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

MAR 27 1987

Report Nos.: 50-335/87-04 and 50-389/87-04

Licensee: Florida Power and Light Company
9250 West Flager 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: March 2-6, 1987

Inspectors: C M Hosey for C. H. Bassett 3/24/87
Date Signed

B. K. Revsin 3/23/87
Date Signed

Approved by: C M Hosey
C. M. Hosey, Section Chief
Division of Radiation Safety and Safeguards
3/24/87
Date Signed

SUMMARY

Scope: This was a routine, unannounced, radiation protection inspection in the areas of external exposure control; internal exposure control; control of radioactive material, contamination surveys and monitoring; program for maintaining exposure as low as reasonably achievable (ALARA); solid radioactive waste handling and disposal; transportation of licensed material; inspector followup items; IE Bulletins, Notices, and allegation followup.

Results: Three violations were identified: failure to label containers of radioactive material, failure to perform surveys per Department of Transportation (DOT) requirements, and failure to implement an adequate Quality Control (QC) program for waste characterization and to properly solidify waste.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

*K. N. Harris, Site Vice President
*D. A. Sager, Plant Manager
*R. Sipas, Services Manager
*T. A. Dillard, Maintenance Superintendent
*C. L. Wilson, Assistant Maintenance Superintendent
*P. D. Parks, Backfit Manager
*H. F. Buchanan, Health Physics Supervisor
*L. W. Pearce, Operations Supervisor
*J. Scarola, Electrical Maintenance Supervisor
*R. J. Frenchette, Chemistry Supervisor
*R. A. Symes, Quality Assurance Supervisor
*E. J. Wunderlich, Reactor Engineering Supervisor
*C. A. Pell, Technical Supervisor
*J. Krumins, Site Engineering Supervisor
*S. C. Sanders, Mechanical Maintenance
*C. R. Siebold, Quality Assurance Engineering
*R. Dawson, Electrical Maintenance
*M. Synder, Engineer
*A. J. Gould, Corporate Health Physics
*P. J. Stoner, Corporate Health Physics
*H. M. Mercer, Health Physics Technical Supervisor
*L. L. Large, Health Physics Assistant Operations Supervisor
L. R. Baker, Health Physics Administrative Supervisor
K. W. Payne, Health Physics ALARA Technician
L. E. Pugh, Health Physics Instrument Supervisor
J. R. Smith, Health Physics Radiation Protection Supervisor
*L. E. Jacobus, Health Physics ALARA Technician
D. West, Shift Technical Advisor Group Lead Engineer
D. Haithcox, Health Physics Radioactive Waste Technician
D. Spaugh, Quality Control
A. Bailey, Quality Assurance
B. Parks, Quality Assurance

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

U. S. Nuclear Regulatory Commission

*H. Bibb, Resident Inspector

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on March 6, 1987, with those persons indicated in Paragraph 1 above. Violations involving failure to label B-25 metal boxes containing radioactive material (Paragraph 6), failure to comply with DOT requirements for surveying the undersides of transport vehicles (Paragraph 9), and failure to properly solidify waste and to implement an adequate QC program for waste characterization (Paragraph 8) were discussed in detail. The quality of written and approved radiation protection procedures, and the use of internal administrative guidelines and memoranda were discussed with management. The licensee committed to review and revise as necessary the health physics procedures and to send the NRC schedules for completion of the review and for procedure implementation the first week of April 1987. It was anticipated that implementation would be complete by the end of 1987. The licensee acknowledged the inspection findings and took no exceptions to the apparent violations except for the violation concerning dose rates on the undersides of vehicles stating that surveys of these areas were not necessary to know that dose rates were within the limits. The licensee did not identify as proprietary any of the materials provided to or reviewed by the inspector during this inspection.

3. Licensee Action on Previous Enforcement Matters

(Closed) Violation (50-335/86-01-01) Failure to Perform an Adequate Evaluation of Personnel Whole Body Exposure. The inspector reviewed the licensee's response dated May 27, 1986, and verified that the corrective actions in the response had been implemented.

(Closed) Violation (50-335/86-09-01 and 50-389/86-08-01) Failure to Maintain Written Procedures for Respiratory Protective Equipment Issuance Records. The inspector reviewed the licensee's response dated July 30, 1986, and verified that the corrective action indicated in the response had been implemented.

