UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W., SUITE 2900
ATLANTA, GEORGIA 30323-0199

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Report Nos.: 50-250/93-28 and 50-251/93-28

Licensee: Florida Power and Light Company
9250 West Flagler Street
Miami, FL 33102

Docket Nos.: 50-250 and 50-251 License Nos.: DPR-31 and DPR-41

Facility Name: Turkey Point Units 3 and 4

Inspection Conducted: November 29 - December 3, 1993

Inspector: R. B. Shortridge for 12/21/93
D. B. Forbes Date Signed

Accompanying Personnel: W. T. Loo

Approved by: B. A. Pahn FOR 12/23/93
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, announced inspection of the licensee's radiation protection (RP) program involved review of health physics (HP) activities. The specific areas evaluated included organization and staffing, training and qualifications, self-assessment programs, external and internal exposure, control of radioactive material and contamination, surveys and monitoring, and As Low As Reasonably Achievable (ALARA) program implementation.

Results:

Based on interviews with licensee personnel, records review, and observation of work activities in progress, the inspector found the RP program to be functioning adequately to protect the health and safety of plant workers. RP staffing levels appeared adequate to support on-going activities; however, several HP organizational changes were noted. The licensee's self-assessment and RP training programs were conducted in accordance with requirements. The licensee continued to implement effective internal and external exposure

control programs with all exposures less than 10 CFR Part 20 limits. The ALARA program continued to be effective in controlling overall collective dose. One non-cited violation (NCV) was identified by the inspector as a result of licensee employees failure to wear dosimetry devices appropriately as required by licensee procedure and violated Technical Specification (TS) 6.11.1 as described in Paragraph 5.a.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

J. Bates, Support Supervisor - Health Physics
S. Blitchington, Supervisor, Operations
B. Boger, Training Supervisor
R. Brown, ALARA Supervisor - Health Physics
M. Eades, Quality Assurance Specialist
*R. Earl, Manager, Site Quality
M. Givens, Technical Support Supervisor
A. Horvath, Procedures/Training Coordinator
*D. Jernigan, Manager, Operations
*H. Johnson, Supervisor, Operations
*J. Kirkpatrick, Supervisor, Fire/Protection Safety
*J. Knorr, Licensing Engineer
*R. Kundalker, Manager, Operations
*J. Lindsay, Supervisor, Health Physics
*C. Mowrey, Licensing Engineer
*T. Plunkett, Vice President
*J. Porter, Engineering Supervisor
*D. Powell, Manager, Technical
J. Williams, Dosimetry and Records Supervisor

Other licensee employees contacted included engineers, technicians, operators, and office personnel.

Nuclear Regulatory Commission

*T. Johnson, Senior Resident Inspector
*L. Trocine, Resident Inspector

*Attended December 3, 1993 Exit Meeting

2. Organization and Management Controls (83750)

The inspector reviewed and discussed with licensee representatives changes made to the RP organization since the last NRC inspection of this area conducted May 3-7, 1993, and documented in Inspection Report (IR) No. 50-250, 251/93-12. The inspector was informed that the primary lines of authority and organizational structure for the RP function had remained unchanged; however, the former Site Technical Manager had been assigned the position of Site Operations Manager as part of a site rotation among several managers. Also, reassignments and the elimination of several positions had occurred within the RP organization.

The Instruments Supervisor position and the Respiratory Protection Supervisor position which reported directly to the Health Physics (HP) Supervisor had been eliminated. The duties of the Instrument Supervisor and the Respiratory Supervisor had been transferred to the HP Support Supervisor who reports directly to the HP Supervisor. Four Radiation Protection Men (RPM) positions had also been eliminated. The positions of the HP Operations Supervisor, the ALARA Supervisor, and the HP Engineer had been rotated to cross train supervisory personnel. The HP Engineer became the HP Operations Supervisor, the HP Operations Supervisor became the ALARA Supervisor, and the ALARA Supervisor became the HP Engineer. One RPM position was available at the time of the inspection. Also, at the time of the inspection approximately 40 permanent RPM positions were filled. Licensee Management stated that actions were underway to fill the vacated RPM position and that the licensee was also evaluating the addition of two more RPM positions; however, they did not anticipate the aforementioned changes to impact ongoing operations.

Based on discussions with licensee representatives and observation of activities in progress, the RP staffing levels appeared adequate to support on-going and planned outage activities. Although no concerns were noted, the inspector encouraged the licensee's continued efforts to fill HP staff vacancies in the routine organization.

