**From:** William Miller, NRC R2
**To:** ATP1.PEF (P. Fredrickson, NRC R2)
**Date:** 12/16/96 5:15pm
**Subject:** St. Lucie -Forwarded

Paul,

During my assignment at St Lucie this summer, I worked on two issues which were turned over to John York for additional follow-up. These issues involved the use of a temporary fire pump without an evaluation and the construction of an enclosure for the control rod drive electronic equipment within the cable spreading room without an appropriate evaluation.

The temporary fire pump was 750 gpm and replaced a 2,500 gpm fire pump. No evaluation had been made to determine if this pump met the required fire flow. The control rod drive enclosure had not been properly evaluated resulting in the requirement for the installation of additional seismic restraints.

Today, I learned that both of these items which were initially identified as apparent violations were dropped and classified as not being a violation to the NRC requirements.

I was not consulted on this matter. I agree that these issues may not warrant escalated enforcement but they do appear to be violations of NRC requirements.

Please provide me with guidance as to how I should address this issue.

Thanks for your help.

Bill

00125

# ST. LUCIE SECURITY EVALUATION

A. **Assessment**: Overall, site security has been adequate. Licensee management aggressively pursued a tampering event, which occurred in August, to determine the cause. However, prior events leading to this tampering event should have had more indepth review by the licensee to determine if tampering was the cause.

B. **Basis**:

- The licensee failed to report the confirmed tampering event within one hour, which resulted in a violation.
- Prior to the tampering event in August, two events in May and June related to valves, were documented by the licensee as tampered or unauthorized work. Licensee management failed to notify security of these events.
- The FFD program was transferred to the site. Numerous problems discovered by a QA audit determined the program to be weak.
- Training and Qualification noted as a strength.

C. **PLANS**:

| INSPECTION | REASON |
|---|---|
| One core | 81700 |
| One reactive | Followup on tampering event/FFD implementation |

SALP INPUT FEEDER FORM

| ISSUE | EXAMPLES | DATE | REFERENCE | NRC CONTACT | ASSESSMENT |
|---|---|---|---|---|---|
| 1. **SECURITY** Training & Qualification | Document reviews, interviews and observations of security force performance of duty indicated training was per the Trng. & Qual. Plan. New firing range with aggressive tactical response training aids and a new training bldg. at the range were completed. Trainers were knowledgeable and dedicated, and equipped with an extensive array of training material and equipment. | 5/10-14/93<br>6/20-24/94 | 93-14: 2.f<br>94-14: 2.f | TILLMAN<br>STANSBERRY | Security training function was **excellent.** |
| 2. **SECURITY** Security Plans, Procedures Adherence and Changes | Two Physical Security Plan changes submitted and approved without complication. | 5/10-14/93<br>6/20-24/94 | 93-14: 2.a<br>94-14: 2.c | TILLMAN<br>STANSBERRY | Security, Contingency, Training and Qualification Plan, and Implementing Procedures were **current and adequate.** |
| 3. **SECURITY** Access Controls | One violation was due to problem with Corporate HQ's processing access information; access granted before B/I was completed. Hand geometry access control equipment has been installed. One of the first licensees to install this within the US. | 5/10-14/93<br>6/20-24/94 | 93-14: 2.c<br>94-14: 2.b | TILLMAN<br>STANSBERRY | Access controls were **proactive and exceptional.** |
| 4. **SECURITY** Access Authorization and Safeguards Information Controls | NOT INSPECTED DURING SALP PERIOD | | | | |
| 5. **SECURITY** Fitness For Duty | (Report pending) | 6/26-<br>7/1/94 | 94-15: | TOBIN | |

0026

| | | | | | |
|---|---|---|---|---|---|
| 6. **SECURITY**<br>Effectiveness of Management Controls | No items on the Open Items List, downward trends in the Security Incident Tracking and Trending Program and low number of items logged in the Safeguards Nonreportable Incident Log. Testing and maintenance of security equipment support also assisted in low log entries and influencing the downward trending of hardware errors. | 6/20-24/94 | 94-14: 2.b | STANSBERRY | Onsite management's effectiveness was **good**. |
| 7. **SECURITY**<br>Assessment Aids | Licensee has improved assessment capabilities by installing the latest model of Video Capture. This reduces the nuisance and false alarm responses by the security force. | 6/20-24/94 | 94-14: 2.a | STANSBERRY | Assessment Aids were **outstanding.** |
| 8. **SECURITY**<br>Audits & Corrective Action | QA Audit personnel were appropriatel trained and motivated. Annual QA Audit was thorough, producing one Finding; appropriate corrective action was taken to resolve the Finding. | 5/10-14/93 | 93-14: 2.a | TILLMAN | **Spirit and innovative perspective** of the audit team was **commendable.** |
| 9. **SECURITY**<br>Other- Operational Safeguards Response Evaluation (OSRE) | NRC Headquarters evaluation resulted in four concerns, no regulatory violations. Concerns involved responsiveness and equipment allocation. | 6/20-24/94 | 94-14: 2.b | STANSBERRY | Licensee's response to OSRE report was **responsive and adequate.** |

Licensee/Facility:

Florida Power & Light Co.
Saint Lucie 1
Fort Pierce, Florida
Dockets: 50-335
PWR/CE

Notification:

MR Number: 2-96-XXXX
Date: 01/25/96
SRI

Subject: EXCESSIVE BORON DILUTION

Discussion:

At approximately 0220 on January 22, 1996, the Unit 1 control board Reactor Controls Operator (RCO) observed that $T_c$ had decreased from 549°F (normal 100% power value) to 548.7°F. At 0225, he began a manual dilution to the RCS by aligning the Primary Makeup Water (PMW) system directly to the suction of the 1B Charging Pump (approximately 44 gpm capacity). He intended to dilute by adding between 25 and 40 gallons of PMW. Moments after beginning the dilution, the board RCO saw the desk RCO return from the kitchen. He requested that the desk RCO relieve him so that he could prepare his lunch. During the relief, there was no discussion of the dilution in progress. The Nuclear Plant Supervisor (NPS), who was at the desk RCO station, was not aware that a dilution was in progress. The Board RCO returned between 5-10 minutes later and immediately recognized his error. He was securing the dilution when the control room annunciator M-16 "RCP CONT BLDOFF PRESS HIGH" alarmed due to a higher than normal VCT pressure caused by hign VCT level (a result of the charging pump taking suction from PMW instead of the VCT). The NPS directed the ANPS take charge and begin a manual boration. Unit 1 briefly entered TS LCO Action Statement 3.2.5 for $T_c$ greater than 549°F. The maximum $T_c$ obtained was 549.9°F at 100.2% reactor power.

The licensee has the root cause under investigation.

Regional Action:

A three member inspection team consisting of two resident and one region-based inspector is onsite investigating this event and evaluating the licensee's corrective actions.


Contact: K. Landis (404)331-5509
M. Miller (407)464-7822
R Schin (404)331-5588


DD|27

NRC QUESTION/RESPONSE FORM

QUESTION #: _____

DATE: 1/28/96

INSPECTOR: (CIRCLE APPROPRIATE INSPECTOR'S NAME)

(ADD INSPECTORS NAMES TO THIS FORM)

OTHER Bob Schinn

UTILITY REPRESENTATIVE: Dietz

INSPECTION CATEGORY: (CIRCLE APPROPRIATE CATEGORY)

(INFO REQUEST) DOCUMENTATION WALKDOWN PROCEDURES

NRC REQUEST OR CONCERN: Assuming the Divert Valve had been in the "Divert" Position, e.g., such that the "RCP Bleedoff Pressure" annunciator had not actuated;
(1) What is/~~are~~ the alarm(s) that would warn the operator that Rx Power >100% prior to the Var Hi Power Pretrip/Trip?
(2) Does DDPS have an alarm associated with "Calorimetric Power"?
(3) At approx. what Rx Power (Total Power) would Incore alarms correlate to?

RESPONDING INDIVIDUAL/DEPT: Dietz / LIC
(Verified W. Mead R/E)

UTILITY RESPONSE:
(1) Point I.D. #742 on plant computer (DDPS) provides an alarm for "ΔT Power" that is equivalent to 101% Rx thermal power. This alarm did not actuate during the event.
(2) Specifically from "Calorimetric Power", answer is no.
(3) Incore alarms based on "Local Power Levels (PLHR)" at 20%, 40%, 60%, 80% of core elevation. Do not directly correlate to "Total Core Power". (No Incore alarms occurred during the event)

DD 1/30

Fiure 1.6-2

Joyce on her way in 1/23

NRC QUESTION/RESPONSE FORM

QUESTION #: _____

DATE: 1/27

INSPECTOR: (CIRCLE APPROPRIATE INSPECTOR'S NAME)

(ADD INSPECTORS NAMES TO THIS FORM)

OTHER Schinn

UTILITY REPRESENTATIVE: GRM

INSPECTION CATEGORY: (CIRCLE APPROPRIATE CATEGORY)

INFO REQUEST (DOCUMENTATION) WALKDOWN PROCEDURES

NRC REQUEST OR CONCERN: Need Copies of OP 1-3200020 & OP 1-1200051 for the 1/22 Mid shift. Need Strip charts for JR011 & JR010 for period 2-3:30 AM 1/22

RESPONDING INDIVIDUAL/DEPT: Joyce Mann Dir Vault

UTILITY RESPONSE: (Procedures Attached) — Steve Sandin has the strip charts JR011 & JR010.

Fiure 1.6-2

FLORIDA POWER & LIGHT COMPANY
ST. LUCIE UNIT 1
OPERATING PROCEDURE NO. 1-1200051
REVISION 17

1.0 TITLE:

NUCLEAR AND DELTA T POWER CALIBRATION

2.0 REVIEW AND APPROVAL:

Reviewed by Plant Nuclear Safety Committee 5/1 1975

Approved by K. N. Harris Plant General Manager 5/19 1975

Revision 17 Reviewed by Facility Review Group 8/29 1995

Approved by J. Scarola Plant General Manager 8/29 1995

3.0 PURPOSE:

To provide detailed instructions for the adjustment of Nuclear and Delta T Power to agree with the thermal energy balance calculation.

4.0 PRECAUTIONS AND LIMITS:

4.1 Perform calibration on only one channel at a time.

4.2 If a pre-trip alarm is received on a power range safety channel being adjusted, stop adjustment. Verify proper test switch lineup and if test line up is correct, request I & C recheck channel pre-trip and trip setpoints.

4.3 If steady state equilibrium power level conditions change from time of completing a plant calorimetric and completion of this procedure, a new calorimetric must be performed prior to performing channel adjustment, unless a monitor of reactor power deemed acceptable by the ANPS/NPS is available. In no case is a change in reactor power of ≥2% acceptable.

4.4 Notify Reactor Engineering of a deviation in excess of ±5% between Calorimetric and NI indicated power prior to performing channel calibration.

4.5 $T_c$ should be constant and consistent with the $T_c$ present during the calorimetric calculation.

4.6 Power level should remain constant during calibration.

ST. LUCIE UNIT 1
OPERATING PROCEDURE NO. 1-1200051, REVISION 17
NUCLEAR AND DELTA T POWER CALIBRATION

5.0 RELATED SYSTEM STATUS:

5.1 Power level is being maintained constant through the completion of this procedure.

6.0 REFERENCES:

6.1 Guideline NT-PY-4, Appendix H, Nuclear and Delta T Calibration

6.2 Technical Manual 8770-7120, Reactor Protective System, Volume I

6.3 St. Lucie Unit 1 Technical Specifications, Table 4.3.1

7.0 RECORDS REQUIRED:

7.1 A signed and dated copy of this procedure shall be maintained in the plant files in accordance with QI 17-PR/PSL-1, "Quality Assurance Records."

ST. LUCIE UNIT 1
OPERATING PROCEDURE NO. 1-1200051, REVISION 17
NUCLEAR AND DELTA T POWER CALIBRATION

8.0 INSTRUCTIONS:

> NOTE
> At times during core cycle a known hot leg swirl effect may be encountered indicating that flow stratification is occurring. This effect may cause a slight rise or fall in one or both hot leg indicated temperatures. When this occurs a similar change in Delta T power may be seen in any of the four RPS channels. When this phenomenon is recognized as occurring, Appendix A should be performed.

> NOTE
> Perform calibration on only one channel at a time.

8.1 Calculation of Calorimetric Power

1. Demand a DDPS calorimetric and record the value of reactor power.

   100.0 %

2. Request T cold from ERDADS Cold Leg Temperature display (screen number CLT) and record T cold.

   545.9 °F

3. Calculate primary system power in accordance with OP 1-3200020 and record the value of reactor power.

   99.65 %

> NOTE
> For this procedure, use DDPS power as the reference power unless there is a 2% deviation between the DDPS and manual calorimetric values, in which case use the higher value as reference power.

4. If the power values recorded in Step 8.1.1 and 8.1.3 differ by more than 2%, notify I & C as soon as possible.

8.2 Proceed with the following instructions for Channel A of the Reactor Protection System.

8.3 If adjusting Delta T Power calibration and/or Nuclear Pwr Calibrate potentiometer, Then use keys 81, 87, 88 and 90 from the ANPS key locker to bypass the Hi Power, TM/Lo Press, Loss Load and Loc Pwr Den Trips (Bypass Switch 1, 7, 8 and 10, located on the Trip Inhibit Switch Panel) and verify that the respective indicator lights illuminate. /R17

ST. LUCIE UNIT 1
OPERATING PROCEDURE NO. 1-1200051, REVISION 17
NUCLEAR AND DELTA T POWER CALIBRATION

8.0 INSTRUCTIONS: (continued)

8.4 Record the Delta T Pwr Calibration potentiometer dial setting.

| | POT SETTING |
|---|---|
| A | 374 |
| B | 401 |
| C | 389 |
| D | 432 |

8.5 Position the meter input switch to the Delta T PWR position and record the DVM reading.

| | DVM DELTA T PWR (%) |
|---|---|
| A | 100 |
| B | 100 |
| C | 100 |
| D | 100 |

8.6 While monitoring the DVM indication, disengage the locking device on the Delta T Power Calibration potentiometer and slowly begin adjusting for a DVM indication equal to that of the plant calorimetric. Engage the locking device on the Delta T Power Calibration potentiometer and verify the DVM indication equals the plant calorimetric value.

8.7 Record the new Delta T Power Calibration potentiometer setting.

| | POT SETTING |
|---|---|
| A | 374 |
| B | 401 |
| C | 389 |
| D | 432 |

ST. LUCIE UNIT 1
OPERATING PROCEDURE NO. 1-1200051, REVISION 17
NUCLEAR AND DELTA T POWER CALIBRATION

8.0 INSTRUCTIONS: (continued)

8.8 Record the DVM Delta T Power value.

| | DVM DELTA T PWR (%) |
|---|---|
| A | 100 |
| B | 100 |
| C | 100 |
| D | 100 |

8.9 Record the Nuclear Pwr Calibrate potentiometer dial setting.

| | POT SETTING |
|---|---|
| A | 598 |
| B | 492 |
| C | 494 |
| D | 598 |

8.10 Position meter input switch to Nuclear Pwr position and record the DVM reading.

| | DVM NUCLEAR PWR (%) |
|---|---|
| A | 100 |
| B | 100 |
| C | 100 |
| D | 100 |

8.11 While monitoring the RPSCIP Nuclear Pwr - Delta T Pwr deviation meter, disengage the locking device on the Nuclear Pwr Calibrate potentiometer and slowly begin adjusting for a meter indication equal to zero. Engage the locking device on the Nuclear Power Calibrate potentiometer and verify the Nuclear Pwr - Delta T Pwr meter indicates zero.

ST. LUCIE UNIT 1
OPERATING PROCEDURE NO. 1-1200051, REVISION 17
NUCLEAR AND DELTA T POWER CALIBRATION

8.0 INSTRUCTIONS: (continued)

8.12 Record the new Nuclear Pwr Calibrate potentiometer setting.

| | POT SETTING |
|---|---|
| A | 498 |
| B | 493 |
| C | 494 |
| D | 498 |

8.13 Record the RPSCIP Nuclear Pwr - Delta T Pwr deviation meter reading.

| | DEVIATION (%) |
|---|---|
| A | C |
| B | C |
| C | C |
| D | C |

8.14 Record the Q-Power meter reading located on RTGB-104.

| | Q-POWER (%) |
|---|---|
| JI-003A | 100.1 |
| JI-003B | 100.0 |
| JI-003C | 100.1 |
| JI-003D | 100.0 |

8.15 Clear all trips and alarms. If used, remove trip bypass keys 81, 87, 88 and 90 and verify that the respective indicator lights extinguish.