(Closed) Violation (50-335/86-09-03 and 50-389/86-08-03) Dose Rates on the External Surface of Packages of Radioactive Material Offered to a Carrier for Transport in Excess of DOT Limits. The inspector reviewed the licensee's response dated July 30, 1986, and verified that the corrective action specified in the response had been implemented.

(Closed) Violation (50-335/86-09-04 and 50-389/86-08-04) Failure to Package LSA Radioactive Material in a Strong Tight Package. The inspector reviewed the licensee's response dated July 30, 1986, and verified that the corrective action specified in the response had been implemented.

4. External Exposure Control and Dosimetry (83724)

a. 10 CFR 20.101 specifies the applicable radiation dose standard for individuals in restricted areas. The inspector reviewed the computer printouts (Form NRC-5 equivalent) for the current calendar year,

1987, and verified that the radiation doses recorded for plant and contractor personnel were within the quarterly limits of 20.101(a). Selected Form NRC-4s were also reviewed and it was determined that exposure histories were being completed and maintained as required by 10 CFR 20.102.

b. 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 dosimeters (SRPDs) as required. For maintenance activities involving steam generator work, the health physics procedure HP-7, Health Physics Requirements for All Steam Generator Activities, Rev. 0, dated April 4, 1986, required the HP Supervisor to determine the number and location of TLDs and dosimeters used by workers based upon an initial survey of the area. The dosimetry requirements for sludge lancing operations were more specific in Procedure HP-7 with specific locations identified for multi-badging and extremity dosimetry. HP coverage of such operations was also specified. All entries into the secondary handholes required constant HP coverage by a qualified Senior Health Physics Technician. While observing the steam generator work and sludge lancing operations in Unit 1, the inspector verified that the workers were wearing the required dosimetry in the locations specified and that continuous HP coverage was being provided.

c. 10 CFR 20.201(b) requires that each licensee make or cause to be made, such surveys as may be necessary for the licensee to comply with the regulations and are reasonable under the circumstances to evaluate the extent of the radiation hazards that may be present. A survey is defined in 10 CFR 20.201(a) as an evaluation of the radiation hazards incident to the production, use, release, disposal or presence of radioactive materials or other sources of radiation under a specific set of conditions.

10 CFR 20.101(a) requires that no licensee 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 from radioactive material, a total occupational dose in excess of 7.5 Rem to the skin of the whole body.

The inspector reviewed the licensee's procedure for calculating dose to the skin, HP-72, Determination of Dose to the Skin From Fixed Skin Contamination, Revision 2, dated March 2, 1987. It was noted that the procedure had been revised to require calculation of dose to the skin from fixed contamination in excess of 10,000 counts per minute per probe area and from contamination of the skin due to a hot particle. A hot particle was defined as a very small piece of radioactive material that had high radiation levels that extended over short distances and it was noted that, in many instances, the particle would not be visible to the naked eye. The procedure did

not require skin dose to be determined if the contamination detected could be removed i.e., did not remain fixed in the skin. During discussions with the licensee, the inspector learned that no threshold levels had been established to require an assessment of skin dose due to removable contamination and that such assessments were not routinely performed at the facility.

The inspector reviewed selected licensee and contractor personnel skin/clothing contamination reports for calendar year 1987. It was noted that on February 20, 1987, a licensee employee had detected contamination on the left side of his face as he was frisking out of the radiation control area. The individual had been in the Unit 1 Reactor Containment Building (RCB) for approximately three hours and twenty minutes and had been wearing protective clothing which consisted of rubber shoe covers, coveralls, gloves and a cap, instead of a hood. The worker apparently became contaminated while laying prone at the wall of the reactor cavity to perform an inspection. The worker was taken to the personnel decontamination area where the initial level of contamination was determined to be one million disintegrations per minute (dpm). Nasal smears were taken but no contamination was detected. The contaminated area was subsequently decontaminated and a re-survey of the area indicated no contamination remained. A whole body count was conducted with no detectable internal deposition of radioactivity. An incident report was also completed but no skin dose calculation was performed. The licensee determined that the contamination was not attributable to a hot particle but was uniformly distributed over a portion of the hair and skin of the left cheek. The inspector determined that, assuming twenty square centimeters as the contaminated area (the approximate area of a probe), cobalt-60 as the isotope involved and three hours and twenty minutes as the length of time the contamination remained on the skin (worst case), the dose to the skin would have been approximately 750 millirem.

