



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

Report Nos.: 50-424/95-22 and 50-425/95-22

Licensee: Georgia Power Company
P. O. Box 1295
Birmingham, AL 35201

Docket Nos.: 50-424 and 50-425

License Nos.: NPF-68 and NPF-81

Facility Name: Vogtle 1 and 2

Inspection Conducted: September 11-15, 1995

Inspector: B. A. Parker 10/10/95
Date Signed

Approved by: W. H. Rankin 10/11/95
Date Signed
W. H. Rankin, Chief
Facilities Radiation Protection Section
Radiological Protection and Emergency Preparedness Branch
Division of Radiation Safety and Safeguards

SUMMARY

Scope:

This routine, announced inspection was conducted in the area of occupational radiation safety and included an examination of organization and staffing; audits and self-assessment; training and qualification; external exposure control; internal exposure control; surveys; contamination control; posting and labeling; and maintaining occupational exposures as low as reasonably achievable (ALARA).

Results:

In the areas inspected, no violations or deviations were identified. Based on interviews with licensee management, supervision, personnel from station departments, and records review, the inspector found that the radiation protection program continued to satisfactorily protect the health and safety of workers and the public.

Enclosure

REPORT DETAILS

1. Persons Contacted

Licensee Employees

B. Anderson, Health Physics Trainer
J. Beasley, General Manager
G. Brenborg, Supervisor, Health Physics
C. Bourne, Senior Nuclear Specialist, Health Physics
C. Burke, Nuclear Specialist, SAER
C. Christiansen, Supervisor, SAER
K. Duquette, Plant Health Physicist
*J. Gasser, Assistant General Manager - Operations
*S. Goff, Nuclear Specialist, SAER
K. Holmes, Manager, Maintenance
*D. Huyok, Manager, Nuclear Security
*W. Kitchens, Assistant General Manager - Support
*I. Kochery, Superintendent, Health Physics
*M. Kurtzman, Supervisor, Health Physics/Chemistry Training
*R. LeGrand, Manager, Health Physics and Chemistry
J. Lucot, Supervisor, Health Physics
R. Miller, Nuclear Specialist, Health Physics
*T. Polito, Supervisor, Outage Scheduling
*M. Sheibani, Supervisor, NSAC
*C. Tippins, Nuclear Specialist, SAER

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

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P. Hopkins, Resident Inspector
*C. Ogle, Senior Resident Inspector
M. Widmann, Resident Inspector

*Denotes attendance at exit meeting held on March 17, 1995.

2. Organization and Management Controls (83750)

The inspector reviewed the licensee's organization, staffing levels, and lines of authority as they relate to radiation protection. No significant changes were noted since the last inspection conducted March 13-17, 1995, and documented in NRC Inspection Report (IR) 95-10. The Reengineering Project was affecting general lines of authority, but not to a significant degree. The licensee appeared adequately staffed. Some reduction in staffing levels was accomplished through attrition with no adverse effects on function or performance in the area of radiological controls.

No violations or deviations were identified.

3. Audits and Self-Identification (83750)

Technical Specification (TS) 6.4.2.8 requires that audits of plant activities be performed under the cognizance of the Safety Review Board (SRB) and that the audits shall encompass, in part, the conformance of plant operation to provisions contained within the TSs and applicable license conditions at least once per 12 months.

The inspector noted that one audit had been performed since the last inspection conducted March 13-17, 1995, and documented in IR 95-10. Audit No. OP02-95/06, Quality Assurance Audit of Health Physics and Radiation Protection, was conducted during the period of February 24 to April 24, 1995, focusing on the Unit 2 refueling outage in March 1995. The inspector discussed the scope of the audit and the findings with licensee personnel and noted no concerns or problems. The audit appeared well-planned and was conducted by experienced and knowledgeable auditors.

The inspector noted that the licensee had initiated self-assessments of the health physics (HP) program. Each quarter, an HP foreman reviewed a specific area relevant to the current ongoing activities. The reviews were both compliance as well as performance based. The inspector reviewed the documentation of the self-assessments conducted for the first and third quarters of 1995. The HP foremen followed particular jobs from start to finish and no problems or concerns were noted related to radiological controls.