No violations or deviations were identified.

3. Health Physics Technician Training and Qualifications (83750)

10 CFR 19.12 requires, in part, that the licensee instruct all individuals working in or frequenting any portion of a restricted area in the health protection aspects associated with exposure to radioactive material or radiation; in precautions or procedures to minimize exposure; in the applicable provisions of the Commission regulations; in the individual's responsibilities; and in the availability of radiation exposure data.

Licensee Administrative Procedure 0-ADM-360, Health Physics Department Personnel Training and Qualifications, dated 1993, provides for continuing training for RPM, Junior RPM, and HP Administration Technicians to include theoretical health physics and operational HP proficiency subjects such as plant systems and component changes, deficiencies identified in the plant's RP program, new procedures and procedure changes, related nuclear industry operating experience, operation of seldom used HP equipment and infrequently performed critical tasks as determined from job analysis.

The inspector discussed with training representatives the Health Physics Continuing Program and determined that the licensee conducted the continuing training program in two cycles for each year. The inspector attended a Health Physics Review Committee Meeting which addressed feedback from previously taught 10 CFR 20 training, continuing training for RPMs, outage training preparations, the concept of advanced

Radiation Worker Training, and training on attention to detail for RPMs was discussed by the Operations Manager. The committee meeting was interactive and addressed issues of substance. Committee meeting action items were assigned and the agenda for the next committee meeting was established. The inspector reviewed the Lesson Plans for the cycles from June 7 to August 20 and November 29 to December 3, 1993, and discussed the following Lesson Plans with training representatives:

- Lesson Plan No. 3201001, Emergency Plan Overview, dated April 17, 1992
- Lesson Plan No. 3201013, Operations Support Center, dated August 25, 1993
- Lesson Plan No. 3202006, Transfer of Contaminated Injured Personnel, dated February 4, 1992
- Lesson Plan No. 3202007, On Site/Off Site Radiological Monitoring, dated March 17, 1992
- Lesson Plan No. 3201009, Evacuation and Accountability, dated February 5, 1993
- Lesson Plan No. 1901800, Star Self-Checking Process, dated April 26, 1993
- Lesson Plan No. 2302115, Radioactive Waste Minimization Program, dated August 13, 1993
- Lesson Plan No. 2302075, Biological Effects, dated August 6, 1993
- Lesson Plan No. 1902106, OSHA Hazard Communication Standard PTN Chemical and Hazardous Material Control Program, dated March 17, 1993
- Lesson Plan No. 2402085, Health Physics Procedure Revisions, dated September 9, 1993

No violations or deviations were identified.

4. Self Assessment Programs (83750)

a. Quality Assurance (QA) Audits

Technical Specification (TS) 6.5.2.8 requires audits of facility activities to be performed under the cognizance of the Company Nuclear Review Board (CNRB) encompassing conformance of facility operation to all provisions contained in the TSs and applicable License Conditions at least once per 12 months, and the Process Control Program (PCP) and implementing procedures at least once per 24 months.

Since the last NRC inspection of this area in May 1993, one QA audit related to the RP function had been performed: QAO-PTN-93-023, Radiation Protection Program Audit, conducted August 8 through October 29, 1993. The inspector reviewed the audit report and discussed the audit findings with QA and HP licensee staff personnel. The audit appeared adequate in scope to address the major program areas and included procedure and documentation review and field evaluations. During the course of this audit, the licensee QA auditors performed walkdowns of the RCA to verify proper postings, observed the performance of radiation surveys, performed walkdowns of locked high radiation area gates, performed observations of personnel in the RCA, and conducted personnel interviews. The inspector's review of the audit determined some licensee identified strengths and weaknesses which included the following:

Strengths

- HP Procedures are generally well written and detailed;
- The licensee is effectively controlling Locked High Radiation Areas (LHRAs) and;
- The Radiological Incident Report (RIR) program provides good feedback and tracking of radiological problems.

Weaknesses

- Personnel were observed reaching over contamination boundaries with bare hands;
- Failure of HP Technicians (RPMs) to identify placarding (Postings) for room entrances on survey forms;
- Disposal of a cloth used for a gross smear in the "clean trash" when it read greater than 1,000 dpm and;
- An attempt by personnel to enter the Unit 4 Containment structure wearing protective clothing that would have violated the RWP.

