

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

DOCUMENT TITLE Control Room Inaccessibility

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EMERGENCY PROCEDURE
2-0030141 REV. 6
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FLORIDA POWER & LIGHT COMPANY
ST. LUCIE UNIT 2
EMERGENCY OPERATING PROCEDURE 2-0030141
REVISION 6

CONTROL ROOM INACCESSIBILITY
(CRI)

TOTAL NO. OF PAGES 41

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2

FLORIDA POWER & LIGHT COMPANY
ST. LUCIE UNIT 2
EMERGENCY PROCEDURE 2-0030141, REVISION 6
CONTROL ROOM INACCESSIBILITY

1.0 Scope

This procedure provides instructions for placing the plant in a safe condition when operations cannot safely be conducted from the Control Room.

/R6

2.0 Symptoms:

Conditions exist such that the Control Room becomes uninhabitable and must be evacuated.

3.0 Automatic Actions:

/R6

None

4.0 Immediate Operator Action:

<u>ACTION</u>	<u>NOTES</u>
4.1 Manually trip the reactor and Turbine prior to leaving the Control Room, if possible.	4.1 Push buttons on RTGB-201 and 204.
4.2 Announce evacuation of the Control Room over the P.A. system.	
4.3 Implement the Emergency Plan, as necessary, in accordance with EPIP 3100021E, "Duties and Responsibilities of the Emergency Coordinator".	
4.4 Obtain the Remote Shutdown Room Keybox Master Key from the Control Room Key Locker.	4.4 Key Number 2
4.5 Evacuate all personnel from the Control Room.	

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ST. LUCIE UNIT 2
EMERGENCY PROCEDURE 2-0030141, REVISION 6
CONTROL ROOM INACCESSIBILITY

2

CHECK

5.0 Subsequent Actions:

5.1 Man and take control of stations as follows:

1. Reactor Control Operator "A" - Remote Shutdown Panel

- A. Establish communications on the Sound Power Phone System (Circuit No. 1).
- B. Monitor available plant parameters on the Remote Shutdown Panel and the column, 30' east of the Remote Shutdown Panel Room.
- C. Start motor or steam-driven AFW Pumps and feed the Steam Generators as required.

/R6

CAUTION

Slowly open AFW valves to Steam Generators to prevent decreasing pressurizer level due to excessive cooldown.

/R6

- D. Control Pressurizer pressure and level by manual control of Pressurizer heaters, auxiliary spray valves, and letdown valves.

NOTE: Only the "P" Letdown level and pressure valves are controllable from outside the Control Room. Control Pressurizer level with letdown level controller (LCV-2201P) and letdown pressure controller (LCV-2110P) located on column, 30' east of Remote Shutdown Panel Room.

/R6

NOTE: 20% output on LCV-2201P (Letdown Level Controller) is approximately 40 GPM letdown flow.

/R6

2. Nuclear Plant Supervisor - Electrical Equipment Room, Reactor Auxiliary Building - 43' Elev.

- A. Open or check open Reactor Trip Breakers TCR-1 through 8.
- B. Place isolation switches in the ISOLATE position on the following switchgear in the order listed: (See Appendix A)
 - 4160V Swgr. 2A3
 - 480V Load Center 2A3*
 - 480V Load Center 2A2
 - 480V Load Center 2A5
 - 480V MCC 2A5
 - 480V MCC 2A6
 - Transfer Panel 2A
 - 480V MCC 2AB

* Open Bkr 2-40305 (Proportional Heater Bank 1)

ST. LUCIE UNIT 2
EMERGENCY PROCEDURE 2-0030141, REVISION 6
CONTROL ROOM INACCESSIBILITY

5.0 Subsequent Actions: (continued)

5.1 (continued)

2. Nuclear Plant Supervisor: (continued)

B. (continued)

4160V Swgr. 2B3
480V Load Center 2B3**
480V Load Center 2B2
480V Load Center 2B5
480V MCC 2B5
480V MCC 2B6
Transfer Panel 2B
Transfer Panel 2AB
Communications Isolation Panel

** Open Bkr 2-40602 (Proportional Heater Bank 2)

C. Assist Reactor Control Operator "A" in monitoring unit parameters from the Remote Shutdown Panel.

3. Reactor Control Operator "B" - Turbine Operating Level

- A. Locally trip or verify the Turbine has tripped.
- B. Verify Turbine Stop Valves and Control Valves are shut. If not, initiate Turbine trip from Turbine front standard.
- C. At the AFW Pump area, place the isolate switches for MV-08-19B, MV-08-18B, MV-08-18A, and MV-08-19A in ISOLATE.
- D. Proceed to Turbine Building Switchgear Room and establish communications on the Sound Powered Phone circuit (Circuit No. 1).
- E. Place isolation switches in the ISOLATE position for bus feeder breakers as follows (See Appendix A):
- 4160V Swgr. 2A2
4160V Swgr. 2B2
6900V Swgr. 2A1
6900V Swgr. 2B1
- F. Stop 2A and 2B Main Feedwater Pumps, 2A and 2B Heater Drain Pumps, and one Condensate Pump by opening their respective breakers.

CHECK

/R6

CAUTION

Ensure that one Condensate Pump remains in service.

/R6

ST. LUCIE UNIT 2
EMERGENCY PROCEDURE 2-0030141, REVISION 6
CONTROL ROOM INACCESSIBILITY

2
CHECK

5.0 Subsequent Actions: (continued)

5.1 (continued)

4. Nuclear Operator - Reactor Auxiliary Building

- A. Place isolate switches in ISOLATE/LOCAL position on the following switchgear (see Appendix A):
4160V Swgr. 2AB
480V Load Center 2AB
- B. Proceed to the Diesel Generator Building and place isolation switches on 2A and 2B Diesel Control Panels in ISOLATE position (see Appendix A)
- C. Open or check open isolation valves for Letdown pressure and level control valves (V-2110P and V-2201P). Isolate V-2110Q and V-2201Q.
- D. Proceed to the Charging Pump area and establish communications on the Sound Powered Phone circuit (Circuit No. 1).

5.2 Maintain Pressurizer level at approximately 33% indicated level.

NOTE: 20% output on LCV-2201P (Letdown Level Controller) is approximately 40 GPM letdown flow.

/R6

5.3 Maintain Pressurizer pressure at approximately 2100 psia by use of auxiliary sprays.

NOTE: If pressurizer auxiliary spray actuates with spray line temperature >200°F, record as per AP 0010134

/R6

5.4 Maintain RCS temperature at or below 532°F (2A cold leg temperature) by use of atmospheric steam dump and/or selective starting/stopping of Reactor Coolant Pumps.

NOTE: If RCS temperature is decreasing, consider decreasing AFW flow.

/R6

NOTE: If RCS temperature is increasing, stop RCPs as required by opening the RCP breakers in the Turbine Building Switchgear Room.

