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

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Report Nos.: 50-250/87-48 and 50-251/87-48

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 3 and 4

Inspection Conducted: December 7-11, 1987

Inspector: for G. B. Kuzo 1/25/88 Date Signed

Accompanying Personnel: R. B. Shortridge

Approved by: for C. M. Hosey, Section Chief 1/25/88 Date Signed
Division of Radiation Safety and Safeguards

SUMMARY

Scope: This routine, unannounced inspection of radiation protection activities involved review of previously identified followup items and enforcement issues, organization and management controls, training and qualifications, external exposure controls, control of radioactive material, transportation, and inspector followup of unresolved items, allegations, and IE Information Notices.

Results: One violation with four examples concerning failure to follow health physics procedures and inadequate procedures was identified.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

*C. J. Baker, Plant Manager
*W. C. Miller, Senior Technical Advisor
*J. Arias, Jr., Supervisor, Regulatory and Compliance Section
*L. W. Pearce, Superintendent, Operations
*W. Bladow, Superintendent, Quality Assurance
*R. J. Earl, Supervisor, Quality Control
*P. W. Hughes, Supervisor, Health Physics (HP)
*A. R. Dyches, Engineer, Quality Assurance
*G. Salamon, Engineer, Compliance
C. D. Kelly, Supervisor, Maintenance and Specialty Training
*D. H. Taylor, Coordinator, Operations System Enhancement
*P. G. Bailey, Health Physics, Corporate Staff
M. A. Jimenez, Engineer, HP
R. M. Brown, Operations Supervisor, HP
J. R. Bates, Jr., ALARA Support Supervisor, HP
F. Marder, Supervisor Assistant, Operations, HP
R. M. Givens, ALARA Engineer, HP
D. W. Hicks, Shift Supervisor
G. E. Jennings, Shift Supervisor

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

Other Organizations

*C. Christensen, Project Engineer, NRC Region II

NRC Resident Inspectors

D. Brewer, Senior Resident Inspector

*Attended exit interview

2. Exit Interview (30703)

The inspection scope and findings were summarized on December 11, 1987, with those persons indicated in Paragraph 1 above. The inspector reviewed the closure of previous enforcement items and inspector identified issues (Paragraphs 3 & 9). The following procedural violation examples were discussed in detail: (1) failure to notify the plant supervisor nuclear or watch engineer prior to transfer of a spent reactor coolant system (RCS) seal water injection filter (Paragraph 8); (2) failure to have adequate radiological procedural controls for maintenance and transfer of

spent RCS filters (Paragraph 8); and (3) inadequate procedures for radiation incident report (RIR) documentation requirements for personnel contamination events (Paragraph 4). In addition, the inspector noted that a licensee employee had stated he processed a RIR documenting contaminated material found outside of the radiation control area (RCA) during the past year, however, the completed form was not readily available for review during the inspection. The licensee was requested to provide this report to the NRC Region II Office in a timely manner for review. The licensee acknowledged the inspection findings and stated that the referenced RIR would be provided. Licensee representatives informed the inspector by teleconference on December 28, 1987, that the RIR was not available; however, records of the initial survey were provided for review. The inspector informed the licensee that the failure to maintain the RIR would be identified as another example of an inadequate procedure.

3. Licensee Action on Previous Enforcement Matters

   a. (Closed) Violation (50-250, 251/87-15-01) Failure to post Notice of Violation (NOV) and response as required by 10 CFR 19.11(a)(4). The inspector reviewed and verified implementation of corrective actions stated in Florida Power and Light (FP&L's) responses dated May 29, 1987, and October 30, 1987.

   b. (Closed) Violation (50-250, 251/87-36-03) Failure to follow RWP requirements for fuel shuffle activities. The inspector reviewed and verified implementation of corrective actions stated in FP&L's response dated October 30, 1987.

   c. (Closed) Violation (50-250, 251/87-36-05) Failure to properly complete a manifest for a radioactive waste shipment. The inspector reviewed and verified implementation of corrective actions stated in FP&L's response dated October 30, 1987.

   d. (Closed) Unresolved Item (50-250, 251/87-43-02) Failure to follow procedures and directives for the transfer of spent RCS seal injection filter. Issues regarding procedural adherence and radiological controls are discussed in Paragraph 8.

