UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA ST., N.W., SUITE 3100
ATLANTA, GEORGIA 30303

Report No. 50-395/81-25

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

Facility Name: V. C. Summer Nuclear Station

Docket No. 50-395

License No. CPPR-94

Inspection at Summer site near Winnsboro, SC

Inspector: for D. Montgomery — 9/17/81 Date Signed

Accompanying Personnel: C. D. Evans

Approved by: J. Philip Stohr, Chief, EPPS Branch
Division of Emergency Preparedness and
Operational Support — 9/18/81 Date Signed

SUMMARY

Inspection on September 1-3, 1981

Areas Inspected

This routine, unannounced inspection involved 22 inspector-hours onsite in the areas of quality control for chemistry and radiochemistry including a review of the quality control program and capability tests for the measurement of radioactive effluents.

Results

Of the two areas inspected, no violations or deviations were identified in two areas.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

*O. S. Bradham, Plant Manager
*L. A. Blue, Health Physics Supervisor
*J. W. Cox, Assistant Health Physics Supervisor
*F. J. Leach, Chemistry Supervisor
L. F. Faltus, Assistant Chemistry Supervisor

Other licensee employees contacted included two technicians.

NRC Resident Inspector

*J. L. Skolds

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on September 3, 1981 with those persons indicated in paragraph 1 above. The inspector requested that an area with appropriate electrical power outlets be provided for the RII Mobile Laboratory. The plant manager agreed to provide these facilities within the protected area.

3. Unresolved Items

Unresolved items were not identified during this inspection.

4. Program for Quality Control of Radioactive Effluent Measurements

Proposed Technical Specification 6.8.1.c requires that written procedures be established, implemented, and maintained for a Quality Assurance program for effluent and environmental monitoring using the guidance in Regulatory Guide 4.15, December 1977. The inspector reviewed the quality assurance program for effluent monitoring with respect to meeting the general guidance of Reg Guide 4.15. The inspector noted that there were no written policies or procedures covering: 1) Organization structure and responsibilities of Managerial and Operational Personnel; and 2) Audits of the Quality Assurance program. Licensee representatives stated that a Health Physics Manual was being written that will address these areas. The inspector noted that procedures and/or instructions were being prepared to implement the other elements specified in Reg Guide 4.15 including: Specification of Personnel Qualifications, Operating Procedures and Instructions; Records; Quality Control in Sampling; Quality Control in the Radioanalytical Laboratory; Quality Control for Continuous Effluent Monitoring; and Review and Analysis of Data.

This area will be reviewed during a subsequent inspection to verify the adequacy of the overall quality control program (81-25-01).

5. Review of Chemical and Radiochemical Procedures

Technical Specification 6.8.1 requires that written procedures be established, implemented, and maintained for the activities recommended in Appendix "A" of Regulatory Guide 1.33, Revision 2, February 1978. Appendix "A" specifies the need for chemical and radiochemical control procedures. The inspector noted that many of the applicable procedures had not been finalized at the time of inspection. The inspector expressed concern that procedures for the analysis of P-32, Fe-55, Sr-89, Sr-90, and H-3 had not been finalized and tested. These analyses are required by the proposed Technical Specifications and should be finalized prior to operation so that personnel can receive adequate training. Licensee representatives agreed to forward copies of completed procedures to the RII office for review. Copies of completed procedures were provided by the licensee and the final procedures will be reviewed during a subsequent inspection (81-25-02).

6. Capability Test

A spiked charcoal cartridge and particulate filter were provided to the licensee for analysis by gamma-ray spectroscopy to verify the licensee's capability to analyze radioiodine in charcoal cartridges and particulate radioactivity in filters. The acceptance criteria are given in Attachment 1 and the analytical results and comparison in Table 1. The results showed agreement between the licensee and NRC for both samples. The inspector informed licensee representatives that a simulated liquid sample and particulate filter would be supplied to verify their capability to measure H-3, Sr-89, Sr-90, and gamma-ray emitting radionuclides. A licensee representative agreed to perform the analyses and submit the results to NRC:RII. The results will be reviewed during a subsequent inspection (81-25-03).