The inspector reviewed selected Radiological Incident Reports (RIRs) and Deficiency Cards (DCs) for 1994 and 1995. These included radiation work permit (RWP) problems, procedural deficiencies, and poor work practices. Total numbers of RIRs and DCs were relatively low and no major issues were identified. During review of selected RIRs and DCs, the inspector noted thorough investigations, appropriate and comprehensive corrective actions, as well as visibility with the responsible department manager. No negative trends or other concerns were noted.

No violations or deviations were identified.

4. Planning and Preparation (83750)

Planning and preparation for the double outage year in 1996 was discussed with cognizant licensee representatives. Areas discussed with the licensee included duration of the outages, dose intensive work planned, and ALARA initiatives being explored to reduce dose. Use of advanced radiation workers (ARWs) was also discussed, as detailed in Paragraph 5. No concerns were noted with the licensee's planning; however, the inspector noted that 1996 would be a very challenging year from a dose management/ALARA standpoint, and encouraged licensee management to continue to strongly support all ALARA efforts.

No violations or deviations were identified

5. Training and Qualifications (83750)

10 CFR 19.12 requires, in part, that the licensee instruct all individuals working in or frequenting any portions 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 purpose and function of protection devices employed; in the applicable provisions of the Commission regulations; in the individual's responsibilities; and in the availability of radiation exposure data.

The inspector noted through discussions with the licensee that a self-monitoring program for qualified radiation workers, e.g. mechanics, operators, etc., had been developed to train workers to become ARWs. The licensee had conducted a "Reengineering" evaluation among the three Southern Nuclear Operating Company plants and determined that a self-monitoring program would be cost effective as well as an efficient method for some radiation workers to complete certain job activities. Individuals who completed the self-monitoring program would be able to conduct specific HP activities without having qualified HP technician accompaniment/coverage to oversee those radiological aspects for a particular job. Those individuals completing the program would be allowed to conduct specific HP activities such as area radiation and contamination surveys. Although this gave the ARW more responsibilities for ensuring appropriate HP activities were conducted during certain job evolutions, it also allowed HP personnel to spend more time with those activities requiring more intensive HP coverage.

The licensee developed a self-monitoring program that was divided into two phases. Phase I consisted of classroom lectures conducted over a period of two to three days. Upon completion of the classroom lectures, a written exam would be administered consisting of approximately 50 questions requiring a 70 percent passing grade. Phase II consisted of field qualifications in which an individual would complete nine tasks for specific job activities. The field qualifications phase was divided into two parts. The first part consisted of on-the-job training where an individual and a qualified HP technician would go through the nine tasks. The second part consisted of the individual completing the nine tasks independently while a qualified evaluator (e.g., an HP technician) would evaluate the individual's performance for conducting the task. Upon completion of each task, the qualified evaluator would certify that the individual completed each task adequately. At the time of the onsite inspection, the licensee had approximately 50 individuals who had completed both Phases I and II. Based on discussions with licensee representatives and review of various training records, the inspector noted that those aspects of the self-monitoring program reviewed were adequate for training radiation workers to become ARWs. However, the

value of the ARW training has yet to be determined as the ARWs will not apply their training to a great extent until the 1996 refueling outages, at which time the licensee will be able to judge the benefits and/or drawbacks of the program as a whole.

No violations or deviations were identified.

6. External Exposure Control (83750)

10 CFR 20.1201 (a) requires each licensee to control the occupational dose to individual adults, except for planned special exposures under 20.1206, to the following dose limits:

- (1) An annual limit, which is the more limiting of:
 - (i) The total effective dose equivalent being equal to 5 rems;
or
 - (ii) The sum of the deep-dose equivalent and the committed dose equivalent to any individual organ or tissue other than the lens of the eye being equal to 50 rems;
- (2) The annual limits to the lens of the eye, to the skin, and to the extremities, which are:
 - (i) An eye dose equivalent of 15 rems; and
 - (ii) A shallow-dose equivalent of 50 rems to the skin or to any extremity.

During tours of the plant, the inspector observed workers wearing appropriate personnel monitoring devices. These included thermoluminescent dosimeters (TLDs) and electronic direct reading dosimeters (EDRDs). At the time of the inspection, the licensee's automated access control system was out of service pending hardware and software upgrades; however, installation problems forced the system to be down longer than expected, eventually leading to the reinstallation of the old software until the problems could be solved. The licensee reacted to the downtime and delays well, requiring entry/exit of the radiation controlled area (RCA) using dose cards for keeping track of personnel dose. No concerns were noted with the licensee's compensatory measures while the automated system was down.

