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July 16, 1979

Mr. L. Dow Davis
Counsel for NRC Staff
Nuclear Regulatory Commission
Washington, D. C. 20555

In re: QA Compliance - Black & Veatch (B&V)
Black Fox Construction Permit
Docket Nos. STN 50-556
STN 50-557

Dear Dow:

Enclosed please find a copy of two letters concerning Black & Veatch's QA Program which we obtained from the NRC's Public Document Room in Washington, D. C. You will note that the NRC's April 30, 1979, letter to Black & Veatch identifies 32 potential deficiencies in the Black & Veatch Program.

It would appear that the NRC's concerns and findings in this area support our QA contention and Board Questions 10-1 through 10-4. Could it be that a closer look at the QA Program by the Staff has resulted in a change in its position on some of these issues? In addition, what effect do these deficiencies identified in the Black & Veatch Quality Assurance Program have on the Black & Veatch design work, equipment ordered, etc. which has already taken place?

Shouldn't we have received this correspondence by normal service on all parties to the Black Fox proceedings?

Your earliest comments in response to these questi[illegible] would be appreciated.

Very truly yours,

Joe Farris

Joseph R. Farris
For the Firm

1013 057

JRF:fj
Encls.
cc: Black Fox Mailing List (Attached)

APR 27 1979

DISTRIBUTION:
Central File
QAB Projects
QAB Chron. File
NRR Reading File
DJSkovholt, DPM
JSpraul, QAB
JGilray, QAB

NRC PDR

MEMORANDUM FOR: Walter P. Haass, Chief, Quality Assurance Branch, Division of Project Management

FROM: Jack Spraul, Quality Assurance Branch, Division of Project Management

SUBJECT: SUMMARY OF MEETING WITH BLACK & VEATCH

On Wednesday afternoon, April 25, 1979, NRC QA Branch personnel met with personnel from Black & Veatch Consulting Engineers, Kansas City, Missouri. The meeting was held in Room P320-D, and a list of attendees is attached.

The purpose of the meeting was to discuss staff questions generated during the review of the Black & Veatch topical report number BVTR-1-0, "Quality Assurance Program Description." There appeared to be a mutual understanding of our concerns when the meeting ended.

The questions are being formally transmitted to Black & Veatch for response.

RELATED CORRESPONDENCE

Original signed by:
J. G. Spraul

Jack Spraul
Quality Assurance Branch
Division of Project Management

TOP

Attachment:
Meeting Attendees

cc: U. Potapovs
M. Peranich

8008050122

OFFICE ▶	DPM:QAB	DPM:QAB				
SURNAME ▶	JSpraul:ch	JGilray				
DATE ▶	4/26/79	4/26/79				

NRC FORM 318 (5-76) NRCM 0240 ☆ U.S. GOVERNMENT PRINTING OFFICE: 1976 - 626 - 166

QUALITY ASSURANCE

The quality assurance (QA) program should assure that the requirements for design, procurement, installation, testing, and administrative controls for the fire protection program for safety related areas approved by NRC are satisfied. The Quality Assurance provisions for fire protection should apply to activities performed after the effective date of the adoption of said provisions. The QA program should be under the management control of the QA organization. This control consists of (1) formulating and/or verifying that the fire protection QA program incorporates suitable requirements and is acceptable to the management responsible for fire protection and (2) verifying the effectiveness of the QA program for fire protection through review, surveillance, and audits. Performance of other QA program functions for meeting the fire protection program requirements may be performed by personnel outside of the QA organization. The QA program for fire protection should be part of the overall plant QA program. These QA criteria apply to those items within the scope of the fire protection program, such as fire protection systems, emergency lighting, communication and emergency breathing apparatus as well as the fire protection requirements of applicable safety related equipment.

Applicants/licensees can meet the fire protection quality assurance (QA) program criteria of Appendix A to BTP 9.5-1 or Regulatory Guide 1.120 by either:

1) implementing those fire protection QA criteria as part of their QA program under 10 CFR Part 50 Appendix B, where such a commitment is made, it is not necessary to submit a detailed description of the fire protection QA program or its implementation for NRC review; or

2) providing for NRC review a description of the fire protection QA program and the measures for implementing the program. Supplemental guidance is provided below on acceptable measures for implementing each of the fire protection QA program criteria of Appendix A to BTP 9.5-1 or Regulatory Guide 1.120.

