
B. 3.8.2.4, 125 Volt DC Distribution - Shutdown

7.7.2 Procedures:

A. S2.OP-PM-CC-0021(Q), 21 Component Cooling Heat Exchanger High Flow Flush and Alignment
B. S2.OP-PM-CC-0022(Q), 22 Component Cooling Heat Exchanger High Flow Flush and Alignment
C. S2.OP-SO.125-0005(Q), 2A 125VDC Bus Operation
D. S2.OP-SO.115-0005(Q), 21 Emergency Lighting UPS System Operation
E. S2.OP-SO.115-0006(Q), 22 Emergency Lighting UPS System Operation
F. S2.OP-SO.115-0012(Q), 2B Vital Instrument Bus UPS System Operation
G. S2.OP-SO.115-0014(Q), 2D Vital Instrument Bus UPS System Operation
H. S2.OP-SO.125-0002(Q), 2B 125VDC Battery Charger Operation
I. S2.OP-SO.125-0004(Q), 125VDC Ground Detection
J. S2.OP-SO.CAV-0001(Q), Control Area Ventilation Operation.
K. S2.OP-SO.CBV-0002(Q), Containment Pressure-Vacuum Relief System Operation
L. S2.OP-SO.CC-0002(Q), 21 & 22 Component Cooling Heat Exchanger Operation
M. S2.OP-SO.WG-0006(Q), Containment Purge to the Plant Vent

7.8 **Commitments**:

None

ATTACHMENT 1
(Page 1 of 5)

TRANSFERRING 2B 125VDC BUS LOADS TO 2A AND 2C 125VDC BUSES

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 326 amps of 125VDC controlled loads specified in Steps 1.1, 1.2, and 1.3 to support transferring 2B 125VDC Bus loads to 2A 125VDC Bus.

ATTACHMENT 1
(Page 2 of 5)

TRANSFERRING 2B 125VDC BUS LOADS TO 2A AND 2C 125VDC BUSES

___ 1.1 2B-DF-ECP-1, 2B DIESEL GENERATOR LOCKOUT [40 amps].

___ 1.2 4KV BUS LOADS - [each breaker listed is 6.0 amps. 132 amps total]:

- ___ ♦ 2AD1AX1D, 21 AUXILIARY FEEDWATER PUMP
- ___ ♦ 2AD1AX2D, 21 CONTAINMENT SPRAY PUMP
- ___ ♦ 2AD1AX3D, 21 SERVICE WATER PUMP
- ___ ♦ 2AD1AX5D, 21 SAFETY INJECTION PUMP
- ___ ♦ 2AD1AX6D, 2A DIESEL GENERATOR BREAKER
- ___ ♦ 2AD1AX7D, 21 RESIDUAL HEAT REMOVAL PUMP
- ___ ♦ 2AD1AX8D, 22 SERVICE WATER PUMP
- ___ ♦ 2AD1AX10D, 21 COMPONENT COOLING WATER PUMP
- ___ ♦ 2BD1AX1D, 22 AUXILIARY FEEDWATER PUMP
- ___ ♦ 2BD1AX3D, 23 SERVICE WATER PUMP
- ___ ♦ 2BD1AX6D, 2B DIESEL GENERATOR BREAKER
- ___ ♦ 2BD1AX7D, 22 RESIDUAL HEAT REMOVAL PUMP
- ___ ♦ 2BD1AX8D, 24 SERVICE WATER PUMP
- ___ ♦ 2BD1AX9D, 21 CHARGING PUMP
- ___ ♦ 2BD1AX10D, 22 COMPONENT COOLING WATER PUMP
- ___ ♦ 2ED1TB1D, 22 CONDENSATE PUMP
- ___ ♦ 2ED1TB4D, 22 REACTOR COOLANT PUMP
- ___ ♦ 2FD1TB1D, 23 CONDENSATE PUMP
- ___ ♦ 2FD1TB4D, 23 REACTOR COOLANT PUMP
- ___ ♦ 2GD1TB4D, 24 REACTOR COOLANT PUMP
- ___ ♦ 2HD1TB1D, 21 CONDENSATE PUMP
- ___ ♦ 2HD1TB4D, 21 REACTOR COOLANT PUMP

