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

Report No.: 50-395/85-21

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

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

Facility Name: V. C. Summer

Inspection Conducted: May 1-31, 1985

Inspector: _____ 6/12/85
C. W. Hehl Date Signed

Approved by: _____ 6/12/85
F. S. Cantrell, Section Chief Date Signed
Division of Reactor Projects

SUMMARY

Scope: This routine, unannounced inspection entailed 166 inspector hours onsite in the areas of plant tours; operational safety verifications; monthly surveillance observations; monthly maintenance observations; followup on written reports of non-routine events; licensee action on previous enforcement items; and followup on operating reactor events.

Results: Two violations were identified - failure to implement the requirement to accurately measure and record and apply the necessary correction factor for electrolyte level during a monthly battery inspection; failure to promptly classify and initiate required notifications for an event requiring declaration of Notification of Unusual Event.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

O. Bradham, Director, Nuclear Plant Operations
*K. Woodward, Manager, Operations
B. Williams, Supervisor of Operations
*M. Quinton, Manager, Maintenance
M. Browne, Manager, Technical Support
*B. Croley, Group Manager, Technical and Support Services
*S. Hunt, Assistant Manager, Surveillance Systems
*H. Sefick, Associate Manager, Station Security
*D. Nauman, Director, Nuclear Services
*M. Blue, Engineer, Nuclear Licensing
*M. Irwin, Nuclear Licensing Technician
*J. Connelly, Deputy Director, Operations and Maintenance
*D. Lavigne, Manager, Quality Control
*R. Campbell, Engineer, ISEG
*F. Zander, Manager, Nuclear Technical Education and Training
*G. Putt, Manager, Scheduling and Materials
*C. McKinney, Regulatory Compliance
*R. Fowlkes, Regulatory Compliance
*D. Fleming, Regulatory Compliance

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

Other Organizations

*Attended exit interview

2. Exit Interview (30703)

The inspection scope and findings were summarized on May 31, 1985, with those persons indicated in paragraph 1 above. The inspector described the areas inspected and discussed in detail the inspection findings. Two violations were identified:

Violation 395/85-21-01: Failure to implement the requirements of Electrical Maintenance 115.011 during performance of the monthly battery inspection.

Violation 395/85-21-02: Failure to implement the requirements of the facility Radiation Emergency Plan in a timely manner following the identification of an event requiring the declaration of Notification of Unusual Event.

During this inspection, the licensee did not identify as proprietary any of the materials provided to or reviewed by the inspector.

3. Licensee Action on Previous Enforcement Items (92702)

(Closed) - Violation (VIO) 84-11-02, Failure to Follow Procedures. This violation resulted from personnel errors which caused an apparent loss of operating shift awareness of safety system status. The inspector reviewed licensee documentation regarding implementation of corrective actions delineated in their response to the violation. The inspector was satisfied that the corrective actions had been implemented.

(Closed) - VIO 84-27-01, Failure to Comply with Dress Requirements of RWP. This violation occurred when a worker disregarded the requirements of the RWP by not wearing a surgeon's cap during performance of decontamination activities. The inspector reviewed the licensee's corrective action commitments and determined that this corrective action was adequate and had been properly implemented.

(Closed) - VIO 84-25-02, Failure to Perform 10 CFR 50.59 Review of Drag Test Procedure. In inspector reviewed implementation of the licensee's corrective action commitments. These commitments were found to be acceptably implemented.

(Closed) - VIO 84-25-03, Failure to Perform Calibration of Load Cell. The inspector reviewed implementation of the licensee's corrective action commitments. These commitments were found to be acceptably implemented.

(Open) - VIO 84-25-04, Failure to Have a Qualified Crane Operator During Use of Spent Fuel Bridge Crane. In their response to this violation, dated November 2, 1984, the licensee committed to upgrading and tracking of the crane operator training programs. This corrective action was to be completed by January 31, 1985.

