



UNITED STATES
NUCLEAR REGULATORY COMMISSION

REGION II
101 MARIETTA STREET, N.W., SUITE 2900
ATLANTA, GEORGIA 30323-0199

Report Nos.: 50-424/95-23 and 50-425/95-23

Licensee: Georgia Power Company

Docket Nos.: 50-424, 50-425

License Nos.: NPF-68, NPF-81

Facility Name: Vogtle Electric Generating Plant

Inspection Conducted: September 25-29, 1995

Inspector: *W. M. Sartor Jr.* 10/26/95
W. M. Sartor, Senior Radiation Specialist Date Signed

Inspector: *R. P. Carrion* 26 Oct '95
R. P. Carrion, Radiation Specialist Date Signed

Approved by: *Thomas R. Decker* 10/27/95
T. R. Decker, Acting Branch Chief Date Signed
Plant Support Branch
Division of Reactor Safety

SUMMARY

Scope:

This routine announced inspection was conducted in the areas of: organization of the Chemistry Department and Radwaste Group, audits, process and effluent radiation monitors, the Control Room Emergency Filtration System (CREFS), and radioactive waste shipping operations and transportation documentation. The emergency preparedness portion of the inspection included: (1) Emergency Plan and associated implementing procedures; (2) facilities, equipment, instrumentation, and supplies, (3) organization and management control systems; (4) training; and (5) independent audits.

Results:

In the areas inspected, no violations or deviations were identified.

The licensee's organization of the Chemistry Department and Radwaste Unit were stable and satisfied requirements of the Technical Specifications (TSs).
(Paragraph 2)

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The licensee's audit process was capable of identifying programmatic weaknesses and making recommendations for corrective action. (Paragraph 3)

The licensee had maintained an effective over-all chemistry program to inhibit degradation due to corrosion/erosion of components of both the primary and secondary systems and to reduce potential dose to its personnel. (Paragraph 4)

The licensee's program for maintaining the plant's process and effluent monitors was being successfully implemented. (Paragraph 5)

The Control Room Emergency Filtration System (CREFS) was adequate for its intended function and was being maintained in compliance with the applicable TSS. (Paragraph 6)

The licensee had implemented effective quality assurance and management control programs for packaging, preparation, and transport of radioactive material. (Paragraph 7)

The licensee's emergency preparedness program was being well maintained and managed. Program strengths included the operationally ready Technical Support Center and the aggressive exercise training program. (Paragraphs 8-12)

REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *J. Beasley, Plant General Manager
- *P. Burwinkel, Engineering Supervisor
- *C. Christiansen, Supervisor, Safety Audit and Engineering Review
- *C. Coursey, Superintendent of Maintenance
- *S. Drisen, Plant Training Supervisor
- *J. Gasser, Assistant General Manager for Plant Operations
- *D. Huyck, Security Manager
- *I. Kochery, Superintendent of Health Physics (HP)
- *L. Mayo, Nuclear Specialist
- *A. Parton, Superintendent of Chemistry
- *T. Polito, Supervisor of Outage Scheduling
- *A. Rickman, Independent Safety Engineering Group
- *J. Roberts, Emergency Preparedness Coordinator
- *F. Scoggins, Nuclear Specialist/HP
- *M. Sheibani, NSAC Supervisor
- *S. Sundaram, Senior Nuclear Specialist
- *C. Tippins, Nuclear Specialist

Other licensee employees contacted during this inspection included engineers, technicians, and administrative personnel.

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

*Attended exit interview

Acronyms and Initialisms used throughout this report are listed in the last paragraph.

2. Organization and Staffing (84750 and 86750)

Technical Specification (TS) 6.2 describes the licensee's organization.

The inspector reviewed and discussed the licensee's chemistry and radwaste shipping organizations with licensee representatives. The 49-position Chemistry Department was directed by the Chemistry Superintendent, to whom the Chemistry Foremen (six total, five shift and one administrative), the Plant Chemist, two Senior Nuclear Specialists, the Nuclear Specialist, and the Chemistry Support Supervisor reported. The Chemistry Superintendent reported to the HP/Chemistry Manager. The radwaste shipping organization had been reduced to one individual, a

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Nuclear Specialist/HP, who requested support from other plant groups as required to accomplish his work.

