DOCUMENT REVISION DISTRIBUTION SHEET - UNIT II
OFF NORMAL & EMERGENCY OPER. PROCEDURE

DOCUMENT TITLE PRESSURIZER PRESSURE & LEVEL

DOCUMENT FILE NUMBER 2-0120035

DOCUMENT REVISION NUMBER 1

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FLORIDA POWER & LIGHT COMPANY
ST. LUCIE UNIT 2
OFF-NORMAL OPERATING PROCEDURE 2-0120035
REVISION 1

2

1.0 TITLE:

PRESSURIZER PRESSURE AND LEVEL-OFF-NORMAL OPERATION

2.0 APPROVAL:

Reviewed by Facility Review Group _____ March 1, 1983
Approved by J. H. Barrow (for) Plant Manager March 1, 1983

Rev. 1 Reviewed by FRG _____ MARCH 18 19 83
Approved by _____ Plant Manager _____ 19__

3.0 PURPOSE:

This procedure provides instructions for operator action in the event of malfunction of Pressurizer pressure and level control systems, or pressure transient caused by inadvertant operation of the auxiliary spray valves.

4.0 SYMPTOMS:

4.1 Pressurizer High-Low Pressure alarm, Channel X or Y.

4.2 Pressurizer High-Low Level alarm, Channels X or Y.

4.3 Pressurizer Low-Low Level alarm, Channels X or Y.

4.4 Pressurizer Proportional Heaters Low Level trip.

4.5 Pressurizer Back-up Heaters Low Level Trip Control Switch Isolated.

4.6 Safety or Relief Valve(s) open alarm.

ST. LUCIE UNIT 2
OFF-NORMAL OPERATING PROCEDURE 2-0120035, REVISION 1
PRESSURIZER PRESSURE AND LEVEL-OFF-NORMAL OPERATION

5.0 INSTRUCTIONS:

5.1 Immediate Automatic Actions:

5.1.1 Abnormal Pressurizer Pressure Condition.

1. Pressurizer safety valves open at 2500 psia.
2. High pressure reactor trip and power operated reliefs open at 2375 psia.
3. High pressure alarm actuates at 2340 psia.
4. Proportional heaters cycle from minimum output at 25 psi above setpoint, to maximum output at 25 psi below setpoint.
5. Spray valves cycle from full closed at 25 psi above setpoint, to full open 25 psi below setpoint.
6. Backup heaters energize at < 2200 psia and de-energize at > 2200 psia.
7. Low pressure alarm actuates at 2100 psia.
8. TM/LP reactor trip initiates at 1887 psia minimum pressure.
9. SIAS initiates at 1708 psia.

5.1.2 Abnormal Pressurizer Level Condition.

1. All Pressurizer heaters deenergize at 26.9% indicated level, and respective Pressurizer Heater Transformer Feeder Breaker opens.
2. Low level alarm actuates and signal to start the back-up Charging Pump is received at -5% below RRS setpoint.

   NOTE: Only one back-up Charging Pump is in the level control system.

3. The back-up Charging Pump receives a signal to start at -3% below RRS setpoint, decreasing.
4. The back-up Charging Pump receives a signal to stop at -1% below RRS setpoint, increasing, and minimum letdown (29 gpm).

ST. LUCIE UNIT 2
OFF-NORMAL OPERATING PROCEDURE 2-0120035, REVISION 1
PRESSURIZER PRESSURE AND LEVEL-OFF-NORMAL OPERATION

2

5.0 INSTRUCTIONS: (Cont.)

5.1 (Cont.)

5.1.1 (Cont.)

5. All back-up heaters energize and a back-up stop signal to the back-up Charging Pump is received at + 4.0% above RRS setpoint.

6. Maximum letdown is 138 gpm at 9% above RRS setpoint.

7. High level alarm actuates at 10% above RRS setpoint.

5.2 Immediate Operator Actions:

5.2.1 Abnormal Pressurizer Pressure.

1. Ensure Pressurizer spray, and Proportional and Backup heaters are operating properly in automatic. If not, shift spray valve controller to MANUAL, and energize or deenergize heaters, whichever is applicable.

2. Ensure power operated relief valves are closed. If open, isolate by closing V-1476 and/or V-1477 (power operated relief isolation valves). Refer to OP #2-0120036, "Pressurizer Relief/Safety Valve-Off-Normal Operation".

3. Ensure SE-02-03 and SE-02-04 (Auxiliary spray valves) are closed. If open, attempt to close using key switch. If still open, stop all Charging Pumps and isolate letdown. Refer to OP #2-0210030, "Charging and Letdown Off-Normal Operation".

4. Ensure pressure normaly is not caused by a large rate of change of T_{ave}.

CAUTION: During blackout conditions with the Diesel Generators supplying power, the control bistables for the Back-up heaters are not energized, and must be bypassed.

Therefore in a blackout, the control switches on RTGB-203 must be reset and the Key Switch selected to PRESSURE OVERRIDE to regain heater control. Note, however, this will only energize B1 and B4 banks of Backup heaters.

R1

5.0 INSTRUCTIONS: (Cont.)

5.2 (Cont.)

5.2.2 Abnormal Pressurizer Level.

1. Ensure selected RRS channel is operating properly. If not, shift to operable channel.

2. Ensure the backup Charging Pump starts and letdown flow is decreasing, or the backup Charging Pump stops and letdown flow is increasing, whichever is applicable.

3. Ensure level anomaly is not caused by a large rate of change in T_{ave}.

5.3 Subsequent Actions.

5.3.1 Check that Pressurizer Safety Valves are not leaking or have actuated by observing downstream header temperature indication and Quench Tank indications.

5.3.2 Ensure AOV-2515, AOV-2516, and AOV-2522 (Letdown Isol) are open.

5.3.3 Ensure SE-02-01 and SE-02-02 (Charging Isol) are open.

5.3.4 Ensure LCV-2110P and LCV-2110Q (Pressurizer Level Control) are operating properly.

5.3.5 Ensure PCV-2201P and PCV-2201Q (Letdown Pressure Control) are operating properly.

5.3.6 Manually start the third Charging Pump, if conditions require.

5.3.7 Ensure Letdown Valve Limiter Bypass switch and Pressurizer Level Bypass control switches are in the NORMAL positions.

ST. LUCIE UNIT 2
OFF-NORMAL OPERATING PROCEDURE 2-0120035, REVISION 1
PRESSURIZER PRESSURE AND LEVEL-OFF-NORMAL OPERATION

2

5.0 INSTRUCTIONS: (Cont.)

5.3 (Cont.)

5.3.8 Compare letdown flow, charging flow, charging pump header pressure, and VCT level for indications of leaks or lifting relief valves in the CVCS system. Refer to OP #2-0120035, "Charging and Letdown-Off-Normal Operation".

5.3.9 Ensure that Power Operated Relief Valve (V-1474 and 1475) hand switches are in the proper mode for existing plant conditions.

NOTE: (1) Switch in NORMAL RANGE:

RCS Temperature > 320°F
RCS Pressure > 490 psia

(2) Switch in LTOP:

RCS Temperature < 320°F
RCS Pressure < 460° psia.

5.3.10 If Pressurizer level decrease cannot be immediately explained, refer to OP #2-0120035, "Excessive Reactor Coolant System Leakage".

5.3.11 With < 27% level on Channel X, the 'A' Pressurizer Heater Transformer feeder breaker trips and the 'B' side 480v breakers trip. With < 27% level on Channel Y, the 'B' Pressurizer Tranformer feeder breaker trips and the 'A' side 480v breakers trip. The key operated override switch placed in the LEVEL OVERRIDE position will reset the 480v breakers.

NOTE: (1) With Channel 'X' selected, and if Channel 'X' fails low, all heaters trip. The operator must then select Channel Y and LEVEL OVERRIDE to get power to the 'B' side heaters. (i.e., P1, B4, B5, and B6).

(2) With Channel 'X' selected, and if Channel 'Y' fails low, all heaters trip. The operator must then select LEVEL OVERRIDE to get power to the 'A' side heaters. (i.e., P1, B1, B2, B3).

ST. LUCIE UNIT 2
OFF-NORMAL OPERATING PROCEDURE 2-0120035, REVISION 1
PRESSURIZER PRESSURE AND LEVEL-OFF-NORMAL OPERATION

6.0 REFERENCES:

6.1 St. Lucie Unit 2 FSAR.

6.2 C-E Setpoint Guidelines.

6.3 F.P.L. Training Lesson Outline #91.

7.0 RECORDS REQUIRED:

7.1 Normal log entries.

7.2 Applicable chart recorders.

7.3 If pressure transient was caused by inadvertant auxiliary spray valve actuation, document transient per AP # 2-0010134, "Component Cyclic and Transient Limits Records".

DOCUMENT REVISION DISTRIBUTION SHEET - UNIT II
OFF NORMAL & EMERGENCY OPER. PROCEDURE

DOCUMENT TITLE Operational Requirements for Emergency Cooling WATER CANAL

DOCUMENT FILE NUMBER 2-03600030

DOCUMENT REVISION NUMBER 0

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FLORIDA POWER & LIGHT COMPANY
ST. LUCIE UNIT 2
OFF-NORMAL OPERATING PROCEDURE NO. 2-0360030
REVISION 0

1. TITLE: Operational Requirements for Emergency Cooling Water Canal
2. PREPARED BY: R R Jennings 3/25 19 83
3. SUBCOMMITTEE REVIEW BY: J P Brannin FP&L PR 3/25 19 83
4. REVIEWED BY FACILITY REVIEW GROUP ON: 3/25 19 83
5. APPROVED BY: J H Barrow Plant Manager 4/5 19 83

2

FLORIDA POWER & LIGHT COMPANY
ST. LUCIE UNIT 2
OFF-NORMAL OPERATING PROCEDURE NO. 2-0360030
REVISION 0

1.0 TITLE:

Operational Requirements for the Emergency Cooling Water Canal

2.0 REVIEW AND APPROVAL:

Reviewed by Facility Review Group 3/25 19 83

Approved by [signature] Plant Manager 4/4 19 83

Revision ____ Reviewed by FRG _____ 19 ___

Approved by _____ Plant Manager _____ 19 ___

3.0 PURPOSE:

The Emergency Cooling Water System consists of a canal connecting Big Mud Creek to the intake in front of the circulating water intake structure. This secondary source will be used only in the event that the primary source from the Atlantic Ocean becomes inoperable. For normal operation the barrier wall across the Ultimate Heat Sink (UHS) separates the intake canal from Big Mud Creek.

An operable UHS ensures that sufficient cooling capacity is available to either (1) provide normal cooldown of the facility, or (2) to mitigate the effects of accident conditions within acceptable limits.

4.0 SYMPTOMS:

4.1 Intake structure low water level (Annunciators LA-1 and LB-1)

4.2 Intake local level indication less than -9 ft.

4.3 Intake water temperature high (TR-21-2)

ST. LUCIE UNIT 2
OFF-NORMAL OPERATING PROCEDURE NO. 2-0360030, REVISION 0
OPERATIONAL REQUIREMENTS FOR EMERGENCY COOLING WATER CANAL

2

5.0 INSTRUCTIONS:

5.1 The Operations Supervisor shall determine the need to operate the UHS.

5.2 The Operations Supervisor shall notify the Duty Call Supervisor.

5.3 The turbine generator and associated equipment will be shut down per OP 2-0030125.

5.4 The Circulating Water System shall be shut down per OP 2-0620020.

5.5 Implement the Emergency Plan as necessary in accordance with EPIP 3100021E, "Duties of the Emergency Coordinator."

5.6 The reactor shall be shut down and placed in mode 3.

NOTE: The reactor shall be in mode 3 within one hour of (1) reaching an intake water level of less than -10.5 ft., or (2) an average intake temperature of greater than or equal to 96°F.

5.7 Within 12 hours after placing the reactor in mode 3, the flow barrier wall valves I-SE-37-1 and I-SE-37-2 shall be opened providing cooling water from Big Mud Creek. Notify Unit 1 Control Room to open and verify by alarm (E-44).

NOTE: In the event barrier valves fail to open on signal, a temporary air jumper hose is available at barrier valve's air supply and steps 5.7.1.1 through 5.7.1.4 may be performed to manually open barrier valves.