Inspector review of implementation of this commitment determined that upgrading of the crane operator training program had occurred and that this upgraded program was utilized to train the first group of crane operator requiring training after January 31, 1985. This first group of crane operators to train under the upgraded program received their training beginning February 20, 1985. Nuclear Education and Training (NE&T) Group Manual, Section III.B.1.1, Rigging and Crane/Hoist Operator Training, is the procedure governing conduct of this training. Inspector review of this procedure determined that it appeared adequate to control the training addressed. Additionally, it was determined that although implemented on February 20, 1985, it had not been formally reviewed and approved until May 1, 1985. The companion training program manual, Rigger, and Crane and Hoist Operator Qualification Manual, which implements the training program described in the NE&T Section III.B.1.1, likewise was implemented for the February 20, 1985 training, but as of the date of this review, May 28, 1985, had not received formal review and approval.

10 CFR 50, Appendix B Criteria VI, requires that measures be established to control the issuance of documents such as instructions and procedures, including changes thereto, which prescribe activities affecting quality.

ANSI N18.7, 1976, paragraph 5.2.15, states that the administrative controls and quality assurance program shall provide measures to control and coordinate the approval and issuance of documents, including changes thereto, which prescribe all activities affecting quality and that these measures shall assure that documents, including revisions and changes, are reviewed and approved. Paragraph 5.2.15 also states that each procedure shall be reviewed and approved prior to initial use.

The V.C. Summer Operational Quality Assurance Plan, Section 5.0, Document Control, implements the requirements of 10 CFR 50, Appendix B, and ANSI N18.7, 1976, by specifying that organizational procedures be established to control the review, approval and release for issuance and implementation of the documents for which it is responsible.

The Nuclear Education and Training Group Manual, Section I.B.16, Training Manual Development, implements the above requirements by delineating a controlled process for preparation, review and comment, approval, control and distribution of changes to that manual. As described in this section, implementation of manual changes follows review and approval.

Therefore the implementation of the aforementioned Section III.b.1.1 of the Nuclear Education and Training Manual and its associated Qualification Manual prior to review and approval was not in compliance with the above requirements. Subsequent discussions with the licensee has determined that these apparent noncompliances were previously identified by onsite QA during a surveillance verification of this corrective action commitment for violation 84-25-04. The inspector reviewed documentation of this QA audit, findings and associated correspondence, QA Type II Surveillance Audit II-16-84-C. The inspector's review determined that the licensee's QA organization had previously identified these noncompliances and are presently working to obtain a satisfactory resolution. Therefore, as is the NRC practice, no violation will be issued for these noncompliances.

Inspector review of the licensee's commitment with regard to tracking of crane operator qualifications determined that a computer based tracking system was in place to accomplish this function, but due to some errors introduced during the input of data, this tracking system did not at the time of this inspection accurately reflect individual crane operator qualification. As a result of this finding, the inspector made a spot check of personnel presently performing crane operations against the hard copy record of their qualification. No deficiencies were identified. Discussions with training management determined that the apparent inaccuracy of the computer tracking system had been previously identified by the Training Department and corrective action was in progress. The licensee committed resolving these tracking system deficiencies and verifying its accuracy by May 31, 1985.

This item, VIO 84-25-04, will remain open pending followup on the tracking system corrective action identified above, and inspector review of the properly reviewed and approved Rigger, Crane and Hoist Operator Qualification Manual.

4. Operational Safety Verification (71707, 71710)

The inspector observed control room operations, reviewed applicable logs and conducted discussions with control room operators during the report period. The inspector verified the operability of selected emergency systems, reviewed removal and restoration logs, and tagout records, and verified proper return to service of affected components. Tours of the control, auxiliary, intermediate, diesel generation, service water and turbine buildings were conducted to observe plant equipment conditions including potential fire hazards, fluid leaks, and excessive vibrations, and to verify that maintenance requests had been initiated for equipment in need of maintenance. The inspector, by observation and direct interview, verified that the physical security plan was being implemented in accordance with the Station Security plan. No violations or deviations were identified in this area.

5. Surveillance Observation (61726)

During the inspection period, the inspector verified by observation/review that selected surveillances of safety-related systems or components was conducted in accordance with adequate procedures, test instrumentation was calibrated, limiting conditions for operation were met, removal and restoration of the affected components were accomplished, test results met requirements and were reviewed by personnel other than the individual directing the test, and that any test deficiencies identified during the testing were properly reviewed and resolved by appropriate management personnel. No violations or deviations were identified in this area.

