

U. S. NUCLEAR REGULATORY COMMISSION

REGION II

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Report No.: 50-395/98-07

Licensee: South Carolina Electric & Gas (SCE&G)

Facility: V. C. Summer Nuclear Station

Location: P. O. Box 88  
Jenkinsville, SC 29065

Dates: July 26 - September 5, 1998

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## EXECUTIVE SUMMARY

V. C. Summer Nuclear Station  
NRC Integrated Inspection Report No. 50-395/98-07

This integrated inspection included aspects of licensee operations, maintenance, engineering, and plant support. The report covers a six-week period of resident inspection; in addition, it includes the results of announced inspections by regional inspectors.

### Operations

- The Station Log Book was not being maintained in the detail that was recommended by the guidelines established in the applicable station administrative procedure in order to provide a complete and accurate record of plant history (Section 01.2).
- A review of two safety-related tagouts for the B Centrifugal Charging Pump and the B Steam Generator blowdown sample containment isolation valve found that they were properly prepared and implemented (Section 01.3).
- A procedural adherence concern was identified concerning the waste line flush after a waste monitor tank release. When ensuring a demineralized water pump was operating, an operator did not explicitly verify this fact but utilized his knowledge that a pump was normally operating and the fact that his turnover did not indicate otherwise (Section 01.4).
- A system walkdown found that the Component Cooling Water System and the Chilled Water System were in a condition to perform their design functions for normal and accident conditions. Plant housekeeping around the systems was good and components labeling was accurate (Section 02.1).
- The inspectors found the Intermediate Building operator and the Auxiliary Building lower level operator to be knowledgeable and familiar with their assigned duties and responsibilities during the conduct of rounds (Section 04.1).

### Maintenance

- No concerns were identified during maintenance on the Heating Ventilation and Air Conditioning chillers and circuit breakers; instrument calibrations; and valve testing. Control room personnel were routinely informed of the status of ongoing maintenance activities. Maintenance personnel adhered to procedures (Section M1.1).
- Following observations and reviews of surveillance testing for venting the Residual Heat Removal System the inspectors agreed with the licensee that the system was essentially absent of gas. Pre-job briefings for the tests were thorough (Section M1.2).

- An apparent violation was identified involving a missed TS surveillance requirement to vent the residual heat removal pump casings. The licensee is planning to submit an LER on the missing surveillance requirement. The inspectors will review the LER as part of the followup for this issue (Section M1.3).
- An observed Anticipated Transients Without Scram (ATWS) Mitigating System Actuation Circuitry (AMSAC) operational test was performed in accordance with the approved procedure and the results met the acceptance criteria (Section M1.4).
- The licensee's use of the Engineering Information Request/Technical Work Record (TWR) process to resolve a Turbine Driven Emergency Feedwater Water (TDEFW) pump test deficiency was less rigorous than other processes for resolving test deficiencies. The TWR did not require a verification to be performed and documented. Good Quality Assurance oversight and identification of a test deficiency resolution issue was observed. The TDEFW pump operability was demonstrated satisfactorily by the surveillance tests (Section M1.5).
- The inspectors concluded that the licensee had appropriately considered potential plant risks and challenges before proceeding with maintenance on a pressurizer pressure transmitter (Section M1.6).
- Corrective maintenance activities to investigate and correct the cause of the B Charging Pump inboard mechanical seal leakage were performed satisfactorily. Maintenance technicians were properly trained, pump shaft alignment was performed in a skillful manner, and pump vibration and post maintenance testing were appropriately conducted (Section M1.7).
- The review of service water surveillance test procedures revealed that Operation and Maintenance Standards (OM) Part 10 was fully implemented for valves in this system other than pressure relief valves. Problems with pressure relief valve testing were discussed in LER 50-395/98005-00 (Section M3.1).

### Engineering

- The licensee adhered to their setpoint control program in making a change to the low flow setpoint on the primary coolant letdown monitor. The revised setpoint was in agreement with the assumptions made in the Final Safety Analysis Report (Section E1.1).
- The licensee's root cause evaluation of gas intrusion into the A train Residual Heat Removal System was thorough and identified the probable causes of the problem. The proposed corrective actions adequately addressed the probable causes (Section E1.2).
- The snubber reduction program was generally performed well. The computer input data in the stress calculation reviewed accurately reflected the pipe layout drawings. The modifications completed in the

field were constructed in accordance with the drawings issued. An unresolved item was identified for the incorrect pipe displacements shown on the pipe support drawings for the snubber reduction program (Section E1.3).

- The licensee did an excellent root cause analysis for failures of Pacific Scientific Shock Arrestor mechanical snubbers. Dissemination of failure analyses findings were transmitted to the industry in a timely manner (Section 2.1).

#### Plant Support

- The normal radiological practices and controls observed during the conduct of tours and a specific review of a B Charging Pump Room health physics survey and analysis of swipes were found to be acceptable (Section R1.1).
- A licensee meeting with state and local government emergency preparedness officials provided useful training and discussions of current issues concerning response to emergency events (Section P1.1).
- The conduct of security and safeguards activities in access authorization, alarm stations, communications, protected area access control of personnel, packages and material, and vehicles were being implemented according to regulatory requirements and Physical Security Plan commitments. The access authorization program was a strength to the security program (Section S1.1).
- The security testing and maintenance program adequately ensure the reliability of the security equipment and devices. The personnel search equipment, perimeter intrusion detection aids, and assessment aids functioned according to the Physical Security Plan and implementing procedures. The closed circuit television images were excellent and considered a strength in the security program (Section S2.1).
- Security personnel appropriately demonstrated their response capabilities and possessed appropriate knowledge to carry out their assigned response duties and responsibilities, including response procedures, use of deadly force, and armed response tactics (Section S4.1).
- An after hours fire drill, which included offsite participation, demonstrated the drill objectives. The drill critique identified several areas for enhancement (Section F1.1).
- Portions of the Fire Protection program reviewed indicated that it was being conducted as required (Section F1.2).

## Report Details

### Summary of Plant Status

Unit 1 began this inspection period at 78 percent power due to a failure of the B circulating water pump motor. On July 27 power was raised to 85 percent. Power varied between 80 and 85 percent until August 8 due to limits on circulating water temperature. On August 9 power was raised to 100 percent following repair of the circulating water pump motor. The plant remained at full power for the remainder of the inspection period.

### I. Operations

#### 01 Conduct of Operations

##### 01.1 General Comments (71707)

The inspectors conducted frequent reviews of ongoing plant operations. In general, the conduct of operations was professional and safety-conscious; specific events and noteworthy observations are detailed in the sections below.

##### 01.2 Review of Control Room Supervisor Log Book

###### a. Inspection Scope (71707)

The inspectors routinely reviewed the Control Room Supervisor (CRS) log book and other operational log books during the conduct of control room tours.