The inspector discussed the incident with licensee representatives who indicated that the subject of skin dose assessment due to removable contamination was being reviewed. The licensee had discussed the matter with members of the Corporate Health Physics Staff and was in the process of determining an appropriate threshold level for requiring skin dose assessments which would then be incorporated into a procedure. The licensee also indicated that previous instances of skin contamination would be evaluated to determine whether any regulatory limit had been exceeded.

The licensee was informed that failure to assess skin dose from contamination would normally be considered a violation of the requirements of 10 CFR 20.201(b). However, the NRC Enforcement Policy delineated in 10 CFR 2, Appendix C, 1986, states that a Notice of Violation will generally not be issued for violations identified by the licensee provided that the licensee identification meets the criteria specified by 10 CFR 2. The inspector stated that this

apparent violation met the required criteria and consequently would be considered licensee identified. The licensee's corrective action will be reviewed during future inspections (50-335, 389/87-04-01).

5. 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 reviewed selected results of general in-plant air samples taken during calendar year 1987 and the results of air samples taken to support Unit 1 steam generator work authorized by specific radiation work permits. The inspector also reviewed selected results of whole body counts and the licensee's assessment of individual intakes of radioactive material performed during calendar year 1987.

b. 10 CFR 20.103(b) requires the licensee to use process or other engineering controls, to the extent practicable, to limit concentrations of radioactive material in air to levels below that specified in Part 20, Appendix B, Table I, Column 1, or limit concentrations, when averaged over the number of hours in a week during which individuals are in the area, to less than 25 percent of the specified concentrations.

The use of process and engineering controls to limit airborne radioactivity concentrations in the plant was discussed with licensee representatives and the use of such was observed during tours of the plant.

No violations or deviations were identified.

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

a. 10 CFR 201(b), 20.401 and 20.403 require the licensee to perform surveys and to maintain records of such surveys as necessary to show compliance with regulatory limits. The Final Safety Analysis Report (FSAR) of Units 1 and 2, Chapter 12, outlines survey methods and instrumentation while each Unit's Technical Specifications (TS) 6.11 requires adherence to written procedures for all operations involving personnel radiation exposure.

During plant tours, the inspector examined radiation levels and contamination survey results posted at the entrance to the Unit 1 radiation control area (RCA). The inspector also reviewed the

results of selected surveys taken in support of the steam generator work in Unit 1. Selected Radiation Work Permits (RWPs) controlling general, as well as specific radiological activities were also reviewed. The inspector observed the use of survey instruments by plant staff and examined calibration stickers on radiation protection instruments in use by licensee personnel. Instrument use appeared to be adequate and all instruments examined had been calibrated.

b. The inspector reviewed the procedure which specified the release criteria for items to be released from an RCA, HP-41, Movement of Material and Equipment, Revision 6, June 2, 1986. While touring the plant and surrounding areas, the inspector observed health physics technicians surveying items to be removed from the RCA. Through observation of and discussions with various technicians, it was determined that adequate release surveys were being performed and that items with inaccessible surfaces were apparently not released.

The inspector also observed workers exiting the RCA from Unit 1. A two minute frisk was required after leaving the contamination control area and another frisk of the hands and feet was required to leave the RCA. The inspector discussed the adequacy of the personal survey using a frisker and hand-held probe due to the difficulty in frisking the back with the short-handled probes at the control point. The licensee stated that there had been no problems to date but stated that consideration was being given to acquiring a number of Eberline personal contamination monitors (PCM-1s) for personnel surveys.

c. 10 CFR 20.203 specifies the posting and control requirements for radiation areas, high radiation areas and airborne radioactivity areas. Additional requirements for the control of high radiation areas are contained in both units' TS 6.12.

During tours of the plant and observation of work in Unit 1 RCB, the inspector reviewed the licensee's posting and control of selected radiation, high radiation and airborne radioactivity areas and performed independent radiation surveys using NRC equipment. The inspector's measurements agreed with those of the licensee. The security of selected locked high radiation areas was also checked and found to meet the requirements of TS 6.12.

d. 10 CFR 20.203(f) states that, except as provided by 20.203(f)(3), each container of licensed material shall bear a durable, clearly visible label identifying the radioactive contents and shall bear the radiation caution symbol and the words "Caution" or "Danger, Radioactive Material," and shall provide sufficient information to permit individuals using or handling the containers, or working in the vicinity thereof, to take precautions to avoid or minimize exposures.

