



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

Report No.: 50-395/85-28

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

Docket No.: 50-395

License No.: NPF-12

Facility Name: V. C. Summer

Inspection Conducted: June 1 - July 5, 1985

Inspectors: *[Signature]*
C. W. Hehl

7/17/85
Date Signed

[Signature]
P. C. Hopkins

7/17/85
Date Signed

Approved by: *[Signature]*
F. S. Cantrell, Section Chief
Division of Reactor Projects

7/17/85
Date Signed

SUMMARY

Scope: This routine, unannounced inspection entailed 235 inspector-hours onsite in the areas of plant tours; operational safety verifications; monthly surveillance observations; monthly maintenance observations; review of inspector followup items; a survey of licensee's response to selected safety issues; and a special review of selected issues concerning on-the-job training.

Results: One violation was identified - failure to adequately evaluate existing plant conditions prior performance of a surveillance test which resulted in both trains of ECCS being inoperable.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *O. Bradham, Director, Nuclear Plant Operations
- *K. Woodward, Manager, Operations
- *M. Quinton, Manager, Maintenance
- *M. Browne, Manager, Technical Support
- B. Croley, Group Manager, Technical and Support Services
- *A. Koon, Associate Manager, Regulatory Compliance
- *R. Fowlkes, Regulatory Compliance
- *J. Connelly, Deputy Director, Operations and Maintenance
- *R. Bouknight, Regulatory Compliance
- *G. Putt, Manager, Scheduling and Materials
- *S. Hunt, Associate Manager, Surveillance System

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

*Attended exit interview

2. Exit Interview (30703)

The inspection scope and findings was summarized on July 9, 1985, with those persons indicated in paragraph 1 above. The inspector described the areas inspected and discussed the inspection findings. One Violation was identified:

Violation 85-28-01: Failure to adequately evaluate plant conditions prior to authorizing a surveillance test which resulted in both trains of ECCS being inoperable.

The Licensee did not identify as proprietary any of the materials provided to or reviewed by the inspectors during the inspection.

3. Licensee Action on Previous Enforcement Items (92702)

Not inspected during this period.

4. Review of Inspector Followup Items (92717)

(Closed) Inspector Followup Item (83-17-04), Control of Overtime. This item raised a concern over the interpretation of TS 6.2.2.f which details the licensee's requirements for control of overtime for key plant personnel. An interpretation provided to the licensee by NRR letter dated June 27, 1985 clarified the requirement and alleviated the inspector concern. Station Administrative Procedure (SAP) 152, Control of Overtime for Key Personnel,

which delineates the licensee's administrative controls for this system was reviewed and found adequate.

5. Operational Safety Verification (71707, 71710)

The inspector observed control room operations, reviewed applicable logs and conducted discussions with control room operators during the report period. The inspector verified the operability of selected emergency systems, reviewed removal and restoration logs, and tagout records, and verified proper return to service of affected components. Tours of the control, auxiliary, fuel handling, intermediate, diesel generation, service water and turbine buildings were conducted to observe plant equipment conditions including potential fire hazards, fluid leaks, and excessive vibrations, and to verify that maintenance requests had been initiated for equipment in need of maintenance. The inspector, by observation and direct interview, verified that the physical security plan was being implemented in accordance with the Station Security plan.

During a routine tour of the control room on June 11, 1985, the inspector determined that neither of the required Emergency Core Cooling Subsystems (ECCS) were fully operable. The unit was at rated power at the time of this observation.

In accordance with the requirements of General Maintenance Procedure (GMP) 101.008, Seismic and Vital Equipment Area Scaffolding/Shielding Evaluation and Utilization, the potential adverse effects (Seismic fall down) of scaffolding proposed for erection in the vicinity of Residual Heat Removal (RHR) pump "A" had been evaluated by Maintenance Engineering and a determination made to declare the pump inoperable for the period the scaffolding would be in place. The scaffolding was needed to support performance of a planned Inservice Inspection (ISI) of a weld. At 7:10 a.m. on June 11, 1985, Removal and Restoration (R&R) Report No. 850-344 was written declaring RHR pump "A" inoperable. The Scaffolding was erected at approximately 8:45 a.m. on June 11, 1985.