###### b. Observations and Findings

During the inspection period the inspectors identified omissions in the CRS log book. On August 24 the plant entered Technical Specification (TS) 4.0.3 due to a missed surveillance requirement for venting the Residual Heat Removal (RHR) System pumps. During a review of the CRS log book on August 25, the inspectors observed that a log book entry was not made for entering TS 4.0.3. The inspectors questioned the CRS on the lack of a log entry. The CRS agreed that a log entry was necessary and a late entry was made. Also a Removal and Restoration (R&R) sheet had not been prepared. On September 2 during a review of current plant problem reports, the inspectors found that on August 25 with the plant operating at full power and stable, the main turbine load limiter had spiked raising power about 5 Megawatts electric. This happened several times until the load limit setpoint pot was lowered. The inspectors identified that this incident also had not been documented in the CRS log book.

Station Administrative Procedure, SAP-204, "Operating Logs and Records," Revision 7, provides guidance on entries for the Station Log Book (CRS log book). The procedure recommends logging of LCO Action Statement entries and plant conditions that are intermittent or unexplained. The inspectors concluded that the Station Log Book was not being maintained in the detail that was recommended in SAP-204.

c. Conclusions

The Station Log Book was not being maintained in the detail that was recommended by the guidelines established in the applicable station administrative procedure in order to provide a complete and accurate record of plant history.

01.3 Review of Tagouts

a. Inspection Scope (71707)

The inspectors reviewed and walked down two safety-related tagouts.

b. Observations and Findings

The inspectors reviewed and walked down tagouts for the B Centrifugal Charging Pump (CCP) and the B Steam Generator (SG) blowdown sample containment isolation valve. Both tagouts were prepared to perform planned maintenance. The inspectors found that the tagouts isolated the components as necessary to perform the intended maintenance. The tags were located in the correct locations and the associated documentation was complete.

c. Conclusions

A review of two safety-related tagouts found that they were properly prepared and implemented.

01.4 Liquid Waste Release

a. Inspection Scope (71707)

The inspectors observed the conduct of a Liquid Waste Release from Waste Monitor Tank (WMT) #2 and reviewed the liquid release permit, locked component operating sheets, and associated procedural documentation.

b. Observations and Findings

On September 2 the inspectors observed a liquid waste release conducted in accordance with System Operating Procedure SOP-108, "Liquid Waste Processing System," Revision 20. The release of WMT #2 was completed satisfactorily. A review of the associated radiation monitor alarm setpoints, channel checks, required notifications, and locked component operating sheets indicated they were performed in accordance with the procedural requirements.

The inspectors identified a concern with the manner in which operators completed a procedural step during the evolution. Following completion of the release, the procedure requires that the liquid waste lines be flushed with demineralized water. The step requires the operators to ensure a demineralized water pump is running and then open a valve. In this instance the field operators based their assurance that the pump

was running on the fact that a pump was normally running and nothing in their turnovers indicated otherwise. In this case the pump was running although the operator had not explicitly verified it was running. The inspectors' observation was discussed with the shift supervisor. The shift supervisor indicated that completion of a step in this manner did not meet management's expectations.

c. Conclusions

A procedural adherence concern was identified concerning the waste line flush after a waste monitor tank release. When ensuring a demineralized water pump was operating, an operator did not explicitly verify this fact but utilized his knowledge that a pump was normally operating and the fact that his turnover did not indicate otherwise.

01.5 Plant Status Reviews

a. Inspection Scope (71707)

The inspectors observed control room shift turnovers and activities.

b. Observations and Findings

The inspectors observed several shift relief turnovers during control room visits. The inspectors observed operators using clear communications techniques while they were performing control board walkdowns with relief operators. On-coming operations personnel were well briefed at their duty stations on present plant status and were provided an assessment of control board responses for the past 24 hours.

There was a noted presence of management personnel in the control room and at several control room briefings. Staffing was verified to be in conformance with Technical Specifications. Personnel were attentive to plant conditions. Inspectors observed that attentiveness in the control room was demonstrated by strict procedure adherence during the performance of surveillance and maintenance activities.

c. Conclusions

During shift turnovers, control room operators were well briefed on current plant status and activities performed in the preceding 24 hours.

02 Operational Status of Facilities and Equipment

02.1 Engineered Safety Feature (ESF) System Walkdown (71707)

a. Inspection Scope (71707)

The inspectors conducted a detailed system walkdown of selected portions of the Component Cooling Water (CCW) and Chilled Water Systems.

b. Observations and Findings

On August 21 the inspectors completed a detailed system walkdown of selected portions of the CCW system and the Chilled Water System to assess the general condition of the system components, including labeling; to verify that system valve positions match the system drawings and station operating procedures; and to assess plant housekeeping around system components. The inspectors considered that the CCW and Chilled Water Systems were able to perform their design function for both normal and accident conditions. No misaligned valves were identified and component labeling and housekeeping were good. The inspectors also reviewed the Final Safety Analysis Report (FSAR) and identified no discrepancies related to the operation of the CCW system or the Chilled Water System.

c. Conclusions

A system walkdown found that the Component Cooling Water System and the Chilled Water System were in a condition to perform their design functions for normal and accident conditions. Plant housekeeping around the systems was good and components labeling was accurate.

04 **Operator Knowledge and Performance**

04.1 Review of Operator Rounds

a. Inspection Scope (71707)

The inspectors accompanied an Intermediate Building (IB) operator and an Auxiliary Building (AB) lower level operator during the performance of a routine tour and TS required logs.

b. Observations and Findings

On August 13 the inspectors observed routine activities of the IB operator which included a complete tour of the assigned spaces and the recording of the evening shift logs. On August 23 the inspectors observed routine activities of the AB lower level operator. The operators were knowledgeable and familiar with their assigned duties and responsibilities. The operator demonstrated good communication with the control room by notifying the control room operators of expected annunciation prior to performing alarm checks.

c. Conclusions

The inspectors found the IB operator and the AB lower level operator to be knowledgeable and familiar with their assigned duties and responsibilities during the conduct of rounds.



## 08 Miscellaneous Operations Issues (92901)

- 08.1 (Closed) Licensee Event Report (LER) 50-395/97001-00: manual reactor trip. This event was initiated by a failure of a O-ring in the Main Turbine Electro-Hydraulic Control (EHC) System shutdown servo to the Combined Intercept Valve (CIV) number 1. One Feedwater Regulating Valve (FRV) was slow to close in response to a feedwater isolation signal. The immediate actions were to replace the hydraulic O-ring in the EHC system. The FRV was mechanically groomed. The inspectors verified that appropriate corrective actions were accomplished by the licensee.
- 08.2 (Closed) LER 50-395/97002-00: automatic reactor trip, turbine trip and feedwater isolation. The inspectors' review of this event verified that the event was initiated by a Hi-Hi level in the C Steam Generator (P14 signal). All systems functioned per design. The licensee took appropriate immediate and long term actions in response to this event. Procedure enhancement and training were verified as being completed in a timely manner.