Based on observations made throughout the inspection, the inspector concluded that the licensee's organization was stable and in compliance with the TSs.

No violations or deviations were identified.

3. Audits (84750)

TS 6.4.2.8 specifies the types and frequencies of audits to be conducted under the cognizance of the Safety Review Board (SRB). The inspector reviewed audits conducted during the past eighteen months by the SRB within the scope of this report. In order to evaluate compliance with the TSs and assess quality of the licensee's programs, the inspector reviewed the following audits:

- QA Audit of Radioactive Waste Control, OP05-94/13, conducted May 19 through June 30, 1994.
- QA Audit of Plant Chemistry, OP04-94/03, conducted January 20 through February 10, 1994.
- QA Audit of Plant Chemistry, OP04-94/25, conducted August 22 through September 9, 1994.
- QA Audit of Plant Chemistry, OP04-95/07, conducted February 27 through April 24, 1995.
- Southern Nuclear Operating Company Supplier Audit of GPC Environmental Laboratory, Audit No. 95-66, conducted May 22 through May 25, 1995.

The audits were found to be well-planned and documented and summarized findings. Corrective actions for previous audit findings were reviewed for adequacy and were closed out formally or left open, as appropriate. The inspector reviewed several Audit Plans used to conduct audits and noted that their respective scopes were sufficiently broad to ensure comprehensive results. The inspector also noted that the comments and recommendations based on audit observations were detailed and would aid the implementation of adequate corrective actions. The inspector verified that the audit program was conducted in accordance with the TSs.

The inspector concluded that the audit process was capable of identifying programmatic weaknesses, documenting deficiencies, and making recommendations for corrective action.

No violations or deviations were identified.

4. Plant Water Chemistry (84750)

During the inspection, both units were operating at one hundred percent power, except when one unit was reduced to 30% for a short period of time to add lubricant to a reactor coolant pump (RCP). Unit 1 was in its sixth fuel cycle, with its next refueling outage scheduled for March 1996, and Unit 2 was in its fifth fuel cycle, having completed its refueling outage in the early Spring 1995.

a. Primary Water Chemistry

1. TS-Required Parameters

The inspector reviewed the plant chemistry controls and operational controls affecting primary plant water chemistry. TS 3/4.4.7 specifies that the concentrations of dissolved oxygen (DO), chloride, and fluoride in the Reactor Coolant System (RCS) be maintained below 0.10 parts per million (ppm), 0.15 ppm, and 0.15 ppm, respectively. TS 3/4.4.8 specifies that the specific activity of the primary coolant be limited to less than or equal to 1.0 microcuries per gram ($\mu\text{Ci/g}$) Dose Equivalent Iodine (DEI) whenever the reactor is critical or the average temperature is greater than 500°F.

These parameters are related to corrosion resistance and fuel integrity. The oxygen parameter is established to maintain levels sufficiently low to prevent general and localized corrosion. The chloride and fluoride parameters are based on providing protection from halide stress corrosion. The activity parameter is based on minimizing personnel radiation exposure during emergency operation and maintenance.

Pursuant to these requirements, the inspector reviewed daily summaries for both units which correlated reactor power output to chloride, fluoride, and dissolved oxygen concentrations, and specific activity of the reactor coolant. The arbitrarily-chosen period of May 1, 1995 through June 30, 1995 was reviewed. The parameters were determined to have been maintained well below TS limits. Typical values for DO, chloride, and fluoride were less than two parts per billion (ppb), less than three ppb, and less than six ppb, respectively, for Unit 1 and less than two ppb, less than twelve ppb, and less than five ppb, respectively, for Unit 2. The inspector also reviewed graphical summaries for both units which correlated reactor power output to specific activity of the reactor coolant for the same period. Typical DEI values at steady-state conditions were $3.0\text{E-}4$ $\mu\text{Ci/g}$ for Unit 1 and $7.0\text{E-}4$ $\mu\text{Ci/g}$ for Unit 2. Neither unit had shown any evidence of leaking fuel.

The inspector concluded that the Primary Water Chemistry was maintained well within the TS requirements.