During performance of the planned ISI weld inspection Station Quality Control (QC) identified a potential deficiency in RHR system mechanical snubber RHH-164. As a result of this QC finding, at approximately 10:15 a.m. on June 11, 1985 a Nonconformance Notice (NCN) 1978 was written on Snubber RHH-164 and a second R & R report no. 850-345 was written declaring RHR Pump "A" inoperable based on the deficient snubber. Snubber RHH-164 was removed at approximately 12:30 p.m. and a replacement installed at approximately 3:15 p.m. on June 11, 1985.

Coincident, with the above inoperability of RHR Pump "A", the Shift Supervisor authorized Instrument Maintenance (I&C) personnel to perform Surveillance Test Procedure (STP) 345.076, Solid State Protection System Monthly Actuation of Train B Reactor Trip Breaker and Test of SI Time Delay. STP 345.076 requires the Solid State Protection System (SSPS) Train "B" Input Error Inhibit Switch be placed in the "INHIBIT" position. Placing this switch in the "INHIBIT" position open circuits all input relays for the

train under test, thus blocking all trips and safeguards actuations from that train. The June 11, 1985 performance of STP 345.076 resulted in the blockage of safeguard actuations from ECCS Train "B" during the periods of approximately 8:50 a.m. to 10:47 a.m. and 1:14 p.m. to 2:18 p.m.

For the plant condition (Mode 1) which existed on June 11, 1985, Technical Specification 3.5.2 requires that two independent Emergency Core Cooling Subsystem (ECCS) be OPERABLE with each subsystem comprised of:

- a. One OPERABLE centrifugal charging pump,
- b. One OPERABLE residual heat removal heat exchanger,
- c. One OPERABLE residual heat removal pump, and
- d. An OPERABLE flow path capable of taking suction from the refueling water storage tank on a safety injection signal and automatically transferring suction to the residual heat removal sump during the recirculation phase of operation.

TS 1.18, Operable-Operability, establishes criteria for operability which includes a system, subsystem, train, component or device being capable of performing its specified functions.

Since a function of the ECCS is to respond to automatic initiation signals from its respective SSPS train and placing the Input Error Inhibit Switch in the "INHIBIT" position blocks automatic actuation of safeguard functions, during performance of STP 345.076 Train "B" ECCS is inoperable. Since RHR pump "A" had also been declared inoperable, on the morning of June 11, 1985 for a period of about two hours and again in the afternoon for a period of about one hour, neither of the required ECCS's were fully operable.

With both required trains of ECCS less than fully operable, TS 3.0.3 requires that within one hour, action be initiated to place the unit in a Mode in which TS 3.5.2 is not applicable. With TS 3.5.2 applicable in Modes 1, 2 & 3, the existing condition required actions to be initiated to bring the plant to Mode 4. Contrary to this requirement, on June 11, 1985, no actions was initiated to place the plant in Mode 4. This failure to initiate the required action of TS 3.0.3 is a violation (85-28-01).

Discussions with licensee personnel determined that there have been two barriers established to preclude this type occurrence. First, an attempt is made by the licensee's Planning and Scheduling Group to schedule surveillance and routine maintenance activities such that activities affecting Train "A" or "B" components are performed during alternate weeks. In this instance, the performance of STP 345.076 had been scheduled for June 5, 1985, a week designated for Train "B" work. The ISI inspection on "A" RHR piping had been scheduled for the week of June 10, 1985, a week designated for Train "A" work. Unfortunately, the licensee's scheduling system had no adequate means of providing timely feedback on the schedule slippage of STP 345.076. Secondly, and most important, the Shift Supervisor is the ultimate

barrier to preclude this type occurrence, and if not precluded, then to take the required compensatory actions. Station Administrative Procedure (SAP) 134, Control of Station Surveillance Test Activities, specifies that the Shift Supervisor (SS) is ultimately responsible for safe, effective conduct of all surveillance activities and requires that, prior to authorizing performance, he evaluate each surveillance activity request to determine if plant conditions allow performance. Subsequent discussions with the on-duty Shift Supervisor determined that at the time he authorized performance of STP 345.076, he was aware of the inoperable status of RHR Pump "A", but that he did not consider the performance of STP 345.076 as rendering the other ECCS train inoperable. He felt that the I&C personnel could have been directed to realign SSPS Train "B" had the system been called upon to function. Thus, neither of these established barriers functioned adequately to preclude this event.