7. Radioanalytical Instrumentation

a. The inspector toured the counting room and verified that the counting room instrumentation was adequate to perform required radioactive effluent measurements. Instrumentation included: three Ge(Li) detectors interfaced to two computer-based multichannel analyzer systems; two low background gas flow proportional counters; and an automatic liquid scintillation spectrometer. Since the final operating procedures and instrument calibrations have not been completed, the capability to meet all the Technical Specifications for effluent measurements could not be verified. This area will be reviewed during a subsequent inspection. (81-25-04).

b. The inspector reviewed the calibration data for the Ge(Li) system and noted that the efficiency curves for the 100-cc gas geometry determined by counting a gaseous standard were not consistent with the efficiency curves determined with a solid source. A licensee representative stated that the calibration for this geometry will be reviewed and repeated with a gas standard, if necessary. This will be reviewed during a subsequent inspection (81-25-05).

c. The inspector noted that the technique used for calibration of the liquid scintillation spectrometer for measuring tritium in aqueous samples did not utilize an aqueous tritium standard. This method may lead to erroneous results. A licensee representative agreed to review the calibration technique and revise the procedure as necessary. This will be reviewed during a subsequent inspection (81-25-06).

TABLE RESULTS OF CONFIRMATORY MEASUREMENTS AT V. C. SUMMER, SEPTEMBER 1-3, 1981

Sample	Isotope	Concentration, Microcuries Summer	NRC	Summer/ NRC	Resolution	Comparison
Spiked Charcoal Cartridge	Ba-133	5.64 ± .07E-2	5.5 ± .1E-2	1.02	55	Agreement
Spiked Particulate Filter	Co-57	7.1 ± 0.8E-4	6.3 ± .2E-4	1.13	31	Agreement
	Cs-134	1.47 ± .10E-3	1.40 ± .05E-3	1.05	28	Agreement
	Cs-137	4.79 ± .10E-3	4.1 ± 0.1E-3	1.17	44	Agreement
	Co-60	2.4 ± .1E-3	2.13 ± .06E-3	1.13	34	Agreement

Attachment 1

CRITERIA FOR COMPARING ANALYTICAL MEASUREMENTS

This attachment provides criteria for comparing results of capability tests and verification measurements. The criteria are based on an empirical relationship which combines prior experience and the accuracy needs of this program.

In these criteria, the judgment limits are variable in relation to the comparison of the NRC Reference Laboratory's value to its associated uncertainty. As that ratio, referred to in this program as "Resolution", increases, the acceptability of a licensee's measurement should be more selective. Conversely, poorer agreement must be considered acceptable as the resolution decreases.

$$\text{RATIO} = \frac{\text{LICENSEE VALUE}}{\text{NRC REFERENCE VALUE}}$$

Resolution	Agreement	Possible Agreement A	Possible Agreement B
<3	0.4 - 2.5	0.3 - 3.0	No Comparison
4 - 7	0.5 - 2.0	0.4 - 2.5	0.3 - 3.0
8 - 15	0.6 - 1.66	0.5 - 2.0	0.4 - 2.5
16 - 50	0.75 - 1.33	0.6 - 1.66	0.5 - 2.0
51 - 200	0.80 - 1.25	0.75 - 1.33	0.6 - 1.66
>200	0.85 - 1.18	0.80 - 1.25	0.75 - 1.33

"A" criteria are applied to the following analyses:

Gamma Spectrometry where principal gamma energy used for identification is greater than 250 Kev.

Tritium analyses of liquid samples.

"B" criteria are applied to the following analyses:

Gamma Spectrometry where principal gamma energy used for identification is less than 250 Kev.

^{89}Sr and ^{90}Sr Determinations.

Gross Beta where samples are counted on the same date using the same reference nuclide.