2. Early Boration

The licensee typically uses early boration (acid-reducing chemistry) combined with hydrogen peroxide injection (acid-oxidizing chemistry) during unit shutdown and cooldown at refueling to reduce the source term.

The inspector reviewed reports/evaluations of the most recent early boration results (Unit 2 Refueling Outage 4). The process solubilized an estimated 612 curies of Co-58, which were removed via the demineralizers of the Chemical and Volume Control System (CVCS). The total of curies removed had been declining over the last three refueling outages, from 2340 curies during Refueling Outage 2 to 1425 curies during Refueling Outage 3 to the above-referenced values. The licensee indicated that these results were probably obtained as a result of the loading of Vantage 5 fuel, due to its lower nickel content in the bundle supports. (Nickel is activated to Co-58 during power operations.) One third of the core was loaded with Vantage 5 fuel for Cycle 3, one third of the core was loaded with Vantage 5 fuel for Cycle 4, and the remainder was loaded with Vantage 5 fuel for the current cycle (Cycle 5). Another possible contributor to the reduction of the radiocobalt inventory was the increased emphasis on tight pH control during the cycle, which was believed to result in less nickel and cobalt transport during operation.

Based on the results of these reports, the inspector concluded that the licensee was proactive in trying to reduce dose rates by removing significant quantities of activity via its early boration/hydrogen peroxide shutdown program.

b. Secondary Water Chemistry

TS 6.7.4.c requires the licensee to establish, implement, maintain, and audit a Secondary Water Chemistry Program to inhibit steam generator (SG) tube degradation.

1. General Program

The inspector discussed the impact of the licensee's program and its impact on the condition of the SGs. The licensee had used an All-Volatile Treatment (AVT) of hydrazine and ammonia on both units since the plant began operation. Originally, the secondary system was operated at a hydrazine concentration of 20 ppb. As operation and industry experience increased, the hydrazine concentration was gradually raised such that both units are operating at a hydrazine concentration of 150 ppb. The licensee's goal was

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to maintain a relatively high pH in the two-phase sections of the system to minimize corrosion and corrosion product transport. A pH of approximately 10 was maintained in the feedwater. The ammonia concentration was approximately 8 ppm in the feedwater and 4 ppm in the blowdown. The iron concentration was determined via corrosion product monitors and was approximately 1.5 ppb in the feedwater. In addition to general system chemistry, the licensee had been emphasizing "crevice" chemistry, in which very localized conditions may give rise to the phenomenon of Intergranular Stress Corrosion Cracking (IGSCC). The licensee had done "hideout return" evaluations to determine the inventory of crevice contaminants of the SGs. Sodium appeared to be a key parameter in the development of IGSCC and the licensee had been trying to control it through the use of a sodium/chloride molar ratio regimen. Three years ago, the licensee maintained the ratio at approximately 2.5:1.0. However, as additional plant and industrial experience was gained, the ratio had been reduced to less than 0.5:1.0. The ratio was generally controlled by the addition of ammonium chloride, thereby raising the chloride value of the denominator of the ratio, and reducing the overall value of the ratio. The inspector reviewed monthly average SG sodium concentrations determined that they had been generally maintained at values approximately 0.3 ppb for both units for the last two years.

2. System Parameters

TS 3/4.7.1.4 specifies that the specific activity of the secondary coolant be limited to less than or equal to $0.1 \mu\text{Ci/g DEI}$. Pursuant to these requirements, the inspector reviewed summaries for composite sample of the four SGs of both units which correlated reactor operational mode to specific activity of the secondary coolant. The arbitrarily-chosen period of May 1 through June 30, 1995, was reviewed. The DEI values for both units were less than $1.0\text{E-}7 \mu\text{Ci/g}$ for the entire period. The inspector also selectively reviewed the Steam Generator Logsheets of both units for the current month (September), which tracked all of the required parameters. The inspector noted that the layout of the sheets was conducive to identifying abnormal values in that the given parameter's normal value and action level values were listed at the top of the sheet. The parameters tracked for SG blowdown included: pH; conductivity (specific and cation); and sodium, ammonia, chloride, sulfate, and silica concentrations. All of the reviewed parameters were well within specified limits.

