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

SEP 0 9 1988

Report No.: 50-395/88-16

Licensee: South Carolina Electric and Gas Gompany
Columbia, SC 29218

Docket No.: 50-395 License No.: NPF-12

Facility Name: Summer

Inspection Conducted: July 12-15, 1988

Inspectors: for R.B. Shortridge 8-25-88
F. N. Wright Date Signed

R.B. Shortridge 8.25-88
R. B. Shortridge Date Signed

Approved by: C. Bassett 8/25/88
C. M. Hosey, Section Chief Date Signed
Division of Radiation Safety and Safeguards

SUMMARY

Scope: This routine, unannounced inspection was conducted in the areas of Organization and Management Controls; Training and Qualifications; External Exposure Control and Dosimetry; Internal Exposure Control and Assessment; Control of Radioactive Materials and Contamination, Surveys and Monitoring; Maintaining Exposures ALARA; Solid Wastes; Transportation, and licensee action on previous inspection findings.

Results: No violations or deviations were identified. Overall, the licensee's radiation protection program appears to be generally effective in protecting the health and safety of occupational workers. The radiation dose recorded for a hot particle contamination event was inappropriate and further action by the licensee was identified.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

*W. Baehr, Manager, Chemistry and Health Physics
*M. Blue, Licensing Engineer, Nuclear Licensing
*M. Browne, General Manager, Station Support
*J. Cox, Associate Manager, Health Physics
D. Deardorff, Reactor Engineer, Core Engineering
*A. Koon Jr., Manager, Nuclear Licensing
*J. Proper, Associate Manager, Quality Assurance
*G. Robertson, Engineer, Independent Safety Engineering Group
*P. Shultz, Staff Health Physicist, Health Physics
*M. Williams, General Manager, Nuclear Services

Other licensee employees contacted during this inspection included craftsmen, engineers, operators, mechanics, security force members, technicians, and administrative personnel.

NRC Resident Inspector

*P. C. Hopkins

*Attended exit interview

2. Organization and Management Controls (83722)

The inspector reviewed the plant organization and discussed recent changes in personnel and organizational structure in radiation protection with the Manager of Chemistry and Health Physics. A major organizational restructure of the Technical and Support Services Department has resulted in the new assignments of departmental functions and responsibilities. Health Physics and Chemistry departments have been combined and report to the General Manager of Station Support. Health Physics and Chemistry include Analytics, Counting Room, Health Physics, Chemistry and Radioactive Waste Processing and is managed by the former Corporate Health Physics Manager. The former manager of Technical and Support Services is now assigned as Manager of Corporate Health Physics. The Associate Manager of Health Physics (Radiation Protection Manager) assignment was not affected by the reorganization.

The inspector reviewed the staffing level of the station health physics organization with the Associate Manager of Health Physics (RPM) as well as contractor support personnel. At the time of the inspection there were 29 authorized health physics technician positions; all were filled. In addition, 14 contractor technicians were onsite to augment the department in performing routine health physics duties. The inspector discussed the

degree of support for radiation protection received from station management and supervision with the RPM. It appeared that the support required to implement and maintain an effective radiation control program was in place.

No violations or deviations were identified.

3. Training and Qualification (83723)

The inspector reviewed the licensee's corporate audit of the Health Physics Training Program. The audit was performed in accordance with Section 5.3.1 of Corporate Health Physics Procedure 105 and Section 4.4.2 of the corporate As Low As Reasonably Achievable (ALARA) plan and examined the adequacy of the training programs compliance with regulatory concerns. The audit noted that radiation worker training had been updated by the development of a manual documenting specific training topics, lesson plans, and practical/hands-on training tailored to the specific needs of each affected work group. The need for a health physics (HP) supervisor training program was identified in previous corporate audits. This audit noted that a supervisory HP training program had not been developed to forstall potential problems in this area. The corporate audit found that the Health Physics Training Program, as currently implemented, satisfactorily met the required level of training mandated by regulations. In response to the recommendations of the audit, the licensee provided for a week of training each quarter for health physics supervision. The effect of operational evolutions on plant radiological conditions was discussed with licensee operators in emergency preparedness training and radiation worker training. In addition, the plant staff will receive training on the Failed Fuel Action Plans.

The inspector reviewed Quality Assurance Biennially Audit of Station Radiation Controls, Number 11-19-87-L. The audit documented a surveillance performed to verify that selected individuals who implement the station's radiation control program have received training commensurate with their assigned duties and responsibilities. Personnel training records were chosen from this group of people at random. All selected individuals had received health physics basic and specialized training and had completed all required reading assignments.

No violations or deviations were identified.

4. External Exposure Control and Dosimetry (83724)

The inspector reviewed Radiation Work Permit (RWP) 88-00166 "Repair Leak Detection Sump Check Valve, Clear Blockages and Replace Reactor Coolant Drain Tank Pump B." A portion of the work listed on the RWP for repair of the sump check valve was performed inside containment behind the bioshield wall with the reactor at 40% full power. The general area dose rates at the sump varied from 0.5 millirem per hour (mrem/hr) to 3 mrem/hr gamma and approximatly 0.5 mrem/hr neutron. The air activity was approximately 0.34 of the Maximum Permissible Concentration (MPC) limit for Iodine 131.