ATTACHMENT 1
(Page 3 of 5)

TRANSFERRING 2B 125VDC BUS LOADS TO 2A AND 2C 125VDC BUSES

___ 1.3 460V BUS LOADS - [each breaker listed is 10.0 amps. 400 amps total]:

- ___ ♦ 2AX1AX2X, 21 CONTAINMENT FAN COIL UNIT LOW SPEED
- ___ ♦ 2AX1AX3X, 21 CONTAINMENT FAN COIL UNIT HIGH SPEED
- ___ ♦ 2AX1AX4X, 21 CONTAINMENT FAN COIL UNIT HIGH SPEED
- ___ ♦ 2AX1AX5X, 21 FUEL HANDLING BUILDING EXHAUST FAN
- ___ ♦ 2AX1AX6X, 2 RADIATION MONITORING SYSTEM
- ___ ♦ 2AX1AX7X, 23 CHARGING PUMP
- ___ ♦ 2AX1AX9X, 21 SWGR RETURN/EXHAUST FAN
- ___ ♦ 2AX1AX10X, 21 PRIMARY WATER MAKE-UP PUMP
- ___ ♦ 2AX1AX12X, 21 AUX BUILDING VENTILATION EXHAUST FAN
- ___ ♦ 2AX1AX13X, 21 CHILLER
- ___ ♦ 2AX1AX14X, 2EP PRESSURIZER HEATER BUS FEED (EMERG)
- ___ ♦ 2AX1AX15X, 21 HYDROGEN RECOMBINER
- ___ ♦ 2AX1AX16X, 21 SWITCHGEAR ROOM SUPPLY
- ___ ♦ 2BX1AX2X, 22 CONTAINMENT FAN COIL UNIT LOW SPEED
- ___ ♦ 2BX1AX3X, 22 CONTAINMENT FAN COIL UNIT HIGH SPEED
- ___ ♦ 2BX1AX4X, 22 CONTAINMENT FAN COIL UNIT HIGH SPEED
- ___ ♦ 2BX1AX5X, 22 FUEL HANDLING BUILDING EXHAUST FAN
- ___ ♦ 2BX1AX6X, 24 CONTAINMENT FAN COIL UNIT LOW SPEED
- ___ ♦ 2BX1AX7X, 24 CONTAINMENT FAN COIL UNIT HIGH SPEED

(step continued on next page)

ATTACHMENT 1
(Page 4 of 5)

TRANSFERRING 2B 125VDC BUS LOADS TO 2A AND 2C 125VDC BUSES

1.3 (Continued)

___ ♦ 2BX1AX8X, 24 CONTAINMENT FAN COIL UNIT HIGH SPEED

___ ♦ 2BX1AX9X, 22 SWGR RETURN/EXHAUST FAN

___ ♦ 2BX1AX10X, 22 SWITCHGEAR ROOM SUPPLY FAN

___ ♦ 2BX1AX11X, 22 AUX BUILDING VENTILATION SUPPLY FAN

___ ♦ 2BX1AX12X, 22 AUX BUILDING VENTILATION EXHAUST FAN

___ ♦ 2BX1AX13X, 22 CHILLER

___ ♦ 2BX1AX14X, 22 SPENT FUEL PIT PUMP

___ ♦ 2BX1AX15X, 22 HYDROGEN RECOMBINER

___ ♦ 2EX1AX5X, 21 CONTROL ROD DRIVE VENT FAN

___ ♦ 2EX1AX6X, 21 WASTE GAS COMPRESSOR

___ ♦ 2EX1AX9X, 21 MONITOR TANK PUMP

___ ♦ 2EX1AX14X, 22 CONTROL ROD DRIVE VENT FAN

___ ♦ 2FX1TB14X, 2 RAW WATER PUMP

___ ♦ 2GX1AX5X, 23 CONTROL ROD DRIVE VENT FAN

___ ♦ 2GX1AX6X, 22 WASTE GAS COMPRESSOR

___ ♦ 2GX1AX9X, 22 MONITOR TANK PUMP

___ ♦ 2HX1TB11X, 2 DEAERATOR VACUUM PUMP

___ ♦ 2HX1TB17X, 6 PRODUCTION WELL PUMP

___ ♦ 2EX1EP2EPX, 2EP 480V PRESSURIZER HEATER BUS MAIN BKR.

___ ♦ 2GX2EP2GPX, 2GP 480V PZR HTR BUS B/U SECT MN BKR

___ ♦ 2GX1EP2GPXA, 2GP 480V PZR HTR BUS CONTRL SECT MN BKR

ATTACHMENT 1
(Page 5 of 5)