3. Sludge Lancing

Sludge lancing has been carried out during every refueling outage of each unit since plant operations began. A summary of sludge removed follows.

Vogtle Sludge Removal History

| Fuel Cycle No. | Unit 1 (lbs.) | Unit 2 (lbs.) |
|----------------------|------------------|------------------|
| 1 | 67 | 106 |
| 2 | 71 | 98 |
| 3 | 110 | 58 |
| 4 | 53 | 80 |
| 5 | 240* | |

* Pressure-Pulse Cleaning was used during the sludge lancing process.

The licensee attributed these relatively small amounts to the strict controls implemented in the chemistry program.

Based on this review, the inspector concluded that the licensee had taken proactive steps to preserve/protect its SGs through effective implementation of its Secondary Water Chemistry Program.

c. Nuclear Service Cooling Water (NSCW) System

The licensee had reported finding debris in the NSCW cooling towers. The inspector reviewed the chemistry requirements of the system as specified in Final Safety Analysis Report (FSAR) Section 9.2.5.2.3 in an effort to determine if there was a cause/effect relation between them. The inspector also interviewed cognizant licensee personnel responsible for maintaining the chemical parameters in the cooling towers, who explained the function of the NSCW Chemical Injection System and the chemicals normally used. The inspector also reviewed Procedure 35360-C, Rev. 16, "Circulating Water, NSCW and River Water Make-Up Chemistry Control." Chlorination was done monthly in the form of 0.2 ppm of free available chlorine for a two-hour period to control algae. A copper-corrosion inhibitor, tolytriazole (TOL), was used to protect the copper-alloy heat exchanger tubes. A biocide, sodium hypochlorite (NaOCl), was injected twice per year to control clams. Approximately every two weeks blowdown grab samples were taken and analyzed to maintain the Ryznar Index (a method of determining the pH), to monitor levels of the treatment chemicals, and to verify the operation of the process monitors.

Based on the above, the inspector concluded that the chemicals used in the NSCW cooling towers were not responsible for the debris encountered therein.

Based on these findings, the inspector concluded that the licensee had implemented an effective over-all chemistry program to not only maintain the components of both the primary and secondary systems, but to reduce the potential dose to its personnel.

No violations or deviations were identified.

5. Process and Effluent Monitors (84750)

TS 3/4.3.3.1 defines the operation and surveillance requirements for monitors of radioactive (or potentially radioactive) streams. This instrumentation is provided to monitor and control the releases of radioactive materials during normal and abnormal plant conditions as well as in effluents during effluent releases. The alarm/trip setpoints for the effluent monitors are calculated in accordance with the procedures in the Off-site Dose Calculation Manual (ODCM) to ensure that the alarm/trip will occur prior to exceeding the limits of 10 CFR 20. The alarm/trip setpoints for the process monitors are specified by the TSs.

The inspector walked down four Unit 1 (1-RE-018, 1-RE-0848, 1-RE-2565, and 1-RE-12444) and two Unit 2 (2-RE-018 and 2-RE-0848) process and effluent monitoring stations to become familiar with their physical location in the plant and to observe their state of maintenance and operability. The monitors were found to be well-maintained and operable.

The inspector observed a technician do the daily channel checks of the radiation monitors. They were accomplished using the Process and Effluent Radiation Monitoring System (PERMS), exclusively. The inspector noted that the technician was knowledgeable and that the procedures were closely followed. A feature of the system was demonstrated when, during the referenced monitor walkdown, an indicator light was noted to be on for one of the monitors. The technician returned to the Chemistry Laboratory and called up the monitor on the PERMS and resolved the problem. (The paper feeder of the monitor's recorder had jammed.) Upon continuing the walkdown, the indicator light was off and the monitor was functioning normally.

The inspector reviewed four randomly-selected Liquid Release Permits (950008.002.005.L, 950015.004.004.L, 950049.013.001.L, and 950059.003.004.L) and four randomly-selected Gaseous Release Permit (950006.020.002.G, 950099.045.001.G, 950202.026.054.G, and 950213.020.029.G) to verify compliance. The permits were found to be complete and included such release information as the identification of the source of the release, the activity released (identified by isotope), the volume of the effluent discharged, and projected dose calculations.

