



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

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Report No.: 50-335/92-25 and 50-389/92-25

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 Units 1 and 2

Inspection Conducted: December 14-18, 1992

Inspectors:	<u><i>Ann Paland</i></u>	<u>1/8/93</u>
	for R. B. Shortridge	Date Signed
	<u><i>Ann Paland</i></u>	<u>1/8/93</u>
	for B. A. Parker	Date Signed

Accompanied by: N. L. Stinson, NRR

Approved by:	<u><i>William H. Rankin</i></u>	<u>1/8/93</u>
	W. H. Rankin, Chief	Date Signed
	Facilities Radiation Protection Section	
	Radiological Protection and Emergency Preparedness Branch	
	Division of Radiation Safety and Safeguards	

SUMMARY

Scope:

This routine, unannounced inspection of the Radiation Protection (RP) program included a review of organization and management controls, audits and appraisals; training and qualifications; external exposure controls, internal exposure controls, control of radioactive material, and the program to maintain occupational dose as low as reasonably achievable (ALARA).

Results:

In the areas inspected, no violations or deviations were identified. Based on interviews with licensee management, supervision, personnel from station departments, and records review, the inspector found the radiation protection program to be effective in protecting the health and safety of plant employees. The plant personnel's participation in ALARA, the constant efforts by the ALARA staff to reduce dose, and respiratory protection were noted as strengths.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *G. Boissy, Plant General Manager
- *H. Buchanan, HP Supervisor
- *C. Burton, Operations Manager
- *R. Englmeier, Site Quality Manager
- *J. Holt, Licensing Engineer
- *L. Jacobus, ALARA Coordinator
- *L. Large, HP Operations Supervisor
- *R. McCullens, HP Operations Supervisor
- *L. McLaughlin, Licensing Manager
- *H. Mercer, HP Technical Supervisor
- *D. Sager, Plant Vice-President
- *J. Voorhees, QA Supervisor
- *T. Ware, Technical Training Supervisor
- *K. Wiecek, QC Specialist

Other licensee employees contacted during the inspection included technicians, maintenance personnel, and administrative personnel.

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- *S. Elrod, Senior Resident Inspector
- M. Scott, Resident Inspector

*Attended exit meeting held on December 18, 1992

2. Organization and Management Controls (83750)

The inspector reviewed the licensee's RP program and conducted interviews with licensee management to discuss the strengths and challenges contained in the program.

The inspector reviewed changes made to the licensee's organization, staffing levels and lines of authority as they related to radiation protection, and verified that the changes had not adversely affected the licensee's ability to control radiation exposures or radioactivity. The licensee's RP program consisted of 51 managers and staff members, as well as approximately 30 utilitymen and others that were recently detailed to assist in HP-related activities.

The inspector discussed with the radiation protection supervisor the type, methods of, and degree of interaction between plant groups. 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.

No violations or deviations were identified.

3. Audits and Appraisals (83750)

Technical Specification (TS) 6.5.2.8 requires that audits of plant activities be performed under the cognizance of the Company Nuclear Review Board (CNRB) and that the audits shall encompass, in part, the conformance of plant operation to provisions contained within the TSs and applicable license conditions at least once per 12 months.

The inspector reviewed the following audit:

- QSL-OPS-92-878, Quality Assurance Audit - Health Physics Department, dated July 15, 1992

In general, the audit was found to be well planned and documented and contained items of substance relating to the radiation protection program. The report of audit findings to management was also reviewed and was found to contain responsive commitments by management to effect corrective actions for the deficiencies noted.

At the time of inspection, the licensee had 19 radiological event reports (RERs) for 1992. The inspector discussed the RERs with a cognizant licensee representative and noted no problems.

No violations or deviations were identified.

4. Training and Qualifications (83750)

10 CFR 19.12 requires the licensee to instruct all individuals working or frequenting any portions of the restricted areas in the health protection aspects associated with exposure to radioactive material or radiation, in precautions or procedures to minimize exposure, and in the purpose and function of protection devices employed, applicable provisions of the Commission Regulations, individuals' responsibilities and the availability of radiation exposure data.

