NRC FORM 195 (2-76)

U.S. NUCLEAR REGULATORY COMMISSION

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DOCKET NUMBER 50-335

FILE NUMBER

TO: Mr. Ziemann

FROM: Florida Power & Light Co
Miami, Fla
R E Uhrig

DATE OF DOCUMENT 12-7-76

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PLANT NAME: St Lucie #1

ENCLOSURE

"Steam Generator Feedwater Hammer Test"......

(40 cy encl rec'd)

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NRC FORM 195 (2-76)

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P. O. BOX 013100, MIAMI, FL 33101

FLORIDA POWER & LIGHT COMPANY

December 7, 1976
L-76-415

Office of Nuclear Reactor Regulation
Attn: Dennis L. Ziemann, Chief
Operating Reactors Branch #2
Division of Operating Reactors
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Ziemann:

Re: St. Lucie Unit No. 1 - Docket No. 50-335
Operating License DPR-67
Enclosure 1, Item C.1

Enclosed herewith for your review is a copy of the St. Lucie Plant Unit No. 1 Preoperational Test Procedure No. 0700080B, "Steam Generator Feedwater Hammer Test," which we plan to perform to satisfy the subject license condition. This test procedure was informally given to members of your staff on November 19, 1976.

It is our understanding that members of your staff wish to witness the performance of this test. Florida Power & Light Company prefers to conduct this test following an unscheduled trip from greater than thirty percent of full rated power for the following reasons:

1) the remaining scheduled trips during the power ascension test program are not compatible with the conduct of this test,

2) a trip scheduled specifically to perform this test would cost Florida Power & Light Company customers approximately $58,000.

The NRC will be notified at least two days before the plant conditions are such that this test could be performed so that appropriate plans may be made for witnessing the test.

The final procedure as implemented may reflect minor revisions made in accordance with St. Lucie Technical Specifications. Any such changes will not, however, alter the intent of the test.

Our present schedule indicates that we could be ready to perform the attached test as early as December 14th, 1976. We, therefore, request any comments

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which you may have on either the attached procedure or plans for its performance prior to December 12, 1976, so that any such comments might be factored into our plans.

Yours very truly,

Robert E. Uhrig
Vice President

REU/ls

Encl.

cc: Norman C. Moseley, Region II
Robert Lowenstein, Esq.

FLORIDA POWER & LIGHT COMPANY
ST. LUCIE UNIT #1
PREOPERATIONAL TEST PROCEDURE No. 0700080B
REVISION 1

1.0 Title:

STEAM GENERATOR FEEDWATER HAMMER TEST

2.0 Purpose:

Due to the modification to the feedwater spargers this procedure will be performed to verify the absence of damaging steam generator feedwater hammer during level recovery when the level is below the feedwater sparger. S/G 1B will be used for the test since it has a longer run of feedwater piping.

3.0 References:

3.1 Ebasco Flow Diagram 8770-G-080; Feedwater, Condensate & Air Evacuation Systems.
3.2 CE Technical Instruction Manual - Steam Generator
3.3 Operating Procedure OP 0700022, Auxiliary Feedwater - Normal Operation.
3.4 Emergency Procedure EP 0700040, Loss of Feedwater or Steam Generator Level.

4.0 Prerequisites:

4.1 Except for the level of S/G 1B, the plant should be at normal operating hot standby conditions with 4 RCP's running. S/G 1B level should be restored to ~ 40%.

Verified by ____________________ Date ____________________

4.2 The test shall be initiated within 2 hours following a plant trip from at least 30% power.

Verified by ____________________ Date ____________________

4.3 Test Personnel have been briefed.

Verified by ____________________ Date ____________________

4.4 Verify MFW isolation valve I-MV-09-8 closed.

Verified by ____________________ Date ____________________

4.5 Back-up RRS should be in Test Mode with Pzr level setpoint at 45%. Other parameters should be same as the operating RRS.

Verified by ____________________ Date ____________________

5.0 Instrumentation:

The following parameters shall be monitored and/or recorded during the test. (S/G 1B level and Aux FWP flow to S/G 1B shall be continuously recorded during steps 12.2 thru 12.3.

NOTE: Aux FWP flow will probably be pegged high at 300 gpm.
Aux FWP 1A & 1B Amperage (Record while feeding up)

Pzr Pressure	S/G 1A & 1B Level
Pzr Level	S/G 1A & 1B Pressure
Loop 1A & 1B Hot Leg Temp.	Aux FWP Flow to S/G 1B
Loop 1A & 1B Cold Leg Temp.	Aux FWP Pressure

Loose Parts Monitor (if in service).

6.0 Related System Status:

6.1 Atmospheric steam dump and SBCS are operational.

Verified by ______________________ Date ______________________

7.0 Special Materials or Equipment:

7.1 Temporary recorders (as necessary)

8.0 Temporary Connections:

8.1 Temporary recorders may be connected to parameters given in Section 5.0 in addition to installed recorders/indicators.

9.0 Precautions & Limits:

9.1 The test shall be aborted if S/G level is off scale. Recovery shall be made in accordance with EP 0700040, Loss of Feedwater or Steam Generator Level.

9.2 The test shall be aborted if RCS cooldown is excessive. Cooldown shall not exceed 75F/hr. The test shall be aborted of Pzr level reaches 27%.

9.3 The fourth RCP shall be secured below 510F (Tcold).

9.4 The preferred mode of adding feedwater during the feedup test is via motor driven Aux FWP to minimize heat removal from the RCS.

9.5 If SBCS is used for temperature control during the hold period, I-HCV-08-1B shall be closed to minimize level decrease in S/G 1B. The setpoint of I-HCV-08-2B shall be raised to 920 psig in auto.

