



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

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Report No.: 50-395/93-02

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

Docket No.: 50-395

License No.: NFP-12

Facility Name: V. C. Summer Nuclear Station

Inspection Conducted: January 11-15, 1993

Inspector:

G. W. Salyers

02/04/93

Date Signed

Approved by:

K. P. Barr, Chief

2/5/93

Date Signed

Emergency Preparedness Section

Radiological Protection and Emergency Preparedness Branch

Division of Radiation Safety and Safeguards

SUMMARY

Scope:

This routine, announced inspection was conducted in the area of emergency preparedness. The licensee's program was reviewed to determine whether the licensee was maintaining a capability for emergency detection and classification, protective action decision-making, notifications and communications, shift staffing and augmentation, training, and dose assessment.

Results:

The licensee's Emergency Preparedness Program was operational and fully capable of performing its function. Management supported the upgrade of facility equipment such as, Emergency Warning Siren System (EWSS) Telephone System (Paragraph 3), and Emergency Response Organization Notification System (ERONS) (Paragraph 5). One Inspector Followup Item (IFI) was identified concerning evacuation route signs within the protected area (Paragraph 7).

REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *K. Beale, Supervisor, Emergency Services
- *L. Bouknight, Emergency Preparedness Specialist
- *D. Caviger, General Manager, Nuclear Safety
- *C. Counts, Emergency Preparedness Coordinator
- *R. Fowlkes, Manager Nuclear Licensing
- *A. Koon Jr., Nuclear Operations Department Project Coordinator
- *C. McKinney, Licensing
- *R. Myers, Emergency Preparedness Specialist
- *K. Nettles, General Manager, Station Support
- *H. O'Quinn, Nuclear Plant Services
- *M. Quinton, General Manager, Emergency Services
- *G. Taylor, General Manager, Nuclear Plant Operations

Other licensee employees contacted during this inspection included members of the emergency response organization, training staff, and office personnel.

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- *F. Cantrell, Section Chief, Division of Reactor Projects, Region II
- *W. Cline, Chief, Radiation Protection and Emergency Preparedness Branch, Region II
- *T. Farnholtz, Intern, Division of Reactor Projects
- *B. Haag, Senior Resident Inspector

*Attended exit meeting

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

2. Emergency Detection and Classification (82201)

Pursuant to 10 CFR 50.47(b)(4) and 10 CFR Part 50, Appendix E, Sections IV.B and IV.C and Appendix 1 of NUREG-0654, this program area was inspected to determine if the licensee had reviewed the EALs with State and local authorities as required, and if classification procedures had provisions for prompt and accurate classifications by the licensee.

The inspector verified that the licensee's notification procedures included criteria for initiation of offsite notifications and for development of PARs. The notification procedures required that offsite notifications be made promptly after declaration of an emergency.

The inspector reviewed a letter dated July 30, 1992, from the State of South Carolina Military Department, Emergency Preparedness Division that stated the latest revision of EPP-001 (Revision 21) had been reviewed by the appropriate state and local authorities. There were no comments and all parties concurred.

No violations or deviations were identified.

3. Notification and Communication (82203)

Pursuant to 10 CFR 50.47(b)(5) and (6) and 10 CFR Part 50, Appendix E, Section IV.D., this area was inspected to determine whether the licensee was maintaining a capability for notifying and communicating (in the event of an emergency) among its own personnel, with offsite supporting agencies and authorities, and with the population within the EPZ.

The inspector reviewed documents indicating that the licensee had performed the required weekly silent test, monthly growl test and annual full actuation test. In 1991, the annual operability of the EWSS system was 88.9%. The licensee informed FEMA that the EWSS did not meet the 90% operability requirement for the EWSS as stated in FEMA REP 10. The licensee informed FEMA that they were in the process of upgrading the EWSS with a new radio receiver actuation and feedback system. The inspector reviewed a letter from FEMA Region IV to NRR which discussed the licensee failure to meet the guidance of FEMA-REP-10 "Guide for the Evaluation of Alert and Notification Systems for Nuclear Power Plants." In the letter, FEMA did not require any action based on the licensee upgrade of the system. The licensee successfully completed a full actuation modification acceptance test of the EWSS on January 23, 1992, and an annual full actuation test on June 3, 1992. The inspector reviewed documentation that indicated since the system upgrade, operability of the EWSS had increased to 96.3% in 1992.

