



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

MAY 17 1989

Report Nos.: 50-327/89-13 and 50-328/89-13

Licensee: Tennessee Valley Authority
6N38 A Lookout Place
1101 Market Street
Chattanooga, TN 37402-2801

Docket Nos.: 50-327 and 50-328

License Nos.: DPR-77 and DPR-79

Facility Name: Sequoyah Nuclear Plant

Inspection Conducted: April 17-21, 1989

Inspector:

James L. Kreh
J. L. Kreh

15 May 1989

Date Signed

Approved by:

William B. Rankin
W. H. Rankin, Chief

16 MAY 1989

Date Signed

Emergency Preparedness Section
Emergency Preparedness and Radiological Protection
Branch
Division of Radiation Safety and Safeguards

SUMMARY

Scope

This routine, unannounced inspection was conducted in the area of emergency preparedness, and included review of the following programmatic elements: (1) Radiological Emergency Plan and its implementing procedures; (2) emergency facilities, equipment, instrumentation, and supplies; (3) organization and management control; (4) training; and (5) independent reviews/audits.

Results

In the area inspected, no violations or deviations were identified. Emergency response facilities, equipment, and supplies were properly maintained. Training of emergency response personnel appeared to be effective, and improvements in the management of this training had recently been implemented. A significant program initiative was completed with the availability of a computerized system for determining onsite personnel accountability during an emergency. Certain corrective actions taken in response to a previous violation were determined to be unacceptable because they decreased the effectiveness of the licensee's emergency response capability. Procedural changes completed during the inspection satisfactorily addressed this finding (see Paragraph 2). Three Inspector Follow-up Items were identified and are discussed in Paragraphs 2 and 3. The findings of this inspection indicated

that the licensee was adequately prepared to respond to a radiological emergency at the Sequoyah Nuclear Plant.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *W. Byrd, Manager, Project Controls and Financial Services
- G. Carroll, Shift Operations Supervisor
- *N. Catron, Program Manager, Site Emergency Preparedness
- *S. Crowe, Site Quality Manager
- *J. Hendrix, Site Support Manager
- *J. Holland, Manager, Corrective Action Program
- T. Howard, Operations Surveillance Supervisor
- *T. Noble, Project Engineer, Site Emergency Preparedness
- *J. Proffitt, Nuclear Engineer, Site Licensing
- R. Smith, Project Engineer, Corporate Emergency Preparedness
- *M. Sullivan, Radiological Control Superintendent
- *T. Youngblood, Program Manager, Corporate Emergency Preparedness

Other licensee employees contacted during this inspection included security force members, technicians, and administrative personnel.

NRC Resident Inspectors

- P. Harmon
- K. Jenison
- *D. Loveless

*Attended exit interview

2. Emergency Plan and Implementing Procedures (82701)

Pursuant to 10 CFR 50.47(b)(16), 10 CFR 50.54(q), Appendix E to 10 CFR Part 50, and Section 16 of the licensee's Radiological Emergency Plan (REP), this area was inspected to determine whether significant changes were made in the licensee's emergency preparedness program since the inspection in March 1988, and to assess the impact of any such changes on the overall state of emergency preparedness at the facility.

The inspector reviewed the licensee's system for making changes to the REP and the Emergency Plan Implementing Procedures (EPIPs). Two revisions to the Sequoyah REP and 25 revisions to the EPIPs were issued to copyholders between March 1, 1988 and the current inspection. The inspector verified that licensee management approved these changes, and that revisions to the REP and EPIPs were submitted to the NRC within 30 days of the effective date, as required.

The inspector's review of selected EIPs included the revisions made to EIP-1, "Emergency Plan Classification Logic", to address a Notice of Violation (NOV) issued on August 22, 1988 with NRC Inspection Report Nos. 50-327, 50-328/88-33. The licensee's response of September 28, 1988 to the NOV indicated an intent to revise the EIP-1 (formerly IP-1) guidance to the Site Emergency Director (SED) regarding the declaration of an emergency when the alarm or other indication used as the basis for that declaration is suspected to be false or spurious. The subject response was acknowledged in an NRC letter dated November 9, 1988. An EIP-1 revision dated December 13, 1988 contained the following guidance in Section 3.0:

If there is reason to doubt whether a given condition has actually occurred, the SOS [Shift Operations Supervisor] or Site Emergency Director may wait for confirmation before proceeding with the required classification. The decision to confirm and the timeframe allowed for confirmation (in no case to exceed 1 hour) of a suspected condition is based upon the SOS's or SED's judgement, with appropriate consideration given to the significance or seriousness of the Emergency Action Level (EAL).

