NRC FORM 195 (2-76)

U.S. NUCLEAR REGULATORY COMMISSION

DOCKET NUMBER 50-335

FILE NUMBER

NRC DISTRIBUTION FOR PART 50 DOCKET MATERIAL

TO: Mr Boyd	FROM: Florida Power & Light Co Miami, Fla R E Uhrig	DATE OF DOCUMENT 4-1-76 DATE RECEIVED 4-12-76

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DESCRIPTION

Ltr trans the following:

PLANT NAME: St Lucie

ENCLOSURE

Information concerning Preoperational testing per Reg Guide 1.68.....

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ACKNOWLEDGED

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CONTROL NUMBER

3691

P.O. BOX 3100 MIAMI, FLORIDA 33101

FLORIDA POWER & LIGHT COMPANY

April 1, 1976
L-76-151

Director of Nuclear Reactor Regulation
Attention: Mr. Roger S. Boyd, Director
Division of Project Management
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Mr. Boyd:

Re: St. Lucie Unit 1
Docket No. 50-335
Preoperational Testing per
Regulatory Guide 1.68

To satisfy the requirements of item B.2 of Enclosure 1 to Facility Operating License DPR-67, Florida Power and Light Company (FPL) hereby submits a report which demonstrates that tests to be conducted during power ascension testing meet the intent of sections D.1.c and D.1.d of Appendix A to Regulatory Guide 1.68.

Regulatory Guide 1.68 Appendix A Section D.1.c calls for a test demonstrating "plant response to load swings, including response to automatic dispatcher control, if applicable (50%, 100%)." (Automatic dispatcher control is not applicable to St. Lucie Unit 1.) Section D.1.d calls for a test demonstrating "automatic control system checkout - steam generator level control, automatic rod control, turbine control (25%)."

We will satisfy the requirements of Sections D.1.c and D.1.d by performing tests in accordance with revised preoperational test procedure no. 1400084, entitled "Automatic Control System Checkout, Steam Generator Level Control, CEA Regulating System, Automatic Turbine Control, and Load Swing Test." In addition, preoperational test procedure no. 0110090, entitled "10% Load Reduction - Turbine Runback Test," will provide further data demonstrating plant response during a load swing.

Our NSSS vendor has recommended that, due to fuel preconditioning considerations, the performance of these tests take place after the 100% test plateau has been reached. Therefore, we do not plan to conduct the tests during the initial ascent to 100% rated power. It should be noted that, during the initial power ascension, data will be taken every four (4) hours in accordance with preoperational procedure no. 0010180, which is the Power Ascension Sequencing Document. This data will demonstrate plant response during transients and normal maneuvering and reveal problems which may be occuring. In addition, plant control systems are monitored during test trips scheduled for the initial ascent to 100% power.

3691

Preoperational test no. 1400084 is to be performed at 25%, 50%, and 90% rated power. The test demonstrates the automatic capabilities of the CEA regulating system, the steam generator feedwater control system, and the turbine control system and documents that all three systems give adequate and stable responses during steady state and expected transient conditions. Strip chart recorders are utilized on these and other systems so that the plant response to load swings of up to 10% can be analyzed. Preoperational test no. 0110090 gives us an additional 10% load swing at 80% rated power where brush recorders are used to analyze plant response. We consider these tests and the consequent data to satisfy Regulatory Guide 1.68 Appendix A sections D.1.c and D.1.d.

Copies of preoperational test procedures 1400084, 0110090, and 0010180 are attached as Attachments 1, 2, and 3, respectively.

Very truly yours,

Robert E. Uhrig
Vice President

REU:MAS:sb

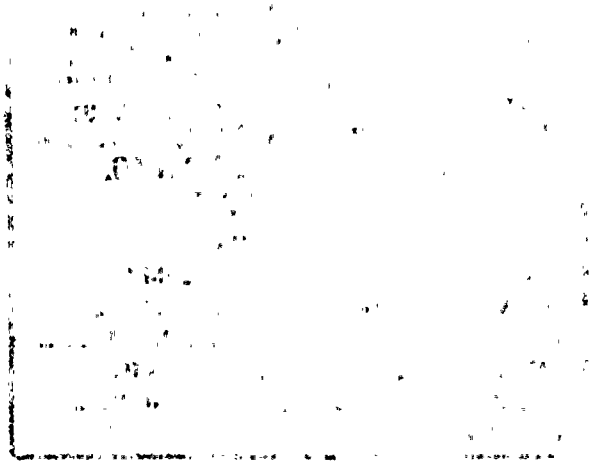
cc: Mr. Norman C. Moseley (w/o attachments)
Jack R. Newman, Esquire (w/o attachments)

FLORIDA POWER & LIGHT COMPANY
ST. LUCIE PLANT UNIT #1

PREOPERATIONAL TEST PROCEDURE NO. 0010180
REVISION 0

1. TITLE: POWER ASCENSION SEQUENCING DOCUMENT
2. PREPARED BY: Power Resources. (R. H. Cantey) Feb. 11 19 76
3. REVIEWED BY: FOR 19
4. SUBCOMMITTEE REVIEW BY: P B Nillon 2-20 19 76
5. REVIEWED BY FRG ON: FEBRUARY 21 19 76
6. APPROVED BY: K N Harris FEBRUARY 23 19 76
7. REVISION REVIEWED BY FRG ON: 19
8. APPROVED BY: PLANT MANAGER 19
9. TEST CONDUCTED BY:
10. RESULTS REVIEWED BY: FOR 19
11. TEST RESULTS REVIEWED BY: 19
12. TEST RESULTS REVIEWED BY FRG, DEFICIENCIES CORRECTED, AND ACCEPTANCE RECOMMENDED 19
13. RESULTS ACCEPTED AND APPROVED BY: Plant Manager 19

ATTACHMENT 3



FLORIDA POWER & LIGHT COMPANY
ST. LUCIE PLANT UNIT NO. 1

PREOPERATIONAL TEST PROCEDURE TRANSMITTAL

Signature below signifies receipt of draft/issue/completed copy of preoperational procedure number: 0010180 REV 0,

titled: POWER ASCENSION SEQUENCING DOCUMENT.

For Ebasco _____ Date _____

For CE _____ Date _____

For Westinghouse _____ Date _____

FOR INFORMATION ONLY

THIS DOCUMENT IS NOT CONTROLLED. BEFORE USE, VERIFY INFORMATION WITH A CONTROLLED DOCUMENT

FLORIDA POWER AND LIGHT CO.
POWER RESOURCES
ST. LUCIE PLANT

DATE VERIFIED _____ INITIAL _____
DATE VERIFIED _____ INITIAL _____
DATE VERIFIED _____ INITIAL _____
DATE VERIFIED _____ INITIAL _____
DATE VERIFIED _____ INITIAL _____
DATE VERIFIED _____ INITIAL _____

Transmitted By: _____

FLORIDA POWER & LIGHT COMPANY
ST. LUCIE PLANT UNIT NO. 1
PREOPERATIONAL TEST PROCEDURE NO. 0010180

1.0 Title:

POWER ASCENSION SEQUENCING DOCUMENT

2.0 Purpose:

The purpose of this procedure is to provide a mechanism to safely progress from low power to full power while obtaining plant performance data to verify design parameters and demonstrate conformance with Technical Specifications. It also demonstrates with reasonable assurance that the plant is capable of withstanding the accidents and transients analyzed in the FSAR.