The inspector discussed with the licensee the 75% minimum operability criteria in EPP-022. The licensee stated that the criteria only applied to single test and the criteria was chosen based on the original FEMA system operability test. The system passed the FEMA operability test if 75% of the local residence surveyed stated that they could hear the sirens.

The inspector noted when calculating the operability factor for the EWSS, (number of sirens that function properly divided by the total number of sirens), the licensee subtracted from the denominator, the number of sirens known to be out of service. This in affect increased the apparent operability factor. The accepted method of calculating siren operability was discussed with the licensee. The licensee stated that the 1992 data had been recalculated, and no credit was taken for known inoperable sirens. The licensee stated they will continue to use the total number of installed sirens when calculating EWSS system operability.

The inspector reviewed documentation indicating satisfactory completion of the required annual radio check to schools within the EPZ.

In response to the loss of normal power to the telephone system, the inspector, with the assistance of a licensee engineer, reviewed the operation of the power supply to the EWSS radio transmitter. The transmitter sends a radio signal to actuate the individual sirens. Licensee drawings E-206-048 indicate that the EWSS radio transmitter receives it's power from UPS "A" which is supplied from 480V switchgear A or B through a manual transfer switch. UPS "A" also had a battery backup. The inspector did not identify any concerns.

The licensee had contracted HMM and Associates to evaluate evacuation times based on the 1990 census. HMM and Associates will use data from the Central Midland Committee (four counties within the EPZ) in conjunction with the 1990 census data. The inspector reviewed a letter from HMM Associates (December 8, 1992) and discussed with the licensee the scope of HMM Associates contract. The contract was to:

- survey the road system in the 10 mile EPZ
- review the population changes from a total vehicle standpoint and compare this to the current ETE
- collect 1990 census data
- survey of the schools and businesses in the EPZ
- when the demographic study is complete, compare the results to the 1983 ETE population data

The letter indicated that evaluation should be completed in the first quarter of 1993.

The reactor trip and loss of BOP power on January 12 resulted in loss of normal power to the telephone system and placed the telephone system on its backup battery power supply. The operability of the telephone system became a concern because it is the principal means of notifying offsite agencies of site emergency situations. Approximately twenty minutes following the trip, the licensee made an announcement over the paging system asking all personnel to limit their usage of the telephones. After approximately one hour, the battery voltage had decreased from approximately 50VDC to 45VDC. Voltage had decreased to 43VDC when normal power was restored. The telephone system fails when power drops to 37VDC. The length of time that the battery was capable of powering the system had been reduced because of major upgrades to the telephone system. While reviewing diagrams of the communication system, the inspector noted that the ESSEX (microwave) telephone system shared the same battery charger and battery power supply as the normal telephone exchange. Also, further review revealed that the battery is not maintained by a periodic maintenance program. These issues were discussed with the licensee. The licensee noted the inspector's comments and referenced a communication power supply modification package, MRF -22416 "DC Power for Telephone system". The inspector reviewed the package and observed that three new battery chargers, which were part of the modification package, had been mounted, ready for

electrical hookup. The licensee stated that new, larger capacity batteries were already on site and that installation of the system should be completed before the outage in March. The system engineer in charge of the modification stated that the new battery had a 1680 Ampere-hour rating and that the calculated full load of the telephone system, as built, is approximately 100 amps. Based on the battery 1600 Ampere-hour rating and the system load of 100 amps, this modification would give the onsite telephone system a 16 hour backup power supply. The system engineer stated that when the new system is installed, a periodic maintenance program on the battery would be implemented.

The inspector and a licensee representative toured the TSC and the EOF. The inspector observed the placement (storage) and condition of the procedures required in the TSC and the EOF. The inspector verified the placement of radio stations, telephones, dose computers, facsimile machines, and requested the licensee to demonstrate the operability of SPDS computer terminals. Based on the general appearance and the operational demonstration of randomly selected equipment, the inspector concluded that the TSC and EOF appeared to be properly maintained and in a condition of operational readiness.

No violations or deviations were identified.

4. Shift Staffing and Augmentation (82205)

Pursuant to 10 CFR 50.47(b)(2) and 10 CFR Part 50, Appendix E, Section IV.A and IV.C, this area was inspected to determine if shift staffing for emergencies was adequate both in numbers and in functional capability, and whether administrative and physical means were available and maintained to augment the emergency organization in a timely manner.

