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

Report No.: 50-395/90-31

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

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

Facility Name: V. C. Summer Nuclear Station

Inspection Conducted: November 1 - December 15, 1990

Inspectors: _____ 12/21/90
R. C. Haag, Senior Resident Inspector Date Signed

_____ 12/21/90
J. E. Tedrow, Senior Resident Inspector Date Signed
(Harris Site)

_____ 12/21/90
P. A. Balmain, Resident Inspector Date Signed
(Vogtle Site)

Approved by: _____ 12/21/90
for Floyd S. Cantrell, Section Chief Date Signed
Division of Reactor Projects

SUMMARY

Scope: This routine inspection was conducted by the resident inspectors onsite in the areas of monthly surveillance observations, monthly maintenance observation, operational safety verification, onsite follow-up of written reports of nonroutine events at power reactor facilities, onsite follow-up of events at operating power reactors, plant safety review committee activities, and licensee action on previous inspection items. Selected tours were conducted on backshift or weekends.

Results: The plant operated at or near 100 percent power throughout the inspection period with the exception of planned power reduction on November 2 and 3, 1990, to 32 percent for maintenance on several main generator subsystems. Reactor power was also reduced to 90 percent on November 17, 1990, due to an inadvertent injection of RWST borated water through the normal charging system (paragraph 6). Additional clarification is provided on the staff's views concerning the use of a non-safety grade battery charger to provide occasional equalizing battery charges (paragraph 8).

REPORT DETAILS

1. Persons Contacted

Licensee Employees

W. Baehr, Manager, Chemistry and Health Physics
*C. Bowman, Manager, Maintenance Services
M. Browne, Manager, Systems Engineering & Performance
*B. Christinsen, Manager, Technical Services
*H. Donnelly, Senior Engineer, Nuclear Licensing
*B. Estes, Associate Manager, Design Engineering
*R. Fowlkes, Associate Manager, Shift Engineering
S. Furstenberg, Associate Manager, Operations
*G. Gibson, Manager, Nuclear Protection Services
*W. Higgins, Supervisor, Regulatory Compliance
A. Koon, Manager, Nuclear Licensing
*D. Moore, General Manager, Station Support
*C. Price, Manager, Technical Oversite
*J. Proper, Associate Manager, Quality Services
*M. Quinton, General Manager, Engineering Services
*J. Skolds, Vice President, Nuclear Operations
*G. Soult, General Manager, Nuclear Plant Operations
G. Taylor, Manager, Operations
*M. Williams, General Manager, Administrative & Support Services

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

*Attended exit interview

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

2. Monthly Surveillance Observation (61726)

a. The inspectors observed surveillance activities of safety related systems and components listed below to ascertain that these activities were conducted in accordance with license requirements. The inspectors verified that required administrative approvals were obtained prior to initiating the test, testing was accomplished by qualified personnel in accordance with an approved test procedure, test instrumentation was calibrated, and limiting conditions for operation were met. Upon completion of the test, the inspectors verified that test results conformed with technical specifications and procedure requirements, test results were reviewed by personnel other than the individual directing the test, any deficiencies identified during the testing were properly reviewed and resolved by appropriate management personnel, and the systems were properly returned to

service. Specifically, the inspectors witnessed/reviewed portions of the following test activities:

* STP 125.001, Electric Power Systems Weekly Test

* STP 125.002, Diesel Generator Operability Test

* STP 303.002, Reactor Building Pressure Instrument Operational Test

* STP 395.055, RWST Level Instrument Operational Test

b. On November 3, 1990, while performing an air leak test on the outer door of the RB personnel hatch, the licensee was unable to maintain the test pressure at the door seals. The door had been closed approximately four hours earlier at 6:30 A.M. when the last RB personnel exit was made. Investigation after the failed test revealed that the door closing mechanism had not fully engaged and resulted in the door not fully mating with the seals. Later the leak test was performed satisfactorily after the door and seals were inspected and the door was verified to be properly closed. The licensee's assessment of this event concluded that the handwheel assembly was not properly operated to fully close the door, nor was the verification of door being closed adequately performed. The licensee's proposed corrective action includes additional training of personnel on the proper operation of the door and the installation of a plaque which describes the basic steps required for door operation. This action appears adequate to ensure the RB personnel hatch doors are properly closing during future RB entries.