ST. LUCIE UNIT 1
OPERATING PROCEDURE NO. 1-1200051, REVISION 17
NUCLEAR AND DELTA T POWER CALIBRATION

8.0 INSTRUCTIONS: (continued)

8.16 Complete steps 8.3 through 8.15 for Channel B, C and D of the Reactor Protection System.

8.17 Return keys 81, 87, 88 and 90 to ANPS key locker.

*Satisfactory performance of all the above asterisked steps assures conformance with applicable Technical Specifications.

| RCO | Time | Date |
|---|---|---|
| [signature] | 0015 | JAN 22 1996 |

Reviewed: [signature]
ANPS/NPS

NRC QUESTION/RESPONSE FORM

QUESTION #: _____

DATE: 1/28/96

INSPECTOR: (CIRCLE APPROPRIATE INSPECTOR'S NAME)

(ADD INSPECTORS NAMES TO THIS FORM)

OTHER Bob Schinn

UTILITY REPRESENTATIVE: Dietz

INSPECTION CATEGORY: (CIRCLE APPROPRIATE CATEGORY)

INFO REQUEST (DOCUMENTATION) WALKDOWN PROCEDURES

NRC REQUEST OR CONCERN:

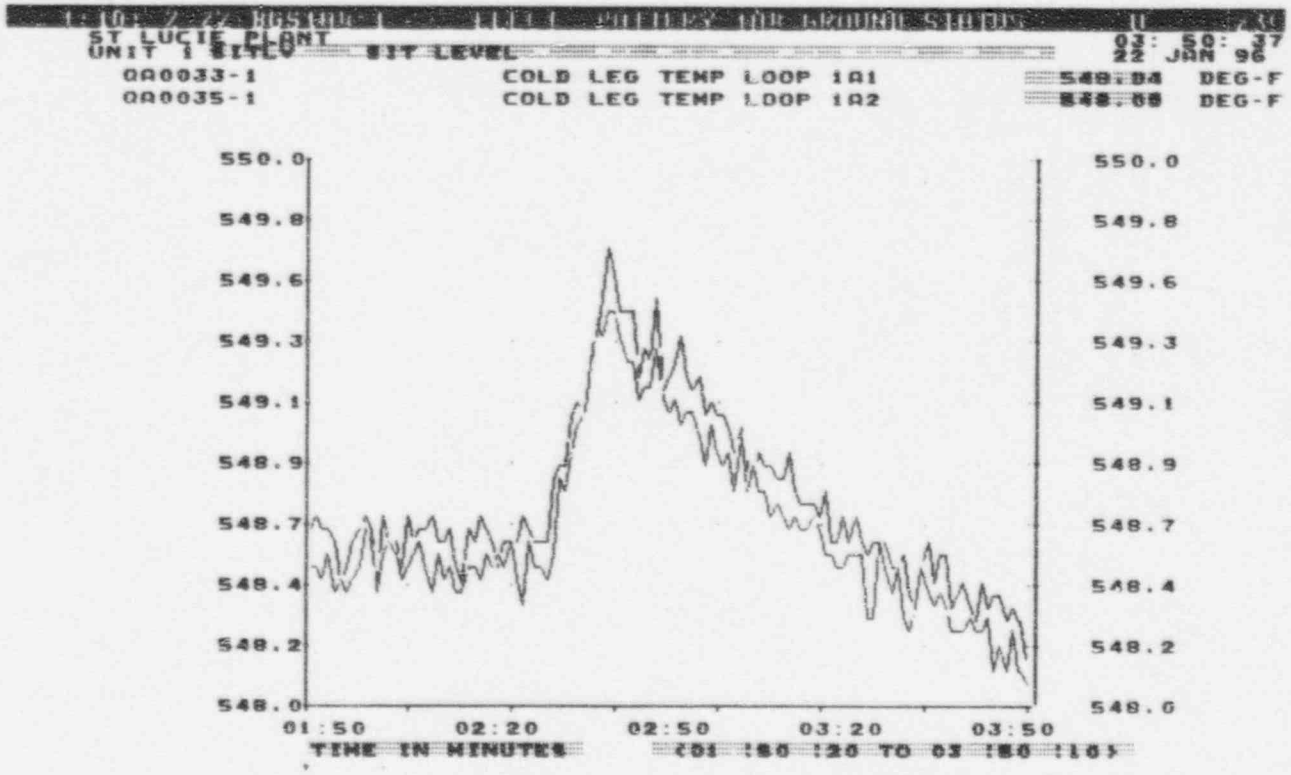
"PLEASE PROVIDE A GRAPH SHOWING TCOLD VS. TIME FOR THE PERIOD COVERING "BEFORE, DURING, AND AFTER" THE TRANSIENT.

RESPONDING INDIVIDUAL/DEPT: Dietz / UC

JTILITY RESPONSE: • GRAPHS Attached for- 1A1, 1A2, 1B1, 1B2 NARROW RANGE COLD LEG TEMPERATURES ALONG WITH TABULATED VALUES FROM ERDADS

• GRAPHS FOR HOT LEG TEMPS A & B ALSO ATTACHED

Fiure 1.6-2


ST LUCIE PLANT
UNIT 1 SITE
SIT LEVEL
03:50:37
22 JAN 96
0A0033-1
COLD LEG TEMP LOOP 1A1
548.84
DEG-F
0A0035-1
COLD LEG TEMP LOOP 1A2
548.68
DEG-F
550.0
549.8
549.6
549.3
549.1
548.9
548.7
548.4
548.2
548.0
01:50
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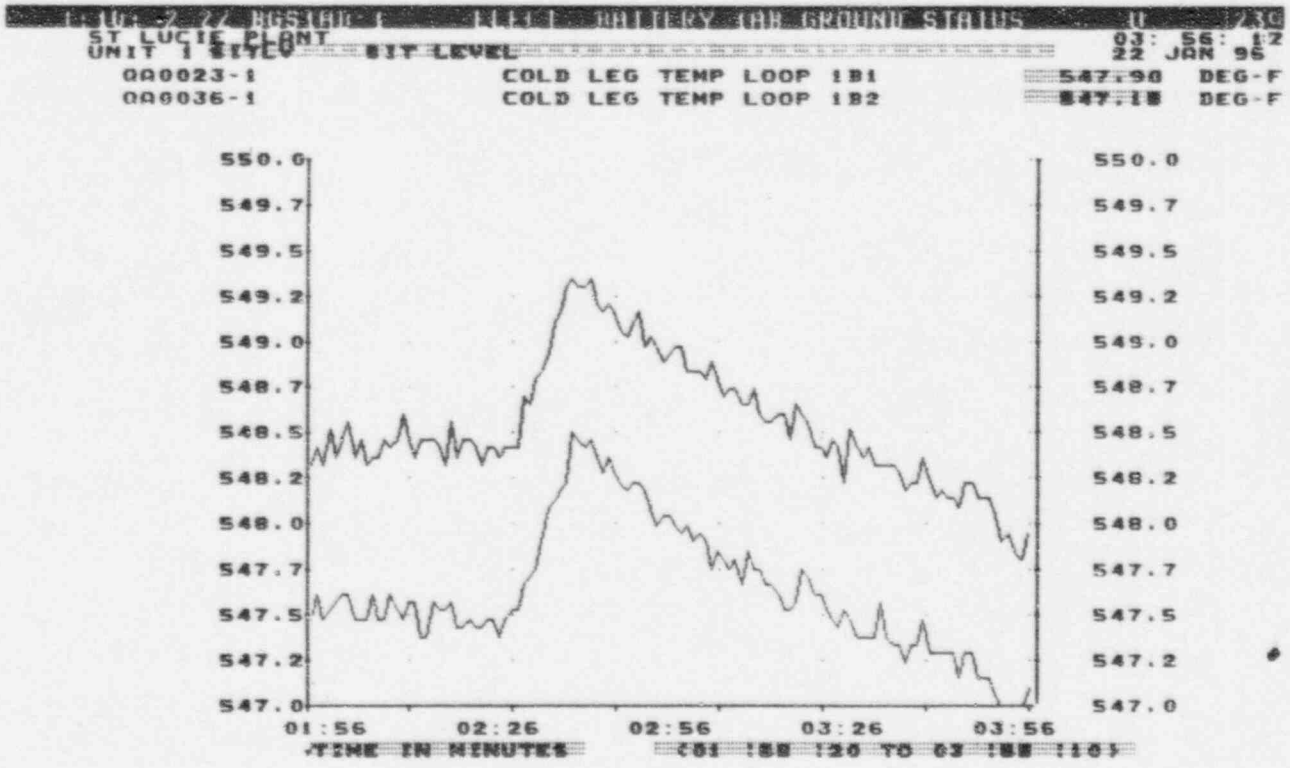
02:50
03:20
03:50
TIME IN MINUTES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UNIT 1 SITE
03: 55: 12
22 JAN 96
QA0023-1 COLD LEG TEMP LOOP 1B1 547.90 DEG-F
QA0036-1 COLD LEG TEMP LOOP 1B2 547.18 DEG-F
550.0
549.7
549.5
549.2
549.0
548.7
548.5
548.2
548.0
547.7
547.5
547.2
547.0
01:56
02:26
02:56
03:26
03:56
TIME IN MINUTES

USE PG-UP AND PG-DN TO PAGE, PREV OR CLEAR TO END

TABULAR TREND REPORT

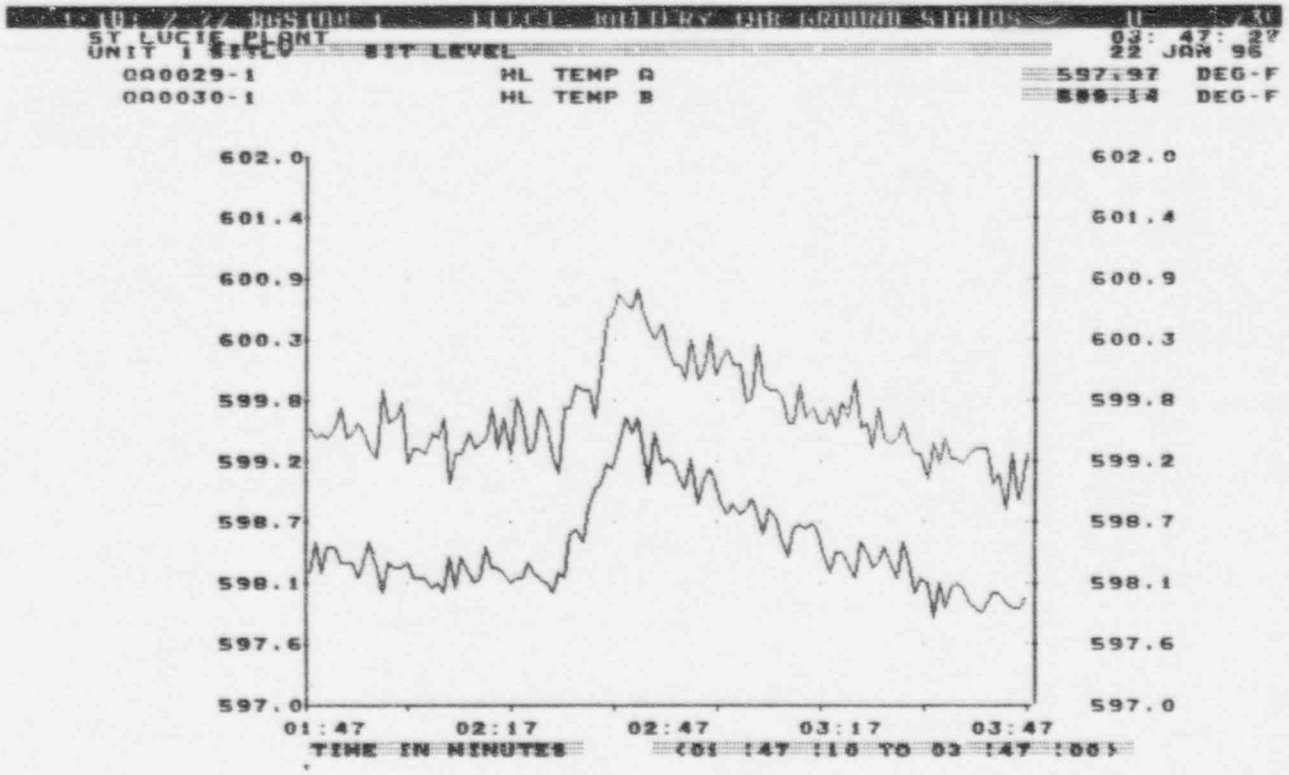
TREND # 1 PAGE 25

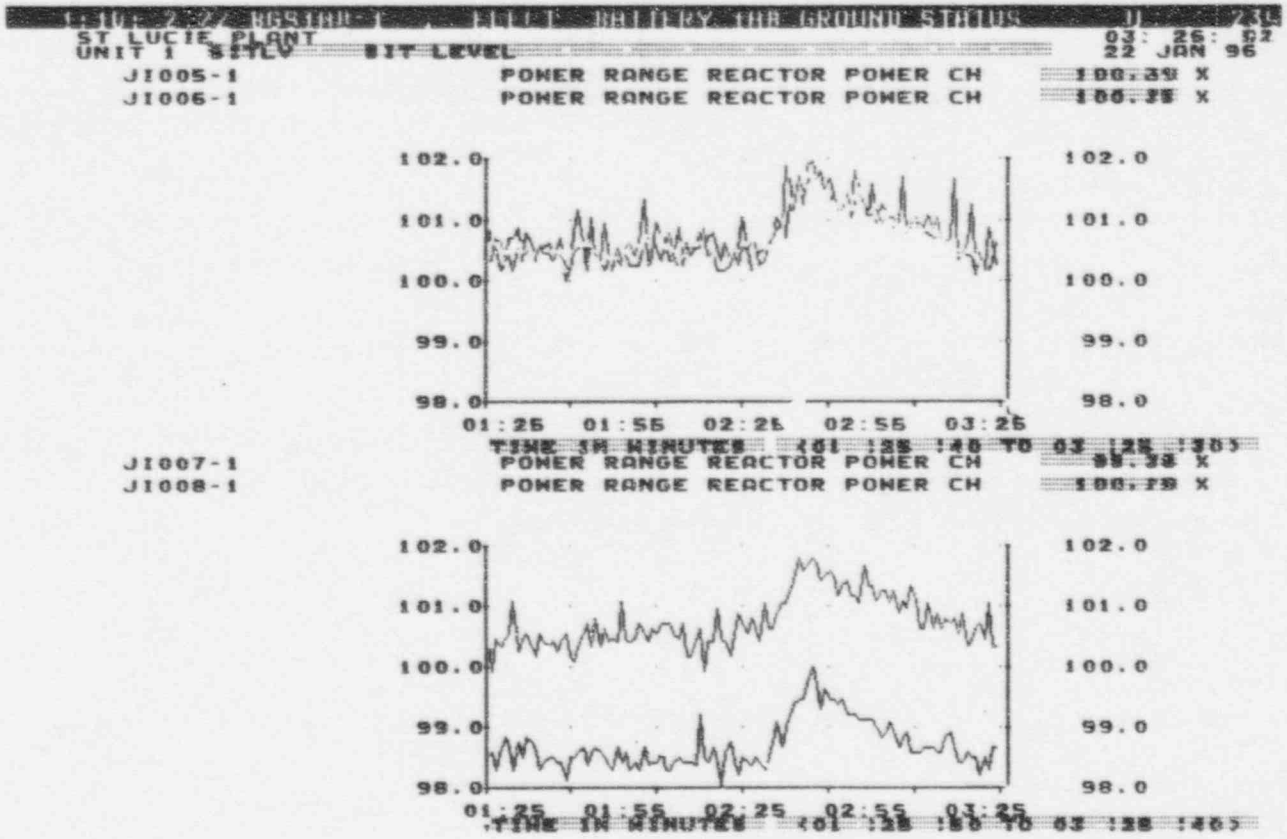
| DATE / TIME | QA0033-1 | QA0035-1 |
|---|---|---|
| 22 JAN 96 2:23:30 | 548.50 | 548.55 |
| 22 JAN 96 2:24:30 | 548.60 | 548.51 |
| 22 JAN 96 2:25:30 | 548.50 | 548.60 |
| 22 JAN 96 2:26:30 | 548.60 | 548.46 |
| 22 JAN 96 2:27:30 | 548.69 | 548.37 |
| 22 JAN 96 2:28:30 | 548.65 | 548.60 |
| 22 JAN 96 2:29:30 | 548.50 | 548.51 |
| 22 JAN 96 2:30:30 | 548.60 | 548.51 |
| 22 JAN 96 2:31:30 | 548.60 | 548.46 |
| 22 JAN 96 2:32:30 | 548.83 | 548.55 |
| 22 JAN 96 2:33:30 | 548.88 | 548.84 |
| 22 JAN 96 2:34:30 | 548.88 | 548.79 |
| 22 JAN 96 2:35:30 | 549.07 | 548.93 |
| 22 JAN 96 2:36:30 | 549.11 | 549.02 |
| 22 JAN 96 2:37:30 | 549.07 | 549.07 |
| 22 JAN 96 2:38:30 | 549.25 | 549.26 |
| 22 JAN 96 2:39:30 | 549.35 | 549.40 |
| 22 JAN 96 2:40:30 | 549.49 | 549.35 |
| 22 JAN 96 2:41:30 | 549.68 | 549.44 |
| 22 JAN 96 2:42:30 | 549.58 | 549.44 |
| 22 JAN 96 2:43:30 | 549.44 | 549.35 |
| 22 JAN 96 2:44:30 | 549.44 | 549.25 |
| 22 JAN 96 2:45:30 | 549.44 | 549.26 |
| 22 JAN 96 2:46:30 | 549.21 | 549.12 |
| 22 JAN 96 2:47:30 | 549.30 | 549.16 |
| 22 JAN 96 2:48:30 | 549.25 | 549.16 |
| 22 JAN 96 2:49:30 | 549.49 | 549.30 |
| 22 JAN 96 2:50:30 | 549.16 | 549.12 |
| 22 JAN 96 2:51:30 | 549.21 | 549.07 |
| 22 JAN 96 2:52:30 | 549.25 | 549.12 |