TRANSFERRING 2B 125VDC BUS LOADS TO 2A AND 2C 125VDC BUSES

___ 2.0 **C/T** at least 62 amps of 125VDC controlled loads specified in Steps 2.1 and 2.2 to support transferring 2DDC Distribution Cabinet to 2C 125VDC Bus.

___ 2.1 4KV BUS LOADS - [each breaker listed is 6.0 amps. 42 amps total]:

___ ♦ 2CD1AX2D, 22 CONTAINMENT SPRAY PUMP

___ ♦ 2CD1AX3D, 21 SERVICE WATER PUMP

___ ♦ 2CD1AX5D, 22 SAFETY INJECTION PUMP

___ ♦ 2CD1AX6D, 2C DIESEL GENERATOR BREAKER

___ ♦ 2CD1AX8D, 22 SERVICE WATER PUMP

___ ♦ 2CD1AX9D, 22 CHARGING PUMP

___ ♦ 2CD1AX10D, 23 COMPONENT COOLING WATER PUMP

___ 2.2 460V BUS LOADS - [each breaker listed is 10.0 amps. 140 amps total]:

___ ♦ 2CX1AX2X, 23 CONTAINMENT FAN COIL UNIT LOW SPEED

___ ♦ 2CX1AX3X, 23 CONTAINMENT FAN COIL UNIT HIGH SPEED

___ ♦ 2CX1AX4X, 23 CONTAINMENT FAN COIL UNIT HIGH SPEED

___ ♦ 2CX1AX5X, 21 SPENT FUEL PIT PUMP

___ ♦ 2CX1AX6X, 25 CONTAINMENT FAN COIL UNIT LOW SPEED

___ ♦ 2CX1AX7X, 25 CONTAINMENT FAN COIL UNIT HIGH SPEED

___ ♦ 2CX1AX8X, 25 CONTAINMENT FAN COIL UNIT HIGH SPEED

___ ♦ 2CX1AX10X, 22 PRIMARY WATER MAKE-UP PUMP

___ ♦ 2CX1AX12X, 23 AUX BUILDING VENTILATION EXHAUST FAN

___ ♦ 2CX1AX13X, 23 CHILLER

___ ♦ 2CX1AX14X, 2 EMERGENCY CONTROL AIR COMPRESSOR

___ ♦ 2CX1AX15X, 21 AUX BUILDING VENTILATION SUPPLY FAN

___ ♦ 2CX1AX16X, 23 SWITCHGEAR ROOM SUPPLY FAN

___ ♦ 2CX2AX23X, 2GP 480V PZR HTR BUS B.U. GRP 21

ATTACHMENT 2
(Page 1 of 4)

INDEPENDENT VERIFICATION
ALTERNATE POWER SUPPLY ALIGNMENT

1.0 **21 CCHX SW INLET VLV**: (Elev. 84′ Aux Bldg)

VALVE	NAME	POSITION	IV
21SW122	CCHX SW INLET VLV	Manually Jacked	
21SW122	43-1 Switch	AUTO	

2.0 **22 CCHX SW INLET VLV**: (Elev. 84′ Aux Bldg)

VALVE	NAME	POSITION	IV
22SW122	22 CCHX SW INLET VLV	Manually Jacked	
22SW122	43-2 Switch	AUTO	

3.0 **2BDC1AX 125VDC BUS**: (Elev. 84′ Swgr Rm)

