



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W.
ATLANTA, GEORGIA 30303

Report No.: 50-335/83-28 and 50-389/83-55

Licensee: Florida Power and Light Company
9250 West Flagler Street
Miami, FL 33101

Docket No.: 50-335 and 50-389

License No.: DPR-67 and NPF-16

Facility Name: St. Lucie 1 and 2

Inspection at St. Lucie site near Ft. Pierce, Florida

Inspectors: *K. A. Elrod*
S. A. Elrod

4 OCT 83
Date Signed

P. E. Bibb
P. E. Bibb

4 OCT 83
Date Signed

Approved by: *K. D. Landis*
K. Landis, Acting Section Chief
Division of Project and Resident Programs

10/4/83
Date Signed

SUMMARY

Inspection on July 11 - August 10, 1983

Areas Inspected

This routine inspection involved 168 resident inspector-hours on site in the areas of Maintenance Observation, Surveillance Observation, Plant Operations, IE Bulletins, Circulars and Information Notices, Licensee Event Reports, and Start Up Testing.

Results

Of the 7 areas inspected, no violations or deviations were identified.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *C. M. Wethy, Plant Manager
- J. H. Barrow, Operations Superintendent
- T. A. Dillard, Maintenance Superintendent
- *D. A. Sager, Operations Supervisor
- *N. G. Roos, Quality Control Supervisor
- R. J. Frechette, Chemistry Supervisor
- C. F. Leppla, Instrument and Control Supervisor
- P. L. Fincher, Training Supervisor
- R. R. Jennings, Technical Department Supervisor
- B. W. Mikell, Outage Coordinator
- C. A. Pell, Reactor Engineering Supervisor
- H. F. Buchanan, Health Physics Supervisor
- J. G. West, Security Supervisor
- J. H. Barrow, Fire Prevention Coordinator
- R. Storke, Nuclear Plant Supervisor
- L. W. Pearce, Nuclear Plant Supervisor
- M. Altermatt, Nuclear Plant Supervisor
- K. C. Wiecek, Nuclear Plant Supervisor
- C. L. Burton, Nuclear Plant Supervisor
- G. Regal, Assistant Plant Superintendent-Electrical
- C. Wilson, Assistant Plant Superintendent-Mechanical
- A. W. Bailey, Quality Assurance Supervisor

Other licensee employees contacted included construction craftsmen, technicians, operators, shift technical advisors, security force members, and office personnel.

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on August 15, 1983, with those persons indicated in paragraph 1 above.

3. Licensee Action on Previous Enforcement Matters

Not inspected.

4. Unresolved Items

Unresolved items were not identified during this inspection.

5. Licensee Event Reports Review

The following LER's were reviewed to verify that reporting requirements had been met, causes had been identified, corrective actions appeared appropriate, generic applicability had been considered, and the LER forms were complete. Additionally, for those reports identified by asterisk, a more detailed review was performed to verify that the licensee had reviewed the events, corrective action had been taken, no unreviewed safety questions were involved, and violations of regulations or TS conditions had been identified.

Unit 1 (50-335)

<u>LER No.</u>	<u>Subject</u>
*83-15	Reactor Protection System Matrix Relay
*83-16	Boric Acid Flowpath Surveillance
*83-17	Containment Airlock
*83-20	Low Pressure Safety Injection Pump Breaker
*83-21	Shutdown Cooling
*83-22	Thermal Shield
*83-23	Instrument Nozzle Partial Penetration Welds
*83-25	Fire Station Surveillance Inspection
*83-26	Bergen-Patterson EA-3 Clamps
*83-27	Missed Surveillance - ARMS

Unit 2 (50-389)

<u>LER No.</u>	<u>Subject</u>
*83-01	Emergency Diesel Generators Out of Service
*83-02	Shutdown Cooling
*83-03	Shutdown Cooling
*83-04	Power Operated Relief Valve
*83-05	Safety Injection Tanks Isolated
*83-06	Safety Injection Header Drain Line Weld
*83-07	Power Operated Relief Valve
*83-08	Power Operated Relief Valve Indication
*83-09	Personnel Airlock
*83-10	Loss of "B" Side Power
*83-11	Thermal Overload Bypass Switches
*83-12	PORV Indication
*83-13	Containment Air Lock
*83-14	Main Feedwater Isolation Valve
*83-15	4160V Buses De-Energized
*83-16	Charging Pump Failures
*83-17	Instrument Bus Inverter

*83-18	Personnel Air Lock
*83-19	PORV Indication
*83-20	Safety Injection Tank Depressurization
*83-21	Waste Gas Decay Tank Inleakage
*83-22	Waste Gas Decay Tank Inleakage
*83-23	Control Element Assembly #45
*83-24	Missed Surveillance - RCS Inventory
*83-25	Safety Injection Tank Depressurization
*83-27	Containment Isolation Instrumentation

No violations or deviations were identified in this area.