3.0 References:

3.1 Florida Power & Light Company, St. Lucie Plant Unit #1 Final Safety Analysis Report (FSAR)

3.2 Standard Tech Specs App. A&B St. Lucie Unit #1

3.3 Preoperational Test Procedures

Steam Bypass Valve Test preop #0810080
Main Generator Excitation System Initial Operation preop #0910085
Turbine Overspeed Trip Test preop #2100087

Simulated CEA Ejection Test - 50% Power preop #0110087
Generator Trip with Shutdown Outside Control Room - preop #1400093
20% Power Trip & Auto Transfer Test preop #0910081
Partial Loss of Flow - preop #0120081
Power Defect Measurement - preop #3200084
Total Loss of Flow/Natural Recirc. Test - preop #0120084
Loss of Offsite Power - preop #2100091
Secondary Sampling Syst. Initial Startup & Funct.Test preop #1730080
Generator Trip - preop #2100089
Turbine Trip - preop #2100090
Automatic Control System Checkout - preop #1400084
Static CEA Drop Test - preop #0110088
Dynamic CEA Insertion Test - preop #0110089
10% Load Reduction - Turbine Runback Test - preop #0110090
Turbine Generator/NSSS Acceptance Run- preop #2100082
Power Range Sub-channel calibration - preop #3200080

3.4 Operating Procedures
Nuclear & ΔT Power Calibration - OP #1200051

Reactor Startup - OP #0030122
Load Follow Guidelines - OP #0030123
Calibration of Fixed Incore Detector Alarm Setpoints - OP #3200050
Incore-Excore Flux Monitor Correlation #1200021
At Power Surveillance of Moderator Temperature Coefficient - OP #3200057
Fast Recovery to Criticality Following a Reactor Trip - OP #0030220
Effluent Monitor Tests C77

PREOPERATIONAL TEST PROCEDURE NO. 0010180
POWER ASCENSION SEQUENCING DOCUMENT

3.0 References: (Cont.)

3.5 Chemical and Radiochemical Analysis, preop #3400081

3.6 Radiation Survey and Shielding Effectiveness, preop #3300081

4.0 Prerequisites:

4.1 Low power physics testing has been successfully completed as defined by Facility Review Group (FRG).

Verified by_____ Date_____

4.2 PWT is filled to capacity or makeup is in progress.

Verified by_____ Date_____

4.3 Holdup tanks are at minimum level or processing is in progress in preparation for receiving large quantities of liquid waste due to borations and dilutions.

Verified by_____ Date_____

PREOPERATIONAL TEST PROCEDURE NO. 0010180
POWER ASCENSION SEQUENCING DOCUMENT

5.0 Instrumentation:

As specified in appendices to this procedure, pre-start check off list, and the minimum instrumentation list as applicable. NOTE: Prior to performing any appendix, verify that the instrumentation section is signed off.

6.0 Related System Status:

6.1 The reactor is critical with CEDS in manual control made All CEA groups are full out with the exception of group 7 controlling. Power level is less than 10^{-2}% power as seen by the WR log channels.

Verified by_____Date_____

6.2 RCS temperature is being maintained at 532F by RCP heat and operation of turbine bypass valves or atmospheric dump valves,

Verified by_____Date_____

6.3 Pressurizer pressure control is maintaining RCS pressure at 2250 psia

Verified by_____Date_____

6.4 Pressurizer level control is maintaining normal level.

Verified by_____Date_____

6.5 Steam generator level is being maintained within the normal operating band.

Verified by_____Date_____

PREOPERATIONAL TEST PROCEDURE NO. 0010180
POWER ASCENSION SEQUENCING DOCUMENT

7.0 Special Materials and Equipment:

As specified in appendices to this procedure.

8.0 Temporary Connections:

As specified in appendices to this procedure.

9.0 Limits and Precautions:

9.1 As specified in appendices to this procedure, applicable operating procedures.

9.2 Steps of this procedure are to be performed in order except as noted.* Chemical and Radiochemical analysis and radiation and shielding effectiveness, and APD and SA baseline monitoring may be performed at any time during the specified plateaus.

9.3 Checks for unexpected radioactivity in process systems and effluents shall be made in accordance with chemistry procedures throughout power ascension test program.

9.4 RCS leakage shall be monitored in accordance with tech specs throughout power ascension test program.

9.5 Power level increases should be made in accordance with the following guidelines:

Category I - Initial increase

a) All rods out (ARO)
b) by boration/dilution control
c) <3%/hour instantaneous (except during turbine roll)
<10%/day average

Category II - Subsequent increases

a) Group 7 rods $\geq$ 69 inches
b) $\leq$10%/hour instantaneous
c) continuous operation at or above that power for a nominal 24 hours. (24 hours may be reduced with concurrence of CE & FP&L)

Power level increase shall not exceed the limits of OP 0030123 - Load Follow Guidelines.

9.6 General instrument response checks shall be made during initial increases in power. (Using App. A & B)

*Deviations to this order may be made with approval of the FRG.

10.0 Acceptance Criteria:

10.1 As specified in appendices to this procedure.

10.2 FSAR values of F_Q (2.71) and $F\Delta H$ (2.02) are not exceeded (Step 12.61)

11.0 Records Required:

11.1 A copy of this procedure and all appendices completed during this test, with each sign-off initialed and dated by a Florida Power & Light Company designated witness shall be retained in the plant files.

NOTE 1: Data should be taken IAW Appendix A & Appendix B every four (4) hours throughout this procedure while the reactor is at power.

NOTE 2: All power levels mentioned are reactor power unless otherwise noted.

NOTE 3: Special test exceptions 3.10.1 - 3.10.5 may be invoked for the following technical specifications:
3.1.1.4
3.1.3.1
3.1.3.2
3.1.3.5
3.1.3.6
3.2.2
3.2.3

NOTE 4: The following abbreviations are used in the procedure.

IAW - in accordance with
ARO - all rods out
HZP - hot zero power
OP - Operating procedure
APD - amplitude probability distribution
SA - spectrum analysis
MTC - moderator temperature coefficient
PDIL - power dependent insertion limit
SAF - shape annealing factor
IVM - internal vibration monitoring (includes APD & SA)
ASI - axial shape index
NPS - Nuclear Plant Supervisor
F_Q - Nuclear heat flux factor
$F_{\Delta H}$ - hot channel factor

NOTE 5: Increasing or decreasing turbine load should be done IAW OP 0030124 Turbine Startup - Zero to Full Load.

NOTE 6: During initial ascensions to power maximum use should be made of Turbine Load Limit Control.

NOTE 7: Throughout this procedure power levels are nominal $\pm$ 3%, pressures are nominal $\pm$ 15 psi, temperatures nominal $\pm$ 2 F. Once an initial value is reached within these ranges, every effort should be made to remain at that initial value.

12.0 Detailed Procedure:

12.1 Increase power to a nominal 5% IAW OP 0030123 and do radiation survey and shielding effectiveness IAW Preop 3300081.

Verified by_____ Date_____

12.2 Commence increasing power to a nominal 14% IAW OP 0030123. During this increase, perform turbine bypass valve test IAW Preop 0810080. NOTE: During this increase, use Appendix A and B for instrument checks to determine adequate inst. response.

Verified by_____ Date_____

12.3 Start up turbine IAW OP 0030124 - Turbine Start up Zero to Full Load - take date IAW Preop 210086 - Initial Turbine Roll @ 1800 rpm.
Verified by_____ Date_____

12.4 Hold power at 14% and perform the following tests:

12.4.1 Main Generator Excitation System initial operation IAW Preop 0910085.

Verified by_____ Date_____

12.4.2 Turbine Overspeed Trip Test IAW Preop 2100087.

Verified by_____ Date_____

NOTE: In order to achieve 90 MWe on the generator for the 8 hour run called for in 4.1 of Preop 2100087, the reactor power may have to be increased. If this is the case, then immediately prior to performing overspeed trip, decrease reactor power to <15% as read on 3 out of 4 channels on the RPS. This is because if 2 channels read >15% power on the RPS, a turbine trip will cause a reactor trip. Care should be taken to avoid this situation.

12.5 Put turbine back on the line IAW OP 0030124.

Verified by_____ Date_____

12.6 Increase power to 20% IAW OP 0030123.

Verified by_____ Date_____

12.0 Detailed Procedure: (cont.)

12.7 Hold power at 20% and perform the following:

12.7.1 Calorimetric using DDPS or OP 3200020 Primary System Manual Calorimetric at beginning and end of hold.

Begin Verified by_____ Date_____

End Verified by_____ Date_____

12.7.2 Nuclear and ΔT calibration IAW OP 1200051 at beginning and end of hold.

Begin Verified by_____ Date_____

End Verified by_____ Date_____

12.7.3 Snapshot log IAW _____ at beginning and end of hold.

Begin Verified by_____ Date_____

End Verified by_____ Date_____

12.7.4 Chemical and Radiochemical analysis IAW Preop 3400081.

Verified by_____ Date_____

12.7.5 Radiation survey and shielding effectiveness IAW Preop 3300081.

Verified by_____ Date_____

12.7.6 APD and SA baseline monitoring.

Verified by_____ Date_____

12.7.7 Establish equilibrium Xenon and perform Preop 3200080 - Power Range Sub-channel Calibration.

Verified by_____ Date_____

NOTE: Take end data called for in 12.7.1, 12.7.2 and 12.7.3 at this point.

12.8 Trip reactor IAW Preop 0910081 - 20% Power Trip and Auto Transfer Test.

Verified by_____ Date_____

12.0 Detailed Procedure: (cont.)

12.9 After trip and before returning to critical perform preliminary adjustment of incore alarm setpoints IAW OP 3200050 (Use snapshot log from 12.7.3).

