EMERGENCY PROCEDURE
1-0030143 REV. 10
TLOP

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FLORIDA POWER & LIGHT COMPANY
ST. LUCIE UNIT 1
EMERGENCY PROCEDURE NUMBER 1-0030143
REVISION 10

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TOTAL LOSS OF AC POWER
(TLOP)

TOTAL NO. OF PAGES 19

ST. LUCIE UNIT 1
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TOTAL LOSS OF AC POWER

1.0 SCOPE:

This procedure is to be used in the event of a total loss of both offsite AC power and loss of both Diesel Generators.

2.0 SYMPTOMS:

2.1 Loss of power to 1A1 and 1B1 6.9KV buses.

2.2 Loss of power to 1A2, 1A3, 1B2, 1B3 and 1AB 4.16KV buses.

3.0 AUTOMATIC ACTIONS:

ACTION	INITIATING EVENT
3.1 Reactor trip.	3.1 Low RCS flow
3.2 Turbine trip/Generator lockout.	3.2 Reactor trip
3.3 AFW auto actuation.	3.3 S/G level <30%
3.4 PORV's operate.	3.4 Pressurizer Pressure >2400 psia

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4.0 IMMEDIATE OPERATOR ACTIONS	NOTES
4.1 Ensure all CEA's on bottom and reactor trip breakers open.	4.1 RTGB-104 and top of RPS panels
4.2 Ensure 1C AFW pump is restoring S/G level.	4.2 RTGB-102
4.3 Close HCV-08-1A and HCV-08-1B (Main Steam Isolation Valves).	4.3 RTGB-106
4.4 Isolate letdown flow by closing V-2515 and V-2516 (Letdown Isol).	4.4 RTGB-105

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5.0 SUBSEQUENT ACTIONS:

		CHECK
5.1	Ensure Generator OCB's and field breaker open.	____
5.2	Open 30102 (S.U. Transformer to 1A1 6.9KV bus).	____
	Open 30202 (S.U. Transformer to 1B1 6.9KV bus).	____
	Open 20102 (S.U. Transformer to 1A2 4.16KV bus).	____
	Open 20302 (S.U. Transformer to 1B2 4.16KV bus).	____
5.3	Ensure D/G breakers open:	
	1A D/G: 20211	____
	1B D/G: 20401	____
5.4	Ensure 1AB 4.16KV bus feeders are open:	
	20208, 20505 (1A3 4.16KV to 1AB 4.16KV bus)	____
	20409, 20504 (1B3 4.16KV to 1AB 4.16KV bus)	____
5.5	Open 40103 (1A2 4.16KV feed to 1A1 L.C. - Lo side).	____
	Open 20110 (1A2 4.16KV feed to 1A1 L.C. - Hi side).	____
	Open 40203 (1A3 4.16KV feed to 1A2 L.C. - Lo side).	____
	Open 20210 (1A3 4.16KV feed to 1A2 L.C. - Hi side).	____
5.6	Open 40403 (1B2 4.16KV feed to 1B1 L.C. - Lo side).	____
	Open 20310 (1B2 4.16KV feed to 1B1 L.C. - Hi side).	____
	Open 40503 (1B3 4.16KV feed to 1B2 L.C. - Lo side).	____
	Open 20402 (1B3 4.16KV feed to 1B2 L.C. - Hi side).	____
5.7	Ensure 1AB 480V Load Center feeders are open:	
	40204, 40702 (1A2 480V L.C. to 1AB)	____
	40706, 40504 (1B2 480V L.C. to 1AB)	____
5.8	Ensure MV-08-1A and MV-08-1B (Main Steam isolation bypass valves) both indicate closed or dispatch an operator to locally take control and close the valves.	____

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5.0 SUBSEQUENT ACTIONS: (continued)

CHECK

5.9 Open 1A and 1B Atmospheric Dump Valves to reduce SG pressure below safety valve lift pressure (985 psig). ____

> NOTE
> If Instrument Air pressure has decayed, local operation is necessary. Additional Instrument Air control capacity may be gained by opening cross-connect from the station Air system, if station air pressure is holding > Instrument air.
> Maintain communication with local operator.

