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

Report Nos.: 50-327/85-21 and 50-328/85-21

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: June 3-7, 1985

Inspector: C. F. Smith 7/15/85
C. F. Smith Date Signed

Accompanying Personnel: R. M. Latta, Region II

Approved by: C. M. Upright 7/15/85
C. M. Upright, Section Chief Date Signed
Division of Reactor Safety

SUMMARY

Scope: This routine, unannounced inspection entailed 72 inspector-hours on site in the areas of licensee action on previous enforcement matters, design changes and modifications program, test and experiments program, and licensee action on previously identified inspection findings.

Results: No violations or deviations were identified.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

*R. Birchell, Mechanical Engineer, Compliance
W. Brown, Supervisor, Mechanical Engineering
*D. Cowart, Supervisor, Quality Surveillance
*J. Dunlap, Supervisor, Division of Power Systems Operations
R. Fortenberry, Supervisor, Engineering Section
M. Frye, Compliance
G. Gault, Supervisor, Reactor Engineering
J. Hamilton, Supervisor, Quality Engineering/Quality Assurance
*M. Harding, Supervisor, Engineering Group
*G. Kirk, Supervisor, Compliance
*J. Krell, Plant Staff
*J. Naih, Modifications
*R. O'Donnell, Staff Engineer
*H. Rankin, Manager, Design Services
R. Remington, Engineering Section
*J. Robinson, Manager, Plant Modifications
W. Sexton, Electrical Engineer, Design
*M. Skarzinski, Supervisor, Electrical Maintenance
*J. Staub, Supervisor, Electrical Engineering
*R. Stockton, Modifications
*P. Wallace, Plant Manager
*C. Wilson, Nuclear Engineer

Other licensee employees contacted included technicians and office personnel.

NRC Resident Inspectors

K. Jenison, Senior Resident Inspector
L. Watson, Resident Inspector

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on June 7, 1985, with those persons indicated in paragraph 1 above. The inspector described the areas inspected and discussed in detail the inspection findings listed below. The licenseee was informed of a potential violation against the design change program. Subsequent discussions with regional management resulted in the determination that this potential problem be identified as an inspector followup item. Licensee management was informed of this determination by the Senior Resident Inspector.

Inspector Followup Item, Erroneous Information and Incomplete Records for Design Changes Listed in Annual Operating Report, paragraph 4.a.

Inspector Followup Item, Development of Staff Guidance for Preparation of USQD Form, paragraph 4.b.

Inspector Followup Item, Development of Procedure STI-1 to Provide Positive Control of STEAR Activities, paragraph 5.

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

3. Licensee Action on Previous Enforcement Matters (92702)

(Closed) Severity Level IV Violation 327, 328/83-14-02: Failure to Respond to Audit Findings Within 30 days

The licensee response dated September 23, 1983, was considered acceptable by Region II. The inspector reviewed the summary of licensee responses to audit findings for the calendar year of 1985 and determined that adequate measures have been taken to provide both corrective action and estimated target completion dates within the prescribed 30-day time frame.

The inspector concluded that the licensee had determined the full extent of the violation, taken action to correct current conditions, and developed corrective actions needed to preclude recurrence of similar problems. Corrective actions stated in the licensee response have been implemented.

4. Design Program (37702)

References:

(a) 10 CFR 50, Appendix B, Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants, Criterion III

(b) Regulatory Guide 1.64, Quality Assurance Requirements for the Design of Nuclear Power Plants, Revision 2

(c) ANSI N45.2.11-1974, Quality Assurance Requirements for the Design of Nuclear Power Plants

(d) Regulatory Guide 1.33, Quality Assurance Requirements (Operations) February 1978

(e) ANSI N18.7-1976, Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants

(f) 10 CFR Part 50.59, Changes, Tests and Experiments

(g) Technical Specifications, Section 6.5, Review and Audit

The inspector reviewed the licensee design change program required by references (a) through (g) to verify that these activities were conducted in accordance with regulatory requirements, industry guides and standards, and Technical Specifications. The following criteria were used during the review to assess the overall acceptability of the established program:

- Procedures had been established to control design changes which include assurance that a proposed change does not involve an unreviewed safety question or a change in technical specifications as required by 10 CFR 50.59.

- Procedures and responsibilities for design control had been established including responsibilities and methods for conducting safety evaluations.

- Administrative controls for design document control had been established for the following:

  Controlling changes to approved design change documents
  Controlling or recalling obsolete change documents such as revised drawings and modification procedures
  Release and distribution of approved design change documents.

- Administrative controls and responsibilities had been established commensurate with the time frame for implementation to assure that design changes will be incorporated into:

  Plant procedures
  Operator training programs
  Plant drawings to reflect implemented design changes and modifications

- Design controls required that implementation will be in accordance with approved procedures.