5.7.1 Operation Procedure

5.7.1.1 Allow normal movement in open direction before attaching hose so upper piston void can intake air preventing a vacuum from forming.

5.7.1.2 Attach hose to upper piston connection.

5.7.1.3 Unlock and open supply air valve (BA 3 key).

5.7.1.4 Regulate 1-2 psig intervals until valve opens (normally <5 psig opens valve).

5.8 Continue reactor cooldown per OP 2-0030127.

ST. LUCIE UNIT 2
OFF-NORMAL OPERATING PROCEDURE NO. 2-0360030, REVISION 0
OPERATIONAL REQUIREMENTS FOR EMERGENCY COOLING WATER CANAL

2

6.0 REFERENCES:

6.1 St. Lucie Unit 2 FSAR, Section 9.2.5

6.2 Unit 2 Technical Specification Section 3.7.5.1

6.3 Circulating Water System Normal Operation, OP 2-0620020

6.4 Turbine Shutdown, OP 2-0030125

6.5 Reactor Cooldown from Mode 3, OP 2-0030127

7.0 RECORDS REQUIRED:

7.1 Normal log entries

DOCUMENT REVISION DISTRIBUTION SHEET - UNIT II
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DOCUMENT TITLE DC GROUND ISOLATION

DOCUMENT FILE NUMBER 2-0960030

DOCUMENT REVISION NUMBER 0

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FLORIDA POWER & LIGHT COMPANY
ST. LUCIE PLANT UNIT 2
OFF-NORMAL OPERATING PROCEDURE NO. 2-0960030
REVISION 0

2

1.0 TITLE:

DC GROUND ISOLATION

2.0 REVIEW AND APPROVAL:

Reviewed by Facility Review Group MARCH 9 19 83

Approved by J. H. Barrow for Plant Manager 4-1 19 83

Revision ____ Reviewed by FRG _____ 19 ___

Approved by _____ Plant Manager _____ 19 ___

3.0 PURPOSE:

3.1 Provide instructions for isolating a DC system ground without affecting plant operation.

3.2 Discussion:

This procedure shall be used as a guideline for DC ground location and isolation. The Nuclear Plant Supervisor and the Nuclear Watch Engineer shall use any section, in any order, as they deem necessary to maintain the plant stability and to insure that no limiting condition for operation from the Standard Technical Specification is violated.

4.0 PRECAUTIONS AND LIMITS:

Maintain two way radio communication between control center and operating point. Verify control center operator is observing ground light on RTGB-201 when isolating circuits to minimize time each circuit is switched off.

5.0 RELATED SYSTEM STATUS:

None

6.0 REFERENCES:

6.1 Ebasco Power Distribution Motor Data 2998-B-335 series drawings

6.2 Ebasco Control Wiring Diagrams 2998-B-327 series drawings

7.0 RECORDS REQUIRED:

Plant Work Order for the grounded circuits

ST. LUCIE PLANT UNIT 2
OFF-NORMAL OPERATING PROCEDURE NO. 2-0960030, REVISION 0
DC GROUND ISOLATION

8.0 INSTRUCTIONS:

8.1 If the ground appears on a bus which is tied to the 2A, 2B, or 2C DC bus, then proceed to Step 8.1.1. If the ground is on a separate isolated bus, then proceed to Step 8.1.5.

____ 8.1.1 Energize the standby battery charger and verify that all the 125V DC buses are being supplied from their respective chargers.

8.1.2 Open or verify open the following breakers:

____ 8.1.2.1 Brk. 60310, 125V DC bus 2C

____ 8.1.2.2 Brk. 60335, tie to Swgr. 2A

____ 8.1.2.3 Brk. 60333, tie to Swgr. 2B

____ 8.1.3 The 2AB 125V DC bus is now isolated from the 2A and 2B 125V DC buses, and the 2C V DC bus is isolated from the 2AB 125V DC bus. Determine which DC bus is grounded.

____ 8.1.4 Return the 125V DC system to its original lineup.

____ 8.1.5 Proceed to the appropriate section as follows:

125V DC bus 2A ground: Section 8.2

125V DC bus 2B ground: Section 8.3

125V DC bus 2AB ground: Section 8.4

125V DC bus 2C ground: Section 8.5

8.2 Isolate a ground on 125V DC bus 2A as follows:

8.2.1 Breaker 2-60101 (PSL 1/PSL 2 Inst. Air Tie Valves PCV-18.5 and PCV-18.6)

8.2.2 Breaker 2-60102 (Spare)

ST. LUCIE PLANT UNIT 2
OFF-NORMAL OPERATING PROCEDURE NO. 2-0960030, REVISION 0
DC GROUND ISOLATION

8.0 INSTRUCTIONS: (Cont.)

8.2 (Cont.)

8.2.3 Breaker 2-60103 (480V 2A-1): Momentarily open and reclose breaker. If ground does not clear, proceed to Section 8.2.4. If the ground did clear, proceed to 480V LC Swgr. 2A1 and perform the following:

8.2.3.1 At the rear of each compartment listed below, momentarily remove and replace the close and trip circuit fuses for the listed breakers:

	COMPT.	BREAKER	EQUIPMENT
_____	2B	2-40103	Main Feed - Station Service Transformer
_____	3C	2-40107	Station Air Compressor
_____	5B	2-40111	Hypochlorite MCC 2A10
_____	5C	2-40112	Main Transformer 2A Cooling Source #1
_____	6A	2-40114	Main Transformer 2B Cooling Source #2
_____	6B	2-40115	Turbine Area MCC 2A1
_____	6C	2-40116	Intake Area MCC 2A3
_____	7B	2-40119	Turbine Area MCC 2C
_____	7C	2-40120	Turbine Bldg. Crane #2
_____	7D	2-40121	Rad Waste MCC 2A2

8.2.4 Breaker 2-60104 (6900V Swgr. 2A1)

ST. LUCIE PLANT UNIT 2
OFF-NORMAL OPERATING PROCEDURE NO. 2-0960030, REVISION 0
DC GROUND ISOLATION

8.0 INSTRUCTIONS: (Cont.)

8.2 (Cont.)

____ 8.2.5 Breaker 2-60105 (480V Swgr. 2A-2): Momentarily open and reclose breaker. If the ground did not clear, proceed to Section 8.2.6. If the ground did clear, proceed to 480V Swgr. 2A-2 and perform the following:

____ 8.2.5.1 At the rear of each compartment listed below, momentarily remove and replace the close and trip circuit fuses for the listed breakers:

	COMPT.	BREAKER	EQUIPMENT
_____	4B	2-40211	2HVE-10A
_____	4C	2-40212	CEA MG Set 2A
_____	5A	2-40214	2HVS-4A

8.2.6 Breaker 2-60106 (4160V Swgr. 2A-2): Momentarily open and reclose breaker. NOTE: Annunciator window B4 and B12 will alarm. If the ground did not clear, proceed to Section 8.2.7. If the ground did clear, proceed to 4160V Swgr. 2A-2 and perform the following:

8.2.6.1 Open cubicle 1 and momentarily remove and replace the close and trip circuit fuses for breaker 2-20101. If the ground did not clear, momentarily remove and replace the 4160V 2A-2 undervoltage fuses. Close cubicle 1.

8.2.6.2 Open cubicle 2 and momentarily remove and replace the close and trip circuit fuses for breaker 2-20102. If the ground did not clear, momentarily remove and replace the startup standby transformer 2A lockout relay fuses. NOTE: Annunciator window B12 will annunciate. Close cubicle 2.

8.2.6.3 Open cubicle 10 and momentarily remove and replace the close and trip circuit fuses for breaker 2-20110. If the ground did not clear, momentarily remove and replace the 4160V Swgr. 2A-2 differential relay fuses. NOTE: Annunciator window B4 will alarm.

ST. LUCIE PLANT UNIT 2
OFF-NORMAL OPERATING PROCEDURE NO. 2-0960030, REVISION 0
DC GROUND ISOLATION

8.0 INSTRUCTIONS: (Cont.)

8.2 (Cont.)

8.2.6 (Cont.)

8.2.6.4 Open the cubicles listed below and momentarily remove and replace the close and trip circuit fuses for the listed breakers:

	CUBICLE	BREAKER	EQUIPMENT
_____	03	2-20102	CWP 2A1
_____	04	2-20104	CWP 2B1
_____	05	2-20105	SGBD MCC 1B-9 Transformer
_____	06	2-20106	TCWP 2A
_____	07	2-20107	Condensate Pump 2A
_____	08	2-20108	Htr. Drain Pump 2A
_____	09	2-20109	Feed to 4160V Swgr. 2A3

____ 8.2.7 Breaker 2-60107 (125V DC PP218): Momentarily open and reclose breaker. See Appendix E for load list.

____ 8.2.8 Breaker 2-60108 (Test Station for 6.9KV Swgr. 2A1 and 2B1): Momentarily open and reclose breaker.

____ 8.2.9 Breaker 2-60109 (Comp. Cooling Water Surge Tank): Momentarily open and reclose breaker. NOTE: LCV-14-1 (CCW surge tank inlet) fails closed.

____ 8.2.10 Breaker 2-60110 (Unit Aux XFMER 2A Control Cabinet): Momentarily open and reclose breaker. NOTE: Annunciator window C-48 will alarm.

____ 8.2.11 Breaker 2-60111 (DC LP 227): Momentarily open and reclose breaker. See Appendix E for load list.

____ 8.2.12 Breaker 2-60112 (S/U Standby XFMER 2A Control Cabinet): Momentarily open and reclose breaker. NOTE: Annunciator B-21 will alarm.

____ 8.2.13 Breaker 2-60113 (480V Pzr. Htr. Bus 2A3 Sudden Pressure Relay Ckt.): Momentarily open and reclose breaker.

ST. LUCIE PLANT UNIT 2
OFF-NORMAL OPERATING PROCEDURE NO. 2-0960030, REVISION 0
DC GROUND ISOLATION

8.0 INSTRUCTIONS: (Cont.)

8.2 (Cont.)

____ 8.2.14 Breaker 2-60114 (Main XFMER 2A Control Cabinet): Momentarily open and reclose breaker. NOTE: Annunciator window C-36 will alarm.

____ 8.2.15 Breaker 2-60115 (RTGB-205 and 203): Momentarily open and reclose breaker. See Appendix E for load list, FF1 to FF28 (RTGB-205), FF1 to FF12 (RTGB-203).

____ 8.2.16 Breaker 2-60116 (4160 Swgr. 2A-3): Momentarily open and reclose breaker. NOTE: Annunciator windows B4, 15, 52, 54, 56, 57 and 59; E-46; G-44, R (LATER) will alarm. If the ground did not clear, proceed to Section 8.2.17. If the ground did clear, proceed to 4160V Swgr. 2A-3 and perform the following:

8.2.16.1 Open cubicle 6 and momentarily remove and replace the close and trip circuit fuses for breaker 2-20206, CCWP 2A. NOTE: Annunciator window S-51 will alarm. If the ground did not clear, momentarily remove and replace the 4160V Swgr. 2A-3 differential relay fuses. NOTE: Annunciator window B-4 will alarm.

8.2.16.2 Open cubicle 11 and momentarily remove and replace the close and trip circuit fuses for breaker 2-20211, Diesel Generator 2A. NOTE: Annunciator window B-56 will alarm. If the ground does not clear, momentarily remove and replace the 4160V Swgr. 2A-3 load shedding relay fuses. NOTE: Annunciator window B-15 will alarm.

8.2.16.3 Open the cubicles listed below and momentarily remove and replace the close and trip circuit fuses for the listed breakers. NOTE: Listed annunciator windows will alarm.

ANN. WINDOW	COMPT.	BREAKER	EQUIPMENT
R-55	1	2-20201	HPSI Pump 2A
R-58	2	2-20202	LPSI Pump 2A
R-51	3	2-20203	Cont. Spray 2A
B-59	4	2-20204	Feed to Prz. Htr. 2A3
	5	2-20205	CEDM Cooling Fan 2HVE-21A
E-46	7	2-20207	ICWP 2A
B-54	8	2-20208	Feed to 4160V 2AB
B-52	9	2-20209	Supply from 4160V 2A2
B-47	10	2-20210	Feed to 480V LC 2A2
G-44	12	2-20212	AFWP 2A

ST. LUCIE PLANT UNIT 2
OFF-NORMAL OPERATING PROCEDURE NO. 2-0960030, REVISION 0
DC GROUND ISOLATION

8.0 INSTRUCTIONS: (Cont.)

8.2 (Cont.)