10 CFR 20.203(f)(3) exempts labeling of containers for containers that do not contain licensed material in quantities greater than

applicable limits specified in 10 CFR 20, Appendix C, and for containers when they are in transport and packaged and labeled in accordance with DOT regulations.

During tours of the plant and the RCB, containers of radioactive material were checked for proper labeling. In general, containers or packages were labeled as required except for two locations. On March 3, 1987, 28 B-25 metal boxes located behind Unit 2 and 12 B-25 metal boxes located adjacent to the Steam Generator Blowdown Treatment Facility were not labeled as required for radioactive material nor were DOT labels applied. At both locations, the areas were barricaded by ropes bearing the postings, Radiation Area and Radioactive Materials Area. Through discussions with the licensee it was determined that the boxes were in areas designated as temporary storage areas awaiting disposal. Review of licensee surveys of the boxes indicated that radiation levels up to 700 millirem per hour (mr/hr) on contact had been detected but had been stacked such that these dose rates were inaccessible to personnel. The inspector surveyed selected boxes and noted a radiation level of 100 mr/hr at contact with one box. Radiation levels on the boxes indicated that the radioactive contents were in excess of Appendix C limits and that the exemptions specified in 10 CFR 20.203(f)(3) were therefore not applicable. The inspector informed the licensee that failure to label containers of radioactive material was an apparent violation of 10 CFR 20.203(f) (50-335, 389/87-04-02).

7. As Low As Reasonably Achievable (ALARA) (83728)

10 CFR 20.1(c) specifies that licensees should implement programs to maintain worker's dose ALARA. Other recommended elements of an ALARA program are contained in Regulatory Guide 8.8 and 8.10. Chapter 12 of the two Units' FSARs also contain licensee commitments regarding worker ALARA actions.

The inspector reviewed Administrative Procedure No. 3300120, St. Lucie Plant ALARA Program, Revision 4, June 20, 1983, which contained the elements of the ALARA program. The focus of the ALARA program is through the ALARA Review Sheet, a form that is required for all Radiation Work Permits, and which mandates the type and depth of ALARA review required for the job.

The inspector reviewed the minutes of the quarterly meetings of the ALARA Review Board for 1986. The Board is composed of plant department heads and contractor project leaders and considers dose reduction as it relates to routine operation, outage planning and facility design modifications. The inspector noted that attendance at these meetings was good. The licensee stated that the Board also participates in the development of long range ALARA plans and had adopted an exposure reduction program with a goal of 285 man-rem per reactor by 1990.

The licensee stated that the plant ALARA group concentrated their attention on outage preplanning and had made major strides in dose reduction for reactor head work through improved shielding. Additionally, chemical decontamination of the steam generators had been planned for the February, 1987, refueling outage which consisted of flushing the system with NH_4OH, followed by hydrolasing. Due to time constraints, only steam Generator A was treated. A dose rate reduction of 30 percent was achieved on the hot leg and 35 percent on the cold leg. It was anticipated that these efforts would be expanded for future outages.

The collective dose measured for the site in 1986 (by TLD) was 469 man-rem or 235 man-rem per reactor. For 1987 the man-rem goal is 884 (442 man-rem per reactor). The increase in 1987 was due to two outages that have been scheduled for the year, one of which includes a 10-year In-service Inspection.

No violations or deviations were identified.

8. Solid Waste (84722)

a. 10 CFR 20.311(d)(1) requires any generating licensee who transfers radioactive waste to a land disposal facility to prepare all wastes so that the waste is classified according to 10 CFR 61.55 and meets the waste characteristic requirements in 10 CFR 61.56.

10 CFR 61.56(b)(1) requires waste to have structural stability which will generally maintain its physical dimensions and form under expected disposal conditions.

10 CFR 61.56(b)(2) states that liquid wastes, or wastes containing liquids, must be converted into a form that contains as little free standing and noncorrosive liquid as is reasonably achievable, but in no case shall the liquid exceed one percent of the volume of the waste when the waste is in a disposal container designed to ensure stability, or 0.5 percent of the volume of the waste for waste processed to a stable form.

On November 25, 1986, the licensee shipped two metal liners containing sludge to a land disposal facility (Barnwell, SC). Radioactive Waste Shipment No. 86-61 was specified on the shipping manifest as Radioactive Material, low specific activity (LSA), n.o.s., UN 2912, described as sludge solidified with cement, Class A stable, and was transported as Exclusive Use on a flatbed trailer. Total radioactivity in the shipment was 0.0180 curies. Upon inspection of the two liners by an inspector from the State of SC when they arrived at the burial facility, it was found that the contents had failed to solidify per the Process Control Program (PCP) as evidenced by a paste-like material flowing from one liner when punctured. The second liner was suspect.

