

Report Nos.: 50-335/87-03 and 50-389/87-03 Licensee: Florida Power and Light Company 9250 West Flagler Street Miami, FL 33102 Docket Nos.: 50-335 and 50-389 License Nos.: DPR-67 and NPF-16 Facility Name: St. Lucie 1 and 2 Inspection Conducted February 8 thru March 7, 1987 Inspectors: R. <u>æniak</u> Senior Resident Inspector H. Bibb, Resident Inspector Ε. Dá 41 Approved by: 1hm Date Signed B. Wilson, Section Chief

SUMMARY

Division of Reactor Projects

Scope: This inspection involved on-site activities in the areas of Technical Specification compliance, operator performance, overall plant operations, quality assurance practices, station and corporate management practices, corrective and preventive maintenance activities, site security procedures, radiation control activities, surveillance activities, and refueling activities.

Results: Of the ten areas inspected, no violations or deviations were identified.

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REPORT DETAILS

- Licensee Employees Contacted 1.
 - *K. Harris, St. Lucie Vice President
 - *D. A. Sager, Plant Manager
 - J. H. Barrow, Operations Superintendent
 - *T. A. Dillard, Maintenance Superintendent

 - J. B. Harper, QA Superintendent *L. W. Pearce, Operations Supervisor
 - *R. J. Frechette, Chemistry Supervisor
 - C. F. Leppla, Instrumentation and Control (I&C) Supervisor
 - F. L. Fincher, Training Supervisor
 - *C. A. Pell, Technical Staff Supervisor
 - *E. J. Wunderlich, Reactor Engineering Supervisor
 - *H. F. Buchanan, Health Physics Supervisor G. Longhouser, Security Supervisor

 - J. Barrow, Fire Prevention Coordinator
 - *J. Scarola, Asst. Plant Superintendent Electrical
 - *C. Wilson, Asst. Plant Superintendent Mechanical
 - N. G. Roos, Quality Control Supervisor

Other licensee employees contacted included technicians, operators, mechanics, security force members, and office personnel.

*Attended exit interview

2. Exit Interview

> The inspection scope and findings were summarized on March 6, 1987, with those persons indicated in paragraph 1 above.

The licensee did not identify as proprietary any of the materials provided to or reviewed by the inspectors during this inspection.

3. TMI Action Items Followup

> (CLOSED - Units 1 and 2) TMI Item II.B.1.2 - Reactor Coolant System Vents - Installation of the Unit 1 RCS Vent System was completed under the following plant changes/modifications (PC/M):

a. PC/M 56-180, RCS Vents, completed September 27, 1982;

Supplement 1 - IEEE Qualification and Seismic Report, May 5, 1983;

Supplement 2 - EQ Documentation, May 3, 1985; and,



b. PC/M 46-182, RCS Vent Siphon Breaker Rework, completed September 14, 1983.

The inspector verified proper installation by personal observation and inspection of records. Initial testing revealed an operational problem with the solenoid operated valves; however, this was corrected by installation of shielded cables. Unit 2 installation was completed prior to issuance of an operating license and was inspected as part of Near Term Operating License (NTOL) plant construction inspections.

(CLOSED - Units 1 and 2) TMI Item II.B.1.3 - Operating Procedures for RCS Vent System - Normal Operation of the Reactor Coolant Gas Vent System (RCGVs) is performed during filling and venting of the RCS using procedures 1-0120020 and 2-0120020. Use of the Gas Vent System under accident situations is covered by procedures 1-0120037 and 2-0120037, Reactor Coolant Gas Vent System - Off Normal Operation. The inspector reviewed these procedures for technical accuracy and operational feasibility. Additionally, the inspector confirmed that operators are trained in the use of these procedures during initial license training and regualification.

(CLOSED-Unit 1) TMI Item II.F.2.3.b - Implement Installation of Instrumentation for Detection of Inadequate Core Cooling - Installation of the required instrumentation was formally closed out on November 7, 1980, for Unit 1. Two independent and redundant systems (Qualified Safety Parameter Display Systems) were installed to provide indication of saturation margin at the upper reactor vessel head, reactor coolant system (coolant leg), and at the core exit (thermocouple). Additionally, thermocouples are used to determine Reactor Vessel Water level. Temperature information for the saturation margin calculation is provided at top of the reactor vessel head, 2A and 2B hot legs, and 2A2 and 2B1 cold legs. Pressurizer pressure is also displayed on the system. The following procedures are provided for operation of the QSPDS: OP 1-1150020 - QSPDS Operation and ONP-1-0120039 - Natural Circulation Cooldown. Licensed operators have been trained in the use of the procedures.