Verified by_____Date_____

12.10 Return to critical, HZP, IAW OP 0030122 - Reactor Startup.

Verified by_____Date_____

12.11 Return to 20% power IAW OP 0030123 (Category II of Section 9.5 of this procedure)

Verified by_____Date_____

FRG approval to ascent to 50%.

Verified by_____Date_____

12.12 Increase power to 30% IAW OP 0030123 (Category I of Section 9.5 of this procedure).

Verified by_____Date_____

12.13 Hold power at 30% to satisfy Section 9.5 of this procedure and perform the following at the beginning and end of hold:

12.13.1 Calorimetric using DDPS or OP 3200020

Begin Verified by_____Date_____

End Verified by_____Date_____

12.13.2 Nuclear and ΔT power calibration IAW 1200051.

Begin Verified by_____Date_____

End Verified by_____Date_____

12.13.3 Snapshot log IAW _____

Begin Verified by_____Date_____

End Verified by_____Date_____

12.14 Increase power to 40% IAW OP 0030123 (Category I of Section 9.5 of this procedure).

Verified by_____Date_____

12.0 Detailed Procedure: (cont.)

12.15 Hold power at 40% to satisfy Section 9.5 of this procedure and perform the following at the beginning and end of hold.

12.15.1 Calorimetric using DDPS or OP 3200020

Begin Verified by_____Date_____

End Verified by_____Date_____

12.15.2 Nuclear and ΔT power calibration IAW OP 1200051.

Begin Verified by_____Date_____

End Verified by_____Date_____

12.15.3 Snapshot log IAW _____

Begin Verified by_____Date_____

End Verified by_____Date_____

12.16 Increase power to 50% IAW OP 0030123 (Category I of Section 9.5 of this procedure).

Verified by_____Date_____

12.17 Hold power at 50% and perform the following:

12.17.1. Calorimetric using DDPS (if available) and OP 3200020 at beginning and end of hold.

Begin Verified by_____Date_____

End Verified by_____Date_____

12.17.2 Nuclear and ΔT power calibration IAW OP 1200051 at beginning and end of hold.

Begin Verified by_____Date_____

End Verified by_____Date_____

12.17.3 Snapshot log IAW _____ at beginning and end of hold.

Begin Verified by_____Date_____

End Verified by_____Date_____

12.0 Detailed Procedure: (cont.)

12.17 (cont.)

12.17.4 Radiation survey and shielding effectiveness IAW Preop 3300081.

Verified by_____Date_____

12.17.5 Chemical and radiochemical analysis IAW Preop 3400081.

Verified by_____Date_____

12.17.6 Reset incore alarm setpoints IAW OP 3200050 (Use snapshot log taken at beginning of 50% hold).

Verified By_____Date_____

12.17.7 Calculate total radial peaking factor (F_r^T) IAW OP 3200054 using snapshot log taken at beginning of 50% hold.

Verified by_____Date_____

12.17.8 APD and SA base line monitoring.

Verified by_____Date_____

12.17.9 Establish equilibrium Xenon concentration & distribution and induce free Xenon oscillation to measure SAF's IAW preop _____

Verified by_____Date_____

12.17.10 Input measured SAF's (from 12.17.9) into the NIS IAW Preop 3200080.

Verified by_____Date_____

12.17.11 Dilute group 7 rods to 100 $\pm$ 3 inches while maintaining reactor power constant.

Verified by_____Date_____

12.17.12 Establish equilibrium Xenon concentration and distribution for measurement of MTC.

Verified by_____Date_____

12.0 Detailed Procedure: (cont.)

12.17 (Cont.)

12.17.13 Perform at power determination of MTC and power coefficient IAW OP 3200051.

Verified by_____Date_____

12.17.14 Maintain power constant and dilute group 7 to 100% PDIL, establish equilibrium Xenon and perform simulated CEA ejection test IAW Preop 0110087.

Verified by_____Date_____

12.17.15 Borate group 7 to ARO while maintaining reactor power constant.

Verified by_____Date_____

NOTE: At this point, take end data called for in 12.17.1, 12.17.2 and 12.17.3.

12.17.16 Perform generator trip with shutdown outside control room IAW Preop 1400093.

Verified by_____Date_____

12.18 Return to critical, HZP, IAW OP 0030122

Verified by_____Date_____

12.19 Return to 50% power IAW OP 0030123 (Category II of Section 9.5 of this procedure.

Verified by_____Date_____

FRG approval to ascend to 80%.

Verified by_____Date_____

12.20 Increase power to 60% IAW OP 0030123 (Category I of Section 9.5 of this procedure).

Verified by_____Date_____

12.0 Detailed Procedure: (cont.)

12.21 Hold power at 60% to satisfy Section 9.5 of this procedure and perform the following at beginning and end of hold.

12.21.1 Calorimetric using DDPS or OP 3200020.

Begin Verified by_____Date_____

End Verified by_____Date_____

12.21.2 Nuclear and ΔT power calibration IAW OP 1200051.

Begin Verified by_____Date_____

End Verified by_____Date_____

12.21.3 Snapshot log IAW _____

Begin Verified by_____Date_____

End Verified by_____Date_____

12.22 Increase power to 70% IAW OP 0030123 (Category I of Section 9.5 of this procedure).

Verified by_____Date_____

12.23 Perform APP A of Preop 0110090 - 10% Load Reduction - Turbine Runback Test at a nominal 70% Power.

Verified by_____Date_____

12.24 Hold power at 70% to satisfy section 9.5 of this procedure and perform the following at the beginning and end of hold.

12.24.1 Calorimetric using DDPS or OP 3200020

Begin Verified_____Date_____

End Verified_____Date_____

12.24.2 Nuclear and ΔT power calibration IAW of 1200051,

Begin Verified_____Date_____

End Verified_____Date_____

12.0 Detailed Procedure: (cont.)

12.24 (cont.)

12.24.3 Snapshot log IAW _____

Begin Verified by_____ Date_____

End Verified by_____ Date_____

12.25 Commence increasing power to 80% IAW 0030123 (Category I of Section 9.5 of this procedure). At 75%, perform turbine control valve tests IAW Section 8.1 of Preop 0030150.

Verified by_____ Date_____

12.26 Hold power at 80% and perform the following:

NOTE: The 80% plateau has one scheduled trip (partial loss of flow test preop 0120081). If no inadvertent trips occur at the 80% plateau then Specil Test Procedure 0700080A - S/G Feedwater Hammer Test shall be performed following the scheduled trip. If any unscheduled trip occurs at the 80% plateau, the NPS shall determine if conditions enable the performance of the water hammer test. If so, it will be done at that time and a power defect test shall be done following the partial loss of flow trip.

12.26.1 Calorimetric using DDPS or OP 3200020 at beginning and end of hold.

Begin Verified by_____ Date_____

End Verified by_____ Date_____

12.26.2 Nuclear and ΔT power calibration at beginning and end of hold.

Begin Verified by_____ Date_____

End Verified by_____ Date_____

12.26.3 Snapshot log IAW _____ at beginning and end of hold.

Begin Verified by_____ Date_____

End Verified by_____ Date_____

PREOPERATIONAL PROCEDURE NO. 0010180, REV. 0
POWER ASCENSION SEQUENCING DOCUMENT

12.0 Detailed Procedure: (cont.)

12.26.4 Chemical and radiochemical analysis IAW Preop 3400081.

Verified by_____Date_____

12.26.5 APD & SA base line monitoring

Verified by_____Date_____

NOTE: If water hammer test has been performed go to step 12.26.6. If water hammer test has not been performed, go to 12.26.7. Ensure end data of 12.26.1, 12.26.2, and 12.26.3 has been taken prior to trip.

12.26.6 Establish equilibrium Xenon concentration in preparation for power defect measurement and prepare for rapid return to critical IAW 0030220.

Verified by_____Date_____

12.26.7 Perform partial loss of flow IAW Preop 0120081.

Verified by_____Date_____

NOTE: If water hammer test has been performed go to 12.26.8 followed by 12.28. If water hammer test has not been performed go to 12.26.9, followed by 12.27.