The burial site is prohibited by the State of SC from receiving unsolidified sludge and consequently the two liners were returned to the licensee's facility. On December 2, 1986, the State of SC issued a violation to the licensee, imposed a civil penalty of one thousand dollars and prohibited further shipments of solidified sludge to the burial ground until acceptable corrective action had been achieved by the licensee. The suspension of burial privileges for this waste form was rescinded on January 13, 1987, by the State of SC after review of corrective measures proposed by the licensee.

When notified of the failure to solidify, the licensee dispatched a representative to the burial ground to confirm the finding. Upon return of the two steel liners to the plant site, the liners were cut open for inspection of the contents. Inspection showed that one liner failed to solidify at all (the liner punctured by the State of SC) while the second contained a mass equal to approximately 85 percent solidification.

Failure to insure waste structural stability and failure to convert the waste into a form such that the waste containing liquid did not exceed 0.5 percent of the volume of the waste was identified as an apparent violation of 10 CFR 20.311(d) (50-335, 389/87-04-03).

b. 10 CFR 20.311(d)(3) requires any generating licensee who transfers radioactive waste to a land disposal facility to conduct a quality control (QC) program to ensure compliance with 10 CFR 61.55 and 61.56.

10 CFR 61.56 specifies the minimum requirements for waste characteristics for all classes of waste.

Upon return of the two metal liners of Shipment No. 86-61 to the plant, the Quality Assurance (QA) Department conducted an audit to determine the reasons why satisfactory solidification had not been achieved. Solidifications were performed for the licensee by a vendor. Audit No. QSL-OPS-86-491 specified that the problem was two-fold: mechanical and chemical. The mechanical problem was that solids from the sludge stuck to the liner filters resulting in caking in the bottom of the liner. Consequently, mixing of one liner was incomplete and thus the test solidification samples were not representative. The chemical problem was that of ammonia. The dried sludge that had been mixed with water in the liner had originated from the sewage treatment system and consequently had a high ammonia content. The ammonia content altered the pH of the mixture such that the exothermic reaction necessary for solidification was inhibited. The licensee's QA audit concluded that: (1) procedures for the vendor's PCP lacked sufficient qualitative and quantitative criteria to assure satisfactory accomplishment of the solidification process; (2) there were no provisions for independent verification in Process Control procedures to assure that solidification was satisfactorily

accomplished; and (3) quality records were inadequate, inaccurate and incomplete.

The inspector reviewed Administrative Procedure No. 0520025, Process Control Program, Revision 5, July 29, 1985. Paragraph 8.2 states that solidification, encapsulation or absorption of radioactive waste materials shall be performed in accordance with vendor approved procedures. The inspector also reviewed Health Physics Procedure No. HP-40, Shipment and Receipt of Radioactive Material, Revision 29, July 25, 1986, which stated in Paragraph 4.5 that containers of non-compactable radioactive waste shall be verified to be free of standing water or oil by two individuals, one of which will be Health Physics (HP). The inspector also reviewed the vendor procedures and noted that there was no procedure specific for sludge solidification. The licensee stated that this had been noted at the time and that the vendor operator had contacted his office and was told to use one of the existing procedures applicable to aqueous wastes since the sludge was water soluble. This procedure specified the steps for the operator to follow in performing a test solidification and solidification of the final product, but did not include QC checks to be performed by the licensee.

Review of calculation sheets used by the vendor operator revealed computational errors for amounts of chemical additions and also transcription errors in transferring numbers from one worksheet to another. Additionally, review of the operator's log book which specified activities actually performed by the operator showed inconsistencies between it and the calculation sheets and was in general, difficult to decipher. The licensee stated that their first point of interaction with the vendor operator required by procedure was at verification of solidification of the final product which was accomplished by visual observation and by prodding the top of the product with a stick. Consequently, vendor errors had not been detected. The inspector stated that although the licensee's PCP had been approved by the NRC, site specific procedures for implementation of the PCP were necessary and should consider actions necessary to insure by performance and/or verification that appropriate waste stabilization had been accomplished. Areas discussed included calculations, representativeness of test samples, solidification of test samples, solidification of final product, methodology and criteria to be used for pronouncing final product solid and vendor procedures appropriate to the waste form being solidified.