____ 8.2.17 Breaker 2-60117 (DG 2A Cont. Pnl.): Momentarily open and reclose breaker. NOTE: This breaker is the feed to the annunciator circuit on 2A DG.

____ 8.2.18 Breaker 2-60118 (Cont. Transfer Panel 2A): Momentarily open and reclose breaker.

____ 8.2.19 Breaker 2-60119 (RTGB-206): Momentarily open and reclose breaker. NOTE: See Appendix E for load list.

____ 8.2.20 Breaker 2-60120 (Static Inv. Cab. 2A): Remove Static Inverter 2A from service by performing Section 8.3 of Operating Procedure 2-0970020.

____ 8.2.21 Breaker 2-60121 (IRS 2A Valve SE-07-3A): Momentarily open and reclose breaker. NOTE: Valve SE-07-3A will open.

____ 8.2.22 Breaker 2-60122 (DG 2A Control Panel): Momentarily open and reclose breaker (LATER) .
NOTE: (LATER)

____ 8.2.23 Breaker 2-60123 (480V Swgr. 2A-2): Momentarily open and reclose breaker. NOTE: B-29 will alarm. If the ground does not clear, proceed to 8.2.2.4. If the ground did clear, proceed to 480V Swgr. 2A-2 and perform the following:

____ 8.2.23.1 Open compartment 6A (instrumentation) and momentarily remove and replace the 2A-2 Swgr. UV relay fuses. NOTE: Annunciator window B-29 will alarm. Close compartment 6A.

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8.0 INSTRUCTIONS: (Cont.)

8.2 (Cont.)

8.2.23 (Cont.)

8.2.23.2 At the rear of each compartment listed below, momentarily remove and replace the close and trip circuit fuses for the listed breakers:

COMPT.	BREAKER	EQUIPMENT
1A	2-40201	MCC 2A-6
1B	2-40202	MCC 2A-7
1C	2-40203	MCC 2A-5
1D	2-40204	MCC 2A-8
5B	2-40215	MCC 2A9
5C	2-40216	MCC 2A9-1B
5D	2-40217	Charging Pump 2A
6B	2-40219	Main Feed
6C	2-40220	480V LC 2AB

____ 8.2.24 Breaker 2-60124 (Relief Valve V-1475): Momentarily open and close breaker.

____ 8.2.25 Breaker 2-60125 (Battery Charger 2A): Momentarily open and close breaker.

8.2.26

____ 8.2.27 Breaker 2-60127 (HVCB): Momentarily open and reclose breaker. See Appendix E for load list, FF25 to FF36.

8.2.28 Breaker 2-60128 (Spare)

____ 8.2.29 Breaker 2-60129 (Static Inverter Cabinet 2C): Remove static inverter 2C from service by performing Section 8.3 of Operating Procedure 2-0970020.

____ 8.2.30 Breaker 2-60130 (Control Transfer Panel 2A): Momentarily open and reclose breaker.

____ 8.2.31 Breaker 2-60131 (Plt. Aux. Cont. Ann. - LA): Momentarily open and reclose breaker.

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8.0 INSTRUCTIONS: (Cont.)

8.2 (Cont.)

___ 8.2.32 Breaker 2-60132 (DC PP-238): Momentarily open and reclose breaker. See Appendix E for load list.

___ 8.2.33 Breaker 2-60133 (Bus MA): This breaker trips reactor trip breakers TCB-(LATER) and TCB-(LATER). Verify that reactor trip breakers TCB-1 through 8 are closed.

___ 8.2.33.1 Inform the Control Room that TCB-(LATER) and TCB-(LATER) will be tripped. Momentarily open and reclose breaker 2-60133. NOTE: Annunciator windows K-7 and K-8 will alarm. If the ground did not clear, proceed to Section 8.2.3.4. If the ground did momentarily clear, proceed to reactor trip switchgear and perform the following:

___ 8.2.33.1.1 Momentarily remove and replace the close and trip fuses for TCB-(LATER).

___ 8.2.33.1.2 Momentarily remove and replace the close and trip fuses for TCB-(LATER).

___ 8.2.33.2 Verify that reactor trip breakers TCB-1 through 8 are closed before proceeding with remainder of procedure.

___ 8.2.34 Breaker 2-60134 (Bus MC): This breaker trips reactor trip breakers TCB-(LATER) and TCB-(LATER). Verify that reactor trip breakers TCB-1 through TCB-(LATER) are closed.

___ 8.2.34.1 Inform the Control Room that TCB-(LATER) and TCB-(LATER) will be tripped. Momentarily open and reclose breaker 2-60134. NOTE: Annunciator windows K-4 and K-5 will alarm. If the ground did not clear, proceed to Section 8.2.3.5. If the ground did momentarily clear, proceed to reactor trip switchgear and perform the following:

8.2.34.1.1 Momentarily remove and replace the close and trip fuses for TCB-(LATER).

8.2.34.1.2 Momentarily remove and replace the close and trip fuses for TCB-(LATER).

8.2.34.2 Verify that reactor trip breakers TCB-1 through 8 are closed before proceeding with remainder of procedure.

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8.0 INSTRUCTIONS: (Cont.)

8.2 (Cont.)

8.2.35 Breaker 2-60135 (ISO CAB "SA"): Verify SS in isolation panel SA are in "normal" position. Momentarily open and close breaker.

8.2.36 Breaker 2-60136 (Charging Line 2A2 Valve I-SE-02-02)

8.2.37 Breaker 2-60137 (DG 2A Cont. Pnl. Exc.)

8.2.38 Breaker 2-60138 (Iso. Pnl. 2A-Charging Line Iso. Valve V-2523)

8.2.39 Breaker 2-60139 (S/G 2A Atm. Steam Dump Valve MV-08-18A)

8.2.40 Breaker 2-60140 (S/G Atm. Steam Dump Isol. Valve MV-08-15)

8.2.41 Breaker 2-60141 (S/G 2B Atm. Steam Dump Valve MV-08-18B)

8.2.42 Breaker 2-60142 (S/G Atm. Steam Dump Isol. Valve MV-08-17)

8.2.43 Momentarily remove and replace the DC bus 2A under-voltage relay fuses in DC bus 2A.

8.2.44 Momentarily remove and replace the DC bus 2A ground relay fuses in DC bus 2A.

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DC GROUND ISOLATION

8.0 INSTRUCTIONS: (Cont.)

8.3 Isolate a ground on 125V DC bus 2B as follows:

____ 8.3.1 Breaker 2-60201 (Hydrogen Panel): Momentarily open and reclose breaker. NOTE: The annunciator horn at the H_2 control panel must be reset locally.

____ 8.3.2 Breaker 2-60202 (LP-228): Momentarily open and reclose breaker. See Appendix F for load list.

____ 8.3.3 Breaker 2-60203 (Turbine Oil H_2 Seal Oil and Htr. Drain Fire Protection): Momentarily open and reclose breaker.

____ 8.3.4 Breaker 2-60204 (S/U Standby XFMER 2B Cont. Cab.): Momentarily open and reclose breaker.

____ 8.3.5 Breaker 2-60205 (480V Pzr. Htr. Bus 2B3 Sudden Press. Relay Ckt.): Momentarily open and reclose breaker.

____ 8.3.6 Breaker 2-60206 (Main XFMER 2B Cont. Cab.): Momentarily open and reclose breaker.

____ 8.3.7 Breaker 2-60207 (480V Swgr. 2B2 Cont. Cab.): Momentarily open and reclose breaker. If the ground did not clear, proceed to Section 8.3.8. If the ground did clear, proceed to 480V Swgr. 2A-2 and perform the following:

8.3.7.1 At the rear of each compartment listed below, momentarily remove and replace the close and trip fuses for the listed breakers:

	COMPT.	BREAKER	EQUIPMENT
_____	3A	40505	2HVS-4B
_____	4B	40510	2HVE-10B
_____	4C	40511	CEA MG Set 2B

____ 8.3.8 Breaker 2-60208 (Aux. XFMER 2B Control Cab.): Momentarily open and reclose breaker.

____ 8.3.9 Breaker 2-60209 (Excitation Swgr.): Do Not Operate this breaker. Proceed to 8.3.10. If ground cannot be cleared after completion of 8.3, notify Electrical Department that the ground is apparently in the excitation switchgear. NOTE: Operation of breaker will trip generator on loss of DC.

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DC GROUND ISOLATION

8.0 INSTRUCTIONS: (Cont.)

8.3 (Cont.)

8.3.10 Breaker 2-60210 (Spare)

____ 8.3.11 Breaker 2-60211 (480V Swgr. 2B-1): Momentarily open and reclose breaker. If ground does not clear, proceed to Section 8.3.12. If ground did clear, proceed to 480V LC Swgr. 2B-1 and perform the following:

8.3.11.1 At the rear of each compartment listed below, momentarily remove and replace the close and trip fuses for the listed breakers:

	COMPT.	BREAKER	EQUIPMENT
_____	1B	2-40402	Main XFMER 2A Cooling Source #2
_____	1D	2-40404	MCC #2B-2
_____	2B	2-40406	MCC #2B-10
_____	2C	2-40407	Main XFMER 2B Cooling Source #1
_____	3A	2-40409	MCC #2C
_____	3B	2-40410	MCC #2B-1
_____	3C	2-40411	MCC #2B-3
_____	6B	2-40419	Main Feed
_____	6C	2-40420	2B1-2A1 Tie

8.3.12 Breaker 2-60212 (6900V Swgr. 2B-1): Momentarily open and reclose breaker. If ground did not clear, proceed to Section 8.3.13. If ground did clear, proceed to 6900V Swgr. 2B1 and perform the following:

8.3.12.1 Open the cubicles listed below and momentarily remove and replace the close and trip circuit fuses for the listed breakers:

CUBICLE	BREAKER	EQUIPMENT
01	2-30205	Reactor Coolant Pump 2B1
02	2-30204	Reactor Coolant Pump 2A2
03	2-30203	Feedwater Pump 2B

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DC GROUND ISOLATION

8.0 INSTRUCTIONS: (Cont.)

8.3 (Cont.)

___ 8.3.13 Breaker 2-60213 (PP-219): Momentarily open and reclose breaker. See Appendix G for load list.

___ 8.3.14 Breaker 2-60214 (4160V Swgr. 2B-2): Momentarily open and reclose breaker. NOTE: Annunciator windows A4 and A15 will alarm. If the ground does not clear, proceed to Section 8.3.15. If the ground did clear, proceed to 4.16KV Swgr. 2B-2 and perform the following:

___ 8.3.14.1 Open cubicle 10 and momentarily remove and replace the close and trip fuses for breaker 2-20301. If the ground did not clear, momentarily remove and replace 4.16KV Swgr. 2B2 undervoltage fuses. Close cubicle 10.

___ 8.3.14.2 Open cubicle 9 and momentarily remove and replace the close and trip fuse for breaker 2-20302. If the ground did not clear, momentarily remove and replace the startup standby transformer 2B lockout relay fuses. NOTE: Annunciator window A15 will alarm. Close cubicle 9.

___ 8.3.14.3 Open cubicle 1 and momentarily remove and replace the close and trip fuses for breaker 2-20310. If the ground did not clear, momentarily remove and replace the 4.16KV Swgr. 2B2 differential relay fuses. NOTE: Annunciator window A4 will alarm.

___ 8.3.14.4 Open the cubicles listed below and momentarily remove and replace the close and trip circuit fuses for the listed breakers:

	CUBICLE	BREAKER	EQUIPMENT
_____	02	2-20309	Feed to 4160V Bus 2B3
_____	03	2-20308	Htr. Dr. Pump 2B
_____	04	2-20307	Condensate Pump 2B
_____	05	2-20306	TCWP 2B
_____	07	2-20304	CWP 2B2
_____	08	2-20303	CWP 2A2

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8.0 INSTRUCTIONS: (Cont.)

8.3 (Cont.)