II. Maintenance

## M1 Conduct of Maintenance

M1.1 Observation of Work Activitiesa. Inspection Scope (62707)

The inspectors observed all or portions of the following work activities:

- WR 9812298, "MOVAT Testing of Limitorque Valve XVB03126B-U-SW"
- EMP 445.016, "Installation of Transducers for Motor Operated Valve Testing," Revision 2
- EMP 445-007, "Baseline Testing of Motor Operated Valves With the MOVATS System," Revision 2
- WR 9810014, "Visually Inspect and Cycle Relays"
- EMP 280.006, "Molded Case Circuit Breaker and Controller Inspection and Preventive Maintenance," Revision 5
- ICP 175.009, "Chiller A-B-C Instrumentation Calibration," Revision 1
- WR 9810010, "Chiller Calibration"
- EMP 405.003, "Termination and Determination of Cables 480 Volts and Below," Revision 14
- EMP 300.002, "Replacement of Electronic Components," Revision 9

- MMP 451.002, "Maintenance of HVAC Mechanical Water Chillers," Revision 10
- PMTS-9810699, EMP-295.004, "Electrical Equipment Inspection and Cleaning," Revision 0

b. Observations and Findings

The inspectors observed pre-job briefings and the pre-staging of tools and equipment that were to be used. The inspectors observed that maintenance activities were conducted using the appropriate procedures, tools, and techniques. The crews demonstrated this by verifying the current calibration of equipment, proper tools were available and procedures were current. When a valve or other piece of equipment was removed, the area was well covered to prevent the intrusion of foreign materials. The maintenance technicians were knowledgeable and demonstrated good work practices. Where appropriate, quality control personnel were present to monitor established hold points and to verify certain installations and procedural steps. There was adequate supervision present at job pre-briefings and at the work areas. Maintenance supervision kept control room personnel aware of work being performed and of the current progress of the work. As-Low-As-Is-Reasonably-Achievable (ALARA) was practiced. No concerns were identified.

c. Conclusions

No concerns were identified during observation of maintenance on the Heating Ventilation and Air Conditioning chillers and circuit breakers; instrument calibrations; and valve testing. Control room personnel were routinely informed of the status of ongoing maintenance activities. Maintenance personnel adhered to procedures.

M1.2 RHR System Surveillance Testing Observation

a. Inspection Scope (61726)

The inspectors observed or reviewed the following surveillance testing activities:

- STP-205.004, "RHR Pump and Valve Operability Test," Revision 3
- STP-105.006, "Safety Injection/Residual Heat Removal Monthly Flow Path Verification Test," Revision 9

b. Observations and Findings

The inspectors observed the venting of the RHR A and B train vent valves. The venting was performed as a followup to the surveillance test that had identified gas in the A train on July 21. The results of the venting for each valve is provided below:

- XVT00033-SI, Refueling Water Storage Tank Outlet Header Vent Valve - no gas emissions, a steady stream of water flow was observed
- XVT00007A-RH, RH Heat Exchanger A Tube Side Vent Valve - no gas emissions, a steady flow of water flow was observed
- XVT00007B-RH, RH Heat Exchanger B Tube Side Vent Valve - approximately 1-2 seconds of gas emission, then a steady stream of water flow was observed
- XVT0007I-SI, Hot Leg Injection Header Vent Valve - no gas emissions, a steady stream of water flow was observed
- XVT00006A-RH, Residual Heat Removal Header A Vent Valve - no gas emissions, a steady stream of water flow was observed
- XVT00006B-RH, Residual Heat Removal Header B Vent Valve - approximately 1 second gas emission, then a steady stream of water flow was observed

The pre-job briefing for the surveillance was conducted by the shift supervisor and engineer in charge. The inspectors found the briefing to be very thorough. All questions were addressed. The HP supervisor held an ALARA briefing for the surveillance crew before entry into the Radiological Control Area (RCA) to perform the surveillance. A complete review of the areas to be entered and the latest radiological surveys of the work areas were discussed. A complete equipment check and a roster of equipment and materials to be taken into the RCA was utilized. The crew demonstrated ALARA and team effort.

c. Conclusions

Following observations and reviews of surveillance testing for venting the Residual Heat Removal System the inspectors agreed with the licensee that the system was essentially absent of gas. Pre-job briefings for the tests were thorough.

M1.3 Missed RHR Pump Venting Surveillance

a. Inspection Scope (61726)

The inspectors reviewed a missed surveillance requirement to vent the RHR pump casings.

b. Observations and Findings

On August 24 as part of the root cause evaluation for gas in the RHR system the licensee identified that they had not previously performed a monthly surveillance to vent the RHR pump casings and entered TS 4.0.3. The licensee identified that they were not meeting the requirements of monthly TS surveillance requirement 4.5.2.b for venting the RHR pumps. The surveillance requirement states that each Emergency Core Cooling

System (ECCS) subsystem shall be demonstrated operable by verifying that the ECCS piping is full of water by venting the ECCS pump casings and accessible discharge piping high points at least once per 31 days. Surveillance procedure STP-105.006, "Safety Injection/Residual Heat Removal Monthly Flowpath Verification Test," Revision 9, did not include the pump casing vents for the Centrifugal Charging Pumps (CCPs) and the RHR pumps.

The licensee determined that the CCPs did not require venting. The charging pumps were not provided with pump casing vents since this model of pump has vertical suction and discharge nozzles located at the top of the pump casing. The vendor, Pacific Pumps, confirmed that vent connections were not provided for pumps with top-mounted suction and discharge nozzles, since vapors could escape through the nozzles. The inspectors reviewed this information and agreed with the licensee's conclusions.

For the RHR pumps the vendor manual identified a pump seal cooler vent that can be used to vent the pump casing. The licensee promptly added the seal cooler vents to the surveillance procedure and performed the RHR pump venting. The inspectors observed the venting of the seal water coolers and no gas was observed.

At the close of the inspection period the licensee was preparing an LER. This issue, which represents a violation of NRC requirements, will remain open pending receipt and analysis of the LER required to be submitted to the NRC by 10 CFR 50.73. This issue is identified as EEI 50-395/98007-01.

c. Conclusions

An apparent violation was identified involving a missed TS surveillance requirement to vent the RHR pump casings. The licensee is planning to submit an LER on the missing surveillance requirement. The inspectors will review the LER as part of the followup for this issue.

M1.4 Surveillance Observation

a. Inspection Scope (61726)

On September 4 the inspectors observed technicians perform ICP-345.046, "ATWS Mitigation System Actuation Circuitry (AMSAC) Operational Test," Revision 2.

b. Observations and Findings

The inspectors verified the installation of test equipment which met all calibration due date requirements. The AMSAC operational test was performed per the requirements of ICP-345.046 and met the acceptance criteria.

c. Conclusions

An observed AMSAC operational test was performed in accordance with the approved procedure and the results met the acceptance criteria.