5.10 Close FCV-23-3, 5, 4, and 6 (1A and 1B S/G Blowdown Isol). ____

5.11 Close FCV-23-7 and 9 (1A and 1B S/G Blowdown Sample Isol). ____

5.12 Close V-5200, 5201, 5202, 5203, 5204 and 5205 (Primary Coolant and Pressurizer Sample Isol). ____

5.13 Implement the Emergency Plan as necessary in accordance with EPIP 3100021E, "Duties and Responsibilities of the Emergency Coordinator." ____

5.14 Minimize Atmospheric Steam Dump use thereby ensuring minimum RCS heat loss; however,

1. Maintain S/G pressure less than S/G safety setpoint (985 psig). ____

2. With decreasing RCS pressure, maintain hot leg temperature (Th) at least 20°F but less than 200°F below the saturation temperature corresponding to the RCS pressure, by use of the atmospheric dump valves. ____

5.15 Verify by the following indications that natural circulation flow has been established within approximately 15 minutes after RCP's were stopped. ____

1. Loop Delta T less than normal full power Delta T (<46°F). ____

2. Cold leg (Tc) constant or decreasing.

3. Hot leg (Th) stable (i.e., not steadily increasing).

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5.0 SUBSEQUENT ACTIONS: (continued) CHECK

5.15 (continued)

4. No abnormal differences between Th RTD's and Core Exit Thermocouples (CETs).

5. RCS CET Subcooling > 20°F per QSPDS.

5.16 If RCS pressure decreases to 1700 psia, verify receipt of block permissive annunciator (R-6) and block SIAS. ____

5.17 Notify system dispatcher of plant conditions and request most urgent priority in restoring off-site power. ____

5.18 If 1C AFW Pump is stopped or flow is lost, then:

1. Reinitiate AFW flow as soon as possible; however, do not exceed a flow rate of 150 GPM per affected S/G. ____

2. Limit feed flow rate to 150 GPM per affected S/G until continuous feed flow to the affected S/G has been maintained for five minutes. ____

5.19 Use all available resources to restore one Emergency Diesel Generator to operable status. ____

5.20 Assuming Unit 2 has both diesels available, one of these diesels may be cross-tied to Unit 1. Refer to Appendix "A". ____

5.21 When either Unit 1 diesel or off-site power is available, restore normal power using Appendix "B." ____

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APPENDIX A
CROSS-TYING UNIT 2 DIESEL TO UNIT 1

CHECK

1. Assuming that both diesels are running and supplying loads on Unit 2 2A3 and 2B3 buses, select the diesel to be tied to Unit 1. ____

2. Transfer loads to the other diesel, being careful not to exceed 659 amps, until the selected diesel is unloaded. ____

3. Perform the indicated switching on the electrical train that will cross-tie the diesel:

UNIT 2

3.1 4.16KV Switchgear 2A3 (2B3)

Open breaker and pull fuses on the following:

		A TRAIN	B TRAIN	CHECK
1)	4.16KV Feed to 2AB 4.16KV bus	2-20208	2-20409	____
2)	4.16KV Feed to 2A2 (2B2) L.C.	2-20210	2-20402	____
3)	2A (2B) HPSI Pump	2-20201	2-20405	____
4)	2A (2B) LPSI Pump	2-20202	2-20406	____
5)	2A (2B) Containment Spray Pump	2-20203	2-20407	____
6)	2A3 (2B3) L.C. (Pressurizer Heaters)	2-20204	2-20403	____
7)	CEDM Cooling Fan 2HVE-21A (21B)	2-20205	2-20408	____
8)	2A (2B) CCW Pump	2-20206	2-20404	____
9)	2A (2B) ICW Pump	2-20207	2-20410	____
10)	2A (2B) AFW Pump	2-20212	2-20412	____

3.2 4.16KV Switchgear 2A2 (2B2)

Open breaker and pull fuses on the following:

		2-20101	2-20301	____
1)	2A (2B) Auxiliary Transformer	1W86	1W84	____
2)	2A (2B) Startup Transformer	2-20102	2-20302	____
3)	2A1 (2A2) Circulating Water Pump	2-20103	2-20303	____
4)	2B1 (2B2) Circulating Water Pump	2-20104	2-20304	____
5)	S/G Blowdown 480V MCC 1B9	2-20105	———	____

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APPENDIX A
CROSS-TYING UNIT 2 DIESEL TO UNIT 1
(continued)

		A TRAIN	B TRAIN	CHECK	
6)	2A (2B) TCW Pump	2-20106	2-20306	____	
7)	2A or 2C (2B or 2C) Condensate Pump	2-20107	2-20307	____	
8)	2A (2B) Heater Drain Pump	2-20108	2-20308	____	
9)	4.16KV Feed to 2A1 (2B1) L.C.	2-20110	2-20310	____	

3.3 4.16KV Switchgear 2A4 (2B4)

1)	Open and rack out breaker # (Feed from 1A (1B) Startup Transformer).	1W90 2-20601	1W82 2-20705	____	/R10
2)	Open and rack out breaker # (Feed from 2A (2B) Startup Transformer).	1W88 2-20605	1W80 2-20701	____	/R10

NOTE
Breaker in either cubicle #5 or #1 may be used for next step.

