VENDOR INSPECTION REPORT

U. S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT
REGION IV

Report No. 99900526/78-01 Program No. 44090

Company: Black & Veatch Consulting Engineers
Post Office Box 8405
Kansas City, Missouri

Inspection at: Overland Park, Kansas

Inspection Conducted: July 24-28, 1978

Inspectors: C. J. Hale 8-9-78
C. J. Hale, Chief, Project Section, Vendor Inspection Branch — Date

Approved by: C. J. Hale 8-9-78
C. J. Hale, Chief, Project Section, Vendor Inspection Branch — Date

Summary

Inspection conducted July 24-28, 1978 (99900526/78-01)

Areas Inspected: Implementation of the requirements of 10 CFR Part 50, Appendix B, in the areas of QA program and organization, design control, procurement control, document control, QA records, audits, and action on previous inspection findings. The inspection involved 33 inspector-hours onsite by one NRC inspector.

Results: No unresolved items were identified in any area. The following three (3) deviations were identified.

Deviations: QA Record - two quality related manuals were not being controlled properly (Notice of Deviation, Enclosure, Item A); Audits - audits of quality related activities were not being conducted at the proper frequency (Notice of Deviation, Enclosure, Item B); and the conduct and reporting of internal audits were not being accomplished in accordance with commitments (Notice of Deviation, Enclosure, Item C.).

DETAILS SECTION

A. Persons Contacted

*R. E. Blaisdell, QA Manager
W. C. Buckheit, Project Design Engineer, Scheduling
W. A. Hartman, Group Head, Division Document Control Center
R. E. Leugel, Project Document Control Administrator
D. M. Rhea, QA Engineer
F. R. Rollins, Jr., Project Quality Control Engineer
C. J. Ross, Manager, Design
M. M. Thomas, Project Engineer, Systems
L. E. Thurman, Supervising Engineer, Pipe Stress Analysis Group
*R. R. Wood, Manager, Procurement

*Denotes those present at the exit meeting.

B. Action on Previous Inspection Findings

(Closed) Unresolved Item (76-01): It was not clear at what point in the design process that design verification would be accomplished. Black & Veatch (B&V) has issued procedure SP 3.9 (Design Verification) that describes the methods of design verification. This procedure further establishes that its verification requirements "shall be accomplished for Safety Class 1, 2, and 3, items prior to the installation of components of the system at the construction site." Further details of this process are found in paragraph D.3. of this report.

C. QA Program and Organization

1. Objectives

a. Determine if the basic QA program includes a management policy statement, indoctrination and training in the execution of the QA program, regular management review of the QA program's implementation, definition of the QA staff and its responsibilities, and identification of the activities to which the program applies.

b. Verify that the QA program, or its schedule for development, is consistent with the ongoing, or scheduled, safety-related activities.

c. Verify that the QA program provisions of a., above, are being implemented.

d. Verify that personnel or groups determining conformance to established quality requirements are independent of the activities being verified.

2. Method of Accomplishment

The preceding objectives were accomplished through a review of the following portions of the Black & Veatch (B&V) Quality Assurance Program - Nuclear (QAP-N) manual.

a. The introductory page of the QAP-N signed by the Head of the B&V Power Division on April 25, 1977, stating that the QAP-N "shall be implemented by the assigned Project Manager for safety-related designs for each nuclear project assigned to the Power Division, effective this date."

b. Standard Procedure Number 2.2 (SP 2.2) which describes the indoctrination and training imposed on all personnel involved in activities subject to the QAP-N manual. The course outline for an indoctrination/orientation course, Introduction to the Quality Assurance Program - Nuclear, was reviewed and appears to provide a comprehensive overview of B&V's QA program, its commitments and requirements.

c. SP 2.4 which provides for periodic management reviews of the QA program to assure compliance with commitments.

d. SP 2.1 which describes the methods that division personnel are assigned specific tasks and their attendant responsibilities.

e. Sections 1 and 2 of the QAP-N which describes the organization and division of responsibilities of Power Division personnel.

Note: The QAP-N consists of eighteen (18) sections that correspond to the 18 criteria of 10 CFR 50, Appendix B. Each begins with a policy section (e.g. Section 3, Design Control). This policy section tracks in general the corresponding sections of 17B.1 of the Black Fox PSAR which also describes B&V's QA program's compliance with 10 CFR 50, Appendix B. Following each policy section is the Standard Procedures that implement the commitments relative to each Appendix B Criterion (e.g. in Section 3 are SP 3.1, System Analysis; SP 3.2, Project Design Manual; etc.).

3. Findings

a. The development of the QA program is and has been consistent with the quality related activities. The following appears to be the only areas yet to be developed and their development is scheduled to be completed before any activities are conducted in these areas:

(1) Project Instructions are not in place concerning client notification of completed system design verifications and for field originated design change requests.