M1.5 Observation of Turbine Driven Emergency Feedwater (TDEFW) Pump Testing

a. Inspection Scope (61726)

The inspectors observed and reviewed surveillance testing activities conducted using STP-220.002, "Turbine Driven Emergency Feedwater Pump and Valve Test," Revision 2.

b. Observations and Findings

On July 27 the TDEFW pump was declared out of service when the lube oil filter outlet pressure was found to be below the acceptance criteria during the conduct of STP-220.002. Following a lube oil filter replacement and relief/regulating valve adjustment the pump met the lube oil filter outlet pressure acceptance criteria. The observed maintenance activities were conducted using the appropriate procedures, tools and techniques.

The inspectors observed the TDEFW pump retest. During the test the pump did not achieve the required differential pressure (dp) and resulting Total Developed Head (TDH) acceptance criteria. The TDH is calculated using the differential pressure (pump discharge - pump inlet) and a fluid density correction factor which is temperature dependent. Design engineering through the Engineering Information Request (EIR) process reviewed the test deficiency and issued a Technical Work Record (TWR) that provided a basis for accepting the pump test results and declaring the pump operable based on a revision to the fluid density factor in the TDH calculation.

The inspectors were concerned with the use of the EIR/TWR process to form the basis for resolution of this test deficiency because it did not require an engineering verification to be performed and documented. The operability determination in the TWR for the TDEFW pump was technically adequate, however, the inspector questioned the fact that the deficiency resolution did not receive an independent review. Station Administrative Procedure, SAP-134, "Control of Station Surveillance Activities," Revision 9, has several processes for resolving test deficiencies, with one method being a TWR. The other processes in SAP-134 are more rigorous and would require an independent review for a resolution that supports a change to the TDH calculation. Involved in this type of resolution would be a more formal review of the engineering calculations including verification of the technical accuracy commensurate with the original TDH calculation. The licensee is addressing these concerns, that were also identified by its Quality Assurance (QA) Department, under Quality Systems Review item numbers QA-QSR-98027 through 98030.

The licensee revised the TDEFW pump and valve test to provide additional margin in the total developed head calculation. On August 21 the inspectors again observed the pump and valve test. The inspectors noted that QA, System Engineering, Test Unit Supervisory Personnel and Independent Safety Engineering Group (ISEG) personnel were observing the TDEFW pump run which showed good technical management involvement and concern on this issue. The observed test was performed satisfactorily and all of the test acceptance criteria were met.

c. Conclusions

The licensee's use of the EIR/TWR process to resolve a TDEFW pump test deficiency was less rigorous than other processes for resolving test deficiencies. The TWR did not require a verification to be performed and documented. Good QA oversight and identification of a test deficiency resolution issue was observed. The TDEFW pump operability was demonstrated satisfactorily by the surveillance tests.

M1.6 Troubleshooting Plan Risk Analysis For Pressurizer Pressure Transmitter

a. Inspection Scope (62707)

The inspectors reviewed a troubleshooting plan to check and calibrate a pressurizer pressure transmitter.

b. Observations and Findings

On August 14 Instrument and Control (I&C) technicians made a Reactor Building (RB) entry to check and calibrate pressurizer pressure transmitter PT-457 (MR 9812253). The inspectors questioned the licensee regarding the risks associated with this work prior to performing the maintenance. The inspectors observed that this transmitter was on a common sensing line with other pressurizer level and pressure transmitters. The other pressure transmitters were control transmitters that controlled Power Operated Relief Valves (PORVs), pressurizer spray valves, and pressurizer heaters. The level transmitter that could be affected had been selected to an alternate transmitter. The inspectors reviewed the licensee's troubleshooting plan prepared in accordance with ICP-500.001, "Development of Troubleshooting and Repair Plans," Revision 2. The plan considered the risks associated with performing this job in a Risk Assessment. The troubleshooting plan also included precautions for performing the job and the expected response when valving the pressure transmitter back into service. The inspectors were satisfied that the licensee's troubleshooting plan had appropriately considered the potential risks associated with this task. The inspectors also questioned operators and found they were aware of the potential plant challenges during this work. The work was completed satisfactorily without any problems.

c. Conclusions

The inspectors concluded that the licensee had appropriately considered potential plant risks and challenges before proceeding with maintenance on a pressurizer pressure transmitter.

M1.7 Replacement of B Charging Pump Inboard Mechanical Seal

a. Inspection Scope (62707)

From August 24 through August 27 the inspectors observed corrective maintenance activities associated with the replacement of the inboard mechanical seal for the B Charging Pump to determine whether work was accomplished in accordance with procedures and regulatory requirements. The maintenance activities were also observed to determine whether the technicians were appropriately trained and qualified, appropriate radiological controls were followed, and appropriate fire watch and personnel safety controls were established and implemented.

b. Observations and Findings

Work activities associated with the replacement of the B Charging Pump inboard mechanical seal were performed in accordance with Work Request No. 9806730 and Mechanical Maintenance Procedure Nos. 300.001, 320.012, 320.001 and 300.008. The inboard mechanical seal was replaced because it had been leaking. During disassembly of the pump seal, engineering determined that the seal leakage was due to a scratch on the seal surface. During the corrective maintenance process the following problems were encountered:

- The first new shaft sleeve drawn on Work Request No. 9806730 could not be installed on the pump shaft due to the I.D. bore of the shaft sleeve being .010 mills smaller than the pump shaft outside diameter. Another new shaft sleeve which was machined to the correct tolerance was obtained and installed. The licensee issued Primary Identification Program (PIP) No. 0-C98-0770 to fully determine and fix the cause of this problem in order to prevent its re-occurrence.
- Two pins were found missing on the packing auxiliary gland plate. The pins were designed to retain the outer packing ring from rotating. The pins were never found. The packing ring and spring showed evidence of rotation on the shaft. The licensee issued PIP 0-C98-0757 on this discrepancy. The pins are external to the pump, so there was no concern that these parts could gain entry into the chemical and volume control system.
- Re-installation of the coupling hub on the shaft required that the coupling hub be heated to expand its inter-bore dimension. However, before the technicians could install the coupling hub correctly on the pump shaft the coupling hub cooled down and had to be removed with a hub puller. The coupling hub was

subsequently installed by applying ice on the pump shaft and heating the hub to the required temperature.

While observing the seal replacement activities the inspectors verified that the maintenance technicians were skillful and knowledgeable, work instructions and procedures were adequate and followed, radiological controls were appropriate and followed, tools and materials had been pre-staged, fire watches complied with the requirements delineated in Procedure No. FPP-020, required personnel (health physics, operations, engineering, maintenance supervision, and quality assurance) monitored work activities.

c. Conclusions

Corrective maintenance activities to investigate and correct the cause of the B Charging Pump inboard mechanical seal leakage were performed satisfactorily. Maintenance technicians were properly trained, pump shaft alignment was performed in a skillful manner, and pump vibration and post maintenance testing were appropriately conducted.