TS 6.8.1 requires that written procedures be implemented for control of surveillance and test activities of safety related equipment. SAP 134 implements this requirement. Therefore, the above noted inadequate evaluation of existing plant conditions prior to authorizing the performance of STP 345.076 constitutes a violation - failure to adequately implement SAP 134. This violation is a second portion of the above violation

The safety significance of this occurrence appears to be two fold. First is the significance of the event itself, secondly, and potentially of greater significance, is the operating philosophy which allowed this event to occur.

The declaration of RHR pump A inoperable was a necessary conservation in lieu of a costly detailed engineering evaluation of the potential affect the scaffolding would have had on the RHR system during a seismic event. The declaration of the RHR system inoperable based on the defective snubber was also a necessary conservation pending the required engineering evaluation of its potential affect on system operation. Subsequent to this event, the licensee has conducted evaluations of the affect on RHR Train "A" of both the scaffolding and the defective snubber (including its removal for replacement). The evaluations for the defective snubber (while in place and while removed for replacement) indicate that RHR Train "A" would have been able to perform its function. The results of the scaffolding evaluation indicate that the RHR Pump could have been rendered inoperable. Nevertheless, with the probability of a seismic event occurring during the time period the scaffolding was in place being small, and considering that ECCS Train "A" was otherwise operable, the impact on plant safety of this event due to equipment status was relatively minor.

What is of more than minor safety significance in this event is the philosophy that prompted the SS to authorize performance of STP 345.076 fully aware of the existing plant conditions. As previously noted, during subsequent discussion with the on-duty SS it was determined that he did not consider the performance of STP 345.076 as rendering ECCS Train "B" inoperable, despite the inhibiting of that train's automatic actuation functions. This philosophy was based on the thought that a trained operator would be able to rapidly discern the need for actuation and direct the local

test performer to re-align the SSPS. He was also aware of the potential conservatisms underlying the declarations of inoperability associated with RHR Train "A". Thus his decision to allow performance of STP 345.076 was based on conjecture, unsupported by analytical evaluations, regarding the actual status of RHR Train "A" and the ability of manual operator actions to mitigate a potential event requiring automatic ECCS response. It is this philosophy, that decisions regarding plant safety can be made based on conjecture, unsupported by analytical evaluations, that is of significance in this event. It is this philosophy that is the root cause of the above noted violations.

6. Surveillance Observation (61726)

During the inspection period, the inspector verified by observation/review that selected surveillances of safety-related systems or components was conducted in accordance with adequate procedures, test instrumentation was calibrated, limiting conditions for operation were met, removal and restoration of the affected components were accomplished, test results met requirements and were reviewed by personnel other than the individual directing the test, and that any test deficiencies identified during the testing were properly reviewed and resolved by appropriate management personnel.

No violations or deviations were identified, except as noted in paragraph 5.

7. Maintenance Observation (62703)

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

No violations or deviations were identified in this area.

8. Fuel Receipt and Storage (60705)

Ascertained that fuel received at the site is properly accepted, and safeguarded and that it is stored in accordance with NRC requirements.

The following procedures were reviewed prior to receipt of fuel for adequacy.

- FHP 602 - (Fuel Handling Procedure) Rev. 2, March 15, 1982, Limitations and Precautions for Handling New and Partially Spent Fuel Assemblies.
- FHP 608 - (Fuel Handling Procedure) Rev. 4, October 22, 1984, Transfer of New Fuel Assemblies to the New Fuel Elevator.
- FHP 604 - (Fuel Handling Procedure) Rev. 4, October 22, 1984, Functional Testing of the Fuel Handling Systems.
- FHP 605 - (Fuel Handling Procedure) Rev. 5, October 9, 1984, Receipt of New Fuel and Control Components.
- HPP 407 - (Health Physics Procedure) Rev. 2, August 20, 1984, Controls for Receipt of New Fuel.