5.5 When conditions have stabilized after a plant trip, maintain or slowly increase S/G levels by operation of the AFW Pumps and discharge valves to the S/G's.

/R6

CAUTION

If decreasing RCS temperature and/or Pressurizer level occurs, consider decreasing AFW flow to the S/Gs

5.6 Isolate S/G blowdown by manually closing isolation valves at the Closed Blowdown Heat Exchangers.

5.7 When Turbine speed decreases to "0" RPM, verify that the Turning Gear Oil Pump and the turning gear are in operation.

ST. LUCIE UNIT 2
EMERGENCY PROCEDURE 2-0030141, REVISION 6
CONTROL ROOM INACCESSIBILITY

5.0 Subsequent Actions: (continued)

CHECK

5.8 Periodically check the habitability of the Control Room and when conditions permit, reoccupy the Control Room. Return isolation switches to NORMAL for switches and controls that are operational and maintain the Unit at Hot Standby until a complete evaluation has been made.

5.9 If Control Room accessibility is not possible, place the unit in a Cold Shutdown condition as follows:

1. Commence boration to Cold Shutdown conditions by manual valve lineup. Borate to 1900 ppm as shown below. Carry out boron sampling as required during cooldown.

NOTE: This concentration will ensure >5% Shutdown Margin at 201°F at any time in core life, assuming the most reactive CEA stuck full out. Use both the local boron flow meters vs. time and BAM Tank level change to determine how many gallons of boron have been added. Do not interpolate values shown, always round critical boron concentration DOWN to next lower value on table.

NOTE: If plant curves are available, they may be used to determine shutdown boron concentration requirements instead of this Table.

Boron Concentration Prior to Control Room Inaccessibility	Number of Gallons of Boron needed to reach 1900 ppm	BAM Tank level change (1 BAM Tank)
50 PPM	7223 Gallons	75%
100 PPM	7039 Gallons	73%
200 PPM	6668 Gallons	70%
300 PPM	6295 Gallons	66%
400 PPM	5919 Gallons	62%
500 PPM	5442 Gallons	57%
600 PPM	5162 Gallons	54%
700 PPM	4779 Gallons	50%
800 PPM	4395 Gallons	46%
900 PPM	4008 Gallons	42%
1000 PPM	3618 Gallons	38%
1100 PPM	3226 Gallons	34%
1200 PPM	2832 Gallons	30%
1300 PPM	2435 Gallons	25%
1400 PPM	2036 Gallons	21%
1500 PPM	1634 Gallons	17%

2. Ensure S/G levels are constant or slowly increasing to maintain 65% level by use of the AFW Pumps.

ST. LUCIE UNIT 2
EMERGENCY PROCEDURE 2-0030141, REVISION 6
CONTROL ROOM INACCESSIBILITY

5.0 Subsequent Actions: (continued)

5.9 (continued)

CHECK

3. Stop at least one RCP prior to reaching 500°F by tripping its breaker at the 2A1 or 2B1 switchgear. Additional RCPs may be stopped as desired to control cooldown rate. After pump coastdown, stop the lift pumps by opening the associated breakers in the electrical switchgear room. Re-close lift pump breakers after one minute elapses.
4. Place all Pressurizer heater switches at the Remote Shutdown Panel to OFF. Heaters may be energized to control RCS pressure as needed.
5. The highest RCS cold leg temperature (highest one with RCP running) shall be plotted every 30 minutes. The copy of the graph (Figure 1) shall be kept with this procedure. The RCS temperature and pressure shall be determined to be within the limits of Figure 3.4-3 at least once per 30 minutes during cooldown.

NOTE: Cooldown of the RCS shall be limited to <75°F in any one hour period with RCS temperature >97°F.
6. The Pressurizer water phase temperature shall be plotted every 30 minutes using the Saturated Temperature vs. Pressure curve of this procedure (Figure 2). If possible, maximize letdown and minimize charging when using auxiliary spray to minimize thermal stress on spray nozzle.

NOTE: Cooldown of the Pressurizer shall be limited to <190°F in any one hour period.
7. When the quantity of boron calculated in Step 5.9.1 has been added, cooldown may proceed. Verify by chemistry sample (if possible) that desired boron concentration has been obtained. Commence taking data on cooldown curve. Have the "B" Reactor Control Operator break Condenser vacuum by manually opening vacuum breaker MOVs.

CAUTION

MSIS will occur at about 475°F, and sealing steam will be lost. Condenser vacuum must be broken prior to 475°F to prevent seal damage.

8. Have I & C personnel install temporary VCT level monitoring equipment. While locally monitoring and controlling VCT level, slowly open the atmospheric steam dumps and establish the desired cooldown rate

NOTE: A makeup blend ratio to the VCT of about 9:1 is sufficient to maintain 1900 PPM boron in the RCS.

NOTE: A temperature differential of approximately 100°F between the RCS and Pressurizer should be maintained during cooldown. Cooldown of the Pressurizer must be accomplished by use of auxiliary spray and heater control.

/R6

ST. LUCIE UNIT 2
EMERGENCY PROCEDURE 2-0030141, REVISION 6
CONTROL ROOM INACCESSIBILITY

5.0 Subsequent Actions: (continued)

5.9 (continued)

9. When the SIAS amber permissive lights come on (1800 psia), block SIAS by turning the key operated switch on the Remote Shutdown Panel for both A and B channels.
10. At 1750 psia, isolate and bypass the following transmitters:
- A. Charging header flow: close valve marked "HIGH SIDE", open valve marked "BYPASS", and close valve marked "LOW SIDE".
 - B. Charging header pressure: close its isolation valve.
11. Commence venting all four SITs from remote valve stations in the Electrical Penetration Room. (Valves 3733, 3734, 3735, 3736, 3737, 3738, 3739, and 3740).
- NOTE: Do not vent more than one SIT to <235 psig.
12. Maintain at least two RCPs operating. If possible, two RCPs in the same loop should be left running.
13. Periodically adjust the steam dump controllers and auxiliary spray control to maintain the desired cooldown and de-pressurization rate. Verify that the S/G's are being maintained at approximately 65% level.
14. With RCS pressure <1700 psia, but prior to commencing SDC operations, rack out 2A and 2B Containment Spray Pump breakers (2-20203 and 2-20407).
15. When RCS temperature is <500°F and RCS pressure is <1500 psia, perform the following:
- A. Close 2-V-07145 and 2-V-07130 (Containment Spray Pump disch valves).
 - B. Close the following Containment Spray header manual isolation valves:
 - 2-V-07161 (A hdr FCV upstream isol)
 - 2-V-07164 (B hdr FCV upstream isol)
 - MV-07-3 (A hdr FCV downstream isol)
 - MV-07-4 (B hdr FCV downstream isol)

CAUTION

Prior to lowering RCS pressure below 390 psia, two RCPs in the same loop must be operating.