M3 Maintenance Procedures and Documentation

M3.1 Review of Service Water Surveillance Test Procedures

a. Inspection Scope (62700)

On June 1, 1998, LER 50-395/98005-00 reported inadequate ASME Code relief valve surveillance testing. Corrective actions were required to be taken for inservice performance testing of Class 2 and 3 pressure relief devices and the LER was subsequently closed. Pressure relief devices are required to be tested in accordance with ASME/ANSI, "Operations and Maintenance Standards (OM)," 1987 edition, with 1988 addenda, Part 1. However, all other ASME Code valves are tested in accordance with Part 10 to the 1988 addenda of ASME/ANSI OM. Therefore, to determine if OM Part 10 was correctly implemented for other valve types the inspectors reviewed the licensee Inservice Testing (IST) Program document and surveillance test procedures for the Service Water System.

b. Observations and findings

The licensee IST Program document for implementing OM Part 10 was General Test Procedure (GTP) 302 "Inservice Testing of Valves, Second Ten Year Interval," Revision 9. The applicable portions of this procedure were compared to OM Part 10 requirements and found to be satisfactory. Service Water surveillance test procedures STP-230.006J, Revision 1; STP-223.002A, Revision 6; STP-123.003A, Revision 3; and STP-123.003B, Revision 3 were then examined for correct test methodology and implementation of OM Part 10 requirements and found to be satisfactory.



c. Conclusions

The review of service water surveillance test procedures revealed that OM Part 10 was fully implemented for valves in this system other than pressure relief valves. Problems with pressure relief valve testing were discussed in LER 50-395/98005-00.

M8 Miscellaneous Maintenance Issues (92902)

- M8.1 (Closed) LER 50-395/96006-00: ABB/ITE 27N relay failure. Inspector review of this event showed that it was initiated by the failure of the integrated circuit U5 timer on the 27N relays. The inspectors noted that the licensee took immediate action and restored the associated protection circuit to operable status by replacement of the defective relay. The licensee initiated a Part 21 Report and the vendor was notified. The vendor identified the cause to be a random failure of the integrated circuit U5 timer.

III. Engineering

E1 Conduct of Engineering

E1.1 Primary Coolant Letdown Monitor Low Flow Alarm (RM-L1) Setpoint Change

a. Inspection Scope (37551)

The inspectors reviewed a change to the low flow alarm setpoint on RM-L1.

b. Observations and Findings

The RM-L1 control room trouble alarm annunciator had been in constant alarm when flow through the monitor was reduced as a result of reducing Chemical and Volume Control System (CVCS) letdown flow to one 60 gpm orifice (see NRC Integrated Inspection Report No. 50-395/98-05). Part of the corrective action to correct the alarm condition was to change the low flow alarm setpoint from 0.3 gpm to 0.0 gpm. The inspectors reviewed the licensee's setpoint control program to ensure this change adhered to the program requirements, and reviewed the engineering and safety evaluation for the setpoint change. The inspectors also verified that the associated procedure were properly revised and that the revised setpoint was in agreement with the assumptions made in the FSAR.

c. Conclusions

The licensee adhered to their setpoint control program in making a change to the low flow setpoint on the primary coolant letdown monitor. The revised setpoint was in agreement with the assumptions made in the FSAR.

## E1.2 Review of Root Cause Evaluation For Residual Heat Removal System Gas Intrusion

### a. Inspection Scope (37551)

The inspectors reviewed the licensee's root cause evaluation for gas intrusion into the A train RHR system.

### b. Observations and Findings

On July 21 the licensee identified a significant amount of gas in the A train RHR system (see NRC inspection report 50-395/98-06). A root cause evaluation was initiated to identify the source of the gas. The licensee's evaluation identified several causal factors that contributed to the introduction of the gas. The licensee identified that the pressurizer steam space Post Accident Sampling System (PASS) containment isolation valves allowed hydrogen gas to leak by at Reactor Coolant System (RCS) pressure and pressurize the PASS header. The A and B train RHR loop PASS sample header check valve leaked by and allowed the PASS header to pressurize the RHR sample line and introduce Hydrogen gas into the RHR piping. Furthermore, the vent locations downstream of the RHR heat exchangers were inadequate to ensure complete system venting.

The inspectors concluded that the licensee had identified the cause of the gas intrusion into the RHR system and proposed corrective actions with completion dates to prevent recurrence of this problem.

### c. Conclusions

The licensee's root cause evaluation of gas intrusion into the A train RHR system was thorough and identified the probable causes of the problem. The proposed corrective actions were adequate to prevent recurrence of the problem.

## E1.3 Snubber Reduction Program (SRP)

### a. Inspection Scope (37550)

The inspectors reviewed the SRP documentation, discussed the program with engineers and management, and walked down the Feedwater (FW) and CCW lines to determine if SRP activities complied with industrial standards, regulatory requirements, and licensee commitments.

### b. Observations and Findings

The purpose of the SRP was to reduce the total number of snubbers in the plant. The licensee performed the snubber reduction as a plant modification. The licensee used "Snubber Reduction Project Specification Piping Analysis", Revision 2 for the snubber reduction related piping analyses. As part of the modification review, the inspectors reviewed portions of revised Stress Calculation No. FW-13A, "FW-13A, -13B, -13C and FW-127 Subsystem Piping Analysis Package."

Revision 6.3. The revised stress calculation FW-13A combined previous individual analyses of FW-13A, -13B, -13C and FW-127.

The two stress isometrics used during the review were drawings C-314-081 Sheet 29, Revision 5A and C-314-081 Sheet 31, Revision 8A. The inspectors reviewed input data from Node A7 of the 30" diameter FW line on Sheet 29 to Node E1 of the 18" diameter FW line on Sheet 31 of the drawings. The elements inspected included node designations, node coordinates, pressures, temperature conditions, pipe sizes, pipe materials, support locations, support directions, support types, support stiffness, anchor points, reducer sizes, valve weights and central gravity locations, and stress intensification factors. This revised stress calculation ran only dead load and various thermal load cases for the SRP. Generally, the snubbers removed were replaced with sway struts. Some snubbers were not replaced. The snubbers to be removed or replaced were previously installed to accommodate small movements shown in previous stress analyses. The licensee followed industrial practices and replaced snubbers with sway struts where pipe movements were less than 1/8 inches. The summary loads shown in the support load transmittals in this revised stress calculation for the pipe support design were the combination of the new dead and thermal loads plus dynamic loads from previous stress calculations.

The inspectors concluded that the portion of the stress calculations reviewed was very good in details and accuracy except as noted below.

The pipe displacements obtained from the revised stress calculation were transferred via the pipe support load transmittal sheets to the pipe support design engineers. These displacements were indicated as the normal displacements for the normal condition and contained the displacements from the dead weight and thermal loads. The transmittals also contained a note indicating that the displacements for upset or faulted conditions were not reported. However, the pipe support design engineers copied the pipe displacements directly from the normal condition shown on the pipe support load transmittal sheets to the pipe support design drawings as maximum displacements. The maximum displacements means a total displacement which would include dead, thermal, and dynamic pipe displacements. Actually, the maximum displacements shown on the pipe support drawings did not include the dynamic displacements. The correct maximum displacements needed to include the displacements for dead and thermal loads in the revised stress calculation and the displacements on dynamic loads in the previous stress calculation. This revised stress calculation contained 25 pipe supports and all had the same error in the pipe support design drawings for the maximum displacements.