3) Remove breaker from cubicle #5 (or #1) and install in cubicle #3. ____

4) Push down and hold the "MOC" lever in cubicle #5 (or #1) prior to performing the next step. ____

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APPENDIX A
CROSS-TYING A UNIT 2 DIESEL TO UNIT 1
(continued)

		A TRAIN	B TRAIN	CHECK
3. (continued)				
	5) Rack in and close breaker # in cubicle #3 (Tie breaker for Unit 1/Unit 2 Swgr.).	2-20603	2-20703	_____

NOTE
It will be necessary to hold the switch for breaker 2-20109 (2-20309) in the CLOSE position in order to close breaker 2-20209 (2-20411).

3.4	Close breaker 2-20109 (2-20309) [2A2/2A3 (2B2/2B3) tie breaker] and hold in the CLOSE position.	2-20109	2-20309	_____
3.5	Close breaker 2-20209 (2-20411) [2A2/2A3 (2B2/2B3) tie breaker] and release switch for 2-20109 (2-20309).	2-20209	2-20411	_____

NOTE
4.16KV bus 2A2 (2B2) is now energized.

3.6	Insert fuses and close breaker # [S.U. feed to 4.16KV bus 2A2 (2B2)].	2-20102	2-20302	_____

UNIT #1

3.7 4.16KV Switchgear 1A2 (1B2)

Open breakers on the following:

1)	1A (1B) Auxiliary Transformer to 4.16KV bus	20101	20301	_____
2)	1A1 (1A2) Circulating Water Pump	20103	20303	_____
3)	1B1 (1B2) Circulating Water Pump	20104	20304	_____
4)	S/G Blowdown 480V MCC 1B9	_____	20305	_____
5)	1A (1B) TCW Pump	20106	20306	_____
6)	1A (1B) Condensate Pump	20107	20307	_____
7)	1A (1B) Heater Drain Pump	20108	20308	_____

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APPENDIX A
CROSS-TYING A UNIT 2 DIESEL TO UNIT 1
(continued)

3. (continued)

		A TRAIN	B TRAIN	CHECK
3.8	4.16KV Switchgear 1A3 (1B3)			
	Open and rack out the following breaker:			
	1) 1A (1B) Diesel Generator	20211	20401	____
	Open breakers on the following:			
	1) 1A (1B) HPSI Pump	20201	20405	____
	2) 1A (1B) LPSI Pump	20202	20406	____
	3) 1A (1B) Containment Spray Pump	20203	20407	____
	4) 1A3 (1B3) Pressurizer Heater Transformer	20204	20403	____
	5) 1A (1B) CCW Pump	20206	20404	____
	6) 1A (1B) ICW Pump	20207	20410	____
	7) 4.16KV Feed to 1AB 4.16KV bus	20208	20409	____
	8) 1A (1B) AFW Pump	20212	20412	____
3.9	Insert fuses and close breaker # [1A (1B) S.U. Transformer to 4.16KV bus].	20102	20302	____

NOTE
4.16KV bus 1A2 (1B2) is now energized.

3.10	Insert fuses and close breaker # [1A2/1A3 (1B2/1B3) tie breaker].	20109	20309	____
3.11	Insert fuses, turn on synch and close breaker # [1A2/1A3 (1B2/1B3) tie breaker].	20209	20411	____

NOTE
4.16KV bus 1A3 (1B3) is now energized.

CAUTION
Do not exceed 659 amps on 2A (2B) Diesel Generator. Ensure bus voltage is 4160 ± 420V and frequency is 60 ± 1.2 Hertz.

4. Start 4.16KV equipment as needed. Energize load centers and MCC's by first stripping the Load Center/MCC bus and then energizing the bus.

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APPENDIX B
UNIT 1 POWER RESTORATION

1

CHECK

1. De-energize Load Centers and MCC's by first stripping the Load Center/MCC bus and then opening the power supply. _____

2. De-energize equipment and open breakers on all loads from 1A3 (1B3) and 1A2 (1B2) 4.16KV buses. _____

3. Perform the indicated switching on the electrical train being restored:

	A TRAIN	B TRAIN	CHECK
3.1 Open breaker # [1A2 (1B2) to 1A3 (1B3) 4.16KV tie].	20209	20411	_____
3.2 Open breaker # [1A2 (1B2) to 1A3 (1B3) 4.16KV tie].	20109	20309	_____

NOTE
4.16KV Bus 1A3 (1B3) is now de-energized.