USE PG-UP AND PG-DN TO PAGE, PREV OR CLEAR TO END

TABULAR TREND REPORT TREND # 1 PAGE 25

| DATE / TIME | QA0023-1 | QA0035-1 |
|---|---|---|
| 22 JAN 96 2:27:40 | 548.46 | 547.47 |
| 22 JAN 96 2:28:40 | 548.37 | 547.38 |
| 22 JAN 96 2:29:40 | 548.41 | 547.47 |
| 22 JAN 96 2:30:40 | 548.41 | 547.47 |
| 22 JAN 96 2:31:40 | 548.37 | 547.47 |
| 22 JAN 96 2:32:40 | 548.65 | 547.66 |
| 22 JAN 96 2:33:40 | 548.69 | 547.71 |
| 22 JAN 96 2:34:40 | 548.74 | 547.75 |
| 22 JAN 96 2:35:40 | 548.84 | 548.04 |
| 22 JAN 96 2:36:40 | 548.98 | 547.99 |
| 22 JAN 96 2:37:40 | 549.02 | 548.18 |
| 22 JAN 96 2:38:40 | 549.16 | 548.18 |
| 22 JAN 96 2:39:40 | 549.30 | 548.36 |
| 22 JAN 96 2:40:40 | 549.35 | 548.41 |
| 22 JAN 96 2:41:40 | 549.35 | 548.46 |
| 22 JAN 96 2:42:40 | 549.35 | 548.50 |
| 22 JAN 96 2:43:40 | 549.44 | 548.36 |
| 22 JAN 96 2:44:40 | 549.30 | 548.27 |
| 22 JAN 96 2:45:40 | 549.12 | 548.22 |
| 22 JAN 96 2:46:40 | 549.21 | 548.27 |
| 22 JAN 96 2:47:40 | 549.12 | 548.27 |
| 22 JAN 96 2:48:40 | 549.16 | 548.22 |
| 22 JAN 96 2:49:40 | 549.07 | 548.27 |
| 22 JAN 96 2:50:40 | 549.16 | 548.13 |
| 22 JAN 96 2:51:40 | 548.93 | 548.13 |
| 22 JAN 96 2:52:40 | 549.07 | 548.22 |
| 22 JAN 96 2:53:40 | 548.98 | 548.13 |
| 22 JAN 96 2:54:40 | 548.98 | 548.08 |
| 22 JAN 96 2:55:40 | 549.02 | 548.04 |
| 22 JAN 96 2:56:40 | 548.84 | 548.04 |

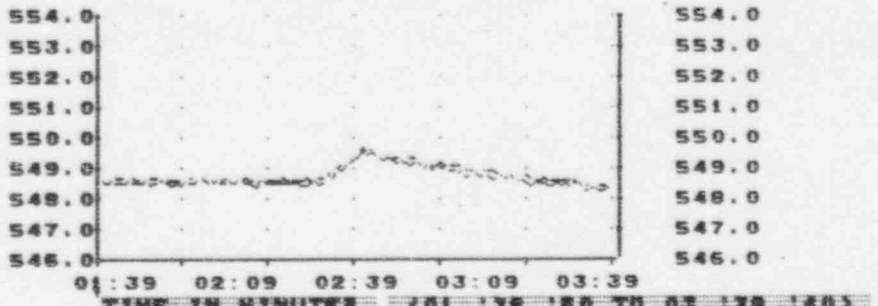

ST LUCIE PLANT
UNIT 1 SITE
SIT LEVEL
02: 47: 27
22 JAN 96
QA0029-1
HL TEMP A
597.97 DEG-F
QA0030-1
HL TEMP B
DEG-F
602.0
601.4
600.9
600.3
599.8
599.2
598.7
598.1
597.6
597.0
01:47
02:17
02:47
03:17
03:47
TIME IN MINUTES


ST LUCIE PLANT
UNIT 1 SITE
BIT LEVEL
03:26:02
22 JAN 96
JI005-1 POWER RANGE REACTOR POWER CH
JI006-1 POWER RANGE REACTOR POWER CH
102.0
101.0
100.0
99.0
98.0
01:25 01:55 02:25 02:55 03:25
TIME IN MINUTES
JI007-1 POWER RANGE REACTOR POWER CH
JI008-1 POWER RANGE REACTOR POWER CH

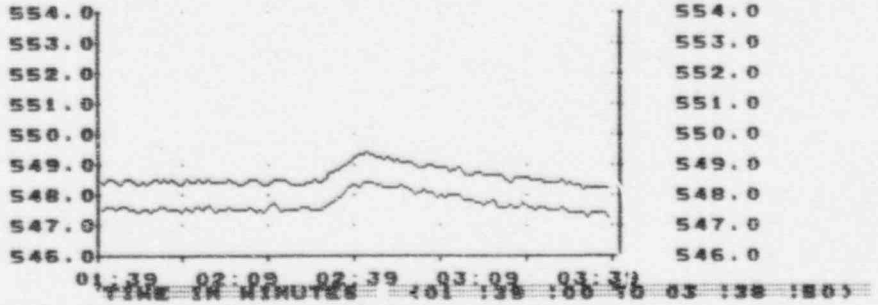
ST LUCIE PLANT
UNIT 1 SITE-V SIT LEVEL

03:39:12
22 JAN 96

| | | |
|---|---|---|
| QA0033-1 | COLD LEG TEMP LOOP 1A1 | 548.46 DEG-F |
| QA0035-1 | COLD LEG TEMP LOOP 1A2 | 548.32 DEG-F |




| | | |
|---|---|---|
| QA0023-1 | COLD LEG TEMP LOOP 1B1 | 549.18 DEG-F |
| QA0036-1 | COLD LEG TEMP LOOP 1B2 | 547.99 DEG-F |



NRC QUESTION/RESPONSE FORM

QUESTION #: _____

DATE: 1/28/96

INSPECTOR: (~~CIRCLE APPROPRIATE INSPECTOR'S NAME~~)

(ADD INSPECTORS NAMES TO THIS FORM)

OTHER Bob Schinn

UTILITY REPRESENTATIVE: DIET-2

INSPECTION CATEGORY: (CIRCLE APPROPRIATE CATEGORY)

(INFO REQUEST) (DOCUMENTATION) WALKDOWN PROCEDURES

NRC REQUEST OR CONCERN: (A) ERDADS PRINTOUTS SHOW JI-005-1 THROUGH JI-008-1 LABELLED AS "POWER RANGE REACTOR POWER". IS THIS CALORIMETRIC (ODYS) POWER, NI POWER, ΔT POWER, OR Q POWER.
(B) ERDADS PRINTOUT ALSO LABELS QA0058-1 AS "POWER RANGE POWER LEVEL"; WHAT IS THIS??

RESPONDING INDIVIDUAL/DEPT: DIET-2 / LIC

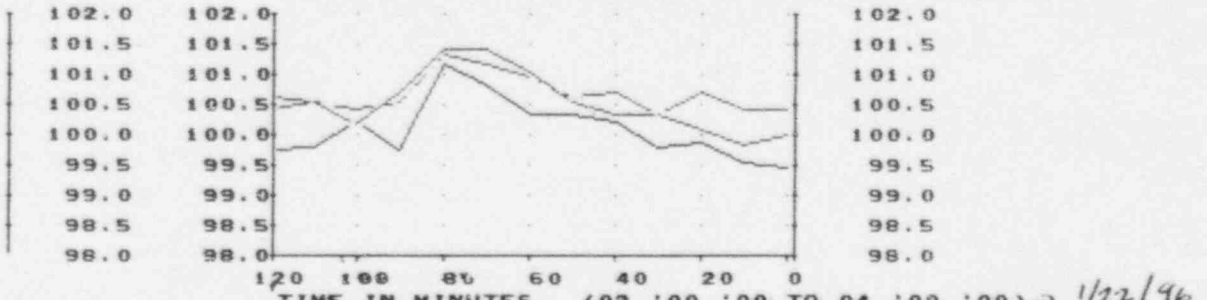
UTILITY RESPONSE:

JI 005 thru JI008 ARE INDICATIONS OF "Q POWER", WHERE Q-POWER IS THE AUCTIONEERED MAXIMUM OF NI POWER" AND "ΔT POWER".

Fiure 1.6-2

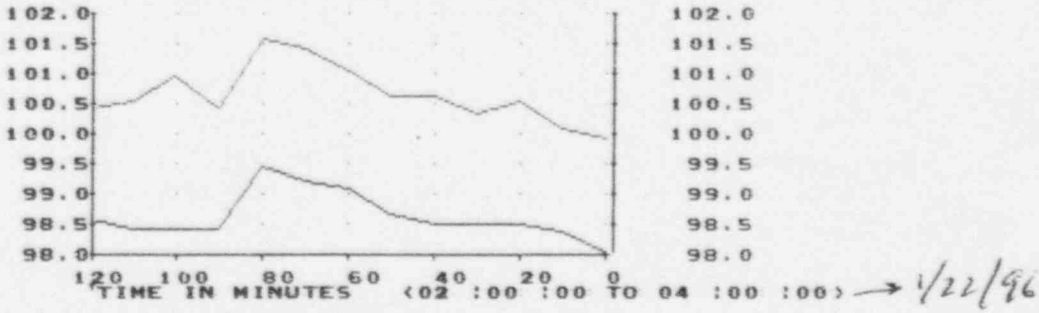
ST LUCIE PLANT
UNIT 1 SITLV SIT LEVEL 15: 31: 38
27 JAN 96 RE

QA0058-1 POWER RANGE POWER LEVEL % %
JI005-1 POWER RANGE REACTOR POWER CH % %
JI006-1 POWER RANGE REACTOR POWER CH % %




1/22/96

JI007-1 POWER RANGE REACTOR POWER CH % %
JI008-1 POWER RANGE REACTOR POWER CH % %




1/22/96

USE PG-UP AND PG-DN TO PAGE, PREV OR CLEAR TO END

TABULAR TREND REPORT TREND # 1 PAGE 65

| DATE / TIME | QA0058-1 |
|---|---|
| 21 JAN 96 23:10: 0 | 99.94 |
| 21 JAN 96 23:20: 0 | 100.00 |
| 21 JAN 96 23:30: 0 | 100.05 |
| 21 JAN 96 23:40: 0 | 100.00 |
| 21 JAN 96 23:50: 0 | 99.92 |
| 22 JAN 96 0: 0: 0 | 100.25 |
| 22 JAN 96 0:10: 0 | 99.94 |
| 22 JAN 96 0:20: 0 | 99.94 |
| 22 JAN 96 0:30: 0 | 100.13 |
| 22 JAN 96 0:40: 0 | 100.04 |
| 22 JAN 96 0:50: 0 | 100.07 |
| 22 JAN 96 1: 0: 0 | 99.86 |
| 22 JAN 96 1:10: 0 | 99.86 |
| 22 JAN 96 1:20: 0 | 100.11 |
| 22 JAN 96 1:30: 0 | 99.88 |
| 22 JAN 96 1:40: 0 | 100.00 |
| 22 JAN 96 1:50: 0 | 100.07 |
| 22 JAN 96 2: 0: 0 | 99.76 |
| 22 JAN 96 2:10: 0 | 99.80 |
| 22 JAN 96 2:20: 0 | 100.19 |
| 22 JAN 96 2:30: 0 | 99.76 |
| 22 JAN 96 2:40: 0 | 101.15 |
| 22 JAN 96 2:50: 0 | 100.82 |
| 22 JAN 96 3: 0: 0 | 100.33 |
| 22 JAN 96 3:10: 0 | 100.33 |
| 22 JAN 96 3:20: 0 | 100.19 |
| 22 JAN 96 3:30: 0 | 99.78 |
| 22 JAN 96 3:40: 0 | 99.86 |
| 22 JAN 96 3:50: 0 | 99.55 |
| 22 JAN 96 4: 0: 0 | 99.47 |

USE PG-UP AND PG-DN TO PAGE, PREV OR CLEAR TO END

TABULAR TREND REPORT TREND # 1 PAGE 66

| DATE / TIME | QA0058-1 |
|---|---|
| 22 JAN 96 4:10: 0 | 99.70 |
| 22 JAN 96 4:20: 0 | 99.70 |
| 22 JAN 96 4:30: 0 | 100.00 |
| 22 JAN 96 4:40: 0 | 100.02 |
| 22 JAN 96 4:50: 0 | 100.02 |
| 22 JAN 96 5: 0: 0 | 99.90 |
| 22 JAN 96 5:10: 0 | 100.19 |
| 22 JAN 96 5:20: 0 | 100.04 |
| 22 JAN 96 5:30: 0 | 100.52 |
| 22 JAN 96 5:40: 0 | 100.58 |
| 22 JAN 96 5:50: 0 | 100.17 |
| 22 JAN 96 6: 0: 0 | 100.15 |
| 22 JAN 96 6:10: 0 | 100.21 |
| 22 JAN 96 6:20: 0 | 100.43 |
| 22 JAN 96 6:30: 0 | 100.25 |
| 22 JAN 96 6:40: 0 | 100.37 |
| 22 JAN 96 6:50: 0 | 100.31 |
| 22 JAN 96 7: 0: 0 | 100.37 |
| 22 JAN 96 7:10: 0 | 100.46 |
| 22 JAN 96 7:20: 0 | 100.04 |
| 22 JAN 96 7:30: 0 | 100.31 |
| 22 JAN 96 7:40: 0 | 100.35 |
| 22 JAN 96 7:50: 0 | 100.31 |
| 22 JAN 96 8: 0: 0 | 100.17 |
| 22 JAN 96 8:10: 0 | 100.17 |
| 22 JAN 96 8:20: 0 | 100.17 |
| 22 JAN 96 8:30: 0 | 100.21 |
| 22 JAN 96 8:40: 0 | 100.60 |
| 22 JAN 96 8:50: 0 | 100.29 |
| 22 JAN 96 9: 0: 0 | 100.33 |

