



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

Report No.: 50-395/89-06

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

Docket No.: 50-395

License No. : NPF-12

Facility Name: V. C. Summer

Inspection Conducted: March 1 - 31, 1989

Inspectors: Manthel for 4/12/89
 Richard L. Prevatte Date Signed

Manthel for 4/12/89
 Perry C. Hopkins Date Signed

Approved by: Manthel 4/12/89
 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, engineered safety features system walkdown, onsite followup of events and subsequent written reports, action on previous inspection findings, and other areas. Certain tours were conducted on backshifts or weekends. Backshift or weekend tours were conducted on March 7, 9, 10, 12, 30, and 31, 1989.

Results: The plant was shutdown from March 10 through March 29, 1989 due to a resin intrusion into the secondary system from the SG blowdown system that occurred on February 14, 1989. While the unit was down an inspection of the main condenser revealed that 45 tubes had been damaged due to metal insulation becoming detached from No. 5/6 feedwater heaters inside the condenser. The licensee's and vendor's efforts in cleaning the resin out of the main condenser, hotwell, deaerating tank, the SG's and feedwater and condensate piping was well coordinated and all areas exhibited a team approach in completing the work activities during this unplanned outage. Two inadvertent ESF actuations occurred during the month, the first which can be attributed to a lack of attention to detail (paragraph 5d). The second event (paragraph 5f) also appeared to be a lack of attention to detail and a lack of familiarity with electrical drawings. Some

minor procedural inadequacies were identified during the ESF System walkdown, (paragraph 6). These items were corrected prior to the end of the reporting period. A problem concerning the staffing, development, review and maintenance of operations procedures (paragraph 5f) which requires additional management attention was identified.

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

REPORT DETAILS

1 Persons Contacted

Licensee Employees

W. Baehr, Manager, Chemistry and Health Physics
*O. Bradham, Vice President, Nuclear Operations
C. Bowman, Manager, Scheduling and Modifications
*W. Higgins, Supervisor, Regulatory Compliance
S. Hunt, Manager, Quality Systems
A. Koon, Manager, Nuclear Licensing
G. Moffatt, Manager, Maintenance Services
*D. Moore, General Manager, Engineering Services
*K. Nettles, General Manager, Nuclear Safety
C. Price, Manager, Technical Oversight
M. Quinton, General Manager, Station Support
J. Shepp, Associate Manager, Operations
*J. Skolds, General Manager, Nuclear Plant Operations
*G. Sault, General Manager, Operations and Maintenance
G. Taylor, Manager, Operations
D. Warner, Manager, Core Engineering and Nuclear Computer Services
M. Williams, General Manager, Nuclear Services
K. Woodward, Manager, Nuclear Operations Education and Training

NRC Resident Inspectors

P. Hopkins, Resident Inspector
*R. Prevatte, Senior Resident Inspector

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. Plant Status

The unit began the the month at approximately 47 percent power due to chemistry problems associated with resin intrusion into the secondary system. The unit was placed in cold shutdown on March 10, 1989 for secondary system cleanup. The unit was restarted on March 29, 1989, power was escalated to 24 percent power on March 30, 1989. The unit experienced a turbine trip at 6:19 p.m. on March 30, 1989. After repair to level switches in the MSR, which had caused the trip, the unit was returned to 30 percent power on March 31, 1989.

3. Monthly Surveillance Observation (61726)

The inspectors observed surveillance activities of safety related systems and components to ascertain that these activities were conducted in accordance with license requirements. The inspectors observed portions of 27 selected surveillance tests including all aspects of the Reactor Trip Breaker Shunt and Undervoltage Trip Verification on Reactor Trip Breakers RT1, RT2, and RT4, STP 506.009. The inspectors verified that required administrative approvals were obtained prior to initiating the test, testing was accomplished by qualified personnel, required test instrumentation was properly calibrated, data met TS requirements, test discrepancies were rectified, and the systems were properly returned to service.

No violations or deviations were identified.