3.3 Open breaker # [1A (1B) S.U. Transformer to 1A2 (1B2) 4.16KV bus].	20102	20302	_____

NOTE
4.16KV bus 1A2 (1B2) is now de-energized.

3.4 If power was being supplied from 2A or 2B diesel, continue with Step 3.5. If not, skip to Step 3.9.

UNIT 2 NORMALIZATION
(Steps 3.5 through 3.8)

3.5 Open breaker # [2A (2B) S.U. Transformer to 2A2 (2B2) 4.16KV bus].	2-20102	2-20302	_____

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APPENDIX B
(continued)

3. (continued)

3.6 4.16KV Switchgear 2A2 (2B2)	A TRAIN	B TRAIN	CHECK
Replace fuses on the following:			
1) 2A (2B) Auxiliary Transformer	1W86	1W84	_____
2) 2A1 (2A2) Circulating Water Pump	2-20103	2-20303	_____
3) 2B1 (2B2) Circulating Water Pump	2-20104	2-20304	_____
4) S/G Blowdown 480V MCC 1B9	2-20105	------	_____
5) 2A (2B) TCW Pump	2-20106	2-20306	_____
6) 2A (2B) Condensate Pump	2-20107	2-20307	_____
7) 2A (2B) Heater Drain Pump	2-20108	2-20308	_____
8) 4.16KV Feed to 2A1 (2B1) L.C.	2-20110	2-20310	_____

3.7 4.16KV Switchgear 2A3 (2B3)			
Replace fuses on the following:			
1) 4.16KV Feed to 2AB 4.16KV bus	2-20208	2-20409	_____
2) 4.16KV Feed to 2A2 (2B2) L.C.	2-20210	2-20402	_____
3) 2A (2B) HPSI Pump	2-20201	2-20405	_____
4) 2A (2B) LPSI Pump	2-20202	2-20406	_____
5) 2A (2B) Containment Spray Pump	2-20203	2-20407	_____
6) 2A3 (2B3) L.C. (Pressurizer Heaters)	2-20204	2-20403	_____
7) CEDM Cooling Fan 2HVE-21A (21B)	2-20205	2-20408	_____
8) 2A (2B) CCW Pump	2-20206	2-20404	_____
9) 2A (2B) ICW Pump	2-20207	2-20410	_____
10) 2A (2B) AFW Pump	2-20212	2-20412	_____

NOTE
On Unit 2: 4.16KV buses 2A2 (2B2) and 2A3 (2B3) are energized by the running diesel and may be reloaded as required.

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APPENDIX B
(continued)

3. (continued)

		A TRAIN	B TRAIN	CHECK
3.8	4.16KV Switchgear 2A4 (2B4)			
	1) Open and rack out breaker # [1A (2A) S.U. Transformer cross-tie].	2-20603	2-20703	____
	2) Remove breaker from cubicle #3 and install in cubicle #5 (or #1, if empty).			____
	3) Rack in and close breaker # [1A (1B) S.U. Transformer Incoming Feeder].	1W90 2-20601	1W82 2-20705	____ /R10
	4) Rack in and close breaker # [2A (2B) S.U. Transformer Incoming Feeder].	1W88 2-20605	1W80 2-20701	____ /R10

NOTE
4.16KV switchgear 2A4 (2B4) is now aligned for off-site power, if available.

3.9 Strip all vital and non-vital load center breakers in preparation for a systematic power restoration. ____

UNIT 1 POWER RESTORATION

3.10 Energize the 4.16KV buses by either of the following methods:

1. Energization with Diesel:

a.	Rack in breaker # [1A (1B) Diesel to 1A3 (1B3) 4.16KV bus]. Diesel will start and energize 1A3 (1B3) 4.16KV bus.	20211	20401	____
b.	Adjust and maintain 4160 ± 420V and 60 ± 1.2 Hertz.			____
c.	Close breaker # [1A3 (1B3) to 1A2 (1B2) tie].	20109	20309	____
d.	Insert synch plug, hold breaker 20109 (20309) closed, and close breaker # [1A3 (1B3) to 1A2 (1B2) tie].	20209	20411	____

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APPENDIX B
UNIT 1 POWER RESTORATION
(continued)

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3. (continued)

3.10 (continued) CHECK

1. (continued)

e. Release breaker 20109 (20309) and remove synch plug. ____

2. Energization with Startup Transformer:

	A TRAIN	B TRAIN	CHECK
a. Close breaker # [1A (1B) S.U. Transformer to 1A2 (1B2) 4.16KV bus].	20102	20302	____
b. Close breaker # [1A3 (1B3) to 1A2 (1B2) tie].	20109	20309	____
c. Insert synch plug and close breaker # [1A3 (1B3) to 1A2 (1B2) tie].	20209	20411	____

NOTE
The following may be energized as required, not necessarily in the order listed.