The inspector reviewed changes in the licensee's training program, policies, and goals relating to the radiation protection program and discussed the changes with licensee representatives. The licensee was required by TS 6.3 to follow ANSI Standard 3.1-1978 regarding contract HP technician training and qualification. The inspector reviewed the licensee's continuing training curriculum and noted that industry events (operating experience) and systems courses were scheduled. Also, the inspector noted that HP technicians received an average of 41 hours of continuing training each in 1992.

The licensee provided facilities and instruction for HP technicians to take the National Registry for Radiation Protection Technicians (NRRPTs) certification test. Fourteen HPs took the test after three months of self-study and instruction. However, at the time of inspection, the results were not yet known. The inspector commented on the support.

management provided for the RP program at the station and that this was another indicator of the continuation of good management support and HP technician interest in improving their capabilities.

No violations or deviations were identified.

5. External Exposure Control (83750)

TS 6.8.1 requires the licensee to have written procedures, which provide detailed instructions on the preparation and processing of radiation work permits (RWPs), including the use of RWPs. The inspector compared personnel that were signed on RWPs that required pre-job briefings prior to work on that RWP with personnel signed on the pre-job briefing attendance sheet and noted that personnel appeared to be working without the pre-job briefing. The inspector reviewed plant procedure HP-1, Radiation Work Permits, Revision 29, dated November 26, 1992, and noted that the procedure did not contain a requirement that stipulated that personnel will have a pre-job briefing when required by RWP. In discussions with HP supervision, the inspector learned that this had previously been identified on a HP internal audit and was in the process of being resolved. The inspector informed HP management that the issue would be reviewed during the next scheduled inspection.

The inspector reviewed selected RWPs for appropriateness of the radiation protection requirements based on work scope, location, and conditions. During tours of the plant, the inspector observed the adherence of plant workers to the RWP requirements and discussed the requirements with workers at the job site.

10 CFR 20.101(b)(3) requires the licensee to determine an individual's accumulated occupational dose to the whole body on an Form NRC-4 or equivalent record prior to permitting the individual to exceed the limits of 20.101(a). The inspector reviewed dosimetry records to determine if Form NRC-4s had been completed for required personnel. No regulatory or administrative overexposures occurred and no discrepancies were noted.

10 CFR 20.202 requires each licensee to supply appropriate monitoring equipment to specific individuals and requires the use of such equipment. During tours of the plant, the inspector observed workers wearing appropriate personnel monitoring devices. In addition, the inspector was informed that the licensee plans to implement the use of digital alarming dosimeters (DADs) in 1993. The DADs will be used for all RCA entries, except for individuals that will be multi-badged for certain special jobs.

10 CFR 20.408(b) requires that when an individual terminates employment with the licensee, or an individual assigned to work in a licensee's facility but not employed by the licensee completes the work assignment, the licensee furnish the NRC a report of the individual's exposure to radiation and radioactive material incurred during the period of employment or work assignment, containing information recorded by the

licensee pursuant to 10 CFR 20.401(a). 10 CFR 20.401(a) requires each licensee to maintain records showing the radiation exposure of all individuals for whom personnel monitoring is required under 10 CFR 20.202 of the regulations. Such records shall be kept on Form NRC-5 or equivalent. The inspector reviewed licensee records for 1992 and noted that termination letters were being issued in a timely manner.

The inspector selectively reviewed the skin dose assessments performed in 1992 due to contaminations on the skin/clothing. Twenty-two assessments were performed that met the licensee's criteria, which consisted of two trigger points. If a personnel contamination involving a hot particle was discovered, then a skin dose assessment was required if the individual received more than 25,000 disintegrations per minute - hours (dpm-hrs) of exposure. The hot particle trigger level was analogous to a skin dose of 45 millirem to one square centimeter of skin per licensee procedure HP-15, Hot Particles, Revision 0, dated December 7, 1988. If an area contamination was involved, then the trigger level for performing a skin dose assessment was 300,000 dpm-hrs. The most significant skin dose assessment performed was one in which a worker received approximately 1415 millirem from a hot particle on the forehead. No regulatory limits were exceeded and the inspector had no problems with the licensee's methods or procedures.

No violations or deviations were noted.

6. Internal Exposure Control (83750)

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 Appendix B, Table 1, Column 1.

