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Page 1 of 9 TLOP EMERGENCY PROCEDURE 2-0030143 REV. 1 TLOP

FLORIDA POWER & LIGHT COMPANY ST. LUCIE PLANT UNIT 2 EMERGENCY PROCEDURE NUMBER 2-0030143 REVISION 1

> TOTAL LOSS OF AC POWER (TLOP) MARCH 18, 1983

> > TOTAL NO. OF PAGES 9



EMERGENCY PROCEDURE NUMBER 2-0030143 REVISION 1

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 2A1, 2B1 6.9 KV Bus.

2.2 Loss of power to 2A2, 2A3, 2B2, 2B3 and 2AB 4.16 KV Bus.

3.0 AUTOMATIC ACTIONS:

ACTION

INITIATING EVENT

3.1 Low RCS Flow

3.2 Reactor Trip

3.1 Reactor Trip.

3.2 Turbine Trip/Generator Lockout

3.3 Auxiliary Feedwater Auto Actuation.

3.4 PORV's Operate.

3.4 Hi Pressurizer Press @ 2375 PSLA

3.3 Low S/G Level @ 39%

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EMERGENCY PROCEDURE NUMBER 2-0030143 REVISION 1

4.0 IMMEDIATE OPERATOR ACTIONS:

- 4.1 Ensure all CEA's on bottom, and reactor trip breakers open.
- 4.1 RTGB-204 and top of RPS panels.

2.1

- 4.2 Ensure 2C Auxiliary Feedwater Pump 4.2 RTGB-202. is restoring Steam Generator level.
- 4.3 Close HCV-08-1A and HCV-08-1B 4.3 RTGB-206. (Main Steam Insolation Valves).
- 4.4 Isolate letdown flow by closing 4.4 RTGB-205 V-2515, V-2516, and V-2522 (Letdown isol).

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Page 4 of 9 TLOP

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EMERGENCY PROCEDURE NUMBER 2-0030143 REVISION 1

5.0 SUBSEQUENT ACTIONS:

		CHECK	1.1
5.1	Ensure Generator OCB's and field breaker open.		in the
5.2	Open 2-30102 (S.U. Transformer to 2A1 6.9 KV bus). Open 2-30202 (S.U. Transformer to 2B1 6.9 KV bus). Open 2-20102 (S.U. Transformer to 2A2 4.16 KV bus). Open 2-20302 (S.U. Transformer to 2B2 4.16 KV bus).	<u> </u>	
5.3	Ensure D/G breakers open.		
	2A D/G: 2-20211 2B D/G: 2-20401	<u> </u>	
5.4	Ensure 2AB 4.16KV bus feeders are open:		
	2-20208, 2-20505 (2A3 4.16KV to 2AB 4.16 KV bus). 2-20409, 2-20504 (2B3 4.16KV to 2AB 4.16 KV bus).		
5.5	Open 2-40103 (2A2 4.16KV feed to 2A1 L.C Hi side). Open 2-20110 (2A2 4.16KV feed to 2A1 L.C Lo side). Open 2-40219 (2A3 4.16KV feed to 2A2 L.C Hi side). Open 2-20210 (2A3 4.16KV feed to 2A2 L.C Lo side).	=	
5.6	Open 2-40419 (2B2 4.16KV feed to 2B1 L.C Hi side). Open 2-20310 (2B2 4.16KV feed to 2B1 L.C Lo side). Open 2-40503 (2B3 4.16KV feed to 2B2 L.C Hi side). Open 2-20402 (2B3 4.16KV feed to 2B2 L.C Lo side).		
5.7	Ensure 2AB 480V Load Center Feeders are open:		
	2-40220, 2-40702 (2A2 480V L.C. to 2AB). 2-40706, 2-40504 (2B2 480V L.C. to 2AB).		
5.8	Ensure the main steam isolation bypass valves both indicat closed or dispatch an operator to locally take control and close the valves.	e	
	NOTE: The handwheels on these values turn counterclock direction to close, opposite of most value handwheels i the plant.	wise	
5.9	Open 2A and 2B Atmospheric Dump Valves to reduce Steam Gen pressure below safety valve lift pressure. AC power to co will be lost, so DC operation of the valves will become ne as below:	erator ntrollers cessary	

1. Take desired ADV auto/man switch to MANUAL.

1.04

 Modulate the dump valve open or closed with direct DC power with the open/close control switch.