The inspector informed licensee representatives on the second day of the inspection that procedurally allowing the SOS to take up to 60 minutes to declare an emergency after meeting one of the classification criteria was unacceptable, regardless of suspicions that might exist concerning the validity of an alarm or indication. The licensee was advised of the NRC's position that once plant parameters indicate that conditions have reached an emergency threshold, according to the EAL scheme, a declaration of an emergency is required. If a declaration is later found to have been based upon a spurious indication or incorrect information, then the emergency classification would be terminated. The licensee was also advised that, absent an immediate revision of EIP-1 to correct the cited problem, the NRC would be requesting a supplemental response to the NOV of August 22, 1988, since the corrective actions outlined in the original response were determined to have been inadequate.

On April 21, 1989, the licensee issued a revision to EIP-1 which revised the two sentences quoted earlier in this paragraph to read as follows:

If there is reason to doubt whether a given condition has actually occurred, the SOS or Site Emergency Director shall follow indications provided. Unless a suspected spurious or otherwise false alarm can be substantiated within a minimum timeframe (based on the potential severity of the event), the SOS/SED is to proceed with actions as required by EIP-1 until such time as the alarm is verified to be false.

The Emergency Preparedness Program Manager (EPPM) informed the inspector that SED training would define "minimum timeframe" to be a period not exceeding 15 minutes. On the basis of these changes, and an earlier

revision clarifying the EAL for a seismic event, the subject violation (50-327, 328/88-33-01) is closed.

The inspector's review of EPIP-1 disclosed another problem with the SOS/SED guidance in Section 3.0. The last sentence of that section drew a potentially confusing distinction between (1) actual declaration of an emergency classification, and (2) reporting of a classification for which the EAL was exceeded but was exited before a declaration could be made. The inspector advised licensee representatives that the NRC expects emergency classifications falling into the second category to be declared and terminated with one telephone call to each cognizant agency. The licensee agreed to develop a revision to EPIP-1 to address this finding.

Inspector Follow-up Item (IFI) 50-327, 50-328/89-13-01: Elimination of the distinction in EPIP-1 between "declaration" and "reporting" of an emergency classification.

Peripherally related to the above finding was the observation that the information to be provided to the Operations Duty Specialist (ODS) upon declaration of an emergency included "Time Event Declared" but not "Time Event Terminated or Classification Changed" (EPIP-2, -3, -4, and -5, all at Revision 0). Licensee representatives agreed to add an entry for this information in the ODS notification forms.

IFI 50-327, 50-328/89-13-02: Addition of an entry for "Time Event Terminated or Classification Changed" on the ODS notification forms.

The inspector reviewed records pertaining to the emergency declarations which had occurred since July 1, 1988. The following is a compendium of events for which the REP was implemented during that period (in each case the classification was Notification of Unusual Event):

<u>Date</u>	<u>Description of Event</u>
September 28, 1988	Technical Specification leakage limit exceeded on valve 1-FCV-74-1 in Unit 1 Residual Heat Removal system during routine test
February 7, 1989	Uncontrolled boron dilution on Unit 2 as diagnosed per A0I-3
February 10, 1989	Unit 1 trip due to feed flow/steam flow mismatch and low Steam Generator No. 3 level
February 11, 1989	Inadvertent opening of steam-dump valve on Unit 1

February 21, 1989	Loss of all meteorological instrumentation at the Control Room and meteorological tower
February 23, 1989	Transport of a potentially contaminated injured person to an offsite medical facility
April 8, 1989	Pressure-boundary leakage on Unit 2 (thimble-tube leakage of 1 drop per 2-3 minutes)
April 13, 1989	Reactor Coolant System leakage on Unit 2 exceeding Technical Specifications
April 20, 1989	Leak (approximately 20 gpm) in Unit 2 charging system exceeding Technical Specifications

Two of these declarations were problematic with respect to timeliness or appropriateness. Because of a belated diagnosis, the event of February 7, 1989 was not declared and reported until February 9, 1989; this matter was the subject of a violation in NRC Inspection Report Nos. 50-327, 50-328/89-07. Following the call to the ODS but prior to notification of the NRC, the event of April 8, 1989 was determined to not fit the definition of pressure-boundary leakage, and, therefore, an emergency declaration was not warranted. The NRC was informed of this occurrence on April 11, 1989. The EPPM routinely reviewed the response to each declared event for problems or inconsistencies which may have occurred with respect to the requirements of the REP and EIPs. (Documentation of the event of April 20, 1989 was not reviewed by the inspector.)

No violations or deviations were identified.

3. Emergency Facilities, Equipment, Instrumentation, and Supplies (82701)

Pursuant to 10 CFR 50.47(b)(8) and (9), 10 CFR 50.54(q), and Section IV.E of Appendix E to 10 CFR Part 50, this area was inspected to determine whether the licensee's emergency response facilities (ERFs) and other essential emergency equipment, instrumentation, and supplies were maintained in a state of operational readiness, and to assess the impact of any changes in this area upon the emergency preparedness program.