____ 8.3.15 Breaker 2-60215 (480V Swgr. 2B-2): Momentarily open and reclose breaker. If the ground did not clear, proceed to Section 8.3.16. If the ground did momentarily clear, proceed to 480V Swgr. 2B2 and perform the following:

____ 8.3.15.1 Open compartment 2A (instrumentation) and momentarily remove and replace the 2B2 swgr. undervoltage relay fuses. Close compartment 2A.

____ 8.3.15.2 At the rear of each compartment listed below, momentarily remove and replace the close and trip fuses for the listed breakers:

	COMPT.	BREAKER	EQUIPMENT
_____	2C	2-40504	2B2-2AB Tie
_____	3B	2-40506	MCC 2B-9 2HVS-1C
_____	3C	2-40507	MCC 2B-9 2HVS-1D
_____	3D	2-40508	Charging Pump 2B
_____	6A	2-40514	Reactor Crane #2
_____	7A	2-40518	MCC 2B-6
_____	7B	2-40519	MCC 2B-7
_____	7C	2-40520	MCC 2B-5
_____	7D	2-40521	MCC 2B-8

____ 8.3.16 Breaker 2-60216 (Aux. Spray Valve ISE-02-4): Momentarily open and reclose breaker. NOTE: Valve fails closed, loses indication.

____ 8.3.17 Breaker 2-60217 (IRS Valve 2B SE-07-3B - 100W): Momentarily open and reclose breaker.

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8.0 INSTRUCTIONS: (Cont.)

8.3 (Cont.)

___ 8.3.18 Breaker 2-60218 (4.16KV Swgr. 2B-3): Momentarily open and reclose breaker. NOTE: Annunciator windows A4, A15, A52, A54, A56, A57, A59, E47, G45, R52, R56, R59 and S52 will alarm. If the ground did not clear, proceed to Section 8.3.19. If the ground did clear, proceed to 4.16KV Swgr. 2B-3 and perform the following:

8.3.18.1 Open cubicle 4 and momentarily remove and replace the close and trip fuses for breaker 2-20204. NOTE: Annunciator window S52 will alarm. If the ground did not clear, momentarily remove and replace the 4.16KV Swgr. 2B-3 differential relay fuses. NOTE: Annunciator window A4 will alarm.

___ 8.3.18.2 Open cubicle 1 and momentarily remove and replace the close and trip fuses for breaker 2-20401. NOTE: Annunciator window A56 will alarm. If the ground did not clear, momentarily remove and repalce the 4.16KV Swgr. 2B-3 load shedding relay fuses. NOTE: Annunciator window A15 will alarm.

___ 8.3.18.3 Open the cubicles listed below and momentarily remove and replace the close and trip fuses for the listed breakers. NOTE: Listed annunciator windows will alarm.

	CUBICLE	BREAKER	ANN. WINDOW	EQUIPMENT
_____	2	2-20402	A-57	Feed to 2B2 480V LC
_____	3	2-20403	A-59	Feed to 2B3 480V Press. Htrs.
_____	5	2-20405	R-56	HPSI Pump 2B
_____	6	2-20406	R-59	LPSI Pump 2B
_____	7	2-20407	R-52	Cont. Spray Pump 2B
_____	9	2-20409	A-54	Feed to 2AB 4160V
_____	10	2-20410	E-47	ICWP 2B
_____	11	2-20411	A-52	Supply from 2B2 4160V
_____	12	2-20412	G-45	Aux. Feed Water Pump 2B

8.3.19 Breaker 2-60219 (DG 2B Control Panel)

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8.0 INSTRUCTIONS: (Cont.)

8.3 (Cont.)

____ 8.3.20 Breaker 2-60220 (Static Inverter Cab. 2B): Remove inverter 2B from service by performing Section 8.3.1 through 8.3.8 of Operating Procedure 2-0970020.

____ 8.3.21 Breaker 2-60221 (DG 2B Cont. Panel)

____ 8.3.22 Breaker 2-60222 (Static Inverter Cab. 2D): Remove inverter 2D from service by performing Section 8.3.1 through 8.3.8 of Operating Procedure 2-0970020.

____ 8.3.23 Breaker 2-60223 (Plant Aux. Cont. BD Ann.-LB): Momentarily open and reclose breaker.

____ 8.3.24 Breaker 2-60224 (Cont. Transfer Panel 2B): Momentarily open and reclose breaker.

____ 8.3.25 Breaker 2-60225 (2B Battery Charger): Momentarily open and reclose breaker.

____ 8.3.26 Breaker 2-60226 (Space)

____ 8.3.27 Breaker 2-60227 (RTGB-203, 205): Momentarily open and reclose breaker. See Appendix H for load list.

____ 8.3.28 Breaker 2-60228 (DC PP-239): Momentarily open and close breaker. See Appendix I for load list.

8.3.29 Breaker 2-60229 (Spare)

____ 8.3.30 Breaker 2-60230 (DG Control Panel): Momentarily open and reclose breaker.

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8.0 INSTRUCTIONS: (Cont.)

8.3 (Cont.)

____ 8.3.31 Breaker 2-60231 (RTGB-206): Momentarily open and reclose breaker. See Appendix J for load list.

____ 8.3.32 Breaker 2-60232 (Letdown Control Isol. Valve V-2522): Momentarily open and reclose breaker. Valve will fail closed, lose indication.

____ 8.3.33 Breaker 2-60233 (Bus MB): This breaker trips reactor trip breakers TCB-(LATER) and TCB-(LATER). Verify that reactor trip breakers TCB-1 through 8 are closed.

____ 8.3.33.1 Inform the Control Room that TCB-(LATER) and TCB-(LATER) will be tripped. Momentarily open and reclose breaker 2-60233. NOTE: Annunciator windows K-1, K-2 and K-3 will alarm. If the ground did not clear, proceed to Section 8.3.3.4. If the ground did momentarily clear, proceed to reactor trip switchgear and perform the following:

____ 8.3.33.1.1 Momentarily remove and replace the close and trip fuses for TCB-(LATER).

____ 8.3.33.1.2 Momentarily remove and replace the close and trip fuses for TCB-(LATER).

____ 8.3.33.2 Verify that reactor trip breakers TCB-1 through 8 are closed before proceeding with remainder of procedure.

____ 8.3.34 Breaker 2-60234 (Bus MC): This breaker trips reactor trip breakers TCB-(LATER) and TCB-(LATER). Verify that reactor trip breakers TCB-1 through TCB-(LATER) are closed.

____ 8.3.34.1 Inform the Control Room that TCB-(LATER) and TCB-(LATER) will be tripped. Momentarily open and reclose breaker 2-60234. NOTE: Annunciator windows K-10 and K-11 will alarm. If the ground did not clear, proceed to Section 8.3.3.5. If the ground did momentarily clear, proceed to reactor trip switchgear and perform the following:

____ 8.3.34.1.1 Momentarily remove and replace the close and trip fuses for TCB-(LATER).

____ 8.3.34.1.2 Momentarily remove and replace the close and trip fuses for TCB-(LATER).

____ 8.3.34.2 Verify that reactor trip breakers TCB-1 through 8 are closed before proceeding with remainder of procedure.

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DC GROUND ISOLATION

8.0 INSTRUCTIONS: (Cont.)

8.3 (Cont.)

___ 8.3.35 Breaker 2-60235 (Charging Line 2B1 Valve I-SE-02-01): Momentarily open and reclose breaker. (*missing CWD)

___ 8.3.36 Breaker 2-60236 (Relief Valve V-1474): Momentarily open and reclose breaker. Valve fail closed, lose indication, window H-12 will alarm.

___ 8.3.37 Breaker 2-60237 (Iso. Cab. "SB"): Momentarily open and reclose breaker.

___ 8.3.38 Breaker 2-60238 (HVCB): Momentarily open and reclose breaker. See Appendix K for load list.

___ 8.3.39 Breaker 2-60239 (S/G 2A Atm. Steam Dump Valve MV-08-19A): Momentarily open and reclose breaker.

___ 8.3.40 Breaker 2-60240 (S/G Atm. Steam Dump Isol. Valve MV-08-14): Momentarily open and reclose breaker.

___ 8.3.41 Breaker 2-60241 (S/G 2B Atm. Steam Dump Valve MV-08-19A): Momentarily open and reclose breaker.

___ 8.3.42 Breaker 2-60242 (S/G Atm. Steam Dump Isol. Valve MV-08-16): Momentarily open and reclose breaker.

___ 8.3.43 Momentarily remove and replace the DC bus 2B undervoltage relay fuses in DC bus 2B.

___ 8.3.44 Momentarily remove and replace the DC bus 2B ground relay fuses in DC bus 2B.

___ 8.3.45 If the ground has not cleared at this point, notify Electrical Maintenance Department that the ground is apparently in the generator excitation swgr. Do Not Operate breaker 2-60209. Main Generator will trip on loss of DC.

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8.0 INSTRUCTIONS: (Cont.)

8.4 Isolate a ground on the 2AB 125V DC Bus as follows:

____ 8.4.1 Breaker 2-60301 (RTGB-201): Momentarily open and reclose breaker. See Appendix L for load list.

____ 8.4.2 Breaker 2-60302 (HVCB): Momentarily open and reclose breaker. See Appendix M for load list.

____ 8.4.3 Breaker 2-60303 (RTGB-205): Momentarily open and reclose breaker. See Appendix N for load list.

____ 8.4.4 Breaker 2-60304 (RTGB-203): Momentarily open and reclose breaker. See Appendix O for load list.

____ 8.4.5 Breaker 2-60305 (Spare)

____ 8.4.6 Breaker 2-60306 (Spare)

____ 8.4.7 Breaker 2-60307 (Spare)

____ 8.4.8 Breaker 2-60308 (Spare)

____ 8.4.9 Breaker 2-60309 (SUPS Cabinet): Remove the vital AC inverter from service by performing steps _____ through _____ of Operating Procedure 2-0970021.

____ 8.4.10 Breaker 2-60310 (125V DC tie to 2C bus) should be open.

____ 8.4.11 Breaker 2-60311 (RTGB-201): Momentarily open and reclose breaker. See Appendix P for load list.

____ 8.4.12 Breaker 2-60312 (Iso. Term Cab. 3): Momentarily open and reclose breaker.

____ 8.4.13 Breaker 2-60313 (Spare)

____ 8.4.14 Breaker 2-60314 (Spare)

____ 8.4.15 Breaker 2-60315 (Spare)

____ 8.4.16 Breaker 2-60316 (Spare)

____ 8.4.17 Breaker 2-60317 (Spare)

____ 8.4.18 Breaker 2-60318 (Spare)

____ 8.4.19 Breaker 2-60319 (RTGB-202, Solenoid Valves I-SE-08-1, I-SE-08-2): Momentarily open and reclose breaker. See Appendix Q for load list.

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DC GROUND ISOLATION

8.0 INSTRUCTIONS: (Cont.)

8.4 (Cont.)

____ 8.4.20 Breaker 2-60320 (Aux. FWP Steam Valve MV-08-3): Verify 2C AFWP is not running. Momentarily open and reclose breaker.

____ 8.4.21 Breaker 2-60321 (4160V Swgr. 2AB): Momentarily open and close breaker. NOTE: Annunciator windows A5, A54, B54, E91, S53 and R57 will alarm. If ground did not clear, proceed to Section 8.4.22. If ground did clear, proceed to 4160V Swgr. 2AB and perform the following:

8.4.21.1 Open cubicle 1 and momentarily remove and replace the close and trip fuses for breaker 2-20501.

Open the cubicles listed below and momentarily remove and replace the close and trip circuit fuses for the listed breakers.

CUBICLE	BREAKER	EQUIPMENT
02	2-20502	CCWP 2C
03	2-20503	ICWP 2C
04	2-20504	Feed from 4.16KV Bus 2B3
05	2-20505	Feed from 4.16KV Bus 2A3

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8.0 INSTRUCTIONS: (Cont.)

8.4 (Cont.)

____ 8.4.22 Breaker 2-60322 (480V Swgr. 2AB): Momentarily open and reclose breaker. If the ground did not clear, proceed to Section 8.4.23. If the ground did clear, proceed to 480V Swgr. 2AB and perform the following:

8.4.22.1 Open compartment 2A (instrumentation) and momentarily remove and replace the 480V swgr. 2AB undervoltage relay fuses. Close compartment 2A.