- Design controls required assigning responsibility for identifying post-modification testing requirements and acceptance criteria in approved test procedures and for evaluation of test results.

- Procedures assigned responsibility and delineated the method for reporting design changes to the NRC in accordance with 10 CFR 50.59.

- Controls required review and approval of temporary modifications in accordance with Section 6 of the Technical Specifications and 10 CFR 50.59.

The documents listed below were reviewed to verify that these criteria had been incorporated into the licensee design program:

TVA Topical Report, TVA-TR75-1A, Revision 8, Section 17.2.3, Modification Control

NQAM, Part II, Section 3.2, Plant Modifications: After Licensing, dated December 31, 1984

NQAM, Part II, Section 6.4, Control of Temporary Alterations, dated November 5, 1984

NQAM, Part IV, Section 2.0, Design Services, dated December 31, 1984

SQN AI-19, (Part III), Plant Modifications: Modification Requests, dated May 15, 1985

SQN AI-19, (Part IV), Plant Modifications: After Licensing dated February 5, 1985

SQN AI-9, Control of Temporary Alterations and Use of the Temporary Alteration Order dated February 21, 1985

SQN AI-12, Adverse Conditions and Corrective Actions dated March 21, 1985

SQN AI-25, Drawing Control After Unit Licensing dated August 16, 1984

SQA 113, Unreviewed Safety Question Determination, dated October 9, 1984

The inspector interviewed licensee onsite QA staff to determine the degree of involvement of QA staff members in the performance of surveillances in the functional area of plant modifications. The following surveillance reports were reviewed by the inspector:

Compliance Visits, Audits and Inspections - Inplant Survey Checklist No. 19C-84-A-010, Survey Title: Workplans, performed September 14, 1984

Compliance Visits, Audits and Inspections - Inplant Survey Checklist No. 19C-84-A-011, Survey Title: Workplans, performed November 7-9, 1984

Compliance Visits, Audits and Inspections - Inplant Survey Checklist No. 19C-84-A-012, Survey Title: Workplans, performed November 19-29, 1984

Compliance Visits, Audits and Inspections - Inplant Survey Checklist No. 19C-84-A-013, Survey Title: Workplans - Documentation and Administrative Controls, performed November 29 - December 4, 1984

Compliance Visits, Audits and Inspections - Inplant Survey Checklist No. 19C-85-A-001, Survey Title: Workplan Performance, performed April 19-26, 1985

Compliance Visits, Audits and Inspections - Inplant Survey Checklist No. 19C-85-A-002, Survey Title: Workplan Performance, performed April 17-19, 1985

Compliance Visits, Audits and Inspections - Inplant Survey Checklist No. 1C-85-S-004, Survey Title: Drawing Control-Unit 1, performed May 16-24, 1985

Four of the above listed survey reports identified deficiencies in workplan performance and drawing control. The inspector verified that appropriate corrective actions were initiated for each identified deficiency.

In accordance with the reorganization of the Office of Nuclear Power, the licensee has established the following organizations on site:

Modifications Branch
Design Services
Site Services Branch
Plant Quality Assurance Staff
Plant Manager

All site organizations report functionally and administratively to the Site Director. Interviews were conducted with staff members from the Modification Branch and Design Services group who are directly involved with the design program. Staff members were knowledgeable of the requirements of the design change program.

Licensee upper-tier documents which comprise the Nuclear Quality Assurance Manual (NQAM) were consistent with the organizational structure and functional responsibilities of the onsite organizations. The lower-tier or quality-implementing procedures were for the most part consistent with the requirements and organizational responsibilities delineated in the NQAM. Some changes in organizational titles were identified by the licensee and corrective actions are presently in progress.

An audit of plant modifications and design control was conducted during April 4-16, 1985, by the Quality Audit Branch and documented in Audit Report No. QSQ-A-85-0007. No deficiencies were identified during the course of this audit.

A narrow scope indepth review of the design change program was conducted to verify compliance with the requirements of the accepted QA program in addition to performing a technical review of design changes. A random sample of design changes were selected from the list of design

changes completed during January 1 - December 31, 1984, contained in the annual operating report. The following are the design change packages reviewed during this effort:

ECN No. 2404, Convert Reactor Coolant Pump undervoltage and underfrequency sensors control power from 120V DC to 120V vital AC, dated June 18, 1979

ECN No. L5550, Replace existing GE MAC type 5000 with a Foxboro Model E13DM-HSAHI-MAC transmitter for 2-FT-3-170, dated March 10, 1983

ECN No. L5441, Change flow path indications on two two-inch pipes to agree with NCR-SQNNEB8121, dated February 2, 1983

ECN No. L5600, Move bellows sensors from inside to outside the crane wall at azimuths 2, 70, 170, 260 dated January 27, 1982