The pipe support load transmittal sheets contained only normal displacements and no data for upset and faulted displacements. When the normal displacement data was transferred to the drawings, the data was transferred incorrectly in that normal displacement data were put in for maximum displacement data and no normal displacement data showed on the drawings. The normal displacement data were required to be shown on the

pipe support drawings for the pipe support design engineers to check the friction loads in the design in case of pipe movements greater than 1/16 inches in the non-restrained directions. The maximum displacements were required to be shown in the support design drawings to check for the support interferences. The licensee issued a Primary Identification Program (PIP) No. 0-C98-0728 to review all the pipe support drawings for revised stress analysis FW-13A, plus approximately 50 pipe support drawings with one support selected from each revised stress analysis to assure that the data was correct. The review will include a root cause analysis, correction of the displacements shown on the pipe support drawings, and pipe support interference checks. The incorrect pipe displacement problem shown on the pipe support drawings was identified as Unresolved Item 50-395/98007-02. This item was opened to review PIP No. 0-C98-0728 as to the problem scope, root cause, and corrective actions.

The inspectors walked down the FW and CCW lines with licensee engineers to inspect the pipe supports in the field, including the modifications for the snubber reduction, in order to assess the effectiveness and quality of the supports for the SRP and to compare them with the documented drawings. The inspection elements included dimensions, member sizes, component sizes, weld sizes and symbols, base plate sizes, anchor bolt diameters and edge distances, sway strut sizes and swing angles, etc. The supports walked down and inspected were: MK-FWH-149, Revision (R) 5: -155, R8: -158, R6: -197, R7: -202, R4: -206, R5: -226, R4: -228, R4: -349, R3: -358, R4: -362, R3: -372, R5: -373, R5: -378, R4: and MK-CCH-081, R11: -117, R6: -127, R8: -295, R7: -297, R12: -298, R10: -756, R5: -764, R7: -765, R8: and -773, R8. The inspector primarily inspected the modification for the snubbers replaced by the sway struts. The inspectors occasionally inspected other existing components or elements in order to check the original construction or other previous modifications for the quality of the supports. The following discrepancies were found by the inspector: a loose locknut on the lower end of the sway strut; fillet welds on two vertical sides of the end attachment of the sway strut were measured to be 1/8" or 3/16" and were less than the 1/4" specified on the drawings; and two cover plates for a wide flange post were found in the field and were not shown on the drawings.

The inspectors considered that the discrepancies found were isolated and had no impact on safety. The licensee issued NCNs to correct the discrepancies.

c. Conclusions

The snubber reduction program was generally performed well. The computer input data in the stress calculation reviewed accurately reflected the pipe layout drawings. The modifications completed in the field were constructed in accordance with the drawings issued. An unresolved item was identified for the incorrect pipe displacements shown on the pipe support drawings for the snubber reduction program.

## E2 Engineering Support of Facilities and Equipment

### E2.1 Snubber Inspection Program

#### a. Inspection Scope (37550)

The inspectors reviewed the licensee's engineering response to discovery of aging-related degradation of mechanical snubbers.

#### b. Observations and Findings

During the snubber reduction program replacement of Pacific Scientific Mechanical Shock Arrestor (PSA snubber) RHH 4034 with a rigid strut, a snubber was found to be locked up. The testing of this snubber and subsequent tests to determine the root cause(s) of the failure, and the extent of the condition, were documented in dispositions one through twelve of NCN 97-0761. Disposition one through ten of the NCN identified the problem and provided a plan for expanded testing and examinations for root cause determination. Disposition 11 and 12 of NCN 97-0761 provided the results of the failure and root cause analyses and provided an inspection and replacement plan for the next refueling outage, Refuel 11.

The results of the test program identified fretting corrosion as the failure mechanism for the PSA snubbers. The cause of the fretting corrosion was identified as normally-occurring, flow-induced high-frequency, low-amplitude vibration. The PSA snubbers were found to be susceptible to damage from system vibration due to the small quantities of lubricant used on complex bearing surfaces, combined with long periods of inactivity. The normal system vibration, over time, apparently worked the lubricant out of the tight tolerance areas of the snubber, allowing metal surfaces to come into direct contact and initiate fretting corrosion. As the fretting corrosion progressed, metallic particles were deposited in the remaining lubricant causing it to degrade to a "tar-like" state. Continued fretting corrosion resulted in further build up of metallic particles and the lubricant turned ultimately into a powder.

The licensee presented the findings of the PSA snubber failure analyses to the "Snubber Utility Group (SNUG)" in two successive meetings. During the Winter 1998 meeting, the licensee presented the conclusions that fretting corrosion was the root cause of lubrication degradation problems associated with PSA mechanical snubbers; and during the Summer 1998 meeting, the licensee presented a proposed program for service life monitoring of snubbers.

#### c. Conclusions

The licensee did an excellent root cause analysis for failures of PSA mechanical snubbers. Dissemination of failure analyses findings were transmitted to the industry in a timely manner.

**E8 Miscellaneous Engineering Issues (92903)**

- E8.1 (Closed) Unresolved Item 50-395/97013-05: review of licensee response to design basis issues relating to the Leak Detection System installed in the auxiliary building. The inspectors reviewed the licensee's letter No. RC-98-0009, dated January 21, 1998, responding to two design basis questions, from NRC Integrated Inspection Report No. 50-395/97-13, concerning the safety classification of the auxiliary building leak detection system. The inspectors also conducted a walk-through inspection of the Residual Heat Removal-Containment Spray recirculation area of the auxiliary building in conjunction with a review of the licensee's modification package for replacement of capacitance probes with flood level switches to improve the reliability of the leak system. Based on these reviews, the inspectors were in agreement with the licensee's position that the system was properly classified in accordance with the plant design bases.
- E8.2 (Closed) Inspection Followup Item 50-395/96009-04: inconsistent TS and design basis limits for service water temperature. NRC Integrated Inspection Report No. 50-395/97-11 discussed the licensee's implementation of administrative limits on Service Water (SW) temperatures. Data for a new SW pond thermal model was gathered during the last refueling outage in October 1997. Analysis and validation of the model are in progress and preliminary results are expected in October 1998. The licensee plans to submit a TS change to the NRC by March 1999.

**IV. Plant Support****R1 Radiological Protection and Chemistry (RP&C) Controls****R1.1 Observation of Health Physics (HP) Survey Practices****a. Inspection Scope (71750)**

The inspectors observed normal radiological practices and controls during the conduct of tours and observations of maintenance activities and observed a B Charging Pump Room survey.