8.4.22.2 At the rear of each compartment listed below, momentarily remove and replace the close and trip fuses for the listed breakers:

COMPT.	BREAKER	EQUIPMENT
1B	2-40702	Bus Tie to 480V Swgr. 2A-2
1C	2-40703	MCC 2AB
2B	2-40706	Bus Tie to 480V Swgr. 2B-2
2C	2-40707	Charging Pump 2C

____ 8.4.23 Breaker 2-60323 (Isol. Cab. "SAB"): Momentarily open and reclose breaker.

____ 8.4.24 Breaker 2-60324 (PP-240): Momentarily open and reclose breaker. See Appendix R for load list.

____ 8.4.25 Breaker 2-60325 (Spare)

____ 8.4.26 Breaker 2-60326 (Battery Charger 2AB): Momentarily open and reclose breaker.

____ 8.4.27 Breaker 2-60327 (Aux. FWP Disch. to S/G 2A Valve MV-09-11): Momentarily open and reclose breaker.

____ 8.4.28 Breaker 2-60328 (S/G 2A to Aux. FWP 2C Turbine MV-08-12): Momentarily open and reclose breaker.

____ 8.4.29 Breaker 2-60329 (Aux. FWP 2C Disch. to S/G 2B Valve MV-09-12): Momentarily open and reclose breaker.

____ 8.4.30 Breaker 2-60330 (S/G 2A to Aux. FWP 2C Turbine MV-08-13): Momentarily open and reclose breaker.

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OFF-NORMAL OPERATING PROCEDURE NO. 2-0960030, REVISION 0
DC GROUND ISOLATION

8.0 INSTRUCTIONS: (Cont.)

8.4 (Cont.)

____ 8.4.31 Momentarily remove and replace the DC Bus 2AB undervoltage relay fuses in DC Bus 2AB.

____ 8.4.32 Momentarily remove and replace the DC Bus 2AB ground relay fuses in DC Bus 2AB.

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8.0 INSTRUCTIONS: (Cont.)

8.5 Isolate a ground on 125V DC Bus 2C as follows:

____ 8.5.1 Breaker 2-60601 (Spare)

____ 8.5.2 Breaker 2-60602 (125V DC PP-133 SGBTF): Momentarily open and reclose breaker. (Ensure Unit 1 feed is closed.)

____ 8.5.3 Breaker 2-60603 (4160V Tie Swgr. 2A4): Momentarily open and close breaker.

____ 8.5.4 Breaker 2-60604 (4160V Tie Swgr. 2B4): Momentarily open and reclose breaker.

____ 8.5.5 Breaker 2-60605 (Battery Charger 2C): Momentarily open and reclose breaker.

____ 8.5.6 Breaker 2-60606 (Security Fire Detection Rad. Vital AC Cabinet): Remove

____ 8.5.7 Breaker 2-60607 (Air Side Seal Oil Backup Pump): Verify pump is not running. Momentarily open and reclose breaker.

____ 8.5.8 Breaker 2-60611 (Emergency Oil Pump): Verify pump is not running. Momentarily open and reclose breaker.
NOTE: Annunciator window C-56 will alarm.

ST. LUCIE PLANT UNIT 2
OFF-NORMAL OPERATING PROCEDURE NO. 2-0960030, REVISION 0
DC GROUND ISOLATION

APPENDIX E

PP 218 CKT. 7 RTGB- TB CWD REV. 0

8.2.7
Bkr. 60107

FUSE NO.	LINE NO.	LOAD			CONDITIONS REQUIRED TO DE-ENERGIZE
		CWD	TAG	TITLE	
Ckt. 1		1004		Isol. Term. Cab. 1	Loss of many Class Ann.
Ckt. 4		929		Bkr. Test Sta. 2A2-2B2 4160V Swgr.	Out of service
Ckt. 5		740		L.P. Htr. 2-3A and 2-4A Reverse Current Valves	Reverse current valves will attempt to close against flow, flow holds open
Ckt. 7		740		H.P. Htr. 2-5A Reverse Current Valves	Reverse current valves will attempt to close against flow, flow holds open
Ckt. 13		1213		Sequence of Events Recorder-Annunciator	Window F-37 will alarm

ST. LUCIE PLANT UNIT 2
OFF-NORMAL OPERATING PROCEDURE NO. 2-0960030, REVISION 0
DC GROUND ISOLATION

APPENDIX E

DC LP 227 CKT. 11 RTGB- TB CWD REV. 0

FUSE NO.	LINE NO.	LOAD			CONDITIONS REQUIRED TO DE-ENERGIZE
		CWD	TAG	TITLE	
Ckt. 1				Control Room Emerg. Lighting	No effect

ST. LUCIE PLANT UNIT 2
OFF-NORMAL OPERATING PROCEDURE NO. 2-0960030, REVISION 0
DC GROUND ISOLATION

APPENDIX E

PP DC 2A CKT. 15 RTGB- 205 TB T8 CWD 645 REV. 0

FUSE NO.	LINE NO.	LOAD			CONDITIONS REQUIRED TO DE-ENERGIZE
		CWD	TAG	TITLE	
F1 F2	F1P F2N	157		Letdown Containment Isolation Valve	Fail closed, lose indication
F3 F4	F3P F4N	159	V-2505	RCP Controlled Bleedoff Isolation	Fail closed, lose indication
F5 F6	F5P F6N	159	V-2650	Boric Acid Tank 2A Recirc.	Fail closed, lose indication
F7 F8	F7P F8N	159	V-2651	Boric Acid Tank 2B Recirc.	Fail closed, lose indication
F9 F10	F9P F10N	163	FCV-2210Y	Boric Acid Flow	Fail closed, lose indication
F11 F12	F11P F12N	199	V-2523	Charging Line Isol Valve	Fail open, lose indication
F13 F14	F13P F14N	176	I-SE-02-02	Charging Line 2A Valve I-SE-02-02	Fail open, lose indication, manually reset HS-I-SE-02-02 RTGB-205
F15 F16	F15P F16N	563	V-6341	RDT Cont. Isol. Valve	Fail closed, lose indication, manually reset HS-6341 RTGB-205
F17 F18	F17P F18N	564	V-6750	Waste Gas Cont. Isol. Valve	Fail closed, lose indication, manually reset HS-6750 RTGB-205
F19 F20	F19P F20N	576	LCV-07-11A	Reactor Sump Isol. Valve	Fail closed, lose indication, must open/reset CS-1/576 when fuse restored to re-open
F21	F21P	1528	I-SE-05-1E	SI Tanks Sample Valve	Fail closed, lose indication

ST. LUCIE PLANT UNIT 2
OFF-NORMAL OPERATING PROCEDURE NO. 2-0960030, REVISION 0
DC GROUND ISOLATION

APPENDIX E

PP DC 2A CKT. 19 RTGE- 206 TB T2 CWD 646 REV. 0

8.2.19
Bkr. 60119

FUSE NO.	LINE NO.	LOAD			CONDITIONS REQUIRED TO DE-ENERGIZE
		CWD	TAG	TITLE	
F1 F2	F1P F2N	202	HCV-14-8A	Comp. Cool. Wtr. Normal Supply Hdr. Isol. Valve	Fail closed, lose indication
F3 F4	F3P F4N	202	HCV-14-8B	Comp. Cool. Wtr. Normal Supply Hdr. Isol. Valve	Fail closed, lose indication
F5 F6	F5P F6N	211	HSE-14-3A	Comp. Cool. Wtr. from HCV-14-3A	Fail open, lose indication, reset to close
F7 F8	F7P F8N	212	HCV-14-1	Comp. Cool. Wtr. to Reactor Cool. Pumps	Fail closed, lose indication, reset to open
F9 F10	F9P F10N	212	HCV-14-2	Comp. Cool. Wtr. from Reactor Cool. Pumps	Fail closed, lose indication, reset to open
F11 F12	F11P	242	I-SE-03-1B	SI Tank 2A2 Fill and Drain	Fail closed, lose indication
F13 F14	F13P F14N	242	I-SE-03-1A	SI Tank 2A2 Fill and Drain	Fail closed, lose indication
F15 F16	F15P F16N	256	V-3612	SI Tank 2A2, N_2 to SI Tank	Fail closed, lose indication
F17 F18	F17P F18N	256	V-3622	SI Tank 2A1, N_2 to SI Tank	Fail closed, lose indication
F19 F20	F19P F20N	280	HCV-3618	Check Valve Leakage Drain to RWT	Fail closed, lose indication
F21 F22	F21P F22N	281	HCV-3628	Check Valve Leakage Drain to RWT	Fail closed, lose indication

ST. LUCIE PLANT UNIT 2
OFF-NORMAL OPERATING PROCEDURE NO. 2-0960030, REVISION 0
DC GROUND ISOLATION

APPENDIX E

PP DC 2A CKT. 19 RTGB- 206 TB T2 CWD 646 REV. 0

8.2.19
Bkr. 60119

FUSE NO.	LINE NO.	LOAD			CONDITIONS REQUIRED TO DE-ENERGIZE
		CWD	TAG	TITLE	
F23 F24	F23P F24N	289	FCV-07-1A	Containment Spray Valve	Fail open, lose indication
F25 F26	F25P F26N	312	HCV-08-1A	Main Steam Isol. Valve	Lose indication, valve will stay open if air supply is uninterrupted
F27 F28	F27P F28N	317	HCV-18-1	Instrument Air Isolation Valve	Fail closed, lose indication
F29 F30	F29P FF30N	319	FCV-23-3	Steam Gen. 2A Blowdown Isol. Valves	Fail closed, lose indication
F31 F32	F31P F32N	319	FCV-23-5	Steam Gen. 2A Blowdown Isol. Valves	Fail closed, lose indication
F33 F34	F33P F34N	320 320	FCV-26-2	Containment Radiation Sample Isol. Valves	Fail closed, lose indication
F35 F36	F35P F36N	461	FCV-23-7 FCV-23-9	Steam Gen. 2A and 2B Blowdown Sample Isol. Valves (A)	Fail closed, lose indication
F37 F38	F37P F38N	536	HCV-25-1 thru 25-7	Drain Valves to Reactor Auxiliary Bldg. Sumps	Fail closed, lose indication
F39 F40	F39P F40N	578	V-5200	Primary Coolant Sample Valve	Fail closed, lose indication
F41 F42	F41P F42N	579	V-5201	Press Surge Line Sample Valve	Fail closed, lose indication

ST. LUCIE PLANT UNIT 2
OFF-NORMAL OPERATING PROCEDURE NO. 2-0960030, REVISION 0
DC GROUND ISOLATION

APPENDIX E

PP DC 2A CKT. 19 RTGB- 206 TB T2 CWD 646 REV. 0

8.2.19
Bkr. 60119

FUSE NO.	LINE NO.	LOAD			CONDITIONS REQUIRED TO DE-ENERGIZE
		CWD	TAG	TITLE	
F43 F44	F43P F44N	580	V-5202	Press. Stm. Space Sample Valve	Fail closed, lose indication, reset to open
F45 F46	F45P F46N	1520	V-3495	Minimum Flow Isol. Valve	Fail closed, lose indication, valve re-opens when fuse restored
F47 F48	F47P F48N	1519	To RWT Val. I-SE-03-2A	SI Tank Test Line	Fail closed, lose indication, reset HS-1519-1 to re-open
F49 F50	F49P F50N	1519	V-3572	Hot Leg HPSI Line Check Valve Leakage Drain Loop 2A	Fail closed, lose indication, reset HS-3572 to re-open
F51 F52	F51P F52N	243	V-3613	SI Tank 2A2 Vent	Fail closed, lose indication
F53 F54	F53P F54N	243	V-3623	SI Tank 2A1 Vent	Fail closed, lose indication
F55 F56	F55P F56N	1528	I-SE-05-1E	SI Tanks Sample Valves	Fail closed, lose indication, reset HS-03-1 to re-open
F57 F58	Spare			Spare	
F59 F60	Spare			Spare	
F61 F62	F61P F62N	655	HCV-09-1A	Main Feedwater Isolation Valve	Window P-6 will alarm
F63 F64	F63P F64N	671	HCV-09-2A	Main Feedwater Isolation	Window P-26 will alarm