(CLOSED - Unit 2) TMI Items II.F.2.1, II.F.2.2 and II.F.2.4 - Inadequate Core Cooling Procedure, Sub-cooling Meter and Additional Instrumentation -The inspector confirmed that identical equipment, procedures and training exist for Unit 2 as that discussed in the preceding paragraph for Unit 1.

4. Plant Tours (Units 1 and 2)

The inspectors conducted plant tours periodically during the inspection interval to verify that monitoring equipment was recording as required, equipment was properly tagged, operations personnel were aware of plant conditions, and plant housekeeping efforts were adequate. The inspectors also determined that appropriate radiation controls were properly established, critical clean areas were being controlled in accordance with procedures, excess equipment or material was stored properly and combustible materials and debris were disposed of expeditiously. During tours, the inspectors looked for the existence of unusual fluid leaks, piping vibrations, pipe hanger and seismic restraint settings, various valve and breaker positions, equipment caution and danger tags, component



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positions, adequacy of fire fighting equipment, and instrument calibration dates. Some tours were conducted on backshifts.

The inspectors routinely conducted partial walkdowns of Emergency Core Cooling Systems (ECCS) Valve, breaker/switch lineups and equipment conditions were randomly verified both locally and in the control room. During the inspection period the inspectors conducted a complete walkdown in the accessible areas of the Unit 1 and 2 High Pressure and Low Pressure Safety Injection Systems, and Emergency Diesel Generators to verify that the lineups were in accordance with licensee requirements for operability and equipment material conditions were satisfactory. Additionally, system lineup verifications were performed on the following systems: Unit 1 and 2 Chemical and Volume Control, Safety Injection and AC and DC Electrical Lineups.

5. Plant Operations Review (Units 1 and 2)

The inspectors, periodically during the inspection interval, reviewed shift logs and operations records including data sheets, instrument traces, and records of equipment malfunctions. This review included control room logs and auxiliary logs, operating orders, standing orders, jumper logs and equipment tagout records. The inspectors routinely observed operator alertness and demeanor during plant tours. During routine operations, operator performance and response actions were observed and evaluated. The inspectors conducted random off-hours inspections during the reporting interval to assure that operations and security remained at an acceptable level. Shift turnovers were observed to verify that they were conducted in accordance with approved licensee procedures. The inspectors performed an in-depth review of the following safety-related tagouts (clearances):

Unit 1

Clearance No.

Description

1-2-276	HVE-13A-PM [Preventative Maintenance]
1-2-277	IA2 480V Load Center - Clean and Inspect
1-2-326	HCV-3628 - Replace Solenoids
1-2-345	FCV-2210Y - Inspect and Repair
1-3-20	1B Containment Spray Pump Valve V-7128 - Inspect

6. Technical Specification (TS) Compliance (Units 1 and 2)

During this reporting interval, the inspectors verified compliance with Limiting Conditions for Operations (LCOs) and results of selected surveillance tests. These verifications were accomplished by direct observation of monitoring instrumentation, valve positions, switch positions, and review of completed logs and records. The licensee's compliance with LCO action statements was reviewed on selected occurrences as they happened.

7. Maintenance Observation

DUO Number

Station maintenance activities of selected safety-related systems and components were observed/reviewed to ascertain that they were conducted in accordance with requirements. The following items were considered during this review; LCOs were met, activities were accomplished using approved procedures, functional tests and/or calibrations were performed prior to returning components or systems to services, quality control records were maintained, activities were accomplished by qualified personnel, parts and materials used were properly certified, and radiological controls were implemented as required. Work requests were reviewed to determine status of outstanding jobs and to assure the priority was assigned to safetyrelated equipment. The inspectors observed portions of the following maintenance activities:

PWU NUMBER	Description
(Unit 1)	
6031 • 6035 6042 6130	Channel B Temperature Meteorology Station Replace Damaged Wire on Security Fence Replace Fire Detector Quarterly Test of Security Alarmed Doors
(Unit 2)	

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6005	Annual Inspection of Freeze Protection
7810	Quarterly PM on Radiation Monitoring Recorder

8. Review of Nonroutine Events Reported by the Licensee (Units 1 and 2)

Non-routine plant events were reviewed for potential generic impact, to detect trends, and to determine whether corrective actions appeared appropriate. Events which were reported immediately were also reviewed as they occurred to determine that technical specifications were being met . and that the public health and safety were of upmost consideration.