1.1 1.000

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EMERGENCY PROCEDURE NUMBER 2-0030143 REVISION 1

5.0 SUBSEQUENT ACTIONS: (Cont.)

- 5.10 Close FCV-23-3, 5, 4 and 6 (2A and 2B S/G Blowdown Isol).
- 5.11 Close FCV-23-7 and FCV-23-9 (2A and 2B S/G Blowdown Sample Isol).
- 5.12 Close AOV-5200, 5201, 5203, 5204 and 5205 (RCS Sample Isol).
- 5.13 Implement the Emergency Plan as necessary in accordance with EP 3100021E, "Duties 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.
 - With decreasing RCS pressure, maintain hot leg temperature (Th) at least 20°F below the saturation temperature corresponding to the RCS pressure.
- 5.15 Verify by the following indications that natural circulation flow has been established within approximately 15 minutes after RCP's were stopped.
 - Loop Delta T less than normal full power Delta T (< 46^oF).
 - 2. Cold leg (Tc) constant or decreasing.
 - Hot leg (Th) stable (i.e., not steadily increasing).
- 5.16 If RCS pressure decreases to 1808 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 2C Auxiliary Feedwater Pump is stopped or flow is lost, then:
 - Reinitiate auxiliary feed flow as soon as possible; however, do not exceed a flow rate of 150 GPM per affected Steam Generator.
 - Limit feed flow rate to 150 GPM per affected Steam Generator until continuous feed flow to the affected Steam Generator has been maintained for five minutes.

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EMERGENCY PROCEDURE NUMBER 2-0030143 REVISION 1

5.0 SUBSEQUENT ACTIONS: (Cont.)

- 5.19 Use all available resources to restore one Emergency Diesel generator to operable status.
- 5.20 The following restoration sequence assumes "A" train power supply is restored first.
 - Strip all vital and non-vital load center breakers in preparation for a systematic power restoration.
 - 2. Energize 2A3 4.16KV bus by either:
 - A. Starting 2A D/G and closing D/G breaker. Adjust and maintain voltage and frequency at 4.16KV/60 HERTZ.

or

B. Close 2-20102 (S.U. Transformer to 2A2 4.16KV bus). Close 2-20109 (2A2 4.16KV to 2A3 4.16KV bus). Insert sync plug and close 20209 (2A2 4.16KV to 2A3 4.16KV bus).

3. Energize 2A2 and 2A5 480V load centers:

A. Close 2-20210 2A3 4.16KV 2A2 & 2A5 480V L.C. B. Close 2-40219 Incoming Feeder to 2A2 480V L.C. C. Close 2-40361 Incoming Feeder to 2A5 480V L.C.

- Energize 2AB 480V Load Center by closing 2-40220 and 2-40702 (2A2 480V L.C. feed to 2AB L.C.)
- 5. Energize 2A5, 2A6, 2A7 and 2A8 480V MCC's as follows:

A. Close 2-40203 (2A2 480V L.C. feed to 2A5 MCC).
B. Close 2-40351 (2A5 480V L.C. feed to 2A6 MCC).
C. Close 2-40202 (2A2 480V L.C. feed to 2A7 MCC).
D. Close 2-40352 (2A5 480V L.C. feed to 2A8 MCC).

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Page 7 of 9 TLOP

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EMERGENCY PROCEDURE NUMBER 2-0030143 REVISION 1

5.0 SUBSEQUENT ACTIONS: (Cont.)

5.20 (Cont.)

Energize non-essential sections	of	2A5,	2A6
and 2A8 MCC's as follows:			

A. Close 2-41230 (MCC 2A5 non-essential breaker).

B. Close 2-41325 (MCC 2A6 non-essential breaker).

C. Close 2-41513 (MCC 2A8 non-essential breaker).

- Ensure 2A Battery Charger is "ON LINE" supplying the 2A DC bus by observing 2A DC bus voltage on RTGB-201 to be greater than 120V DC.
- Alight and start emergency cooling water to the Instrument Air Compressor. Start the 2A Instrument Air Compressor and observe restoration of instrument air pressure.
- 9. Start the 2A Charging Pump to reestablish Pressurizer level. When the CCW system has been restored per Step 15, then 2A HPSI Pump can also be started to augment refilling of the Pressurizer.
 - A. Evaluate RCS temperature, pressure, and level instrumentation to determine if a bubble exists other than in the Pressurizer.
 - B. If evaluation confirms, then continue charging to increase RCS pressure.
 - C. When greater than 20°F subcooled, operate Charging and/or HPSI pumps to maintain Pressurizer level greater than 30% level.
- Ensure closed 2-20204 (Pressurizer heater transformer 2A 4.16V feed).
- When Pressurizer level indicates > 30%, energize Pressurizer heaters B-1, B-2, B-3 and P-1.
- Ensure ICW seal water from Unit 1 Domestic Water System is available.

