



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

MAY 03 1985

Report Nos.: 50-327/85-13 and 50-328/85-13

Licensee: Tennessee Valley Authority  
500A Chestnut Street  
Chattanooga, TN 37401

Docket Nos.: 50-327 and 50-328

License Nos.: DPR-77 and DPR-79

Facility Name: Sequoyah 1 and 2

Inspection Conducted: March 25-29, 1985

Inspector: W. E. Cline  
for R. R. Marston

4/23/85  
Date Signed

Accompanying Personnel: A. L. Smith (PNL)

Approved by: W. E. Cline  
W. E. Cline, Section Chief  
Division of Radiation Safety and Safeguards

4/23/85  
Date Signed

SUMMARY

Scope: This routine, unannounced inspection involved 69 inspector-hours on site in the areas of emergency preparedness.

Results: Two violations were identified - failure to provide adequate training to Shift Engineers in the area of offsite protective action decisionmaking; and failure to test the Public Notification System at a frequency specified in the emergency plan.

## REPORT DETAILS

## 1. Persons Contacted

## Licensee Employees

- \*P. R. Wallace, Plant Manager
- R. J. Kitts, Chief, Risk Protection Branch
- B. Marks, Supervisor, Emergency Preparedness
- \*W. S. Wilburn, Technical Services Supervisor
- A. Schenk, Supervisor - REP State Programs
- D. C. Craven, Plant QA Staff Supervisor
- R. L. Moore, Group Head - Plant Evaluation Group
- D. W. Cross, Shift Engineer
- D. S. Richardson, Shift Engineer
- B. C. Lake, Shift Engineer
- \*T. H. Youngblood, Project Engineer (REP)
- W. E. Webb, Project Engineer
- Lt. W. H. Daniel, Security Training Officer
- H. Williamson, Project Administrator
- M. Brock, Electrical Engineer
- D. P. Ormsby, Plant Compliance Staff
- D. L. Cowart, Plant QA Staff

Other licensee employees contacted included two technicians, and two mechanics.

## NRC Resident Inspectors

- \*E. J. Ford

- \*Attended exit interview

## 2. Exit Interview

The inspection scope and findings were summarized on March 29, 1985, with those persons indicated in paragraph 1 above. Enforcement items in paragraphs 4 and 5 were discussed at that time. The licensee agreed that the violation discussed in paragraph 5 occurred, but did not agree to the violation in paragraph 7. The licensee did not identify as proprietary any of the materials provided to or reviewed by the inspector during the inspection. A meeting was held in Atlanta at the Regional Office between Tennessee Valley Authority (TVA) and Regional representatives to discuss these matters.

## 3. Licensee Action on Previous Enforcement Matters

This subject was not addressed in the inspection.

#### 4. Protective Action Decision-Making (82202)

Pursuant to 10 CFR 50.47(b)(9) and (10) and 10 CFR Part 50, Appendix E, Section IV.D.3, this area was inspected to determine whether the licensee had 24-hour-per-day capability to assess and analyze emergency conditions and make recommendations to protect the public and onsite workers, and whether offsite officials had the authority and capability to initiate prompt protective action for the public.

The inspector discussed responsibility and authority for protective action decision-making with licensee representatives and reviewed pertinent portions of the licensee's emergency plan and procedures. The plan and procedures clearly assigned responsibility and authority for accident assessment and protective action decision-making. Interviews with members of the licensee's emergency organization revealed that these personnel understood their authorities and responsibilities with respect to accident assessment and protective action decisionmaking.

Walk-throughs were conducted. Problems were noted. See Paragraph 7 for details.

No violations or deviations were identified in this program area.

#### 5. Notification and Communication (82203)

Pursuant to 10 CFR 50.47(b)(5) and (6) and 10 CFR 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, offsite supporting agencies and authorities, and the population within the emergency planning zone (EPZ).

The inspector reviewed the licensee's notification procedures; SQN IP-2, IP-3, IP-4, IP-5 and DNPEC IP-2, IP-3 and IP-5, and appropriate SQN-REP's. The procedures were consistent with the emergency classification and emergency action level scheme used by the licensee. The inspector determined that the procedures made provisions for message verification.