16. Lower RCS temperature to 325°F and RCS pressure to 320 psia.

CHECK

2

CRI

ST. LUCIE UNIT 2
EMERGENCY PROCEDURE 2-0030141, REVISION 6
CONTROL ROOM INACCESSIBILITY

5.0 Subsequent Actions: (continued)

5.9 (continued)

CHECK

17. Stop the operating RCPs by tripping the breakers on 2A1 and 2B1 switchgear. After pump coastdown, stop the oil lift pumps by opening the breaker for each pump for one minute, then re-closing the breaker.

NOTE: Since RCS forced circulation has been terminated, it is necessary to proceed quickly to Shutdown Cooling.

18. Lower RCS pressure to <275 psia, rack in the breakers and then close the SIT discharge valves by placing the local control switch in the CLOSE position.

MV-3614: Bkr. 2-41219

MV-3624: Bkr. 2-41311

MV-3634: Bkr. 2-42117

MV-3644: Bkr. 2-42048

19. Rack out the SIT discharge valve breakers.

20. Rack out one HPSI Pump prior to 280°F. Ensure the other HPSI Pump remains operable.

CAUTION

With SDC in service, an increase in RCS pressure >350 psia will result in rapid RCS inventory loss due to lifting of relief valves in Hot Leg suction lines (Total capacity 4,600 gpm).

21. Ensure RCS pressure <275 psia, then open the following valves from their local controllers:

- A. Hot Leg Suction Valves: V-3651, V-3652, V-3665, V-3480, V-3481, V-3664.

NOTE: V-3664 and V-3665 local controllers are in Pipe Penetration Room; all others are in the Cable Spreading Room.

NOTE: V-3545 (Hot Leg Suction Cross-Tie) is normally closed. It may be used to provide flow during off-normal conditions and must be open if both trains of SDC are in service.

- B. Open CCW from SDC Heat Exchangers: HCV-14-3A and HCV-14-3B by isolating instrument air to the HCVs and bleeding off air pressure.

- C. SDC Heat Exchanger Discharge Valves: MV-3456 and MV-3457.

- D. LPSI Header Isolation Valves: MV-3615, MV-3625, MV-3635 and MV-3645.

/R6

/R6

ST. LUCIE UNIT 2
EMERGENCY PROCEDURE 2-0030141, REVISION 6
CONTROL ROOM INACCESSIBILITY

5.0 Subsequent Actions: (continued)

5.9 (continued)

CHECK

22. Close the following valves:
- A. LWT recirculation stop valves: V-3459, V-3463, and V-3597.
 - B. Miniflow header stop valves: V-3659, V-3660, V-3495 and V-3496.
 - C. LPSI suction from RWT: V-3432 and V-3444.
23. Have the Nuclear Operator establish communications on the Sound Power Phone System (Circuit No. 1) in the 2A LPSI Pump Room.
24. Establish SDC as follows:
- A. Insert keys for MV-3306 and MV-3657 (controllers located in A LPSI Room) and place switches to MODULATE position.
 - B. Using key switches at local controllers, open MV-3517 and MV-3658.
 - C. Give MV-3306 a three second open signal, then allow switch to return to NORMAL.
 - D. Start the 2A LPSI Pump, then open MV-3306 to obtain 3000 gpm flow as indicated on FI-3306 at the Remote Shutdown Panel.
 - E. While observing SDC outlet temperature and flow on the Remote Shutdown Panel, alternately open MV-3657 and close MV-3306 to achieve desired cooldown rate and maintain 3000 gpm.
25. At 200°F RCS temperature, remove the trip and close fuses on the remaining HPSI Pump. Open the breaker for one Charging Pump so that no more than two Charging Pumps are operable.
26. Stabilize RCS temperature at approximately 100°F and RCS pressure at approximately 250 psia. Control pressure by use of Pressurizer heaters and auxiliary spray. Do not take the Pressurizer solid until Control Room access has been re-established.

ST. LUCIE UNIT 2
EMERGENCY PROCEDURE 2-0030141, REVISION 6
CONTROL ROOM INACCESSIBLE

6.0 Purpose and Discussion:

This procedure provides instructions for placing the plant in a safe condition when operations cannot safely be conducted from the Control Room. The reactor and turbine are manually tripped prior to leaving the Control Room, if possible, or locally from the Reactor Trip Switchgear and the Turbine front standard. A heat sink is provided by automatic steam dump to the Condenser and/or to atmosphere. Level is maintained in the Steam Generators by manual control of auxiliary feedwater valves with flow furnished by the AFW Pumps. Pressurizer level and pressure are maintained by manual control of Pressurizer heaters, auxiliary spray valves, and letdown valves, and are monitored at the Remote Shutdown Panel.

Isolation switches located in the Reactor Auxiliary Building Electrical Equipment Room, Turbine Building Switchgear Room, Diesel Generator Rooms, and Reactor Auxiliary Building are manually selected to the ISOLATE position to prevent inadvertent operation of vital equipment due to possible electrical malfunction in the unattended Control Room.

A copy of this procedure will be posted at each manned operating station required for plant shutdown from outside the Control Room. A listing of isolation switches will be posted on each of the following panels, MCCs, and distribution buses.

1. Load Centers 2A, 2B, 2AB
2. Transfer Panels 2A, 2B, 2AB
3. MCC 2A5, 2A6, 2B5, 2B6
4. 4160V Buses 2A3, 2B3, 2AB
5. 4160V Buses 2A2, 2B2
6. 6900V Buses 2A1, 2B1
7. Diesel Generator 2A and 2B Control Panels

The Nuclear Plant Supervisor will utilize additional personnel as available to assist in required subsequent actions.

ST. LUCIE UNIT 2
EMERGENCY PROCEDURE 2-0030141, REVISION 6
CONTROL ROOM INACCESSIBILITY

7.0 References:

- 7.1 Emergency Operating Procedure 1-0030141
7.2 St. Lucie Unit 2 Technical Specifications

8.0 Records:

- 8.1 A completed, initialed copy of this procedure shall be retained in the plant file.