USE F1 TO PRINT THIS PAGE, F10 TO CLEAR TO END

TABULAR TREND REPORT TREND # 1 PAGE 67

| DATE / TIME | QA0058-1 |
|---|---|
| 22 JAN 96 9:10: 0 | 100.31 |
| 22 JAN 96 9:20: 0 | 100.43 |
| 22 JAN 96 9:30: 0 | 99.98 |
| 22 JAN 96 9:40: 0 | 100.33 |
| 22 JAN 96 9:50: 0 | 100.17 |
| 22 JAN 96 10: 0: 0 | 100.37 |
| 22 JAN 96 10:10: 0 | 100.29 |
| 22 JAN 96 10:20: 0 | 100.52 |
| 22 JAN 96 10:30: 0 | 100.31 |
| 22 JAN 96 10:40: 0 | 100.35 |
| 22 JAN 96 10:50: 0 | 100.52 |
| 22 JAN 96 11: 0: 0 | 100.41 |
| 22 JAN 96 11:10: 0 | 100.43 |
| 22 JAN 96 11:20: 0 | 99.92 |
| 22 JAN 96 11:30: 0 | 100.11 |
| 22 JAN 96 11:40: 0 | 99.92 |
| 22 JAN 96 11:50: 0 | 100.13 |
| 22 JAN 96 12: 0: 0 | 99.96 |
| 22 JAN 96 12:10: 0 | 100.04 |
| 22 JAN 96 12:20: 0 | 100.19 |
| 22 JAN 96 12:30: 0 | 99.96 |
| 22 JAN 96 12:40: 0 | 100.17 |
| 22 JAN 96 12:50: 0 | 100.15 |
| 22 JAN 96 13: 0: 0 | 100.09 |
| 22 JAN 96 13:10: 0 | 100.17 |
| 22 JAN 96 13:20: 0 | 100.11 |
| 22 JAN 96 13:30: 0 | 100.00 |
| 22 JAN 96 13:40: 0 | 100.02 |
| 22 JAN 96 13:50: 0 | 100.15 |
| 22 JAN 96 14: 0: 0 | 99.88 |

ST. LUCIE PLANT NUCLEAR PLANT ERDADS DATA BASE LISTING

UNIT #1 ANALOG POINTS

| DATA BASE POINT NAME (PT. ID.) | DATA BASE POINT DESCRIPTION | POINT ENG. UNITS | ENGINEERING UNITS HIGH SCALE | ENGINEERING UNITS LOW SCALE |
|---|---|---|---|---|
| MV08-1B-1 | MS HDR B BYPASS 1B POSITION | | | |
| HCV08-1B-1 | MS HDR B ISOL VLV 1B POSITION | | | |
| MSLRAD-1 | MSL HIGHEST RADIATION | MR/HR | | |
| RE26-37-1 | NEW FUEL STORAGE AREA RAD | MR/HR | 1.00000000E+04 | 1.00000000E-01 |
| QA0037-1 | PLANT EFFLUENT RADIATION | | | |
| RSC26-1H-1 | PLANT STACK (HR) NOBLE GAS RAD | UC/CC | | |
| RSC26-1L-1 | PLANT STACK (LR) NOBLE GAS RAD | UC/CC | | |
| RSC26-1M-1 | PLANT STACK (MR) NOBLE GAS RAD | UC/CC | | |
| RSC26-1F-A-1 | PLANT STACK FLOW 15MIN AVERAGE | SCFM | | |
| RSC26-1F-1 | PLANT STACK FLOW CH A RAD | SCFM | | |
| RSC26-1I-1 | PLANT STACK IODINE RAD | CPM | | |
| RSC26-1P-1 | PLANT STACK PARTICULATE RAD | CPM | | |
| RSC26-1H-A-1 | PLANT STACK(HL)NG RAD 15M AVG | UC/CC | | |
| RSC26-1L-A-1 | PLANT STACK(LR)NG RAD 15M AVG | UC/CC | | |
| RSC26-1M-A-1 | PLANT STACK(MR)NG RAD 15M AVG | UC/CC | | |
| CGAS-1 | PLANT STK. NOBLE GAS AVG | UC/CC | | |
| FT1402-O-1 | PORV V1402 FLOW ---- SQRT CONV | % | 1.00000000E+02 | 0.00000000E+00 |
| FT1404-O-1 | PORV V1404 FLOW ---- SQRT CONV | % | 1.00000000E+02 | 0.00000000E+00 |
| QA0058-1 | POWER RANGE POWER LEVEL | PRCT | | |
| JI005-1 | POWER RANGE REACTOR POWER CH A | % | 1.25000000E+02 | 0.00000000E+00 |
| JI006-1 | POWER RANGE REACTOR POWER CH B | % | 1.25000000E+02 | 0.00000000E+00 |
| JI007-1 | POWER RANGE REACTOR POWER CH C | % | 1.25000000E+02 | 0.00000000E+00 |
| JI008-1 | POWER RANGE REACTOR POWER CH D | % | 1.25000000E+02 | 0.00000000E+00 |
| QTA677-1 | POWER SELECTION | %/CPS | | |
| PROPT-1 | PRESSURIZER HEATER TOTAL POWER | KW | | |
| AM943-1 | PRESSURIZER HTR BUS 1A3 AMPS | AMPS | 1.50000000E+02 | 0.00000000E+00 |
| AM944-1 | PRESSURIZER HTR BUS 1B3 AMPS | AMPS | 1.50000000E+02 | 0.00000000E+00 |
| LT1110X-1 | PRESSURIZER LEVEL | % | 1.00000000E+02 | 0.00000000E+00 |
| LT1110Y-1 | PRESSURIZER LEVEL | % | 1.00000000E+02 | 0.00000000E+00 |
| QA0001-1 | PRESSURIZER LEVEL | PRCT | | |
| LT1103-1 | PRESSURIZER LEVEL (COLD CNDTN) | % | 1.00000000E+02 | 0.00000000E+00 |

NRC QUESTION/RESPONSE FORM

QUESTION #: _____

DATE: 1/28/96

INSPECTOR: ~~(CIRCLE APPROPRIATE INSPECTOR'S NAME)~~

(ADD INSPECTORS NAMES TO THIS FORM)

OTHER Bob Schinn

UTILITY REPRESENTATIVE: Dietz

INSPECTION CATEGORY: (CIRCLE APPROPRIATE CATEGORY)

INFO REQUEST (DOCUMENTATION) WALKDOWN PROCEDURES

NRC REQUEST OR CONCERN:

STRIP CHART for MWe during the event. e.g. IHE states that 870 MWe existed at beginning of Shift and that indicated plant "MWe reached 885 and indicated average reactor power was approximately 100.2 %." This would imply an increase.

RESPONDING INDIVIDUAL/DEPT: Dietz / LIC

UTILITY RESPONSE: See Attached Strip chart - Max MWe shown to be 875 MWe, not the 885 MWe stated in the IHE.

Fiure 1.6-2

MEGAWATTS

100 200 300 400 500 600 700 800 900 1000

MEGAWATTS

100 200 300 400 500 600 700 800 900 1000

ST. LUCIE UNIT 1
OPERATING PROCEDURE NO. 1-3200020, REVISION 23
PRIMARY SYSTEM MANUAL CALORIMETRIC

**DATA SHEET 1**
(Page 1 of 3)

Date: JAN 22 1996 Time: CC:CL (AM) PM

1. ENTER MAIN STEAM PRESSURE

PI-8013A 880
PI-8023A 870
PI-8013B 860
PI-8023B 860
PI-8013C 860
PI-8023C 860
PI-8013D 860
PI-8023D 860

ENTER FEEDWATER FLOW

FR-9011 5.81 X $10^6$ lb/hr /R23 /R23 /R23 /R23
FR-9021 5.98 X $10^6$ lb/hr /R23 /R23 /R23

$M_{FW}$ = 11.79 X $10^6$ lb/hr (TOTAL)

Average Steam Pressure = 6.910 (TOTAL) divided by 8 = 863.75 (AVERAGE)

ENTER FEEDWATER TEMPERATURE

Speedomax Pt. 1 434 °F
Pt. 2 434 °F

Average Feedwater Temperature 868 (TOTAL) divided by 2 = 434 (AVERAGE)

---

From a set of steam tables, enter the enthalpy of the steam pressure:

$h_{steam}$ = 1197.552 BTU/lbm

Calculate the heat output due to steam flow ($Q_{steam}$):

1197.552 ($h_{steam}$) x [11.79 E6 ($M_{FW}$) - 528529 E6 ($M_{BD}$)] = 1405171.71 E6 BTU/hr ($Q_{steam}$)

S 1 OPS
DATE 960122
DOCT PROCEDURE
DOCN OP-1-3200020
SYS OPS
COMP 1ET
ITM 23

ST. LUCIE UNIT 1
OPERATING PROCEDURE NO. 1-3200020, REVISION 23
PRIMARY SYSTEM MANUAL CALORIMETRIC

**DATA SHEET 1**
(Page 2 of 3)

From the steam tables, enter the enthalpy of the feedwater at the average feedwater temperature:

$$h_{FW} = \underline{\quad 413.35 \quad} \frac{BTU}{lbm}$$

Calculate the feedwater heat input ($Q_{FW}$):

$$(\underline{\quad 11.79 \quad} \frac{}{M_{FW}} \times 10^6) \times (\underline{\quad 413.35 \quad} \frac{}{h_{FW}}) = \underline{\quad 4861.60 \quad} \frac{}{Q_{FW}} \times 10^6 \frac{BTU}{hr}$$

Circle the total blowdown flow from the S/Gs and the corresponding heat output: (Interpolation is not required, circle the closest blowdown flow below)

| Total blowdown flow (both steam generators) | Mass flow of blowdown $M_{BD}$ | Heat output from blowdown $Q_{bd}$ |
|---|---|---|
| 40 GPM | .019799 E6 lbm/hr | 9.660 E6 BTU/hr |
| 80 GPM | .039599 E6 lbm/hr | 19.320 E6 BTU/hr |
| 120 GPM | .059398 E6 lbm/hr | 28.981 E6 BTU/hr |
| 160 GPM | .079198 E6 lbm/hr | 38.641 E6 BTU/hr |
| 200 GPM | .098997 E6 lbm/hr | 48.301 E6 BTU/hr |
| 240 GPM | .118797 E6 lbm/hr | 57.961 E6 BTU/hr |

Calculate the heat output from the core:

$$[\underline{\quad 14071.71 \quad} \frac{}{Q_{STEAM}} - \underline{\quad 4861.60 \quad} \frac{}{Q_{FW}} + \underline{\quad 19.320 \quad} \frac{}{Q_{BD}} - \frac{47.23}{Q_{OTHER}}] \times 10^6 \frac{BTU}{hr} = \underline{\quad 9183.30 \quad} \frac{}{Q_{CORE}} \times 10^6 \frac{BTU}{hr}$$

Calculate percent core power:

Core Power = $\underline{\quad 9183.30 \quad} \frac{}{Q_{CORE}} \times 10^6$ divided by $(92.143 \times 10^6)$ = $\boxed{\quad 99.65 \quad}$ % Manual Calorimetric Power

ST. LUCIE UNIT 1
OPERATING PROCEDURE NO. 1-3200020, REVISION 23
PRIMARY SYSTEM MANUAL CALORIMETRIC

**DATA SHEET 1**
(Page 3 of 3)

Record DDPS Calorimetric Power (Point 32), (Point ID 31 should be used below if the reactor has not been in a stable power configuration for at least 10 minutes):

DDPS Calorimetric Power = 100 %

| NOTE |
| --- |
| Calculated power in percent must be within 2% of DDPS calorimetric power. If not, notify the ANPS/NPS. |

2. Every Monday complete Data Sheet 2.

C
Initial

Core
RCO

ANPS/NPS

ST. LUCIE UNIT 1
OPERATING PROCEDURE NO. 1-3200020, REVISION 23
PRIMARY SYSTEM MANUAL CALORIMETRIC

**DATA SHEET 2**
(Page 1 of 1)

NOTE
This data sheet will compare feedwater temperature inputs into DDPS calorimetric with feedwater temperature indications used in manual calorimetric.

1. Record feedwater temperature inputs from DDPS.

   PT 301 433.8

   PT 302 431.7

   PT 303 433.0

   Compare PTs 301 through 303 to be within 2°F, if greater than 2°F notify I&C.

   PT 304 436.7

   PT 305 437.1

   PT 306 433.2

   Compare PTs 304 through 306 to be within 2°F, if greater than 2°F notify I&C.

2. Record feedwater temperatures from DDPS and from Speedomax.

   DDPS PT 389 433.0 Speedomax PT 1 434

   Ensure feedwater temperatures to be within 5°F or notify I&C and ANPS.

   DDPS PT 390 431.7 Speedomax PT 2 434

   Ensure feedwater temperatures to be within 5°F or notify I&C and ANPS.

RCO _____ ANPS _____

## Response to NRC Question Regarding 50.59 Screening of TC 1-96-017 to OP 1-0250020, Boron Concentration Control - Normal Operation

The question raised is with respect to the makeup water flow path. The "normal" method of adjusting boron concentration involves directing the makeup water to the VCT. The subject procedure permits directing flow to the charging pump suction header, downstream of the VCT. Thus, the question is raised if this procedure constitutes a change to the facility or procedures as described in the UFSAR. (Note: The TC involved did not establish the option of directing flow directly to the charging pump suction header, this option existed in the previous revision of the procedure.)

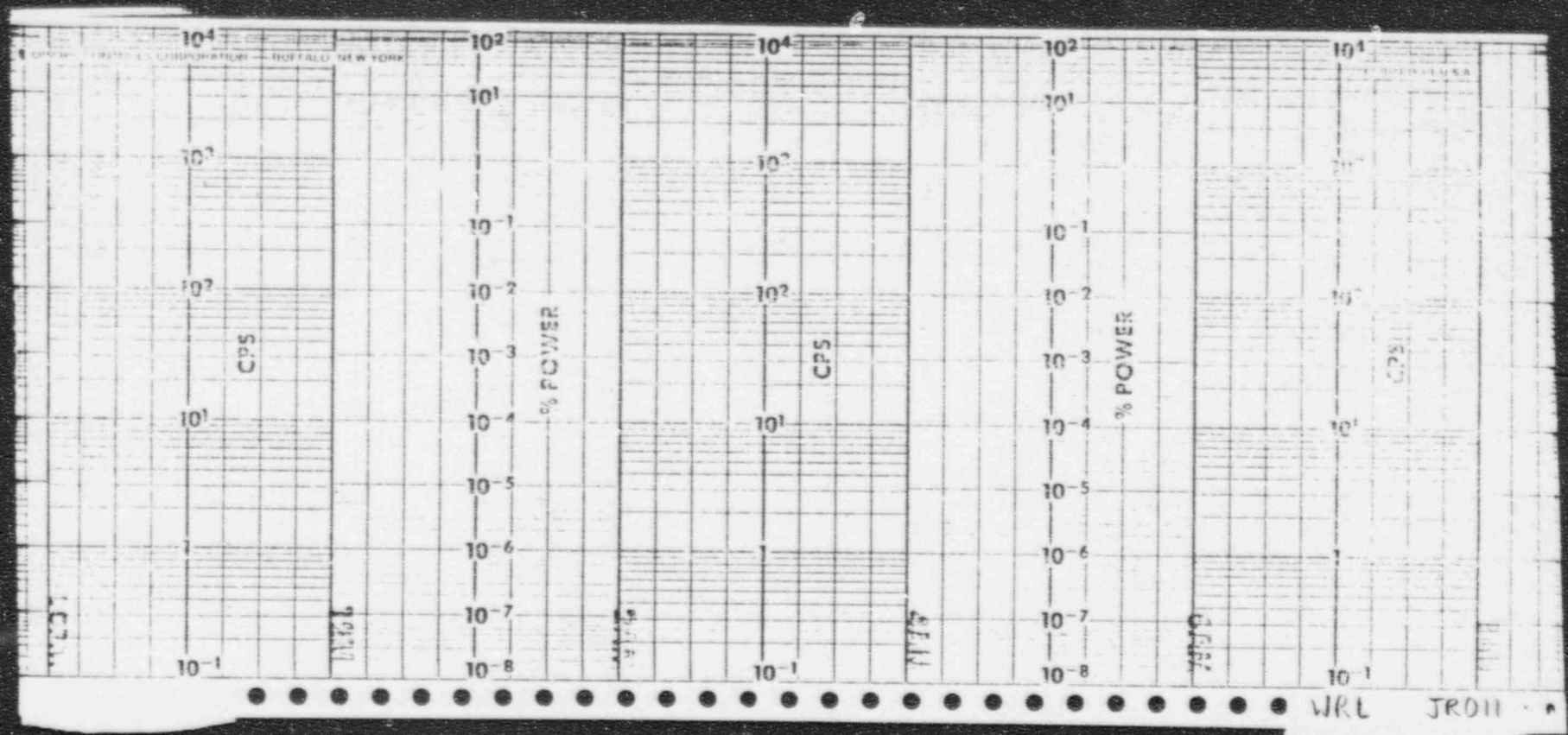
The flow path in question is via existing system piping and valves. The sole purpose of lines 3-CH-640 and 4-CH-639 is to provide for direct introduction of makeup water and/or boric acid solution to the common charging pump suction header. Thus, no change to the facility as described in the UFSAR has been introduced by this procedure.