6. Surveillance Observation

During the inspection period, the inspector verified plant operational compliance with at least 16 different TS requirements. Typical of these was confirmation of compliance with the TS for reactor coolant system leakage, linear heat rate, reactor protection instrumentation, safety injection tanks, containment systems, auxiliary feedwater system, and AC and DC sources.

The inspector verified that testing was performed in accordance with adequate procedures, test instrumentation was calibrated, limiting conditions for operation were met, removal and restoration of the affected components were properly accomplished, test results met requirements and were reviewed by personnel other than the individual directing the test, and that any deficiencies identified during the testing were properly reviewed and resolved by appropriate management personnel.

The inspector personally observed portions of Procedure 1220052, Rev. 1, Linear Power Range Safety and Control Channel Monthly Calibration.

No violations or deviations were identified in this area.

7. Operational Safety Verification

The inspector observed control room operations, reviewed applicable logs and conducted discussions with control room operators during the report period. The inspector verified the operability of selected emergency systems reviewed tagout records and verified proper return to service of affected components. Tours of the reactor, auxiliary and turbine buildings were conducted to observe plant equipment conditions, including potential fire hazards, fluid leaks, and excessive vibrations and to verify that maintenance requests had been initiated for equipment in need of maintenance. The inspector, by observation and direct interview, verified that the physical security plan was being implemented in accordance with the station security plan.

The inspector conducted a hand-over-hand walkdown of accessible portions of the Unit 2 emergency diesel generators and their support systems to verify correct valve and breaker alignment.

No violations or deviations were identified in this area.

During a plant tour, the inspector observed many fire doors open on Unit 2. The plant operators did not know which doors were open nor the reason they were open. This appeared to violate TS 3.7.12.a. Later, it was noted that a full-time roving fire watch was provided by the security force. This use of one roving patrol to compensate for wholesale unrecorded breaching of fire boundaries has been determined by NRC Region II and NRR to comply with the letter of the TS.

During a plant tour, the inspector observed that radioactive material (trash) was being stored in the Unit 2 drumming room but no postings were made in accordance with 10 CFR 20.203(e). The HP staff immediately posted the room, as previously planned, in the event greater than 10 times Appendix C quantities of radioactive materials were stored while waiting to be compacted and shipped offsite.

8. Followup of Previously Identified Items

- a. (Closed - Unit 1) IFI 335/81-RI-01 - During NRR Review of Florida Power and Light Company (FPL) Proposal to operate St. Lucie 1 at 2700 MWT, FPL Committed (FPL Letter L-81-477 dated November 13, 1981) to install start-up flux channel alarms for the detection of boron dilution events during the Cycle 6 refueling outage. NRR subsequently issued a letter (Operating Reactors Branch #3 dated April 26, 1982) rescinding the requirement for this alarm. FPL responded (FPL Letter L-82-233, dated June 1, 1982), stating that the alarm would not be installed on St. Lucie 1. This item is closed based on the preceding commitments.
- b. (Closed - Unit 1) IFI 335/82-RI-01: FPL to Power Pressurizer Low Range Pressure from an Inverter during 1983 Outage. The inspector reviewed Plant Change/Modification (PC/M)72-82 and plant work order (PWO) 6811 and determined that this item could now be closed based on work and testing completed.
- c. (Closed - Unit 1) IFI 335/82-41-01: Correct OP 1400057, Rev. 7. The inspector reviewed Revision 9 to OP 1400057, Reactor Regulating System Functional Test, and noted that steps have been taken to expand the tolerance band on certain data points in order to facilitate readings falling within the desired band. This solution was preferred by operations (over deletion of the data points) to permit recording of the data for trending purposes; even though the data is unnecessary (as originally discussed in inspection report 82-41). The inspector had no further questions in this area.
- d. (Closed - Unit 2) IFI 389/83-52-02: Power Level Tolerances for Load-Swing Test 2-1400084. This report updates previous report 389/83-52. The item concerned resolution of a disagreement between FPL and Combustion Engineering (CE) over power level tolerances. The disagreement occurred at the time of the 20% test. Verbal resolution and agreement for that power level was documented in CE letter L-SF-1184 dated June 20, 1983. Resolution and agreement for the higher power level tests were documented by CE review and concurrence on

July 15, with Revision 1 to the test procedure. The inspector had no further questions.

- e. (Closed - Unit 2) IFI 389/83-47-01: Replace QSPDS Glare Shields with Amber Shields. These were installed when received.