3.11 To energize 1A2 (1B2) 480V Load Centers:

1. Close breaker # [4.16KV feed to 1A2 (1B2) L.C.].	20210	20402	____
2. Close breaker # [1A2 (1B2) Station Service Transformer to 1A2 (1B2) 480V L.C.].	40203	40503	____

3.12 To energize 1AB 480V Load Center:

1. Close breaker #	40204		____
and breaker #	40702		____
(1A2 480V L.C. feed to 1AB L.C.).			
OR			
Close breaker #		40504	____
and breaker #		40706	____
(1B2 480V L.C. feed to 1AB L.C.).			

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APPENDIX B
UNIT 1 POWER RESTORATION
(continued)

3. (continued)

		A TRAIN	B TRAIN	CHECK
3.13	To energize 1A5 (1B5) MCC:			
	1. Close breaker # [1A2 (1B2) L.C. feed to 1A5 (1B5) MCC].	40214	40514	____
	2. Close breaker # [1A5 (1B5) MCC non-essential load breaker].	41230	42027	____
3.14	To energize 1A6 (1B6) MCC:			
	1. Close breaker # [1A2 (1B2) L.C. feed to 1A6 (1B6) MCC].	40218	40518	____
	2. Close breaker # [1A6 (1B6) MCC non-essential load breaker].	41325	42135	____
3.15	To energize 1A7 (1B7) MCC:			
	1. Close breaker # [1A2 (1B2) 480V L.C. feed to 1A7 (1B7) MCC].	40219	40519	____
3.16	To energize 1A8 (1B8) MCC:			
	1. Close breaker # [1A2 (1B2) 480V L.C. feed to 1A8 (1B8) MCC].	40215	40515	____
	2. Close breaker # [1A8 (1B8) MCC non-essential load breaker].	41513	42317	____
3.18	Ensure 1A (1B) battery charger is "ON LINE" supplying the 1A (1B) DC bus by verifying 1A (1B) DC bus voltage on RTGB-101 to be >120V DC.			____
3.19	Align and initiate emergency cooling water to the Instrument Air Compressors. When power has been restored to 1A6 (1B6) MCC, the Air Compressor(s) may be started.			____

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APPENDIX B
UNIT 1 POWER RESTORATION
(continued)

		CHECK
3.20	Start 1A (1B) Charging Pump to restore Pressurizer level. When the CCW System is returned to operation, a HPSI pump may be operated to augment refilling of the Pressurizer.	_____
3.21	Observe all available indications to determine conditions within the RCS and ensure subcooling.	_____
	1. Use the OSPDS Subcool Margin Monitor (SMM) display to ensure that the RCS, Upper Head, and CETs indicate >20 degrees and <200°F subcooled.	_____
	2. Subcool Margin Curve (Figure 1) should be used with RCS T-hot RTDs and Pressurizer pressure as a comparison with the QSPDS SMM display.	_____
3.22	If RCS is not ≥20°F subcooled:	
	1. With the Pressurizer available, use heaters to establish 20°F subcooled conditions, when heater power is restored	_____
	2. If the pressurizer is not available, establish the required subcooling by reducing RCS temperature, or by pressurizing with changing or HPSI flow.	_____
3.23	If the RCS is or becomes >200°F subcooled:	
	1. With the Pressurizer available, reduce pressure by removing heaters from service and utilize Pressurizer spray.	_____
	2. With Pressurizer not available, consider throttling the HPSI pumps discharge or stopping charging pumps to reduce RCS pressure.	_____

		A TRAIN	B TRAIN	CHECK
3.24	Close breaker # (4.16KV feed to Pressurizer Heaters).	20204	20403	_____
3.25	When Pressurizer level indicates ≥30%, energize Pressurizer heaters B-1, B-2, B-3, P-1 (B-4, B-5, B-6, P-2).			_____
3.26	Ensure ICW seal water from Unit 1 Domestic Water System is available.			_____