The QA audit identified the weaknesses to be personnel issues that required management attention and interdepartmental cooperation. The QA audit addressed the actions currently being developed and implemented with the HP Supervisor. Overall, the licensee had an effective auditing function actively reviewing the RP program.

b. Radiological Incident Reports (RIRs)

The inspector also reviewed RIRs for 1993. These included Radiation Work Permit (RWP) violations, procedural violations, and poor work practices resulting in personnel and/or area

contamination. During review of the identified RIRs, the inspector noted thorough investigations, appropriate and comprehensive corrective actions, as well as visibility with the responsible department manager.

Based on the review of this program area, the inspector did not take exception with these licensee findings and concluded that the audit program related to the RP function was adequate to identify program deficiencies and was conducted in accordance with TS requirements.

No violations or deviations were identified.

5. External Exposure Controls (83750)

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.

10 CFR 20.202 requires each licensee to supply appropriate monitoring equipment to specific individuals and requires the use of such equipment.

TS 6.11.1 requires procedures for personnel radiation protection to be prepared consistent with the requirements of 10 CFR Part 20 and be approved, maintained, and adhered to for all operations involving personnel radiation exposure.

a. External Exposure and Dosimetry Program

The inspector reviewed and discussed with licensee representatives external exposures for plant and contractor employees for the period May through December 2, 1993. The inspector verified that assigned quarterly doses were within 10 CFR Part 20 limits. For the second and third quarter 1993 the maximum doses for individuals employed at the site were as follows:

	2nd Quarter 1993 (person-rem)	3rd Quarter 1993 (person-rem)
Whole Body (WB) Dose (TPN Only)	207.069	27.946
WB Skin Dose	251.202	33.647
Extremity	528.456	68.363

For the fourth quarter 1993, the inspector determined that through December 2, 1993, the maximum whole body, skin and extremity exposures were 19.800, 25.030, and 50.201 person-rem, respectively. In addition, for those individuals who had exceeded 1.25 rem to the whole body during this time period, the inspector determined for selected personnel that exposure extensions had been authorized. Review of the associated documentation verified that exposure history files were completed (NRC Form-4) and extensions granted based on annual and lifetime cumulative exposures, as required. Licensee representatives stated that, in general, no exposure extensions would be granted above 2 rem per quarter, and for 1993 no extensions to this threshold had been granted. No concerns were identified by the inspector.

During tours of the Auxiliary Building, the RadWaste Building, and the Radiologically Controlled Area (RCA) Control Point area, the inspector observed personnel not wearing dosimetry devices appropriately. License Procedure O-HPA-030, Personnel Monitoring of External Dose, dated January 27, 1993, requires the TLD to be worn on the front side of the body on or above the belt and that DRDs be worn near the TLD. Contrary to procedural requirements, the inspector observed multiple examples of licensee employees wearing TLDs on shirt collars or at chest level while the Direct Reading Dosimeters (DRDs) were being worn below the belt in pants pockets at thigh level.

The inspector informed licensee representatives that failure by licensee employees to wear dosimetry appropriately as required by licensee procedure was an apparent violation of TS 6.11.1 (50-250, 251/93-28-01). Prior to the end of the onsite inspection, the licensee published an article in the Turkey Point newspaper to address the wearing of dosimetry, posted a sign at the entrance to the RCA specifying the correct location on the body to wear dosimetry, provided a letter to the training department to ensure that General Employee Training (GET) emphasizes the importance of wearing dosimetry as required by procedures, and briefed RPMs to be more attentive while observing personnel traversing and working in the RCA. The inspector informed licensee representatives that based on their actions, the criteria specified in Section VII.B of the Enforcement Policy were met and therefore the violation was not being cited.

The licensee continued to implement both DRDs and self-reading pocket dosimeters (SRPDs); however, the former were being used as the primary devices for RCA entries. Licensee representatives stated that the DRDs system had not yet been integrated into the computerized dose tracking system; however, efforts in this area were continuing as previously discussed in IR 93-12.

One NRC-identified NCV for failure to wear dosimetry devices appropriately as required by licensee procedure and no deviations were identified.

b. Radiation Work Permit System

The inspector reviewed selected Radiation Work Permits (RWPs) and discussed the RWP system with licensee representatives. In addition, the inspector observed selected briefings conducted for workers prior to entering the RCA and attended a briefing for workers prior to performing a power level entry into Unit 4 to perform two maintenance evolutions. One evolution was to adjust a damper which appeared to be malfunctioning on D-Normal Containment Cooler and the other work evolution was to change out the paper on the Reactor Head Leak Detector. The briefings addressed radiological concerns and RWP requirements appropriately and no inspector concerns were noted. During tours of the Auxiliary Building and Radwaste Building, the inspector observed personnel performing work on RWPs relative to meeting the dress and other special requirements with no discrepancies noted.