6. Maintenance Observation (62703)

Station maintenance activities of selected safety-related systems and components were observed/reviewed to ascertain that they were conducted in accordance with regulatory requirements. The following items were considered in this review: the limiting conditions for operations were met; activities were accomplished using approved procedures; functional testing and/or calibrations were performed prior to returning components or systems to service; quality control record were maintained; activities were accomplished by qualified personnel; parts and materials used were properly certified; and radiological controls were implemented as required. Maintenance Work Requests were reviewed to determine status of outstanding jobs to assure that priority was assigned to safety-related equipment which might affect system performance.

On May 3, 1985, the inspector observed Electrical Maintenance personnel performing a monthly preventative maintenance inspection on station safety related battery XBA-1A and a daily preventative maintenance on station safety related battery XBA-1B.

The governing procedure for performance of these preventative maintenance inspections is Electrical Maintenance Procedure (EMP) 115.011, Battery Inspection. The procedure in use on May 3, 1985 was EMP 115.011, Revision 4, issued March 26, 1985. EMP 115.011, step 7.2, requires, as part of the monthly inspection, that the electrolyte level below the full mark be measured and recorded for each cell. EMP 115.011, step 7.2.3, requires that the level correction factor be determined for each cell and the specific gravity measurement be adjusted to obtain the corrected specific gravity. Attachment 10.1 to EMP 115.011 specifies that a correction of 0.00375 be subtracted from the specific gravity measurement for every one-eighth inch of level below full.

Inspector review of the data taken during the May 3, 1985 performance of EMP 115.011 determined that the electrolyte level of each cell had not been accurately measured and recorded in that the data sheet failed to identify that the cells listed below had electrolyte levels below full.

Cell	Electrolyte Level (inches below full)
3	-1/8
4	-1/8
10	-3/8
31	-1/4
47	-3/16
50	-1/4

The corrected specific gravity readings recorded on the EMP 115.011 data sheet did not correct for these deviations from full.

Technical Specification 6.8.1.a. requires that the applicable procedures recommended in Appendix "A" of Regulatory Guide 1.33, Revision 2, February 1978 be established, implemented and maintained. Appendix "A" of Regulatory Guide 1.33 recommends procedures for performing maintenance. EMP 115.011 implements this requirement for the periodic preventative maintenance inspection of the station batteries. The above noted failure to accurately measure and record the individual cell levels and apply the required level correction factors to obtain the corrected specific gravity for the above cells is a failure to adequately implement EMP 115.011. This failure to adequately implement EMP 115.011 is a violation (85-21-01).

7. On Site Followup of Written Reports of Non-routine Events (92700)

The inspector reviewed the following Licensee Event Reports (LERs) to ascertain whether the Licensee's review, corrective action, and report of the identified event and associated conditions were adequate and in conformance with regulatory requirements, Technical Specifications, license conditions, and licensee procedures and controls.

(Closed) LER 84-022, Failure to Maintain Required Boration Flow Path.

(Closed) LER 84-021, Degraded Kaowool Fire Wrap.

(Closed) LER 83-144, Erratic Behavior of Power Range Nuclear Instrument.

(Closed) LER 84-050, Actuation of RPS With Plant in Mode 3 Due to Personnel Error.

(Closed) LER 85-005, Reactor Trip Resulting From MSIV Closure Caused by Faulty Test Switch.

(Closed) LER 85-003, Reactor Trip on High Flux Positive Rate. This LER reported the February 28, 1985 startup during which a reactor trip occurred on high flux positive rate trip. The inspector reviewed and verified implementation of the corrective action identified in the LER. The results of this review were satisfactory.

(Closed) LER 83-136, Isolation of RHR System While in Mode 5. This event resulted in a licensee commitment to generate APN power distribution lists to enhance operator anticipation of plant instrumentation responses during transients where power is lost to or removed from vital instrument power supply panels. Inspector review determined that the committed to APN feeder lists had been generated.

(Closed) LER 85-001, Rod Control System Failure.