Inside the bioshield, general area dose rates at the work location for replacing the reactor coolant drain tank pump were 150-350 mrem/hr gamma and 25-60 mrem/hr neutron with maximum dose rates of 230 mrem/hr neutron and 2,000 mrem/hr gamma. The airborne radioactivity was also approximately 0.34 MPC Iodine 131. The total exposure received for both jobs was 1.461 person-rem based on pocket chamber results and assigned neutron dose. The inspector verified that controls and precautions specified by the RWP were adequate to provide personnel protection.

The inspector discussed personnel entries into containment while the reactor was at power with licensee representatives. A total of 14 entires involving 43 people were made through May 1988. The collective dose for the entry was 0.285 person-rem. The licensee stated that only entries essential to safe plant operations were made and by a minimum number of personnel.

The inspector reviewed Health Physics Procedure 505, Issuance and Termination of Personnel Dosimetry. The inspector determined that the procedure did not address quarterly exposure records or occupational history requirements for short term visitors. The licensee representatives agreed to review and revise the dosimetry procedure to address exposure history requirements for short term visitors.

No violations or deviations were identified.

5. Internal Exposure Control and Assessment (83725)

The inspector reviewed respiratory qualification and Maximum Permissible Concentration-Hours (MPC-H) records of selected individuals. The inspector determined that during the period of January through June of 1988, no one had received greater than (40 MPC-H) in one week or greater than 10% of a maximum permissible body burden. The licensee was in the process of replacing the sodium iodine detector system in the whole body counter (chair) with germanium detectors. In addition, the licensee was installing a state of the art standup whole body counter that will reduce count times to 2 minutes.

During the inspection, the inspector determined that Health Physics Procedure 303, Airborne Activity Sampling Techniques and Procedures, did not describe the air sampling flow rate for charcoal filters. Licensee representatives agreed to revise the air sampling procedure to describe the air flow requirements for using charcoal air sampling filters.

No violations or deviations were identified.

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

a. Contamination, Surveys and Monitoring

During plant tours, the inspector observed locked high radiation areas, radiological postings and housekeeping practices. Radiation survey maps were displayed at the entrance to each room posted as a radiation or high radiation area. The inspector, accompanied by a licensee representative, performed smear and radiation surveys of the radiologically controlled area (RCA). The inspector's survey results indicated that areas were properly controlled and posted. The inspector surveyed items in the clean tool room and electronics shop, located outside of the RCA for contamination above the station limits. Results of the surveys indicated no contamination present on any items in these areas. The inspector observed that hand and foot monitors and whole body contamination monitors were appropriately provided in areas for the control of contamination. Licensee representatives stated that 1,449 square feet (ft2) of a total of 155,000 ft2 plant area was contaminated. This represents approximately 1% of the RCA of the plant and indicates the effectiveness of an aggressive contamination control program.

b. Radiation Work Permits

Licensee Quality Assurance Audit #11-19-87-L, Station Radiation Control and the Annual Corporate Health Physics Review of the Radiation Work Permit Program, noted deficiencies involving personnel failing to sign-in on RWPs and personnel not reading or understanding RWP requirements. Corrective actions to the findings, in part, stated that Corporate Health Physics would continue to track station Health Physics efforts until corrective actions were completed. During the inspection, the inspector noted that the licensee was in the process of implementing a computerized access system and that dose cards would no longer be required for entry into the RCA. The inspector noted that a memorandum from plant management will require, when the system is fully implemented, that individuals read the specific RWP requirements each time they enter the RCA but they will only be required to sign that they understand the requirements one time. For standing RWPs, workers will be required to sign that they have read and understand the requirements of the RWP annually. The inspector discussed past RWP compliance problems that were identified by licensee audits and health physics problem reports with licensee representatives and the proposed less stringent systems for RWP access. A licensee representative stated that they would reevaluate the requirement for signing in on RWPs. The inspector stated that the RWP/access control system will be reviewed in subsequent inspections and that the NRC will tracking this issue as an Inspector Followup Item (IFI) (50-395/88-16-01).

No violations or deviations were identified

7. Maintaining Occupational Exposure ALARA (83728)

The inspector reviewed Quality Assurance Audit # 11-19-87-L that reported a finding on ALARA program activities. Summer Administrative Procedure (SAP) 121, ALARA Committee, governs the station's ALARA committee activities and required quarterly meetings of the committee. A licensee deficiency report noted that the second quarter ALARA meeting was not held. The licensee changed SAP 121 to require biennually ALARA committee meetings. The inspector discussed with licensee representatives the frequency of ALARA meetings and the need for frequent meetings to monitor the licensee ALARA program. The licensee stated they would consider increasing the frequency of required ALARA meetings. The inspector stated that this frequency of holding ALARA committee meeting would be reviewed during subsequent inspections and would be tracked by the NRC as an IFI (50-395/88-16-02).

The inspector discussed ALARA goals and objectives with licensee representatives and was informed that the ALARA goal for 1988, was 540 person-rem. The majority of collective dose was planned for steam generator maintenance in an 86 day outage beginning on September 16, 1988.