9.0 Approval:

Reviewed by Facility Review Group _____ October 26 1982
Approved by J. H. Barrow (for) Plant Manager October 26 1982
Revision 6 Reviewed by FRG June 16 1983
Approved by C. M. [Signature] Plant Manager 6-16-1983

EP 2-0030141
Revision 6
Total No. of Pages 41

ST. LUCIE UNIT 2
EMERGENCY PROCEDURE 2-0030141, REVISION 6
CONTROL ROOM INACCESSIBILITY

APPENDIX "A"

ISOLATION SWITCHES

480V Load Center 2A3 - Pressurizer Heater Bus, Auxiliary Building
Electrical Equipment Room

1. Pressurizer Backup Heater Bank B-1
2. Pressurizer Backup Heater Bank B-2
3. Pressurizer Backup Heater Bank B-3

2

ST. LUCIE UNIT 2
EMERGENCY PROCEDURE 2-0030141, REVISION 6
CONTROL ROOM INACCESSIBILITY

APPENDIX "A"
(continued)

ISOLATION SWITCHES

2

480V Load Center 2B3 - Pressurizer Heater Bus, Auxiliary Building
Electrical Equipment Room

1. Pressurizer Backup Heater Bank B-4
2. Pressurizer Backup Heater Bank B-5
3. Pressurizer Backup Heater Bank B-6

ST. LUCIE UNIT 2
EMERGENCY PROCEDURE 2-0030141, REVISION 6
CONTROL ROOM INACCESSIBILITY

APPENDIX "A"
(continued)

ISOLATION SWITCHES

480V Load Center 2A2 - Auxiliary Building Electrical Equipment Room

1. Station Service Transf 2A2 Main Breaker
2. Bus Tie to 480V L.C. 2AB
3. Containment Fan Cooler 2-HVS-1A
4. Charging Pump 2A

2

ST. LUCIE UNIT 2
EMERGENCY PROCEDURE 2-0030141, REVISION 6
CONTROL ROOM INACCESSIBILITY

APPENDIX "A"
(continued)

ISOLATION SWITCHES

2

480V Load Center 2A5 - Auxiliary Building Electrical Equipment Room

1. Containment Fan Cooler 2-HVS-1B

ST. LUCIE UNIT 2
EMERGENCY PROCEDURE 2-0030141, REVISION 6
CONTROL ROOM INACCESSIBILITY

APPENDIX "A"
(continued)

ISOLATION SWITCHES

4160V SWGR 2A3 - Auxiliary Building Electrical Equipment Room

1. HP Safety Injection Pump No. 2A
2. LP Safety Injection Pump No. 2A
3. Containment Spray Pump No. 2A
4. Pressurizer Heater Transf No. 2A3
5. CEDM Cooling Fan 2HVE-21A
6. Component Cooling Water Pump No. 2A
7. Intake Cooling Water Pump No. 2A
8. Feeder to 4.16KV Bus No. 2AB
9. Feeder from 4.16KV Bus No. 2A2
10. Feed to 480V SS Transformer 2A2/2A5
11. Emergency Diesel Generator No. 2A
12. Auxiliary Feedwater Pump No. 2A

ST. LUCIE UNIT 2
EMERGENCY PROCEDURE 2-0030141, REVISION 6
CONTROL ROOM INACCESSIBILITY

APPENDIX "A"
(continued)

ISOLATION SWITCHES

480V MCC 2A5 - Auxiliary Building Electrical Equipment Room

- * 1. Makeup Bypass to Charging Pumps V-25i4 (Emergency Borate)
- 2. Aux. F.W. Pump 2A Discharge Valve to S/G 2A (MV-09-9 and I-SE-09-2)
- 3. S/G #2B to AFWP-2C Turbin MV-08-12
- 4. Comp Cool Wtr to Cont Cool Unit 2A Valve MV-14-9
- 5. Comp Cool Wtr from Cont Cool Unit 2A MV-14-10
- * 6. Comp Cool Wtr Cont Cool Unit 2B MV-14-11
- * 7. Comp Cool Wtr from Cont Cool Unit 2B Valve MV-14-12

*NOTE: Switch 1, 6, and 7 must be in ISOLATE to have remote control of 2A charging pump.

ST. LUCIE UNIT 2
EMERGENCY PROCEDURE 2-0030141, REVISION 6
CONTROL ROOM INACCESSIBILITY

APPENDIX "A"
(continued)

ISOLATION SWITCHES

480V MCC 2A6 - Auxiliary Building Electrical Equipment Room

1. Boric Acid Makeup Pump 2A
2. Boric Acid Makeup Pump 2B
3. Control Room Air Cond Unit 2HVA/ACC 3A
4. Shield Bldg. Vent Exhaust Fan 2HVE-6A
5. Control Room Emerg. Filtration Fan 2HVE-13A
6. Containment Spray Isolation Valve MV-07-161
7. 2A LPSI Pump Suction Valve V-3444

2

ST. LUCIE UNIT 2
EMERGENCY PROCEDURE 2-0030141, REVISION 6
CONTROL ROOM INACCESSIBILITY

APPENDIX "A"
(continued)

ISOLATION SWITCHES

2

480V Load Center 2B2 - Auxiliary Building Electrical Equipment Room

1. Station Service Transf. 2B-2 Main Breaker
2. Bus Tie to 480V L.C. 2AB
3. Containment Fan Cooler 2HVS-1C
4. Charging Pump 2B

ST. LUCIE UNIT 2
EMERGENCY PROCEDURE 2-0030141, REVISION 6
CONTROL ROOM INACCESSIBILITY

APPENDIX "A"
(continued)

ISOLATION SWITCHES

2

480V Load Center 2B5 - Auxiliary Building Electrical Equipment Room

1. Containment Fan Cooler 2-HVS-1D

ST. LUCIE UNIT 2
EMERGENCY PROCEDURE 2-0030141, REVISION 6
CONTROL ROOM INACCESSIBILITY

APPENDIX "A"
(continued)

ISOLATION SWITCHES

2

4160V SWGR 2B3 - Auxiliary Building Electrical Equipment Room

1. Emergency Diesel Generator No. 2B
2. Feed to 480V SS Transformer 2B2/2B5
3. Pressurizer Heater Transf No. 2B3
4. Component Cooling Water Pump No. 2B
5. HP Safety Injection Pump No. 2B
6. LP Safety Injection Pump No. 2B
7. Containment Spray Pump No. 2B
8. CEDM Cooling Fan 2HVE-21B
9. Feeder to 4160V Bus No. 2AB
10. Intake Cooling Water Pump No. 2B
11. Incoming Feeder from 4.16KV Bus 2B2
12. Auxiliary Feedwater Pump No. 2B

ST. LUCIE UNIT 2
EMERGENCY PROCEDURE 2-0030141, REVISION 6
CONTROL ROOM INACCESSIBILITY

APPENDIX "A"
(continued)

ISOLATION SWITCHES

480V MCC 2B6 - Auxiliary Building Electrical Equipment Room

1. 2HVE-13B - Control Room Booster Fan
2. Control Room Air Cond 2HVA-3B
3. Containment Spray Isolation Valve (MV-07-164)
4. Shield Bld Vent Exh Fan 2HVE-6B
5. 2B LPSI Pump Suction Valve (V-3432)

2

ST. LUCIE UNIT 2
EMERGENCY PROCEDURE 2-0030141, REVISION 6
CONTROL ROOM INACCESSIBILITY

APPENDIX "A"
(continued)

ISOLATION SWITCHES

480V MCC 2B5 - Auxiliary Building Electrical Equipment Room

1. CCW to Containment Fan Cooler 2HVS-1C (MV-14-13)
2. CCW from Containment Fan Cooler 2HVS-1D (MV-14-14)
- * 3. Boric Acid Gravity Feed Valve (V-2508)
4. Boric Acid Gravity Feed Valve (V-2509)
- * 5. CCW to Containment Fan Cooler 2HVS-1D (MV-14-15)
6. CCW from Containment Fan Cooler 2HVS-1D (MV-14-16)
7. 2B AFW Pump Discharge to 2B Steam Generator (MV-09-10 and I-SE-09-3)
(Back of MCC 2B5)
8. 2A Steam Generator to 2C AFW Pump Turbine (MV-08-13)
(Back of MCC 2B5)

*NOTE: Switch 3 and 5 must be in ISOLATE to have remote control
of 2B charging pump.