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Page 8 of 9 TLOP

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EMERGENCY PROCEDURE NUMBER 2-0030143 REVISION 1

- 5.0 SUBSEQUENT ACTIONS: (Cont.)
 - 5.20 (Cont.)

		CHECK
13.	Reestablish "A" train Intake Cooling Water System as follows:	10.0000000
	A. Establish seal water.	
	B. Throttle 2A ICW pump discharge valve.	
	C. Start 2A ICW pump; pressurize and vent "A" ICW header.	
	D. After venting, open 2A ICW pump discharge valve.	
14.	Reestablish "A" train Component Cooling Water System	as follows:
	A. Isolate CCW to RCP's by closing HCV-14-1, 2, 6 and 7 (to prevent thermal shocking RCP seals.	
	B. Throttle 2A CCW pump discharge valve.	
	C. Ensure surge tank at normal level.	
	D. Start 2A CCW pump; pressurize and slowly open 2A CCW pump discharge valve.	
15.	Reestablish CVCS letdown to maintain Pressurizer level at normal operating level.	
16.	Commence boration to Cold Shutdown boron concentration.	
17.	Start one set of cavity and support cooling fans.	
18.	Proceed to EOP #2-0120040, "Natural Circulation/Cooldown", Step 5.10, and perform in conjunction with the balance of this procedure.	
19.	Restore balance of secondary plant in accordance with EOP 2-0030140, "Blackout	
	operation .	

1. 1

EMERGENCY PROCEDURE NUMBER 2-0030143 REVISION 1

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 busses. 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 Reactor Coolant System 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. Reactor Coolant System heat removal is accomplished using Atmospheric Pump Valves and the steam-driven Auxiliary Feedwater Pump.

7.0 REFERENCES:

7.1 CE Emergency Procedure Guidelines, CEN-152

7.2 St. Lucie #1 Off-Normal Operating Procedures

8.0 RECORDS REQUIRED:

8.1 Normal Log Entries

9.0 APPROVAL:

Reviewed b	by the F	acility	Review	Group		MAR	CH.	25	em	1985
Approved b	y	e mu	fatter	F. al	Plant	Manager	_A	or, 1	/3, 1	1983
Rev. 1 R	Reviewed	by FRG	Jarra	m er	100	Ma	rch	23		1983
Approved b	y _	O MU	Ved	in	- Plant	Manager	Ap	re.1	13	1983

"LAST PAGE"

EP 2-0030143 REV. Ø1 TOTAL NO. OF PAGES 9 DOCUMENT REVISION DISTRIBUTION SHEET - UNIT II REACTOR COMPANY DOCUMENT TITLE CAS VENT SYSTEM OFF-NORMAL & EMERGENCY OPER. PROCEDURE DOCUMENT FILE NUMBER 2-0/20037 DOCUMENT FILE NUMBER 1 DOCUMENT REVISION NUMBER 1 DOCUMENT DISTRIBUTED ON 4-13-83 DATE

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DATE 4-13-83



FLORIDA POWER & LIGHT COMPANY ST. LUCIE PLANT UNIT NO. 2 EMERGENCY OFF-NORMAL OPERATING PROCEDURE NO. <u>2-0120037</u> REVISION <u>1</u>

1.	TITLE: REACTOR COOLANT GAS VENT SYSTEM	OFF-NORMAL OPERATION		
2.	PREPARED BY: M. G. Altermatt		3/23	19 83
3.	SUBCOMMITTEE REVIEW BY: D. A. Sager	for FP&L PR	3/24	19 83
4.	REVIEWED BY FRG ON:		3/17	19 82
5.	APPROVED BY: C. M. Wethy	Plant Manager	3/17	19 82
6.	REVISION / REVIEWED BY FRG ON:	Mare	125,	19 83
7.	APPROVED BY: JHBour	R Plant Manager Cy.	mil 6	1953

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Page 1 of 13

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FLORIDA POWER & LIGHT COMPANY ST. LUCIE UNIT NO. 2 OFF-NORMAL OPERATING PROCEDURE NUMBER 2-0120037 REVISION 1



1.0 TITLE:

REACTOR COOLANT GAS VENT SYSTEM OFF-NORMAL OPERATION

2.0 REVIEW AND APPROVAL:

Reviewed by Facility Review Grou	P	March 17,	1982
Approved by C. M. Wethy	Plant Manager	March 17,	1982
Revision 1 Reviewed by F R G		March 25	1983
Approved by Athan	Plant Manager	Cynil 6	1983

3.0 PURPOSE AND DISCUSSION:

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- 3.1 The purpose of this procedure is to provide a me. 10d of venting non-condensible gases from the Reactor Coolant System (RCS) which may inhibit core cooling during natural circulation.
- 3.2 Guidance and precautions are also provided for use in determining when to initiate venting, and termination of venting operations.

