UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W.
ATLANTA, GEORGIA 30323

DEC 16 1991

Report Nos.: 50-335/91-23 and 50-389/91-23

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: November 18-22, 1991

Inspectors: R. B. Shortridge 12/12/91
R. B. Shortridge Date Signed

E. B. Pharr 12/12/91
E. B. Pharr Date Signed

Approved by: 12/13/91
J. P. Potter, Section Chief Date Signed
Facilities Radiation Protection Section
Radiological Protection and Emergency
Preparedness Section
Division of Radiation Safety and Safeguards

SUMMARY

Scope:

This unannounced inspection of radiation protection activities included a review of the licensee's organization and management controls, training and qualifications, external exposure control, internal exposure control, control of radioactive materials and contamination, surveys and monitoring, and maintaining occupational exposures ALARA. In addition, Information Notices were reviewed.

Results:

Within the scope of the inspection, no violations or deviations were identified. The radiation protection (RP) program functioned adequately to protect the health of occupational radiation workers and to promote the safe use of radioactive materials. Management and staff were motivated and involved in activities to reduce personnel exposure.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

*G. Alexander, ISI Specialist (ESI)
*G. Boissy, Plant Manager
*H. Buchanan, Health Physics Supervisor
*C. Burton, Operations Superintendent
*R. Church, Chairman, ISEG
*K. Craig, Steam Generator Supervisor (ESI)
*J. Danek, Corporate Health Physics
*B. Dawson, Maintenance Supervisor
*J. Dyer, Supervisor, Maintenance Quality Control
*R. Englmeier, Site Quality Manager
*A. Flowers, Mechanical Maintenance Engineering
*B. Frechette, Chemistry Supervisor
*J. Fulford, Materials Performance Supervisor
*J. Geiger, Vice President, Nuclear Assurance
*L. Jacobus, Health Physics ALARA Coordinator
*K. Mayhew, ISI Coordinator
*R. McCullers, Health Physics Operations Supervisor
*L. McLaughlin, Plant Licensing Manager
*A. Menocal, Mechanical Maintenance Department Head
*L. Motley, Supervisor, Code Programs
*D. Nowakowski, NDE Section (ESI/JPN)
*T. Roberts, Nuclear Engineer
*T. Ware, Technical Training Supervisor
*D. West, Technical Department Supervisor
*D. Wolf, Site Engineering Supervisor

Other licensee employees contacted during this inspection included craftsmen, technicians, and office personnel.

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*S. Elrod, Senior Resident Inspector
*C. Ogle, Project Engineer
*M. Scott, Resident Inspector

*Attended November 22, 1991 Exit meeting

2. Occupational Exposure During Extended Outages (83729)

a. Organization and Management Controls

The inspector reviewed and discussed with the licensee representatives the RP organization and staffing levels and verified that no changes had been made since the previous inspection conducted from November 5-9, 1990. The inspector noted that RP staff members were knowledgeable and actively involved in activities to reduce personnel exposure.

The inspector reviewed the licensee's program for self-identification of weaknesses related to the radiation protection program and the appropriateness of corrective action taken. The inspector noted that since January 1, 1991 only eight Radiological Event Reports (RERs) had been written and each involved skin contaminations.

b. Audits and Appraisals

The inspector reviewed the licensee's program of self-assessment to determine the effectiveness in contributing to the prevention of problems in radiological controls. Three elements of this program reviewed in depth, included licensee audits, surveillances, and RERs. In reviewing audits the inspector found that corporate health physics does not perform a formal assessment of the plant radiation protection (RP) program. However, plant quality assurance does conduct a performance monitoring audit of RP. The inspector reviewed the following audits:

QSL-OPS-90-759, dated October 31, 1990, Monitoring and Test Equipment

QSL-OPS-90-772, dated November 16, 1990, Performance Monitoring - October

QSL-OPS-91-791, dated February 21, 1991, Performance Monitoring - January

QSL-OPS-91-803, dated April 3, 1991, Performance Monitoring - March

QSL-OPS-91-809, dated April 30, 1991, Performance Monitoring - April

QSL-OPS-91-820, dated July 31, 1991, Performance Monitoring - July

QSL-OPS-91-894, dated September 4, 1991, Performance Monitoring - August

Additionally, the inspector reviewed 58 surveillances of the RP program performed by site quality control personnel and eight RERs performed in 1991. All eight of the RERs were written for personnel contamination events which duplicated the effort for

reporting since the licensee also issues personnel contamination event reports for each personnel contamination. Based on the review, the inspector noted in only one audit and one surveillance were there findings of substance. Overall, the RER system was not used comprehensively and the audit and surveillance programs were not fully developed. The inspector was not able to determine management oversight, root cause determination, timeliness of correction, or problem trending; all critical elements in a program to ensure that problems, both programmatic and compliance based, are being identified and corrected when the Region-based radiation specialists are not on site. This item was discussed with plant management at the exit and the licensee acknowledged the NRC's concern.

c. Training and Qualifications

Technical Specification (TS) 6.3 states that each member of the unit staff shall meet or exceed the minimum qualifications of ANSI/ANS-3.1-1978 as endorsed by Regulatory Guide 1.8, September 1975.