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APPENDIX B
UNIT 1 POWER RESTORATION
(continued)

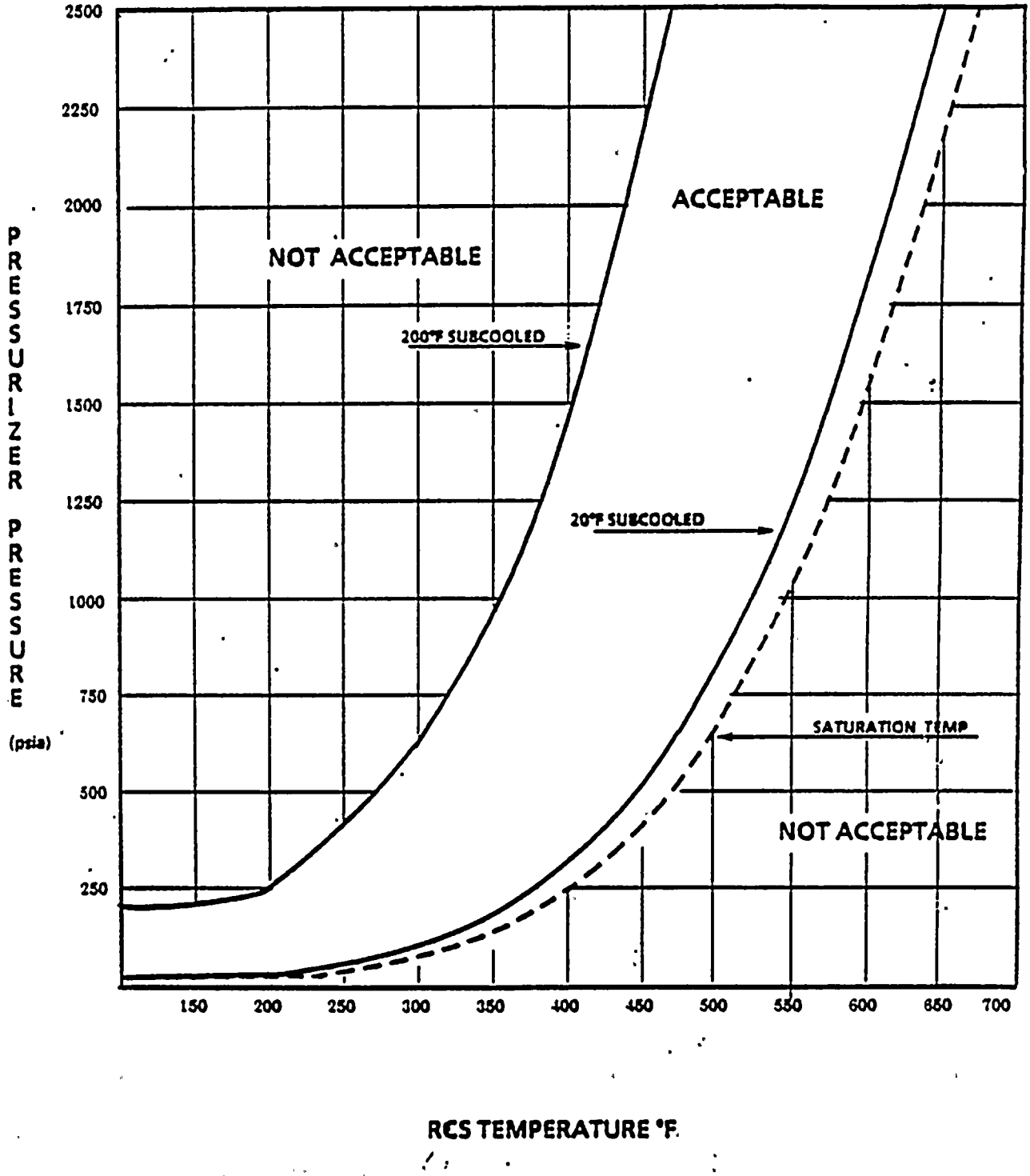
3. (continued)