4.0 SYMPTOMS:

- 4.1 Abnormal RCS conditions such as large variations in Pressurizer level during normal charging and spraying operations have occurred.
- 4.2 Reactor vessel level display less than 100% and reactor vessel head temperatures equal to or greater than saturation temperature, as indicated by QSPDS Display System.
- 4.3 Plant events have occurred (such as Safety Injection Tank [SIT] discharge, rapid RCS cooldown, or core uncovery events) that may result in the presence of a gaseous void in the vessel head.
- 4.4 Loss of Pressurizer pressure control during normal Pressurizer conditions (i.e., bubble established, normal heaters/spray capabilities).

- 5.0 INSTRUCTIONS:
 - 5.1 Immediate Automatic Actions:

None

5.2 Immediate Operator Actions:

None

- 5.3 Subsequent Operator Actions:
 - Note: Asterisked steps are not applicable if safety injection has been initiated.
 - 5.3.1 If any of the above listed symptoms have occurred or it is suspected that there is a non-condensible void formation present in the RCS by other detection means, then any changes being made to the primary system should be terminated and a steady state condition established.
 - 5.3.2 Attempt to recombine any condensible gases by increasing RCS pressure through the use of Pressurizer Back-up heaters. If this step is successful in condensing the gas volume in the vessel head (as indicated by a return to normal readings in those parameters used to determine the presence of the gases) then return to the appropriate operating procedures.
 - 5.3.3 Coordinate with appropriate on-site technical resources. (Technical Support Center [TSC] Supervisor, if manned; Chemistry Department representative if TSC is not manned).
 - 5.3.4 Determine the recommended venting time required per Appendix A, if possible.
 - 5.3.5 Increase the RCS sub-cooling to 50°F + inaccuracies by either pressurizing via Pressurizer Backup heaters or decreasing RCS temperature via dumping steam.
 - 5.3.6 Terminate Containment purge, if in progress. Start all available Containment Fan Coolers.
 - 5.3.7 Ensure that all available Hydrogen Recombiners are in service.
 - 5.3.8 Verify that Chemistry Department is prepared for monitoring the Containment atmosphere for hydrogen via the hydrogen analyzer and/or grab sample.

- 5.0 INSTRUCTIONS: (continued)
 - 5.3 (Cont.)
 - 5.3.9 Increase Pressurizer level to 80-85% in preparation for venting. This should provide inventory to displace approximately 900 ft³ before reaching Pressurizer heater level.
 - 5.3.10 If not already performed, manually block SIAS if the permissive is energized during the venting process.
 - 5.3.11 Restore power to the Reactor Coolant Gas Vent System (RCGVS) solenoid operated valves by inserting fuses.

PLANT	AUXILIAR	Y CONTROL BOARD NO).
SA DC	F1 & F2	SB DC F1 & F2	2
v-	1462	V-1463	
V-	1461	V-1460	
V-	1465	V-1464	
		V-1466	

5.3.12 Monitor Pressurizer pressure and level and QSPDS reactor vessel display during the venting period. Minimize the pressure and level decrease by selective use of Charging Pump combinations and letdown flow.

PRECAUTIONS

- This venting procedure should be used as the primary means to mitigate an inadequate core cooling event.
- Venting operations should be performed prior to the initiation of safety injection flow throttling during a Post-LOCA cooldown and depressurization. During venting "full flow" SI capabilities must be maintained if needed.
- Do not trip any running or start any non-operating Reactor Coolant Pumps during venting operations.
- Containment purge should be isolated to prevent the relase of any radioactive gases to the environment.
- 5. All available Containment air circulation equipment should be started to prevent any hydrogen from forming a gas pocket and to ensure a representative hydrogen concentration is obtained during sampling.
- Appendix A "Venting Time Period" determines the maximum allowable time period for venting which will limit the Containment hydrogen concentration to < 3 volume percent.