2

ST. LUCIE UNIT 2
EMERGENCY PROCEDURE 2-0030141, REVISION 6
CONTROL ROOM INACCESSIBILITY

APPENDIX "A"
(continued)

ISOLATION SWITCHES

480V MCC 2AB - Auxiliary Building Electrical Equipment Room

1. Component Cooling Water Suction Valve Hdr. A (MV-14-3)
2. Component Cooling Water Suction Valve Hdr. B (MV-14-4)
3. Component Cooling Water Discharge Valve Hdr. A (MV-14-1)
- * 4. Component Cooling Water Discharge Valve Hdr. B (MV-14-2)
- * 5. Control Room Air Cond Unit 2-HVA/ACC 3C

*NOTE: Switch 4 and 5 must be in ISOLATE to have remote control of
2C charging pump.

2

ST. LUCIE UNIT 2
EMERGENCY PROCEDURE 2-0030141, REVISION 6
CONTROL ROOM INACCESSIBILITY

APPENDIX "A"
(continued)

ISOLATION SWITCHES

Transfer Panel 2AB - Auxiliary Building Electrical Equipment Room
(2AB Battery Room)

1. 2C Aux Feed Pump Stop Valve MV-08-3

2

ST. LUCIE UNIT 2
EMERGENCY PROCEDURE 2-0030141, REVISION 6
CONTROL ROOM INACCESSIBILITY

APPENDIX "A"
(continued)

ISOLATION SWITCHES

Transfer Panel 2A - Auxiliary Building Electrical Equipment Room

1. 2A Steam Gen Atms Steam Dump PIC-08-1A1
2. 2A Steam Gen Atms Steam Dump PIC-08-1A1
3. SS-1-157 - Letdown Cont Isol Valve (V-2516)
4. SS-1-189 - Aux Spray Valve (I-SE-02-3)
5. SS-194 - Charging Line Isol Valve (V-2523)
6. 2A Diesel Gen Watt/Volt Meter
7. SS-1-176 - Charging to Loop 2A2 (I-SE-02-02)
8. 2C AFW Pmp Discg to 2B Steam Gen (MV-09-12 and I-SE-09-5)
9. 2B Steam Generator Atms Steam Dump PIC-08-3A1

ST. LUCIE UNIT 2
EMERGENCY PROCEDURE 2-0030141, REVISION 6
CONTROL ROOM INACCESSIBILITY

APPENDIX "A"
(continued)

ISOLATION SWITCHES

2

Transfer Panel 2B - Auxiliary Building Electrical Equipment Room

1. 2B Steam Gen Atms Steam Dump PIC-08-1B1
2. 2B Steam Gen Atms Steam Dump PIC-08-1B1
3. SS-2-157 - Letdown Stop Valve (V-2515)
4. SS-2-189 - Aux Spray Valve (I-SE-02-04)
5. SS-1-194 - Letdown Cont Isol Valve (V-2522)
6. 2B Diesel Gen Watt/Volt meter
7. SS-2-176 - Charging to Loop 2B1 (I-SE-02-01)
8. 2C AFW Pump Disch to 2A Steam Gen (MV-09-11 and I-SE-09-4)
9. 2A Steam Gen Atms Steam Dump PIC-08-3B1

ST. LUCIE UNIT 2
EMERGENCY PROCEDURE 2-0030141, REVISION 6
CONTROL ROOM INACCESSIBILITY

APPENDIX "A"
(continued)

ISOLATION SWITCHES

Communications Isolation Panel - Auxiliary Building Communications Room

1. Fire Alarm/Site Evacuation - (Control Console, Isolation Switch)

2

ST. LUCIE UNIT 2
EMERGENCY PROCEDURE 2-0030141, REVISION 6
CONTROL ROOM INACCESSIBILITY

APPENDIX "A"
(continued)

ISOLATION SWITCHES

2

4160 SWGR 2A2 - Turbine Building Switchgear Room

1. Feeder to 480V SWGR No. 2A1
2. Feeder to 4.16KV Bus No. 2A3
3. Incoming Feeder from 4.16KV SWGR 2A4

ST. LUCIE UNIT 2
EMERGENCY PROCEDURE 2-0030141, REVISION 6
CONTROL ROOM INACCESSIBILITY

APPENDIX "A"
(continued)

ISOLATION SWITCHES

4160V SWGR 2B2 - Turbine Building Switchgear Room

1. Feeder to 480V SWGR No. 2B1
2. Feeder to 4.16KV Bus No. 2B3
3. Incoming Feeder from 4.16KV SWGR 2B4

2

ST. LUCIE UNIT 2
EMERGENCY PROCEDURE 2-0030141, REVISION 6
CONTROL ROOM INACCESSIBILITY

APPENDIX "A"
(continued)

ISOLATION SWITCHES

6900V SWGR 2A1 - Turbine Building Switchgear Room

1. Incoming Feeder from S/U Transf No. 2A

ST. LUCIE UNIT 2
EMERGENCY PROCEDURE 2-0030141, REVISION 6
CONTROL ROOM INACCESSIBILITY

APPENDIX "A"
(continued)

ISOLATION SWITCHES

6900V SWGR 2B1 - Turbine Building Switchgear Room

1. Incoming Feeder from S/U Transf No. 2B

2

ST. LUCIE UNIT 2
EMERGENCY PROCEDURE 2-0030141, REVISION 6
CONTROL ROOM INACCESSIBILITY

APPENDIX "A"
(continued)

ISOLATION SWITCHES

AFW PUMP AREA

1. MV-08-19B (Atmospheric Dump Valve)
2. MV-08-18B (Atmospheric Dump Valve)
3. MV-08-18A (Atmospheric Dump Valve)
4. MV-08-19A (Atmospheric Dump Valve)

2

ST. LUCIE UNIT 2
EMERGENCY PROCEDURE 2-0030141, REVISION 6
CONTROL ROOM INACCESSIBILITY

APPENDIX "A"
(continued)

ISOLATION SWITCHES

4160V SWGR 2AB - Auxiliary Building Ground Floor

1. Component Cooling Water Pump No. 2C
2. Intake Cooling Water Pump No. 2C
3. Incoming Feeder from 4.16KV Bus 2A3
4. Incoming Feeder from 4.16KV Bus 2B3

2

ST. LUCIE UNIT 2
EMERGENCY PROCEDURE 2-0030141, REVISION 6
CONTROL ROOM INACCESSIBILITY

APPENDIX "A"
* (continued)