The inspector toured the following onsite ERFs: Control Room, Technical Support Center (TSC), and Operations Support Center (OSC). Selective examination of emergency equipment and supplies therein indicated that an adequate state of readiness was being maintained. Documentation of the inventories specified in EPIP-17, "Emergency Equipment and Supplies", was reviewed for the period January 1988 to March 1989. The available records indicated that identified deficiencies were resolved expeditiously.

However, a problem with the documentation of the EPIP-17 inventories was identified in that records were not consistently retained, and some of the original checklists were not available. The inspector learned that these were not considered QA records, and no specific retention requirements appeared to exist. The subject finding was also identified as a "recommendation" by the licensee's QA organization in Audit Report No. SSA88809 (see paragraph 6). The inspector noted that independent audits of EPIP-17 requirements by the Sequoyah Site Quality Organization in August, October, and December 1988 confirmed the proper maintenance of emergency equipment and supplies. The inspector concluded that this was strictly a recordkeeping problem, and the licensee agreed to develop appropriate measures for retaining documentation generated by the performance of EPIP-17.

IFI 50-327, 328/89-13-03: Development of system for retaining surveillance records completed in accordance with EPIP-17.

A major ERF change during 1988 was the relocation of the OSC from the Electrical Maintenance Conference Room (in the Service Building) to the facility known as the Plant Staff Room. Although still used as a meeting room on a limited basis, this room was basically dedicated to the OSC function, and was a significant improvement in terms of floor space and accommodations. A PA was installed to allow TSC briefings to be heard in the OSC. A Safety Parameter Display System (SPDS) terminal was available in the OSC (intended for use by the Operations Supervisor). These changes were not yet reflected in the OSC description found in Appendix B to the REP.

The larger OSC allowed the transfer of eight positions from the TSC to the OSC, thus potentially reducing the congestion and noise level in the TSC. The positions transferred were OSC Manager, Assistant OSC Manager, Mechanical Engineers (2), Electrical Engineers (2), and Instrument Engineers (2). The only recent significant physical change in the TSC was the installation of new, much larger CRT displays for the SPDS.

In December 1988, the licensee placed into service the Personnel Radiological Emergency Accountability System (PREAS). The system employed 15 accountability stations within the site area, each of which had a scanner capable of reading the bar-code identifier on every individual's site badge. Should a site accountability be ordered during an emergency, individuals would swipe their badges through the card reader (at their assigned accountability station, if possible); a central computer would receive data from the 15 stations and produce a list of persons within the site area who had not reported for accountability. The system appeared to represent a significant improvement over the traditional "head-count" method. Six drills have been conducted using PREAS, with accountability completed within 30 minutes in each case. PREAS was designed and built by the licensee and has been very reliable, with no system failures to date.

The licensee completed the deployment of 72 additional sirens for the Prompt Notification System (PNS), bringing the total number of PNS sirens in the 10-mile emergency planning zone to 107. The new sirens, declared operable in September 1988, were placed in the 5- to 10-mile annulus and superseded the mobile-siren routes previously designated for alerting the populace of that area. PNS test data for the period May 1988 to April 1989 indicated that the overall siren availability on the monthly full-scale tests was 94.6 percent.

No violations or deviations were identified.

4. Organization and Management Control (82701)

Pursuant to 10 CFR 50.47(b)(1) and (16) and Section IV.A of Appendix E to 10 CFR Part 50, this area was inspected to determine the effects of changes in the licensee's emergency response organization and/or management control systems on the emergency preparedness program, and to verify that such changes were properly factored into the REP and EPPs.

The organization and management of the emergency preparedness program were reviewed. Since the last inspection of this program element (March 1988), a plant reorganization resulted in a change in the reporting chain for the EPPM. The position to which the EPPM reported changed from the Manager of Projects to the Site Support Manager. This change did not appear to negatively affect the "visibility" of the site emergency preparedness program.

The position of Emergency Preparedness Program Manager was reassigned in October 1988 to an individual with five years of experience as a Senior Reactor Operator at the Browns Ferry Nuclear Plant, four years as a simulator supervisor at the Plant Operations Training Center (POTC), and two years with the corporate Emergency Preparedness Branch. The EPPM continued to have one technical assistant assigned to the program.