Page 4 of 13

ST. LUCIE UNIT 2 OFF-NORMAL OPERATING PROCEDURE NUMBER 2-0120037, REVISION 1 REACTOR COOLANT GAS VENT SYSTEM OFF-NORMAL OPERATION

- 5.0 INSTRUCTIONS: (continued)
 - 5.3 (Cont.)
 - 5.3.13 Destination of the gas when venting is optional. The decision as to which is used should be based on quantity of gas to be released. If recovery and processing to the waste gas system is desired, then vent to quench tank. If quantity is large then vent to containment atmosphere via the goose neck or via accumulator to ventilation system.
 - 5.3.14 Under no circumstances should both vent valves in the venting flowpath be powered from the same electrical train. The reactor vessel head and pressurizer should not be vented simultaneously.
 - 5.3.15 Commence venting as follows:
 - 5.3.15.1 Venting pressurizer and/or reactor vessel head to containment via goose neck.

Open	V1460	to	venc	pressurf	zer	
Open '	V1463	to	vent	reactor	vessel	head
Open	V1465	goo	senec	k isolat	ion to	
comme	nce ve	nti	ng			

5.3.15.2 Venting pressurizer and/or reactor vessel head to quench tank.

Open	V1461	to vent	pres	ssur	izer	1.1
Open	V1462	to vent	: read	ctor	vesse	1 head
Open	₹1464	guench	vent	iso	lation	to
comme	ence ve	enting				

5.3.15.3 Venting pressurizer and/or reactor vessel head to accumulator.

0
 0
- 0
 - 2

Open V1461 to vent pressurizer Open V1462 to vent reactor vessel head Open V1466 accumulator isolation to commence venting

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Page 5 of 13

14

ST. LUCIE UNIT 2 OFF-NORMAL OPERATING PROCEDURE NUMBER 2-0120037, REVISION 1 REACTOR COOLANT GAS VENT SYSTEM OFF-NORMAL OPERATION

5.0 INSTRUCTIONS: (continued)

5.3 (Cont.)

- 5.3.16 Terminate venting by closing destination valve and then closing source valve when:
 - 1. TIME PERIOD DETERMINED IN STEP 5.3.4 IS MET,

OR

2. PRESSURIZER PRESSURE DECREASES BY 200 PSI,

OR

3. PRESSURIZER LEVEL DECREASES BELOW 25% LEVEL,

OR

4. REACTOR COOLANT SUBCOOLING is < 20°F + INACCURACIES,

OR

- THE REACTOR VESSEL HEAD IS REFILLED AS INDICATED BY QSPDS REACTOR VESSEL LEVEL DISPLAY.
- 5.3.17 Re-establish Pressurizer level and evaluate the response and trend of the Pressurizer level to determine if a gas bubble existed in the head. If a gas bubble existed and the venting was terminated prior to the vessel being completely refilled, then return to Step 5.3.13.

Note: If multiple venting operations are required and the Containment hydrogen concentration is > 3 volume percent, then provisions must be made to remove or reduce the volume of hydrogen from the Containment prior to re-opening the reactor vessel head vent.

5.3.18 Return to the appropriate operating procedures following successful completion of venting of the reactor vessel head.

6.0 REFERENCES:

6.1 C-E "Final Report on the Reactor Coolant Gas Vent System".

- 7.0 RECORDS:
 - 7.1 Completed Appendix A work sheets shall be retained in the plant file in accordance with QI-17/PSL-1.



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Page 6 of 13

APPENDIX A

VENTING TIME PERIOD

Page 1 of 3

- 1. During a core uncovery event, there exists the potential for a significant amount of hydrogen to be generated in the reactor core which could be trapped in the reactor vessel and released to the Containment atmosphere during the venting operation. The Containment hydrogen concentration is limited to <4 volume percent to prevent a potential explosive mixture with oxygen; therefore, the amount of hydrogen that can be vented to the Containment is restricted. A maximum allowable time period for venting is determined to limit the Containment hydrogen concentration.</p>
- 2. This guide assumes that Containment conditions are near normal.
- 3. Convert the Containment free-volume to Containment volume at standard temperature and pressure conditions as follows:



b. Temperature in degrees Rankine (° F + 460)

Containment Volume (ft³ @ STP) =

- 4. Determine Containment hydrogen concentration in volume percent units.
 - A. Obtain value from Chemistry Department.
 - B. If there has been no leakage from the RCS into the Containment, assume a value of zero.
 - C. Containment Hydrogen Concentration = %.
- Calculate the maximum hydrogen volume that can be vented to the Containment which will result in a Containment hydrogen concentration of < 3 volume percent.