10 CFR 20.103(a)(3) requires, in part, that the licensee, as appropriate, use measurements of radioactivity in the body, measurements of radioactivity excreted from the body, or any combination of such measurements as may be necessary for timely detection and assessment of individual intakes of radioactivity by exposed individuals.

10 CFR 20.103(b) requires that when an individual exceeds 40 Maximum Permissible Concentration-hours (MPC-hours) in any consecutive seven day period, the licensee shall make such evaluations and take such action necessary to assure against recurrence. No individuals exceeded the 40 MPC-hour limit in 1992.

10 CFR 20.103(c)(2) permits the licensee to maintain and to implement a respiratory protection program that includes, at a minimum: air sampling to identify the hazard; surveys and bioassays to evaluate the actual exposures; written procedures to select, fit and maintain respirators; written procedures regarding the supervision and training of personnel

and issuance of records; and determination by a physician prior to the use of respirators, that the individual is physically able to use respiratory protective equipment.

Procedure HP-60, Respiratory Protection Manual, Revision 11, dated September 25, 1990, established requirements and responsibilities for a respiratory protection program. The inspector reviewed the procedure and noted that a medical examination was required annually to determine that an individual was physically able to use respiratory protective equipment. A fit-test was also required every year. Those personnel possibly needing respiratory protective equipment were required to receive training in the proper use of the equipment and the hazards associated with airborne radioactive materials every two years. This training was in addition to General Employee Training and required passing a 20 question test covering respiratory protection with a grade of 70 percent or better.

The licensee utilized a quantitative method for fit-testing as outlined in ANSI Standard Z88.2. Respirators were washed, sanitized and dried after use and were checked for fixed and removable contamination. The licensee recently implemented a new computerized recordkeeping system which simplified the respiratory protection program and made it more efficient and organized. Maintenance on equipment was only performed by authorized personnel and equipment checks/inspections were generally made more frequently than required. A review of selective records and discussions with licensee representatives indicated that the licensee was in compliance with the aforementioned requirements and that the procedure was properly implemented.

The inspector also noted that the licensee offered only one type and size of respirator to lessen administrative burden. This resulted in an approximate fit-test failure rate of 19 percent. However, anyone who met all of the requirements except fit-testing was allowed to wear a bubblehood. Conversely, bubblehood users were required to meet all of the requirements except fit-testing.

10 CFR 20, Appendix A, Footnote (d), requires adequate respirable air of the quality and quantity in accordance with NIOSH/MSHA certification described in 30 CFR Part 11 to be provided for atmosphere-supplying respirators.

30 CFR 11.121 requires that compressed, gaseous breathing air meets the applicable minimum grade requirements for Type 1 gaseous air set forth in the Compressed Gas Association (CGA) Commodity Specification for Air, G-7.1 (Grade D or higher quality).

The inspector reviewed the licensee's methods for ensuring that at least Grade D air was provided to workers. Quarterly samples were taken and analyzed from each source of breathing air. Selective records were reviewed by the inspector and no problems were identified.

The licensee continued to follow a situation involving their fiberglass-wrapped aluminum self-contained breathing apparatus (SCBA) air cylinders. Apparently in 1986, this type of SCBA cylinder was identified to have the potential for developing small leaks, normally around the neck area. NRC Information Notice (IN) 86-24, Respirator Users Notice: Increased Inspection Frequency for Certain SCBA Air Cylinders, was issued on April 11, 1986, reemphasizing a January 1986 National Institute for Occupational Safety and Health (NIOSH) recommendation that such cylinders be inspected weekly for leaks. The licensee responded to the IN by instituting a weekly inspection frequency of all SCBAs. Since then, nine cylinders have been found with cracks/holes, all of which were located in the aluminum neck area. Approximately 50 fiberglass-wrapped aluminum SCBA cylinders were originally purchased by the licensee. Nine cylinders with cracks/holes correlates to an approximate 20 percent failure rate. The licensee has not had any significant problems with other models of SCBA cylinders (i.e. all-aluminum). The licensee was continuing to monitor the situation and working with the vendor to determine the future of the failed cylinders.

Overall, the inspector noted respiratory protection to be a program strength.

No violations or deviations were identified.