No violations or deviations were identified.

3. Monthly Maintenance Observation (62703)

Station maintenance activities for the safety-related systems and components listed below were observed to ascertain that they were conducted in accordance with approved procedures, regulatory guides, and industry codes or standards and in conformance with TS.

The following items were considered during this review: that limiting conditions for operation were met while components or systems were removed from service, approvals were obtained prior to initiating the work, activities were accomplished using approved procedures and were inspected as applicable, functional testing and/or calibrations were performed prior to returning components or systems to service, quality control records were maintained, activities were accomplished by qualified personnel, parts and materials used were properly certified, and radiological and fire prevention controls were implemented. Work requests were reviewed to determine the status of outstanding jobs and to ensure that priority was

assigned to safety-related equipment maintenance that may affect system performance. The following maintenance activities were observed:

* Repair of flange leakage associated with the "C" charging pump in accordance with mechanical maintenance procedure, MMP 300.001, Bolted Connection Removal, Installation.

* Investigation and repair of the ESF load sequencer.

* Repair of bus bars for 480 volt MCC XMC1EB1X (NCN 4057). After removal of a breaker for maintenance, electricians were placing the breaker output leads back in the vertical wire way of the MCC when one of the wires came into contact with a bus bar. The aluminum sheathing on the wire caused a short of the bus bar and resulted in burning and arc damage to three phase bars at the bottom of the MCC. The aluminum sheathing is for cable separation purposes and is only installed on leads for non class 1E breakers that are located in a class 1E MCC. Repair of MCC included removing the damaged portions of the vertical bus bars and testing each breaker in the MCC. Additional interim corrective action involved a discussion of this event with other plant electricians and practices that are needed to prevent recurrence. The licensee's root cause evaluation of this event has not been completed. The inspector will review the evaluation when completed and any additional corrective action that is identified by the root cause evaluation.

No violations or deviations were identified.

4. Operational Safety Verification (71707)

The inspectors conducted daily inspections in the following areas: control room staffing, access, and operator behavior; operator adherence to approved procedures, TS, and limiting conditions for operations; examination of panels containing instrumentation and other reactor protection system elements to determine that required channels are operable; and review of control room operator logs, operating orders, plant deviation reports, tagout logs, jumper logs, and tags on components to verify compliance with approved procedures.

The inspectors conducted weekly inspections in the following areas: verification of operability of selected ESF systems by valve alignment, breaker positions, condition of equipment or component(s), and operability of instrumentation and support items essential to system actuation or performance.

Plant tours included observation of general plant/equipment conditions, fire protection and preventative measures, control of activities in progress, radiation protection controls, physical security controls, plant housekeeping conditions/cleanliness, and missile hazards.

The inspectors conducted biweekly inspections in the following areas: verification review and walkdown of safety related tagout(s) in effect; review of sampling program (e.g., primary and secondary coolant samples, boric acid tank samples, plant liquid and gaseous samples); observation of control room shift turnover; review of implementation of the plant problem identification system; and verification of selected portions of containment isolation lineup(s).

Selected tours were conducted on backshifts or weekends. Inspections included areas in the cable vaults, vital battery rooms, safeguards areas, emergency switchgear rooms, diesel generator rooms, control room, auxiliary building, containment, cable penetration areas, service water intake structure, and other general plant areas. Reactor coolant system leak rates were reviewed to ensure that detected or suspected leakage from the system was recorded, investigated, and evaluated; and that appropriate actions were taken, if required. On a regular basis, RWP's were reviewed and specific work activities were monitored to assure they were being conducted per the RWP's. Selected radiation protection instruments were periodically checked, and equipment operability and calibration frequency were verified.