9. Evaluation of Licensee Response to IE Bulletin 83-04 and Other Salem Anticipated Transient Without Scram (ATWS) Issues

On March 30, 1983, Regional Office Notice No. 0553 was issued providing instructions to resident inspectors for assessing the adequacy of licensee response to IEB 83-04. The following requested actions and responses are provided to meet the requirement.

a. Action

Inspect the records resulting from the scram breaker surveillance which was performed to satisfy 83-04. Confirm that the tests were accomplished as required, in accordance with the bulletins. Confirm that results were satisfactory, that breakers tripped within the required time interval or that unsatisfactory results were corrected and reported.

Response

In order to meet the immediate requirements of IEB 83-04, the licensee shipped the Unit 1 reactor trip circuit breakers to General Electric for overhaul and testing at the factory. The test results were reviewed by the inspector and found to be satisfactory under some very general guidelines supplied by the vendor. A value of 25-35 msec for the breaker trip response time was considered acceptable. A recent supplement to GE Service Advice Letter 175-9.3 of April 1979, dated May 31, 1983, provided recommended time responses. Additionally, the supplement provided expanded information on lubrication, cleaning and trip tension measurement. This information has been incorporated into maintenance procedures with the exception of trip response times.

b. Action

Review the scram breaker surveillance procedure for adequacy. The procedure must meet the requirements of the TS and/or FSAR with respect to time response of the breaker. The procedure must test separately redundant trip mechanisms.

Response

The TS and FSAR do not provide specific time response requirements for the scram breakers as a separate entity. The response time of the entire reactor protection system trip channel through and including the scram breaker, is specified. This response time is checked during each refueling using procedure 1400053, Reactor Protection System Response

Time Testing. Maintenance Operating Procedures 1-0110060 and 2-0110060 provide quarterly inspections of the breakers for cleanliness, broken parts, trip latch clearance, pickup voltage, trip shaft torque, positive trip action, and separate testing of the undervoltage and shunt trip mechanisms, but do not address trip time response testing.

c. Action

Verify that the scram breakers are unambiguously designated as quality hardware by the "Q list" and that procedures are in place and being followed to ensure that the breakers are treated as safety-related equipment in the areas of preventive maintenance, testing, corrective maintenance, replacement parts, work order procedures, and any other appropriate activities.

Response

The scram breakers are clearly identified as safety-related for Unit 1 in the FSAR, Table 8.3-1, page 8.3-52 and for Unit 2 with a "Nuclear Safety Related" stamp on the control wiring diagram for each trip circuit breaker. Procedures in place which ensure proper control of safety-related equipment include the following:

- QI 4-PR/PSL-1 - Procurement Document Control
- QI 4-PR/PSL-2 - Procurement Document Review
- QI 5-PR/PSL-1 - Preparation, Revision, Review, Approval of Procedures
- MOP 1&2 - 0110060 - Periodic Maintenance of Control Element Assembly (CEA) Drive Equipment & Switchgear

d. Action

Verify that current technical manuals are available, reviewed, approved, controlled, and used for scram breaker maintenance.

Response

A review was conducted to verify availability, control and use of vendor technical manuals for reactor trip switchgear. The manuals, General Electric Reactor Trip Switchgear, EBASCO Nos. 8770-3561 and 2998-12102 were on file (master copy) in the Quality Control Records Vault and other controlled copies were on file in the Electrical Department (technical and maintenance), training, and system protection. The procedures used for breaker surveillance/maintenance, MOP 1-0110060, Rev. 11 and MOP 2-0110060, Rev. 2, provide reference to the respective technical manuals.

With respect to review and approval of technical manuals, the manuals and subsequent revisions are reviewed upon arrival onsite by EBASCO engineering personnel and initialed prior to entry into the plant QC records. No Facility Review Group (FRG) review/approval is conducted

unless it is a proposed manual change request initiated by the licensee's staff.

e. Action

Verify that the licensee has a clear procedural commitment to conduct a post-trip review to determine the cause of reactor trip and evaluate transients to verify that safety-related equipment performed correctly.

Response

Operating Procedure 0030119, Rev. 0, Post Trip Review, was issued on August 11, 1983, and adequately addresses the need for a post-trip review by the nuclear plant supervisor and the shift technical advisor. Typical items addressed are: trip breakers open, safety features actuation, first-out annunciation, plant electrical alignment before/after trip, plant conditions, reason for trip, steam generator feed before/after trip, any unusual or unexplained conditions.

Response

The scram breakers are clearly identified as safety-related for Unit 1 in the FSAR, Table 8.3-1, page 8.3-52 and for Unit 2 with a "Nuclear Safety Related" stamp on the control wiring diagram for each trip circuit breaker. Procedures in place which ensure proper control of safety-related equipment include the following:

- QI 4-PR/PSL-1 - Procurement Document Control
- QI 4-PR/PSL-2 - Procurement Document Review
- QI 5-PR/PSL-1 - Preparation, Revision, Review, Approval of Procedures
- MOP 1&2 - 0110060 - Periodic Maintenance of Control Element Assembly (CEA) Drive Equipment & Switchgear

d. Action

Verify that current technical manuals are available, reviewed, approved, controlled, and used for scram breaker maintenance.