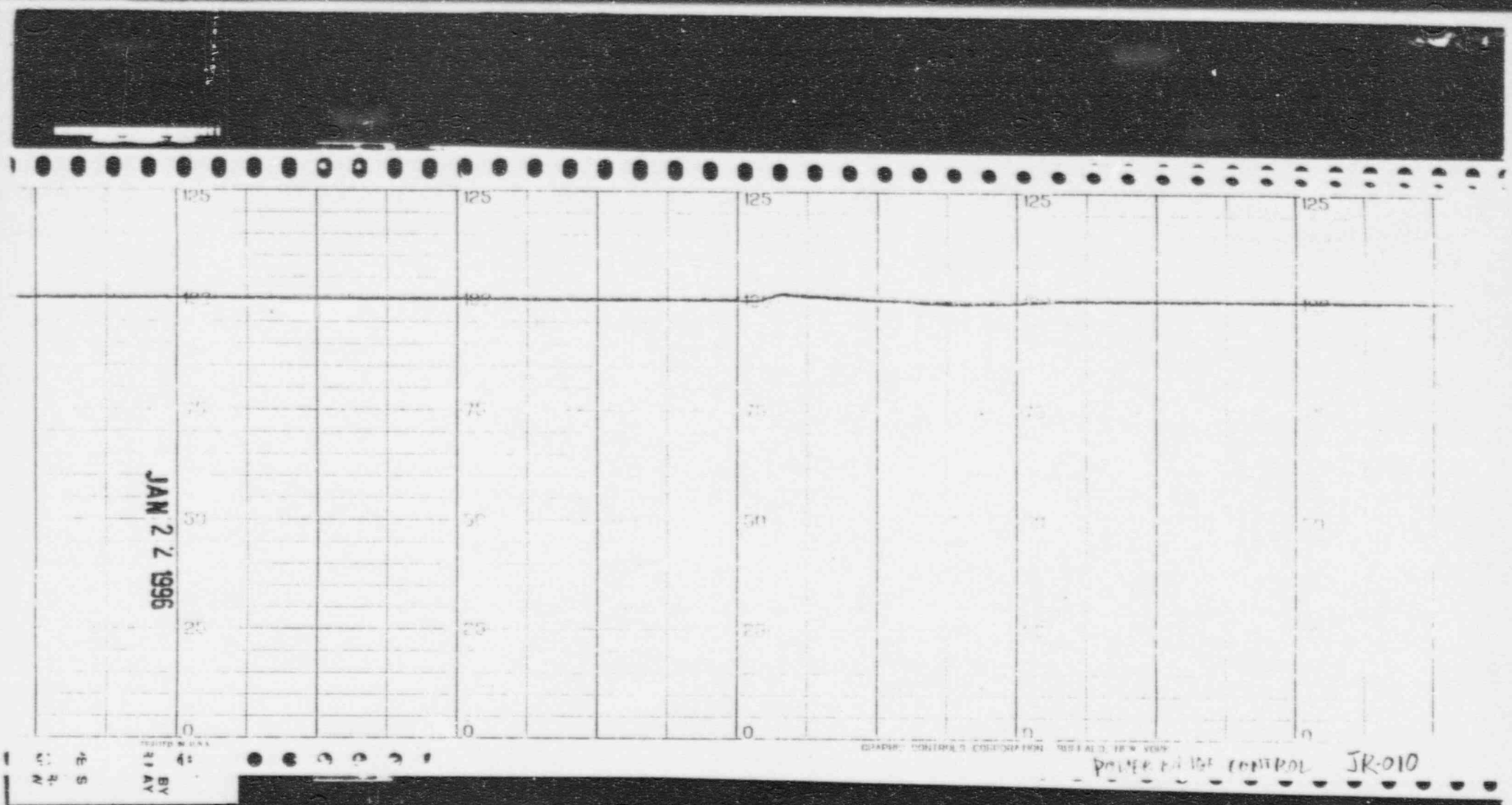
As described in the UFSAR, there are several different modes of operation for controlling RCS boron concentration, including the manual mode. When operating in the manual mode the makeup flow can either be directed to the RCS via the VCT or it can be supplied directly to the charging pump suction header. Both of these flow paths are shown on UFSAR figure, 9.3-5. By bypassing the VCT and feeding directly to the charging pump suction header, the effects of the addition on RCS boron concentration occur more rapidly.

The boron dilution events of UFSAR section 15.2.4 were reviewed. As discussed in section 15.2.4.2.1, each of the six different events analyzed assumed that boron dilution resulted from the direct injection of unborated demineralized water into the RCS at the maximum rate possible (132 gpm = 3 charging pumps). As such, the UFSAR analysis does not assume that makeup flow is being directed through the VCT, since any flow via the VCT would result in a mixing of the makeup flow with the borated contents of the tank. The only means of direct injection of unborated makeup would be through the subject lineup.

The UFSAR chapter 15 analysis notes "Because of the procedures, involved and the numerous alarms and indications available to the operator, the probability of a sustained or erroneous dilution is very low." This statement is valid for all modes of operation of the makeup system. The subject plant procedure provides sufficient controls to ensure proper operation and control of boron concentration. In addition, there are numerous alarms and indications available to operators for any mode of operation.

In conclusion, the subject procedure is consistent with system design and operation as provided in the UFSAR.


CPS
% POWER
CPS
% POWER
CPS
WRL
JROH


125
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GRAPHIC CONTROLS CORPORATION
POWER RANGE CONTROL
JR-010

3PM FRIDAY

# ST. LUCIE PLANT
# NP-700 PROBLEM REPORT 96-008

## I. EVENT TITLE

High Reactor Coolant Temperature and Power Due To Excess Dilution

## II. INITIAL PLANT CONDITIONS

Unit 1 was at 100% power, steady state operations.

## III. EVENT SEQUENCE

At approximately 0220 on January 22, 1996 reactor fuel burnout resulted in an indicated reactor coolant cold leg temperature of 548.7F by the digital meter on Reactor Turbine Generator Board (RTGB)-104. The board Reactor Control Operator (RCO) decided to dilute the Reactor Coolant System (RCS) in order to restore cold leg temperature to programmed level of 549.0F. He commenced manual dilution in accordance with OP 1-0250020 "Boron Concentration Control - Normal Operation" Section 8.5, with Primary Makeup Water (PMW) directed to the suction of the 1B charging pump at approximately 0225. Shortly after, the board RCO left the RTGB area and went to the kitchen located adjacent to the control room to retrieve his meal. A few minutes later, the board RCO returned to the RTGB area, set his meal on the desk and heard the PMW integrator "clicking". He realized that he was still diluting the RCS and immediately secured the evolution. The RCO commenced borating in accordance with OP 1-0250020 to the suction of the charging pump for a total initial addition of approximately 26 gallons. He simultaneously informed the desk RCO and the Assistant Nuclear Plant Supervisor (ANPS) of his actions. At approximately 0235 annunciator M-16 "RCP CONT BLDOFF PRESS HIGH" alarmed, due to a higher than normal VCT pressure caused by letdown flow aligned to the VCT with charging pump suction aligned to PMW. Indicated RCS cold leg temperature was approximately 549.6F. The ANPS entered a two hour Action Statement to restore RCS cold leg temperature to less than or equal to 549F in accordance with Technical Specification Limiting Condition of Operation (LCO) 3.2.5. At approximately 0242 RTGB-104 indicated RCS cold leg temperature reached its highest value of 549.9F. Indicated plant MegaWatt (MW) reached 885, approximately 4 MW higher than before the dilution, and indicated average reactor power was approximately 100.2% These levels were sustained for less than four minutes and then reduced as boration affected reactivity. At 0314 indicated cold leg temperature was 549F, and the LCO Action Statement was exited. All other parameters of reactor power and MW reached normal levels concurrently.

DRAFT

## IV. CAUSE OF THE EVENT

The cause of this event was cognitive personnel error due to lack of attention to detail by the board RCO performing the dilution. He left the RTGB area with a reactivity evolution in progress.

Additional Deficiencies Noted:

1) The RCO performing the dilution left the RTGB area and did not inform the desk RCO or the ANPS that he was diluting the RCS. The "Short Term Turnover" process was less than adequate.

2) Expectations for reactivity control for dilution evolutions were not adhered to by the RCO.

3) The expectation for notification of Operations Management and Plant Management was not adhered to.

## V. CORRECTIVE ACTIONS

1. A self critique was conducted by the control room crew immediately following the event.

2. An independent investigation team led by the Assistant Operations Supervisor gathered all facts associated with the event.

3. The RCO responsible for initiating the dilution was removed from licensed duties based on the results from the fact finding team.

4. The Site Vice President, Plant General Manager and Operations Manager conducted crew meetings with each of the operating crews to ensure all crews are aware of the Unit 1 dilution event. Additionally, excerpts from Zack Pate's "The Control Room" and site management's expectations with respect to conservative operation were discussed. These briefs were completed Friday morning, January 26, 1996.

5. An industry survey was conducted at 9 other nuclear facilities to determine the controls in place for reactivity additions to the reactor coolant system.

6. The "Conduct of Operations" procedure was revised to require direct supervision of reactivity changes by a Senior Reactor Operator which involve dilution to the reactor coolant system and the operation of Chemical Volume and Control System ion exchangers. Also required is a control board walkdown as part of the "Short Term Turnover" process.

7. The Condition Report from the 1993 Turkey Point Plant dilution event was reviewed for lessons learned.

8. Operations Management will personally re-enforce the expectation of communicating required plant events as required by the "Conduct of Operations" procedure. J. West - STAR 960146A - Due 1/30/96

9. The implications of this event will be reviewed by a team for applicability to other operation's activities both inside and outside the control room. J. West - STAR 960146B - Due 2/15/96

10. Plant Management will review its expectations for command and control using information obtained from other sites including Turkey Point. J. West - STAR 960146C - Due 2/15/96

11. St. Lucie's training program will be reviewed for adequacy in the area of reactivity management. W. Bladow - STAR 960146D - Due 1/29/96

12. An HPES evaluation of this event was conducted. A. Locke - STAR 960146E Complete

13. Quality Assurance will conduct an assessment of reactivity management at the St. Lucie Plant. W. Bladow - Complete

NRC QUESTION/RESPONSE FORM

QUESTION #: _____

DATE: 1/28/96

INSPECTOR: ~~(CIRCLE APPROPRIATE INSPECTOR'S NAME)~~

(ADD INSPECTORS NAMES TO THIS FORM)

OTHER Bob Schinn

UTILITY REPRESENTATIVE: Dietz

INSPECTION CATEGORY: (CIRCLE APPROPRIATE CATEGORY)

INFO REQUEST (DOCUMENTATION) WALKDOWN PROCEDURES

NRC REQUEST OR CONCERN:

INDICATION/DOCUMENTATION OF "DDPS CALORIMETRIC POWER" BEFORE, DURING, AND AFTER THE ~~TRANS~~ EVENT.
- SPECIFICALLY, WOULD LIKE DOCUMENTATION OF THE "ACTUAL REACTOR THERMAL POWER" (PEAK) ACHIEVED DURING THE EVENT.

RESPONDING INDIVIDUAL/DEPT: Dietz / LIC

UTILITY RESPONSE:

- PLANT COMPUTER (DDPS) PRINTOUTS PROVIDED FOR INTERVAL 0200 - 0600, 1/22/96.
- THERE IS NOT A PRINTOUT THAT SHOWS "CALORIMETRIC POWER" AT THE TIME THAT THE PEAK WOULD HAVE BEEN ACHIEVED.

Fiure 1.6-2

Plant Computer (DDPS) Printouts
0200 through 0603, 1/22/96

02:00 1/22/96 CALIBRATION DATA LOG
FLUIDIZING FLOWRATE AND LIGHT SELECTED UNIT: NO. 1

| PT.301 | PT.302 | PT.303 | PT.304 | PT.305 | PT.306 | PT.307 | PT.308 | PT.309 | PT.310 | PT.311 | PT.312 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DEG.F | DEG.F | DEG.F | DEG.F | DEG.F | DEG.F | DEG.F | DEG.F | DEG.F | DEG.F | DEG.F | DEG.F |
| 433.6 | 431.8 | 432.3 | 430.9 | 431.8 | 432.4 | 488.2 | 486.9 | 414.6 | 102.9 | 600.0 | 593.1 |

| PT.340 | PT.341 | PT.318 | PT.319 | PT.320 | PT.321 | PT.322 | PT.323 | PT.324 | PT.325 | PT.326 | PT.327 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DEG.F | DEG.F | KW | KW | IN-H2O | IN-H2O | IN-H2O | IN-H2O | IN-H2O | IN-H2O | PSIG | PSIG |
| 549.0 | 544.6 | DELETE | 229.3 | 736.1 | 742.8 | 735.4 | 706.2 | 708.9 | 704.1 | 813.5 | 823.9 |

| PT.328 | PT.329 | PT.330 | PT.331 | PT.332 | PT.333 | PT.334 | PT.335 | PT.336 | PT.337 | PT.338 | PT.339 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PSIG | PSIG | PSIG | PSIG | KW | KW | KW | KW | IN-H2O | IN-H2O | IN-H2O | IN-H2O |
| 835.8 | 818.4 | 825.8 | 822.5 | 4451 | 4213 | 4309 | 4107 | 41.9 | 43.7 | 42.8 | 42.6 |

| PT.371 | PT.372 | PT.373 | PT.374 | PT.375 | PT.376 | PT.377 | PT.378 | PT.379 | PT.380 | PT.381 | PT.382 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | KILOHP | KILOHP | BTU/LB | BTU/LB | KLBS/H | KLBS/H | MBTU/H | MBTU/H | KILOHP | KILOHP |
| 1.0063 | 1.0063 | 5772 | 5938 | 1196.1 | 1196.1 | 17.13 | 10.87 | 45.2 | 47.07 | 14.3 | 14.4 |

| PT.383 | PT.384 | PT.385 | PT.386 | PT.389 | PT.390 | PT.391 | PT.392 | PT.393 | PT.394 | PT.387 | PT.388 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| KBTU/H | KBTU/H | MBTU/H | MBTU/H | DEG.F | DEG.F | PSIG | PSIG | IN-H2O | IN-H2O | MBTU/H | IN-H2O |
| 1643 | 2749 | 54.38 | 9.189 | 412.0 | 431.7 | 821.9 | 822.2 | 736.1 | 705.6 | 9165 | 101.71 |