12.26.8 Perform rapid return to critical IAW 0030220 and perform power defect measurement IAW Preop 0120081.

Verified by_____Date_____

12.26.9 Perform S/G water hammer test IAW Special Test Procedure IAW 0700080 A.

Verified by_____Date_____

12.27 Return to critical HZP IAW OP 0030122.

Verified by_____Date_____

PREOPERATIONAL PROCEDURE NO. 0010180, REV. 0
POWER ASCENSION SEQUENCING DOCUMENT

12.0 Detailed Procedure: (cont.)

12.28 Return to 40% IAW OP #0030123 (cat. II of sect. 9.5).
Verified by_____Date_____

12.29 Perform total loss of flow/natural circ. test IAW preop #0120084.
Verified by_____Date_____

12.30 Return to critical and raise power to 20% (cat. II of sect. 9.5)
Verified by_____Date_____

12.31 Perform loss of off-site power IAW preop #2100091.
Verified by_____Date_____

12.32 Return to critical HZP, IAW OP #0030122.
Verified by_____Date_____

FRG approval to ascend ≥ 98%. Verified by_____Date_____

12.33 Return to 80% in accordance with OP #0030123 (cat II of sect. 9.5).
Verified by_____Date_____

NOTE: Prior to reaching 85% reinstate tech specs suspended in Note 3.

12.34 Increase power to 90% IAW OP #0030123 (cat I of sect. 9.5)
Verified by_____Date_____

12.35 Hold power at 90% and perform the following at the beginning and end of hold:

12.35.1 Calorimetric using DDPS or OP #_____at beginning and end of hold.
Begin Verified by_____Date_____
End Verified by_____Date_____

12.35.2 Nuclear & ΔT power calibration IAW OP #1200051.
Begin Verified by_____Date_____
End Verified by_____Date_____

12.35.3 Snapshot log IAW _____.
Begin Verified by_____Date_____
End Verified by_____Date_____

12.36 Check ASI calibration IAW OP #1200021 and incore alarm setpoints IAW OP #3200050.
Verified by_____Date_____

PREOPERATIONAL PROCEDURE NO. 0010180, REV. 0
POWER ASCENSION SEQUENCING DOCUMENT

12.0 Detailed Procedure (cont.)

12.37 Increase power $\geq$ 98% (cat I. sect. 9.5).
Verified by_____ Date_____

12.38 Hold power $\geq$ 98% and perform the following at the beginning and end of hold:

12.38.1 Calorimetric using DDPS or OP #_____ at beginning and end of hold.
Begin Verified by_____ Date_____
End Verified by_____ Date_____

12.3822 Nuclear & ΔT power calibration IAW OP #1200051.
Begin Verified by_____ Date_____
End Verified by_____ Date_____

12.38.3 Snapshot log IAW _____.
Begin Verified by_____ Date_____
End Verified by_____ Date_____

12.39 Perform chemical and radiochemical analysis IAW preop #3400081.
Verified by_____ Date_____

12.40 Perform radiation survey & shielding effectiveness IAW preop #3300081.
Verified by_____ Date_____

12.41 Effluent monitors testing IAW chemistry procedures.
Verified by_____ Date_____

12.42 Baseline monitoring for APD and SA.
Verified by_____ Date_____

12.43 Maintain power const. and dilute group 7 rods into 100 $\pm$ 3 inches in preparation for MTC measurement IAW Step 8.1 thru 8.4 of OP 3200051.

Verified by_____ Date_____

12.44 Establish equilibrium Xenon concentration and distribution in preparation for for MTC and power coefficient measurement.
NOTE: This will take approximately 72 hours.

Verified by_____ Date_____

12.45 Perform MTC Test and power coefficient measurement IAW OP 3200051.

Verified by_____ Date_____

12.0 Detailed Procedure: (cont.)

12.46 Borate ARO while maintaining reactor power constant.

Verified by_____Date_____

12.47 Prepare for rapid return to critical for power defect Xenon follow test, IAW OP #0030220.

Verified by_____Date_____

NOTE: Take end data of 12.38.1, 12.38.2 and 12.38.3 at this point.

12.48 Perform turbine trip IAW preop #2100090.
Verified by_____Date_____

12.49 Perform rapid return to critical, HZP IAW OP #0030220.
Verified by_____Date_____

12.50 Perform power defect measurement/xenon follow IAW preop #3200084.

Verified by_____Date_____

12.51 Return power ≥ 98% IAW OP #0030123.
Verified by_____Date_____

12.52 Perform generator trip IAW #2100089. NOTE: This test may be performed out of sequence.
Verified by_____Date_____

12.53 Return to critical, HZP, IAW OP #0030122
Verified by_____Date_____

12.54 Return to 25% IAW OP #0030123.
Verified by_____Date_____

12.55 Perform automatic control system checkout IAW preop #1400084.
Verified by_____Date_____

12.56 Return to 50% power IAW OP #0030123.
Verified by_____Date_____

12.57 Establish equilibrium xenon.
Verified by_____Date_____

12.58 Perform static CEA drop test IAW preop #0110088.
Verified by_____Date_____

12.0 Detailed Procedure: (cont.)

12.59 Perform dynamic CEAinsertion test IAW preop #0110089.
Verified by_____Date_____

12.60 Return to 85% IAW OP #0030123.
Verified by_____Date_____

12.61 Analyze snapshot logs between steps 12.15.3 and 12.35.3 inclusive to verify FSAR limiting valves for F_Q and $F\Delta H$.
Verified by_____Date_____

12.62 Perform 10% Load Reduction - Turbine Runback test IAW preop #0110000.
Verified by_____Date_____

12.63 Return to 98% IAW OP #0030123.
Verified by_____Date_____

12.64 Perform turbine generator/NSSS acceptance/run IAW preop #2100082.
Verified by_____Date_____

PREOPERATIONAL TEST PROCEDURE NO. 0010180
POWER ASCENSION SEQUENCING DOCUMENT

13.0 Deviations from Procedure:

APPENDIX "A"

LINEAR POWER RANGE SAFETY METERS		
Channel		Meter Reading
A	Sub A	%
	Sub B	%
B	Sub A	%
	Sub B	%
C	Sub A	%
	Sub B	%
D	Sub A	%
	Sub B	%

LINEAR POWER RANGE CONTROL METERS		
1	Sub A	%
	Sub B	%
2	Sub A	%
	Sub B	%

CEA POSITION	
A	
B	
1	
2	
3	
4	
5	
6	
7	
P1	
P2	

T-avg	
TR-1111	°F
TR-1121	°F

Calorimetric	%
Generator Power	MW
Chemical Boron Conc.	PPM
Time & Date of Analysis	
Boronometer Boron Conc.	PPM

Snapshot ID No.

R.P.S.Readings	A	B	C	D
ΔT Power				
Nuclear Power				
T-hot				
T-cold				
ASI Internal				
ASI External				

Time

Date

Verified by

ESSS TEST DATA RECORD

NAME: _____

DATE: _____ TIME: _____

Channel	A	B	C	D
Lower (%) (Meter Lower)				
Upper (%) (Meter Upper)				
ΔT PWR (%) (DVM)				
NUC PWR (%) (DVM)				
T_{cold} (°F) (DVM)				
T_{hot} (°F) (DVM)				
ASI (Y)				
NUC PWR Pot Set				
ΔT PWR Pot Set				
WIDE RANGE Channels				

CONTROL CHANNEL SUBCHANNEL

	Left (lower)	Right (upper)
C-A	____ %	____ %
C-B	____ %	____ %

VCT TEMP (TI-2225) _____ °F
LETDOWN FLOW (FI-2202 _____ GPM

VCT LEVEL (LIC-2226) _____ %
CHARGING FLOW (FI-2212 _____ GPM

PRESSURIZER PRESSURE, psia

PI-1102A _____
PI-1102B _____
PI-1102C _____
PI-1102D _____

TM/LO, psia

PI-1102A _____
PI-1102B _____
PI-1102C _____
PI-1102D _____

PRESSURIZER LEVEL, %

LR-1110 _____
LIC-1110X _____
LIC-110Y _____

RCP CURRENT, amperes

AMI 101 _____
AMI 105 _____
AMI 107 _____
AMI 113 _____

NSSS TEST DATA RECORD
(Cont'd)

Date

STEAM GENERATOR DIFFERENTIAL PRESSURE, psid

STEAM GENERATOR 1A	STEAM GENERATOR 1B	% RCS FLOW
PDI-1101A	PDI-1101A	PDI-1101A
PDI-1101B	PDI-1101B	PDI-1101B
PDI-1101C	PDI-1101C	PDI-1101C
PDI-1101D	PDI-1101D	PDI-1101D

