



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W.
ATLANTA, GEORGIA 30303

Report Nos.: 50-327/78-27 and 50-328/78-21

Docket Nos.: 50-327 and 50-328

License Nos.: CPPR-72 and CPPR-73

Categories: A3 and A2

Licensee: Tennessee Valley Authority
830 Power Building
Chattanooga, Tennessee 37401

Facility Name: Sequoyah Nuclear Plant, Units 1 and 2

Inspection at: Daisy, Tennessee
Knoxville, Tennessee

Inspection conducted: September 26-29, 1978

Inspectors: J. K. Rausch
C. R. McFarland
V. L. Brownlee
T. E. Burdette

Reviewed by: A. R. Herdt
A. R. Herdt, Chief
Projects Section
Reactor Construction and Engineering Support Branch

1-31-78
Date

Inspection Summary

Inspection on September 26-29, 1978 (Report Nos. 50-327/78-27 and 50-328/78-21)

Areas Inspected: Review and inspection of QA Program Implementation including QA Manual reviews, document control, procurement activities, design control and audit records review. In addition the principal inspector responsibility was transferred. The inspection involved 96 inspector-hours by four NRC inspectors.

Results: Of the five areas inspected, no apparent items of noncompliance or deviations were identified in four areas; one apparent item of non-compliance was identified in one area. (Deficiency - Failure to document audits of all applicable elements of the QA Program. Details 11, paragraph b).

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DETAILS I

Prepared by:

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V. L. Brownlee
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8/31/78
Date

Dates of Inspection: September 27-29, 1978

Reviewed by:

A. R. Herdt
A. R. Herdt, Chief
Projects Section
Reactor Construction and Engineering
Support Branch

10/31/78
Date

1. Persons Contacted

Tennessee Valley Authority (TVA)

- *J. P. Knight, OEDC QA Manager
- *J. L. Parris, Chief Quality Engineering Branch (QEB)
- *S. Duhan, Supervisor Quality Compliance
 - F. E. Denney, Quality Assurance Audit Section
 - W. D. DeFord, Supervisor Quality Assurance Engineering Section
 - W. K. Anders, QA Staff OEDC
- *D. L. Mclean, Supervisor Quality Control Group
- *J. F. Cow, Nuclear Licensing
- *W. I. Dothard, Nuclear Licensing
- *D. R. Armentrout, Assistant to Manager OEDC
- *M. D. Conner, QEB/QC Group Coordinator
- *J. W. Mabee, Supervisor Quality Assurance Audit Section
- *L. G. Hebert, QA Staff OEDC
- *R. W. Dibeler, Construction QA Staff
- *P. L. Duncan, Supervisor Quality Assurance
- *J. E. Wilkins, Construction Engineer - Sequoyah

The inspectors also interviewed eight other licensee employees during the course of the inspection. They included design engineers and QA personnel.

*Denotes those present at the exit interview.

2. Licensee Action on Previous Inspection Findings

There were no previous inspection findings reviewed during this inspection.

3. Unresolved Items

No new unresolved items were identified during this inspection.

4. Overall Review and Inspection of the Quality Assurance (QA) Program Implementation

a. General

The purpose of this inspection was to complete an overall review of the implementation of the TVA QA Program for QA, design, procurement and construction activities. Inspection activities included review and inspection of the following areas: inspection and enforcement history; QA management; QA/QC organizational/functional alignment; vendors; audits; training; and site activities relating to design control; document control; field procurement; site audits; installation activities and site QA/QC organization.

Inspection activities relating to site functions are addressed in Details II and III of this report.

b. QA Manual, Inspection and Enforcement History

The inspectors performed a review of the QA manuals and docket files to include the following: inspections relative to QA programs and site; enforcement correspondence and responses; and the construction deficiency report file.

TVA QA procedures for the control of QA related activities within the Office of Engineering Design and Construction, Division of Engineering and Design and Division of Construction are contained within the departments respective QA manuals. TVA has been in the process of restructuring the OEDC QA program documentation. No organizational/functional alignment changes are brought about

by the restructuring; only program and document organization have changed. TVA anticipates the restructuring to be completed in February, 1979. TVA stated that the applicable SAR's and Topical Report will be updated upon completion of the QA program documentation restructuring.

The review findings indicate that TVA has developed and is executing a QA program consistent with SAR commitments relative to design, procurement, construction, enforcement response and reporting of deficiencies.

c. Vendors

TVA procedures EN DES-EP 5.33 through 5.46 are the controlling procedures for control of vendors surveys and audits. The TVA Quality Engineering Branch (QEB) Quality Control (QC) Group is responsible for surveillance of vendors. The QEB QA Group is responsible for the pre-award survey of potential suppliers, periodic audits, and approval of suppliers as fulfilling the technical and quality assurance requirements of procurement specifications.