The inspector reviewed selected portions of the procedures used to generate a Gaseous Waste Release Permit (950317.021.047.G, for a Unit 2 Containment Vent, a continuous release) and to obtain a gaseous sample. Specifically, the inspector reviewed selected parts of Chemistry Procedure No. 33015-C, "Obtaining Gaseous Samples for Radioactivity Analysis," approved August 23, 1995, and Chemistry Procedure No. 36020-C, "Radioactive Gaseous Effluent Release Permit Generation and Data Control - Computer Method," approved August 28, 1994. The inspector observed a licensee technician obtain a gaseous grab sample and return it to the Count Room for analysis and noted that the procedures were followed closely. Proper sampling techniques and health physics practices were employed. The inspector observed a technician close the release of the previous week (950317.021.046.G) and open the referenced release. The inspector noted that the technician was knowledgeable and followed the procedure closely.

Based upon the above observations, the inspector concluded that the licensee's programs for maintaining the plant's process and effluent radiation monitors, preparing gaseous waste release permits, and doing the associated sampling and sample analysis were being effectively implemented and that regulatory requirements were satisfied.

No violations or deviations were identified.

6. Control Room Emergency Filtration System (CREFS) (84750)

Per 10 CFR 50, Appendix A, Criterion 19, licensees shall assure that adequate radiation protection be provided to permit access to and occupancy of the control room under accident conditions and for the duration of the accident. Specifically, operability of the control room emergency ventilation system ensures that 1) the ambient air temperature does not exceed the allowable temperature for continuous duty rating for the equipment and instrumentation cooled by this system and 2) the control room remains habitable for operations personnel during and following all credible accident conditions such that the radiation exposure to personnel occupying the control room is limited to 5 rem or less whole body, or its equivalent.

TS 3/4.7.6 defines operability and surveillance requirements for the Control Room Emergency Filtration System under the various design scenarios.

The inspector reviewed the Piping and Instrumentation Diagrams (P&IDs) AX4DB206-1, Rev. 26, AX4DB206-2, Rev. 20, and AX4DB206-2, Rev. 25, which showed the general layout of the components of the Control Room Emergency Filtration System for Units 1 and Unit 2. The inspector walked down the system, from the air intake to the Control Room, to air exhaust, noting the major components, such as isolation dampers, filter banks, and fans as well as detectors for radiation, smoke, etc. All components were well maintained, with no sign of physical degradation. The inspector reviewed the System Description, as described in Section 9.4.1 of the FSAR, and discussed system operation under both normal and emergency conditions with cognizant licensee personnel.

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The inspector reviewed summaries of surveillances conducted in the last several years for High Efficiency Particulate Air (HEPA) filter testing, carbon adsorption, and train performance, as required by the TSs, and determined that TS compliance had been met and acceptance criteria satisfied.

Based on the scope of this review, the inspector concluded that the System was adequate for its intended function and that it was being maintained in compliance with the applicable TSs.

No violations or deviations were identified.

7. Transportation of Radioactive Material (86750)

10 CFR 71 established the requirements for packaging, preparation for shipment, and transportation of licensed material. 10 CFR 71.5 required the licensee to comply with the applicable requirements of the Department of Transportation (DOT) in 49 CFR Parts 170 through 189 when transporting licensed material outside of the confines of the plant or other place of use, or when delivering licensed material to a carrier for transport. 10 CFR 71 Subpart H established the quality assurance (QA) program requirements applicable to transportation of radioactive materials. 10 CFR 20.2006 and of Appendix F to 10 CFR 20 specified the requirements for control of transfers of radioactive waste intended for disposal at a land disposal facility and for establishing a manifest tracking system for those transfers. 10 CFR 61.55 and 61.56 established the requirements for classification and characterization of radioactive waste shipped to a near-surface disposal site.

a. Quality Assurance Program

10 CFR 71.101(c) required the licensee to obtain NRC approval of the QA program prior to the use of any package for shipment of licensed material subject to 10 CFR 71 Subpart H.