RCS TEMPERATURE, °F

T_{Hot} - Loop 1A

TI-1111X	°F	TI-1102A	°F
TI-1121X	°F	TI-1102B	°F
TI-1111Y	°F	TI-1102C	°F
TI-1121Y	°F	TI-1102D	°F

T_{Hot} - Loop 1B

TI-1102A	°F
TI-1102B	°F
TI-1102C	°F
TI-1102D	°F

T_{cold} - Loop 1A2

TR-1115	°F	TI-1102A	°F
TR-1125	°F	TI-1102C	°F

T_{cold} - Loop 1B1

TI-1102A	°F
TI-1102C	°F

T_{cold} - Loop 1A1

		TI-1102B	°F
		TI-1102D	°F

T_{cold} - Loop 1B2

TI-1102B	°F
TI-1102D	°F

Makeup Water Flow Totalizer (FQI-2210X) _____ Gal.
Boric Acid Flow Totalizer (FQI-2210Y) _____ Gal.
Process Radiation Monitor (RR-2202) _____ CPM
Boron Concentration Recorder (AR-2203) _____ ppm
Boron Concentration (LAB) _____ ppm
Time of Sample _____

COMPUTER POINTS:
Calorimetric
Power _____ MWTH

Gen. Output
_____ MW_E

CEA GROUP POSITION, INCHES-WITHDRAWAL

A_____, B_____, 1_____, 2_____, 3_____, 4_____, 5_____

P1_____, P2_____, 6_____, 7_____. CEA 7-1 _____, CEA 7-59 _____

NSSS TEST DATA RECORD
(Cont'd)

_____
Date

S.G. 1A Pressure, psig	S.G. 1B Pressure, psig	S.G. 1A Level, %	S.G. 1B Level, %
PI-8013A_____	PI-8023A_____	LI-9013A_____	LI-9023A_____
PI-8013B_____	PI-8023B_____	LI-9013B_____	LI-9023B_____
PI-8013C_____	PI-8023C_____	LI-9013C_____	LI-9023C_____
PI-9013D_____	PI-9023D_____	LI-9013D_____	LI-9023C_____

SG1A Steam Flow (FI-08-1A)_____lb/hr SG1B Steam Flow (FI-08-1B_____lb/hr
SG1A Feed Flow (FI-09-1A)_____lb/hr SG1B Feed Flow (FI-09-1B_____lb/hr

SG1A Feed Control Valve (FIC-9011_____% SG1B Feed Control Valve (FIC-9021)_____%
SG Feedwater Temp (TE-09-5A) _____°F SG Feedwater Press (PI-)_____psi

Time Completed_____

Verified by _____

FLORIDA POWER & LIGHT COMPANY
ST. LUCIE PLANT UNIT NO. 1

PREOPERATIONAL TEST PROCEDURE NO: 1400084-7
REVISION 1

1. TITLE: AUTOMATIC CONTROL SYSTEM CHECKOUT, STEAM GENERATOR LEVEL CONTROL, CEA REGULATING SYSTEM AUTOMATIC TURBINE CONTROL & LOAD SWING TEST

2. PREPARED BY: Power Resources Sept. 17 1975

3. REVIEWED BY: Wilbur C. Rhoer for CE Nov. 10 1975

4. SUBCOMMITTEE REVIEW BY: J. Pinto 4 Nov 1975

5. REVIEWED BY PNSC ON: November 5 1975

6. APPROVED BY: J. H. Barrow For K. N. Harris 11/10 1975

7. REVISION REVIEWED BY FRG ON: FEBRUARY 23 1976

8. APPROVED BY: R. E. Uhrig Plant Manager MARCH 1 1976

9. TEST CONDUCTED BY: _____ 19___

10. RESULTS REVIEWED BY: _____ for CE _____ 19___

11. TEST RESULTS REVIEWED BY: _____ 19___

12. TEST RESULTS REVIEWED BY FRG DEFICIENCIES CORRECTED, AND ACCEPTANCE RECOMMENDED: _____ 19___

13. RESULTS ACCEPTED AND APPROVED BY: _____ Plant Manager

_____ 19___

ATTACHMENT 1

FLORIDA POWER & LIGHT COMPANY
ST. LUCIE PLANT UNIT NO. 1
PREOPERATIONAL TEST PROCEDURE NO. 1400087

1.0 Title:

AUTOMATIC CONTROL SYSTEM CHECKOUT, STEAM GENERATOR LEVEL CONTROL, CEA REGULATING SYSTEM, AUTOMATIC TURBINE CONTROL & LOAD SWING TEST R1

2.0 Purpose:

2.1 To demonstrate the capability of the CEA Regulating System under steady state and normal transient operation.

2.2 To verify that the Feedwater Regulating system for A&B steam generators will give an adequate and stable response during steady state and expected transient conditions.

2.3 To verify turb. response to reactor power changes. R1

3.0 References:

3.1 FSAR Chapter 14, Table 14.1-2, item 6.
3.2 Regulatory Guide 1.68 section D, item d.
3.3 FSAR chapter 7, page 7.7-6 S/G Control System
3.4 FSAR chapter 10.5

4.0 Prerequisites:

4.1 Preoperational tests of the feedwater regulating system have been satisfactorily concluded (0700086 and 0700060).

Verified by_____Date_____

5.0 Instrumentation:

5.1 Data processor
5.2 Sequence of events recorder
5.3 Multichannel strip chart recorders

6.0 Related System Status:

6.1 The plant has been stabilized at approx. 25% generator power for at least 3 hours, in accordance with Sequencing Document.
Verified by_____Date_____

6.2 The CEDS is in the manual sequential control mode.
Verified by_____Date_____

6.3 The feedwater regulating system is in automatic control.
Verified by_____Date_____

6.4 Tavg-controlling at ± 2 F of Tref.
Verified by_____Date_____

6.5 Turbine generator is in automatic control.
Verified by_____Date_____

PREOPERATIONAL TEST PROCEDURE NO. 1400084

AUTOMATIC CONTROL SYSTEM CHECKOUT, STEAM GENERATOR LEVEL CONTROL, CEA. REGULATING SYSTEM AUTOMATIC TURBINE CONTROL & LOAD SWING TEST

7.0 Special Materials or Equipment:

7.1 Multichannel strip chart recorders.

8.0 Temporary Connections:

8.1 The Multichannel strip chart recorders should be connected to the following parameters at their patch panels: as applicable:

8.1.1 Pressurizer pressure
8.1.2 Pressurizer level
8.1.3 S/G 1A & 1B outlet and turbine inlet pressure
8.1.4 A&B S/G flows - steam and feedwater
8.1.5 A&B S/G levels
8.1.6 Reactor power level, power range control, channel 1&2
8.1.7 Loop 1A & 1B hot leg temp.
8.1.8 One cold leg temp. per loop(1A1, 1A2, 1B1, 1B2)
8.1.9 Turbine First stage pressure
8.1.10 Generator MW

9.0 Precautions:

9.1 Limit temperature increases in order to prevent turbine bypass valve operation.

9.2 Do not exceed a ramp rate of $\pm$ 5%/min.

9.3 Limit CEA motion and position in accordance with Tech. Spec 3.1.3.6 and Load Follow Guidelines OP 0030123.

9.4 Prior to transfer of CEDS control to automatic, insure that Tavg is within $\pm$ 1°F of Tref.

9.5 Temperature oscillations, when CEDS is in automatic mode, should not be allowed to exceed 5 F peak to peak or have a period of less than one minute. Switch CEDS to manual control and return plant equilibrium conditions if this or any other anomaly occurs during the test. Do not continue with this test until unexpected condition is corrected.

9.6 Avoid input disturbances which could cause the steam generator level to approach high or low steam generator level alarm points.

9.7 Avoid large disturbances in feedwater flow which could create significant temperature imbalances within the reactor coolant loops.

9.8 During power increases insure variable overpower trip is being reset. R1

9.9 If, prior to the performance of this test, Combustion Engineering prohibits load swinging with CEA's, load swinging by that means should not be done.

9.10 All control room recorders should be marked with the following information; 1) chart parameters; 2) chart speed; 3) chart scale; 4) time, date 5) test title and number R

10.0 Acceptance Criteria:

NOTE: NO SAFETY CRITERIA APPLICABLE

10.1 Steam generator level is controlled in the automatic mode without significant oscillations during steady state operation and after transients.

10.2 Verify the capability of the CEA Regulating System in automatic sequential mode under steady state and normal transient reactor operation.

10.3 Turbine Control System:
No undamped or diverging oscillations resulting from the transients of Section 12.42 as seen by turbine first stage pressure and/or generator megawatts.

11.0 Records Required:

11.1 A copy of this test, signed and dated by a Florida Power & Light Company designated witness, shall be retained in the plant files.