The inspector held discussions with licensee representatives concerning management control of emergency preparedness training for nonlicensed plant personnel. Previous NRC inspections have identified a lack of oversight of the training program (see NRC Inspection Report Nos. 50-327, 50-328/88-33, paragraph 5). Audits of the REP training program by the Site Quality Organization as recently as October 1988 disclosed discrepancies with respect to required annual training/retraining of emergency response personnel, uniform proficiency requirements for examinations, and maintenance of training records. In an attempt to address such problems, the licensee revised the training program, as described in AI-14 (Part XV), "Radiological Emergency Preparedness Training", Revision 1, dated March 30, 1989, and on April 1, 1989 implemented use of the Emergency Preparedness Qualification List (EPQL). The revised program gave oversight for all emergency preparedness training to the EPPM, although actual administration of the training was by the Nuclear Training Branch at the POTC. This approach appeared to represent

a considerable improvement in this area, and its effectiveness will be reviewed during future inspections.

No violations or deviations were identified.

5. Training (82701)

Pursuant to 10 CFR 50.47(b)(2) and (15), Section IV.F of Appendix E to 10 CFR Part 50, and REP Section 15.0, this area was inspected to determine whether the licensee's key emergency response personnel were properly trained and understood their emergency responsibilities.

The inspector conducted an interview with one Shift Operations Supervisor, who was given several sets of hypothetical emergency conditions and plant data, and was asked in each case to talk through the response he would provide as Site Emergency Director if such conditions actually existed. The individual demonstrated comprehensive knowledge of the REP and EIPs. No problems were observed in the areas of event classification, protective action decision-making, and notifications.

The inspector audited a 2.5-hour training session, given by the EPPM as part of the Licensed Operator Requalification Program, in which the emergency response duties of the SOS/SED were discussed. The presentation was thorough and professional, and detailed handouts were provided to the attendees.

No violations or deviations were identified.

6. Independent Reviews/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 had performed an independent review or audit of the emergency preparedness program, and whether the licensee had a corrective action system for deficiencies and weaknesses identified during exercises and drills.

Records of emergency preparedness audits were reviewed. An independent audit was conducted by the Division of Nuclear Quality Assurance (DNQA) during the period May 23-July 5, 1988, and was documented in Report No. SSA88809, dated July 29, 1988. That report identified one significant finding ("condition adverse to quality", in the licensee's terminology) with regard to the Sequoyah emergency preparedness program. The referenced audit fulfilled the 12-month frequency requirement for such an audit. The report provided evidence that the State and local government interfaces were properly evaluated. Audit findings and recommendations were presented to plant and corporate management.

The inspector reviewed licensee documentation of critiques of the following: (1) a Post-Accident Sampling System drill on May 31, 1988, (2) the annual emergency response exercise on December 14-15, 1988, and

(3) a practice exercise on November 23, 1988. The critiques were well documented, and produced substantive findings for program improvement.

Deficiencies identified during audits by DNQA and during drills and exercises by licensee evaluators were tracked for follow-up on a computer-based file known as the Activities Management and Oversight System (AMOS). The inspector determined that the licensee was effectively using AMOS as a management tool for ensuring the completion of corrective action for emergency preparedness problems.

No violations or deviations were identified.

7. Action on Previous Inspection Findings (92701)

- a. (Closed) Violation 50-327, 328/88-18-01: Failure to provide annual REP training to a member of the emergency response organization.

This item was reviewed during a previous inspection and left open (see Paragraph 7 of NRC Report Nos. 50-327, 328/88-33). Implementation of the EPQL (see Paragraph 5, above) appeared to satisfactorily address the root cause of the subject violation.

- b. (Closed) Violation 50-327, 328/88-33-01: Failure to adequately implement procedure IP-1 in response to a seismic alarm on February 8, 1988.

The basis for closing this item is discussed in paragraph 2.

- c. (Closed) IFI 50-327, 328/88-57-03: Revision of maps in the TSC and Central Emergency Control Center (CECC) to achieve consistency with the State's designation of evacuation zones.

Inspection of the evacuation map displayed in the TSC disclosed consistency with the map on pages 8-9 of the Sequoyah emergency information brochure (1988-89 edition), which showed the evacuation zones as used by the State. A licensee representative stated that the same change was made for the evacuation map in the CECC.

8. Exit Interview (30703)

The inspection scope and results were summarized on April 21, 1989, with those persons indicated in Paragraph 1. The inspector described the areas inspected and discussed in detail the inspection results listed below. Although proprietary information was reviewed during this inspection, none is contained in this report. Dissenting comments were not received from

the licensee.

<u>Item No.</u>	<u>IFI Description and Reference</u>
50-327, 328/89-13-01	Elimination of the distinction in EPIP-1 between "declaration" and "reporting" of an emergency classification (Paragraph 2).
50-327, 328/89-13-02	Addition of an entry for "Time Event Terminated or Classification Changed" on the ODS notification forms (Paragraph 2).
50-327, 328/89-13-03	Development of a system for retaining surveillance records completed in accordance with EPIP-17 (Paragraph 3).