The inspector reviewed the 1987 Refueling Outage Exposure Report and noted that, of the 562 person-rem received in 1987, 547 was attributed to the Refueling Outage. Steam generator maintenance, inservice inspection and testing accounted for the majority of dose received during the outage.

No violations or deviations were identified.

8. Solid Waste (84722)

The inspector was informed by licensee representatives that iodine spiking in September 1987, and increases of iodine in reactor coolant samples in January 1988, indicated a fuel assembly was leaking. The cesium-to-cobalt ratio increased significantly. Radiation levels on contact with the Volume Control Tank increased from the previous month's reading of 140 mR/hr to 1,000 mR/hr. Since observance of the increased reactor coolant fission product activity, the licensee has increased coolant sample frequencies to characterize fuel defects. The licensee has not made any radioactive waste shipments since changes in waste streams have occurred and will not until they are confident that waste steam classifications are correct. The inspector informed the licensee that classification of waste and the reevaluation of scaling factors would be reviewed during subsequent inspection and would be tracked by the NRC as an IFI (50-395/88-16-03).

No violations or deviations were identified.

9. Transportation of Radioactive Material (86721)

The inspector was informed by licensee representatives that no radioactive waste shipments have been made thus far in 1988, due to changes in waste stream radionuclide distributions.

The inspector reviewed Quality Assurance Surveillance 6-JTN-88-R, dated a April 14, 1988, Shipping of a Spent Fuel Rack. The licensee surveillance specialist observed the packaging, survey and loading of the shipment. Radiation levels and smears were determined to be below the requirements of 49 CFR Part 173, thus placards marking and labeling, of the shipment were not required. All instruments used in the surveys were determined to be in calibration. One finding was issued in the area of document control for using outdated shipping forms. The licensee corrected the outdated form and completed correction of health physics Procedure 703 to reflect up-to-date forms on May 27, 1988.

No violations or deviations were identified.

10. Action on Previous Inspection Findings (92701)

a. (Closed) IFI 50-395/87-27-01: Review of Waste Classification Program. Prior to identifying a fuel leak in January 1988 the licensee had experienced problems in detecting low levels of certain key isotopes such as Cesium-137 (Cs 137) in waste streams. The key isotopes were utilized to identify difficult-to-measure radioisotopes to meet the waste classification requirements of 10 CFR 61. The licensee's method for identifying difficult-to-measure radioisotopes was not clearly defined in the classification of radioactive waste stream procedures. The licensee agreed to review existing procedures for classifying low level radioactive waste and examine alternatives to improve the accuracy of waste classification. The inspector reviewed the improvements made in Health Physics Procedures 717, Sample Collection and Preparation and Analysis Techniques for Assuring Compliance with 10 CFR 61 and 712, Classification or Materials.

b. (Open) Violation 50-395/86-22-02: Failure to Limit Occupational Dose to an Individual to Less Than 18.75 Rems per Quarter. A previous inspection identified that the licensee failed to limit the occupational dose of an individual to 18.75 rems per quarter. The inspector discussed the violation and the licensee reponse to a NRC letter dated July 3, 1987, with licensee representatives. Previous licensee correspondence indicated extensive evaluations and use of consultants in developing a methodolgoy for calculating dose for a hot particle skin contamination to an individual. The licensee has assessed and assigned a skin dose of 0.43 rem based on averaging the dose to the skin over 100 square centimeters. The NRC response to the licensee in a letter dated December 3, 1987, reiterated that the current basis of 10 CFR 20.101(a) is the guidance in NBS Handbook 59, and IE Notice 86-23 and this methodology should be used until regulations are changed. As stated in the cover letter to Inspection Report 86-22 dated March 10, 1987, the dose to skin of the subject individual should be assessed averaging the dose over an area no larger than one square centimeter and that the absorbed dose to 1 cm^2 of the skin of one hand be recorded as 420 rem. This value exceeds

the allowable extremity limit of 18.75 rem per quarter and results in a violation of 10 CFR 20.101(a).

11. Exit Interview

The inspection scope and results were summarized on July 15, 1988, with those persons indicated in Paragraph 1, and during a telephone conversation on August 17, 1988, between F. N. Wright of the NRC and licensee representatives W. R. Baehr, M. D. Blue and J. Cox of South Carolina Electric and Gas Company. The inspector described the areas inspected and discussed in detail the inspection results listed below. During the inspection the inspector determined that corrective actions for the Notice of Violation (50-395/86-22-02) were incomplete in that the calculated dose of 420 rem had not been entered in the individual's occupational exposure record. The licensee stated that they considered the dose assigned (430 mrem) appropriate and took exception to the NRC's position that the higher dose be assigned.

Proprietary information is not continued in this report.

Item Number		Description and Reference
50-395/88-16-01	IFI	Review of system for worker review of RWPs.
50-395/88-16-02	IFI	Review frequency of ALARA Committee meetings
50-395/88-16-03	IFI	Review waste classification program and validating of scaling factors

Licensee management was informed that the IFI discussed in Paragraph 10.a, was closed.