8. Onsite Followup of Operating Events

a. At 5:20 a.m. on May 9, 1985, in accordance with the facility Radiation Emergency Plan, a Notification of Unusual Event (N.U.E.) was declared. The condition resulting in the N.U.E. was the simultaneous inoperability of both emergency diesel generators (DG) for a period of greater than one hour. The Unit was in Mode 3 (Hot Standby) at the time of this event. At 1:30 p.m. on May 9, 1985, the necessary repairs and testing to return DG "A" to operability were completed and the N.U.E. was terminated. Preceding this event, the plant had been shutdown for a preplanned maintenance outage which began on April 29, 1985. On May 9, 1985, at the time the DG's were declared inoperable, the unit was in a heatup to rated temperature and pressure in anticipation of a reactor startup and return to power.

At 7:30 p.m. on May 8, 1985, during routine surveillance testing of DG "A", in accordance with Surveillance Test Procedure (STP) 125.002, the automatic voltage regulator failed. During surveillance testing, the DG started satisfactorily and achieved the desired voltage and frequency within the required 10 seconds. During the subsequent attempt to synchronize with the off site grid, the control room operator determined that remote automatic voltage control was not functioning properly.

Local control of the automatic voltage regulator was attempted, but was likewise unsuccessful. DG "A" was shutdown and subsequently declared inoperable.

The automatic voltage regulator (AVR) circuitry is locked into a preset position during operation of the DG in response to an Engineered Safeguard Feature (ESF) signal. Following each shutdown of the DG, the AVR returns to this preset position such that on a subsequent restart of the DG, it will achieve the require voltage to satisfactorily power its associated ESF equipment. The manual voltage regulator was unaffected by the above failure of the automatic circuitry.

With one DG inoperable, Technical Specification (TS) 3.8.11 requires that the other DG be demonstrated operable within one hour. At 7:50 p.m. on May 8, 1985, DG "B" was started and proper voltage and frequency were obtained within the required 10 seconds. As usual for the starting of large pieces of equipment at V.C. Summer, a local operator was positioned in the DG room to record locally available data and to monitor equipment performance. Discussions with licensee personnel determined that just prior to securing the DG following the successful operability start, the operator reported hearing a loud bang. Upon investigation, the local operator found water on the side of the DG in the vicinity of cylinder no. 1. The DG was immediately shutdown and declared inoperable. Initial licensee investigation into the DG "B" failure found several ounces of water in the no. 1 cylinder. No water was found in the remaining other eleven cylinders.

Following unsuccessful initial attempts to return either DG to operable status, at 5:20 a.m. on May 9, 1985, the licensee declared the N.U.E. The NRC Emergency Operations Center was notified of the N.U.E. at 5:45 am on May 9, 1985.

Subsequent troubleshooting of the DG "A" determined that the AVR potentiometer had mechanically "frozen" in position near one end of its travel causing diodes controlling the potentiometer drive motor and the drive motor to fail. A replacement AVR was obtained from the licensee warehouse and installed, but this AVR was found to have a defective drive motor. With no other AVR's available on-site or readily obtainable from the vendor, the AVR from DG "B" was removed and installed in DG "A". Following successful post-maintenance test and the performance of a successful STP operability test, at 1:30 p.m. on

May 9, 1985, DG "A" was declared operable and the N.U.E. was terminated.

In accordance with vendor recommendations, the no. 1 cylinder liner, cooling jacket, cylinder head and injector were removed from DG "B" and subjected to hydrostatic testing to identify the source of the water in leakage. Hydrostatic testing of these components determined that the fuel injector cooling jacket had developed a cooling water leak near the tip of the injector which projects into the cylinder through the head. This injector had been installed approximately a week prior to its failure during a scheduled 18 month inspection of DG "B", which included replacement of all injectors. Following this 18 month inspection, DG "B" had successfully completed the full load 24 hour run described in TS 4.8.1.1.2.d.7. The failed injector was "new" at the time of installation. At the time of this event, pre-installation hydrostatic testing of injectors was not a vendor recommended action nor an action required by the licensee's procedures. The licensee is adding to their procedures a requirement to hydrostatically test each injector prior installation.