PREOPERATIONAL TEST PROCEDURE No. 0700080B, Rev. 1
STEAM GENERATOR FEEDWATER HAMMER TEST

9.0 (cont)

9.6 Only persons authorized by the Test Director and/or Nuclear Plant Supervisor are allowed in containment.

10.0 Acceptance Criteria:

10.1 The test is complete upon successful completion of steps 12.2 and 12.3 with no audible or visual indications of damaging Feedwater hammer.

11.0 Records Required:

11.1 The completed copy of this procedure with applicable recorder traces shall be filed in accordance with QI 17-PR/PSL-1.

12.0 <u>Detailed Instructions:</u>

12.1 Initial Setup & Steamdown

12.1.1 Commence raising Pressurizer level to at least 45%. Charging pump high level override bypass may be used to allow running 2 charging pumps if desired. When level is at 45%, switch to Backup RRS. This step shall be completed by 12.3.4. Proceed with 12.1.2-12.3.3 concurrently.

Verified by________________ Date__________________

12.1.2 Transfer control of S/G 1B pressure from the SBCS to the atmospheric dump by placing the I-HCV-08-2B controller setpoint to the existing S/G pressure in auto and closing I-HCV-08-1B. Verify that the atmospheric dump opens and that pressure is being controlled by it.

Time of trip____________ Pre-trip Power level______________

Verified by ________________ Date __________________

12.1.3 Raise the pressure setpoint for I-HCV-08-2A to 920 psig. Raise the pressure setpoint on SBCS to 930 psia. Maintain water level in S/G 1A by reducing feed flow.

Verified by ________________ Date __________________

12.1.4 Reduce the level in S/G 1B by discontinuing feed to that generator and by maintaining its pressure at 900 psia.

Verified by ________________ Date __________________

12.1.5 Note the time that S/G 1B level drops below 34.2%. (Bottom of Feedwater Thermal Sleeves).

Time ________________

Verified by ________________ Date __________________

12.1.6 Note the time that S/G 1B level reaches 29%.

Time ________________

Verified by ________________ Date __________________

12.1.7 Verify Blowdown is secured from S/G 1B.

Verified by ________________ Date __________________

12.2 Hold Period (2 hrs. or 5% Level)

12.2.1 When S/G 1B level has dropped to between 27% & 29%, reduce the setpoint on SBCS to 900 psia and increase

12.0 (cont)

12.2 (cont)

12.2.1 (cont)
the setpoint for I-HCV-08-2B to 920 psig. Verify that steam flow from S/G 1B atmospheric dump has decreased.

Verified by________________ Date________________

12.2.2 Feed S/G 1A as necessary to maintain a level of 65% to 70%. Verify the RCS temperature is controlled by S/G 1A.

Verified by ________________ Date ________________

12.2.3 Near the end of the hold period, verify an observer is stationed in the area of the Aux FWP and that communications are established with the control room.

Verified by ________________ Date ________________

12.2.4 Near the end of the hold period, perform the following:

All Pzr backup htrs	ON
P1 & P2 Pzr heaters	ON

Verify Pzr pressure controlling via Pzr spray. Pzr pressure setpoint may have to be adjusted to maintain 2250 psia.

Verified by ________________ Date ________________

NOTE: If S/G 1B level approaches 5%, immediately proceed to step 12.3.

12.3 Feedup Test

12.3.1 Verify that 2 hours have passed since the time recorded in step 12.1.5 or that S/G 1B level is at 5%. Record the time ______________.

Verified by ________________ Date ________________

12.3.2 Verify there has been no feedwater addition to S/G 1B during the above time interval.

Verified by ________________ Date ________________

12.3.3 Secure Blowdown from S/G 1A.

Verified by ________________ Date ________________

12.0 (cont)

12.3 (cont)

12.3.4 Station an observer inside the personnel airlock with the inner door open a few inches to listen for FW hammer. Using two motor driven Aux FWP's, iniate feedwater flow to S/G 1B in accordance with OP 0700022 (perform steps 8.2.2 and 8.2.5 concurrently.) Establish as close to maximum flow (all valves in Aux FW flow path to S/G 1B open) as cooldown rates allow. If cooldown rates appear excessive, make small reductions in Aux FWP flow.

NOTE: Aux Fw header flow indication only goes to 300 gpm -use amperage to estimate flow. Since experience indicates cooldown rate will not be a problem, it is expected that we will have maximum flow from the two motor driven Aux FWP's.

Verified by ________________ Date ____________

12.3.5 Increase level in S/G 1B to greater than 43% while maintaining feedwater flow at the above established rate. Observers shall record their observations on the summary sheet. Record 1A & 1B AFW pump amperage on summary sheet.

Verified by ________________ Date ____________

12.4 System Restoration

12.4.1 Reduce feedwater flow to S/G 1B to desired amount to minimize RCS cooldown. When S/G 1B level is above 50%, setpoints for SBCS and both atmospheric dump controllers (I-HCV-08-2A & I-HCV-08-2B) may be reset to normal no-load conditions. I-HCV-08-1B may be opened. Maintain normal hot shutdown steam generator levels.

Verified by ________________ Date ____________

12.4.2 Regain normal control of Pzr pressure.

Verified by ________________ Date ____________

12.4.3 Initiate Blowdown from S/G 1A and S/G 1B.

Verified by ________________ Date ____________

12.4.5 Collect all data, recording charts and document observations of personnel.

Verified by ________________ Date ____________

PREOPERATIONAL TEST PROCEDURE No. 0700080B, Rev. 1
STEAM GENERATOR FEEDWATER HAMMER TEST

13.0 Deviations:

PREOPERATIONAL TEST PROCEDURE NO. 0700080B

PREOPERATIONAL TEST SUMMARY

DATE	REMARKS