(2) There are five (5) subsections in the Project Design Manual (PDM) that remain to be completed but these are currently in preparation.

b. The division of responsibility and organizational independence, where applicable, was found to be consistent with Sections 1 and 2 of the QAP-N based on observations during the accomplishment of the balance of this inspection.

c. The verification of implementation of the principal elements of the QAP-N was accomplished by the inspection of the remaining elements within the scope of this inspection, i.e., design control, procurement control, document control, QA records, and audits.

d. In this area of the inspection no deviations or unresolved items were identified.

D. Design Control

1. Objectives

Verify procedures have been established and implemented that provide for:

a. Definition of design activities and organizational interfaces.

b. Correct translation of specified design requirements into design output documents.

c. Control of design in all disciplines, independent design verification, and design change control.

d. Review, approval, release, distribution, and revision of design documents.

2. Method of Accomplishment

The preceding objectives were accomplished by an examination of the following implementing procedures and completed documents which were subject to the procedures.

a. Section 3 (Design Control) of the QAP-N manual which is essentially the same as section 17B.1.3 of the Black Fox PSAR.

b. Standard procedures:

SP 3.1, System Analysis
SP 3.2, Project Design Manual
SP 3.3, System Design Specifications
SP 3.4, Component Design Specification
SP 3.9, Design Verification
SP 3.10, Design Change Control

c. Component Design Specification (CDS) 6212.312.6510.17 (preliminary issue) for pipe supports including review comments and their proposed disposition.

d. System Design Specification (SDS) 6212.215.2220.12 for the high pressure core spray system, standard specifications 6212.356.2200 (Cleaning, Packaging, Shipping, Storing, and Handling), and 6212.357.6100 (QA Requirements) to assure that commitments and requirements have been translated into completed design documents.

e. Correspondence files on specifications 6212.312.6510, 41 (pipe supports), and 6212.311.8510 (structural steel) were reviewed to determine that interfaces with other organizations were appropriate and that review, approval, and distribution were consistent with applicable procedures.

3. Findings

a. A general review of the Project Design Manual (PDM) was made. The PDM is the first level engineering document. It translates design criteria and commitments from the PSAR and other regulations and standards into an engineering document from which output design documents are generated. The PDM also identifies the systems and major components to which the QAP-N applies.

b. The design verification process, as defined in SP 3.9, has not been completed for any system presently in work at B&V. However, independent design verification does appear to be being accomplished on certain inputs to major system designs but it does not appear that SP 3.9 identifies these activities as independent design verifications. This apparent lack of QAP-N procedures clearly describing the design verification processes used by engineering will be a topic of review during a subsequent inspection.

c. In this area of the inspection no deviations or unresolved items were identified.

E. Procurement Control

1. Objectives

Verify procedures have been established and implemented that provide for:

a. Including or referencing applicable regulatory requirements, design bases, and other requirements necessary to obtain adequate quality and perforamnce in documents for procurement of items and services.

b. Changes to procurement documents being subjected to the same degree of control as the original document.

c. Procurement documents extending appropriate requirements to lower tier suppliers.

d. Control of purchased material, equipment, and services..

e. Identification and control of materials, parts, and components.

f. Control of special processes.

g. Inspection

h. Test control.

i. Control of measuring and test equipment.

j. Handling, storage, and shipping.

k. Control of nonconforming materials, parts, and components.

2. Method of Accomplishment

The preceding objectives were accomplished by a review of the following procedures and documents.

a. QAP-N sections:

4, Procurement Document Control
7, Control of Purchased Material, Equipment, and Services
8, Identification and Control of Materials, Parts, and Components
9, Control of Special Processes
10, Inspection
11, Test Control
12, Control of Measuring and Test Equipment.
13, Handling, Storage, and Shipping
14, Inspection, Test, and Operating Status.
15, Nonconforming Materials, Parts, or Components

b. Standard specifications (attachments to CDSs and SDSs) 6212.356.2200 and 6212.357.6100.

c. Contract by B&V with Shannon and Wilson, Inc. (S&WI) for geotechnical services.

d. S&WI quality assurance manual dated January 5, 1974.

3. Findings

a. In general, procurement activities by B&V relative to the Black Fox Station will be limited to:

(1) Preparation of engineering documents in support of procurements which will be made by Public Service of Oklahoma (PSO).

(2) Recommending potential bidders.

(3) Evaluate and recommend disposition of bid proposals, deviations from purchase documents, and proposed changes to purchase documents.

(4) Total procurement responsibility for services procured by B&V in support of their project scope.

b. PSO is retaining responsibility for a large part of the procurement activity including bid selection/contract award, supplier evaluation, supplier surveillance inspection, and releases of supplier equipment.

c. Standard specifications (amended as appropriate) are included in applicable purchase document packages and contain provisions for shop inspections, witness and hold points, record requirements, documentation requirements, handling packaging and shipping requirements, QA requirements on supplier and sub-tier suppliers, control of special processes, material identification, and measuring and test equipment control.

d. In this area of the inspection no deviations or unresolved items were identified.