The inspector reviewed the licensee's "Quality Assurance Program Approval for Radioactive Material Packages," No. 0726, Rev. 0, and noted that its expiration date was September 30, 1996.

b. Radiation Monitoring

10 CFR 71.47, 10 CFR 71.87(i) and (j), 49 CFR 173.441, 49 CFR 173.443 and 49 CFR 173.475(i) delineated the limits for external radiation levels and for removable surface contamination levels of packages offered for shipment.

The inspector determined that licensee's procedures for shipping radioactive materials included provisions for performing the required surveys and for assuring that the radiation and contamination limits were met for each package offered for

shipment. The inspector reviewed the licensee's records for several shipments of radioactive material and found that those records indicated that the required surveys had been performed and the radiation and contamination limits had been met.

c. Shipping Paper Documentation

49 CFR 172.200 required the licensee to prepare shipping papers describing hazardous materials offered for transport in the manner specified in 49 CFR 172 Subpart C. 10 CFR 20.2006 required the licensee to prepare shipping manifests for each shipment of radioactive waste to a licensed land disposal facility such that they meet the requirements of Appendix F to 10 CFR 20.

The inspector determined that the licensee's procedures included provisions for preparing shipping papers and manifests in accordance with the above requirements and for recording the required information thereon. The inspector also reviewed the shipping papers for selected shipments of radioactive materials and determined that they had been prepared in accordance with the above procedure.

d. Drivers Instructions for Exclusive Use Shipments

49 CFR 173.425(b)(9) and 173.441(c) required the licensee to provide specific written instructions for maintenance of the exclusive use shipment controls to the carrier of packages of radioactive material consigned as exclusive use. Those instructions were required to be included with the shipping paper information.

The inspector determined that the licensee's procedures for shipping radioactive materials included provisions for providing drivers with the required instructions and that the shipping papers for selected shipments included a copy of those instructions.

e. Records

10 CFR 71.91 required the licensee to maintain records of each shipment of licensed material for a period of three years after shipment.

The licensee classified shipments into three categories: Radioactive Waste Shipments (RWSs), Radwaste Volume Reduction Shipments (RVRSs), and Radioactive Material Shipments (RMSs). RWSs included radioactive material destined to go directly to the disposal facility (dewatered resins and filters, for example); RVRSs included items sent to a processor for volume reduction (via incineration and/or compaction) prior to disposal; and RMSs included items such as decontaminated outage and refueling equipment. The inspector reviewed the following randomly-selected shipping records to determine if the required information was

being properly retained: RWSs 94-005, 95-001, and 95-005; RVRs 94-011 and 95-021; and RMS 95-03-009. The shipping documents were being maintained as required.

f. Radioactive Waste Classification and Characterization

10 CFR 20.2006(d) and Section III.A.1 of Appendix F to 10 CFR 20 required the licensee to prepare all radioactive waste shipped to a licensed land disposal facility or waste collector such that the waste is classified according to 10 CFR 61.55 and meets the waste characteristics requirements in 10 CFR 61.56.

The inspector reviewed selected shipping records and determined that the licensee classified and characterized waste shipments through the use of the RADMAN computer software. Radionuclide concentrations and physical description data for packaged waste were input to the computer and the program generated a manifest form. The printed manifest form included the information required to be included on waste manifests and the certifications that the waste had been properly classified, described, packaged, marked, and labeled and in proper condition for transport in accordance with applicable State and federal regulations.

g. Historical Radiological Waste Disposal Data

The inspector reviewed the licensee's solid radwaste disposal data, as reported in the Radioactive Effluent Release Reports, for the referenced years. The following table summarizes those data for the last four years.

Vogtle Electric Generation Station
Solid Radwaste Shipments

| | <u>1991</u> | <u>1992</u> | <u>1993</u> | <u>1994</u> |
|------------------------------------|-------------|-------------|-------------|-------------|
| Number of Waste Disposal Shipments | 20 | 37 | 40 | 16 |
| Volume (cubic meters) | 68.7 | 108.5 | 63.4 | 51.4 |
| Activity (curies) | 596.1 | 1069.4 | 223.0 | 339.4 |

The licensee had generally been able to reduce its disposal volume over the last several years due to heightened awareness of the problem; including the virtual elimination of the use of plastic and other disposable items, the use of washable protective clothing, shoe covers, bags, etc., and revised work practices so as to preclude the entrance of non-essential materials into the RCA, etc. In addition, the licensee was investigating the use of a dissolvable material made from polyvinyl alcohol for the use of protective clothing, shoe covers, bags, and absorbent materials, such as mop heads and rags.