The inspector determined by review of applicable procedures and by discussion with licensee representatives that adequate procedural means existed for alerting, notifying, and activating emergency response personnel. The procedures specified when to notify and activate the onsite emergency organization, corporate support organization, and offsite agencies. Selected telephone numbers listed in the licensee's procedures SQN-IP-6, IP-7, IP-10 and the Radiological Emergency Notification Directory for emergency response support organizations were checked in order to determine whether the listed numbers were current and correct. No problems were noted, however a major relocation of TVA personnel was scheduled from the Knoxville Emergency Center and the Muscle Shoals Emergency Center to Chattanooga and various reactor sites which could have an impact on maintaining a current Emergency Notification Directory.

The content of initial emergency messages was reviewed and discussed with licensee representatives. The initial messages appeared to meet the guidance of NUREG-0654, Sections II.E.3 and II.E.4. Licensee representatives stated that the format and content of the initial emergency messages had been reviewed by State and local government authorities.

The licensee's management control program for the prompt notification system was reviewed. According to licensee documentation and discussions with licensee representatives, the system consisted of 34 fixed sirens, mobile sirens which included county police vehicles running predetermined routes in the 5-10 mile EPZ area, and tone-alert radios maintained and activated by county agencies and placed in stations where there were concentrations of people. A review of the licensee records verified that the system as installed was consistent with the description contained in the emergency plan. Maintenance of the system had been provided for by the licensee. The inspector reviewed siren test records for the period August 8, 1983, to March 26, 1985. The records showed that silent tests were not being conducted every two weeks. The licensee had determined that silent testing of the sirens should be included as part of a monthly test which was conducted by Tennessee Emergency Management Agency (TEMA) to check all sirens. This testing change had been initiated approximately 7 months prior to this inspection. The change for silent testing of sirens from two weeks to a month was not consistent with SQN-REP 7.1.12.2. This constituted a violation: Failure to Implement the Site Radiological Emergency Plan as required by Paragraph 6.8.1.e of the Technical Specifications (50-327, 328/85-13-01). Growl tests were being conducted quarterly, and a full-cycle test annually as specified in NUREG-0654, Appendix 3.

Communications equipment in the Control Room, Operations Support Center (OSC), Technical Support Center (TSC), and Chattanooga Emergency Control Center (CECC) was inspected. Provisions existed for prompt communications among emergency response organizations, to emergency response personnel, and to the public. The installed communications systems at the emergency response facilities were consistent with system descriptions in the emergency plan and implementing procedures.

The inspector conducted operability checks on selected communications equipment in the Control Room, TSC, OSC, and CECC. No problems were observed. The inspector reviewed licensee records for the period September 7, 1984 to March 5, 1985 which indicated that communications tests were conducted at the frequencies specified in NUREG-0654, Section II.N.2.a. Licensee records also revealed that corrective action was taken on problems identified during communications tests.

Redundancy of offsite and onsite communication links was discussed with licensee representatives. The inspector verified that the licensee's primary means of communication was the Bell Telephone Company private lines and that the licensee had established a backup communications system. The backup system was augmented by the public address exchange and regular Bell Telephone system, plant paging and intercom system, and a radio network system. The inspector requested and observed an unannounced communications and notification check using the backup system. The inspector noted that the system operated properly and that the notification message used by the

licensee representative followed the format prescribed in the licensee's procedures.

6. Changes to the Emergency Preparedness Program (82204)

Pursuant to 10 CFR 50.47(b)(16), 10 CFR 50.54(q), and 10 CFR 50, Appendix E, Sections IV and V, this area was reviewed to determine whether changes were made to the program since the last routine inspection August 27-30, 1984 and to note how these changes affected the overall state of emergency preparedness.

The inspector discussed the licensee's program for making changes to the emergency plan and implementing procedures. The inspector reviewed the licensee's procedure SQN AI-4, "Plant Instructions - Document Control," governing review and approval of changes to the plan and procedures. The inspector verified that changes to the plan and procedure were reviewed and approved by management. It was also noted that all such changes were submitted to NRC within 30 days of the effective date, as required.

Discussions were held with licensee representatives concerning recent modifications to facilities, equipment, and instrumentation. By review of selected procedures, the inspector verified that procedural and plan changes were made to reflect the recent modifications to SQN IP-6, which involved a March 20, 1985, revision involving Activation and Operation of the TSC, communication, material and equipment changes and responsibilities of emergency personnel assigned to the TSC.

The organization and management of the emergency preparedness program were reviewed. The inspector verified that there had been no significant changes in the organization or assignment of responsibility for the plant and corporate emergency planning staffs since the last inspection. The inspector's discussion with licensee representatives also disclosed that there had been no significant changes in the organization and staffing of the offsite support agencies since the last inspection.