4. Monthly Maintenance Observation (62703)

The inspectors observed maintenance activities of safety related systems and components to ascertain that these activities were conducted in accordance with approved procedures, TS and appropriate industry codes and standards. The inspectors also determined that the procedures used were adequate to control the activity, and that these activities were accomplished by qualified personnel. The inspectors independently verified that equipment was properly tested before being returned to service. Additionally, the inspectors reviewed several outstanding job orders to determine that the licensee was giving priority to safety related maintenance and not developing a backlog which might affect a given system's performance. The following specific maintenance activities were observed:

MWR 89I0070	Repair power range NI-42
MWR 89M0049	Repair feedwater pump inboard bearing leak
MWR 890043	Replace pipe in SWS
MWR 8800181	Repair service water piping
PMTS P0105573	Repair and test limit switch for equipment room relief damper
PMTS P013592	Calibrate control building controlled access area DP switch
PMTS P0116052	Repair DG fuel oil storage tank "B" level indicator
MWR 8800829	Repair waste gas compressor
PTP 176001	Perform secondary system flushing
MWR 89D0052	Open and clean main condenser hotwell
MWR 89D0050	Open and clean deaerating storage tank
MWR 89X003	Sludge, lance and wash SG "A"
MWR 89X004	Sludge, lance and wash SG "B"
MWR 89X005	Sludge, lance and wash SG "C"
MWR 8900502	Repair transmitter on RCP "A"
MWR 8610270	Repair and reinstall RM recorder
MWR 8900531	Repair discriminator card for nuclear instrumentation

The operations and maintenance activities during the unscheduled outage exemplified good coordination and team work from all departments of nuclear operations. Each group appeared to be knowledgeable and concerned about the requirements of other work centers and areas. Work was planned and accomplished within prescribed time limits much better than in past outages.

No violations or deviations were identified.

5. Operational Safety Verification (71707)

- a. The inspectors toured the control room, reviewed plant logs, records and held discussions with plant staff personnel to verify that the plant was being operated safely and in conformance with applicable requirements. Specific items inspected in the control room included: adequacy of staffing and attentiveness of control room personnel, TS and procedural adherence, operability of equipment and indicated control room status, control room logs, tagout books, operating orders, jumper/bypass controls, computer printouts and annunciators. Tours of other plant areas were conducted to verify equipment operability, control of ignition sources and combustible materials, the condition of fire detection and extinguishing equipment, the control of maintenance and surveillance activities in progress, the implementation of radiation protective controls and the physical security plan. Tours were conducted during normal and random off-hour periods.
- b. The resident inspector's report for the month of February, 1989 (89-03) discussed a resin intrusion into the condensate/feedwater system and the SG's that occurred on February 14, 1989. After discussing this event with EPRI, Westinghouse, and other utilities the plant was placed in cold shutdown on March 10, 1989.

Physical inspections revealed beaded resin in the condenser hotwell, the deaerating tank, feedwater and condensate piping and the SG's. The deaerating tank and main condenser hotwell was mechanically cleaned. The condensate and feedwater piping was flushed three times to remove entrained resin. The SG's were washed and sludge lanced to remove sludge and resins.

A meeting was held in NRC headquarters on March 22, 1989 to discuss this event and the actions being taken by the licensee to prevent or reduce the potential tube degradation that may have occurred from this event. As a result of this meeting the licensee agreed to maintain close liaison with the NRC and keep them apprised of any chemistry deviations that may occur during plant restart. They additionally agreed to evaluate the operating procedures for SG tube

rupture and to inform the NRC of corrective actions taken to prevent a recurrence of this event.

The unit was restarted on March 29, 1989 with the intent of holding the unit at 30 percent power to allow sulphate hide out return and allow boron treatment of the secondary system. This treatment is intended to arrest the effect of elevated sulphates that were present in the SG's from the resin. A turbine trip from 24 percent power was experienced on March 30, 1989. The cause was determined to be faulty level switches in the moisture separation reheater. The switches were recalibrated and the unit was returned to 30 percent power on March 31, 1989.