4. Organization and Management Controls (83722)

   a. Organization and Staffing

      Technical Specification (TS) 6.2.2 details the licensee's organization. The inspector reviewed the health physics (HP) organization and line of authority to upper management as related to radiation protection, radioactive material control and transportation of radioactive material. The HP supervisor reports to the operations superintendent who is responsible to the plant manager. The inspector noted that the operations supervisor position recently had been filled with a qualified person selected from FP&L's St. Lucie Nuclear Plant staff. No other management changes which could affect

the licensee's ability to maintain radiation protection activities were noted.

The present HP staffing levels related to routine radiation protection activities were discussed with the health physics supervisor. Presently, the radwaste supervisor position is vacant and a search for a qualified replacement is being conducted. Current HP staff includes 23 ANSI qualified radiation protection men (RPM), three junior RPMs, 11 technical-shift supervisors, six supervisors, a HP engineer and approximately 17 contract technicians. The inspector noted that the HP engineer could use additional assistance to address selected HP technical issues, for example, whole body counting analyses, skin contamination evaluations and technical review and development of HP procedures. Licensee representatives stated that proposed HP staffing plans include a second site HP engineer to assist in technical areas. In addition, the licensee may reduce the number of contract personnel with permanent HP staff. Present HP staffing levels appear adequate to provide health physics support for routine operations but would be marginal for any unexpected outage situations. The inspector was informed that if necessary, corporate and/or contract personnel would be made available to support the present staff.

No violations or deviations were identified.

b. Management Control

The inspector discussed with cognizant licensee representative methods utilized in identifying concerns, notifying appropriate management, and completing corrective actions regarding radiation protection activities in a timely manner. The HP program is routinely reviewed by off-site personnel, for example, corporate quality assurance (QA), NRC and INPO groups, and by onsite plant quality control (QC), and quality improvement program (QIP) organizations. Licensee representatives stated that findings reported by quality control (QC), quality assurance (QA), NRC and INPO audits are reviewed by appropriate management, detailed to the responsible area and formally tracked by the site QC department until each issue is resolved. Issues identified by the quality improvement program task teams are reviewed and tracked separately by the QIP groups. In addition, worker concerns regarding HP issues can be voiced to their immediate supervisors and, if necessary, upper management for review and resolution. The inspector noted that there is not a procedure or directive detailing the reporting and resolution of individual workers concerns regarding HP issues.

Technical Specification 6.8.1 requires written procedures to be established, implemented and maintained to meet or exceed the requirements and recommendations of Appendix "A" of USNRC Regulatory Guide 1.33. Plant Procedure, HP-101, Radiological Investigation Reports, dated June 23, 1987, details documentation and review

criteria by appropriate HP personnel regarding significant health physics issues, for example, contamination events and violations of procedures occurring at the site. A review of licensee records and discussion with appropriate HP personnel indicated that less than 20 radiological incident reports (RIRs) were issued for 1987. The inspector noted that this low number of reports contrasted with the more than 248 personnel contamination reports noted by the licensee records. Licensee representatives stated that HP-101 states that personnel contamination events having an excess of 1000 dpm/probe area "should", but were not required "to be", documented. The inspector noted that selected skin contamination events, for example, on May 21, 1987, a personnel contamination event required extensive decontamination and precautionary internal exposure determination; however, a RIR was not filed. Documentation of this contamination event and licensee actions using the RIR procedure was necessary to adequately evaluate all HP issues. The failure to have adequate procedure guidance for documentation and evaluation of significant HP issues was identified as an apparent violation of Technical Specification 6.8.1 (50-250, 251/87-48-01).