ST. LUCIE PLANT UNIT 2
OFF-NORMAL OPERATING PROCEDURE NO. 2-0960030, REVISION 0
DC GROUND ISOLATION

APPENDIX E

PP DC 2A CKT. 27 RTGB- HVCB TB W1-LTA CWD 1239 REV. 0

8.2.27
Bkr. 60127

FUSE NO.	LINE NO.	LOAD			CONDITIONS REQUIRED TO DE-ENERGIZE
		CWD	TAG	TITLE	
F25 F26	F25P F26N	511	FCV-25-1 FCV-25-3	Reactor Containment Purge Isol. Valves	Fail closed, lose indication
F27 F28	F27P F28N	522	2HVS-2A	Reactor Cavity Cooling System	No effect under normal conditions
F29 F30	F29P F30N	1160	FCV-25-20	Continuous Containment/ Hydrogen Purge Isol. Valve	Fail closed, lose indication
F31 F32	F31P F32N	529	FCV-25-7	Containment Vacuum Relief Valve	Fail closed, lose indication
F33 F34	F33P F34N	1164	FCV-25-26	Continuous Containment/ Hydrogen Purge Isol. Valve	Fail closed, lose indication
F35 F36	F35P F36N	455		Fuel Pool Rad. Monitoring	Fuel Handling Building Ventilation is shifted to Shield Building Ventilation Fans/Shield Building Ventilation is isolated

ST. LUCIE PLANT UNIT 2
OFF-NORMAL OPERATING PROCEDURE NO. 2-0960030, REVISION 0
DC GROUND ISOLATION

APPENDIX E

PP DC PP-238 CKT. 32 RTGB- TB CWD REV. 0

8.2.32
Bkr. 60132

FUSE NO.	LINE NO.	LOAD			CONDITIONS REQUIRED TO DE-ENERGIZE
		CWD	TAG	TITLE	
Ckt. 1		595		Reflash Module RA-RAB-5	Window G-5 will alarm
Ckt. 2		640		Reflash Module RA-T-4	Window F-42 will alarm
Ckt. 3		640		Reflash Module RA-T-5	Window G-4 will alarm
Ckt. 4		640		Reflash Module RA-T-6	Window G-24 will alarm
Ckt. 5		1574		Reflash Module RA-RAB-24	Window Q4 will alarm
Ckt. 6		1564		Reflash Module RA-RAB-17	Windows R26, P23, P15, F37, E30 will alarm
Ckt. 7		Spare		Spare	
Ckt. 8		986		Reflash Module RA-T-7	Window B-7 will alarm
Ckt. 9		1551		Reflash Module RA-RAB-2	Window B-29 will alarm
Ckt. 10		Spare		Spare	
Ckt. 11		Spare		Spare	
Ckt. 12		131		Reflash Module RA-RAB-3	Window B-9 will alarm
Ckt. 13		Spare		Spare	
Ckt. 14		584		Reflash Module RA-RAB-6	Window N-6 will alarm
Ckt. 15		1007		Reflash Module RA-T-9	Window E-32 will alarm
Ckt. 16		Spare		Spare	
Ckt. 17		Spare		Spare	
Ckt. 18		188		Reflash Module RA-RAB-8	Window N-23 will alarm
Ckt. 19		Spare		Spare	

ST. LUCIE PLANT UNIT 2
OFF-NORMAL OPERATING PROCEDURE NO. 2-0960030, REVISION 0
DC GROUND ISOLATION

APPENDIX E

PP DC PP-238 CKT. 32 RTGB- TB CWD REV. 0

8.2.32
Bkr. 60132

FUSE NO.	LINE NO.	LOAD			CONDITIONS REQUIRED TO DE-ENERGIZE
		CWD	TAG	TITLE	
Ckt. 20		1001		Reflash Module RA-RAB-11	Window B-20 will alarm
Ckt. 21		Spare		Spare	
22					
23					
Ckt. 24		596		Reflash Module	

ST. LUCIE PLANT UNIT 2
OFF-NORMAL OPERATING PROCEDURE NO. 2-0960030, REVISION 0
DC GROUND ISOLATION

APPENDIX F

PP DC LP-228 CKT. 02 RTGB- TB CWD REV. 0

8.3.2
Bkr. 2-60202

FUSE NO.	LINE NO.	LOAD			CONDITIONS REQUIRED TO DE-ENERGIZE
		CWD	TAG	TITLE	
Ckt. 1		N/A		Control Room Emergency DC Lighting	No effect without loss of A/C lighting

ST. LUCIE PLANT UNIT 2
OFF-NORMAL OPERATING PROCEDURE NO. 2-0960030, REVISION 0
DC GROUND ISOLATION

APPENDIX G

PP DC PP-219 CKT. 13 RTGB- TB CWD REV. 0

8.3.13
Bkr. 60213

FUSE NO.	LINE NO.	LOAD			CONDITIONS REQUIRED TO DE-ENERGIZE
		CWD	TAG	TITLE	
PP-238	Ckt. 23	444		Rad. Monitoring Panel No. 1	Closes sample isolation valve I-SE-26-1 to component cooling water radiation monitoring skid #1 (RS-26-1)
Ckt. 2		931		Breaker Test Station for 2A3 and 2B3 4160V Switchgear	Test Station out of service
Ckt. 3		1579		RTGB-201, 203, 205 and HCVB Annunciators	Backup Power Supply
Ckt. 4		933		Breaker Test Station for 2AB 4160V Switchgear	Test Station out of service
Ckt. 5		740	LP Htr 2-3B and 2-4B	Reverse Current Valves	Will close reverse current valve SC-10-3B and 4B
Ckt. 6		1004		Isolation Term Cabinet 2	Loss of many annunciators
Ckt. 7		587		Waste Management Local Annunciator ("Y")	Backup Power Supply
Ckt. 8		Spare		Spare	
Ckt. 9		Spare		Spare	
Ckt. 10		740	HP Htr 2-5B	Reverse Current Valve	Will close reverse current valve SC-10-5B

ST. LUCIE PLANT UNIT 2
OFF-NORMAL OPERATING PROCEDURE NO. 2-0960030, REVISION 0
DC GROUND ISOLATION

APPENDIX H

PP DC 2B CKT. 27 RTGB- 205 TB T6 CWD 657 REV. 0

8.3.27
Bkr. 60227

FUSE NO.	LINE NO.	LOAD			CONDITIONS REQUIRED TO DE-ENERGIZE
		CWD	TAG	TITLE	
F1 F2	F1P F2N	157	V-2515	Letdown Stop Valve	Fails closed, lose indication
F3 F4	F3P F4N	159	V-2524	RCP Controlled Bleedoff Isol. Valve	
F5 F6	F5P F6N	176	I-SE-02-01	Charging Line 2B1 Valve	Fails open, lose indication, reset to close
F7 F8	F7P F8N	194	V-2522	Letdown Containment Isol.	Fails closed, lose indication
F9 F10	F9P F10N	163	V-2512	Makeup Stop Valve	Fails closed, lose indication
F11 F12	F11P F12N	563	V-6341	RDT Containment Isol. Valve	Fails closed, lose indication
F13 F14	F13P F14N	564	V-6718	Waste Gas Containment Isol. Valve	Fails closed, lose indication, manually reset HS-6718 to open
F15 F16	F15P F16N	566	V-5741	Nitrogen Hdr. Containment Isol. Valve	Fails closed, lose indication
F17 F18	F17P F18N	576	LCV-07-11B	Reactor Sump Isol. Valve	
F19 F20	F19P F20N	190	V-2525	Boron Load Control Valves	Load control fail as is

ST. LUCIE PLANT UNIT 2
OFF-NORMAL OPERATING PROCEDURE NO. 2-0960030, REVISION 0
DC GROUND ISOLATION

APPENDIX H

PP DC 2B CKT. 27 RTGB- 205 TB T6 CWD 657 REV. 0

8.3.27
Bkr. 60227

FUSE NO.	LINE NO.	LOAD			CONDITIONS REQUIRED TO DE-ENERGIZE
		CWD	TAG	TITLE	

ST. LUCIE PLANT UNIT 2
OFF-NORMAL OPERATING PROCEDURE NO. 2-0960030, REVISION 0
DC GROUND ISOLATION

APPENDIX I

PP DC 239 CKT. 28 RTGB- TB CWD REV. 0

8.3.28
Bkr. 2-60228

FUSE NO.	LINE NO.	LOAD			CONDITIONS REQUIRED TO DE-ENERGIZE
		CWD	TAG	TITLE	
Ckt. 1		882		Reflash Module RA-RAB-18	Window C-31 will alarm
Ckt. 2				Spare	
Ckt. 3				Spare	
Ckt. 4				Spare	
Ckt. 5		1553		Reflash Module RA-RAB-1	Windows A-4, A-9 will alarm
Ckt. 6		259		Reflash Module RA-T-2	Window C-57 will alarm
Ckt. 7		1007		Reflash Module RA-CC-1	Window E-32 will alarm
Ckt. 8				Spare	
Ckt. 9				Spare	
Ckt. 10		1008		Reflash Module RA-RAB-4	Window B-33 will alarm

ST. LUCIE PLANT UNIT 2
OFF-NORMAL OPERATING PROCEDURE NO. 2-0960030, REVISION 0
DC GROUND ISOLATION

APPENDIX J

PP DC 2B CKT. 31 RTGB- 206 TB T28 CWD 646 REV. 0

8.3.3.1
Dkr. 2-60231

FUSE NO.	LINE NO.	LOAD			CONDITIONS REQUIRED TO DE-ENERGIZE
		CWD	TAG	TITLE	
F1 F2	F1P F2N	202	HCV-14-8B	Component Cool Wtr. Normal Supply Hdr. Isol. Valve	Fail closed, lose indication
F3 F4	F3P F4N	202	HCV-14-10	Component Cool. Wtr. Normal Return Hdr. Isol. Valve	Fail closed, lose indication
F5 F6	F5P F6N	211	HSE-14-3B HCV-14-3B	Component Cool. Wtr. from Shutdown Ht Exch 2B	Fail open, lose indication
F7 F8	F7P F8N	212	HCV-14-7	Component Cool. Wtr. to Reactor Cool. Pumps	Fail closed, lose indication
F9 F10	F9P F10N	212	HCV-14-6	Component Cool. Wtr. from Reactor Cool. Pumps	Fail closed, lose indication
F11 F12	F11P F12N	176	V-3661	Recirc. Draw Line Drain to Reactor Drain Tank	Fail closed, lose indication
F13 F14	F13P F14N	242	I-SE-03-1A	Safety Injection Tank Fill and Drain Valve	Fail closed, lose indication
F15 F16	F15P F16N	242	I-SE-03-1D	Safety Injection Tank Fill and Drain Valve	Fail closed, lose indication
F17 F18	F17P F18N	256	V-3632	SI Tank 2B1	Fail closed, lose indication
F19 F20	F19P F20N	256	V-3642	SI Tank 2B2	Fail closed, lose indication

ST. LUCIE PLANT UNIT 2
OFF-NORMAL OPERATING PROCEDURE NO. 2-0960030, REVISION 0
DC GROUND ISOLATION

APPENDIX J

PP DC 2B CKT. 31 RTGB- 206 TB T28 CWD 646 REV. 0

8.3.3.1
Bkr. 2-60231

FUSE NO.	LINE NO.	LOAD			CONDITIONS REQUIRED TO DE-ENERGIZE
		CWD	TAG	TITLE	
F21 F22	F21P F22N	282	HCV-3638	Check Valve Leakage Drain to RWT	Fail closed, lose indication
F23 F24	F23P F24N	283	HCV-3648	Check Valve Leakage Drain to RWT	Fail closed, lose indication
F25 F26	F25P F26N	289	FCV-07-1B	Containment Spray Valve	Fail open, lose indication
F27 F28	F27P F28N	315	HCV-08-1B	Main Steam Isol. Valve, Opening, Closing and Solenoid Test	Solenoid test valves fail open, stroke test valve fail open, lose indication, P49 will alarm
F29 F30	F29P F30N	319	FCV-23-4	Steam Gen. 2A Blowdown Isol. Valve	Fail closed, lose indication
F31 F32	F31P F32N	319	FCV-23-6	Steam Gen. 2B Blowdown Isol. Valve	Fail closed, lose indication
F33 F34	F33P F34N	320	FCV-26-1 FCV-26-3 FCV-26-5	Containment, Suction Return Rad. Sample Isol. Valve	Fail closed, lose indication
F35 F36	F35P F36N	578	V-5203	Primary Coolant Sample Valve	Fail closed, lose indication, local and remote
F37 F38	F37P F38N	579	V-5204	Press. Surge Line Sample Valve	Fail closed, lose indication, local and remote
F39 F40	F39P F40N	580	V-5205	Press. Steam Space Sample Valve	Fail closed, lose indication, local and remote