The inspector reviewed the licensee's program for distribution of changes to the emergency plan and procedures. Document control records for the period September 1, 1984 to March 12, 1985 showed that appropriate personnel and organizations were sent copies of plan and procedural changes, as required.

No violations or deviations were identified in this program area.

7. Knowledge and Performance of Duties (Training) (82206)

Pursuant to 10 CFR 50.47(b)(15) and 10 CFR Part 50, Appendix E, Section IV.F, this area was inspected to determine whether emergency response personnel understood their emergency response roles and could perform their assigned functions.

The inspector reviewed the description (in the emergency plan) of the training program, training procedures, and selected lesson plans, and interviewed members of the instructional staff. Based on these reviews and



interviews, the inspector determined that the licensee had established a formal emergency training program.

Records of training for key members of the emergency organization for the period June 1984 to March 1985 were reviewed. The training records revealed that personnel designated as alternates or given interim responsibilities in the emergency organization were provided with appropriate training. According to the training records, the type, amount, and frequency of training were consistent with approved procedures.

The inspector conducted walk-through evaluations with selected key members of the emergency organization. During these walk-throughs, individuals were given various hypothetical sets of emergency conditions and data and asked to talk through their response as if an emergency actually existed. The individuals demonstrated familiarity with emergency procedures and equipment, and no problems were observed in the areas of emergency detection and classification, and assessment action to include plant conditions.

Walk-through evaluations involving protective action decision-making were conducted with three Shift Engineers. Personnel interviewed appeared to be cognizant of appropriate onsite protective measures and aware of the range of protective action recommendations appropriate to offsite protection. Personnel had difficulty in making protective action decisions for offsite protection, however. This appeared to be due to inadequate training. The protective action decisions made by the Shift Engineers were not always consistent with Federal guidance and in some cases were not consistent with each other. The flow chart used in the procedure (Attachment 1, IP-5) made provisions for decisions based on core and containment status, but not on offsite radiological dose rates or total doses.

It was also noted that the flow chart used by the Muscle Shoals center for protective action decision-making (MSEC IP-10, Attachment 7) provided for radiological releases, but was not always consistent with the flow chart used by the Shift Engineers at Sequoyah. This constitutes a violation: failure to provide emergency response training to those who may be called upon to assist in an emergency as required by 10 CFR 50.47(b)(15) (50-327, 328/85-13-02).

This violation and the one in paragraph 5 were discussed with licensee representatives in the Regional Office on April 11, 1985. The NRC position on protective action recommendations was explained and problems with the licensee's program were discussed.

#### 8. Licensee Audits (82210)

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 had performed an independent review or audit of the emergency preparedness program.

Records of audits of the program were reviewed. The records showed that independent audits of the program were conducted by the TVA Plant Evaluation Group during May - July 1984 and by the Quality Assurance Staff Surveillance Section during January - February 1985. These audits fulfilled the 12-month

frequency requirement for such audits. The audit records showed that the State and local government interfaces were evaluated. Audit findings and recommendations were presented to plant and corporate management. A discussion of past audit reports with licensee representatives indicated that the licensee complied with the five-year retention requirement of such reports.

Licensee emergency plans and procedures required critiques following exercises and drills. Licensee documentation showed that critiques were held following periodic drills as well as the annual exercise. The records showed that deficiencies were discussed in the critiques, and recommendations for corrective action were made.

The licensee's program for follow-up action on audit, drill, and exercise findings was reviewed. Licensee procedures required follow-up on deficient areas identified during audits, drills, and exercises. The inspector reviewed licensee records dated July 1984 which indicated that corrective action was taken on identified problems, as appropriate. The licensee had established a tracking system as a management tool in following up on actions taken in deficient areas.

The annual audit conducted by the Plant Evaluation Group also covered the Browns Ferry Emergency Preparedness Program.

No violations or deviations were identified in this program area.

- j. (Closed) IFI 390/84-55-11 and 391/84-43-10, concerning a review of the ACR by the licensee to determine if additional instrumentation, (such as condensate storage tank level, refueling water storage tank level, etc.) is needed. The licensee has performed a review of the ACR instrumentation and determined that all the instrumentation NRC considers necessary for alternate or dedicated shutdown (identified in NRC IE Information Notice No. 84-09 dated February 13, 1984) has not been provided in the ACR. The licensee has submitted a deviation request (letter from TVA to NRC dated January 4, 1985) with justification concerning the ACR instrumentation. This inspector followup item is considered closed. Followup on resolution of the deviation request will be tracked by Inspector Followup Item (390/85-29-05), Deviation From Providing the Required Appendix R Nuclear Instrumentation In the Auxiliary Control Room.