Unit 2 operated at full power throughout most of the reporting period. There is a discussion in paragraph 12 on Unit 2's reactor trip. Unit 1 has been shutdown for a refueling outage throughout the reporting period, as discussed in paragraph 11.

9. Physical Protection (Units 1 and 2)

The inspectors verified by observation and interviews during the reporting interval that measures taken to assure the physical protection of the facility met current requirements. Areas inspected included the organization of the security force, the establishment and maintenance of gates, doors and isolation zones in the proper conditions, that access control and badging was proper, and procedures were followed.



10. Surveillance Observations

During the inspection period, the inspectors verified that surveillances were conducted in accordance with selected TS requirements. Typical of these were confirmation of compliance with the TS for reactor coolant chemistry, refueling water tank (level, temperature and chemistry), containment pressure, control room ventilation, and AC and DC electrical sources. The inspectors verified that testing was performed in accordance with adequate procedures, that test instrumentation was calibrated, that limiting conditions for operations were met that removal and restoration of the affected components were accomplished, that 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 inspectors observed portions of the following surveillances:

Unit 1

AP-1-0010125 - Check Sheets 1, 2 and 5; Data Sheet 5, 12, 13 and 14 OP-1-1630022 - Spent Fuel Handling Machine Operation OP-1-1600023 - Refueling Sequencing Guidelines

Unit 2

OP-2-0110057 - Periodic Surveillance of DNB Margin OP-2-0120026 - Reactivity - Deviation From Design

11. Refueling Activities (Unit 1)

Unit 1 refueling continued during the inspection period. All fuel elements were removed from the reactor vessel and placed in the spent fuel pool. Ultrasonic testing of each individual fuel pin in each assembly was conducted to determine which fuel pins had leaks. These pins were removed and replaced with dummy pins. A total of six fuel pins were replaced; three for leaks and three for visual degradation of the fuel pin lower external surface. The fuel pin degradation was due to unknown debris impingement.

During core reload, the third fuel assembly (H350) to be placed in the core fell over and came to rest against the opposite side of the core shroud at an approximate 45° angle. A team was quickly formed to investigate the situation and develop a procedure to recover assembly H350. The procedure was implemented and the assembly was recovered and returned to the spent fuel pool by the following morning. Another partially spent fuel assembly was used to replace H350 and reload was continued. Reload was completed on March 5, however restart was delayed due to deficiencies identifed on electrical splices (IE Notice 86-53). At the time of this report, the licensee identified the need to redo 826 splices on Unit 1. Similar problems were not found on Unit 2.



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Typical refueling events reviewed were:

- a. Periodic testing and verification of the operability of refuelingrelated equipment and systems are being performed as required by TS and licensee administrative procedures.
- b. Fuel handling operations (removal, inspection, sipping, reconstitution, and insertion) and other ongoing activities are being performed in accordance with TS and approved procedures.
- · c. Plant conditions are being maintained as required by TS.
 - d. Good housekeeping and loose object control are being maintained in the refueling and spent fuel areas.
 - e. The licensee's staffing is in accordance with TS and approved procedures.
- 12. Reactor Trips (Unit 2)

On March 3, while at 100% power, the Unit 2 reactor tripped. I&C technicians were replacing a defective power supply in the "B" Channel Auxiliary Feedwater Actuation System (AFAS). While testing the new power supply to place it inservice an overload trip setpoint was exceeded, thereby sending a closure signal to the "B" Main Feedwater Isolation Valve. The feedwater isolation valve closed cutting off feedwater to the "B" Steam Generator (S/G) which resulted in a low level and subsequent reactor trip and turbine trip. The licensee immediately commenced to place the reactor in a stabilized hot shutdown condition and started working on several maintenance items which could only be worked with the Unit shutdown.

The Unit attempted to return to power on the morning of March 5, but tripped at about 43% power (ascending) due to the "B" Main Feedwater Regulating Valve closing. Efforts to determine the precise reason for the valve closing were not successful. The problem appeared to be in the valve actuator. Since Unit 1 was shut down for refueling, the valve actuator for the Unit 1 Feed Regulator was removed and placed on Unit 2. Unit 2 was returned to power on the evening of March 5.