The inspector reviewed the circumstances surrounding an event which occurred on July 6, 1995, involving a worker with a hot particle on his left hand. The event was initially documented in IR 95-17 and resulted in a non-cited violation (NCV 95-17-03) for failure to properly frisk. The hot particle was isolated and removed after the worker alarmed the portal monitor at the plant security exit at the end of his shift. The particle was analyzed to contain 0.348 microcuries of cobalt-60, the most common source of hot particles. A conservative evaluation by the licensee estimated the time of exposure to be 7.6 hours, which represented the time period from when the worker first entered the radwaste building at the beginning of his shift until the removal of the

hot particle by HP personnel at the security exit. The calculated dose to the skin of worker's hand was 2.6 microcurie-hours, well within the 75 microcurie-hour skin dose limit specified in NRC Information Notice 90-48, "Enforcement Policy of Hot Particle Exposures." The inspector reviewed the documentation of the event as well as the corrective actions taken in response to the event. No concerns or problems were noted beyond that documented in IR 95-17.

Overall, the licensee's collective dose was satisfactory. The licensee was approximately eight person-rem above the year-to-date goal of 181 person-rem. This was mainly due to a 12 percent overrun of dose during the Unit 2 outage in March 1995. Approximately 158 person-rem was accrued during the outage versus an outage goal of 140 person-rem. A combination of an aggressive outage goal and emergent work caused the dose overrun. The licensee was slowly making up the difference, but it did not appear likely that the licensee would meet their most aggressive annual goal of 195 person-rem; however, no major concerns or problems were noted with the licensee's management of collective dose.

No violations or deviations were identified.

7. Internal Exposure Control (83750)

10 CFR 20.1502(b) requires each licensee to monitor the occupational intake of radioactive material by and assess the committed effective dose equivalent to:

- (1) Adults likely to receive, in one year, an intake in excess of 10 percent of the applicable Annual Limit of Intake (ALI) in Table 1, Columns 1 and 2 of Appendix B to 10 CFR 20.1001-20.2401; and
- (2) Minors and declared pregnant women likely to receive, in one year, a committed effective dose equivalent in excess of 0.05 rem.

The inspector reviewed the licensee's program for monitoring internal dose in general and noted no problems. Prior to implementing the revised 10 CFR Part 20 requirements, the licensee determined that monitoring for internal dose was not necessary on this site based on historical data as no individual was likely to exceed ten percent of the regulatory limits in one year. Whole body counts were conducted initially, at termination, and as needed; however, the licensee had recently eliminated the annual whole body counts and replaced them with random spot checks. The licensee indicated that evaluation of the annual counting program showed no value added, and that random checks could be just as effective or more so.

The inspector reviewed a study conducted by the licensee regarding initial whole body counts for incoming workers. The study evaluated whether portal monitors were capable of detecting small quantities of internally deposited radioactive material. If so, this would allow the licensee to screen incoming workers for significant internal

radioactivity deposition using a portal monitor versus a whole body counter, thus eliminating the need to conduct a majority of initial whole body counts. The study showed that the portal monitor could detect 0.2 percent of the ALI for cobalt-60 and two percent of the ALI for iodine-131 with a 15 second count. Based on the findings of the study, the licensee planned to initiate the screening process during the next refueling outage in 1996. According to the licensee, individuals who alarm the portal monitor during the screening will be given a whole body count to set a baseline of internal radioactive material prior to work onsite. The inspector noted that the study was well-founded and used conservative values and assumptions throughout.

No violations or deviations were identified.

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

10 CFR 20.1501(a) requires each licensee to make or cause to be made such surveys as (1) may be necessary for the licensee to comply with the regulations and (2) are reasonable under the circumstances to evaluate the extent of radioactive hazards that may be present.

10 CFR 20.1902 specifies the requirements for posting certain areas with a conspicuous sign or signs bearing the radiation symbol and a precautionary statement describing the area.

a. Routine Surveys

The inspector reviewed selected records of radiation and contamination surveys performed since the last inspection and discussed survey results with licensee representatives. During tours of the auxiliary building and containment, the inspector observed HP technicians performing release surveys of materials, radiation surveys, and contamination surveys. The inspector also observed HP personnel performing radiation and contamination surveys during work evolutions. The inspector interviewed various plant workers regarding their dose, RWPs, and work area dose rates. No concerns were noted by the inspector.