In addition, the inspector was informed by a licensee employee that he had processed a RIR documenting contaminated material found outside of the RCA on September 29, 1987. Licensee representatives stated that all RIRs processed were sent to the HP supervisor for review and resolution. Although survey results for the incident were available, cognizant licensee representatives were unable to locate the referenced RIR and documentation of licensee corrective action. The failure to provide adequate procedure guidance concerning RIR documentation and retention of records was identified as an additional example of an apparent violation of Technical Specification 6.8.1 (50-250, 251/87-48-01).

c. Audits and Self-licensee Evaluations (83722, 82723, 83724, 83725, 83626, 83727, 83728, 84722, 86721)

Technical Specification 6.5 requires audits of radiological controls and chemistry operations. The inspector reviewed an audit dated March 27, 1987. Included in the review of radiological protection program material were recently formed quality improvement teams (QIP), Mechanical Maintenance, and Man-rem Reduction team reports, as well as other licensee generated radiological performance indicators. Audits were performed using staff with technical backgrounds in radiological controls and chemistry. Major issues identified as needing resolution were: reduction of man-rem exposure, increased participation in the as low as reasonably achievable (ALARA) program; source term reduction; maintaining updated copies of HP procedures; inconsistency of health physics coverage; reduction of the contaminated plant areas; and additional support needed for HP engineering. The inspector noted that audit findings were being addressed and that the (QIP teams) findings were substantive in that major issues needing improvement were identified.

No violations or deviations were identified.

5. Training and Qualifications (83723)

10 CFR 19.12 requires the licensee to instruct all individuals working in or frequenting any portion of the restricted area in health protection aspects associated with exposure to radioactive material or radiation, in precautions or procedures to minimize exposure, and in the purpose and functions of protective devices employed, applicable provisions of commission regulations, individual responsibilities and the availability of radiation exposure data.

10 CFR 20.103(c)(2) requires that the licensee maintain and implement a respiratory protection program that includes determination by a physician prior to initial use of respirators that the individual user is physically able to use respiratory equipment.

The inspector reviewed licensee event report (LER) No. L-87-439, dated October 30, 1987. The report discussed the events surrounding an incident in which the removal and transfer of a highly contaminated seal injection filter caused actuation of Process Radiation Monitor R-11 resulting in containment vent and control room ventilation isolation. Details of the incident are discussed in Paragraph 8. Training records of the HP technicians in charge of radiological controls for the job and of the maintenance workers performing the filter change out operation detailed in Paragraph 8 were reviewed to determine adequacy of training and qualifications. Training records revealed that the technicians had received both classroom and on-the-job training in tasks such as performance of pre-job surveys and responding to changing radiological conditions in a work area. The technician's qualification cards were examined and reflected satisfactory training and accomplishment of training for the subject tasks. Respiratory training and medical qualifications records for both technicians and workers reflected satisfactory training and qualification for wearing the assigned respiratory protection equipment.

No violations or deviations were noted.

6. Internal Exposure Control and Assessment (83725)

a. 10 CFR 20.103(a) establishes the limits for exposure of individuals to concentrations of radioactive materials in air in restricted areas. This section also requires that suitable measurements of concentrations of radioactive materials in air be performed to detect and evaluate the airborne radioactivity in restricted areas and that appropriate bioassays be performed to detect and assess individual intakes of radioactivity.

The inspector toured and observed selected high and low volume air samplers in containment, verified their operability and reviewed selected results of in-plant air samples taken during calendar year

1987. Also, the results of air samples collected to support the radiological controls authorized by specific radiation work permits for repair of valve LCV 460 in the Regenerative Heat Exchanger Area observed during the inspection were reviewed. Sampling and respiratory protective equipment utilized appeared adequate. The inspector also reviewed selected results of whole body counts and licensee's assessment of individual intakes of radioactive material performed during calendar year 1987. The results of the review revealed that no personnel required intake evaluations due to receiving greater than 40 maximum permissible concentration hours (MPC-hrs) in one week or greater than ten percent (10%) maximum permissible body burden.