		CHECK
3.27	Re-establish 1A (1B) ICW train as follows:	
	1. Establish seal water.	_____
	2. Throttle 1A (1B) ICW Pump discharge valve.	_____
	3. Start 1A (1B) ICW Pump; then pressurize and vent 1A (1B) ICW header.	_____
	4. After venting, open 1A (1B) ICW Pump discharge valve.	_____
3.28	Re-establish 1A (1B) CCW train as follows:	_____
	1. Isolate CCW to RCP's by closing HCV-14-1, 2 6 and 7 (to prevent thermal shocking RCP seals).	_____
	2. Throttle 1A (1B) CCW Pump discharge valve.	_____
	3. Ensure CCW Surge Tank at normal level.	_____
	4. Start 1A (1B) CCW Pump; then pressurize and slowly open 1A (1B) CCW pump discharge valve.	_____
3.29	Re-establish CVCS letdown to maintain Pressurizer level at normal operating level.	_____
3.30	Commence boration to Cold Shutdown boron concentration.	_____
3.31	Start one set of Cavity and Support Cooling Fans.	_____
3.32	Proceed to OP 1-0120039, "Natural Circulation/Cooldown, and perform in conjunction with the balance of this procedure.	_____
3.33	Restore balance of secondary plant in accordance with EP 1-0030140, "Blackout Operation."	_____

ST. LUCIE UNIT 1
EMERGENCY PROCEDURE NUMBER 1-0030143, REVISION 10
TOTAL LOSS OF AC POWER

FIGURE 1

SATURATION MARGIN CURVE



ST. LUCIE UNIT ?
EMERGENCY PROCEDURE NUMBER 1-0030143, REVISION 10
TOTAL LOSS OF AC POWER

6.0 DISCUSSION:

The "Total Loss of AC Power" event consists of a loss of off-site power in conjunction with failure of the Emergency Diesel Generators to provide emergency power. This results in a loss of all AC electrical power except that provided by inverters powered from the vital DC buses. The termination of AC power causes a loss of forced reactor coolant flow, main feedwater flow, steam flow to the Turbine and Pressurizer pressure control. The reactor trips on either low reactor coolant flow, high Reactor Coolant System pressure or low Steam Generator level depending on initial conditions.

The "Total Loss of AC Power" event also causes a loss of all RCS makeup capability which includes charging and safety injection flow. Inventory losses through leakage, Reactor Coolant Pump controlled bleedoff, and primary relief valve releases are the major contributors to the degradation of pressure and level control during the event. The other contributor to coolant system shrinkage and pressure reduction is system heat loss, primarily through the Pressurizer walls.

Core heat removal is accomplished through natural circulation. RCS heat removal is accomplished using Atmospheric Dump Valves and the steam-driven AFW Pump.

Instructions are provided for tying either 2A or 2B diesel into the Unit 1 grid to provide temporary power. A study made by CE indicates that the unit can run from batteries alone for up to four hours. If it appears that power restoration will be greater than four hours, preparations should be made to use one of the Unit 2 diesels.

7.0 REFERENCES:

7.1 CE Emergency Procedure Guidelines, CEN-152, REV-D2.

7.2 St. Lucie Unit 1 Off-Normal Operating Procedures.

8.0 RECORDS REQUIRED:

8.1 Normal log entries.

9.0 REVIEW AND APPROVAL:

Reviewed by Facility Review Group August 4 1982

Approved by C. M. Wethy Plant Manager August 4 1982

Revision 10 Reviewed by FRG 5/4 1989

Approved by J H Barrow Plant Manager 5-23 1989

"L A S T P A G E"

EP 1-0030143
REVISION 10

TOTAL NO. OF PAGES 19

Attachment II

LICENSING BASIS CRITERIA
TO
RESOLVE STATION BLACKOUT
FOR
FLORIDA POWER & LIGHT
ST. LUCIE NUCLEAR UNITS

RGSBO

1.0 PURPOSE

The information provided by this document provides the licensing criteria that will be used by Florida Power & Light Company (FPL) to meet the requirements of the Station Blackout (SBO) rule. It is intended to form the basis for agreement between FPL and the NRC for satisfying the rule. When implemented it will meet requirements of 10 CFR 50.63 "Loss of All Alternating Current Power".

2.0 INTRODUCTION

Resolution of Unresolved Safety Issue (USI) A-44, STATION BLACKOUT, was concluded by the NRC on June 21, 1988 by amending its regulations (i.e., 10 CFR 50) to require that light water cooled nuclear power plants be capable of withstanding a total loss of alternating current (AC) electric power (i.e. station blackout).

3.0 DISCUSSION

Resolution of the Station Blackout issue for FPL nuclear units has required consideration of the criteria embodied in the NRC final rule, Regulatory Guide 1.155 "STATION BLACKOUT" and NUMARC document 87-00 "Guidelines and Technical Bases for NUMARC Initiatives Addressing Station Blackout at Light Water Reactors".