02:00 END OF CALIBRATION DATA LOG

[illegible]

| [illegible] | FLUX(RH1) MJ*10(12) | FLUX(RH2) MJ*10(12) | FLUX(RH3) MJ*10(12) | FLUX(RH4) MJ*10(12) |
|---|---|---|---|---|
| 1 | 23.06 | 23.19 | 23.56 | 23.81 |
| 2 | 26.75 | 26.75 | 26.75 | 27.31 |
| 3 | 58.50 | 56.31 | 56.38 | DEL |
| 4 | 58.13 | 56.50 | 56.38 | DEL |
| 5 | 66.75 | 65.44 | 65.31 | [illegible] |
| 6 | 66.19 | DEL | DEL | [illegible] |
| 7 | 26.75 | 26.50 | 26.50 | 27.44 |
| 8 | 22.94 | DEL | DEL | [illegible] |
| 9 | 56.50 | DEL | 55.81 | [illegible] |
| 10 | 56.63 | 55.81 | 55.44 | [illegible] |
| 11 | 65.56 | 64.44 | 63.81 | [illegible] |
| 12 | 63.25 | 61.75 | 61.19 | [illegible] |
| 13 | 59.19 | 56.50 | 56.13 | [illegible] |
| 14 | 48.69 | 48.44 | 47.63 | [illegible] |
| 15 | DEL | 66.44 | 64.31 | [illegible] |
| 16 | DEL | DEL | DEL | DEL |
| 17 | 49.06 | 48.13 | 48.00 | [illegible] |
| 18 | 64.69 | 64.81 | 63.13 | [illegible] |
| 19 | DEL | 63.63 | DEL | [illegible] |
| 20 | 71.75 | 71.75 | 71.88 | [illegible] |
| 21 | DEL | 64.69 | 64.69 | [illegible] |
| 22 | 67.38 | 66.44 | DEL | [illegible] |
| 23 | 59.44 | 59.31 | 59.44 | [illegible] |
| 24 | DEL | 65.94 | 65.81 | 64.44 |
| 25 | DEL | DEL | DEL | DEL |
| 26 | 52.25 | 51.25 | 51.25 | [illegible] |
| 27 | 67.25 | 66.19 | 64.44 | DEL |
| 28 | DEL | DEL | DEL | DEL |
| 29 | 48.31 | 48.13 | DEL | [illegible] |
| 30 | 64.94 | 65.19 | DEL | DEL |
| 31 | 68.25 | 65.81 | 66.31 | [illegible] |
| 32 | 57.00 | 57.00 | DEL | [illegible] |
| 33 | 58.38 | 56.88 | 58.13 | DEL |
| 34 | 67.00 | 65.44 | 64.31 | DEL |
| 35 | 67.63 | 64.69 | DEL | DEL |
| 36 | 58.13 | 55.69 | 54.69 | [illegible] |
| 37 | 64.56 | 62.63 | DEL | DEL |
| 38 | DEL | [illegible] | [illegible] | [illegible] |
| 39 | [illegible] | [illegible] | [illegible] | [illegible] |
| 40 | DEL | DEL | DEL | DEL |
| 41 | [illegible] | DEL | [illegible] | DEL |

| | | | | |
|---|---|---|---|---|
| 4 | 141 | 141 | 141 | 141 |
| 43 | 57.75 | 56.13 | 141 | 56.94 |
| 44 | 26.75 | 26.13 | 25.75 | 27.06 |
| 45 | 23.44 | 23.56 | 24.06 | 23.69 |

02 01 END OF FLUX LOG

02 01 1/22/85 CEA POSITION LOG

FLUX MAP NUMBER 6400 LIGHT - SAT. FEB 11 07:00:11 EST 1984 PAGE 1

REGULATING GROUP

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| CEA | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 |
| 1 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 |
| CEA | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |
| 2 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 |
| CEA | 58 | 60 | 61 | 63 | 64 | 66 | 67 | 69 |
| 3 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 |
| CEA | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 |
| 4 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 |
| CEA | 2 | 3 | 4 | 5 | | | | |
| 5 | 135.00 | 135.00 | 135.00 | 135.00 | | | | |
| CEA | 14 | 15 | 16 | 17 | | | | |
| 6 | 135.00 | 135.00 | 135.00 | 135.00 | | | | |
| CEA | 1 | 38 | 39 | 40 | 41 | 59 | 62 | 65 | 121 |
| 7 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 |
| CEA | | | | | | | | |
| 8 | | | | | | | | |

SHUTDOWN GROUP

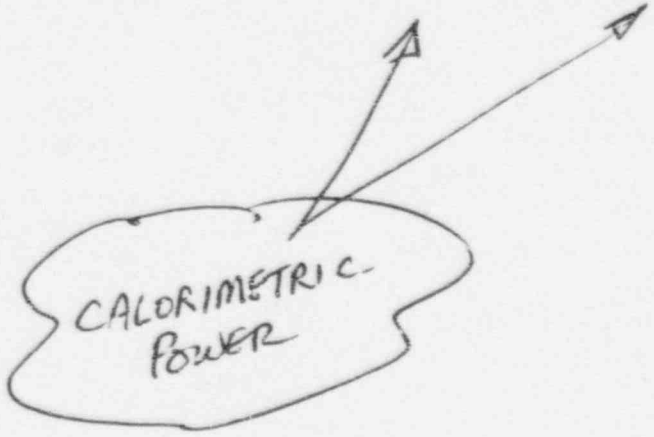
| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| CEA | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 |
| 4 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 |
| CEA | 6 | 7 | 8 | 9 | | | | |
| 8 | 135.00 | 135.00 | 135.00 | 135.00 | | | | |

02 01 END OF CEA POSITION LOG

02 01 1/22/95 REACTOR POISON AND POWER LOG
FLORIDA POWER AND LIGHT - ST LUCIE UNIT NO. 1

| TURBINE CORR.% | XENON CONC.% | XENON MONTH PCM | DELTA I POWER | 96% PWR LAST HOUR | 60% PWR LAST 24 HOURS | FITH |
|---|---|---|---|---|---|---|
| 101.57 | 100.4 | -2723 | 102.05 | 99.91 | 99.97 | -2741.5 |

02 01 END OF REACTOR POISON AND POWER LOG



02 57 1/22/96 REACTOR POISON AND POWER LOG
FLORIDA POWER AND LIGHT - ST LUCIE - UNIT NO. 1

| IODINE | XENON | XENON WORTH | DELTA I | HPS, PSIG | HPS, PSIG | TIME |
|---|---|---|---|---|---|---|
| CORE, % | CORE, % | PCM | POWER | LAST HOUR | LAST 24 HOURS | |
| 101.57 | 100.4 | -2722 | 102.08 | 100.01 | 71.92 | 2254.2 |

02 57 END OF REACTOR POISON AND POWER LOG

CALORIMETRIC POWER

03:00 1/22/95 CALORIMETRIC DATA LOG
FLORIDA POWER AND LIGHT -- ST.LUCIE-UNIT 1 DOL. 1

| PT.301 | PT.302 | PT.303 | PT.304 | PT.305 | PT.306 | PT.307 | PT.308 | PT.309 | PT.310 | PT.311 | PT.312 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DEG.F | DEG.F | DEG.F | DEG.F | DEG.F | DEG.F | DEG.F | DEG.F | DEG.F | DEG.F | DEG.F | DEG.F |
| 432.8 | 432.1 | 432.5 | 431.0 | 432.0 | 432.5 | 428.2 | 427.2 | 1041.4 | 1041.4 | 1040.1 | 1040.1 |

| PT.340 | PT.341 | PT.318 | PT.319 | PT.320 | PT.321 | PT.322 | PT.323 | PT.324 | PT.325 | PT.326 | PT.327 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DEG.F | DEG.F | KW | KW | BTU/H20 | BTU/H20 | BTU/H20 | BTU/H20 | BTU/H20 | BTU/H20 | PSIG | PSIG |
| 543.5 | 543.5 | DELETE | 229.6 | 742.2 | 740.6 | 741.3 | 1042.1 | 1042.2 | 794.9 | 824.6 | 825.1 |

| PT.328 | PT.329 | PT.330 | PT.331 | PT.332 | PT.333 | PT.334 | PT.335 | PT.336 | PT.337 | PT.338 | PT.339 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PSIG | PSIG | PSIG | PSIG | KW | KW | KW | KW | BTU/LB | BTU/LB | BTU/LB | BTU/LB |
| 824.6 | 821.7 | 827.4 | 825.6 | 4446 | 4215 | 4995 | 4109 | 1.1 | 1.7 | 3.11 | 0.0 |

| PT.371 | PT.372 | PT.373 | PT.374 | PT.375 | PT.376 | PT.377 | PT.378 | PT.379 | PT.380 | PT.381 | PT.382 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | KLB/HR | KLB/HR | BTU/LB | BTU/LB | KLB/HR | KLB/HR | BTU/LB | BTU/LB | KLB/HR | KLB/HR |
| 1.0063 | 1.0063 | 5847 | 6051 | 1195.8 | 1195.8 | 17.16 | 10.164 | 4529 | 4734 | 10.2 | 1.3 |

| PT.383 | PT.384 | PT.385 | PT.386 | PT.389 | PT.390 | PT.391 | PT.392 | PT.393 | PT.394 | PT.395 | PT.396 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MBTU/HR | MBTU/HR | MBTU/HR | MBTU/HR | DEG.F | DEG.F | PSIG | PSIG | BTU/LB | BTU/LB | BTU/LB | BTU/LB |
| 19.11 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |

03:00 END OF CALORIMETRIC DATA LOG

03:00 1/22/96 CALORIMETRIC CALCULATION LOG
FLORIDA POWER AND LIGHT - ST. LUCIE PLANT - UNIT NO. 1

| STEAM GENERATOR | | LETDOWN CHARGING | PRESSURIZER | FLOW FOR COOLANT PUMPS | CORE DTS | SAMPLING HEAT INPUT | FLOW FOR PUMPS | DIFFERENTIAL PUMP |
|---|---|---|---|---|---|---|---|---|
| A | B | | | | | | | |
| 4574 | 4745 | 1541 | 2250 | 54.38 | 9.189 | 280.0 | 9.277 | 31,967,100 |

03:00 END OF CALORIMETRIC CALCULATION LOG

03:00 1/22/96 FLUX LOW

FLORIDA POWER AND LIGHT - ST. LUCIE PLANT UNIT NO. 1

| GRID | FLUX(PHI) NPW10(12) | FLUX(PHI) NPW10(12) | FLUX(PHI) NPW10(12) | FLUX(PHI) NPW10(12) |
|---|---|---|---|---|
| 1 | 23.19 | 23.44 | 23.69 | 23.81 |
| 2 | 27.00 | 26.88 | 26.88 | 27.31 |
| 3 | 58.81 | 56.63 | 58.50 | DEL |
| 4 | 58.50 | 56.75 | 58.50 | DEL |
| 5 | 67.13 | 65.81 | 65.56 | 63.13 |
| 6 | 66.63 | DEL | DEL | 64.56 |
| 7 | 26.88 | 26.63 | 26.63 | 27.44 |
| 8 | 23.06 | DEL | DEL | 23.06 |
| 9 | 56.88 | DEL | 55.94 | 55.94 |
| 10 | 57.00 | 56.00 | 55.56 | 55.81 |
| 11 | 66.06 | 64.81 | 63.94 | 63.25 |
| 12 | 63.63 | 62.13 | 61.38 | 63.13 |
| 13 | 59.56 | 56.75 | 56.25 | 56.88 |
| 14 | 49.06 | 48.69 | 47.75 | 46.63 |
| 15 | DEL | 66.63 | 64.56 | 65.50 |
| 16 | DEL | DEL | DEL | DEL |
| 17 | 49.31 | 48.19 | 48.00 | 47.13 |
| 18 | 65.19 | 65.19 | 63.38 | 62.25 |
| 19 | DEL | 63.94 | DEL | 62.63 |
| 20 | 21.88 | 21.88 | 22.00 | 21.50 |
| 21 | DEL | 64.94 | 64.81 | 63.50 |
| 22 | 67.88 | 66.75 | DEL | 65.75 |
| 23 | 59.81 | 59.69 | 59.56 | 59.31 |
| 24 | DEL | 66.31 | 65.94 | 64.56 |
| 25 | DEL | DEL | DEL | DEL |
| 26 | 52.50 | 51.38 | 51.88 | 49.94 |
| 27 | 67.75 | 66.44 | 64.56 | DEL |
| 28 | DEL | DEL | DEL | DEL |
| 29 | 48.63 | 48.19 | DEL | 46.25 |
| 30 | 65.44 | 65.56 | DEL | DEL |
| 31 | 68.63 | 66.06 | 66.44 | 65.06 |
| 32 | 57.38 | 57.25 | DEL | 55.63 |
| 33 | 58.63 | 57.25 | 58.25 | DEL |
| 34 | 67.50 | 65.81 | 64.56 | DEL |
| 35 | 68.13 | 64.94 | DEL | DEL |
| 36 | 59.50 | 58.31 | 58.31 | 56.75 |

| | | | | |
|---|---|---|---|---|
| 37 | 54.01 | [illegible] | DEL | DEL |
| 38 | DEL | [illegible] | [illegible] | [illegible] |
| 39 | [illegible] | [illegible] | [illegible] | [illegible] |
| 40 | DEL | DEL | DEL | DEL |
| 41 | 67.00 | DEL | 65.31 | DEL |
| 42 | DEL | DEL | DEL | DEL |
| 43 | 58.13 | 56.31 | DEL | 55.56 |
| 44 | 26.88 | 27.00 | 25.75 | 27.00 |
| 45 | 24.06 | 23.69 | 24.06 | 23.69 |

03 01 END OF FLUX LOG

03 01 1-22-95 CEA POSITION LOG
FLORIDA POWER AND LIGHT - ST. LUCIE PLANT UNIT 1 CYC. 1

REGULATING GROUP

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| CEA | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 |
| 1 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 |
| CEA | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |
| 2 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 |
| CEA | 58 | 60 | 61 | 63 | 64 | 66 | 67 | 69 |
| 3 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 |
| CEA | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 |
| 4 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 |
| CEA | 2 | 3 | 4 | 5 | | | | |
| 5 | 135.00 | 135.00 | 135.00 | 135.00 | | | | |
| CEA | 14 | 15 | 16 | 17 | | | | |
| 6 | 135.00 | 135.00 | 135.00 | 135.00 | | | | |
| CEA | 1 | 38 | 39 | 40 | 41 | 59 | 62 | 65 | 68 |
| 7 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 |
| CEA | | | | | | | | |
| 8 | | | | | | | | |

SHUTDOWN GROUP

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| CEA | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 |
| 8 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 |
| CEA | 6 | 7 | 8 | 9 | | | | |
| 8 | 135.00 | 135.00 | 135.00 | 135.00 | | | | |

03 01 END OF CEA POSITION LOG

03 01 1/22/96 REACTOR POISON AND POWER LOG
FLORIDA POWER AND LIGHT - ST LUCIE - UNIT NO. 1

| IODINE CONC.% | XENON CONC.% | XENON WORTH PCM | DELTA I POWER | AVG PWR LAST HOUR | AVG PWR LAST 24 HOURS | TIME |
|---|---|---|---|---|---|---|
| 101.57 | 100.4 | -2722 | 101.45 | 100.13 | 99.97 | [illegible] |

03 01 END OF REACTOR POISON AND POWER LOG

CALORIMETRIC POWER

03 37 1/22/95 REACTOR POISON AND POWER LOG
FLORIDA POWER AND LIGHT - ST LUCIE UNIT NO. 1

| TURBINE | XENON | XENON MONTH | DELTA I | 96% ISE | 96% ISE | TIME |
|---|---|---|---|---|---|---|
| CUR.% | CUR.% | PCM | POWER | LAST HOUR | LAST 4 HOURS | |
| 101.59 | 100.3 | -2722 | 101.04 | 100.21 | 101.07 | 2354:59 |

03 37 END OF REACTOR POISON AND POWER LOG

CALORIMETRIC POWER

04 00 1/22/95 CALORIMETRIC DATA LOG
FLORIDA POWER AND LIGHT - ST. LUCIE UNIT 1 TBL. 1

| PT. 301 | PT. 302 | PT. 303 | PT. 304 | PT. 305 | PT. 306 | PT. 307 | PT. 308 | PT. 309 | PT. 310 | PT. 316 | PT. 317 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DEG.F | DEG.F | DEG.F | DEG.F | DEG.F | DEG.F | DEG.F | DEG.F | DEG.F | DEG.F | DEG.F | DEG.F |
| 432.7 | 431.5 | 432.0 | 430.6 | 431.4 | 432.0 | 487.6 | 486.7 | 195.6 | 97.5 | 600.1 | 598.9 |

| PT.340 | PT.341 | PT.318 | PT.319 | PT.320 | PT.321 | PT.322 | PT.323 | PT.324 | PT.325 | PT.326 | PT.327 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DEG.F | DEG.F | KW | KW | IN/H2O | IN/H2O | IN/H2O | IN/H2O | IN/H2O | IN/H2O | PSIG | PSIG |
| 548.4 | 548.4 | DELETE | 235.1 | 721.6 | 727.0 | 729.8 | 785.9 | 786.5 | 815.5 | 817.0 | 819.0 |

| PT.328 | PT.329 | PT.330 | PT.331 | PT.332 | PT.333 | PT.334 | PT.335 | PT.336 | PT.337 | PT.338 | PT.339 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PSIG | PSIG | PSIG | PSIG | KW | KW | KW | KW | IN/H2O | IN/H2O | IN/H2O | IN/H2O |
| 818.3 | 814.9 | 821.3 | 818.9 | 4465 | 4219 | 4314 | 2069 | 1.04 | 1.46 | 2.21 | 2.28 |

| PT.371 | PT.372 | PT.373 | PT.374 | PT.375 | PT.376 | PT.377 | PT.378 | PT.379 | PT.380 | PT.381 | PT.382 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | KLB/HR | KLB/HR | BTU/LB | BTU/LB | KLB/HR | KLB/HR | BTU/HR | BTU/HR | KLB/HR | KLB/HR |
| 1.0063 | 1.0063 | 5269 | 5271 | 1196.1 | 1196.2 | 17.10 | 10.34 | 0.25 | 4481 | 0.25 | 0.17 |

| PT.383 | PT.384 | PT.385 | PT.386 | PT.387 | PT.388 | PT.389 | PT.390 | PT.391 | PT.392 | PT.393 | PT.394 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| KBTU/H | KBTU/H | MBTU/H | MBTU/H | DEG.F | DEG.F | PSIG | PSIG | IN H2O | IN H2O | MBTU/H | PT 1387 |
| 1372 | 2268 | 54.46 | 9.189 | 431.8 | 431.3 | 818.9 | 818.3 | 273.3 | 785.5 | 9165 | 1011.93 |