No violations or deviations were identified.

7. External Exposure Control and Personnel Dosimetry (83724)

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

During plant tours, the inspector observed workers wearing thermoluminescent dosimeters (TLDs) and self reading pocket dosimeter (SRPDs) as required. Workers when asked about the radiation levels in their work area were knowledgeable and responded to questions correctly.

b. 10 CFR 20.101(a) requires that no licensee possess, use or transfer any licensed material in such a manner as to cause any individual in a restricted area to receive in any one period of one calendar quarter from radioactive material, a total occupation dose in excess of 7.5 Rem to the skin of the whole body.

The inspector reviewed licensee personnel contaminations. Of the approximately 248 personnel contaminations, approximately 70 percent were contaminations of the skin. Inclusive in this number were approximately 38 hot particle contaminations. The majority of causes for the events were reported as poor radiological work practices, torn protective clothing, environmental conditions, and additional protective clothing required.

The inspectors reviewed the licensee procedure for calculating dose to the skin. Health Physics Procedure HP-70, Decontamination of Personnel, Section 8.3.3, dated May 28, 1987, details dose calculation methodology based on a model referenced in the Healy Report No. LA 44558 ms. The weighted dose factor was slightly conservative relative to VARSKIN (NUREG/CR-4418, 1987) and permitted estimation of dose from radionuclide contamination on clothing or for contamination directly on the skin. The licensee stated that they

plan to modify the procedure to use VARSKIN methodology in the near future.

No violations or deviations were noted.

8. Control of Radioactive Materials and Contamination, Surveys and Monitoring (83726)

a. Control of Radioactive Material

Technical Specification 6.8.1 requires that written procedures be established, implemented and maintained covering applicable procedures recommend in Appendix A of Regulatory Guide 1.33, Revision 2, dated February 1978.

Regulatory Guide 1.33, Appendix A requires procedures for personnel monitoring and special work permits.

Licensee procedure 0-HPA-002, dated August 12, 1986, Section 3.2.1 requires individuals to fully understand and follow all requirements of the radiation work permit (RWP).

RWP 87-2318, RCA & RAD Waste Building (RWB) High Level Storage Area (HLSA) Transport High Level Radioactive Material to and from RWB HLSA, dated January 1, 1987, requires the plant supervisor nuclear or watch engineer be notified before transferring high level material.

Licensee Event Report (LER) Number L-87-439 dated October 30, 1987, details that on September 30, 1987, a 3B seal water injection filter, which was highly contaminated, was replaced and transported through the Auxiliary Building past the R-11 Radioactive Particulate Containment Radiation Monitor (PRM). The high radiation level from the filter caused the R-11 to increase beyond its set point resulting in the containment vent and control room ventilation isolation and a subsequent switch to the recirculation mode per design.

Due to work being performed along the normal filter transport path to the RWB, the Health Physics Shift Supervisor (HPSS) stated in the pre-shift briefing that the spent filter should be transferred through the Auxiliary Building-North hallway. Although an alternate path was taken to transport the spent RCS seal water filter, the RWP recognized that any path taken would likely set off the monitor and required prior control room notification. However, proper notification of the filter move was not provided to the plant supervisor nuclear nor the watch engineer as required by step nine of RWP-87-2314, "Remove/Replace RCS, Seal water injection filter, dated November 24, 1986. Failure of the health physics technician to notify the control room as required by procedure was identified as an additional example of an apparent violation of Technical Specification 6.8.1 (50-250, 50-251/87-48-01).