BREAKER	NAME	POS	IV
2BDC1AX3	2B VITAL INSTRUMENT BUS INVERTER	OFF	
2BDC1AX4	2D VITAL INSTRUMENT BUS INVERTER	OFF	
2BDC1AX10	NO. 2H & 2F 460V BUSES CONTROL POWER 2H (REG), 2F (EMER)	OFF	
2BDC1AX11	SPDS 2B 125VDC BUS BATTERY VOLTAGE	OFF	
2BDC1AX12	NO. 2G & 2F 4KV BUSES CONTROL POWER 2G (REG), 2F (EMER)	OFF	
2BDC1AX17	2B 125VDC BUS CONTROL ROOM GROUND OHMMETER	OFF	
2BDC1AX18	2B 125VDC BUS UNDERVOLTAGE RELAY & CONTROL ROOM VOLTMETER	OFF	
2BDC1AX20	2BBDC 125VDC DISTRIBUTION CABINET REGULAR POWER	OFF	
2BDC1AX23	2B 125VDC BUS GROUND OHMMETER (BATTERY CHARGER AREA)	OFF	
2BDC1AX24	22 EMERGENCY LIGHTING INVERTER (ALTERNATE FEED)	OFF	
2BDC1AX26	2BDC 125VDC DISTRIBUTION CABINET REGULAR POWER	OFF	
2BDC1AX28	2DDC 125VDC DISTRIBUTION CABINET REGULAR POWER	OFF	
2BDC1AX31	2B 4KV VITAL BUS REGULAR CONTROL POWER	OFF	
2BDC1AX36	2B 460V VITAL BUS REGULAR CONTROL POWER	OFF	
2BDC1AX39	2B 125VDC VITAL BATTERY DISCONNECT SWITCH (located inside, rear 2BDC1AX cabinet)	OFF	

ATTACHMENT 2
(Page 2 of 4)

INDEPENDENT VERIFICATION
ALTERNATE POWER SUPPLY ALIGNMENT

4.0 **2ADC1AX 125VDC BUS**: (Elev. 84′ Swgr Rm)

BREAKER	NAME	POS	IV
2ADC1AX10	NO. 2F & 2H 460V BUSES CONTROL POWER 2F (REG), 2H (EMER)	ON	
2ADC1AX12	NO. 2F & 2G 4KV BUSES CONTROL POWER 2F (REG), 2G (EMER)	ON	
2ADC1AX20	2BBDC 125VDC DISTRIBUTION CABINET (EMERGENCY)	ON	
2ADC1AX26	2BDC 125VDC DISTRIBUTION CABINET (EMERGENCY)	ON	
2ADC1AX31	2B 4KV VITAL BUS CONTROL POWER (EMERGENCY)	ON	
2ADC1AX36	2B 460V VITAL BUS CONTROL POWER (EMERGENCY)	ON	

5.0 **2CDC1AX 125VDC BUS**: (Elev. 84′ Swgr Rm)

BREAKER	NAME	POS	IV
2CDC1AX28	2DDC 125VDC DISTRIBUTION CABINET EMERGENCY POWER	ON	

6.0 **DC DISTRIBUTION CABINETS MAIN BREAKER ALIGNMENT**

BREAKER	NAME	POS	IV
2BDC2AXX1	2BBDC 125VDC DISTRIBUTION CABINET REGULAR POWER FROM 2BDC20	OFF	
2BDC2AXX2	2BBDC 125VDC DISTRIBUTION CABINET EMERGENCY POWER FROM 2ADC20	ON	
2BDC3AXX1	2BDC 125VDC DISTRIBUTION CABINET REGULAR POWER FROM 2BDC26	OFF	
2BDC3AXX2	2BDC 125VDC DISTRIBUTION CABINET EMERGENCY POWER FROM 2ADC26	ON	
2DDC2AXX1	2DDC 125VDC DISTRIBUTION CABINET REGULAR POWER FROM 2BDC28	OFF	
2DDC2AXX2	2DDC 125VDC DISTRIBUTION CABINET EMERGENCY POWER FROM 2CDC28	ON	

ATTACHMENT 2
(Page 3 of 4)