ANSI/ANS-3.1-1978, Section 4.5.2 requires that technicians have three years of working experience in their speciality of which one year should be related technical training.

The inspector noted that the licensee had contracted with 90 technicians to provide HP support during the current outage. The inspector was informed that 55 of the contract HP technicians were ANSI 3.1 qualified. The remaining 35 contract technicians only provided HP support while under the auspices of an ANSI qualified technician. The inspector reviewed selected ANSI qualified contract technician's resumes and verified compliance with ANSI 3.1 requirements.

d. External Exposure Control

10 CFR 20.101 requires that no licensee shall possess, use or transfer licensed material in such a manner as to cause any individual in a restricted area to receive in any period of one calendar quarter a total occupational dose in excess of 1.25 rems to the whole body; head and trunk; active blood forming organs; lens of the eyes; or gonads; 18.75 rems to the hands and forearms; feet and ankles; and 7.5 rems to the skin of the whole body.

(1) Multibadge/Extremity Exposure Monitoring

The inspector reviewed the RP program guidance for conducting multibadge exposure monitoring for workers involved with Radiation Work Permit (RWP) 1407, Installation of Nozzle Dams.

Health Physics Procedure, HP-112, Multibadging, revision (Rev. 7), dated 10/22/91, requires HP supervision to establish multibadging and dosimetry requirements for applicable RWPs. From review of selected contract outage worker records, the inspector verified that procedural requirements were met for multibadging the workers. The inspector also verified that the doses assigned to each worker were for the maximum whole body and extremity doses [1349 milliRem (mRem) and 1048 mRem, respectively], for those involved in the installation of steam generator nozzle dams.

(2) Skin Dose Evaluation

Procedure HP-72, Determination of Dose to the Skin from Skin Contamination, Rev. 5, dated 2/20/90 provides guidance for determining beta dose from skin contamination. Any skin contamination in excess of 25,000 disintegrations per minute-hours (DPM-hrs) is required to be evaluated to determine if the contamination is in the form of a hot particle.

Skin dose calculations conducted from January 1, 1991, until the time of the onsite inspection were reviewed and discussed with cognizant licensee representatives. The inspector noted that for all events involving hot particles, skin dose evaluations were initiated as required by HP-72. The maximum skin exposure assigned to an individual was 931 mRem from a hot particle.

e. Internal Exposure Control

(1) Program Implementation

10 CFR 20.103(a)(1) states that no licensee shall possess, use, or transfer licensed material in such a manner as to permit any individual in a restricted area to inhale a quantity of radioactive material in any period of one calendar quarter greater than the quantity which would result from inhalation for 40 hours per week for 13 weeks at uniform concentrations of radioactive material in air specified in 10 CFR Part 20, Appendix B, Table 1, Column 1.

10 CFR 20.103(a)(3) requires that for purposes of determining compliance with the requirements of this section, the licensee must use suitable measurements of concentrations of radioactive materials in air for detecting and evaluating airborne radioactivity in restricted areas, and in addition, as appropriate, measure radioactivity in the body, measure radioactivity excreted from the body, or any combination of such measurements as may be necessary for the timely detection and assessment of individual intakes of radioactivity by exposed individuals.

HP Procedure, HP-35, Bioassay Program, Rev. 7, dated 9/21/90 states that each radiation worker shall have a baseline or entrance bioassay and upon termination of assignment should have an exit bioassay. In addition the procedure states that radiation workers should submit to at least one whole body count per year.

The inspector verified that selected contract personnel involved in current outage activities had received baseline whole body counts following assignment to the site. The inspector also reviewed and verified completion of annual whole body counts for selected RP personnel. Further, from review of the selected whole body analysis records the inspector noted that no positive whole body analyses were identified.

For those records reviewed the inspector noted the results of the licensee's internal assessment efforts. No exposures in excess of the 40 Maximum Permissible Concentration - hours (MPC-hrs) control measure had occurred since January 1, 1991.

(2) Respiratory Protection Program

10 CFR 20.103(c) permits the licensee to maintain and to implement a respiratory protection program that includes, at a minimum: air sampling to identify the hazards; surveys and bioassays to evaluate the actual exposures; written procedures to select, fit and maintain respirators; written procedures regarding supervision and training of personnel and issuance of records; and determination by a physician prior to use of respirators that the individual user is physically able to use respiratory protection equipment.