Failure to conduct a quality control program to insure waste characterization in accordance with 10 CFR 61.56 was identified as an additional example of an apparent violation of 10 CFR 20.311(d) (50-335, 389/87-04-03).

9. Transportation (86721)

10 CFR 71.5(a) requires each licensee who transports licensed material outside of the confines of its plant or other place of use to comply with the applicable requirements of the regulations appropriate to the mode of transport of DOT in 49 CFR Parts 170 through 189.

49 CFR 173.475(i) states that before each shipment of any radioactive materials package, the shipper shall ensure by examination or appropriate tests that external radiation and contamination levels are within allowable limits.

49 CFR 173.411(b)(2) specifies that radiation levels at any point on the outer surface of exclusive use vehicles, including top and underside of the vehicle, must not exceed 200 millirem per hour during transportation.

The inspector reviewed selected records of radioactive materials shipments and radioactive waste shipments made during September through December 1986. It was noted that the following shipment records failed to denote radiation levels taken on the underneath side of the vehicle: (1) No. 86-46 on September 23, 1986; (2) No. 86-47 on October 2, 1986; (3) No. 86-49 on October 9, 1986; (4) No. 86-52 on October 14, 1986; (5) No. 86-53 on October 21, 1986; and (6) No. 86-54 on October 23, 1986. The licensee stated that they were aware that surveys on the bottoms of trucks were required by the regulations but could not recall whether they had been performed for the specific shipments in question. The HP Supervisor stated that the source of the problem lay in the survey forms in that no spaces were clearly delineated for survey readings taken on the bottom of transport vehicles.

Failure to insure by examination or appropriate tests that external radiation levels on the underneath side of the transport vehicle were within the allowable limits was identified as an apparent violation of 10 CFR 71.5(a) (50-335, 389/87-04-04).

10. Followup on IE Bulletins (92703)

(Closed) BUL (50-335/78-19-08)

IE Bulletin 78-08 required licensees to perform a review of shielding design of plant areas adjacent to fuel transfer tubes to identify potential high radiation areas, both continuous and transient, assure positive control of the areas, conduct special surveys and provide a written response of the findings and actions to resolve any problems to the NRC.

The licensee response of August 11, 1978, indicated that (1) investigation of the shield design and the radiation associated with the fuel transfer tube would be completed prior to the April 1979 refueling and (2) the fuel transfer tube area would be surveyed during the April 1979 refueling. These actions were completed by the licensee; however, resurvey of the

fuel transfer tube area was necessary due to missing documentation for the initial survey.

The inspector reviewed the surveys of the Unit 1 fuel transfer tube conducted from April 14 to April 27, 1979, documented in the licensee's Corrective Action Commitment Request, 06-25-78, June 22, 1978 and referenced in Inspection Report 50-335/79-3, January 3, 1980. The radiation surveys appeared to be adequate and documented the fact that the shielding which had been installed was effective in reducing radiation levels to within acceptable levels.

Unit 2 was completed after issuance of the Bulletin and consequently, shielding was installed during construction. The licensee stated that radiation surveys were performed in the fuel transfer tube area and that, although the surveys indicated no major problems, additional shielding will be added to reduce radiation levels at the seal between the Fuel Handling Building and the Reactor Containment Building to less than 5 mr/hr. Shielding will also be installed to reduce the contact dose rate at the existing fuel transfer tube shield structure in the annulus region to less than 5 mr/hr. After the additional shielding is in place, scheduled for installation in the Fall 1987, the fuel transfer tube area will again be surveyed. These additional surveys will be reviewed and evaluated in a future inspection (50-335, 389/87-04-05).

11. Followup on IE Information Notices (92717)

The following IE Information Notices were reviewed to ensure receipt and review by appropriate licensee management.