**b. Observations and Findings**

On August 24 a radiological survey and analysis of swipes taken during maintenance activities occurring in the B Charging Pump Room were observed by the inspectors. The HP technician used proper radiological protection techniques and the survey results were made available to the maintenance workers prior to commencing work and any special radiological considerations were discussed with the supervisor covering the maintenance activities on B Charging Pump.

c. Conclusions

The normal radiological practices and controls observed during the conduct of tours and a specific review of a B Charging Pump Room HP survey and analysis of swipes were found to be acceptable.

P1 Conduct of EP Activities

P1.1 Annual Training For State and Local Government Agencies

a. Inspection Scope (71750)

The inspectors attended the licensee's annual training for state and local government agencies.

b. Observations and Findings

On September 3 the licensee held an annual meeting with state and local officials. Representatives from the South Carolina Emergency Preparedness Division (EPD), the South Carolina Department of Health and Environmental Control (DHEC), and county officials from Newberry, Lexington and Richland counties were present. The meeting included annual refresher training topics and current issues. The training topics included a review of Emergency Action Levels, a review of the siren system activation process, and other emergency response actions. The meeting provided useful training and discussions for the meeting participants.

c. Conclusions

A licensee meeting with state and local government emergency preparedness officials provided useful training and discussions of current issues concerning response to emergency events.

S1 Conduct of Security and Safeguards Activities

S1.1 Access Authorization Program and Related Equipment/Processes

a. Inspection Scope (81700)

The inspectors evaluated the licensee's program for access authorization, alarm stations, communications, Protected Area (PA) access control of personnel, packages, and vehicles as committed to in the Physical Security Plan (PSP) and appropriate Security Plan Procedures (SPPs).

b. Observations and Findings

Access Authorization Program (AAP)

The inspectors reviewed five active unescorted access personnel files and three records of personnel, that either the licensee had denied

access to, had their access removed, or who subsequently appealed their denied access. The licensee maintained accurate records that documented all actions that had a bearing on each case. Access to the personal information in the AAP records was limited to five individuals. Two individuals were issued a key to the AAP record files. Each key was secured when not in use. Personal information was safeguarded from release to unauthorized individuals. AAP records were released only to authorized agencies who requested AAP records formally in writing by signature. The licensee audited the AAP at least every 12 months. The last audit was conducted May 11-27, 1998. The AAP was maintained and operated in a superior manner and considered a strength to the security program.

### Alarm Stations

The inspectors verified that annunciation of protected and vital area (PA/VA) alarms occurred audibly and visually in the alarm stations. The licensee equipped both stations with CCTV assessment capabilities and communication equipment. Alarms were tamper-indicating and self-checking, and provided with an uninterruptable power supply. Capable and knowledgeable security operators continually manned these stations. The stations were independent yet redundant in operation. Alarm station interiors were not visible from the protected area, and no single act could remove the capability of calling for assistance or otherwise responding to an alarm.

### Communication

The inspectors evaluated the internal and external security communication links, and determined that they were adequate and appropriate for their intended function. At the time of the inspection, the local law enforcement agency radio communications were inoperable. Appropriate compensatory measures were in effect. Each security force member could communicate with an individual in each of the continuously manned alarm stations, who could call for assistance from other security force personnel and from local law enforcement agencies. The alarm stations had the capability for continuous two-way voice communication with local law enforcement agencies through direct and conventional telephone services.

### PA Access Control of Personnel

The inspectors reviewed applicable PSP personnel access control and procedural commitments to ensure that the licensee provided appropriate access controls for the PA. The licensee used a colored-coded, numbered, picture badge identification system for personnel who were authorized unescorted access to the PA and VAs. The codes encrypted in the issued key card corresponded to vital areas to which individuals had authorized access. Picture badges issued to nonlicensee personnel also indicated by color coding that no escort was required and areas that they could gain authorized access. The inspectors noted that personnel displayed their badges while within the PA. Visitors authorized



escorted access to the PA were issued a badge that showed an escort was required, and were escorted by licensee-designated escorts while in the PA. The licensee used biometric hand geometry to ensure personal identification of individuals entering the PA. Access control program records were available for review and contained sufficient information for identification of persons authorized access to the PA. The licensee maintained access records of key cards, key card codes, and other related equipment during a person's employment or for the duration of use of these items.

#### PA Access Control of Packages and Material

The inspectors reviewed applicable PSP access control and procedural commitments to ensure that the licensee provided appropriate package and material access controls for the PA. The inspectors observed 13 individuals with hand carried items and vehicles processed through the PA access portal and PA vehicle access portal. These observations found that security personnel confirmed the authorization of, and identified packages and material at the access control portals before allowing them to enter the PA. The licensee used security force personnel, explosive and metal detectors, and X-ray equipment to identify and confirm that prohibited materials were not entering the PA.

#### PA Access Control of Vehicles

The inspectors reviewed applicable access control procedures to ensure that the licensee provided appropriate access controls for the PA. Individuals who controlled the admittance control hardware that allowed vehicle access to the PA were in an approved enclosure. Security force personnel escorted nondesignated vehicles while within the PA. Vehicles were off-loaded in the PA at specifically designated materials receiving areas that were not next to a vital area. Licensee-designated vehicles were limited to onsite plant use and remained in the PA except for operational, maintenance, repair, security, and emergency purposes. The inspectors reviewed the corrective actions concerning Violation 50-395/98002-02 and found actions taken to correct the violation were as stated in Reply to Notice of Violation letter, dated June 2, 1998. See paragraph S8.1 for additional information on the NOV.

#### c. Conclusions

The conduct of security and safeguards activities in access authorization, alarm stations, communications, protected area access control of personnel, packages and material, and vehicles were being implemented according to regulatory requirements and Physical Security Plan commitments. The access authorization program was a strength in the security program.

## S2 Status of Security Facilities and Equipment

### S2.1 Protected Area Access Equipment Control

#### a. Inspection Scope (81700)

The inspectors evaluated the licensee's testing and maintenance program, PA detection aids, PA assessment aids, and personnel search equipment to ensure compliance with criteria of the PSP and SPPs.

#### b. Observations and Findings

##### Testing and Maintenance

The inspectors reviewed records of the first quarter of 1997 tests of the metal detectors, second quarter of 1996 tests of the X-ray devices, and the seven-day test of the explosive detectors during the week of April 2, 1998. The inspectors found that documents on file proved that the licensee was maintaining and testing systems and equipment as committed to in the PSP and applicable SPPs. The inspectors observed seven-day tests of the intrusion detection system of the site PA perimeter and VA portals, and assessment aids of the site PA perimeter. All equipment tested functioned as required.

##### PA Detection Aids

The inspectors observed seven-day tests of intrusion detection devices in five PA perimeter isolation zones. The intrusion detection devices tested detected attempts to penetrate through the system (microwave and Perifeld). The inspectors verified, by observations and by reviewing the testing documentation associated with the equipment repairs, that, when needed, repairs were made in a timely manner and that the equipment was functional, effective, and met the requirements of the PSP.