INDEPENDENT VERIFICATION
ALTERNATE POWER SUPPLY ALIGNMENT

7.0 AC BUSES CONTROL POWER BREAKER ALIGNMENT

BREAKER	NAME	POS	IV
2BX1AXX1	2B 460V VITAL BUS REG CONTROL POWER FROM 2BDC36	OFF	
2BX1AXX2	2B 460V VITAL BUS EMER CONTROL POWER FROM 2ADC36	ON	
2BD1AXX1	2B 4KV VITAL BUS REG CONTROL POWER FROM 2BDC31 (2B 4KV VITAL BUS 4KV PT's Cubicle rear)	OFF	
2BD1AXX2	2B 4KV VITAL BUS EMER CONTROL POWER FROM 2ADC31 (2B 4KV VITAL BUS 4KV PT's Cubicle rear)	ON	
2BD1AXX3	2B 4KV VITAL BUS REG ALARM POWER FROM 2BDC31 (2B 4KV VITAL BUS 4KV PT's Cubicle rear)	OFF	
2BD1AXX4	2B 4KV VITAL BUS EMER ALARM POWER FROM 2ADC31 (2B 4KV VITAL BUS 4KV PT's Cubicle rear)	ON	
2FD1TBX1	2F 4KV GROUP BUS REG CONTROL POWER FROM 2ADC12 (2F 4KV Group Bus PT Cubicle)	ON	
2FD1TBX2	2F 4KV GROUP BUS EMER CONTROL POWER FROM 2BDC12 (2F 4KV Group Bus PT Cubicle)	OFF	
2GD1TBX1	2G 4KV GROUP BUS REG CONTROL POWER FROM 2BDC12 (2G 4KV Group Bus PT Cubicle)	OFF	
2GD1TBX2	2G 4KV GROUP BUS EMER CONTROL POWER FROM 2ADC12 (2G 4KV Group Bus PT Cubicle)	ON	
2FX1TBX1	2F 460 VOLT BUS REGULAR CONTROL POWER FROM 2ADC10	ON	
2FX1TBX2	2F 460 VOLT BUS EMERGENCY CONTROL POWER FROM 2BDC10	OFF	
2HX1TBX1	2H 460 VOLT BUS REGULAR CONTROL POWER FROM 2BDC10	OFF	
2HX1TBX2	2H 460 VOLT BUS EMERGENCY CONTROL POWER FROM 2ADC10	ON	

ATTACHMENT 2
(Page 4 of 4)

INDEPENDENT VERIFICATION
ALTERNATE POWER SUPPLY ALIGNMENT

8.0 **2BDC1AX 125VDC BUS**: (Elev. 84′ Swgr Rm)

BREAKER	NAME	POS	IV
2BDC1AX12	NO. 2G & 2F 4KV BUSES CONTROL POWER 2G (REG), 2F (EMER)	OFF	
2BDC1AX24	22 EMERGENCY LIGHTING INVERTER (ALTERNATE FEED)	OFF	
2BDC1AX31	2B 4KV VITAL BUS REGULAR CONTROL POWER	OFF	
2BDC1AX39	2B 125VDC VITAL BATTERY DISCONNECT SWITCH (located inside, rear 2BDC1AX cabinet)	OFF	

9.0 **2ADC1AX 125VDC BUS**: (Elev. 84′ Swgr Rm)

BREAKER	NAME	POS	IV
2ADC1AX12	NO. 2F & 2G 4KV BUSES CONTROL POWER 2F (REG), 2G (EMER)	ON	
2ADC1AX31	2B 4KV VITAL BUS CONTROL POWER (EMERGENCY)	ON	

10.0 **AC BUSES CONTROL POWER BREAKER ALIGNMENT**

BREAKER	NAME	POS	IV
2BD1AXX1	2B 4KV VITAL BUS REG CONTROL POWER FROM 2BDC31 (2B 4KV VITAL BUS 4KV PT's Cubicle rear)	OFF	
2BD1AXX2	2B 4KV VITAL BUS EMER CONTROL POWER FROM 2ADC31 (2B 4KV VITAL BUS 4KV PT's Cubicle rear)	ON	
2BD1AXX3	2B 4KV VITAL BUS REG ALARM POWER FROM 2BDC31 (2B 4KV VITAL BUS 4KV PT's Cubicle rear)	OFF	
2BD1AXX4	2B 4KV VITAL BUS EMER ALARM POWER FROM 2ADC31 (2B 4KV VITAL BUS 4KV PT's Cubicle rear)	ON	
2FD1TBX1	2F 4KV GROUP BUS REG CONTROL POWER FROM 2ADC12 (2F 4KV Group Bus PT Cubicle)	ON	
2FD1TBX2	2F 4KV GROUP BUS EMER CONTROL POWER FROM 2BDC12 (2F 4KV Group Bus PT Cubicle)	OFF	
2GD1TBX1	2G 4KV GROUP BUS REG CONTROL POWER FROM 2BDC12 (2G 4KV Group Bus PT Cubicle)	OFF	
2GD1TBX2	2G 4KV GROUP BUS EMER CONTROL POWER FROM 2ADC12 (2G 4KV Group Bus PT Cubicle)	ON	