ST. LUCIE PLANT UNIT 2
OFF-NORMAL OPERATING PROCEDURE NO. 2-0960030, REVISION 0
DC GROUND ISOLATION

APPENDIX J

PP DC 2B CKT. 31 RTGB- 206 TB T28 CWD 646 REV. 0

8.3.3.1
Bkr. 2-60231

FUSE NO.	LINE NO.	LOAD			CONDITIONS REQUIRED TO DE-ENERGIZE
		CWD	TAG	TITLE	
F41 F42	F41P F42	586	HCV-25-1A thru 25-7A	Drain valves to Reactor to Auxiliary Bldg. Sumps	All valves this circuit fail closed, lose indication
F43 F44	F43P F44N	1520	V-3496	Minimum Flow Isol. Valve	Fail closed, lose indication, Annunciator P-2 will alarm
F45 F46	F45P F46N	1519	V-3571	Hot Leg HPSI Line Check Valve Leakage Drain Loop 2B	Fail closed, lose indication
F47 F48	F47P F48N	243	V-3633	SI Tank 2B1 Vent Valve	Fail closed, lose indication
F49 F50	F49P F50N	243	V-3643	SI Tank 2B2 Vent Valve	Fail closed, lose indication
F51 F52	F51P F52N	849	HCV-15-1	Primary Water Isol. Valve	Fail closed, lose indication
F53 F54	F53P F54N	1527	I-SE-05-1A	SI Tank 2A1 Sample Valve	Fail closed, lose indication
F55 F56	F55P F56N	1527	I-SE-05-1B	SI Tank 2A2 Sample Valve	Fail closed, lose indication at local station
F57 F58	F57P F58N	1527	I-SE-05-1B	SI Tank 2A2 Sample Valve	Fail closed, lose indication at local station
F59 F60	F59P F60N	1527	I-SE-05-1C	SI Tank 2B1 Sample Valve	Fail closed, lose indication at local station

ST. LUCIE PLANT UNIT 2
OFF-NORMAL OPERATING PROCEDURE NO. 2-0960030, REVISION 0
DC GROUND ISOLATION

APPENDIX J

PP DC 2B CKT. 31 RTGB- 206 TB T28 CWD 646 REV. 0

8.3.3.1
Bkr. 2-6023

FUSE NO.	LINE NO.	LOAD			CONDITIONS REQUIRED TO DE-ENERGIZE
		CWD	TAG	TITLE	
F61 F62	F61P F62N	1527	I-SE-05-1D	SI Tank 2B2 Sample Valve	Fail closed, lose indication at local station
F63 F64	F63P F64N	1519	I-SE-03-2B	SI Tank Test Line to RWT/VCT	Fail closed, lose indication
F65 F66	F65P F66N	656	HCV-09-1B	Main Feedwater Isolation Valve	Window P-16 will alarm
F67 F68	F67P F68N	672	HCV-09-2B	Main Feedwater Isolation Valve	Window P-36 will alarm

ST. LUCIE PLANT UNIT 2
OFF-NORMAL OPERATING PROCEDURE NO. 2-0960030, REVISION 0
DC GROUND ISOLATION

APPENDIX K

PP DC 2B CKT. 38 RTGB- HVCB TB W8-RTE CWD 1239 REV. 0

8.3.38
Bkr. 2-60238

FUSE NO.	LINE NO.	LOAD			CONDITIONS REQUIRED TO DE-ENERGIZE
		CWD	TAG	TITLE	
F25 F26	F25P F26N	512	FCV-25-6	Reactor Containment Purge Isolation Valves	Fail closed, lose indication
F27 F28	F27P F28N	523	2-HVS-2B	Reactor Cavity Cooling System	Do not remove fuse if 2B Diesel Generator bkr. closed or if CIS present
F29 F30	F29P F30N	1161	FCV-25-21	Continuous Containment/ Hydrogen Purge Isol. Valve	Fail closed, lose indication
F31 F32	F31P F32N	529	FCV-25-7	Containment Vacuum Relief Valve	Fail closed, lose indication, bypass indication alarm window PT-8 on HVCB will alarm
F33 F34	F33P F34N	455		Fuel Pool Rad Monitoring	
F35 F36	F35P F36N	456		No CWD	

ST. LUCIE PLANT UNIT 2
OFF-NORMAL OPERATING PROCEDURE NO. 2-0960030, REVISION 0
DC GROUND ISOLATION

APPENDIX L

PP DC 2AB CKT. 1 RTGB- 201 TB ____ CWD 800 REV. 5

8.4.1
2-60301

FUSE NO.	LINE NO.	LOAD			CONDITIONS REQUIRED TO DE-ENERGIZE
		CWD	TAG	TITLE	
F51		887		KWH Meter Output	Contact MPS, lose indication
F52		887		KWH Meter Output	Contact MPS, lose indication
F53		871		Gross MW Recorder	Contact MPS, lose indication
F54		871		Digital MW Recorder	Contact MPS, lose indication
F55		744		PT-12-30	None
F56		744		PT-16-2	None
All other ckts are spares					

ST. LUCIE PLANT UNIT 2
OFF-NORMAL OPERATING PROCEDURE NO. 2-0960030, REVISION 0
DC GROUND ISOLATION

APPENDIX M

PP DC 2AB CKT. 02 RTGB- 201 TB W13 RTF CWD 1241 REV. 0

FUSE NO.	LINE NO.	LOAD			CONDITIONS REQUIRED TO DE-ENERGIZE
		CWD	TAG	TITLE	
F11	F11P	511	SE-25-5	Purge-Refueling Dampers	Remove and replace fuse
F12	F12N			Reactor Containment	
				Purge Isolation Valves	
F13	F13P	512	FCV-25-2	Reactor Containment	Purge fans will stop
F14	F14N		FCV-25-4	Purge Isolation Valves	
F15	F15P	455	Isol. Term	Fuel Pool Rad.	Stops
F16	F16N		Cab. 1	Monitoring	Fuel Handling Bldg. Exhaust Fan 2HVE-15
					Fuel Pool Exhaust Fan 2HVE-16A
					Fuel Pool Exhaust Fan 2HVE-16B
					Fuel Handling Building Heat and Vent Fan 2HVE-17
F17	F17P	Spare		Spare	
F18	F18N				

ST. LUCIE PLANT UNIT 2
OFF-NORMAL OPERATING PROCEDURE NO. 2-0960030, REVISION 0
DC GROUND ISOLATION

APPENDIX N

PP DC 2AB CKT. 03 RTGB- 205 TB T2 CWD 645 REV. 0

8.4.3
Bkr. 2-60303

FUSE NO.	LINE NO.	LOAD			CONDITIONS REQUIRED TO DE-ENERGIZE
		CWD	TAG	TITLE	
F1 F2	F1P F2N	151		Letdown Press. and Intermediate Letdown Temp. Channels	Loss of indication PCV-2201P, Q On RTGB-205
F3 F4	F3P F4N	158	LCV-2110P LCV-2110Q	Letdown Throttle Valves	Lose indication only, valves still function
F5 F6	F5P F6N	160	V-2513	Volume Control Tank Vent	Fail closed, lose indication
F7 F8	F7P F8N	163		Not on indicated CWD*	
F9 F10	F9P F10N			Spare	
F11 F12	F11P F12N	563	V-6300	RDT Vent Stop Valve	Fail open, lose indication
F13 F14	F13P F14N	564	V-6565	Waste Gas Stop Valve	Fail closed, lose indication
F15 F16	F15P F16N	565	V-6739	Spent Resin Tank to Drumming Station	Fail closed, lose indication
F17 F18	F17P F18N	566	V-6728	Resin Disch Stop Valve	Fail closed, lose indication
F19 F20	F19P F20N	543		Reactor Drain Pump 2B	Loss of pump alternator
F21-F32	Spares			Spares	

ST. LUCIE PLANT UNIT 2
OFF-NORMAL OPERATING PROCEDURE NO. 2-0960030, REVISION 0
DC GROUND ISOLATION

APPENDIX O

PP DC 2AB CKT. 04 RTGB- 205 TB T10 CWD 645 REV. 0

8.4.4
Bkr. 2-60304

FUSE NO.	LINE NO.	LOAD			CONDITIONS REQUIRED TO DE-ENERGIZE
		CWD	TAG	TITLE	
F1	F1P	151	PCV-2201P	Letdown Pressure Control	Loss of indication only
F2	F2N		PCV-2201Q		
F3	F3P	160	V-2500	Volume Control Tank Inlet	If de-energized opens to VCT
F4	F4N				
F5	F5P	160	V-2513	Volume Control Tank Vent	Fail closed, lose indication
F6	F6N				
F7	F7P	163	V-2512	Makeup Stop Valve	Fail closed, lose indication
F8	F8N				
F9	F9P	Spare		Spare	
F10	F10N				
F11	F11P	563	V-6300	RDT Vent Stop Valve	Fail open, lose indication
F12	F12N				
F13	F13P	564	V-6565	Waste Gas Stop Valve	Fail closed, lose indication
F14	F14N				
F15	F15P	565	V-6739	Spent Resin Tank to Drumming Station	Fail closed, lose indication
F16	F16N				
F17	F17P	566	V-6728	Resin Discharge Stop Valve	Fail closed, lose indication
F18	F18N				
F19	F19P	543		Reactor Drain Pump 2B	Loss of pump alternator
F20	F20N				
All other fuses this T.B. shown as spares F21 thru F32					

ST. LUCIE PLANT UNIT 2
OFF-NORMAL OPERATING PROCEDURE NO. 2-0960030, REVISION 0
DC GROUND ISOLATION

APPENDIX P

PP DC 2AB CKT. 11 RTGB- 201 TB ____ CWD 800 REV. 5

8.4.11
2-60311

FUSE NO.	LINE NO.	LOAD			CONDITIONS REQUIRED TO DE-ENERGIZE
		CWD	TAG	TITLE	
F1 and F2		720		DEH Governor Fluid Pump 2A MP1	None
F3 and F4		883		Generator Protective Relaying	
All other circuits are spares					

ST. LUCIE PLANT UNIT 2
OFF-NORMAL OPERATING PROCEDURE NO. 2-0960030, REVISION 0
DC GROUND ISOLATION

APPENDIX Q

PP DC 2AB CKT. 19 RTGB- 202 TB ____ CWD 638 REV. 6

8.4.19
2-60319

FUSE NO.	LINE NO.	LOAD			CONDITIONS REQUIRED TO DE-ENERGIZE
		CWD	TAG	TITLE	
Ckt. 1		638		Solenoid Valves I-SE-08-1 and I-SE-08-2	Energ. to close

ST. LUCIE PLANT UNIT 2
OFF-NORMAL OPERATING PROCEDURE NO. 2-0960030, REVISION 0
DC GROUND ISOLATION

APPENDIX R

PP 240 CKT. 24 RTGB- TB PD & MD 64J REV. 0

8.4.24
Bkr. 2-60324

FUSE NO.	LINE NO.	LOAD			CONDITIONS REQUIRED TO DE-ENERGIZE
		CWD	TAG	TITLE	
Ckt. 4		999		Reflash Module RA-T-8	Window D28 will alarm
Ckt. 12		742		Reflash Module RA-T-3	Window E26 will alarm
Ckt. 20		1003		Reflash Module RA-RAB-12	Window A50 will alarm
NOTE: All other circuits this panel shown as spares					

DOCUMENT REVISION DISTRIBUTION SHEET - UNIT II
OFF NORMAL & EMERGENCY OPER. PROCEDURE

DOCUMENT TITLE OPERATIONAL REQUIREMENTS FOR EMERGENCY COOLING WATER CANAL

DOCUMENT FILE NUMBER 2-0360040

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Date 4-1-83

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FIGURE 1

REQUEST FOR PROCEDURE CHANGE

1.0 Request:

The following change is requested to Procedure No. 2-0360040 Present Rev. -

Procedure Title: Op Requirements for Emergency Cooling Water

Page, Paragraph & lines to be changed: All pages

Change Requested: Change number to 2-0360030 and Procedure Type to Off-Normal (not emergency procedure) * Delete 2-0360040

Reason for Change: NRC has expressed concern that it's not in 2 column format. This should not be an emergency procedure anyway

Requested by: R Bennings Date: 3/25/83

2.0 Subcommittee by: J.P. Bennin Date: 3/25/83

3.0 Forward request for procedure change to Q.C. Department

4.0 Review: To be performed by Q.C

✓ a. This procedure change does not constitute a change in the system operating procedure requirements described in the FSAR as amended by PCM's and/or other authorized changes.