7. Surveys, Monitoring, and Control of Radioactive Material and Contamination (83750)

10 CFR 19.11(d) requires that a licensee post Form NRC-3, "Notice to Employees," in sufficient numbers so as to permit licensee workers to observe them on the way to or from licensed activity locations. During plant tours, the inspector noted that Form NRC-3 was posted as required.

10 CFR 20.203 specifies the posting, labeling and control requirements for radiation areas, high radiation areas, airborne radioactivity areas and radioactive material. Additional requirements for control of high radiation areas are contained in TS 6.12. During tours of the plant, the inspector reviewed the licensee's posting and control of radiation areas, high radiation areas, airborne radioactivity areas, contamination areas, and radioactive material areas, and the labeling of radioactive material. All high radiation areas (HRAs) which required locking were found locked. NRC Inspection Report (IR) 92-12 noted a minor problem with documenting the return of controlled HRA keys. The inspector reviewed HRA key logs during this inspection and noted that corrective actions had been taken with no further problems.

The inspector reviewed selected records of radiation and contamination surveys performed during the period of May-December 1992, and discussed the survey results with licensee representatives. No significant problems were noted. During tours of the plant, the inspector observed HP technicians performing radiation and contamination surveys.

As of November 27, 1992, the licensee had experienced a total of 83 personnel contamination events (PCEs). Sixteen of the PCEs occurred in Unit 1 and the remaining 67 occurred in Unit 2. The majority of the Unit 2 PCEs occurred during the refueling outage earlier in 1992. The inspector reviewed selected records of the PCEs and noted no problems with the events or the evaluations/documentation.

No violations or deviations were identified.

8. Program for 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 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 Power Stations will be ALARA, and Regulatory Guide 8.10, Operating Philosophy for Maintaining Occupational Radiation Exposures ALARA.

ALARA initiatives reviewed by the inspector included use of a video camera attached to a remote-controlled mini-submarine. The mini-sub is used during outages for reactor cavity and refueling operations. The technology saved dose by two methods: (1) it reduced outage duration, and (2) it allowed smaller clearances between equipment during movement, keeping the equipment deeper in the water and lessening general area dose rates above the water surface.

The inspector also reviewed the licensee's initiative to refurbish used lead blankets. Due to the fact that contaminated lead blankets are considered a mixed hazardous waste, the licensee chose to strip off the contaminated outer layer(s) of polyethylene encasing the lead and replace them. The contaminated covers were then disposed of as radioactive waste. The licensee cut new covers, resewed them onto the lead blankets and replaced the brass grommets used for hanging the blankets. The lead was also "rolled" to redistribute the lead evenly and sewn to stay in place, making the blankets more efficient for shielding.

The licensee continued to utilize microfiltration in both units. Unit 1 was utilizing six-micron filters, down from 20 microns in the past. Unit 2 was utilizing one-micron filters, down from three microns in the past. A cognizant licensee representative indicated that submicron filtration may be utilized in the future if a change is made in the filtering configuration.

The inspector noted that the licensee had experienced a total of 92 outage days in 1992, 66 days which were scheduled and 26 which were unscheduled. The licensee's collective dose through November 30, 1992, was 239.746 person-rem. ALARA representatives stated that additional resources were incorporated into the ALARA group to coordinate in-service-inspection work and that this, among other dose saving measures,

was responsible for the low annual collective dose. In preparation for the use of new nozzle dams next year, several licensee personnel observed the same type of nozzle dam installation at another utility. When compared, the installation time for the new type nozzle dam was 16 minutes and 40 seconds "jump" time as opposed to 130 minutes jump time for the last nozzle dam installation performed at St. Lucie. The new nozzle dams are projected to save approximately 21.5 person-rem during the next outage. The licensee has tentatively set a dose goal for 1993 (a two-outage year) at 600 person-rem. The dose for the last two-outage year was approximately 731 person-rem.

No violations or deviations were identified.

9. Exit Meeting

At the conclusion of the inspection on December 18, 1992, an exit meeting was held with those licensee representatives indicated in Paragraph 1 of this report. The inspector summarized the scope and findings of the inspection and indicated that no apparent violations or deviations were identified. The plant personnel's participation in ALARA, the constant efforts by the ALARA staff to reduce dose, and respiratory protection were noted as strengths. The licensee did not indicate any of the information provided to the inspectors during the inspection as proprietary in nature and no dissenting comments were received from the licensee.