In the course of monthly activities, the inspectors included a review of the licensee's physical security program. The performance of various shifts of the security force was observed in the conduct of daily activities to include: protected and vital areas access controls; searching of personnel, packages and vehicles; badge issuance and retrieval; escorting of visitors; and patrols and compensatory posts.

No violations or deviations were identified.

5. Onsite Follow-up of Written Reports of Nonroutine Events at Power Reactor Facilities (92700)

The inspectors reviewed the following LER's and SPR's to ascertain whether the licensee's review, corrective action and report of the identified event or deficiency was in conformance with regulatory requirements, TS, license conditions, and licensee procedures and controls.

a. (Closed) LER 90-04: This LER reported an inoperable reactor building level transmitter which resulted from personnel error while terminating the transmitter's electrical leads. This matter was previously discussed in NRC Inspection Report 50-395/90-12 and was the subject of a violation (395/90-12-02). For record purposes this LER will be closed and further action tracked by the violation.

b. (Closed) LER 90-06: This LER reported an inadvertent start of the "B" emergency diesel generator. This event was previously discussed in NRC Inspection Report 50-395/90-12 and was the subject of a violation (395/90-12-02). For record purposes this LER will be closed and further action tracked by the violation.

c. (Closed) LER 90-08: This LER reported an inadvertent start of the "A" emergency diesel generator. This event was previously discussed in NRC Inspection Report 50-395/90-15 and was the subject of a violation (395/90-15-01). For record purposes this LER will be closed and further action tracked by the violation.

d. (Closed) Special Report 90-001, Failure of the main plant vent, high range, radiation monitor (RM-A13). An alternate method of monitoring was initiated within the 72 hour requirement after RM-A13 was declared inoperable. A failed read out module was replaced and the monitor was returned to service.

6. Onsite Follow-up of Events at Operating Power Reactors (93702)

On November 17, 1990, inverter XIT5901 failed due to a grounded transformer which resulted in the loss of APN5901, 120 volt vital bus. The loss of APN5901 resulted in a failed low pressurizer level indication to the pressurizer level control system which caused a letdown isolation and an increase in charging flow. In addition the loss of APN5901 disabled the VCT auto makeup control feature. The combination of these three occurrences (letdown isolation, increased charging flow and disabling of the VCT auto makeup feature) caused actual VCT level to decrease to 5 percent (low-low level) which initiated an automatic transfer of the charging pump suction from the VCT to the RWST. Borated water from the RWST was injected into the RCS which caused a power reduction. Operators restored normal charging and letdown and stabilized the reactor at approximately 90 percent power. Power to APN5901 was subsequently restored through inverter XIT5907 until XIT5901 was repaired on November 19, 1990. This electrical alignment met the onsite power distribution requirements of TS 3.8.3.1. Although this transient was not initiated by an actuation of logic associated with an engineered safeguards feature as described in the Final Safety Analysis Report; it does represent an abnormal alignment of ESF components which resulted in delivering borated water from the RWST to the reactor core. The licensee identified the failure mechanism as an internal short in the inverter ferroresonant transformer. A review of previous inverter maintenance history did not indicate that this type of failure is expected for other inverters. In addition, the licensee plans to replace the six safety related inverters during the next refueling outage. The licensee has submitted a voluntary LER, 90-010, which describes this event.

No violations or deviations were identified.

7. Review of Plant Safety Review Committee Activities (40500)

The inspectors attended selected PSRC meetings to observe committee activities and verify TS requirements with respect to committee composition, duties, and responsibilities. Minutes from this meeting were also reviewed to verify accurate documentation.

No violations or deviations were identified.