11.2 Charts from Multichannel recorder shall be retained in the plant files.

PREOPERATIONAL TEST PROCEDURE NO. 14[illegible]84

AUTOMATIC CONTROL SYSTEM CHECKOUT, STEAM GENERATOR LEVEL CONTROL, CEA. REGULATING SYSTEM, AUTOMATIC TURBINE CONTROL & LOAD SWING TEST

12.0 Detailed Procedure:

NOTE: During the performance of this test it is expected that some tuning of the RRS and the feedwater regulating system will be necessary. Repitition of previously completed steps may be required.

During the performance of this test note Tavg-Tref points where slow and fast CEA movements are initiated and record on Data Sheet 1.

12.1. Select RRS to channel 1.

Verified by_____Date_____

12.2 Verify multichannel strip chart recorders are connected to the following parameters. Turn on recorders.

12.2.1	Pressurizer pressure	_____
12.2.2	Pressurizer level	_____
12.2.3	S/G 1A steam outlet pressure	_____
12.2.4	S/G 1A steam flow	_____
12.2.5	S/G 1A feed flow	_____
12.2.6	S/G 1A level	_____
12.2.7	Turbine inlet pressure	_____
12.2.8	Turbine first stage pressure	_____
12.2.9	Loop 1A hot leg temp.	_____
12.2.10	Loop 1B hot leg temp.	_____
12.2.11	One cold leg temp. per loop	_____
12.2.12	Reactor power level, power range control Ch. 1	_____ R1
12.2.13	Generator MW	_____

Verified by_____Date_____

12.3 Switch CEDS from manual sequential to automatic sequential control mode.

Verified by_____Date_____

12.4 Verify S/G 1A feedwater flow controller in automatic. R1

Verified by_____Date_____

12.5 Observe operation of the RRS and feedwater regulating system for at least one hour. Check Tavg - Tref $\leq$ 2 F and S/G 1A level at 66.5% $\pm$ 2%.

Tavg - Tref = _____
S/G 1A level = _____

Verified by_____Date_____

12.6 Slowly lower load approximately 2 percent at the rate of $\leq$1/2%/min.

Verified by_____Date_____

PREOPERATIONAL TEST PROCEDURE NO. 1400084

AUTOMATIC CONTROL SYSTEM CHECKOUT; STEAM GENERATOR LEVEL CONTROL, CEAC REGULATING SYSTEM, AUTOMATIC TURBINE CONTROL & LOAD SWING TEST

12.0 Detailed Procedure: (cont.)

12.7 Observe operation of the RRS and feedwater regulating system for at least one hour. Check Tavg-Tref $\leq$ 2 F and S/G 1A level is 66.5%$\pm$2%.

Tavg - Tref = _____
S/G 1A level = _____

Verified by_____Date_____

12.8 Slowly increase load approximately 2 percent at the rate of $\leq$1/2 %/minute.

Verified by_____Date_____

12.9 Observe operation of the RRS and feedwater regulating system for at least one hour. Check Tavg-Tref $\leq$ 2 F and S/G 1A level is 66.5% $\pm$ 2%.

Tavg - Tref = _____
S/G 1A level = _____

Verified by_____Date_____

12.10 Turn off strip recorders. Verified by_____Date_____

12.11 Switch CEDS from automatic sequential to manual sequential control mode.

Verified by_____Date_____

12.12 Switch RRS to channel 2. Verified by_____Date_____

12.13 Verify multichannel strip chart recorders are connected to the following parameters. Turn on recorders.

Verified by_____Date_____

12.13.1	Pressurizer pressure	_____
12.13.2	Pressurizer level	_____
12.13.3	S/G 1B steam outlet pressure	_____
12.13.4	S/G 1B steam flow	_____
12.13.5	S/G 1B feed flow	_____
12.13.6	S/G 1B level	_____
12.13.7	Turbine inlet pressure	_____
12.13.8	Turbine first stage pressure	_____
12.13.9	Loop 1A hot leg temp.	_____
12.13.10	Loop 1B hot leg temp.	_____
12.13.11	One cold leg temp. per loop	_____
12.13.12	Reactor power level, power range control Ch. 2	_____
12.13.13	Generator MW	_____ R1

Verified by_____Date_____

12.14 Switch CEDS from manual sequential to automatic sequential control mode.

Verified by_____Date_____

PREOPERATIONAL TEST PROCEDURE NO. 1400084
AUTOMATIC CONTROL SYSTEM CHECKOUT, STEAM GENERATOR LEVEL CONTROL, CEA REGULATING SYSTEM, AUTOMATIC TURBINE CONTROL & LOAD SWING TEST

12.0 Detailed Procedure: (cont.)

12.15 Verify S/G 1B feedwater flow controller in automatic. R1 R1

Verified by_____Date_____

12.16 Observe operation of the RRS and feedwater regulating system for at least one hour. Check Tavg - Tref $\leq$ 2 F and S/G 1B level at 66.5% $\pm$ 2%.

Tavg - Tref = _____
S/G 1B level = _____

Verified by_____Date_____

12.17 Slowly lower load approximately 2 percent at the rate of $\leq$ 1/2%/minute.

Verified by_____Date_____

12.18 Observe operation of the RRS and feedwater regulating system for at least one hour. Check Tavg - Tref $\leq$ 2 F and S/G 1B level is 66.5%$\pm$2%.

Tavg - Tref = _____
S/G 1B level = _____

Verified by_____Date_____

12.19 Slowly increase load approximately 2 percent at the rate of $\leq$ 1/2%/minute.

Verified by_____Date_____

12.20 Observe operation of the RRS and feedwater regulating system for at least one hour. Check Tavg - Tref $\leq$ 2 F and S/G 1B level is 66.5% $\pm$ 2%.

Tavg - Tref = _____
S/G 1B level = _____

Verified by_____Date_____

12.21 Turn off strip recorders. Verified by_____Date_____

12.22 Automatic operation of CEDS while diluting and borating

12.22.1 Verify strip recorders are connected as in 12.13 with RRS selected to channel 2 and S/G 1B feedwater control in automatic. Turn on strip recorders.

Verified by_____Date_____

12.22.2 Dilute RCS by approximately 10 ppm. Observe the RRS and feedwater regulating system response while diluting and verify that Tavg - Tref $\leq$ 2 F and S/G 1B level is 66.5% $\pm$ 2% at end of dilution.

Tavg - Tref = _____
S/G 1B level = _____

Verified by_____Date_____

PREOPERATIONAL TEST PROCEDURE NO. 1400084
AUTOMATIC CONTROL SYSTEM CHECKOUT, STEAM GENERATOR LEVEL CONTROL, CEA REGULATING SYSTEM, AUTOMATIC TURBINE CONTROL & LOAD SWING TEST

12.0 Detailed Procedure: (cont.)

12.22 (cont.)

12.22.3 Borate the RCS by approximately 10 ppm. Observe the RRS while borating and verify that Tavg - Tref $\leq$ 2 F and S/G 1B level is 66.5% $\pm$ 2%.

Tavg - Tref = _____
S/G 1B level = _____

Verified by_____Date_____

12.22.4 When plant conditions stabilize turn off strip recorders, switch RRS from channel 2 to channel 1, verify S/G 1A feedwater controller on automatic. Connect R1 multichannel strip recorders as in 12.2. Turn on strip recorders.

Verified by_____Date_____

12.22.5 Dilute RCS by approximately 10 ppm. Observe the RRS and feedwater regulating system response while diluting and verify that Tavg - Tref $\leq$ 2 F and S/G 1A level is 66.5% $\pm$ 2% at end of dilution.

Tavg - Tref = _____
S/G 1A level = _____

Verified by_____Date_____

12.22.6 Borate the RCS by approximately 10 ppm. Observe the RRS while borating and verify that Tavg - Tref $\leq$ 2 F and S/G 1A level is 66.5% $\pm$ 2%.

Tavg - Tref = _____
S/G 1A level = _____

Verified by_____Date_____

12.22.7 When plant conditions stabilize, turn off strip recorders.

Verified by_____Date_____

12.23 Stabilize plant conditions at 25% power. Verify that RRS is selected to channel 1 in automatic sequential control mode, S/G 1A feedwater controller is in automatic and multichannel strip recorders are connected as in 12.2. Turn on strip recorders.