04 00 END OF CALORIMETRIC DATA LOG

04 00 1/22/95 CALORIMETRIC CALCULATION LOG
FLORIDA POWER AND LIGHT - ST. LUCIE PLANT - UNIT 1 DAY 1

| STEAM GENERATOR | | LETDOWN CHARGING | FEEDWATER | PUMP DISCHARGE PUMPS | CORE DTD WATER | SATURATED STEAM DENS | PLANT POWER | UNCORRECTED POWER |
|---|---|---|---|---|---|---|---|---|
| A | B | | | | | | | |
| 4523 | 4688 | 1372 | 2268 | 54.46 | 9.189 | 283.0 | 9165 | 30,787,268. |

04 00 END OF CALORIMETRIC CALCULATION LOG

| GROUP | FLUX(PH1) HOUR(12) | FLUX(PH2) HOUR(12) | FLUX(PH3) HOUR(12) | FLUX(PH4) HOUR(12) |
|---|---|---|---|---|
| 1 | 22.94 | 23.19 | 23.56 | 23.81 |
| 2 | 26.63 | 26.63 | 26.75 | 27.31 |
| 3 | 58.25 | 56.25 | 56.38 | DEL |
| 4 | 57.88 | 56.25 | 56.38 | DEL |
| 5 | 66.44 | 65.31 | 65.19 | 63.69 |
| 6 | 65.31 | 141 | 141 | 64.56 |

| | | | | |
|---|---|---|---|---|
| 7 | 35.63 | 35.38 | 35.50 | 37.25 |
| 8 | 22.81 | DEL | DEL | 23.38 |
| 9 | 56.25 | DEL | 55.69 | 55.31 |
| 10 | 56.38 | 55.56 | 55.31 | 55.81 |
| 11 | 65.31 | 64.13 | 63.63 | 63.13 |
| 12 | 62.88 | 61.50 | 61.06 | 63.00 |
| 13 | 58.94 | 56.25 | 56.00 | 56.81 |
| 14 | 48.44 | 48.31 | 47.50 | 46.63 |
| 15 | DEL | 66.19 | 64.19 | 65.56 |
| 16 | DEL | DEL | DEL | DEL |
| 17 | 48.81 | 47.88 | 47.88 | 47.13 |
| 18 | 64.31 | 64.56 | 63.00 | 62.13 |
| 19 | DEL | 63.38 | DEL | 62.50 |
| 20 | 21.63 | 21.63 | 21.88 | 21.81 |
| 21 | DEL | 64.44 | 64.44 | 63.50 |
| 22 | 67.00 | 66.19 | DEL | 63.63 |
| 23 | 59.06 | 59.06 | 59.19 | 59.19 |
| 24 | DEL | 65.69 | 65.56 | 64.44 |
| 25 | DEL | DEL | DEL | DEL |
| 26 | 52.00 | 51.00 | 51.63 | 49.94 |
| 27 | 67.00 | 65.94 | 64.31 | DEL |
| 28 | DEL | DEL | DEL | DEL |
| 29 | 48.19 | 47.88 | DEL | 48.25 |
| 30 | 64.56 | 64.94 | DEL | DEL |
| 31 | 67.88 | 65.56 | 66.06 | 65.00 |
| 32 | 56.75 | 56.88 | DEL | 55.69 |
| 33 | 58.00 | 56.75 | 58.00 | DEL |
| 34 | 66.63 | 65.19 | 64.19 | DEL |
| 35 | 67.25 | 64.44 | DEL | DEL |
| 36 | 57.88 | 55.56 | 54.56 | 52.13 |
| 37 | 64.19 | 62.38 | DEL | DEL |
| 38 | DEL | 23.31 | 23.56 | 23.56 |
| 39 | 26.75 | 26.25 | 26.31 | 24.88 |
| 40 | DEL | DEL | DEL | DEL |
| 41 | 65.31 | DEL | 65.06 | DEL |
| 42 | DEL | DEL | DEL | DEL |
| 43 | 57.50 | 55.94 | DEL | 55.56 |
| 44 | 26.63 | 26.75 | 25.63 | 26.88 |
| 45 | 23.81 | 23.44 | 23.94 | 23.69 |

04 01 END OF FLUX LOG

04 01 1/22/85 CEA POSITION LOG
FLORIDA POWER AND LIGHT - ST. LUCIE PLANT - UNIT 1 CYC. 1

REGULATING GROUP

| CEA | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 |
|---|---|---|---|---|---|---|---|---|
| 1 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 |

| CEA | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |
|---|---|---|---|---|---|---|---|---|
| 2 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 |

| CEA | 58 | 60 | 61 | 63 | 64 | 66 | 67 | 69 |
|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 125.00 | 125.00 | 125.00 | 125.00 | 125.00 | 125.00 | 125.00 | 125.00 | |
| CEA | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | |
| 4 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | |
| CEA | 2 | 3 | 4 | 5 | | | | | |
| 5 | 135.00 | 135.00 | 135.00 | 135.00 | | | | | |
| CEA | 14 | 15 | 16 | 17 | | | | | |
| 6 | 135.00 | 135.00 | 135.00 | 135.00 | | | | | |
| CEA | 1 | 38 | 39 | 40 | 41 | 59 | 62 | 45 | 68 |
| 7 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 |
| CEA | | | | | | | | | |
| 8 | | | | | | | | | |

[illegible]

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| CEA | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 |
| 9 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 |
| CEA | 6 | 7 | 8 | 9 | | | | |
| 8 | 135.00 | 135.00 | 135.00 | 135.00 | | | | |

04 01 END OF CEA POSITION LOG

04 01 1/22/95 REACTOR POISON AND POWER LOG
FLORIDA POWER AND LIGHT - ST LUCIE - UNIT NO. 1

| IODINE | XENON | ZERO MONTH | DELTA I | MW, EOF | MW, EOF | ETCH |
|---|---|---|---|---|---|---|
| COEF, % | COEF, % | PCM | POWER | LAST HOUR | LAST 24 HOURS | |
| 101.57 | 101.4 | -2722 | 101.15 | 94.97 | 94.97 | 7755.5 |

04 01 END OF REACTOR POISON AND POWER LOG

CALORIMETRIC

04 34 1/22/95 REACTOR POISON AND POWER LOG
FLORIDA POWER AND LIGHT [illegible] UNIT 1

| IODINE | XENON | XENON WORTH | DELTA I | 48% TAU | 96% TAU | TIME |
|---|---|---|---|---|---|---|

04 25 END OF REACTOR PRESSURE AND PROBE LOG

04 44 06 * 751 OPEN PRESSURIZER PRESS FROM P-1104
04 45 36 751 NORM FROM OPEN PRESSURIZER PRESS FROM P-1104

05:00 1/22/95 CALORIMETRIC DATA LOG
FLORIDA POWER AND LIGHT - ST. LUCIE-UNIT 1 REV. 1

| PT.301 | PT.302 | PT.303 | PT.304 | PT.305 | PT.306 | PT.307 | PT.308 | PT.309 | PT.310 | PT.311 | PT.312 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DEG.F | DEG.F | DEG.F | DEG.F | DEG.F | DEG.F | DEG.F | DEG.F | DEG.F | DEG.F | DEG.F | DEG.F |
| 432.9 | 431.8 | 433.2 | 430.7 | 432.1 | 432.2 | 487.9 | 487.0 | [illegible] | 491.0 | [illegible] | [illegible] |

| PT.349 | PT.341 | PT.318 | PT.319 | PT.320 | PT.321 | PT.322 | PT.323 | PT.324 | PT.325 | PT.326 | PT.327 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DEG.F | DEG.F | FW | FW | IN-H2O | IN-H2O | IN-H2O | IN-H2O | IN-H2O | PSIG | PSIG | [illegible] |
| 549.0 | 549.1 | DELETE | 291.8 | 729.7 | 735.9 | 728.6 | 793.4 | 744.1 | 740.1 | 830.0 | [illegible] |

| PT.328 | PT.329 | PT.330 | PT.331 | PT.332 | PT.333 | PT.334 | PT.335 | PT.336 | PT.337 | PT.338 | PT.339 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PSIG | PSIG | PSIG | PSIG | FW | FW | FW | FW | IN-H2O | IN-H2O | IN-H2O | IN-H2O |
| 821.3 | 818.0 | 825.1 | 822.7 | 4467 | 4218 | 4309 | 4103 | 34.0 | 13.6 | 7.45 | [illegible] |

| PT.371 | PT.372 | PT.373 | PT.374 | PT.375 | PT.376 | PT.377 | PT.378 | PT.379 | PT.380 | PT.381 | PT.382 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | KLB/HR | KLB/HR | BTU/LB | BTU/LB | KLB/H | KLB/H | MBTU/H | MBTU/H | KLB/HR | KLB/HR |
| 1.00053 | 1.00074 | 5822 | 5016 | 1196.1 | 1196.1 | 17.1 | [illegible] | 24.1 | [illegible] | [illegible] | 1.1 |

| PT.383 | PT.384 | PT.385 | PT.386 | PT.389 | PT.390 | PT.391 | PT.392 | PT.393 | PT.394 | PT.395 | PT.396 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| KBTU/H | KBTU/H | MBTU/H | MBTU/H | DEG.F | DEG.F | PSIG | PSIG | IN-H2O | IN-H2O | MBTU/H | [illegible] |
| 1326 | 2155 | 54.44 | 9.189 | 431.9 | 431.7 | 822.1 | 821.9 | 731.4 | 794.8 | [illegible] | [illegible] |

05:00 END OF CALORIMETRIC DATA LOG

05:00 1/22/96 CALORIMETRIC CALCULATION LOG
FLORIDA POWER AND LIGHT - ST. LUCIE PLANT - UNIT 1 REV. 1

| STEAM GENERATOR | | LEIDOUN CHARGING | PRESSURIZER | REACTOR COOLANT PUMPS | COOLING WATER | SAMPLING HEAT REMOVED | REACTOR POWER | MEGAWATTS THERMAL |
|---|---|---|---|---|---|---|---|---|
| A | B | | | | | | | |
| 4561 | 4721 | 1326 | 2155 | 54.44 | 9.189 | 233.0 | 92.5 | 2652.0 |

05:00 END OF CALORIMETRIC CALCULATION LOG

05:00 1/22/96 FLUX LOG

FLORIDA POWER AND LIGHT - ST. LUCIE PLANT - UNIT NO. 1

| GROUP | FLUX(PHI) I0*10(12) | FLUX(PHI) I0*10(12) | FLUX(PHI) I0*10(12) | FLUX(PHI) I0*10(12) |
|---|---|---|---|---|
| 1 | 23.06 | 23.31 | 23.56 | 23.81 |
| 2 | 26.88 | 26.75 | 26.88 | 27.31 |
| 3 | 58.63 | 56.38 | 56.38 | DEL |
| 4 | 58.13 | 56.50 | 56.50 | DEL |
| 5 | 66.75 | 65.56 | 65.44 | 63.13 |
| 6 | 66.19 | DEL | DEL | 64.56 |
| 7 | 26.75 | 26.50 | 26.50 | 27.44 |
| 8 | 22.94 | DEL | DEL | 23.06 |
| 9 | 56.50 | DEL | 55.81 | 56.94 |
| 10 | 56.63 | 55.81 | 55.44 | 56.13 |
| 11 | 65.69 | 64.56 | 63.81 | 63.13 |
| 12 | 63.25 | 61.75 | 61.19 | 63.13 |
| 13 | 59.19 | 56.50 | 56.13 | 56.81 |
| 14 | 48.69 | 48.44 | 47.63 | 48.63 |
| 15 | DEL | 66.44 | 64.31 | 63.56 |
| 16 | DEL | DEL | DEL | DEL |
| 17 | 49.06 | 48.13 | 48.00 | 48.13 |
| 18 | 64.69 | 64.81 | 63.25 | 62.25 |
| 19 | DEL | 63.75 | DEL | 62.50 |
| 20 | 21.75 | 21.75 | 21.88 | 21.50 |
| 21 | DEL | 64.69 | 64.69 | 63.50 |
| 22 | 67.38 | 66.50 | DEL | 65.69 |
| 23 | 59.44 | 59.44 | 59.44 | 59.31 |
| 24 | DEL | 65.94 | 65.81 | 64.44 |
| 25 | DEL | DEL | DEL | DEL |
| 26 | 52.25 | 51.25 | 51.75 | 49.94 |
| 27 | 67.38 | 66.19 | 64.44 | DEL |
| 28 | DEL | DEL | DEL | DEL |
| 29 | 48.31 | 48.13 | DEL | 46.25 |
| 30 | 64.94 | 65.31 | DEL | DEL |
| 31 | 68.25 | 65.81 | 66.31 | 65.06 |
| 32 | 57.13 | 57.00 | DEL | 55.69 |
| 33 | 58.38 | 57.00 | 58.13 | DEL |
| 34 | 67.00 | 65.44 | 64.31 | DEL |
| 35 | 67.63 | 64.81 | DEL | DEL |
| 36 | 58.13 | 55.69 | 54.69 | 52.75 |
| 37 | 64.56 | 62.63 | DEL | DEL |
| 38 | DEL | 23.44 | 23.56 | 23.56 |
| 39 | 26.38 | 26.38 | 26.50 | 26.63 |
| 40 | DEL | DEL | DEL | DEL |
| 41 | 66.50 | DEL | 65.13 | DEL |
| 42 | DEL | DEL | DEL | DEL |

| | | | | | |
|---|---|---|---|---|---|
| 44 | 26.75 | 6.18 | 25.75 | 5.00 | |
| 45 | 25.94 | 25.56 | 4.06 | 4.63 | |

05 01 END OF FLUX LOG

05 01 1/22/95 CEA POSITION LOG
FLORIDA POWER AND LIGHT - ST. LUCIE PLANT UNIT NO. 1

PERMANENT GROUP

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| CEA | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 |
| 1 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 |
| CEA | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |
| 2 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 |
| CEA | 58 | 60 | 61 | 63 | 64 | 66 | 67 | 69 |
| 3 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 |
| CEA | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 |
| 4 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 |
| CEA | 2 | 3 | 4 | 5 | | | | |
| 5 | 135.00 | 135.00 | 135.00 | 135.00 | | | | |
| CEA | 14 | 15 | 16 | 17 | | | | |
| 6 | 135.00 | 135.00 | 135.00 | 135.00 | | | | |
| CEA | 1 | 38 | 39 | 40 | 41 | 59 | 62 | 65 | 68 |
| 7 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 |
| CEA | | | | | | | | |
| 8 | | | | | | | | |

SHUTDOWN GROUP

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| CEA | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 |
| 9 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 |
| CEA | 6 | 7 | 8 | 9 | | | | |
| 8 | 135.00 | 135.00 | 135.00 | 135.00 | | | | |

05 01 END OF CEA POSITION LOG

05 01 1/22/95 REACTOR PROTECTION AND POWER LOG
FLORIDA POWER AND LIGHT - ST LUCIE - UNIT NO. 1

| IODINE CONC.% | FLUX CONC.% | CHART GRAPH PEN | DELTA I POWER | RPS TRIP DIST TRIP | RPS TRIP DIST TRIP | TIME |
|---|---|---|---|---|---|---|
| 101.57 | 100.4 | -2722 | 102.08 | 93.14 | 94.52 | 1254. |