h. Loss of Particulate Sample

The five weekly plant vent particulate samples for the month of August 1995 were collected, analyzed for gamma-emitting radioisotopes, prepared for shipping to the corporate central laboratory, and sent to the laboratory for analysis gross alpha, Sr-89, and Sr-90 (per the ODCM). Upon arrival at the laboratory, it was discovered that the sample for the week of August 23-30, 1995, was not in the package. The sample had been inadvertently misplaced/overlooked during package preparation. The licensee had also discarded the backup filter prior to learning of the misplaced filter. The licensee prepared Deficiency Card 2-95-175 to address the incident. Gamma analysis did not identify any radioisotopes in any of the five samples. The samples were shipped by common carrier as a Limited Quantity of Excepted Radioactive Material in a five-gallon bucket.

The inspector reviewed the shipping papers and the gamma analysis performed on each of the samples prior to their preparation for shipping and noted that they were in order. In addition, the inspector reviewed a draft Root Cause Analysis which had been initiated by the licensee. The analysis identified personnel failure (for not checking and verifying that all of the referenced samples were included in the package) and procedures (for lack of clarity) as the principle reasons for the incident. Furthermore, specific corrective actions were recommended to prevent recurrence, including:

- Counseling the individuals involved in the shipping of samples on the importance of self-checking and adherence to procedures.
- Revision of Procedure 37040-C to improve the Chain of Custody.
- Revision of Procedure 33015-C to clarify the proper handling of the backup filter paper, specifically the length of time which the backup filter paper must be saved.
- List the samples individually on the radioactive material shipment record so that the number of samples shipped can be accounted for.

The inspector concluded that the actions taken by the licensee to resolve this incident were timely and adequate to prevent recurrence and that public health and safety were not compromised.

Based on the above reviews and observations, the inspector concluded that the licensee had implemented effective QA and management control programs for packaging, preparation, and transport of radioactive

material, despite the referenced incident. The licensee's heightened awareness of the generation of radwaste held the potential to reduce future disposal volumes even more.

No violations or deviations were identified.

8. Emergency Plan and Implementing Procedures (82701)

This area was inspected to determine whether significant changes were made in the licensee's emergency preparedness program since the last inspection of this area was performed and to assess the impact of any such changes on the overall state of emergency preparedness at the facility, and to determine whether the licensee's actions in response to actual emergencies were in accordance with the Emergency Plan and its implementing procedures. Requirements applicable to this area are found in 10 CFR 50.47(b)(16), 10 CFR 50.54(q), Appendix E to 10 CFR Part 50, and the licensee's Emergency Plan.

The inspector reviewed the licensee's system for making changes to the Emergency Plan and its Implementing Procedures. Through selective review of applicable documents, the inspector confirmed that licensee management approved revisions to the Emergency Plan and procedures as required.

The current VEGP Emergency Plan was Revision 22 with an approved date of July 7, 1995. This approved revision had been submitted to the NRC within 30 days of its approval date as required. No emergency declarations had been made by the licensee since the last inspection.

No violations or deviations were identified.

9. Emergency Facilities, Equipment, Instrumentation, and Supplies (82701)

This area was inspected to determine whether the licensee's ERFs and associated equipment, instrumentation, and supplies were maintained in a state of operational readiness, and to assess the impact of any changes in this area upon the emergency preparedness program. Requirements applicable to this area are found in 10 CFR 50.47(b)(8) and (9), 10 CFR 50.54(q), Sections IV.E and VI of Appendix E to 10 CFR Part 50, and the licensee's Emergency Plan.

The inspector made selective reviews of emergency response facilities and equipment to assess their current status. Facility reviews focused on the TSC and EOF. The equipment review was an operational check of a radiological monitoring team vehicle. In all cases the inspector observed that the facilities and equipment were being maintained in a state of operational readiness.

No violations or deviations were identified.