Verified by_____Date_____

12.24 Decrease load by 10% at 1%/minute.

Verified by_____Date_____

12.25 Allow plant to stabilize for about 10 minutes.

Verified by_____Date_____

PREOPERATIONAL TEST PROCEDURE NO. 1400084

AUTOMATIC CONTROL SYSTEM CHECKOUT, STEAM GENERATOR LEVEL CONTROL, CEA REGULATING SYSTEM, AUTOMATIC TURBINE CONTROL & LOAD SWING TEST

12.0 Detailed Procedure: (cont.)

12.26 Increase load by 10% at 1/2%/minute.
Verified by_____ Date_____

12.27 Allow plant to stabilize. Verified by_____ Date_____

12.28 Turn off strip recorders. Verified by_____ Date_____

12.29 Switch RRS to channel 2. Verified by_____ Date_____

12.30 Verify S/G 1B feedwater control in automatic
Verified by_____ Date_____

12.31 Connect strip recorders as in 12.13 and start recorders.
Verified by_____ Date_____

12.32 Repeat steps 12.24 through 12.27. Verified by_____ Date_____

12.33 Decrease load by 10% at 5%/minute. Verified by_____ Date_____

12.34 Allow plant to stabilize. Verified by_____ Date_____

12.35 Increase load by 10% in 5% steps. CAUTION: Allow 10 minute wait between 5% steps at 25% power. Allow 15 mins. above 30% power.
Verified by_____ Date_____

12.36 Allow plant to stabilize. Verified by_____ Date_____

12.37 Turn off strip recorders. Verified by_____ Date_____

12.38 Switch RRS to channel 1. Verified by_____ Date_____

12.39 Verify S/G 1A feedwater control in automatic
Verified by_____ Date_____

12.40 Connect strip recorders as in 12.2 and start recorders.
Verified by_____ Date_____

12.41 Repeat steps 12.33 through 12.37. Verified by_____ Date_____

12.42 Automatic Turbine Control Test.

12.42.1 Verify Turbine Control in Automatic and strip recorders connected as in 12.2 or 12.3 and turned on
Verified by_____ Date_____

PREOPERATIONAL TEST PROCEDURE NO. 1400084
AUTOMATIC CONTROL SYSTEM CHECKOUT, STEAM GENERATOR LEVEL CONTROL,
CEA REGULATING SYSTEM, AUTOMATIC TURBINE CONTROL & LOAD SWING TEST

12.0 Detailed Procedure: (contd)

12.42 (contd)

12.42.2 Decrease RX power by 10% at 1%/minute.
Verified by_____Date_____

12.42.3 Allow plant to stabilize for about 10 minutes
Verified by_____Date_____

12.42.4 Increase Rx power by 10% at 1/2%/minute.
Verified by_____Date_____

12.42.5 Allow plant to stabilize.
Verified by_____Date_____

12.42.6 Decrease Rx power load by 10% at 5%/minute.
Verified by_____Date_____

12.42.7 Allow plant to stabilize
Verified by_____Date_____

12.42.8 Increase Rx power by 10% in 5% steps. CAUTION: Allow 10 minute wait between 5% steps at 25% power. Allow 15 minutes above 30% power.
Verified by_____Date_____

12.42.9 Allow plant to stabilize.
Verified by_____Date_____

12.42.10 Turn off strip recorders.
Verified by_____Date_____

12.43 A&B feedwater control valves may be placed in the mode required for the test program.
Verified by_____Date_____

12.44 Turbine control may be placed in the mode required for the test program.
Verified by_____Date_____

12.45 CEDS control may be placed in the mode required for the test program.
Verified by_____Date_____

12.46 Remove the miltichannel strip recorders.
Verified by_____Date_____

12.47 Repeat steps 12.1 thru 12.46 at 50% power.
NOTE: In steps 12.35 & 12.42.8 allow 15 min. wait instead of 10 mins.
Verified by_____Date_____

PREOPERATIONAL TEST PROCEDURE NO. 1400084
AUTOMATIC CONTROL SYSTEM CHECKOUT, STEAM GENERATOR LEVEL CONTROL,
CEA REGULATING SYSTEM, AUTOMATIC TURBINE CONTROL & LOAD SWING TEST

12.0 Detailed Procedure (contd)

12.48 Repeat steps 12.1 thru 12.4.6 at 90% power.
NOTE: In steps 12.35 and 12.42.8 allow
15 min. wait instead of 10 min.

Verified by_____Date_____

12.49 Verify all acceptance criteria have been met.

Verified by_____Date_____

PREOPERATIONAL TEST PROCEDURE NO. 140[illegible]4
AUTOMATIC CONTROL SYSTEM CHECKOUT, STEAM GENERATOR
LEVEL CONTROL AND CEA REGULATING SYSTEM

DATA SHEET NO. 1

RRS Channel 1

Tavg > Tref by _____F initiates slow CEA movement.

Tavg < Tref by _____F initiates slow CEA movement.

Tavg > Tref by _____F initiates fast CEA movement.

Tavg < Tref by _____F initiates fast CEA movement.

RRS Channel 2

Tavg > Tref by _____F initiates slow CEA movement.

Tavg < Tref by _____F initiates slow CEA movement.

Tavg > Tref by _____F initiates fast CEA movement.

Tavg < Tref by _____F initiates fast CEA movement.

Verified by_____Date_____

PREOPERATIONAL TEST PROCEDURE NO. 1400084
AUTOMATIC CONTROL SYSTEM CHECKOUT, STEAM GENERATOR LEVEL CONTROL,
CEA REGULATING SYSTEM, AUTOMATIC TURBINE CONTROL & LOAD SWING TEST

13.0 Deviations from Procedure:

Revision 1

PREOPERATIONAL TEST SUMMARY

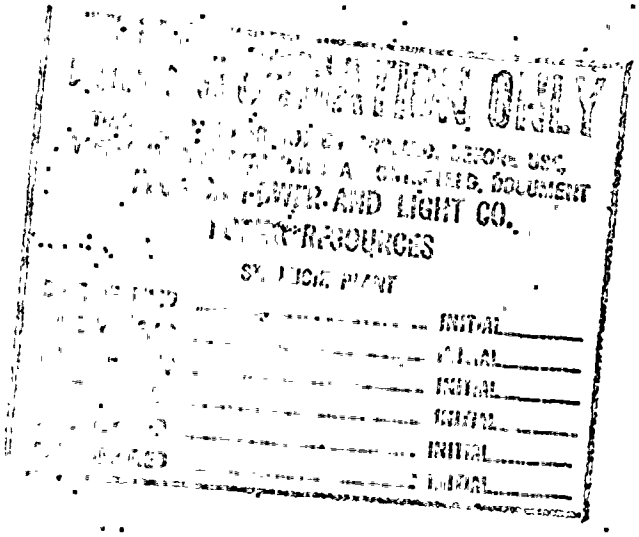
Preop Test No.

System Engineer

DATE	REMARKS

FLORIDA POWER & LIGHT COMPANY
ST. LUCIE PLANT UNIT #1
PREOPERATIONAL TEST PROCEDURE No. 0110090
Revision 1

1. TITLE: 10% LOAD REDUCTION - TURBINE RUNBACK
2. PREPARED BY: R. L. Hayes October 30 1975
3. REVIEWED BY: Willie C. Rhoen FOR GE NOV. 7 1975
4. SUBCOMMITTEE REVIEW BY: P.B. Dillon Oct 31 1975
5. REVIEWED BY PNSC ON: November 5 1975
6. APPROVED BY: J H Barrow For K.N. Harris Nov. 7 1975
7. REVISION REVIEWED BY PNSC ON: FEBRUARY 21 1976
8. APPROVED BY: K Harris FEBRUARY 21 PLANT MANAGER 1976
9. TEST CONDUCTED BY: _____
10. RESULTS REVIEWED BY: _____ FOR _____ 19___
11. TEST RESULTS REVIEWED BY: _____ 19___
12. TEST RESULTS REVIEWED BY PNSC, DEFICIENCIES CORRECTED, AND ACCEPTANCE RECOMMENDED _____ 19___
13. RESULTS ACCEPTED AND APPROVED BY: _____ Plant Manager 19___



ATTACHMENT 2

FLORIDA POWER & LIGHT COMPANY
ST. LUCIE PLANT
PREOPERATIONAL TEST PROCEDURE NO. 0110090
REVISION 1

1.0 Title:

10% LOAD REDUCTION - TURBINE RUNBACK

2.0 Purpose:

The purpose of this procedure is to verify turbine runback and to determine plant response resulting from a load reduction.

3.0 References:

3.1 B G & E Power Test Procedures

3.2 St. Lucie Unit #1, FSAR, Chapter 14

4.0 Prerequisites:

4.1 The load dispatcher has been advised of the load reduction.

Verified by _____ Date _____

4.2 The parameters listed in 12.2 have been input to the recorders. Recorder scales have been selected and pens positioned to monitor the entire transient on scale.