86-20, Low-Level Radioactive Waste Scaling Factors, 10 CFR Part 61

86-22, Underresponse of Radiation Survey Instrument to High Radiation Fields

86-23, Excessive Skin Exposures Due to Contamination With Hot Particles

86-24, Respirator Users Notice: Increased Inspection Frequency for Certain Self-Contained Breathing Apparatus Air Cylinders

86-41, Evaluation of Questionable Exposure Readings of Licensee Personnel Dosimeters

86-42, Improper Maintenance of Radiation Monitoring Systems

86-43, Problems with Silver Zeolite Sampling of Airborne Radioiodine

86-44, Failure to Follow Procedures When Working in High Radiation Areas

86-46, Improper Cleaning and Decontamination of Respiratory Protection Equipment

86-55, Delayed Access to Safety-Related Areas and Equipment During Plant Emergencies

86-103, Respirator Coupling Nut Assembly Failures

86-107, Entry Into PWR Cavity with Retractable Incore Detector Thimbles Withdrawn

87-03, Segregation of Hazardous and Low-Level Radioactive Wastes

12. Allegation Followup (99014)

Allegation (RII 85A0184)

During September 1985, the alleger was employed by Catalytic, Inc. as a sheet metal worker at the St. Lucie plant. On September 26, 1985, at about 7:00 a.m. he and five other workers were installing fire dampers on the -5 foot elevation of Unit 1 inside the RCA under RWP 85-267, issued on July 15, 1985. When the individual went to the control point to frisk out of the controlled area, he set off the frisker. Health Physics (HP) personnel surveyed him and found an unspecified level of contamination over his entire body. He was then told by HP to sit down and wait to see if the contamination decayed away because it was probably due to radioactive noble gas on his person. The individual was subsequently told by his foreman to go back into the RCA and continue work. At that point, he told his foreman that he would not go back into the area until someone explained what had caused the contamination problem. His foreman told him that there was no other work to be performed and that, if he would not go back into the area, he should go home, which he did. The next day he was notified that he had been fired.

As a result of this incident, the individual was concerned that there was a noble gas problem in the area that was not properly controlled and that the licensee had not filled out a skin contamination or incident report.

Discussion

Through records review the inspector found the following additional information:

(a) The individual had attended a general employee training (GET) class which was required for all persons working at the plant. This training was developed to explain the various hazards of working at a nuclear power plant including the subject of noble gas.

(b) The licensee is required to post an area as an airborne radioactivity area when it is found that the airborne activity is equal to or greater than 25 percent (%) of the maximum permissible concentration (MPC) listed in 10 CFR 20, Appendix B, Table 1, Column 1.

(c) The licensee's procedure, HP-101, Identification and Reporting of Radiation Incidents, Revision 2, November 8, 1983, required that an incident report be completed for personnel contamination in excess of 100,000 disintegrations per minute per one hundred square centimeters (dpm/100 cm^2) on skin or personal clothing (5,000 dpm/100 cm^2 on skin or clothing requires documentation on a personnel skin/clothing contamination report). Although not stated in the procedure, the licensee indicated that this does not apply to contamination attributable to noble gas because it decays rapidly and dose is tracked only when concentration of noble gases are in excess of 5 mr/hr beta skin dose.

After discussions with licensee management and further records review, the inspector determined that the airborne radioactivity levels on September 26, 1985, were not in excess of 25% of the MPC for noble gas but were 9.02% MPC in the -5 foot elevation area. Particulate airborne radioactivity levels were less than minimum detectable activity (MDA). Also, according to the Health Physics Sign-in Sheet for that date, the alleger was in the area from 7:20 until 10:00 a.m. while other individuals, who signed in at about the same time and were working in the same general area, remained there until approximately 11:30 a.m. Other personnel in the area had been contaminated, as had the alleger, but no contamination was detected on anyone upon exiting the RCA for break/lunch. The alleger was given a whole body count upon termination but no activity was detected.

Finding

The allegation was partially substantiated in that there was a noble gas problem on September 26, 1985. However, the levels were such that the area was not required to be posted as an airborne area. The radiological data also indicated that the individual was apparently contaminated with noble gas which subsequently decayed off. Because no contamination was detected after the noble gas had apparently decayed away, the licensee was not required to fill out a contamination report. No regulatory requirements were violated and no deviations were identified.

13. Facility Statistics

a. Solid Waste

During 1986, the licensee made 27 shipments of radioactive waste consisting of 16,225 cubic feet of waste containing 2134.701 curies of radioactivity. This year to date, 6 shipments had been made consisting of 1,934 cubic feet of waste containing a total of 496.321 curies of radioactivity.

b. Contaminated Area

The licensee began tracking square footage of contaminated area of the plant on February 1, 1986. At that time 46,565 square feet or approximately 35% was contaminated. As of February 28, 1987, 33,763 square feet or 25.3% remained under contamination control. Neither reactor building was included in this inventory.

c. Personnel Contamination

During 1986, a total of 259 skin and clothing contaminations were reported. To date, during 1987, 189 skin and clothing contamination events had been documented.