ISOLATION SWITCHES

480V Load Center 2AB - Auxiliary Building Ground Floor

1. Bus Tie to 480V L.C. 2A2 (Left End of Panel)
2. 2C Charging Pump
3. Bus Tie to 480V L.C. 2B2

2

ST. LUCIE UNIT 2
EMERGENCY PROCEDURE 2-0030141, REVISION 6
CONTROL ROOM INACCESSIBILITY

APPENDIX "A"
(continued)

ISOLATION SWITCHES

2

2A Diesel Generator Control Panel

1. Voltage Control
2. Frequency Control
3. Start Circuit

ST. LUCIE UNIT 2
EMERGENCY PROCEDURE 2-0030141, REVISION 6
CONTROL ROOM INACCESSIBILITY

APPENDIX "A"
(continued)

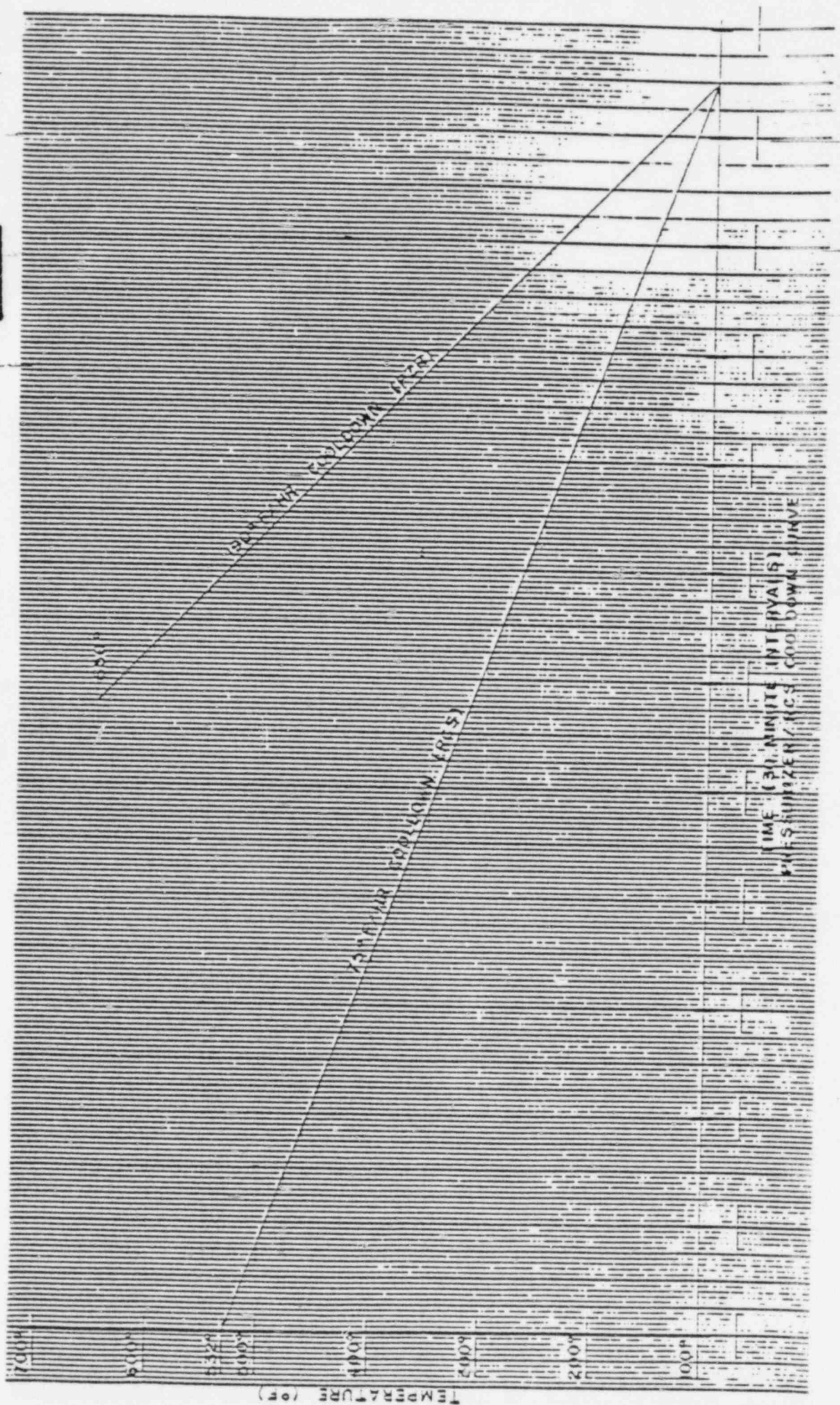
ISOLATION SWITCHES

2

2B Diesel Generator Control Panel

1. Voltage Control
2. Frequency Control
3. Start Circuit

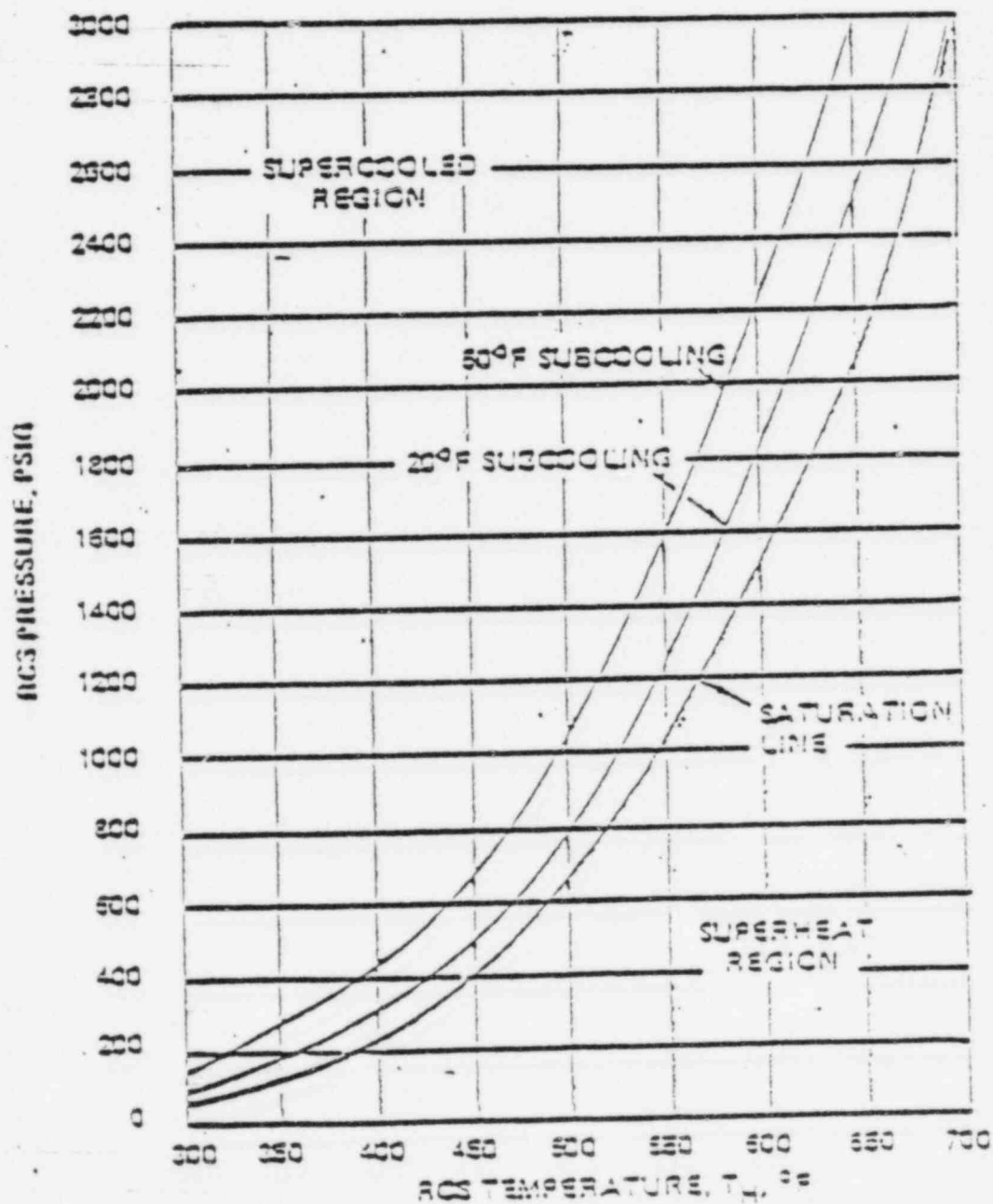
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CONTROL ROOM INACCESSIBILITY