The inspectors held discussions with responsible QC and QA Group personnel, reviewed the applicable procedures, and reviewed surveys and audits of vendors. The following surveys and audits of vendors were reviewed:

Vendor Surveys

1. Tem Tex, Dallas, Texas
2. Tri-Mark, Incorporated, Piqua, Ohio
3. Techalloy Illinois, Incorporated, Union, Illinois

Vendor Audits

1. INRYCO, Incorporated, 77V-7
2. Bristol Steel, 77V-25
3. ITE Imperial Corp., 78V-15

No items of noncompliance or deviations were identified.

d. Audits

The Quality Assurance Audit Program consists of OEDC management audits and EN DES internal audits. A system of planned and periodic audits is set forth in written procedures. The inspectors reviewed the OEDC management audit and EN DES internal audit programs.

(1) OEDC Management Audits

TVA procedure MO-QAP 3.1 is the applicable procedure for planning, scheduling, coordinating, conducting, reporting, and following up of quality assurance audits performed by OEDC personnel. The Quality Compliance Section of the OEDC Quality Assurance Manager's office implements the Quality Assurance Audit Program. The inspectors reviewed the procedure for OEDC management audits, the current audit schedule, and held discussions with responsible OEDC personnel. The following audits were reviewed:

- (a) Quality Audits and Surveys - M 77-2C
- (b) Calibration of Construction Equipment - M 77-9A
- (c) Nondestructive Examination and Welding Activities - M 77-1
- (d) QA Training and Indoctrination - M 78-05
- (e) QA Records - M 78-09

In reviewing the OEDC Quality Assurance Audit Status Report, the inspectors noted that several audits performed in 1975 and 1976 had open deficiencies. In one case, audit no. M 76-17, a deficient area was open due to an unacceptable response. The inspectors were informed of various actions taken or planned for each of the audits. Pending resolution of audit deficiencies, this matter is identified as an inspector followup item (327/78-27-04 and 328/78-21-04) - Open 1975 and 1976 OEDC Audits.

(2) QEB Internal Audits

TVA procedure EN DES-EP 1 29 is the controlling procedure for internal audits by QEB. The EN DES QA Audit Section is responsible for performing internal audits of each organization performing QA-related activities and of the QA criteria applicable to EN-DES once a year. The inspectors reviewed the procedures for QEB audits, internal audit schedule, and held discussions with QA Audit Section personnel. The following internal audits were reviewed.

- (a) QEB-QC Group - Pittsburgh, Pa. - EN DES 78-8

- (b) Civil Engineering Branch - EN DES 77-1
- (c) Electrical Engineering Branch - EN DES 78-7
- (d) Civil Engineering Branch - EN DES 78-1

No items of noncompliance or deviations were noted during this review.

e. Training

TVA procedures DED-EP 1.16 and EN DES - EP 1.30 are the controlling procedures for training of EN DES employees performing quality assurance activities. The QEB QA Engineering Section has responsibility for indoctrinating and training EN DES employees. The inspectors reviewed the applicable procedures, training records, and held discussions with personnel responsible for QA training. The responsible personnel indicated that current procedures on EN DES training are under rewrite and review. A recent OEDC audit M78-05 had reported several deficiencies in the area of training/indoctrination of EN DES employees. Discussions with TVA management revealed that two QA Engineering Section personnel have been assigned full time responsibility for development of training programs for EN DES employees. Current plans are for an intensified training program to commence in late October.

In reviewing the current status of training, the inspector concluded that the corrective actions being implemented to resolve the OEDC audit 78-05 deficiencies should be adequate to correct the procedural, records, and training schedule problems. This matter is being identified as an inspector followup item (327/78-27-03 and 328/78-21-03) - Training.

No items of noncompliance or deviations were noted during this review.

5. Exit Interview

The inspectors met with licensee representatives (denoted in paragraph 1) at the conclusion of the inspection on September 29, 1978. The inspectors summarized the scope and findings of the inspection of QA program review, vendors, audits, and training. The licensee acknowledged the following items of followup inspection effort: Open 1975 and 1976 OEDC audits (Details 1, paragraph 4.d); and training (Details 1, paragraph 4.e).

DETAILS II

Prepared by:

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Support Branch

10/31/78
Date

Dates of Inspection: September 26-29, 1978

Reviewed by:

A. R. Herdt
A. R. Herdt, Chief
Projects Section
Reactor Construction and Engineering
Support Branch

10/31/78
Date

1. Persons Contacted

Tennessee Valley Authority (TVA)

G. G. Stack, Project Manager
*J. E. Wilkins, Construction Engineer
J. M. Munns, QA Supervisor
R. W. Olson, Assistant Construction Engineer
R. W. Farrell, Supervisor, QC Records Unit

In addition to the above personnel, the inspector interviewed other craftsmen and engineers.