These procedures were determined to be technically adequate for the receipt inspection and storage of new fuel, to include inspection and handling.

On June 26, 1985, fuel shipment No. CA00543 by carrier Westinghouse No. 960 arrived at V.C. Summer. This shipment consisted of 14 fuel assemblies in seven casks. The inspector observed receipt, unpackaging and storage of this new fuel. No violations or deviations was noted.

9. Survey of Licensee's Response to Selected Safety Issues

During this inspection period, a special survey of this licensee's response to selected safety issues was completed. The survey was conducted to determine the actions that licensee's at operating reactors have taken to address a selected sample of safety issues. The issues reviewed were identified in IE Information Notices (IEN) 83-75 and 84-06. These particular issues were also the subject of Institute of Nuclear Power Operations (INPO) Significant Operating Experience Reports (SOER) 84-02 and 84-03.

IEN 83-75 and SOER 84-02 were concerned with control rod mispositioning events which can result in fuel cladding damage either directly or in conjunction with plant transients. Several events had occurred at other facilities in which the mispositioning of control rods have resulted in fuel damage.

IEN 84-06 and SOER 84-03 were concerned with the potential steam binding of auxiliary feedwater pumps due to back leakage. This steam binding had occurred at several facilities resulting in inoperability of the affected auxiliary feedwater pumps.

The inspectors review determined that these two safety issues had been evaluated for applicability to the licensee's facility and applicable compensatory measures had been implemented to reduce the potential for these types occurrences. Applicable INPO SOER recommendations had been implemented or evaluations and justifications for not implementing were reviewed.

The information gathered during this review was forwarded to NRR for inclusion in their survey results.

10. Special Training Review

As a result of continuing NRC interest regarding the circumstance of and potential contributing factors to the February 28, 1985 Positive Rate Trip Event, discussed in IE Report 50-395/85-12, a special review of selected portions of the facility Licensed Operator Training Program was conducted. The primary focus of this review was to determine the following:

- a. Training program status of the trainee who manipulated the controls during the subject event.
- b. Whether the licensee's program addresses a time frame during which in-plant training (practical factors) are to be accomplished.
- c. Whether the licensee's program designates the method and standards by which the in-plant training is accomplished.
- d. Whether the licensee's program identifies training requirements for personnel conducting the in-plant training phase.

The inspectors accomplished this review by in-office training materials review, discussions with Training Department personnel and a review of personnel training records. The results of this review are as follows:

- (1) The trainee of interest was a qualified Auxilliary Operator and had completed the first week of the licensed Reactor Operator Training Program, which was conducted the week of February 18, 1985. This first week of training included the following instruction: Introduction to Thermodynamics; Operation of a PWR; Properties of Water; Steam Surges; Rod Control; PWR Chemistry; Corrosion in PWR Systems; and a Prescreening Examination.
- (2) The Licensee's Program does not specify a time frame for accomplishment of practical factors although, in general the required in-plant practical factors are accomplished during the trainee's 90 days on shift as a extra person. The program does not require the associated classroom training prior to in-plant training. Practical factors are accomplished by actual performance, walk-through or on the plant specific simulator.

In accordance with NRC requirements, each candidate must manipulate the controls of the reactor during five significant reactivity changes. The reactivity manipulations must be accomplished at the plant.

- (3) Specific guidance to assure program consistency is included in the practical factors portion of this program. The program contains both instructions to the examiner and the trainee identifying the knowledge to be demonstrated and the method by which the evaluation is to be performed.
- (4) Aside from the guidance provided as described in Item C above, an oral Examination Seminar was conducted for potential examiners (SRO'S) as part of the 1984 Licensed Operator Requalification Program. This training was conducted in response to an INPO recommendation identified during the INPO Accreditation Process. At present no formal program exists to periodically administer this type training to persons authorized to administer oral examinations.

It is noted that the Shift Supervisor overseeing the trainee during the February 28, 1985 event did not attend this seminar.