FPL is required by law to comply with the "rule" as presented in 10CFR50.63. FPL has obtained guidance from the regulatory guide to implement the rule. FPL has also voluntarily agreed, through executive commitment, to implement five (5) initiatives from NUMARC 87-00 Section 1.2. All these documents were used to develop FPL's Licensing Basis Criteria document for the St. Lucie units.

4.0 SCOPE AND LIMITATIONS

The rule and supporting guidance documents allow flexibility in addressing station blackout. This document provides the licensing criteria that are the bases for FPL to resolve this issue. It is not intended to address all options. Specifically, resolution of station blackout for St. Lucie nuclear units shall be resolved by use of an alternate safety related, class 1E, seismic category 1, power source and unit intertie with the ability to align the source in 10 minutes.

5.0 REQUIREMENTS OF THE RULE

5.1 One (1) Emergency Diesel Generator (EDG) shall be made available in 10 minutes after the onset of a station blackout (10CFR50.63(c)(2)):

a) The 10 minute clock shall start after: operators perform the immediate steps in the Emergency Operating Procedures (EOP's) verify scram, other primary system parameters, attempt to restore offsite power and attempt to start the EDG's from the control room per the EOP's.

b) The EDG shall be made available to the nonpowered buses, by demonstration, in 10 minutes, after performing items in section 5.1 (a).

c) The EDG shall be capable of supporting all necessary loads to place units 1 and 2 in hot standby (i.e., safe shutdown) for 4 hours.

d) All EDG loads for station blackout shall be identified in a load study for purposes of identification in the "TOTAL LOSS OF AC POWER EOP".

e) To provide reasonable assurance of success by analysis, the failed state frequency for the shared SBO electrical configuration shall not exceed 1 x 10^{-5} /year.

f) Independence between existing safety-related systems shall be provided by a minimum of two (2) class 1E circuit breaker administratively controlled from the control room.

g) All design criteria used to address SBO modifications shall conform with criteria applicable to the unit's current licensed design bases. To the extent that the licensed design basis commits to regulatory guides, industry design codes and standards, they shall be used.

h) The SBO modifications shall not change the licensed configuration of units 1 and 2.

5.2 Loss of Coolant Accident - Design Bases Accident (LOCA-DBA) shall not be considered: (10 CFR 50.2)

a) The SBO event is assumed to occur without postulating any other concurrent Design Bases Accident (DBA).

b) The SBO event is assumed to occur after a loss of Offsite Power (LOOP) and failure to start two of two EDG's on the affected unit.

c) No other single failures are assumed or postulated during the SBO event for both units. Seismic, flooding and fire induced SBO events shall not be considered concurrent with this design.

d) Non-LOCA loads shall be used as a SBO design bases for EDG loading. Loads identified to be placed on the EDG shall provide assurance that the units can survive the SBO event for four (4) hours. These loads, as a minimum, shall support the following functions:

1) water for decay heat removal

2) HVAC in critical or "dominant area of concern" to assure equipment operability

3) cooling for RCP seals to preclude seal failures

4) fuel oil for EDG operability

5) power for valves required for containment integrity

5.3 Recovery Procedure(s)

a) The procedure(s) shall be revised following implementation of the 10-minute crosstie design to address actions to be taken to mitigate and recover from the SBO event. The procedure shall include containment isolation, AC recovery and use of (1) EDG to mitigate SBO for the required duration.

b) The procedure(s) shall include and address actions taken in the 24-hour period prior to anticipated hurricane force winds.

6.0 COMMITMENT TO NUMARC 87-00

Criteria provided in this document meets all five (5) industry initiatives committed to the NRC by NUMARC 87-00 Section 1.2. In addition, criteria provided in this document conforms to NUMARC 87-00 "Guidelines and Technical Bases for NUMARC Initiatives Addressing Station Blackout at Light Water Reactors".

7.0 REQUIRED SUBMITTALS

7.1 Information submittal, April 17, 1989

a) By use of tables 1 through 8 in Reg Guide 1.155 FPL shall propose a station blackout duration time. The duration time may be modified, with justification, to take credit for the opposite units 2 EDG's via the 10-minute crosstie (to reduce coping time to 4 hours).

b) Description of procedures that will be implemented for SBO events for the duration determined in (a).

c) Description of modifications to the facility to meet requirements of the SBO event and a proposed schedule for implementation.

7.2 Implementation Schedule

A final implementation schedule shall be submitted in accordance with 10 CFR 50.63(c)(4).