Prior to reassembly of DG "B", the no. 1 cylinder liner and head were subjected to liquid penetrant examination; the cylinder cooling water jacket, head cooling jacket and replacement fuel injector were hydrostatically tested; the no. 1 piston examined and piston rings replaced. No damage to these components was identified.

Following reassembly of DG "B", a vendor recommended "run-in" of the diesel was performed and a successful STP operability test was performed At 3:30 p.m. on May 11, 1985, DG "B" was declared operable.

During this event, the inspector monitored and observed the licensee's troubleshooting and maintenance activities. These activities were conducted in accordance with properly reviewed and approved procedure and performed by qualified individuals. No deficiencies were observed during these activities. As a result of this occurrence, a special inspection was conducted by a team of Region II inspectors. The scope and results of this inspection are presented in IE Report 395/85-24.

The facility Radiation Emergency Plan, (REP), Table 4-1, identifies Emergency Action Levels (EALs) which are used to describe each of the four emergency classes. These EALs are composed of plant parameters (such as system status) that can be used to give relatively quick indication to the operating staff of the severity of a situation. The purpose of the EALs is to provide the earliest possible notification of actual or potential accident situations. REP, Table 4-1, Item 8, identifies "Both Diesel Generators In Operable for ¶ 1 hr" as a detection method for an EAL associated with the N.U.E.

Station Administrative Procedure (SAP) 200, Conduct of Operations, requires that the Shift Supervisors implement established procedures for normal operations and emergency conditions. The REP further clarifies these responsibilities in that the Shift Supervisor, as the Interim Emergency Director, is responsible for classifying the emergency and notifying offsite organizations and agencies.

As identified above, by approximately 7:50 p.m. on May 8, 1985, both emergency diesel generators had been declared inoperable, therefore, at approximately 8:50 p.m. on May 8, 1985, the EAL identified in the REP for declaration of N.U.E. existed. This declaration of N.U.E. did not take place and notifications to offsite organizations and agencies did not take place until nearly 9 hours later. This is clearly a failure to adequately implement the intent of the REP to, in a timely manner, classify the occurrence and initiate required notifications.

TS 6.8.1 requires that Emergency Plan Procedures be established, implemented and maintained. The facility REP was established to meet this requirement. The above noted failure to adequately implement the requirements of the REP is a violation (85-21-02).

b. At 4:08 p.m. on May 11, 1985, following restoration of the DG as described above, a reactor startup was initiated in preparation for returning the unit to power operations. As required by General Operating Procedure (GOP)-3, at 5:00 p.m. on May 11, 1985, the reactor was shutdown by emergency boration and inserting control rods following criticality at a control rod height (control rod bank C at 69 steps) below the required Rod Insertion limit (control rod bank C at 118 steps) for the existing plant conditions. The estimated critical rod position calculation performed for this startup had predicted criticality at a rod height of 65 steps on control rod bank D.

Initial review of this startup by the licensee and Westinghouse did not resolve the apparent discrepancy between the actual and predicted critical rod height. As result of this initial review, Westinghouse recommended that a subsequent restart of the unit proceed utilizing the known critical condition data from the aborted startup and compensating with boron to achieve the desired rod height for criticality. Following Plant Safety Review Committee concurrence with this Westinghouse recommendation, a successful startup was performed and criticality achieved at 3:55 a.m. on May 12, 1985.

On May 13, 1985, a special NRC inspection of this event was initiated, the results of which are presented in IE Report 395/85-27.

9. In-Office Review

The following items were evaluated by the Reactor Safety, Radiation Safety and Safeguards, and Reactor Projects Regional staff. Based on this review and the results of the latest Resident and Region based inspection activities in the affected functional areas, the following items were determined to require no additional specific followup and are closed.

a. Inspector Followup Items (IFI):

(82-23-01) Complete Discrepancy Items Noted in TE-1, Rev. 2

(82-04-09) Revise Liquid Scintillation Procedure for H-3 Counting

b. Part 21 Report:

(P21 82-01) Electrical Control Panels

c. Unresolved Items (URI):

(82-13-01) Installation of Locking Devices