ATTACHMENT 3
(Page 1 of 1)

CCHX SW INLET VALVE MANUAL OPERATIONS

1.0 **ENGAGE (MANUAL) SW122, CCHX SW INLET VLV**

___ 1.1 **SET** Bypass Valve to "AUTO" position.

___ 1.2 **REMOVE** Pin located in Gear Cover.

___ 1.3 While holding the handwheel, **ROTATE** gear cover in direction of arrow (← to Left), until Full Engagement is audible. Hand-wheel rotation may be required to assist meshing while rotating gear cover.

___ 1.4 **INSERT** Locking Pin

___ 1.5 **POSITION** By-pass Valve to "MANUAL"

___ 1.6 **POSITION** SW122 as required.

2.0 **DIS-ENGAGE (MANUAL) SW122, CCHX SW INLET VLV**

NOTE

- Fully closed = 15 lb output pressure
- Fully open = 3 lb output pressure

___ 2.1 **ENSURE** valve position as indicated on valves Travel Plate, coincides with Instrument Signal (Ex. Valve halts half open when signal at mid point).

___ 2.2 **POSITION** Bypass valve to "AUTO"

___ 2.3 **REMOVE** Locking Pin, handwheel rotation maybe required to free pin.

___ 2.4 While holding the handwheel, **ROTATE** gear cover in direction of arrow (→, to Right)

___ 2.5 **INSERT** Locking Pin.

___ 2.6 **POSITION** valve with pneumatic actuator.

ATTACHMENT 4
(Page 1 of 4)

INDEPENDENT VERIFICATION
BREAKER & VALVE RESTORATION ALIGNMENT

1.0 **21 CCHX SW INLET VLV**: (Elev. 84′ Aux Bldg)

VALVE	NAME	POSITION	IV
21SW122	CCHX SW INLET VLV	Actuator Handwheel Disengaged	
21SW122	43-1 Switch	AUTO	

2.0 **22 CCHX SW INLET VLV**: (Elev. 84′ Aux Bldg)

VALVE	NAME	POSITION	IV
22SW122	CCHX SW INLET VLV	Actuator Handwheel Disengaged	
22SW122	43-2 Switch	AUTO	

3.0 **2BDC1AX 125VDC BUS**: (Elev. 84′ Swgr Rm)

BREAKER	NAME	POS	IV
2BDC1AX3	2B VITAL INSTRUMENT BUS INVERTER	ON	
2BDC1AX4	2D VITAL INSTRUMENT BUS INVERTER	ON	
2BDC1AX10	NO. 2H & 2F 460V BUSES CONTROL POWER 2H (REG), 2F (EMER)	ON	
2BDC1AX11	SPDS 2B 125VDC BUS BATTERY VOLTAGE	ON	
2BDC1AX12	NO. 2G & 2F 4KV BUSES CONTROL POWER 2G (REG), 2F (EMER)	ON	
2BDC1AX17	2B 125VDC BUS CONTROL ROOM GROUND OHMMETER	ON	
2BDC1AX18	2B 125VDC BUS UNDERVOLTAGE RELAY & CONTROL ROOM VOLTMETER	ON	
2BDC1AX20	2BBDC 125VDC DISTRIBUTION CABINET REGULAR POWER	ON	
2BDC1AX23	2B 125VDC BUS GROUND OHMMETER (BATTERY CHARGER AREA)	ON	
2BDC1AX24	22 EMERGENCY LIGHTING INVERTER (ALTERNATE FEED)	ON	
2BDC1AX26	2BDC 125VDC DISTRIBUTION CABINET REGULAR POWER	ON	
2BDC1AX28	2DDC 125VDC DISTRIBUTION CABINET REGULAR POWER	ON	
2BDC1AX31	2B 4KV VITAL BUS REGULAR CONTROL POWER	ON	
2BDC1AX36	2B 460V VITAL BUS REGULAR CONTROL POWER	ON	