*Denotes those present at the exit interview.

2. Licensee Action on Previous Inspection Findings

Licensee actions on previous inspection findings were not inspected.

3. Unresolved Items

There were no new unresolved items identified during this inspection.

4. Independent Inspection Effort

Inspection was made of Units 1 and 2 containment buildings, cable spreading rooms, control room and the auxiliary building. The inspector observed the measures taken to protect instrumentation lines from damage and inspected the ice basket installation. In Unit 1 containment the inspector toured the lower elevations and inspected the reactor coolant pumps.

No items of noncompliance or deviations were identified.

5. QA Manual Review

The IE inspector noted that the Quality Assurance Manual utilized by TVA is being restructured from a 3 volume manual to a "single-source" reference document identified as PRM. Previously, TVA had used the Office of Engineering Design and Construction (OEDC) QA Manual, Volume 1; Engineering Design (EN DES) QA Manual, Volume 2; and the Construction (CONST) QA Manual, Volume 3. However, at the time of this inspection the Sequoyah field construction had been instructed to use Volume 1 and Volume 3 only. Another phase of the program is to restructure the QA Manual into a "single-source" document. The information previously supplied by Volume 2 has been inserted into the OEDC QA Manual Volume 1.

The inspector verified from the Quality Assurance Units (QAU) working files and the Construction Engineers (CE) files that QA Manual procedures and instructions are current. In the areas examined it was noted that the program has been changed as a result of deficiencies identified by IE. In addition the licensee has taken the initiative to issue changes as necessary to improve the effectiveness of program execution.

It was determined that the QA Manuals are being maintained current with the latest revision submitted to the RII office. The site QA organization and duties of QA personnel are as described in the QAM. Examination of the revisions to the procedures confirms that TVA maintains an effort to upgrade the program and increase the effectiveness.

No items of noncompliance or deviations were identified.

6. Audits

TVA CONST-QAP 18.01 entitled "Auditing Construction Activities" sets forth the requirements for conducting audits of construction activities to verify that applicable elements of the QA Program have been developed, documented, and effectively implemented in accordance with specified requirements of the PSAK Section 17.1.18, OEDC-QAP 18.0, CONST-QAP-2.08 and Criterion 18 to 10 CFR 50. The activities audited include CONST (internal) and contractor service (external) organizations.

TVA QA procedure CONST-QAP-2.08 sets forth the requirements for the system by which personnel performing QA audits within the Division of Construction are qualified. It includes requirements for qualification, certification and recertification. This procedure is being applied to personnel performing audits within their respective responsibilities of the QA Program and to the division auditor examiner appointed to certify auditor qualifications.

Auditing schedules as specified in CONST-QAP 18.01 are projected 3 months in advance. They are updated and reissued monthly. Normally, 3 to 5 audits are performed each month. These audits are scheduled on the basis of the activity engaged in for a specific discipline. Applicable elements of the quality assurance program are audited annually or at least once within the life of the activity whichever is shorter.

Audit records for 1977 were selected for examination. The examination confirmed that audits were performed according to schedule with the following exception. When construction activity was delayed in a particular area, the scheduled audit was delayed until a later date. Nonconformance reports were issued and corrective action completed according to documented procedures.

It was noted by the IE inspector that audits are required for all "applicable elements" of the quality assurance program by procedure CONST-QAP No. 18.01. The procedure further states that provisions of 18.01 are to be implemented by the Quality Assurance Unit Supervisor. Contrary to this requirement, no audits have been documented verifying that those responsible for QA in Construction continue to meet Criteria I, II and XVIII. This is a deficiency and is identified as 327/78-27-01; 328/78-21-01, Corporate Audits of Applicable Elements of the Quality Assurance Program.

No other items of noncompliance or deviations were identified.

7. Site Design Control

Onsite design effort for the permanent plant is limited to design and design modification of pipe hangers and supports.

This special group of design personnel are an extension of the corporate design group in Knoxville. They are located at the site for convenience and ready access to design conditions. The QA program follow is under the surveillance of the EN-DES QA Group in Knoxville as a part of the normal corporate design control.

No items of noncompliance or deviations were identified.

8. QA/QC Organization

TVA acting as their own constructor has assigned the Project Manager full responsibility for constructing the plant in accordance with quality assurance requirements. The Construction Engineer is assigned primary responsibility for QC for all work on site including the QC procedures and instructions necessary to implement the QA/QC program.