Licensee annual operating report showed that a design change initiated via ECN No. 2404 (Unit 2) was implemented during 1984. This modification converted the power supply to the undervoltage (UV) and underfrequency (UF) relay sensors from 125V DC to 125 V Vital DC. The inspector determined that a typographical error was made in reporting this design change, in that the change was made from the 125V Vital DC system to the 120V Vital AC system. The annual operating report also refers to ECN No. 5057 (Unit 1) to indicate a similarity in the power supply to the UV and UF relay sensors on both units. The inspector determined that Unit 1 UV and UF relay sensors are presently fed from the 125V Vital DC system. A design change initiated via ECN L5057 was prepared to convert the power supply from 125V Vital DC to 120V Vital AC. This modification has not yet been implemented.

Records associated with ECN Nos. 2402 and 5057 were deficient, in that not all the records which provide evidence that the design was performed in accordance with ANSI N45.2.11-1974 were available from permanent record storage. The following drawings were obtained from Design Services staff members in connection with determining the status of the design changes:

Wiring Diagrams, 120V AC Vital Inst. Power BDS Connection Wiring Diagrams (Sheets 1 through 4) Drawing No. 45N706-01 through -04

Wiring Diagrams 125V Vital Battery Board Single Line - Sheets 1 through 4, Drawing No. 45N703-1 through 4

The wiring diagrams for the 120V Vital AC Instrument Boards showed the UV and UF relay sensors for both Units being fed with power supplies from their own respective Reactor Protection System (RPS) channel power board. A review of the 125V Vital DC wiring diagrams similarly showed a deletion of power supplies from this system which previously fed the UV and UF relay sensors for both Units 1 and 2.

Changes shown on the above-referenced drawings were all done via revisions to drawings performed during 1983. A review of the official record of the construction work package which implemented the change for Unit 2 showed this work as having been started in 1980. The following drawings which are part of the construction work package were reviewed in connection with this effort:

Wiring Diagrams, 6900 V Unit Auxiliary Power Connection Diagrams (Unit 2) Drawing No. 45N2721-5 Revision 1

Wiring Diagram - Typ. for All Panels, 6.9kv Auxiliary Power Relay Panel, Sequoyah Nuclear Plant Units 1 and 2, Drawing No. DN2206-05, Revision 4

Engineering Change Notice (ECN) No. L5550 involved the replacement of an existing General Electric Mac flow transmitter (2-FT-3-170) with a Foxboro transmitter. This change was initially implemented by way of Temporary Alteration Control Form No. 81-2042-3 dated February 1981, with the subsequent preparation of Design Change Request No. SQ-DCR-1026.

The instrument involved is used to monitor the Auxiliary Feedwater System flow. A review of the Unreviewed Safety Question Determination (USQD) form shows that an inadequate technical review was performed to verify that the replacement transmitter met the specifications and codes equivalent to that specified for the original equipment. Subsequent discussions with licensee management showed that the selection was made on the basis of Foxboro Test Report for Seismic Requirement Nos. T1-1059 and T3-1091, and Environmental Requirements Nos. Q9-6005, T3-1068, and T3-1097. Licensee Work Plan package documentation was inadequate in providing objective evidence for the basis for the above decisions. Deficiencies were identified in the USQD in that the instrument was classified as nonseismic not requiring a secure Class 1E electric power supply and environmental qualification requirements were not addressed.

Licensee records obtained from permanent record storage in connection with ECN No. L5550 did not provide objective evidence that the design was performed in accordance with the requirements of ANSI N45.2.11-1974. Paragraph 10 of this standard requires that documentation shall include not only the final design documents such as drawings, specifications and revisions, but also records of the important steps, including sources of the design inputs, which support the final design. This is further addressed in paragraph 4.a.

Within this area, two Inspector Followup Items were identified and are discussed in the following paragraphs.

a. Erroneous Information and Incomplete Records for Design Changes Listed in Annual Operating Report

During the review of the design change packages associated with ECN No. 2404 and ECN No. L5550, certain documents were identified as missing from the packages obtained from the vault. These records provide objective evidence of activities affecting quality in connection with design changes reported as complete in licensee annual operating report. The licensee, at the request of the inspector, provided some of the missing documentation. Additionally, the licensee identified for the inspector reference documents where these were not readily available. The inspector also identified errors in the information concerning completed design changes contained in the annual operating report.