ATTACHMENT 4
(Page 2 of 4)

INDEPENDENT VERIFICATION
BREAKER & VALVE RESTORATION ALIGNMENT

4.0 **2ADC1AX 125VDC BUS**: (Elev. 84′ Swgr Rm)

BREAKER	NAME	POS	IV
2ADC1AX10	NO. 2F & 2H 460V BUSES CONTROL POWER 2F (REG), 2H (EMER)	OFF	
2ADC1AX12	NO. 2F & 2G 4KV BUSES CONTROL POWER 2F (REG), 2G (EMER)	OFF	
2ADC1AX20	2BBDC 125VDC DISTRIBUTION CABINET (EMERGENCY)	OFF	
2ADC1AX26	2BDC 125VDC DISTRIBUTION CABINET (EMERGENCY)	OFF	
2ADC1AX31	2B 4KV VITAL BUS CONTROL POWER (EMERGENCY)	OFF	
2ADC1AX36	2B 460V VITAL BUS CONTROL POWER (EMERGENCY)	OFF	

5.0 **2CDC1AX 125VDC BUS**: (Elev. 84′ Swgr Rm)

BREAKER	NAME	POS	IV
2CDC1AX28	2DDC 125VDC DISTRIBUTION CABINET EMERGENCY POWER	OFF	

6.0 **DC DISTRIBUTION CABINETS MAIN BREAKER ALIGNMENT**

BREAKER	NAME	POS	IV
2BDC2AXX1	2BBDC 125VDC DISTRIBUTION CABINET REGULAR POWER FROM 2BDC20	ON	
2BDC2AXX2	2BBDC 125VDC DISTRIBUTION CABINET EMERGENCY POWER FROM 2ADC20	OFF	
2BDC3AXX1	2BDC 125VDC DISTRIBUTION CABINET REGULAR POWER FROM 2BDC26	ON	
2BDC3AXX2	2BDC 125VDC DISTRIBUTION CABINET EMERGENCY POWER FROM 2ADC26	OFF	
2DDC2AXX1	2DDC 125VDC DISTRIBUTION CABINET REGULAR POWER FROM 2BDC28	ON	
2DDC2AXX2	2DDC 125VDC DISTRIBUTION CABINET EMERGENCY POWER FROM 2CDC28	OFF	

ATTACHMENT 4
(Page 3 of 4)

INDEPENDENT VERIFICATION
BREAKER & VALVE RESTORATION ALIGNMENT

7.0 AC BUSES CONTROL POWER BREAKER ALIGNMENT

BREAKER	NAME	POS	IV
2BX1AXX1	2B 460V VITAL BUS REG CONTROL POWER FROM 2BDC36	ON	
2BX1AXX2	2B 460V VITAL BUS EMER CONTROL POWER FROM 2ADC36	OFF	
2BD1AXX1	2B 4KV VITAL BUS REG CONTROL POWER FROM 2BDC31 (2B 4KV VITAL BUS 4KV PT's Cubicle rear)	ON	
2BD1AXX2	2B 4KV VITAL BUS EMER CONTROL POWER FROM 2ADC31 (2B 4KV VITAL BUS 4KV PT's Cubicle rear)	OFF	
2BD1AXX3	2B 4KV VITAL BUS REG ALARM POWER FROM 2BDC31 (2B 4KV VITAL BUS 4KV PT's Cubicle rear)	ON	
2BD1AXX4	2B 4KV VITAL BUS EMER ALARM POWER FROM 2ADC31 (2B 4KV VITAL BUS 4KV PT's Cubicle rear)	OFF	
2FD1TBX1	2F 4KV GROUP BUS REG CONTROL POWER FROM 2ADC12 (2F 4KV Group Bus PT Cubicle)	OFF	
2FD1TBX2	2F 4KV GROUP BUS EMER CONTROL POWER FROM 2BDC12 (2F 4KV Group Bus PT Cubicle)	ON	
2GD1TBX1	2G 4KV GROUP BUS REG CONTROL POWER FROM 2BDC12 (2G 4KV Group Bus PT Cubicle)	ON	
2GD1TBX2	2G 4KV GROUP BUS EMER CONTROL POWER FROM 2ADC12 (2G 4KV Group Bus PT Cubicle)	OFF	
2FX1TBX1	2F 460 VOLT BUS REGULAR CONTROL POWER FROM 2ADC10	OFF	
2FX1TBX2	2F 460 VOLT BUS EMERGENCY CONTROL POWER FROM 2BDC10	ON	
2HX1TBX1	2H 460 VOLT BUS REGULAR CONTROL POWER FROM 2BDC10	ON	
2HX1TBX2	2H 460 VOLT BUS EMERGENCY CONTROL POWER FROM 2ADC10	OFF	