##### PA Assessment Aids

The inspectors evaluated the effectiveness of the PA assessment aids and the abilities of the alarm station operators to assess alarm annunciations received in the alarm stations. This was done by observation of the CCTV surveillance system and the performance of the alarm station operators upon receiving intrusion detection alarm annunciations. The CCTV system was tamper proof from the camera to the alarm station. The quality and clarity of the CCTV images were excellent and considered a strength in the security program.

##### Personnel Search Equipment

The inspectors verified that personnel, hand-carried packages or material, and delivered packages or materials were searched adequately before being admitted to the PA. These searches were either by physical search or by search equipment. The inspectors observed security personnel search personnel using metal and explosive detectors for

firearms, explosives, incendiary devices, and other items that could be used for radiological sabotage. Hand-carried packages or materials were searched by X-ray devices or manually searched by security personnel.

c. Conclusions

The security testing and maintenance program adequately ensured the reliability of the security equipment and devices. The personnel search equipment, perimeter intrusion detection aids, and assessment aids functioned according to the PSP and implementing procedures. The CCTV images were excellent and considered a strength in the security program.

**S4 Security and Safeguards Staff Knowledge and Performance**

S4.1 Security Force Requisite Knowledge

a. Inspection Scope (81700)

The inspectors evaluated the security organization response capability to security threats, contingencies, and routine response situations, including drills to ensure consistency with the SPPs, the approved PSP, and Safeguards Contingency Plan.

b. Observations and Findings

The inspectors randomly interviewed approximately 15 security personnel, including supervisors, and witnessed approximately 12 others in the performance of their duties during normal operations and two security event exercises. Members of the security force were knowledgeable in their duties and responsibilities, response commitments and procedures, and armed response tactics. The inspectors found that armed response personnel had been instructed in the use of deadly force as required by 10 CFR Part 73.

c. Conclusions

Security personnel appropriately demonstrated their response capabilities and possessed appropriate knowledge to carry out their assigned response duties and responsibilities, including response procedures, use of deadly force, and armed response tactics.

**S8 Miscellaneous Security and Safeguards Issues (92904)**

S8.1 (Closed) VIO 50-395/98002-02: failure to search vehicles according to Security Plan procedures. The inspectors verified that the licensee investigated, documented and implemented corrective actions as described in the Reply to Notice of Violation letter, dated June 2, 1998. The corrective action of the security organization to prevent the recurrence of this violation was appropriate and timely. This item was also discussed in section S1 of this report, under paragraph titled, PA Access Control of Vehicles.

**F1 Control of Fire Protection Activities****F1.1 Fire Drill Observation****a. Inspection Scope (71750)**

The inspectors observed an evening shift fire drill and simulated medical emergency from the control room and at the fire scene.

**b. Observations and Findings**

On August 13, the inspectors observed an evening shift fire drill. Control room operators used fire plans and emergency procedures, and promptly called for off-site assistance when it became apparent that the on-site fire team could not control the simulated fire. Operators also correctly classified the emergency action level and correctly sounded plant alarms. The fire response team with off-site fire department assistance adequately extinguished the fire. The inspectors concluded that this drill was useful and resulted in several areas for improvement.

**c. Conclusions**

An after hours fire drill, which included offsite participation, demonstrated the drill objectives. The drill critique identified several areas for enhancement.

**F2 Status of Fire Protection Facilities and Equipment****F2.1 Fire Protection****a. Inspection Scope (71750)**

Normal fire protection practices and controls were observed during routine plant tours. A review of a fire protection area permit and observation of required roving fire watch requirements were also conducted.

**b. Observations and Findings**

During routine plant tours the inspectors examined the operability of fire alarms, extinguishing equipment, firefighting equipment, fire barriers and the general control of ignition sources and flammable material. The inspectors reviewed selected portions of the V.C. Summer Fire Protection Evaluation Report (FPER) and various Fire Protection Administrative and Emergency Procedures. Inspectors reviewed a fire protection area permit allowing the TDEFW pump room door to be open during the TDEFW test conducted on August 21. The inspectors noted that proper reviews required by FPP-020 (Fire Protection) Program Administration had been completed and the documentation was posted. Additionally, the inspectors observed security/fire watch personnel performing the required roving watch hourly reviews.

c. Conclusions

Portions of the Fire Protection program reviewed indicated that it was being conducted as required.

V. Management Meetings

## X1 Exit Meeting Summary

The inspectors presented the inspection results to members of licensee management at the conclusion of the inspection on September 10, 1998. The licensee acknowledged the findings presented.

The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

## PARTIAL LIST OF PERSONS CONTACTED

Licensee

C. Barbier, Senior Stress Engineer  
 F. Bacon, Manager, Chemistry Services  
 L. Blue, Manager, Health Physics  
 M. Browne, Manager, Systems and Component Engineering  
 S. Byrne, General Manager, Nuclear Plant Operations  
 R. Clary, Manager, Quality Systems  
 M. Fowlkes, Manager, Operations  
 S. Furstenberg, Manager, Maintenance Services  
 D. Lavigne, General Manager, Nuclear Support Services  
 G. Moffatt, Manager, Design Engineering  
 L. Hipp, Manager, Nuclear Protection Services  
 A. Rice, Manager, Nuclear Licensing and Operating Experience  
 G. Taylor, Vice President, Nuclear Operations  
 R. White, Nuclear Coordinator, South Carolina Public Service Authority  
 B. Williams, General Manager, Engineering Services  
 G. Williams, Associate Manager, Operations

## INSPECTION PROCEDURES USED

IP 37550: Engineering  
 IP 37551: Onsite Engineering  
 IP 61726: Surveillance Observations  
 IP 62700: Maintenance Implementation  
 IP 62707: Maintenance Observations  
 IP 71707: Plant Operations  
 IP 71750: Plant Support Activities

IP 81700: Physical Security Program for Power Reactors  
 IP 92901: Followup - Plant Operations  
 IP 92902: Followup - Maintenance  
 IP 92903: Followup - Engineering  
 IP 92904: Followup - Plant Support

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

50-395/98-07-01      EEI missed Technical Specification surveillance requirement to vent the Residual Heat Removal (RHR) pump casings (Section M1.3)

50-395/98007-02      URI Incorrect pipe displacements shown on the pipe support drawings (Section E1.3)

Closed

50-395/97001-00      LER Manual reactor trip (Section 08.1)

50-395/97002-00      LER Automatic turbine trip and feedwater isolation (Section 08.2)

50-395/96006-00      LER ABB/ITE 27N relay failure (Section M8.1)

50-395/97013-05      URI Review of licensee response to design basis issues relating to the Leak Detection System installed in the auxiliary building (Section E8.1)

50-395/96009-04      IFI Inconsistent TS and design basis limits for service water temperature (Section E8.2)

50-395/98002-02      VIO Failure to search vehicles according to Security Plan Procedures (Section S8.1)