Response

A review was conducted to verify availability, control and use of vendor technical manuals for reactor trip switchgear. The manuals, General Electric Reactor Trip Switchgear, EBASCO Nos. 8770-3561 and 2998-12102 were on file (master copy) in the Quality Control Records Vault and other controlled copies were on file in the Electrical Department (technical and maintenance), training, and system protection. The procedures used for breaker surveillance/maintenance, MOP 1-0110060, Rev. 11 and MOP 2-0110060, Rev. 2, provide reference to the respective technical manuals.

With respect to review and approval of technical manuals, the manuals and subsequent revisions are reviewed upon arrival onsite by EBASCO engineering personnel and initialed prior to entry into the plant QC records. No Facility Review Group (FRG) review/approval is conducted unless it is a proposed manual change request initiated by the licensee's staff.

e. Action

Verify that the licensee has a clear procedural commitment to conduct a post-trip review to determine the cause of reactor trip and evaluate transients to verify that safety-related equipment performed correctly.

Response

Operating Procedure 0030119, Rev. 0, Post Trip Review, was issued on August 11, 1983, and adequately addresses the need for a post-trip review by the nuclear plant supervisor and the shift technical advisor. Typical items addressed are: trip breakers open, safety features actuation, first-out annunciation, plant electrical alignment before/after trip, plant conditions, reason for trip, steam generator feed before/after trip, any unusual or unexplained conditions.

f. Action

Determine if the licensee training program includes training for post-trip evaluation.

Response

The aforementioned procedure has been placed in the night orders book for both control rooms with signoffs required for all licensed operators and will be reviewed during new operator training classes.

g. Action

Verify that emergency procedures call for operators to immediately follow up an automatic scram initiation with a manual scram actuation.

Response

The following two procedures were reviewed:

Off-normal OP 1-0030130, Rev. 15 - Shutdown resulting from reactor trip or turbine trip

Off-normal OP 2-0030130, Rev. 3 - Reactor trip/Turbine trip

Both procedures contained a requirement to manually trip the reactor and the turbine as the first immediate operator action to be taken upon receipt of a reactor trip signal alarm. Additionally, both procedures have been revised to incorporate the new procedure OP 0030119 - Post-Trip Review.

10. Followup of a Potentially Generic Issue

Speed Switches for Class 1-E Pump Motors - This issue concerned the charging spring motor for Brown-Boveri 4160V circuit breakers used as speed switches. FPL indicated that 4160V Brown-Boveri circuit breakers are not used at St. Lucie 1 or 2 and that a similar problem reported earlier for 480V circuit breakers had been investigated and repaired as necessary. The inspector had no further questions.

11. Unit 2 Power Range Transient Testing

- a. The inspector observed the conduct of a 10% step increase from 30% to 40% power and 10% ramp up from 40% to 50% power, in accordance with pre-op test procedure 2-1400084, Rev. 1, Sections 12.13 and 12.14. The inspector had no further questions.
- b. The inspector observed the conduct of the turbine runback test from 75% power in accordance with pre-op test procedure 2-0110090. The test was performed smoothly. The control system did not stop the runback within the acceptance criteria. This was recorded by the test director for FRG review.

Briefings were held prior to the above tests, the test director and data recorders were assigned, adequate operators were made available and the operators retained control of the control panels. The inspector observed prerequisites being evaluated and signed and data being taken. The inspector had no further comment.

- c. The inspector observed preoperational test procedure 2-2100091, Rev. 0: Loss of Offsite Power. The test, in accordance with FSAR, paragraph 14.2.12.4.B, commenced at 20% power with a generator trip and maintenance of plant auxiliary loads. Next, after stability was attained, a generator fault was simulated and, upon a generator and turbine trip, the two diesel generators were to feed plant loads. Data was also to be taken to support the NSSS Vendors CESEC Computer Code. The inspector reviewed crew performance, test performance, data recording, test coordination and preliminary test results.

The inspector had no adverse comment on the test itself. "B" diesel generator started but failed to load because of a broken lead in the 2B3 4160V differential current device. This device erroneously sensed a high bus differential current and tripped the feeder breakers open. That portion of the test was repeated following repair.

The loss of power to "B" bus caused a subsequent loss of power to many instruments serving "B" train equipment. The Sigma brand instruments failed as is even though the signal input may not be failed. This occurrence illustrated the need to complete an in-progress study of instrument bus failures being conducted under IE Bulletin 79-27/SER item 7.5.6.