Maximum Hydrogen Volume (ft³)=(3.0%-Cont.H₂ Conc% [Step 4.C])X(Cont. Vol.@ STP [Step 3]) Maximum Hydrogen Volume (ft³) = . 100%

Page 7 of 13

ST. LUCIE UNIT 2 OFF-NORMAL OPERATING PROCEDURE NUMBER 2-0120037, REVISION 1 REACTOR COOLANT GAS VENT SYSTEM OFF-NORMAL OPERATION

APPENDIX A

Page 2 of 3

- Obtain from Curve #1 the hydrogen flow rate which will result at the predicted RCS pressure at time of venting.
 - A. Predicted RCS pressure = psia
 - B. Hydrogen flow rate = SCFM
- 7. The maximum allowable venting time period which will limit the Containment hydrogen concentration to ≤ 3 volume percent is determined by:

Venting				Max.	H2	Volu	ne	[Step	5]
Venting	period	(min)	1		Н2	Flow	rate	[Step	6]
Venting	period					min	nutes		

17 Page 8 of 13

ST. LUCIE UNIT 2 OFF-NORMAL OPERATING PROCEDURE NUMBER 2-0120037, REVISION 1 REACTOR COOLANT GAS VENT SYSTEM OFF-NORMAL OPERATION

.

APPENDIX A

Page 3 of 3

CURVE #1 HYDROGEN FLOW RATE vs. PRESSURE



Page 9 of 13

ST_LUCIE UNIT 2 OFF-NORMAL OPERATING PROCEDURE NUMBER 2-0120037, REVISION 1 REACTOR COOLANT GAS VENT SYSTEM OFF-NORMAL OPERATION

FIGURE 1

PRESSURIZER VENT HYDROGEN FLOW RATE VS PRESSURE



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FIGURE 2

REACTOR VENT STEAM FLOW RATE vs PRESSURE



FIGURE 3

PRESSURIZER VENT STEAM FLOW RATE vs. PRESSURE



FACT SHEET SOURCES OF NON-CONDENSABLES

	Source (STP)	Mass	
1.	Complete oxidation of clad (hydrogen)	448000 ft3	2514.9 1bsa
2.	Fuel rod fill gas (helium)	1140 ft ³	12.7 1bs ^a
3.	Fission gases (Xe, Kr, I2)	26 ft ³	9.0 1bsa
4.	Safety Injection Tanks (nitrogen)		
	A. Cover gas 51820 ft3	4042.2 1bsb	
	B. Dissolved gas 690 ft ³	53.8 1bsb	
5.	Dissolved in Refueling Water Tank (air)	1360 ft ³	109.7 1bsc
6.	Dissolved in primary coolant (hydrogen)	384 ft ³	2.2 11bs
7.	Pressurizer vapor space (hydrogen)	793 ft ³	4.6 lbs

NOTES:

- a. For breaks requiring the return to natural circulation no fuel rod rupture or oxidation is predicted. Numbers are based on 36924 fuel rods.
- b. For breaks requiring the return to natural circulation the SIT's do not inject water.
- c. The largest amount of liquid injected from the Refueling Water Tank (RWT) during the boiling phase for breaks that return to natural circulation is approximately 40% of the RWT volume.

Pressurizer

Stea

Volume of Top Spherical Head -	134 ft3
Volume of Bottom Spherical Head =	114 ft ³
Volume of Cylinder Section =	1252 ft ³
Level Span = 350 inches	
Volume vs. % Span =	15 ft3 per %
Inches vs. % = 3.6" per %	
Volume Required to Cover Heaters =	266 ft ³
Pressurizer O.D. =	106.5 inches
Pressurizer I.D. =	96 inches
Pressurizer Cross Sectional Area =	50.27 ft ²
m Generators	
Total Volume of U-Tubes =	1147 ft ³
Volume of Steam Generator Cold Planum	= 250 ft ³
Volume of Steam Generator Hot Plenum	= 258 ft3

Page 13 of 13

ST. LUCIE UNIT 2 OFF-NORMAL OPERATING PROCEDURE NUMBER 2-0120037, REVISION 1 REACTOR COOLANT GAS VENT SYSTEM OFF-NORMAL OPERATION

5.4 +

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PRESSURIZER LEVEL (%) VS. VOLUME (Cu Ft) PRESSURIZER at 2250 psia/653° F.