ST. LUCIE UNIT 2
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CONTROL ROOM INACCESSIBILITY

Figure 1
SATURATION

2



ST. LUCIE UNIT 2
EMERGENCY PROCEDURE NO. 2-0030141, REVISION 6
CONTROL ROOM INACCESSIBILITY

2

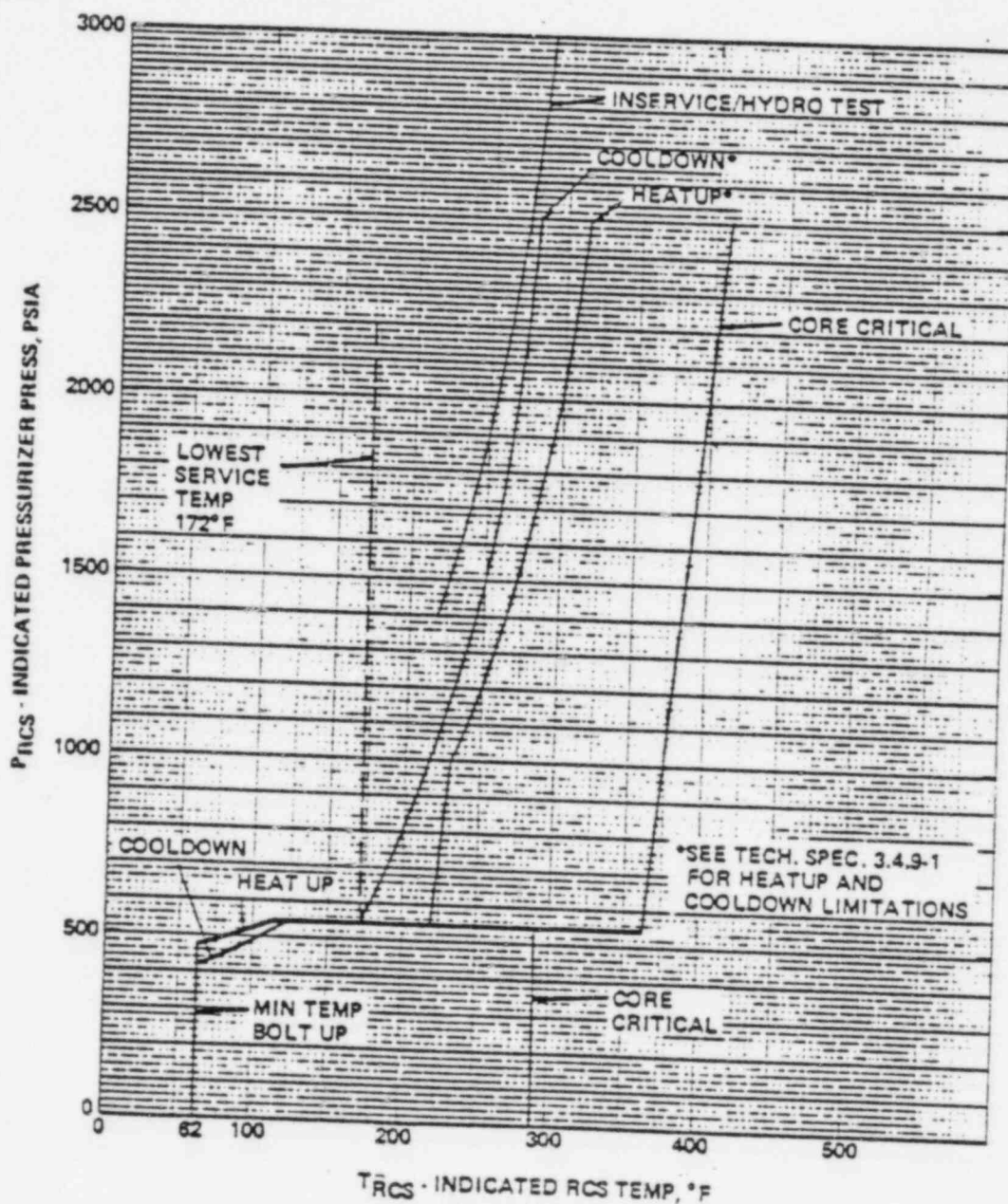


FIGURE 3.4-3

REACTOR COOLANT SYSTEM
PRESSURE TEMPERATURE LIMITATIONS
2 TO 10 YEARS OF OPERATION

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

DOCUMENT TITLE CCW EXCESSIVE ACTIVITY

DOCUMENT FILE NUMBER 2-03/0031

DOCUMENT REVISION NUMBER 1

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FLORIDA POWER & LIGHT COMPANY
ST. LUCIE UNIT 2
OFF-NORMAL OPERATING PROCEDURE NO. 2-0310031
REVISION 1

2

1.0 TITLE:

CCW - EXCESSIVE ACTIVITY

2.0 REVIEW AND APPROVAL:

Reviewed by Facility Review Group _____ December 28 1982

Approved by J. H. Barrow (for) _____ Plant Manager December 28 1982

Revision 1 Reviewed by FRG _____ May 25 1983

Approved by J. H. Barrow (for) _____ Plant Manager May 25 1983

3.0 PURPOSE AND DISCUSSION:

3.1 This procedure provides instruction in the event of high activity in the Component Cooling Water (CCW) System.

3.2 Leakage from the Reactor Coolant System to the CCW System could occur at:

1. Letdown Heat Exchanger
2. Sample Heat Exchangers
3. Shutdown Cooling Heat Exchangers
4. Reactor Coolant Pump Seal Coolers
5. HPSI Pump Seal Coolers

4.0 SYMPTOMS:

4.1 Increase in CCW activity observed on radiation detectors PLP-101 and PLP-102 or annunciated in Control Room at setpoint.