The inspector reviewed current respiratory protection program records to verify training, completion of medical physicals, and fit-testing for selected RP staff personnel and contract personnel involved with nozzle dam installation activities. For those records reviewed, the inspector verified that all personnel were trained to use respiratory protection equipment, fit-tested, and medically qualified in accordance with the regulations.

f. Surveys, Monitoring, and Control of Radioactive Material and Contamination

10 CFR 20.201(b) requires a licensee to make or cause to be made such surveys as (1) may be necessary to comply with the regulations and (2) are reasonable under the circumstances to evaluate the extent of radioactive hazards that may be present.

10 CFR 20.203 specifies the posting; labeling and control requirements for radiation, airborne, and radioactive material areas.

During tours of the Unit 1 containment and the auxiliary building for both units, the inspector examined licensee postings, labeling, and controls for radiation and high radiation areas. The inspector observed good consistency for postings and labelings of radioactive material and good controls for radiation and high radiation areas. The inspector performed both radiation and surface contamination surveys in the auxiliary building and radiation surveys in the Unit 1 containment building. All surveys agreed with those taken by the licensee.

The inspector reviewed the licensee's program to control contamination at the source and noted the licensee posted as contaminated 10,161 square feet (ft^2) of the total 106,000 ft^2 of radiologically controlled area (RCA). However, during operations the average contaminated area of the RCA is approximately 4,000 ft^2. To date in 1991 the licensee has experienced 40 personnel contaminations. With a major portion of the outage completed, it appears that the goal of 167 personnel contaminations for 1991 will not be exceeded. Licensee representatives stated that increased worker awareness, decontamination of areas, and daily cleanings of the aisleways have kept personnel contaminations low.

The inspector also noted that the licensee had continued efforts to ship all radioactive waste off site and cleanup their backyard area. The area has improved greatly in posting and appearance over the past several inspections.

g. Maintaining Exposures As Low As Reasonably Achievable (ALARA)

10 CFR 20.1(c) states that persons engaged in activities under licenses issued by the NRC should make every reasonable effort to maintain radiation exposures as low as reasonably achievable. The recommended elements of an ALARA program are contained in Regulatory Guide 8.8, "Information Relevant to Ensuring that Occupational Radiation Exposure at Nuclear Stations will be ALARA," and Regulatory Guide 8.10, "Operating Philosophy for Maintaining Occupational Radiation Exposures ALARA."

Ongoing licensee operations during the week of the inspection included the completion of sludge lancing in steam generator (S/G) "C" and eddy current testing in S/G "A" and "B". Maintenance was also in progress on pressurizer valves and S/G tube plugging.

At the time of the inspection, the licensee was seven person-rem over their projection, however, the outage completion date appeared to be ahead of schedule. Site dose by thermoluminescent dosimeter readings through October showed a collective dose of 135 person-rem, well below the projected 178 person-rem.

Based on a review of data and discussions with licensee representatives, the inspector noted that the program to reduce hot spots was working well. Since the start of the outage, the 30 existing hot spots had been reduced by flushing to 15. Ultra filters had been installed to reduce the size of radioactive particles in the reactor coolant system. Roughing filters are still used to cover the cavity drain during draining operations. Routinely the several filters used, read between 80 and 100 rem/hr when removed. This has removed a significant amount of source term and subsequent water treatment for cavity drain effluent.

No violations or deviations were identified.

3. Information Notices (92701)

The inspector determined that the following Information Notices (INs) had been received by the licensee, reviewed for applicability, distributed to appropriate personnel, and that action, as appropriate was taken or scheduled:

- 90-49: Stress Corrosion Cracking in PWR Steam Generator Tubes
- 90-50: Minimization of Methane Gas in Plant Systems and Radwaste Shipping Containers
- 90-52: Inadvertent Shipment of a Radioactive Source in a Container Thought to be Empty
- 90-63: Management Attention to the Establishment and Maintenance of a Nuclear Criticality Safety Program
- 88-63: Supplement 1: High Radiation Hazards from Irradiated Incore Detectors and Cables
- 90-66: Incomplete Draining and Drying of Shipping Casks
- 90-75: Denial of Access to Current Low-Level Radioactive Waste Disposal Facilities
- 90-81: Fitness-For-Duty
- 91-10: Summary of Semi-Annual Program Performance Reports
- 91-35: Labeling Requirements for Transporting Multi-Hazard Radioactive Materials
- 91-36: Nuclear Plant Staff Working Hours

- 91-37: Compressed Gas Cylinder Missile Hazard
- 91-49: Enforcement of Safety Requirements for Radiographers

4. Exit Meeting

The inspector met with license representatives denoted in Paragraph 1 at the conclusion of the inspection on November 22, 1991. The inspector summarized the scope and findings of the inspection and did not receive any dissenting comments. The licensee did not identify any materials reviewed by the inspectors as proprietary.