05 01 END OF REACTOR PROTECTION AND POWER LOG

[illegible]

| IODINE | XENON | XENON WORTH | DELTA T | REV/DAY | REV/DAY | [illegible] |
|---|---|---|---|---|---|---|
| CORE,% | CORE,% | PCM | POWER | LAST HOUR | LAST 24 HOURS | |
| 101.57 | 100.4 | -2722 | 102.10 | 94.51 | 91.97 | [illegible] |

05 23 END OF RESTOP POSTJOB AND POWER LOG

05:39 1/22/96 PEAK END POISON AND POWER LOG
FLORIDA POWER AND LIGHT - ST LUCIE - UNIT 1 CYCLE 1

| IODINE | XENON | XENON WORTH | DELTA I | AVG FAP | AVG FAP | TIME |
|---|---|---|---|---|---|---|
| CORE % | CORE % | PCM | POWER | LAST HOUR | LAST 24 HOURS | |
| 101.60 | 100.4 | -2720 | 102.99 | 99.37 | 94.47 | 7754.25 |

05:39 END OF PEAK END POISON AND POWER LOG

05 001 1/22/96 CALORIMETRIC DATA FOR
FLORIDA POWER AND LIGHT - SLUDGE DRIED TO 1

| PT.301 | PT.302 | PT.303 | PT.304 | PT.305 | PT.306 | PT.307 | PT.308 | PT.309 | PT.310 | PT.311 | PT.312 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DEG.F | DEG.F | DEG.F | DEG.F | DEG.F | DEG.F | DEG.F | DEG.F | DEG.F | DEG.F | DEG.F | DEG.F |
| 432.9 | 431.8 | 432.2 | 430.8 | 432.3 | 432.5 | 432.9 | 432.1 | 431.1 | 430.2 | 430.4 | 430.1 |

| PT.340 | PT.341 | PT.318 | PT.319 | PT.320 | PT.321 | PT.322 | PT.323 | PT.324 | PT.325 | PT.326 | PT.327 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DEG.F | DEG.F | PM | PM | IN-H2O | IN-H2O | IN-H2O | IN-H2O | IN-H2O | IN-H2O | PSIG | PSIG |
| 543.0 | 543.0 | DELETE | 231.3 | 740.8 | 747.3 | 739.8 | 735.8 | 734.3 | 731.6 | 0.0 | 0.0 |

| PT.328 | PT.329 | PT.330 | PT.331 | PT.332 | PT.333 | PT.334 | PT.335 | PT.336 | PT.337 | PT.338 | PT.339 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PSIG | PSIG | PSIG | PSIG | PM | PM | PM | PM | IN-H2O | IN-H2O | IN-H2O | IN-H2O |
| 821.2 | 817.7 | 814.4 | 822.2 | .4443 | 4.12 | 4.001 | 4.00 | 1.71 | 1.8 | 1.8 | 1.8 |

| PT.371 | PT.372 | PT.373 | PT.374 | PT.375 | PT.376 | PT.377 | PT.378 | PT.379 | PT.380 | PT.381 | PT.382 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | FLR-HP | FLR-HP | BTU/LB | BTU/LB | FLBS/H | FLBS/H | MBTU/H | MBTU/H | FLR-HP | FLR-HP |
| 1.0063 | 1.0063 | 5749 | 6010 | 1195.9 | 1196.1 | 17.14 | 19.89 | 4.41 | 4715 | 19.3 | .3 |

| PT.383 | PT.384 | PT.385 | PT.386 | PT.389 | PT.390 | PT.391 | PT.392 | PT.393 | PT.394 | PT.397 | PT.398 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| KBTU/H | KBTU/H | MBTU/H | MBTU/H | DEG.F | DEG.F | PSIG | PSIG | IN-H2O | IN-H2O | MBTU/H | PI-MW |
| 0 | 2256 | 54.53 | 9.189 | 432.0 | 431.8 | 822.4 | 821.3 | 74.56 | 79.1 | 9.14 | 102.79 |

06:00 END OF CALORIMETRIC DATA LOG

06:00 1/22/96 CALORIMETRIC CALCULATION LOG
CALORIMETRIC NUMBER AND LIGHT -- SI. LOG IS STORED UNITS LOG. 1

| STEAM GENERATOR | LETDOWN PRESSURIZER | REACTOR COOLANT | COOLING WATER | SAMPLING HEAT TRACED | REACTOR PUMP | CONTAINMENT AIR |
|---|---|---|---|---|---|---|

05:00 END OF [illegible] CALCULATIONS

05:00 1/22/96 FLUX LOG
FLORIDA POWER AND LIGHT - ST. LUCIE PLANT UNIT NO. 1

| GROUP | FLUX(PH1) IPM10(1) | FLUX(PH2) IPM10(1/) | FLUX(PH3) IPM10(1/) | FLUX(PH4) IPM10(1/) |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| 1 | 26.88 | 26.81 | 26.56 | 26.81 |
| 2 | 26.81 | 26.75 | 26.75 | 26.81 |
| 3 | 58.63 | 56.81 | 56.81 | DEL |
| 4 | 58.13 | 56.50 | 56.50 | DEL |
| 5 | 66.75 | 65.56 | 65.44 | 65.13 |
| 6 | 66.19 | DEL | DEL | 64.94 |
| 7 | 26.75 | 26.50 | 26.50 | 26.44 |
| 8 | 22.94 | DEL | DEL | 23.06 |
| 9 | 56.50 | DEL | 55.69 | 55.63 |
| 10 | 56.63 | 55.81 | 55.31 | 55.81 |
| 11 | 65.69 | 64.56 | 63.81 | 63.19 |
| 12 | 63.25 | 61.75 | 61.19 | 63.13 |
| 13 | 59.19 | 56.50 | 56.13 | 56.81 |
| 14 | 48.69 | 48.44 | 47.63 | 48.63 |
| 15 | DEL | 66.44 | 64.31 | 65.94 |
| 16 | DEL | DEL | DEL | DEL |
| 17 | 49.06 | 48.13 | 48.00 | 47.13 |
| 18 | 64.69 | 64.81 | 63.25 | 62.25 |
| 19 | DEL | 63.63 | DEL | 62.50 |
| 20 | 21.75 | 21.75 | 21.81 | 21.50 |
| 21 | DEL | 64.69 | 64.69 | 63.50 |
| 22 | 67.38 | 66.44 | DEL | 65.69 |
| 23 | 59.44 | 59.44 | 59.44 | 59.31 |
| 24 | DEL | 65.94 | 65.81 | 64.44 |
| 25 | DEL | DEL | DEL | DEL |
| 26 | 52.25 | 51.25 | 51.25 | 49.94 |
| 27 | 67.25 | 66.13 | 64.44 | DEL |
| 28 | DEL | DEL | DEL | DEL |
| 29 | 48.31 | 48.13 | DEL | 46.25 |
| 30 | 64.94 | 65.31 | DEL | DEL |
| 31 | 68.25 | 65.81 | 66.31 | 65.06 |
| 32 | 57.13 | 57.00 | DEL | 55.81 |
| 33 | 58.38 | 57.00 | 58.13 | DEL |
| 34 | 67.00 | 65.44 | 64.31 | DEL |
| 35 | 67.63 | 64.63 | DEL | DEL |
| 36 | 58.13 | 55.69 | 54.69 | 52.25 |
| 37 | 64.56 | 62.63 | DEL | DEL |
| 38 | DEL | 23.44 | 23.56 | 23.50 |
| 39 | 26.88 | 26.38 | 26.50 | 26.81 |
| 40 | DEL | DEL | DEL | DEL |
| 41 | 66.50 | DEL | 65.19 | DEL |
| 42 | DEL | DEL | DEL | DEL |
| 43 | 57.75 | 56.13 | DEL | 55.56 |
| 44 | 26.75 | 26.88 | 25.75 | 27.00 |
| 45 | 23.94 | 23.56 | 24.06 | 23.63 |

06 01 END OF FLUX LOG

06 01 1/22/96 CER POSITION LOG

FLORIDA POWER AND LIGHT - St. Lucie Plant -- Unit No. 1

REGULATING GROUP

| | | | | |
|---|---|---|---|---|
| 43 | 27.42 | 26.1 | 24.1 | 23.45 |
| 44 | 26.75 | 26.38 | 25.75 | 25.00 |
| 45 | 27.34 | 25.56 | 24.06 | 23.59 |

06.01 END OF FIRE LOG

06.01 1-22-96 CLAY POSITION LOG

PAGE 1

RETRIEVING GROUP

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| CLAY | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 |
| 1 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 |
| CLAY | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |
| 2 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 |
| CLAY | 58 | 60 | 61 | 63 | 64 | 66 | 67 | 69 |
| 3 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 |
| CLAY | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 |
| 4 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 |
| CLAY | 2 | 3 | 4 | 5 | | | | |
| 5 | 135.00 | 135.00 | 135.00 | 135.00 | | | | |
| CLAY | 14 | 15 | 16 | 17 | | | | |
| 6 | 135.00 | 135.00 | 135.00 | 135.00 | | | | |
| CLAY | 1 | 38 | 39 | 40 | 41 | 59 | 62 | 65 | 135.00 |
| 7 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | |
| CLAY | | | | | | | | | |
| 8 | | | | | | | | | |

SHOTGUN GROUP

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| CLAY | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 |
| 8 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 | 135.00 |
| CLAY | 6 | 7 | 8 | 9 | | | | |
| 8 | 135.00 | 135.00 | 135.00 | 135.00 | | | | |

06.01 END OF CLAY POSITION LOG

[illegible]

| IODINE | XENON | XENON WORTH | DELTA K | [illegible] | [illegible] | [illegible] |
|---|---|---|---|---|---|---|
| [illegible] | [illegible] | PCM | POWER | [illegible] | [illegible] | [illegible] |
| 101.65 | 100.3 | -2718 | 102.84 | 99.3% | [illegible] | [illegible] |

06 03 END OF REACTOR POISON AND POWER LOG

06 03 1/22/96 REACTOR POISON AND POWER LOG
FLORIDA POWER AND LIGHT - ST LUCIE - UNIT NO. 1

| IODI.% | XENON | XENON WORTH | DELTA I | AVG PWR | AVG TEMP | |
|---|---|---|---|---|---|---|
| CONC.% | CONC.% | PCM | POWER | LAST HOUR | LAST 24 HOURS | |
| 101.66 | 100.3 | -2718 | 103.13 | 99.97 | 99.97 | [illegible] |

06 04 END OF REACTOR POISON AND POWER LOG

NRC QUESTION/RESPONSE FORM

QUESTION #: _____

DATE: _____

INSPECTOR: ~~(CIRCLE APPROPRIATE INSPECTOR'S NAME)~~

(ADD INSPECTORS NAMES TO THIS FORM)

OTHER BOB SCHINN

UTILITY REPRESENTATIVE: DIETZ

INSPECTION CATEGORY: (CIRCLE APPROPRIATE CATEGORY)

(INFO REQUEST) DOCUMENTATION WALKDOWN PROCEDURES

NRC REQUEST OR CONCERN:

· WHAT IS THE SAFETY ANALYSIS TRANSIENT THAT "BOUNDS" THE 1/22/96 EVENT, AND WHAT VALUES WERE ASSUMED FOR INITIAL % POWER AND INITIAL Rx INLET TEMP.?

RESPONDING INDIVIDUAL/DEPT: DIETZ, PSL/LIC (CONFIRMED BY WINNARD (JAN) AND KARADI (NUCLEAR FUELS))

UTILITY RESPONSE: • ATTACHED UFSAR SECTIONS 15.2.4 (CVCS MALFUNCTION - BORON DILUTION EVENT) AND DESIGN BASIS DOC (DBD) SECTION 5.1.3.

* SPECIFIC PSL FOR INITIAL INLET TEMPS AND POWER ARE NOT AVAILABLE — EVENT BOUNDED BY OTHER MORE LIMITING DNB TRANSIENTS - PROTECTION FROM SETPOINTS (TM/LP, VAR HI POWER) VERIFIED FOR THE LIMITING EVENTS EACH RELOAD CYCLE.

Fiure 1.6-2

This AOO is comprised of the four possible events which can affect a single steam generator:

- Loss of load to one steam generator
- Excess load to one steam generator
- Loss of feedwater to one steam generator
- Excess feedwater to one steam generator

Each of these events has the potential for creating temperature differences between the four cold legs. This inlet temperature asymmetry would cause radial peaking and corresponding reductions in DNB and centerline to melt (CTM) margins. Of the four possible events the loss of load to one steam generator is the limiting asymmetric event. The loss of load would be caused by closure of a single MSIV. Pressure and temperature in the isolated steam generator rapidly increase to the opening pressure of the steam line safety valves. The turbine control system reacts to maintain speed by drawing more steam from the intact steam generator which leads to decreasing temperature and pressure. The asymmetric steam generator protective trip (ASGPT) is the primary means of mitigating this transient. The low steam generator level trip serves as a backup to ASGPT for this AOO.

The ASGPT function was added as part of the 2700 $mW_{th}$ stretch power license amendment. A separate bistable trip unit (BTU) is not provided for this function. The ASGPT is processed via the TM/LP BTU. Whenever the pressure difference between the two steam generators exceeds 135 psi, the variable low pressure trip setpoint input signal to the TM/LP BTU is automatically increased to 2500 psia. This will result in an immediate trip since pressurizer pressure will be less than the trip setpoint.

Reference: St. Lucie Unit 1 UFSAR, Section 15.2.2

### 5.1.3 Boron Dilution

Boron dilution events are postulated to occur during all six operational modes. From modes 3-6 the time to achieve criticality due to boron dilution is dependent on the initial and critical boron concentrations, the boron reactivity worth and the dilution rate. From modes 1 and 2 the reactivity insertion rate due to boron dilution is dependent on the boron worth and rate of dilution. The dilution rate is a function of both the boron concentration and the rate at which demineralized water is being injected. The analysis assumes the maximum possible charging rate of 132 gpm with a corresponding letdown flow. For dilution events postulated to occur from subcritical initial conditions all CEAs are conservatively assumed to be withdrawn thus resulting in minimum shutdown margins and time to criticality. One other key assumption is that the boron concentration remains uniform throughout the RCS, and in particular through the core. This assumption is based on the solubility of boric acid, and

the mixing provided by either the shutdown cooling flow or the reactor coolant pumps.

For the subcritical boron dilution events the analysis demonstrates that there is sufficient time to criticality for the operator to recognize and take action to terminate the event. The Standard Review Plan identifies the minimum acceptable time to criticality for refueling events as 30 minutes and 15 minutes for dilution events occurring during all other modes.

For the at power boron dilution events the maximum reactivity insertion rate is small relative to the CEA withdrawal event. The VHPT provides adequate protection for the SAFDLs. Due to the slow rate of power increase the TM/LP trip may occur before the VHPT setpoint is reached. The low steam generator level and LPD trips provide backup protection.

Reference: St. Lucie Unit 1 UFSAR Section 15.2.4

### 5.1.4 Loss of Coolant Flow

Two reactor coolant pumps (RCPs), one per steam generator, are powered from each of the two 6.9 kV buses. In the event of a turbine generator trip, each 6.9 kV bus fast transfers to the corresponding startup transformer. Loss of more than two RCPs is unlikely. None the less a simultaneous loss of all four RCPs is postulated as the limiting case loss of coolant flow accident. The seized RCP shaft case is analyzed as a separate event and is discussed under the postulated accidents section. A reactor trip on loss of coolant flow is initiated by the steam generator differential pressure transmitters. The rate at which core coolant flow decreases is a critical factor in maintaining an acceptable DNBR margin. A gradual flow coastdown is supported by the high rotational inertia of the RCPs. A time delay of approximately two seconds occurs between loss of RCP power and when the low flow trip setpoint is reached. Protection against exceeding the DNBR limit for this event is provided by the initial steady state thermal margin maintained by compliance with the DNBR related technical specification LCOs, and the low flow reactor trip.

Reference: St. Lucie Unit 1 UFSAR, Section 15.2.5

### 5.1.5 Loss of Load

During a loss of load event the rapid reduction in the rate of heat removal from the steam generator initially causes a rapid increase in secondary side temperature and pressure. Primary to secondary heat transfer decreases as the temperature differential decreases. Within the first second of the event the RCS cold leg temperature begins to increase with corresponding sharp increases in pressurizer level and pressure. A reactor trip on high pressurizer pressure is generated within the first three seconds, and the safety valve