___ b. This procedure change does constitute a change in the system operating procedure requirements described in the FSAR as amended by PCM's and/or other authorized changes.

NOTE: If Block b is checked, the Tech Staff shall ensure proper resolution in accordance with 10CFR 50.59.

5.0 FRG Review

Reviewed by FRG 3/25/83

FRG Secretary

DOCUMENT REVISION DISTRIBUTION SHEET - UNIT II
OFF NORMAL & EMERGENCY OPER. PROCEDURE

DOCUMENT TITLE Off-Normal Operation of the Plant Heat Process [illegible]

DOCUMENT FILE NUMBER I-1110034

DOCUMENT REVISION NUMBER 0

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11				Ugelow, Al —Backfit	
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				A. Pell	
				R. J. Frechette	
				Resident NRC	
				NRC - IE: HQ	
				Attn: Chief, Nuclear Response Branch	
				C. Burns - CE	

PROCESSED BY: _____ DATE _____

FLORIDA POWER & LIGHT COMPANY
ST. LUCIE UNIT NO. 2
OFF NORMAL OPERATING PROCEDURE NO. 2-1110034
REVISION 0

2

1. TITLE: OFF-NORMAL OPERATION OF THE PLANT VENT PROCESS MONITOR
2. PREPARED BY: B. W. Kelsey 3/14 19 83
3. SUBCOMMITTEE REVIEW BY: For FP&L 3/14 19 83
4. REVIEWED BY FRG ON: 3/16 19 83
5. APPROVED BY: J. H. Barrow Plant Manager April 19 83
6. REVISION REVIEWED BY FRG ON: 19
7. APPROVED BY: Plant Manager 19

FLORIDA POWER & LIGHT COMPANY
ST. LUCIE UNIT 2
OFF-NORMAL OPERATING PROCEDURE NO. 2-1110034
REVISION 0

1.0 TITLE:

OFF-NORMAL OPERATION OF THE PLANT VENT PROCESS MONITOR

2.0 REVIEW AND APPROVAL:

Reviewed by Facilty Review Group MARCH 16, 1983
Approved by J. H. Brown Jr. Plant Manager April 1, 1983

Revision ___ Reviewed by Facility Review Group _____, 19__
Approved by _____ Plant Manager _____, 19__

3.0 PURPOSE AND DISCUSSION:

3.1 Purpose:

This procedure provides instruction in the off-normal operations of the Plant Vent Process Monitor.

3.2 Discussion:

The Plant Vent Monitoring System is designed to representatively sample, monitor, indicate and record the radioactivity level in the plant effluent gases being discharged from the vent pipe.

The system consists of redundant Particulate-Iodine-Gas (P-I-G) Monitors, RS-26-13 & RS-26-14 and a Wide-Range Gas Monitor (WRGM), RS-26-90. These monitors sample the plant stack via sets of isokinetic nozzles located within the stack.

4.0 SYMPTOMS:

4.1 Annunciation and alarm on the Control Room RMS Safety Cabinets and the three (3) system operators terminals.

4.2 Respective Channel "ALERT", "HIGH", or "FAIL" alarms.

4.3 Increasing activity as noted on the respective channel recorders and on the channel graphic display histograms.

OFF-NORMAL OPERATING PROCEDURE 2-1110034, REVISION 0
OFF-NORMAL OPERATION OF THE PLANT VENT PROCESS MONITOR

2

5.0 INSTRUCTIONS:

5.1 Immediate Automatic Action:

NONE

5.2 Immediate Operation Action:

5.2.1 Acknowledge the alarms and notify the Chemistry Department.

5.3 Subsequent Operator Action:

5.3.1 Determination should be made to identify and isolate the source of the increased activity as soon as possible. Compare all monitored channels of sources that contribute to the discharge of the Plant Vent.

5.3.2 Ensure that samples are taken to identify the suspected source and to verify the alarming condition.

5.3.3 Inoperable Monitor:

5.3.3.1 For an energized FAIL alarm, the channel should be considered out of service.

5.3.3.2 Gaseous releases shall be continuously monitored for gross radioactivity and the flow continuously measured and recorded.

Whenever the monitor is inoperable, consult the Unit 2 Technical Specification, Section 3/4 3-26 and 3/4 3-54.

6.0 REFERENCES:

6.1 FSAR Section 11.5.2.1.

6.2 General Atomic Technical Manuals.

6.3 PSL Technical Specifications.

7.0 RECORDS REQUIRED:

7.1 Normal Log Entries.

DOCUMENT REVISION DISTRIBUTION SHEET - UNIT II
OFF NORMAL & EMERGENCY OPER. PROCEDURE

DOCUMENT TITLE OFF-NORMAL OPERATION OF THE AREA RADIATION MONITORING SYSTEM

DOCUMENT FILE NUMBER 2-1120030

DOCUMENT REVISION NUMBER 0

DOCUMENT DISTRIBUTED ON 4/4/83
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				C. Burns - CE	

PROCESSED BY: [signature] DATE 4/4/83

FLORIDA POWER & LIGHT COMPANY
ST. LUCIE UNIT NO. 2
OFF-NORMAL OPERATING PROCEDURE NUMBER 2-1120030
REVISION 0

2

1.0 TITLE:

OFF-NORMAL OPERATION OF THE AREA RADIATION MONITORING SYSTEM

2.0 REVIEW & APPROVAL:

Reviewed by Facility Review Group MARCH 9 1983
Approved by J H Barrow Plant Manager 4-1 1983

Rev. ___ Reviewed by FRG _____ 19__
Approved by _____ Plant Manager _____ 19__

3.0 PURPOSE & DISCUSSION:

3.1 Purpose:

The purpose of this procedure is to provide the necessary instructions for the Off-Normal Operation of the Area Radiation Monitoring System.

3.2 Discussion:

The area radiation monitoring system consists of safety and non-safety area monitors. The safety monitors consist of the CIS Spent Fuel Pool, Containment High Range and Post-Loca Radiation monitors. Those monitors have alarms, digital readout and strip chart recorders located on the Radiation Monitoring Panel in the Control Room. They have local indicators and provide radiation data to the Radiation Monitoring System computers. The non-safety related monitors have local alarms and indicators and provide radiation data to the Radiation Monitoring System computers.

The CIS monitors continually provide radiation information to the Control Room and if radiation levels exceed their setpoint will initiate a Containment Isolation Actuation Signal.

The Spent Fuel Pool monitors continually monitor radiation levels just above the Spent Fuel Pool water level. If the radiation levels exceed the setpoint of the monitors they stop normal fuel handling building ventilation and discharge fuel handling building exhaust to the plant vent by starting the shield building ventilation system.

The Containment High Range Radiation Monitors and Post-Loca Monitors provide control room indication of radiation levels at the monitors and alarms if the setpoints are exceeded.

4.0 SYMPTOMS:

4.1 Symptoms are contained in the text of the procedure.

ST. LUCIE UNIT NO. 2
OFF-NORMAL OPERATING PROCEDURE NUMBER 2-1120030, REVISION 0
OFF-NORMAL OPERATION OF THE AREA RADIATION MONITORING SYSTEM

5.0 INSTRUCTIONS:

5.1 Containment Isolation Radiation Monitors High Radiation Alarm

5.1.1 Symptoms:

1. Containment High Radiation CIS Channel Trip P-5.

2. Containment High Radiation CIS Channel Pre-Trip P-15.

5.1.2 Immediate Automatic Actions

1. Containment isolation occurs if 2 or more monitors are in high alarm.

5.1.3 Immediate Operator Actions

1. Verify Containment Isolation has occurred if 2 or more monitors are in alarm.

2. Verify Containment evacuation alarm has sounded or initiate manually.

3. If only one monitor is in alarm check the other CIS monitors for increasing radiation levels.

5.1.4 Subsequent Operator Actions

1. Notify the NPS.

2. Verify the alarms are valid.

3. Carry out the applicable emergency procedures as necessary.

4. Determine if personnel were in the RCB and obtain an accountability as necessary.

5.2 Spent Fuel Pool Monitors in High Radiation Alarm

5.2.1 Symptoms:

1. Spent Fuel Pool Channels in Radiation Monitoring System Panel in High Alarm and at Spent Fuel Pool monitors local stations.

ST. LUCIE UNIT NO. 2
OFF-NORMAL OPERATING PROCEDURE NUMBER 2-1120030, REVISION 0
OFF-NORMAL OPERATION OF THE AREA RADIATION MONITORING SYSTEM

2

5.0 Instructions: (Continued)

5.2 (Continued)

5.2.2 Immediate Automatic Actions - 2 or 3 monitors on either the SA or SB circuit in High Alarm.

1. 2-HVS 6 and 2-HVS 7 stop.
2. 2-HVE 15, 2-HVE 16A or 16B and 2-HVE 17 stop.
3. Dampers D-29 thru D-36 close.
4. I-FCV-25-30 and I-FCV-25-31 open.
5. I-FCV-25-32 and I-FCV-25-33 close.
6. 2-HVE 6A and 6B start.

5.2.3 Immediate Operator Actions

1. Verify that automatic actions have occurred or initiate manually.
2. Announce the alarms over the Plant paging system and the immediate evacuation of the Fuel Handling Building.

5.2.4 Subsequent Operator Actions

1. Verify the alarms are valid.
2. Initiate emergency procedures if applicable.
3. Obtain an accountability of personnel in the Fuel Handling Building.

5.3 Individual Area Radiation Monitors in Alert or High Alarm

5.3.1 Symptoms:

1. High or Alert Radiation Monitor Alarm (audible and visual) on Control Room, Health Physics, Chemistry Radiation Monitoring System CRT's.
2. Individual High or Alert Alarms (audible and visual) on Control Room RMS Panel.
3. High or Alert Radiation Monitor Alarms (audible and visual) on local monitor stations.

ST. LUCIE UNIT NO. 2
OFF-NORMAL OPERATING PROCEDURE NUMBER 2-1120030, REVISION 0
OFF-NORMAL OPERATION OF THE AREA RADIATION MONITORING SYSTEM

5.0 Instructions: (Continued)

5.3 (Continued)

5.3.2 Immediate Automatic Actions

1. None

5.3.3 Immediate Operator Actions

1. Notify personnel by use of the Plant paging system to evacuate the affected area.

5.3.4 Subsequent Operator Actions

1. Verify the validity of the alarm.

2. Contact Health Physics and request a survey of the affected area.

5.4 Inoperable Monitor

5.4.1 Symptoms:

1. Audible and visual alarms on Control Room, Health Physics and Chemistry Radiation Monitoring System CRT's.

2. Audible alarm and loss of operate light at local monitor station.

5.4.2 Immediate Automatic Actions

1. None

5.4.3 Immediate Operator Actions

1. None

5.4.4 Subsequent Operator Actions

1. Contact Health Physics and request a check of the monitor and to perform area surveys as necessary.

ST. LUCIE UNIT NO. 2
OFF-NORMAL OPERATING PROCEDURE NUMBER 2-1120030, REVISION 0
OFF-NORMAL OPERATION OF THE AREA RADIATION MONITORING SYSTEM

2

6.0 REFERENCES:

6.1 PSL-2 FSAR

7.0 RECORDS:

7.1 Normal log entries.