- c. While the unit was shutdown during the above event, an inspection of the main condenser was conducted. This inspection revealed that sections of heavy gauge sheet metal insulation, which surrounds No. 5 and 6 feedwater heaters, had become detached and caused impact damage to some condenser cooling water tubes. Physical inspections and eddy current testing resulted in the plugging of 45 condenser tubes. This is the second occurrence of damage from this insulation in the past two years. The licensee is conducting additional leak testing during unit startup to confirm that all leaking tubes have been repaired.
- d. On March 2, 1989 an instrument and control technician performing maintenance on "C" component cooling water pump discharge pressure transmitter (IPT 07042) lifted the negative power lead. This resulted in the instrument failing low and caused the standby component cooling water pump to start. This is an ESF actuation and was reported under 10 CFR 50.72 with a followup LER to be provided within 30 days. The transmitter was immediately restored and verified to be operable. As a result of this and other similar events the licensee has taken steps to provide additional first line supervision in the field to provide oversight and assistance for repair and test activities rather than only providing work assignments from the shops. The inspectors will monitor and evaluate the success of these changes.
- e. On March 9, 1989 during a tour with the auxiliary operator assigned to the lower auxiliary building the inspectors questioned the ability and methodology used to perform a TS channel check on the oxygen product gas meter for the catalytic hydrogen recombiner. This channel check is required by TS 4.3.9. The capability to perform this check was questioned since this meter will read less than zero during normal operation if the equipment is functioning correctly and will read the same if the unit is deenergized. The licensee has agreed to review this item to see if a channel check can be accurately performed. If the check cannot be performed, a TS change will be submitted to correct this item. The licensee has also agreed

to review all other channel checks performed for similar deficiencies. The inspector will follow the licensee's action on this item as an inspector followup item, "Channel Checks", 395-89-06-01.

- f. On March 22, 1989 "B" emergency DG was inadvertently started in the emergency mode during the performance of surveillance test procedure Fire Switch Functional Test for 1B DG, STP 170.021. This is an ESF actuation and was reported under 10 CFR 50.72 with a followup LER to be provided in 30 days.

An investigation into this event revealed that procedural inadequacies/errors or omissions had resulted in the test technician removing the wrong fuses which resulted in an automatic start up of the DG. Further investigation revealed that the location of the fuse panel had been the subject of three different reviews by procedure writers and plant technicians. In each instance the incorrect location had been specified in the procedure. Only after an attempted performance of the procedure with an inadvertent ESF actuation was the correct location for these fuses identified. The procedure was then corrected and the STP was satisfactorily completed on March 23, 1989.

The inspector attended the management review board at which this item was discussed in detail on March 29, 1989. The discussions at this meeting appeared to be frank and objective with corrective action to prevent a recurrence being the main objective. The licensee actions to correct the specific problem with the fuse location appears to be adequate. Since this item was identified and corrected during the reporting period no violation will be issued. However, it appears that the operations procedure writing group is either understaffed or may be attempting to over extend their capabilities. This group is responsible for maintaining over 600 SOP's, EOP's, GOP's and other operations procedures, providing cross discipline reviews on over 1000 other plant procedures, and reviewing all plant MRF's. The group is presently staffed with 2 SRO's and 1 RO and an auxiliary operator. This group, in addition to their normal work, must also attend required requalification training and stand watches to maintain their license. A staffing increase to 5 personnel was approved for this area; however, two of five billets, authorized have not been filled.

The OSTI inspection completed in December, 1988 identified discrepancies in operating procedures as a major concern in the operations area. The findings were reiterated in the SALP report (88-32) and SALP presentation conducted on March 28, 1989. Additional management attention appears to be required to ensure procedural accuracy. The inspectors will provide added inspection emphasis in this area in future inspections.

- g. On March 29, 1989 the licensee discovered HVAC and cable penetrations that would permit access from an administratively controlled area to a vital area of the control building. Compensatory measures were established and the event was reported to NRC headquarters and Region II. The licensee is currently preparing a LER on this item and Region II will conduct a followup on the next routine inspection.

No violations or deviations were identified.

6. ESF System Walkdown (71710)

The inspectors verified the operability of an ESF system by performing a walkdown of the accessible portions of the control building ventilation system. The inspectors confirmed that the licensee's system line-up procedures matched plant drawings and the as-built configuration. The inspectors looked for equipment conditions and items that might degrade performance (hangers and supports were operable, housekeeping, etc.) and inspected the interiors of electrical and instrumentation cabinets for debris, loose material, jumpers, evidence of rodents, etc. The inspectors verified that valves, including instrumentation isolation valves, were in proper position, power was available, and valves were locked as appropriate. The inspectors compared both local and remote position indications.