10. Organization and Management Control (82701)

This area was inspected to determine the effects of any changes in the licensee's emergency organization and/or management control systems on the emergency preparedness program, and to verify that any such changes were properly factored into the Emergency Plan and EIPs. Requirements applicable to this area are found in 10 CFR 50.47(b)(1) and (16), Section IV.A of Appendix E to 10 CFR Part 50, and the licensee's Emergency Plan.

The organization and management of the emergency preparedness program were reviewed and discussed with licensee representatives. A recent change onsite was the reengineering of the Maintenance Department into performance teams. This organizational change will impact the Emergency Plan administratively as title changes have to be made. However, the same personnel with the required maintenance skills will continue to be available to support emergency repairs such that the change is not of a substantial nature.

The inspector discussed the status of offsite interfaces with the EPC. A change had recently occurred in the staffing of the Director of Barnwell County Emergency Services. The licensee stated that the change had not affected the interface with the agency in the area of emergency preparedness. The licensee had already completed radiation protection training, an EAL briefing, and a plant tour with the new Director.

No violations or deviations were identified.

11. Independent and Internal Reviews/Audits (82701)

This area was inspected to determine whether the licensee had performed an independent audit of the emergency preparedness program, and whether the emergency planning staff had conducted a review of the Emergency Plan and the EIPs. Requirements applicable to this area are found in 10 CFR 50.54(t) and the licensee's Emergency Plan.

The inspector reviewed the three most recent audit reports of the Emergency Plan and Procedures. The audit reports met the requirements for an independent audit of the emergency preparedness program. The audits were thorough in selected areas and included recommendations where appropriate. The emergency planning staff had also conducted a review of the Emergency Plan and Procedures.

No violations or deviations were identified.

12. Training (82701)

This area was inspected to determine whether the licensee's emergency response personnel were properly trained and understood their emergency responsibilities.

The inspector randomly selected members of the emergency response organization to determine their status of training and understanding of responsibilities. The individuals selected had current training and demonstrated a high degree of confidence in their understanding of

emergency preparedness responsibilities. During the program review the inspector noted that numerous training drills were being conducted. The frequency of the drills was to insure that all shifts had the opportunity to participate and demonstrate their proficiency in meeting the key training objectives of the drills. This area is a program strength.

No violations or deviations were identified.

13. Exit Interview (82701, 84750, and 86750)

The inspection scope and results were summarized on September 29, 1995, with those persons indicated in Paragraph 1. The inspectors described the areas inspected and discussed the inspection results, including likely informational content of the inspection report with regard to documents and/or processes reviewed during the inspection. The licensee did not identify any such documents or processes as proprietary. Dissenting comments were not received from the licensee.

14. Acronyms and Initialisms

AVT - All-Volatile Treatment
 CFR - Code of Federal Regulations
 Ci - curie
 CREFS - Control Room Emergency Filtration System
 CVCS - Chemical and Volume Control System
 ° - degrees
 DEI - Dose Equivalent Iodine
 DO - Dissolved Oxygen
 DOT - Department of Transportation
 EAL - Emergency Action Limit
 EOF - Emergency Operations Facility
 EPIP - Emergency Plan Implementing Procedures
 ERF - Emergency Response Facility
 F - Fahrenheit
 FSAR - Final Safety Analysis Report
 g - gram
 HEPA - High Efficiency Particulate Air
 HP - Health Physics
 IGSCC - Intergranular Stress Corrosion Cracking
 μ Ci - micro-Curie (1.0E-6 Ci)
 NRC - Nuclear Regulatory Commission
 NSCW - Nuclear Service Cooling Water
 ODCM - Off-site Dose Calculation Manual
 P&ID - Piping and Instrumentation Diagram
 PERMS - Process and Effluent Radiation Monitoring System
 ppb - parts per billion
 ppm - parts per million
 QA - Quality Assurance
 RCP - Reactor Coolant Pump
 RCS - Reactor Coolant System
 Rev - Revision
 RMS - Radioactive Material Shipment

RVRS - Radwaste Volume Reduction Shipment
RWS - Radioactive Waste Shipment
SG - Steam Generator
SRB - Safety Review Board
TOL - tolytriazole
TS - Technical Specification
TSC - Technical Support Center
VEGP - Vogtle Electric Generating Plant