In addition, radiological controls concerning the replacement and transfer of the filter were reviewed. The inspector noted that Inter Office Correspondence, subject, Liquid Filter Cartridges Change Out Operations, dated June 17, 1985, required a shielded container for receipt and transfer of filters with radiation levels greater than 25 Rem/hr. The seal water injection filter radiation levels were approximately 40 Rem/hr. As corrective action to the LER a new Health Physics Instruction, HPI-8, Removal and Transfer of Reactor Coolant system Filters was written and approved on October 8, 1987. The inspector noted that the method for filter removal in HPI-8 does not allow accurate measurement of the seal injection filter until after the filter has been removed from its housing. In the past the licensee has performed removal and transfer of filters with radiations levels as high as 400 Rem/hr. Interviews with Health Physics technicians and supervisors revealed that differing opinions were held as to radiation level that would require reassessment of radiological controls. The levels of 100 Rem/hr to 800 Rem/hr were given as reassessment points for filter handling.

The method used for removal and transfer of filters requires a survey of the filter after it is removed from its canister and relocated approximately 10 feet away from the work area. At this point in the operation personnel may not be able to adequately respond to changing or unexpected radiolocial conditions. The failure to have adequate procedure or RWP guidance for radiation controls maintenance and for transfer of spent RCS filters based on radiation levels was identified as an additional example of an appparent violation of Technical Specification 6.8.1 (50-250, 50-251/87-48-01).

The inspector reviewed and discussed radiation controls utilized for the maintenance and transfer of materials having similar high radiation levels to the RCP seal injection filters. Procedures and RWPs reviewed appeared adequate. Current RWPs are active which detail radiation levels and specify stop points for jobs with high radiation levels that require additional radiological assessment. Examples included RWP, 87-3085, Unit 3 Containment 30'6" Elevation/Flux Mapper Area Repair, Flux Mapper System/Retract Detector, requiring the detectors to be returned to the original position if the general rate exceeds 100 mr until authorized to continue by HPSS; RWP 87-3047, Unit 3 Seal Table (HRA) Crimp/Cut and Remove Incore Cable, Tubing and Detector, termination work if contact dose rate is greater than 600 Rem/hr or the work zone greater than 20 Rem/hr, RWP, 87-3594, Unit 3 containment 30'6" and 14' Elevation Inside Bio-Wall "clear" or "rod out" Flux Mapper Storage Path, stopping work if dose rates on the detector, cables, or debris exceed five Rem/hr, until the containment supervisor can issue new instructions.

b. Contamination

Review of records of contaminated areas inside the radiologically controlled area (RCA) indicated minimal progress in reclaiming contaminated square footage. In January the area of RCA contaminated was 27,000 square feet, in October the contaminated area had been reduced less than 3% to 26,464 square feet. Licensee representatives stated that the yearly goal of a 20% reduction in contaminated areas will not be attained.

No violations or deviations were identified.

c. Surveys

The licensee is required by 10 CFR 20.201(b) and 20.401 to perform surveys and to maintain records of such surveys necessary to show compliance with regulatory limits. Survey methods and instrumentation were outlined in FSAR Chapter 12, and Technical Specifications 6.8 and 6.11 provided requirements for adherence to written procedures.

During tours of the plant the inspectors reviewed contamination of radiation survey results outside selected rooms and cubicles. The inspectors performed independent radiation level surveys of selected areas and verified licensee survey results. Licensee instruments used appeared to be adequate and all instruments examined were calibrated properly. The inspector noted that high radiation areas inside and outside of containment were maintained as required by Technical Specification 6.12.

During tours of the facility the inspector observed radiation surveys being performed on a truck containing LSA boxes intended for disposal under Shipment No. 87-083. Surveys appeared adequate and met applicable NRC and Department of Transportation requirements. The inspector performed independent radiation surveys of the shipment and verified that the readings were consistent with those of the licensee.

No violations or deviations were noted.