8.0 BATTERY DISCONNECT SWITCH ALIGNMENT:

BREAKER	NAME	POS	IV
2BDC1AX39	2B 125VDC VITAL BATT DISC SWT (located inside, rear 2BDC1AX cabinet)	ON	

ATTACHMENT 4
(Page 4 of 4)

INDEPENDENT VERIFICATION
BREAKER & VALVE RESTORATION ALIGNMENT

9.0 **2BDC1AX 125VDC BUS**: (Elev. 84′ Swgr Rm)

BREAKER	NAME	POS	IV
2BDC1AX12	NO. 2G & 2F 4KV BUSES CONTROL POWER 2G (REG), 2F (EMER)	ON	
2BDC1AX31	2B 4KV VITAL BUS REGULAR CONTROL POWER	ON	

10.0 **2ADC1AX 125VDC BUS**: (Elev. 84′ Swgr Rm)

BREAKER	NAME	POS	IV
2ADC1AX12	NO. 2F & 2G 4KV BUSES CONTROL POWER 2F (REG), 2G (EMER)	OFF	
2ADC1AX31	2B 4KV VITAL BUS CONTROL POWER (EMERGENCY)	OFF	

11.0 **AC BUSES CONTROL POWER BREAKER ALIGNMENT**

BREAKER	NAME	POS	IV
2BD1AXX1	2B 4KV VITAL BUS REG CONTROL POWER FROM 2BDC31 (2B 4KV VITAL BUS 4KV PT's Cubicle rear)	ON	
2BD1AXX2	2B 4KV VITAL BUS EMER CONTROL POWER FROM 2ADC31 (2B 4KV VITAL BUS 4KV PT's Cubicle rear)	OFF	
2BD1AXX3	2B 4KV VITAL BUS REG ALARM POWER FROM 2BDC31 (2B 4KV VITAL BUS 4KV PT's Cubicle rear)	ON	
2BD1AXX4	2B 4KV VITAL BUS EMER ALARM POWER FROM 2ADC31 (2B 4KV VITAL BUS 4KV PT's Cubicle rear)	OFF	
2FD1TBX1	2F 4KV GROUP BUS REG CONTROL POWER FROM 2ADC12 (2F 4KV Group Bus PT Cubicle)	OFF	
2FD1TBX2	2F 4KV GROUP BUS EMER CONTROL POWER FROM 2BDC12 (2F 4KV Group Bus PT Cubicle)	ON	
2GD1TBX1	2G 4KV GROUP BUS REG CONTROL POWER FROM 2BDC12 (2G 4KV Group Bus PT Cubicle)	ON	
2GD1TBX2	2G 4KV GROUP BUS EMER CONTROL POWER FROM 2ADC12 (2G 4KV Group Bus PT Cubicle)	OFF	

ATTACHMENT 5
(Page 1 of 2)

COMPLETION SIGN-OFF SHEET

1.0 **COMMENTS**:

(Include procedure deficiencies and corrective actions.)

ATTACHMENT 5
(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 1-5 is reviewed for completeness and accuracy. All deficiencies, including corrective actions, are clearly recorded in the COMMENTS Section of this Attachment.

Signature:_____ Date:_____
SM/CRS