The inspector reviewed the Emergency Planning Telephone Directory and noted that it was current and was being updated quarterly as required by the Plan. The inspector randomly selected names of emergency personnel from the emergency phone directory and verified that their phone number was correct. The inspector verified that positions identified as "# Required for minimum staffing" in the emergency phone book were consistent with NUREG-0654 Table B-1 and EPP-23, "Onsite Emergency Response Center Operation." No errors were identified.

The inspector reviewed a report of a practice Back-Up EOF activation drill conducted on November 11, 1992. The report stated that the Back-up EOF was fully activated in 88 minutes. Although 88 minutes was longer than the 75 minute goal, the report noted that all of the principle personnel were in place by 75 minutes. The inspector reviewed the 10 specific areas evaluated and the lead controller's 16 evaluation criteria. The inspector concluded that the licensee evaluation of the drill was both thorough and objective. The licensee graded the drill as satisfactory.

No violations or deviations were identified.

5. Knowledge and Performance of Duties (82206)

Pursuant to 10 CFR 50.47(b)(2) and (15) and 10 CFR Part 50, Appendix E, Section IV.F, and Section B of the Emergency Plan, this area was inspected to determine whether the licensee's key emergency response personnel were properly trained and understood their emergency responsibilities.

The inspector observed a Shift Communicator training class. The inspector noted that the instructor was on time, organized, had class handouts, covered the training objectives, and solicited class participation. The class was scheduled for four hours, but the building lost power 55 minutes into the session and did not reconvene that day. The inspector could not evaluate the content of the course other than from the handouts. The inspector did not identify any concerns from the material reviewed.

The inspector selected eleven individuals names from the emergency planning telephone directory. Using the licensee's computer tracking system and EPP-018, "Emergency Plan Training" Revision 12, the inspector verified the selected individuals had received the required initial training specified for their position and that their training was up-to-date. The inspector did not identify any delinquencies in training. The inspector noted that the emergency preparedness program does not require respiratory protection training for it's responders. This was discussed with the licensee. The licensee stated individuals needing respirator training for their job, are trained and their training is tracked by their work group. The inspector, using the licensee tracking computer, verified individuals which may need respirator training in their position, were receiving training and their training was being maintained up-to-date.

The inspector interviewed a Shift Communicator (Fire Protection Officer). The interview consisted of the inspector stating that a general emergency had been declared, and observing the interviewee perform portions of EPP-002, "Communication and Notification," Revision 28, which consisted of a simulated local group and statewide group beeper activation and a walkthrough of the call in sequence using the "Call Tree." The interviewee also performed a walkthrough of the EPP-021, "Activation of the Early Warning Siren System," Revision 14, for actuating the EWSS. No problems were identified.

The inspector observed a demonstration of a new Auto Dialer System (ERONS). The system uses a tier type user actuation. The system will actuate the emergency beepers and, if necessary, perform the emergency call tree if the beeper system failed. The system contains a call back message that gives the caller a briefing of the type of event, where to report, and their emergency position. The licensee stated the system should be operational by May 1993.

No violations or deviations were identified.

6. Dose Calculation and Assessment (82207)

Pursuant to 10 CFR 50.47(b)(9), this area was inspected to determine whether there was an adequate method for assessing the consequences of an actual or potential radiological release.

Interviews were conducted with two dose assessment supervisors, one from the TSC and one from the EOF. Each interviewee was given EPP-005, "Offsite Dose Calculations," Revision 17, and asked to perform an offsite dose calculation using both the nomogram and the manual method. The inspector then compared the two results. The interviewees were then asked to take field team data taken at 3 miles, back calculate the data to 1 mile and make a PAR based on their calculation. The inspector did not observe any procedural problems in performing the calculations or making PARs based on their calculations. The inspector did note the first interviewee incorrectly used the wrong side of the "time after shutdown" graph (HR-4) on the whole body nomogram. The dose assessor is to use the left side of HR-4 if data from G19 Radiation Monitor is used and the right side of HR-4 if data from A13/14 Radiation Monitor is used. There was a large difference in the scaling of the two sides of the graph. Using the wrong side of HR-4 resulted in a large error in one of the dose assessor's calculations.

The inspector noted that the second interviewee had completed dose assessment retraining the day of the interview. The training covered dose assessment methods using the nomogram. The first interviewee had not received the retraining, but was scheduled for retraining at a later date. The first interviewee received personal instruction from a member of the EP staff covering the error in his calculation.