9. Inspector Followup Items (92701)

(Closed) Inspector Followup Item (IFI) 50-250, 251/87-36-02. This item dealt with failure of personnel to deposit their dosimetry at the main control point upon exiting the RCA. The licensee has responded to the item by implementing a daily computerized listing of all personnel failing to return their dosimetry to the health physics main control point. Based on daily reviews of the listing of violators that do not log out of the area and return their dosimetry, a form AP-20 is issued for the purpose of investigating the event and obtaining compliance. Improved compliance has been noted by licensee representatives.

10. IE Information Notices (92717)

The inspector determined that NRC Information Notice (IEN) 87-39, control of hot particle contamination at nuclear power plants, had been received by the licensee. This IEN was distributed to the appropriate HP personnel and appropriate actions, including procedural development and improved laundered clothing surveillances were completed or scheduled.

11. Allegation Followup (99014)

a. Allegation (RII-87-A-0119)

The alleger stated that he received internal radioactive contamination during Unit 3 outage work at the Turkey Point Nuclear Plant on May 21, 1987. This exposure incident resulted from contaminated insulation material falling on the worker while checking thread engagements inside the bio-shield near the B steam generator. Prior to initiating the work, the alleger was informed by health physics personnel that respiratory equipment was not required. The alleger was concerned that he remains contaminated from the incident and this was not reflected in his whole body counting analyses that had been conducted when he terminated his employment from the Turkey Point facility.

b. Discussion

The inspector reviewed employee training, contamination survey and bioassay, whole-body counting (WBC), records regarding this issue and discussed licensee actions with cognizant on-site personnel. Records indicate the alleger had received training and was performing work under conditions specified in radiation work permit (RWP) 87-3829. Contamination surveys of the immediate work area and surface of insulation indicated contamination levels of approximately 5,000 dpm/100 cm^2 below the criteria of 50,000 dpm/100 cm^2 which required respiratory protection. Licensee representatives stated that the insulation material had been removed from the immediate work surfaces to conduct the job. However, during the course of the work the alleger's tools made contact with and dislodged nearby insulation which resulted in his becoming contaminated from the falling material. The alleger completed the job after dislodging the insulating material. The individual was determined to be contaminated during personnel monitoring (frisking) at the exit area.

HP personnel initiated decontamination procedures and completed form HP-12.2, Personnel Contamination Report, as required. The alleger's mustache was contaminated (approximately 30,000 dpm) and a WBC analysis was requested as a precautionary measure by the HP shift supervisor. Subsequent to preliminary decontamination, a series of WBC analyses through time was conducted. The inspector reviewed and discussed the whole-body counting results with licensee representatives. All data relating to the specific incident appeared

to be appropriately identified, analyzed, and evaluated by appropriate personnel. Maximum Permissible Concentration-hour (MPC-hour) calculations based on the maximum concentration of radionuclides determined by WBC analyses were reviewed and discussed. For the specific event a 1.0 MPC-hour exposure value was assigned to the individual. The alleger's WBC analyses conducted as part of termination from the plant site did not indicate any residual internal contamination above the WBC analyses minimum detection limits.

The inspector noted that a radiation incident report was not completed for this incident. Plant procedure HP-101 states that a RIR "should" be completed for personnel contamination events in excess of 1,000 dpm/probe area. The inspector noted that for this incident a RIR would allow more thorough analyses and followup of the event. The inspector noted that the procedure was inadequate in that this personnel contamination event was not required to be formally documented in a radiation incident report.

c. Finding

The licensee's actions and calculations of exposure to air-borne radioactive contamination appeared to be adequate. The allegation was partially substantiated in that the exposure event occurred as stated, however, the assigned 1.0 MPC-hour exposure was below the 10 CFR 20.103 quarterly limit of 520 MPC-hours.

Internal contamination was near or below detection capabilities of the WBC instrumentation at the time of the alleger's leaving the Turkey Point site. An inadequacy in the licensee's procedures regarding documentation of the event was noted and is addressed in Paragraph 4 of this report.