Verified by _____ Date _____

4.3 The turbine bypass and atmospheric steam dump valves are operable.

Verified by _____ Date _____

4.4 All test personnel have been briefed. R 1

Verified by _____ Date _____

5.0 Instrumentation:

Installed plant equipment

6.0 Related System Status:

6.1 TRAC I & TRAC II setpoints have been determined App. A.

6.2 Plant is at 80% power level minimum. (Except for step 12.1).

Verified by _____ Date _____

6.3 Feedwater Regulating System is in operation.

Verified by _____ Date _____

6.4 Atmospheric Steam Dumps & SBCS are in automatic. R1

Verified by _____ Date _____

PREOPERATIONAL TEST PROCEDURE NO. 0110090, REV. 1.
10% LOAD REDUCTION - TURBINE RUNBACK

7.0 Special Materials or Equipment:

None

8.0 Temporary Connections:

8.1 Temporary jumper to be installed across dropped rod contacts.

8.2 Four multichannel recorders (6 inputs each) to be used to record the transient.

9.0 Limits and Precautions:

9.1 Advise load dispatcher prior to runback.

9.2 Advise plant personnel of start of runback over Gai-tronics PA system. Insure personnel are standing clear of secondary safeties, atmospheric steam dumps, and turbine bypass valves.

9.3 Operations personnel to take necessary action to prevent reactor trip, secondary safeties from lifting or excessive reactor/turbine power mismatch. Insert CEA's as necessary using motion inhibit bypass.

9.4 Do not remove the temporary jumper installed in step 8.1 until turbine runback is complete. The Nuclear Plant Supervisor shall authorize removal. R1

9.5 In the event the runback does not stop at the setpoint, manually trip the turbine at approximately 50% power.

NOTE: The runback cannot be stopped by assuming manual control of the turbine. Some undershoot should be anticipated.

10.0 Acceptance Criteria:

The turbine runback does occur on a simulated signal.

11.0 Records Required:

11.1 A copy of this procedure with each sign-off initialed and dated by a Florida Power & Light Company designated witness shall be retained in the plant files.

11.2 A copy of the recorder charts shall be attached to this procedure.

PREOPERATIONAL TEST PROCEDURE NO. 0110090, REV. 1
10% LOAD REDUCTION - TURBINE RUNBACK

12.0 Detailed Procedure:

12.1 Perform Appendix A. (To be performed during initial power increase at ≈70% power) R 1

Verified by _____ Date _____

12.2 The following parameters should be monitored on the recorders for the duration of the test. Indicate start and stop times. Turn recorders to fast speed prior to start.

SG 1A1 Level	Loop 1A1 T_{Hot}
SG 1B1 Level	Loop 1A1 T_{Cold}
SG 1A1 Pressure	Loop 1B1 T_{Cold}
SG 1B1 Pressure	Pzr. Pressure
SG 1A1 Steam Flow	Pzr. Level
SG 1A1 Feedwater Flow	Turbine 1st Stage Press.
SG 1B1 Feedwater Flow	Turbine Inlet Pressure
SG 1A1 Feedwater Demand	Steam Dump Demand
SG 1B1 Feedwater Demand	NI-09
Govenor Valve Common	Generator MW_e
Runback Event Signal	Crossover Pressure

12.3 Announce start of the Turbine Runback Test over PA system.

12.4 Upon obtaining clearance from the load dispatcher, begin countdown at 5 seconds prior to runback (5-4-3-2-1- START).

12.5 At START, initiate Turbine Runback by placing a jumper from Terminal No. 13 to Terminal No. 4 on Terminal Board EMB-7A in the CEDS Logic Cabinet (Rod No. 31).

Verified by _____ Date _____

12.6 In the event the runback does not stop at the setpoint, manually trip the turbine at approximately 50% power.

12.7 Operations personnel perform normal monitoring of plant parameters to ensure plant safety.

12.8 Verify runback lamp on DEH lights when runback is initiated.

Verified by _____ Date _____

12.9 Test personnel turn recorders to slow speed when the significant portion of the transient is completed. Continue to monitor the parameters until plant conditions are again stabilized.

Verified by _____ Date _____

12.10 Verify runback lamp on DEH goes out when runback is complete.

Verified by _____ Date _____

PREOPERATIONAL TEST PROCEDURE NO. 0110090, REV. 1
10% LOAD REDUCTION - TURBINE RUNBACK

12.0 Detailed Procedure (cont.):

12.11 At the direction of the NPS remove the temporary jumper installed in step 12.4. R 1

Verified by _____ Date_____

12.12 Adjust turbine controls to assume control of turbine, if not in automatic. R 1

Verified by _____ Date_____

12.13 Input correct position of jumpered CEA to DDPS.

Verified by _____ Date_____

12.14 Evaluate recorded data and verify acceptance criteria are met.

Verified by _____ Date_____

PREOPERATIONAL TEST PROCEDURE NO. 0110090, REV. 1
10% LOAD REDUCTION - TURBINE RUNBACK

13.0 Deviations to Procedure:

PREOPERATIONAL TEST PROCEDURE NO. 0110090, REV. 1
10% LOAD REDUCTION - TURBINE RUNBACK

PREOPERATIONAL TEST SUMMARY

Preop Test No. _____
System Engineer _____

Date	Remarks

PREOPERATIONAL TEST PROCEDURE NO. 0110090, REV. 1
10% LOAD REDUCTION - TURBINE RUNBACK

APPENDIX A

1.0 Prior to the actual runback (approximately 60% power), determine the arming and resetting points of TRAC I, TRAC II, and PI S-22-36 turbine 1st. stage pressure indicator, by slowly increasing power until they arm, then decreasing power until they reset.

Device	Arming		Resetting	
	% Power	Turbine Press.	% Power	Turbine Press.
TRAC I	_____	_____	_____	_____
TRAC II	_____	_____	_____	_____
PIS-22-36	_____	_____	_____	_____

Verified by _____ Date_____

2.0 Continue power ascension test program. Turbine Runback to be performed at approximately 80% power.

Combustion Engineering, Inc.
1000 Prospect Hill Road
Windsor, Connecticut 06095

Tel. 203/688-1911
Telex: 9-9297

COMBUSTION ENGINEERING

Local Address:
P. O. Box 3667
Fort Pierce, Florida 33450

F-SF-563
November 17, 1975

Florida Power & Light Co.
St. Lucie Plant Unit # 1
CE Contract #19367

Mr. K. N. Harris
Plant Manager
Florida Power & Light Co.
St. Lucie #1

SUBJECT: P/O #0110090, Rev. 0, 10% LOAD REDUCTION TURBINE RUNBACK.

Dear Mr. Harris:

The subject procedure has been reviewed and we submit the following comments for consideration.

6.2 Replace this section with:

"Plant is at the power level determined in Appendix A."

10.0 Add the following:

"and terminates at approximately 70% power."

12.3 Include the following:

"Ensure that personnel are standing clear of main steam safety valves, atmospheric dump valves, turbine control valves and bypass valves."

12.6 Add the following caution note:

CAUTION: If the runback continues reducing power below 50%, trip the turbine.

Insert the following NOTE between 12.7 and 12.8.

NOTE: Except in emergency, do not take any operator action for at least 60 seconds following the jumper connection.

Place 12.9 before 12.8. After 12.8 add the following comment:

CAUTION: If T_{cold} exceeds 542°F it may be necessary to reduce power with rods. If necessary, drive rods in MANUAL GROUP mode, starting with Group 7.

Between 12.12 and 12.13, add the following:

Restore turbine and (if necessary) reactor power to pre-test values. Ensure that the steam dump system returns to its pre-test configuration.

E. H. Smith, Jr.
CE Site Manager

EHS:WCP:dto
cc: A. S. Jameson
R. J. Walker
J. G. Tefft
C. F. Sears
P. B. Dillon
R. K. Ryall

APPENDIX A

1.0 Prior to the actual runback (approximately 60% power), determine the arming and resetting points of TRAC I, TRAC II, and PIS-22-36 (70% power contacts).

1.1 Increase power from approximately 60% by dilution (ARO) and continuously observe the parameters listed below. As each arms, observe the corresponding parameters and record them below.

1.2 After the last (highest power) parameter has armed, commence boration to reduce power. Continuously monitor the parameters until the lowest one has reset and record them below.

1.3 Increase power 10% above the lowest resetting device and stabilize power.

DEVICE	ARMING		RESETTING	
	% Power	Turbine Press	% Power	Turbine Press.
TRAC I				
TRAC II				
PIS-22-36				

2.0 Continue power ascension test program. Turbine runback is to be performed at the power level determined in 1.3 above.