The inspector noted that the licensee had evaluated and recently implemented a new method for performing routine surveys. The licensee evaluated all areas surveyed and set the survey frequency based on factors such as traffic, radiation levels, contamination levels, and historical data. The new method was proceduralized, allowing the licensee to more effectively utilize the HP staff resources as well as save dose. Some areas such as high radiation areas were changed to "survey as needed" (e.g., prior to entry) instead of surveying on some set frequency. The inspector reviewed the licensee's methodology and identified no concerns or problems.

b. Posting and Labeling

During tours of the plant, the inspector reviewed the licensee's program for posting and controlling radiological areas. A few minor discrepancies were noted by the inspector and were promptly corrected by the licensee. The inspector further verified that locked high radiation areas were locked and posted, as required. The inspector also reviewed the licensee's program for the identification and marking of radioactive material, tagging and wrapping material, movement of radioactive materials, storage areas, tools and equipment release, and solid trash monitoring. The inspector noted that all containers, material, and areas observed were properly labeled, posted, and/or safeguarded in accordance with the radiation hazard present.

c. Contaminated Area

The licensee's total RCA equaled approximately 450,000 square feet (ft²). The licensee typically maintained less than 4,500 ft² (one percent) as contaminated area, with the amount of contaminated area peaking during outage periods at two to three percent of the RCA. In general, housekeeping was satisfactory. No concerns were noted.

d. Radiation Detection and Survey Instrumentation

During facility tours, the inspector noted that survey instrumentation, continuous air monitors, and EDRDs in use within the RCA were operable and displayed current calibration data. The inspector further noted an adequate number of instruments were available for use, and background radiation levels at personnel survey locations were observed to be within the licensee's procedural limits.

No violations or deviations were identified.

9. Operational and Administrative Controls (83750)

a. Radiation Work Permits (RWPs)

The inspector reviewed selected RWPs for adequacy of the radiation protection requirements based on work scope, location, and conditions. For the RWPs reviewed, the inspector noted that appropriate protective clothing, dosimetry, etc., were required. The inspector noted the RWPs reviewed contained the appropriate radiological control requirements for the areas being entered. The inspector interviewed several workers to determine if they were working under the correct RWP, understood the RWP requirements, and were aware of their dose and work area dose rates. No problems or concerns were noted.

b. Notices to Workers

10 CFR 19.11(a) and (b) require, in part, that the licensee post current copies of 10 CFR Parts 19 and 20, the license, license conditions, documents incorporated into the license, license amendments and operating procedures, or that a licensee post a notice describing these documents and where they may be examined.

10 CFR 19.11(d) requires that a licensee post Form NRC-3, Notice to Employees. Sufficient copies of the required forms are to be posted to permit licensee workers to observe them on the way to or from licensed activity locations.

During the inspection, the inspector verified that Form NRC-3 was posted properly at various plant locations permitting adequate worker access. In addition, notices were posted referencing the location where the regulations, license, procedures, and supporting documents could be reviewed.

No violations or deviations were identified.

10. Program for Maintaining Exposures As Low As Reasonably Achievable (ALARA) (83750)

10 CFR 20.1101(b) states that the licensee shall use to the extent practical, procedures and engineering controls based upon sound radiation protection procedures to achieve occupational doses to members of the public that are as low as reasonably achievable (ALARA).

The inspector reviewed and discussed with licensee representatives successful ALARA initiatives and the licensee's long term radiation exposure reduction plan to maintain occupational exposure ALARA. These initiatives included further downsizing of reactor coolant system (RCS) filters to 0.1 micron, installation of permanent reactor head shielding on both units, more centralization of HP control points, easier-to-use covers for drain lines, vents, etc., and tighter controls on shutdown chemistry. In addition, a number of other ALARA-related initiatives and items of interest were discussed, including potential future use of chemical decontamination techniques on various equipment/systems. Overall, the licensee's efforts to maintain exposures ALARA continued to be strong and effective in a wide variety of areas.

No violations or deviations were identified.

11. Exit Meeting (83750)

At the conclusion of the inspection on September 15, 1995, an exit meeting was held with those licensee representatives indicated in Paragraph 1. The inspector summarized the scope and findings of the inspection with licensee management. The licensee did not indicate any of the information provided to the inspector as proprietary in nature and no dissenting comments were received from the licensee.