13. I&E Bulletins (IEB) (92703)

The following bulletin was closed by regional based inspection.

(Closed) 335;389/86-BU-O3, Potential Failure of Multiple ECCS Pumps Due to Single Failure of Air Operated Valve in Minimum Flow Recirculation Line. The licensee responded to IEB 86-O3 in a letter dated November 12, 1986. In their response the licensee stated that they had completed their review of the subject Bulletin and determined that St. Lucie Units 1 and 2 were not vulnerable to the situation for single active failures described in the Bulletin. Unit 1 has a common header for recirculation of the safety





injection pumps. The only active valves in this header are motor operated. These valves are electrically locked open, with the breaker open for Modes 1 through 3. Unit 2 has independent recirculation headers for the "A" and "B" trains. Therefore, controls or design features preclude the disabling of more than one train by a single active failure. This item was previously addressed in Inspection Report 50-335; 389/85-36 as a followup on IE Notice 85-94. This item is closed.

- 14. Effluent and Environmental Reports (84723, 84724)
 - A regional review was conducted on the licensee's Effluent and Environmental Report. Technical Specification 6.9.1.10 requires the licensee to submit within 60 days of January 1 and July 1 of each year, routine Radioactive Effluent Release Reports covering the operation of the unit during the previous six months of operation. The Regional inspector reviewed the Semiannual Radiological Effluent Release Reports for the periods January 1, 1985 through June 30, 1985; July 1, 1985 through December 31, 1985; and January 1, 1986 through June 30, 1986. The review included an examination of the liquid and gaseous effluent release data. The data are summarized below for liquids and gases for calender year 1985 and the first six months of 1986:

Effluent Summary: St. Lucie Power Station

Gases - Summation of all releases for Units 1 and 2

	<u>CY-1985</u>	Jan-Jun <u>1986</u>
° Fission and Activation Gases (curies)	6.03 E+4	2.41 E+4
° Iodine (curies)	9.82 E-1	2.40 E-1
° Particulates (curies)	1.69 E-3	1.45 E-4
° Tritium (curies)	5.62 E+2	4.07 E+1

Liquids- Summation of all releases for Units 1 and 2

	<u>CY-1985</u>	Jan-Jun <u>1986</u>
<pre>° Fission and Activation Products (curies) ° Tritium (curies)</pre>	5.53 E 0 6 50 F+2	3.76 E 0 2.67 F+2
° Dissolved entrained gases (curies)	5.22 E+1	4.37 E 0

Radioactive gas waste releases consisting of noble gases for 1985 from Units 1 and 2, respectively, were 5.08 E+4 curies and 9.55 E+3 curies.

The average annual gaseous release per unit for 21 operating PWRs in Region II during the same time period was 5.18 E+3 curies. Similarly, radioactive liquid waste releases (from Units 1 and 2 combined) consisting





of fission and activation products for 1985 were 5.53 curies. The average annual liquid release, per unit, for 21 operating PWRs in Region II during 1985 was 1.35 curies.

Additionally, Technical Specification 6.9.1.9 requires the Radioactive Effluent Release Report to be submitted within 60 days after January 1 of each year to include an assessment of the radiation doses to the maximum exposed member of the public due to radioactive liquid and gaseous effluents released from the site during the previous calendar year. The inspector reviewed the 1985 annual doses calculated for an infant exposed through the grass-cow-milk pathway and inhalation pathway. These dose calculations were based on gaseous effluent releases using actual meterological data.

1985 Dose Calculation Summary: St. Lucie Power Station

Gaseous Effluent Pathway

			_
0	Thyroid (mrem)	2.42	E 0
0	Bone (mrem)	6.32	E-3
0	Liver (mrem)	9.15	E-3
0	Kidnev (mrem)	2.60	E-3
0	Lung (mrem)	1.59	E-3
0	GI-LII (mrem)	1.89	E-3
0	Total Body (mrem)	6.20	E-3
A	ir Doses		
0	Gamma (mrad)	6.63	E-2
٥	Beta (mrad)	1.37	E-1

In addition, the inspector reviewed the 1985 Annual Radiological Environmental Monitoring Report, as required by Technical Specification 6.9.1.11, for omissions, obvious mistakes, and anomalous measurements.

No violations and deviations were identified.