Discrepancies identified during the above inspection included missing identification tags on the outside door for panels APN-01B4 and APN-01C4. On the accumulators for valves XVB-3A/3B and XVB-4A/4B, two of the air supply valves are listed on the valve line-up sheets but 8 vent and drain valves do not have identification tags installed and are not listed on the valve line-up sheets. The licensee has been informed of these discrepancies and is in the process of correcting them. No other deficiencies were identified.

No violations or deviations were identified.

7. Onsite Followup of Events and Subsequent Written Reports (92700, 93702)

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.

LER 89-002 and LIV 89-01-01, Essential equipment operability concerns due to scaffold installations. The above items addressed shielding scaffolds that had been erected during the fourth refueling outage and had not been removed prior to plant startup. This item was reported in Report 89-01 and LER 89-002 dated February 14 and 17, 1989. A detailed engineering review of these installations by the licensee's AE determined that the failure of the installations during a seismic event would not prevent plant safe shutdown. The inspectors verified that the licensee had completed the corrective actions stated in the above LER. LER 89-002 and LIV 89-01-01 are therefore closed.

SPR 88-008, Inoperable fire barrier. This item concerns fire doors that were kept open greater than seven days. This was to support maintenance and testing during the fourth refueling outage. TS required compensatory action was taken during this time period. This item is closed.

No violations or deviations were identified.

8. Other Areas

1. The senior resident inspector from the H.B. Robinson plant visited the plant during the period of March 6-9, 1989. He completed the site specific orientation training and badging needed to serve as backup inspector.
2. The resident inspector served as a member of the OSTI at the McGuire plant that was completed on March 3, 1989.
3. The resident inspector attended a management oversight risk tree analysis training course during the weeks of March 13 and 20, 1989.
4. The Regional Administrator and the Deputy Director of Reactor Projects and the Reactor Projects Section Chief presented the 1987/1988 SALP to the licensee on March 28, 1989 at the plant site.

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

(Closed) Violation 88-13-01, Failure to meet LCO prior to mode change. The licensee provided a written denial to the above violation in a letter to Region II dated September 16, 1989. Region II reviewed the above response and did not accept the denial as stated in letters dated October 17, and December 7, 1988. The inspectors verified that the corrective actions listed in the licensee's September 16, 1988 submittal had been completed. The licensee has also applied to the South Carolina Department of Health and Environmental Control for permission to chemically treat the SWS. Anticipating approval, they are currently working on a design for the treatment system. This treatment should prevent or reduce the probability of future occurrences of reduced service water flow.

10. Exit Interview (30703)

The inspection scope and findings were summarized on March 31, 1989, with those persons indicated in paragraph 1. The inspectors described the areas inspected and discussed the inspection findings. The two inadvertent ESF actuations and the perceived root causes were discussed during the exit. The procedural inadequacies identified during the DG ESF system walkdown were discussed in detail. It was also noted that procedural inadequacies such as these were identified in the December OSTI inspection and the recent SALP report. 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.

11. Acronym: and Initialisms

AE	Architect Engineer
DG	Diesel Generator
DP	Differential Pressure
EOP	Emergency Operating Procedures
EPRI	Electric Power Research Institute
ESF	Engineered Safety Feature
GOP	General Operating Procedures
HVAC	Heating Ventilation and Air Conditioning
LCO	Limiting Condition for Operation
LER	Licensee Event Reports
LIV	Licensee Identified Violation
MSR	Moisture Separator Reheater
MRF	Modification Request Form
MWR	Maintenance Work Request
NRC	Nuclear Regulatory Commission
OSTI	Operational Safety Team Inspection
PMTS	Preventive Maintenance Task Sheet
PTP	Plant Test Procedure
RCP	Reactor Coolant Pump
RM	Radiation Monitor
RO	Reactor Operator
SALP	Systematic Assessment of Licensee Performance
SG	Steam Generator
SOP	Surveillance Operating Procedures
SPR	Special Reports
SRO	Senior Reactor Operator
STP	Surveillance Test Procedures
SWS	Service Water System
TS	Technical Specifications