Rev. 41 to Chapter 17 of the FSAR requires that CONST audits be planned performed and reported by the Quality Assurance Unit (QAU) Supervisor in accordance with CONST QAP 18.01, Rev. 2. The IE inspector observed that this requirement is being met. However, the inspector noted that QAU Supervisor's FSAR had not been revised to keep it current. Rev. 32 to Chapter 17 was the last update whereas Rev. 53 is current. The QAU personnel were using the FSAR located in the quality assurance records facility in lieu of their own. The FSAR in the records facility was found to be up to date. Corrective action will be examined on future inspections and is identified as an inspector follow item 327/78-27-02; 328/78-21-02, Control of Documents.

9. Exit Interview

The inspector met with licensee's representatives identified in paragraph 1 at the conclusion of the inspection on September 29, 1978. The inspector summarized the scope and findings of the audit performed on the site QA surveillance programs, site design activities and QA Corporate audits of site design activities. Discussion included one new deficiency concerning implementation of the QA Program and one "inspector follow item" concerning control of documents.

DETAILS III

Prepared by:

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Support Branch

10/25/78

Date

Dates of Inspection: September 26-29, 1978

Reviewed by:

A. R. Herdt
A. R. Herdt, Chief
Projects Section
Reactor Construction and Engineering
Support Branch

10/31/78

Date

1. Persons Contacted

Tennessee Valley Authority (TVA)

- G. G. Stack, Project Manager, Sequoyah Nuclear Project (SNP)
- *J. E. Wilkins, Construction Engineer, SNP
- J. M. Munns, QA Supervisor, SNP
- R. W. Farrell, Supervisor, QC Records Unit, SNP
- D. Bateson, Supervisor, Drawing Distribution, SNP
- E. C. Pendergrass, Engineer, QC Records Unit, SNP
- V. P. Thomas, Supervisor Engineering Services Unit, SNP
- G. M. Wilkinson, Materials Expediting Group Leader, SNP
- *W. I. Douthard, Nuclear Licensing, Division of
Engineering Design (EN DES)
- *J. P. Knight, QA Manager, Office of Engineering
Design & Construction (OEDC)

*Denotes those attending exit interview.

2. Licensee Action on Previous Inspections

Licensee actions on previous inspection findings were not reviewed during this inspection.

3. Unresolved Items

None

4. Independent Inspection

The inspector conducted a walk through inspection of the Unit 1 and Unit 2 reactor buildings, the auxiliary building and the general support facilities.

5. Mid Term CP QA Inspection

a. QA Manual - Document Control

The inspector selected two QA engineers assigned unrelated QA/QC activities and discussed with them the availability of applicable QA manual procedures and the controls used to notify the individuals regarding the current status of QA manual documents. The inspector subsequently verified that these two persons copies of the OEDC QA Manual for Design and Construction procedures 3.01 "Field Change Requests" and 4.01 "Procurement Document Control" have not been superceded by later revisions.

b. Drawing - Document Control

The inspector discussed with the supervisor of QC records and supervisor of drawing distribution the procedures used for controlling drawings related to site construction activities, physically examined the adequacy of the facilities related to the control and storage of these drawings, and verified the drawing control computer printout by checking a representative set of drawings in the master set file on site. The master-reproducible drawings are retained by OEDC in Knoxville. The controlling procedures are in section 3.0 "Design Control" in the OEDC QAM annual for Design and Construction and in the SNP Construction Procedure P-10 "Control of Quality Assurance Documents."

The inspector selected a set of five drawings from the computer printout for each of the areas of: (1) containment (civil, structural drawings); (2) mechanical piping; and (3) electrical and instrumentation and verified these in the field offices for the seven assigned craft supervisors or foremen and the two field located drawing distribution centers. The field observations verified that the requirements of SNP Construction Procedure No. P-10 "Control of Quality Assurance Documents" are in effect for transmittals of revised drawings on site.

c. Procurement Control - Document Control

The inspector discussed with the supervisor of the Engineering Services Unit and the supervisor of the QC Records Unit the procedures applicable to procurement. The inspector examined representative samples of contract documents for civil, mechanical, electrical and instrumentation materials or components that have been recently procured for safety-related systems. The documentation reviewed was consistent with the requirements of the OEDC Construction QA procedure 4.01 "Procurement Document Control", and SNP Construction Procedure No. P-7 "Procurement of Project Items."

6. Exit Interview

The inspector met with the licensee representatives (denoted in paragraph 1) on September 29, 1978. The scope of the inspection and the findings were reviewed. The licensee was advised that no items of noncompliance nor deviations were identified during this part of the inspection.