No violations or deviations were identified.

6. Internal Exposure (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.

a. Respiratory Protection and Breathing Air Quality

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 bioassay 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 the use of respirators, that the individual user is physically able to use respiratory protective equipment.

The inspector reviewed records for selected employees who had recently worn respiratory protection equipment. The inspector verified that for the records reviewed, each worker had successfully completed respiratory protection training, was medically qualified, and was fit-tested for the specific respirator type used in accordance with licensee procedural requirements.

The inspector reviewed the respirator log sheets indicating the number and types of respirators used during 1993 which included 1,117 full face respirators and 322 bubble hoods. Licensee

records reviewed by the inspector determined the licensee was tracking actual numbers of respirators worn by workers on specific RWPs versus total doses recieved by these workers to better establish job history to improve their overall process for respirator reduction. The inspector discussed with the licensee methods to be used by the licensee for future respirator reductions to enhance ALARA concepts such as, worker training, successful decontamination efforts, and various engineering controls to include worksite ventilation and face shields.

30 CFR 11.121 requires that compressed, gaseous breathing air meet 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 and discussed with the licensee representatives the program for testing and qualifying breathing air as Grade D. The inspector inspected the in-use breathing air system which included a plant in-line system using two permanently installed compressors labeled as A and B compressors. The inspector examined breathing air manifolds for physical integrity, current calibration of gauges, and the presence of carbon monoxide monitoring equipment. In addition, the inspector further noted that the supplied air hoods and hoses available for use were compatible per manufacturer's instructions as were air supplied respirators and hoses.

Review of breathing air testing records verified that the licensee was calibrating in-line carbon monoxide monitors and sampling in-use breathing air systems for certification in accordance with procedural requirements. For the tests reviewed, breathing air met Grade D requirements.

No violations or deviations were identified.

b. Whole Body Counting and Exposure Tracking

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.

The inspector was informed by licensee representatives that four positive internal contaminations had been identified to date in 1993 as a result of leakage of radioactive material from a radiological containment during decontamination operations. The inspector reviewed the licensee's assessment of the internal exposures which were all less than 10 percent Maximum Permissible Body Burden (MPBB), the largest being 7 percent MPBB for one individual with a potential maximum of 34.4 MPC-hours.

Based on the above, the inspector concluded that the licensee was effectively controlling internal contaminations with no exposure greater than the 40 MPC-hr control limit identified.

No violations or deviations were identified.

7. Control of Radioactive Materials and Contamination, Surveys, and Monitoring (83250)

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

a. Posting and Labeling

10 CFR 20.203 specifies the posting, labeling, and control requirements for radiation areas, high radiation areas, airborne radioactivity areas, and radioactive material areas. 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 program for posting and controlling areas with respect to the aforementioned requirements, and no discrepancies were noted. The inspector further verified that all locked high radiation areas were locked and posted, as required, and for those areas which could not be locked that flashing lights and postings were used to warn workers.

10 CFR 20.203 (f) requires, in part, each container of licensed material containing greater than Appendix C quantities to bear a durable, clearly visible label.

Licensee procedures O-ADM-605, Control of Radioactive Tools Equipment and Components, dated August 28, 1992, and O-HPS-041, Control of Radioactive Material Inside the Radiation Area, dated May 5, 1991, detailed the licensee's implementation of the radioactive material labeling requirements. During tours of the Containment, Auxiliary Building, RadWaste Building, and various radioactive material storage locations, the inspector noted that radioactive material areas were appropriately posted and containers were labelled consistent with regulatory requirements and procedural requirements.

b. Routine Surveys

The inspector reviewed licensee procedure O-HPS-021.3, dated February 5, 1992, which provides guidelines for controlling the release of materials from the RCA. The inspector observed technicians performing release surveys of materials, and no

concerns were noted. In addition, the inspector reviewed selected records of radiation and contamination surveys performed during the period from May 6 through December 2, 1993, and discussed the survey results with licensee representatives. During tours of the plant, the inspector observed HP technicians performing radiation and contamination surveys, and no concerns were noted.