8. Licensee Identified Items - Construction Deficiency Reports (CDRs)

- a. (Closed) CDRs 390/85-09 and 391/85-09, Unqualified Fire Protection Equipment for the Emergency Gas Treatment System and Auxiliary Building Gas Treatment Filter Housings. This item was initially reported to NRC Region II on January 25, 1985. The final report was submitted on February 25, 1985. In this report the TVA indicated that based on a design review, it was identified that the closed head fire protection spray nozzles in the Emergency Gas Treatment Filter System (EGTS) were rated to fuse at a temperature of 175°F. However, air being passed through this filter could reach 170°F, this design condition does not provide sufficient margin to provide adequate assurance that the installed spray nozzles would not inadvertently operate during EGTS operation. In addition, the smoke detectors installed downstream of the EGTS and auxiliary building gas treatment system (ABGTS) are ionization type detectors. These detectors are not qualified for operation in high radiation areas. Under Work Plans 5480 and 5185 TVA replaced the 175°F rated spray nozzle in the EGTS and ABGTS with Star Model E spray nozzles which have a 150° water spray pattern and a operating temperature setpoint of 286°F. In addition, the fire detection system for the EGTS and ABGTS have been modified to perform an alarm and annunciation function only. The automatic functions associated with the Fire Protection Deluge Valve, the Fire Pump Start Circuit and the Filter Fan Shutdown have been changed to manual actuation. These fire protection design changes have been implemented through engineering change Notice 5430 and 5588. At the time of this inspection the installation of the spray nozzles in the EGTS and ABGTS filter housing was not complete and this item was provided to the resident inspector for followup. On April 8, 1985, the resident inspector verified that the proper spray nozzles had been installed in the subject filter housing. This item is closed.
- b. (Closed) CDRs 390/85-03 and 391/85-03, Failure of Electro Thermal Links to Function Properly. The subject deficiency was initially reported to NRC Region II on December 17, 1984. The final report was submitted on March 15, 1985. In this report TVA indicated that during the initial



performance of Surveillance Instruction (SI) L601, 14 of the 47 fire/smoke dampers tested under this procedure failed to close. It was determined by TVA and the vendor that some of the dampers failed to close due to improper installation the Electro Thermal Link (ETL) which resulted in less than 2lbs of tension applied to the ETL assembly. In addition, it was determined that improper orientation of the S-Hooks which are used to mount the ETLs and fusible links to the dampers contributed to the failure of the dampers to go closed. TVA analyzed the functional requirements of all the dampers included in the scope of Nonconformance Conformance Reports W-210-P and W-220-P. This analysis determined that O-XFD-31-74, 168, 181, and 182 were not required for smoke control. These dampers have been locked open by removing the ETL and replacing it with aircraft cable. The analysis indicated that dampers O-XFD-31-78A, 78B, 79, 92A, 92B, 159, 233, 234, 235, 236, 237, 238, 239 and 248 are not required for smoke control however, they are required for fire control. Therefore, the ETL have been removed from these dampers and replaced with standard fusible links. The inspector reviewed the modifications to the above dampers and verified that these modifications had been completed. This item is closed.

- c. (Closed) CDR 50-390/85-07 and 50-391/85-06 Emergency Gas Treatment System (EGTS) Controls Not Qualified to Calculated Radiation Levels. This item was reported to RII on December 31, 1984, and a final report was submitted on February 7, 1985. In the EGTS filter housing area the calculated integrated dosage may be on the order of  $1 \times 10^9$  rads rather than the  $3 \times 10^7$  rads as indicated on environmental drawing 47E235-78. The licensee relocated replacement controls for the EGTS on the opposite side of an outside wall of the room containing the EGTS per Work Plan 2788. This item is closed.
- d. (Closed) CDR 50-390/85-08 and 50-391/85-08, Erroneous Radiation Level Used on Auxiliary Building Gas Treatment System (ABGTS) Environmental Drawings. This item was reported to RII on January 23, 1985, and the final report was submitted on February 25, 1985. The failure to recognize the significance of the filter as a source of radiation to equipment in the area or the higher radiation level for the filter being inadvertently omitted from environmental drawings were given as the causes for the error. A reanalysis was performed resulting in the heater controls for the ABGTS being relocated to the opposite side of an outside wall of the gas treatment room per Work Plan 2788. This item is closed.