Pursuant to discussion of the above with Regional Management an Inspector Followup Item has been identified for reinspection of design change activities reported as complete in licensee annual operating report. Until a reinspection of the design change program for design activities reported as complete in the annual operating report is performed, this is identified as Inspector Followup Item 327, 328/85-21-01.

b. Development of Staff Guidance for Preparation of USQD Form

The licensee had identified a need to revise SQA 119 to more adequately provide guidance to plant personnel in completing the USQD form. The inspector reviewed the format of the present form with licensee management and discussed the need for similar guidance in the preparation of the Unreviewed Environmental Question Determination (UEQD) and the Environmental Qualification Protection Requirements (IEEE-323). Until the licensee has completed the revision of SQA 119, this is identified as Inspector Followup Item 327/85-21-02, 328/85-21-02.

5. Test and Experiments Program (37703)

References:
(a) 10 CFR 50, Appendix B, Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants

(b) 10 CFR Part 50.59, Changes, Tests and Experiments

(c) TVA Topical Report, TVA-TR75-1A, Section 17.2.11, Test Control, Revision 8

(d) Technical Specification, Section 6.5, Review and Audit

(e) Regulatory Guide 1.33, Quality Assurance Requirements (Operations) February 1978

(f) ANSI N18.7-1976, Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants

The inspector reviewed the licensee test and experiment program required by references (a) through (f) to verify that the program was in conformance with regulatory requirements and industry guides and standards. The following criteria were used during this review to access the overall acceptability of the established program:

- A formal method had been established to handle all requests or proposals for conducting plant tests involving safety-related components.

- Provisions had been made to assure that all tests will be performed in accordance with approved written procedures.

- Responsibilities had been assigned for reviewing and approving test procedures.

- A formal system, including assignment of responsibility, had been established to assure that all proposed tests will be reviewed to determine whether they are as described in the FSAR.

- Responsibilities had been assigned to assure that a written safety evaluation required by 10 CFR50.59 will be developed for each test to assure that it does not involve an unreviewed safety question or a change in Technical Specifications.

The documents listed below were reviewed to verify that the previously listed criteria had been incorporated into the licensee's test and experiments program.

NQAM, Part II, Section 4.6, Special Tests, dated October 12, 1984

NQAM, Part II, Section 4.9, Handling of CSSC Test Deficiencies

NQAM, Part II, Section 6.4, Control of Temporary Alterations, dated November 5, 1984

SQA 100, Special Tests, dated January 6, 1984

SQA 119, Unreviewed Safety Question Determination, dated October 9, 1984

The inspector reviewed licensee test and experiment program documents to assess the program scope and content. It was determined that a test program had been established to assure that all testing required to demonstrate satisfactory operation of in-service critical systems, structures, and components had been identified and that these tests were performed in accordance with approved written procedures. The inspector also verified that written safety evaluations required by 10 CFR 50.59 were developed for special tests to assure that unreviewed safety questions or changes to Technical Specifications do not exist.

The following documents were reviewed in connection with the performance of special tests:

SQ-STEAR-INST-84-02, Special Test of Protection Sprinkler System, Revision 0

SQ-STEAR-INST-84-03, Special Test of Dial Indicator Method of Ice Weighing, Revision 0

SQ-STEAR-INST-84-05, Special Test of Wiring Configuration Change on Pipe Break Detection Loop 1 Turbine Driven Auxiliary Feedwater Pump (Unit 2), Revision 0

SQ-STEAR-INST-84-08, Special Test of Additional Type "A" Package Testing for Liquids and Gases, Revision 0

An audit in this functional area was performed by the Quality Audit Branch. The findings of the Quality Audit Branch, DQA, as presented in Audit Report No. QSQ-A-85-0003, dated March 22, 1985, were reviewed. The audit report results in the area of test control revealed that in general special tests are not being adequately controlled, documented, or reviewed. Similar deficiencies in the special test program concerning accountability, tracking, and closeout review of special test, experiments, or activity requests (STEARs) were also identified by the inspector.

As stated by the Engineering Group Supervisor, a task force committee was assigned the responsibility of resolving deficiencies identified in the subject audit report. Subsequent committee findings identified a lack of adequate program controls resulting from deficiencies in the implementing Special Test Procedure SQA 100. Licensee management stated that actions are being taken to delete SQA-100 and replace it with a new procedure identified as Special Test Instruction-1 (STI-1). The licensee has committed to an implementation date of August 1, 1985.

Within this area, one Inspector Followup Item (IFI) was identified. Until the licensee cancels Special Test Procedure SQA-100 and issues STI-1 to adequately control the accountability, tracking, and closeout review of special tests (STEARs), this is identified as Inspector Followup Item 328/85-21-03, Development of Procedure STI-1 to Provide Positive Control of STEAR Activities.

6. Licensee Action on Previously Identified Inspection Findings (92701)

(Closed) Inspector Followup Item 327, 328/85-05-02: Revision Status of Surveillance Instruction SI-1

The inspector reviewed the latest issue of SI-1, Appendix A, dated February 8, 1985, and verified that it has been updated to agree with the licensee computer SI schedule used for surveillance testing and calibration program control.