No violations or deviations were identified.

7. Reactor Trip and Partial Loss of Balance of Plant Power Event

On January 12, 1992, the facility experienced a partial loss of balance of plant power and a reactor trip. The inspector observed the event from the TSC and focused primarily on potential classification and emergency preparedness issues.

The inspector concluded that no emergency action levels were exceeded, but, noted the following three issues:

- a. The concern over the battery backup power supply to the telephone system discussed in detail in Paragraph 3.
- b. The inspector exited the protected area from the TS. While walking through areas that had lost power, the inspector noted three emergency lighting fixtures that failed to illuminate. One hall in the Auxiliary Services Building was totally dark. The failed emergency lighting was brought to the licensee's attention. The licensee promptly repaired the failed lights and performed a complete test of the emergency lighting system in all areas that

had lost power. The inspector observed the corrective action and concluded that no follow-up actions were necessary.

- c. The inspector left the TSC and attempted to follow evacuation signs while exiting the protected area. The inspector noted that some of the evacuation signs in the stairwells were missing or not immediately recognizable. This issue was brought to the attention of the licensee. The inspector and a licensee representative walked down different areas of the control building noting the placement and size of the evacuation signs. The licensee agreed that additional signs were needed. The licensee committed to review evacuation routes and clearly place appropriate RED or GREEN evacuation signs identifying evacuation routes within the Control Building and the Aux Service Building. The licensee was informed that the commitment to review and clearly place appropriate RED or GREEN evacuation signs identifying evacuation routes within the Control Building and the Aux Service Building would be tracked as an IFI.

IFI 93-02-01: Review evacuation routes and clearly place RED and GREEN evacuation signs identifying routes within the Control Building and the Aux Service Building.

8. Independent and Internal Reviews and Audits (82701)

Pursuant to 10 CFR 50.47(b)(14) and (16) and 10 CFR 50.54(t), this area was inspected to determine whether the licensee has performed an independent review audit of the emergency preparedness program, and whether the licensee has a corrective action system for deficiencies and weaknesses identified during exercises and drills.

The inspector reviewed the licensee's independent audit report of the Emergency Preparedness Program. The report dated March 9, 1992, stated there were no findings issued, however, the report identified six enhancement items that are to be responded to and tracked if needed. The inspector concluded that the audit met the requirements of 10 CFR 50.54(t). The inspector noted from the report and from discussion with the licensee, that they are participating in an exchange program with other licensee's emergency preparedness groups when performing their independent audits.

The inspector reviewed a EP Self Assessment Report. This is a new program which the licensee implemented to improve the quality of their program. The report was analytical and objective and was viewed by the inspector as a proactive step to enhancing the program.

9. Action on Previous Inspection Findings (92701)

The inspector reviewed the open items from the previous inspection and concluded the items could best be evaluated and closed during an annual exercise inspection. No open items were closed during this inspection.

10. Exit Interview

The inspection scope and results were summarized on January 15, 1993, with those persons indicated in Paragraph 1. The inspector described the areas inspected and discussed in detail the inspection results. Licensee management was informed that no previous IFIs were closed. The licensee acknowledged the findings concerning evacuation route signs. No dissenting comments were received from the licensee. No proprietary information was reviewed during this inspection.

| <u>Item Number</u> | <u>Category, Description, and Reference</u> |
|--------------------|---|
| 50-395/93-02-01 | IFI: Review evacuation routes and clearly place RED and GREEN evacuation signs identifying routes within the control building and the Aux Service Building (Paragraph 7). |

11. Abbreviations And Acronyms

| | |
|-------|---|
| ARP | Alarm Response Procedure |
| Aux | Auxiliary |
| BOP | Balance Of Plant |
| EOF | Emergency Operating Facility |
| EPP | Emergency Plan Procedure |
| EPZ | Emergency Planing Zone |
| ERONS | Emergency Response Organization Notification System |
| ETE | Evacuation Time Estimates |
| EWSS | Emergency Warning Siren System |
| FEMA | Federal Emergency Management Agency |
| IFI | Inspector Follow-Up Item |
| MRF | Maintenance Request Form |
| NRR | Nuclear Reactor Regulation |
| NUREG | Nuclear Regulation |
| PAR | Protective Action Recommendation |
| TSC | Technical Support Center |
| UPS | Uninterruptable Power Supply |
| V | Volts |
| VDC | Volts Direct Current |