F. Document Control

1. Objectives

Determine if the basic implemented QA program includes provisions to cover:

a. Measures for control of the issuance of documents that prescribe activities affecting quality including review, approval and distribution to the location where the prescribed activity is performed.

b. Measures to assure that those participating in an activity are aware of and use proper and current documents.

2. Method of Accomplishment

The preceding objectives were accomplished by the following:

a. Review of Section 6, Document Control, of the QAP-N and SP 6.1, Control of Quality Assurance Program Documents.

b. Review of the files in the Division Document Control Center for the control and distribution of two quality-related manuals to assure compliance with SP 6.1.

c. Check of two (2) manuals at assigned locations to assure manuals were being maintained current.

3. Findings

In this area of the inspection no deviations or unresolved items were identified.

G. Quality Assurance Records

1. Objectives

Determine if the basic implemented QA program includes provisions for:

a. Maintenance of records to furnish evidence of activities affecting quality.

b. Identification, retrieval, and retention of records.

2. Method of Accomplishment

The preceding objectives were accomplished by the following:

a. Review of Section 17, Quality Assurance Records, of the QAP-N and procedures SP 17.1, Identification of QA Records and SP 6.2, Project Files -- Administration and Numbering.

b. Review of the Project Document Control Files and the Security Files (the two halves of the duplicate QA records system) to assure maintenance, security, preservation, and retrievability of QA records.

c. Two computer listings of that provide identification and location of records being retained.

d. Interoffice memorandum dated January 31, 1978, from Lengal to Robinson identifying those individuals authorized access to the Project Document Control Files and those that have keys to these files.

e. Interoffice memorandum dated January 20, 1978, from Blaisdell to Robinson specifying retention times for documents.

3. Findings

No unresolved items were identified in this area of the inspection. The following deviation was identified.

Contrary to QA program commitments to ANSI N45.2.9, two quality-related manuals (and revisions thereto) were identified that are not being collected, stored, and maintained in the appropriate QA records system (See Notice of Deviation, Enclosure, Item A for details).

H. Audits

1. Objectives

Determine if the basic implemented QA program includes provisions for:

a. A system of audits to verify compliance with all aspects of the QA program and to determine the effectiveness of the QA program.

b. Documenting responsibilities and procedures for auditing, the required frequency of audits, documenting and reviewing audit results, corrective action followup, and designating management levels to review and assess audit results.

c. Assuring that conditions adverse to quality are identified and promptly corrected.

d. Assuring that causes of significant conditions adverse to quality are determined and corrective action taken to preclude repetition.

2. Method of Accomplishment

The preceding objectives were accomplished by review of the following procedures and documents demonstrating implementation.

a. Section 18 of the QAP-N and procedures SP 18.2, Audit Perforamnce; SP 18.3, Project Internal Surveys; SP 2.5, Qualification of Lead Auditors; and SP 2.4, Management Reviews.

b. Qualification and training files of six (6) auditors in the QA Group, five (5) of which were qualified as Lead Auditors.

c. Internal audit schedules and project survey schedules for 1977 and 1978.

d. The documentation packages for five (5) internal audits and two (2) project surveys (packages included audit notification and plans, checklist and reports).

e. Interoffice memos, plans, checklists, meeting minutes, and reports of the 1978 annual management review conducted by QA Management Review Committee.

f. Eleven (11) corrective action reports (CARs) issued in 1977 and 1978 including responses, followup, and closeout of the items.

g. The reports of two audits by B&V of S&WI's activities onsite and in S&WI's laboratory including the audit plans.

3. Findings

No unresolved items were identified in this area of the inspection. The following deviations were identified.

a. Contrary to commitments to ANSI standards N45.2.12 and N45.2.13, procured services for geotechnical studies are not being audited at the committed frequencies and certain elements of the internal QA program are not being audited in the committed depth or frequency (See Notice of Deviation, Enclosure, Item B.)

b. Contrary to commitments in ANSI N45.2.12, internal audits are not being consistently conducted and reported in accordance with commitments (See Notice of Deviation, Enclosure, Item C.).

I. Exit Interview

An exit meeting was conducted with management representatives at the conclusion of the inspection on July 28, 1978. In addition to those individuals noted in paragraph A above, the following were in attendance:

P. J. Adam, Acting Head, Power Division
C. E. Lemons, Project Engineer, Mechanical
M. J. Robinson, Project Manager
R. D. Woodson, Head, Power Division

The inspector summarized the scope and findings of the inspection including a description of the three deviations identified. The proper method of responding to the deviations was described also. Management representatives acknowledged the statements by the inspector.