/R1

4.2 Unexpected rise in CCW Surge Tank level.

FOR INFORMATION ONLY
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verify information with a controlled document.

ST. LUCIE UNIT 2
OFF-NORMAL OPERATING PROCEDURE NO. 2-0310031, REVISION 1
CCW - EXCESSIVE ACTIVITY

2

5.0 INSTRUCTIONS:

5.1 Immediate Automatic Action:

1. CCW Surge Tank Vent valve (2-RCV-14-1) will divert from ~~atmosphere~~ to the Chemical Drain Tank when activity in system reaches preset alarm.
2. Annunciation and alarm due to high radiation in CCW System should occur.
3. A high ΔT of 203°F across the RCP seal cooler will close individual valves on the discharge side.

2A1: 2-HCV-14-11-A1

2A2: 2-HCV-14-11-A2

2B1: 2-HCV-14-11-B1

2B2: 2-HCV-14-11-B2

5.2 Immediate Operator Action:

1. Check CCW return temperatures and flow rates from the following components for possible indication of leakage source:

Letdown Heat Exchanger (FIS-14-6)

RCP Low Flow or High ΔT alarms

SDC Heat Exchangers

Sample Heat Exchangers

2. Notify Chemistry Department of condition.

5.3 Subsequent Action:

1. After source of activity has been determined, if possible, isolate the leaking equipment as follows:

A. Hot Leg Loop 2A Sample Heat Exchanger: (2A)

Close AOV-5203 (Reactor Coolant Sample) (RTGB-206)

Close V-5162 (Hot Leg Sample Cooler Outlet)

Close V-14426 (CCW Inlet to Hot Leg Sample Hx)

Close V-14428 (CCW Outlet from Hot Leg Sample Hx)

B. Pressurizer Surge Line Sample Heat Exchanger: (2B)

Close AOV-5204 (Pzr Surge Line Sample) (RTGB-206)

Close V-5163 (Pzr Surge Line Sample Cooler Outlet)

Close V-14424 (CCW Inlet to Pzr Surge Line Sample Hx)

Close V-14429 (CCW Outlet from Pzr Surge Line Sample Hx)

ST. LUCIE UNIT 2
OFF-NORMAL OPERATING PROCEDURE NO. 2-0310031, REVISION 1
CCW - EXCESSIVE ACTIVITY

5.0 INSTRUCTIONS: (Cont.)

5.3 (Cont.)

1. (Cont.)

C. Pressurizer Steam Space Sample Heat Exchanger: (2C)

Close AOV-5205 (Pzr Steam Space Sample) (RTGB-206)
Close V-5157 (Pzr Steam Space Sample Cooler Outlet)
Close V-14422 (CCW Inlet to Pzr Steam Space Sample Hx)
Close V-14430 (CCW Outlet from Pzr Steam Space Sample Hx)

D. Shutdown Cooling Sample Heat Exchanger: (2D)

Close V-5165 (2B Mini Flow to Sample Hx)
Close V-5127 (2A LPSI Pump Disch)
Close V-5130 (2A Mini Flow Sample to Hx)
Close V-5161 (SDC Suction Line Sample to Hx)
Close V-5128 (SDC Sample Hx Outlet)
Close V-14420 (CCW Inlet to SDC Sample Hx)
Close V-14431 (CCW Outlet from SDC Sample Hx)

E. Letdown Heat Exchanger:

CAUTION: PRESSURIZER LEVEL WILL HAVE TO BE CONTROLLED BY
MANUALLY STARTING AND STOPPING CHARGING PUMPS.

Close LCV-2110P (Letdown Control Valve)
Close LCV-2110Q (Letdown Control Valve)
Close AOV-2515 (Letdown Isol)
Close AOV-2516 (Letdown Isol)
Close V-2347 (Inlet Isol PCV-2201Q)
Close V-2348 (Inlet Isol PCV-2201P)
Close V-14241 (CCW to Letdown Hx)
Close V-14254 (CCW Regulator Bypass)
Close V-14248 (CCW to Regulator Stop)

2

ST. LUCIE UNIT 2
OFF-NORMAL OPERATING PROCEDURE NO. 2-0310031, REVISION 1
CCW - EXCESSIVE ACTIVITY

2

5.0 INSTRUCTIONS: (Cont.)

5.3 (Cont.)

1. (Cont.)

F. 2A Shutdown Cooling Heat Exchanger:

Close V-7145 (2A CS Pump Disch)
Close V-7162 (2A SDC Hx Outlet to Spray Hdr)
Close V-3517 (LPSI Pump to 2A SDC Hx)
Close HCV-3456 (2A SDC Hx to Low Press Hdr)
Check closed V-3460 (CS Pump Recirc to RWT)
Check closed V-7158 (CS Pump Test to RWT)
Close V-14348 (CCW to 2A SDC Hx)
Close V-14365 (CCW from 2A SDC Hx)

/R1

G. 2B Shutdown Cooling Heat Exchanger:

Close V-7130 (2B CS Pump Disch)
Close V-7165 (2B SDC Hx Outlet to Spray Hdr)
Close V-3658 (LPSI Pump to 2B SDC Hx)
Close HCV-3457 (2B SDC Hx to Low Press Hdr)
Check closed V-3511 (CS Pump Recirc. to RWT)
Check closed V-7157 (CS Pump Test to RWT)
Close V-14357 (CCW to 2B SDC Hx)
Close V-14487 (CCW from 2B SDC Hx)

/R1

NOTE: Both SDC Heat Exchangers shall be operable before
increasing RCS temperature to $\geq 325^{\circ}\text{F}$ or RCS pressure
 ≥ 1750 psia.

2. If the source of leakage cannot be determined or isolated, evaluate both the magnitude of the leakage and activity. Refer to Off-Normal OP 2-0120031, "Excessive RCS Leakage".

ST. LUCIE UNIT 2
OFF-NORMAL OPERATING PROCEDURE NO. 2-0310031, REVISION 1
CCW - EXCESSIVE ACTIVITY

6.0 REFERENCES:

- 6.1 Ebasco P&ID 2998-G-083
- 6.2 C.E. ~~P&ID~~ E13172-310-130
- 6.3 C.E. P&ID E13172-310-150
- 6.4 Ebasco P&ID 2998-G-088

7.0 RECORDS REQUIRED:

- 7.1 Normal log entries

2