The inspector independently verified radiation and/or contamination levels during tours of the Dry Storage Warehouse, RadWaste Building, Auxiliary Building, and outside radioactive material storage areas. The inspector noted that all containers, materials, and areas were properly labeled, posted, and/or safeguarded in accordance with the radiation hazard present.

During the inspection, the inspector reviewed actions taken by the licensee to evaluate the need for improvements in the survey program for areas with a high potential for changing radiological conditions. The licensee informed the inspector that they had identified potential transient areas as a result of routine operations and maintenance in an effort to upgrade survey frequencies in such areas as needed to detect changing radiological conditions. The inspector reviewed changes made by the licensee to the HP Operations Outage Survey Activity Matrix used by HP personnel to identify survey frequencies for specific plant areas where the potential for changing radiological conditions exists.

Based on discussions with licensee representatives, a review of selected surveys, the performance of independent surveys, and a review of current survey frequencies, the inspector concluded the licensee was effectively performing routine surveys.

c. Area and Personnel Contamination

The licensee maintained approximately 117,750 square feet (ft^2) of floor space as radiologically controlled. As of December 3, 1993, the licensee was tracking approximately 4,934 ft^2 of floor space as contaminated which equated to less than 1 percent of the RCA.

The inspector reviewed Personnel Contamination Event (PCE) reports prepared by the licensee to track, trend, determine root cause, and any necessary followup action. The licensee incurred 125 skin or clothing contaminations in 1993 as of December 3, 1993.

d. Radiation Detection and Survey Instrumentation

During facility tours, the inspector noted that survey instrumentation and continuous air monitors in use within the RCA were operable and displayed current calibration stickers. The

inspector toured the instrument calibration room and observed instruments staged for issue. The inspector further noted an adequate number of survey instruments were available for use.

No violations or deviations were identified.

8. Program for As Low As Reasonably Achievable (ALARA) (83750)

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 ALARA.

The inspector reviewed and discussed with cognizant licensee representatives ALARA program implementation and initiatives. The inspector also reviewed ALARA Review Board Meeting Minutes conducted since the last inspection, ALARA RPM Meeting Minutes, and the Turkey Point ALARA Plan Update. The ALARA Plan Update was an action plan to identify ALARA initiatives, evaluate feasibility of such initiatives for the Turkey Point site, assign and track action items, and to provide explanations and resolutions for the assigned action items.

The inspector interviewed the recently assigned ALARA Supervisor, the HP Supervisor, the Chemistry Manager, and other licensee representatives to discuss ALARA initiatives currently being implemented to reduce dose such as, ordering and installing low to no stellite replacement parts/equipment and improved plant chemistry during startups, operations and shutdowns to reduce cobalt 60 in primary systems. At the time of the inspection, the licensee was establishing procedures to flush the Unit 3 RHR system piping to reduce dose rates to operators performing routine work evolutions in the auxiliary building. The inspector also discussed with licensee representatives ALARA Review Board agenda items which included: ALARA Suggestion Program, Revised 10 CFR 20 changes/effects on the ALARA Program, and 1994 Preliminary exposure projections. The licensee's collective dose for 1993 was 282 person-rem as of December 3, 1993, which included the completion of the Unit 4 outage. At the time of the inspection, the licensee was estimating approximately 300 person-rem or less total collective onsite dose for 1993 which was well below the licensee's pre-established goal for 1993 of 375 person-rem.

Based on the above, the inspector informed the licensee representatives that the ALARA program continued to be effective in controlling exposures. Overall, collective dose expended was consistent with the work performed.

No violations or deviations were identified.

9. Action on Previous Inspection Findings (92701)

(Closed) IFI 50-250, 251/93-12-01: Evaluate needed improvements in the survey program for areas with a high potential for changing radiological conditions. As discussed in detail in Paragraph 7.b above, the licensee

had incorporated appropriate procedural changes to address the frequency for performing surveys in areas which had a high potential for changing radiological conditions by updating the Operations/Outage Survey/Activity Matrix. The licensee was informed that this issue is considered closed.

10. Exit Interview (83750, 92701)

At the conclusion of the inspection on December 3, 1993, an exit meeting was held with those licensee representatives indicated in Paragraph 1. The inspector summarized the scope and findings of the inspection and informed the licensee that all findings were preliminary and subject to NRC management review and approval. 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.

Item Number	Status	Description and Reference
50-250, 251/93-28-01	Closed	NCV - Failure by licensee employees to wear dosimetry devices appropriately as required by licensee procedure. VIO of TS 6.11 (Paragraph 5.a).