8. Use of Non-Safety Grade Battery Charger (71707)

As discussed in NRC Inspection Report 50-395/89-22, the licensee installed a plant modification to provide occasional equalizing battery charges to individual cells utilizing a non-safety grade battery charger. Additional conversations between the NRC and licensee representatives produced clarifications on the use of this charger. In an internal NRC memorandum dated November 23, 1990, NRR has modified the recommended limits on the use of this charger to allow the licensee to complete a sufficient charge. A maximum charging time of up to 7 days involving a group of up to 15 battery cells is considered to be acceptable. An individual equalizing charge maybe applied only once per year to any cell.

No violations or deviations were identified.

9. Action on Previous Inspection Findings (92701 & 92702)

a. (Closed) Inspector Follow-up Item 395/90-22-01, Licensee's actions to improve the IA dewpoint temperatures in the SW building. The inspector had observed a three month trend of high dewpoint temperatures while reviewing dewpoint measurement data of the service water building portion of the IA system. The licensee completed cleaning and repairs to the SW building IA dryer (XDR-009), which resulted in reducing the IA dewpoint temperature well below the 18 degree Fahrenheit ambient temperature limit established by the licensee in response to Generic Letter 88-14. The system engineer will continue to monitor dewpoint temperatures via GTP550.

b. (Closed) Unresolved Item 50-395/88-01-06, Re-evaluation of Instrument Loop Accuracy Concerning Negative Margin. During the phase I equipment inspection this item was identified to track the licensee's efforts in addressing deficiencies in instrument loop accuracy analysis. During the phase II equipment inspection, the inspectors found that the re-evaluation of instrument loop accuracies was completed. The licensee at that time committed to replacing four transmitters with non-conforming negative margins after refuel 5. (LT-1969 & 1970, RHR Sump Level and LT-1975 & 1976, RB Level Detector). The licensee replaced these transmitters with common transmitters, which provide monitoring of the RHR sump and RB level. This modification was installed under MRF21479, which was completed on October 23, 1990.

c. (Closed) Violation 395/90-15-01, Failure to follow procedures and inadequate QC verification. The inspector verified completion of the corrective actions as stated in the licensee's response letter dated July 11, 1990. The licensee has correctly rewired the relay and counseled personnel on proper wire termination verification methods.

10. Other Areas

A maintenance team inspection was conducted onsite during the weeks of November 26 - 30, 1990, and December 10 - 15, 1990. The team consisted of five regional inspectors and two NRR inspectors.

A regional inspection was also performed in the safeguards area during this inspection period.

On November 7, 1990, the inspector observed the licensee's annual emergency drill. The drill involved limited participation for county, state and federal organizations. In addition to the regional evaluation team, Floyd Cantrell, Section Chief, Division of Reactor Projects and George Wunder, Project Manager, NRR also observed the drill.

11. Exit Interview (30703)

The inspection scope and findings were summarized on December 18, 1990, with those persons indicated in paragraph 1. The inspectors described the areas inspected and discussed the inspection findings. No dissenting comments were received from the licensee. The licensee did not identify as proprietary any of the materials provided to or reviewed by the inspectors during the inspection.

12. Acronyms and Initialisms

ESF	Engineered Safety Feature
GTP	General Test Procedure
IA	Instrument Air
LER	Licensee Event Reports
LT	Level Transmitter
MCC	Motor Control Center
MMP	Mechanical Maintenance Procedure
MRF	Modification Request Form
MWR	Maintenance Work Request
NCN	Nonconformance Notice
NRC	Nuclear Regulatory Commission
NRR	Nuclear Reactor Regulation
PMTS	Preventive Maintenance Task Sheet
PSRC	Plant Safety Review Committee
QC	Quality Control
RB	Reactor Building
RCS	Reactor Coolant System
RHR	Residual Heat Removal
RWP	Radiation Work Permits
RWST	Refueling Water Storage Tank
SPR	Special Reports
STP	Surveillance Test Procedures
SW	Service Water
TS	Technical Specifications
VCT	Volume Control Tank