1.0 Design Control and Procurement Document Control - Measures should be established to assure that the applicable guidelines of the Regulatory Guide 1.120 or approved NRC alternatives are included in design and procurement documents and that deviations therefrom are controlled. These measures should assure that:

a. Design and procurement document changes, including field changes and design deviations are subject to the same level of controls, reviews, and approvals that were applicable to the original document.

b. Quality standards are specified in the design documents such as appropriate fire protection codes and standards, and deviations and changes from these quality standards are controlled.

c. New designs and plant modifications, including fire protection systems, are reviewed by qualified personnel to assure inclusion of appropriate fire protection requirements. These reviews should include items such as:

(1) Design reviews to verify adequacy of wiring isolation and cable separation criteria.

(2) Design reviews to verify appropriate requirements for room isolation (sealing penetrations, floors, and other fire barriers).

d. A review and concurrence of the adequacy of fire protection requirements and quality requirements stated in procurement documents are performed and documented by qualified personnel.

This review should determine that fire protection requirements and quality requirements are correctly stated, inspectable and controllable; there are adequate acceptance and rejection criteria; and the procurement document has been prepared, reviewed, and approved in accordance with QA program requirements.

2.0 Instructions, Procedures, and Drawing - Inspections, tests, administrative controls, fire drills, and training that govern the fire protection program should be prescribed by documented instructions, procedures or drawings and should be accomplished in accordance with these documents. The following provisions should be included.

a. Indoctrination and training programs for fire prevention and fire fighting are implemented in accordance with documented procedures.

b. Activities such as design, installation, inspection, test, maintenance, and modification of fire protection systems are prescribed and accomplished in accordance with documented instructions, procedures, and drawings.

c. Instructions and procedures for design installation, inspection, test, maintenance, modification and administrative controls are reviewed to assure that proper inclusion of fire protection requirements, such as precautions, control of ignition sources and combustibles, provisions for backup fire protection of the activity requires disabling a fire protection system, and restriction on material substitution unless specifically permitted by design and confirmed by design review.

d. The installation or application of penetration seals and fire retardant coatings is performed by trained personnel using approved procedures.

3.0 Control of Purchased Material, Equipment, and Services - Measures shall be established to assure that purchased material, equipment and services conform to the procurement documents. These measures should include:

a. Provisions, as appropriate, for source evaluation and selection, objective evidence of quality furnished by the contractor, inspections at suppliers, or receiving inspections.

b. Source or receiving inspection, as a minimum, for those items whose quality cannot be verified after installation.

4.0 Inspection - A program for independent inspection of activities affecting fire protection should be established and executed by, or for, the organization performing the activity to verify conformance to documented installation drawings and test procedures for accomplishing activities. This program should include:

a. Inspections of (1) installation, maintenance and modification of fire protection systems; and (2) emergency lighting and communication equipment to assure conformance to design and installation requirements.

b. Inspection of penetration seals and fire retardant coating installations to verify the activity is satisfactorily completed.

c. Inspections of cable routing to verify conformance with design requirements:

d. Inspections to verify that appropriate requirements for room isolation (sealing penetrations, floors, and other fire barriers) are accomplished during construction.

e. Measures to assure that inspection personnel are independent from the individuals performing the activity being inspected and are knowledgeable in the design and installation requirements for fire protection.

f. Inspection procedures, instructions, and check lists which provide for the following:

(1) Identification of characteristics and activities to be inspected

(2) Identification of the individuals or groups responsible for performing the inspection operation

(3) Acceptance and rejection criteria

(4) A description of the method of inspection

(5) Recording evidence of completing and verifying a manufacturing, inspection or test operation

(6) Recording inspector or data recorder and the results of the inspection operation

g. Periodic inspections of fire protection systems, emergency breathing and auxiliary equipment, emergency lighting, and communication equipment to assure the acceptable condition of these items.

h. Periodic inspection of materials subject to degradation such as fire stops, seals, and fire retardant coatings to assure these items have not deteriorated or been damaged.

5.0 Test and Test Control - A test program should be established and implemented to ensure that testing is performed and verified by inspection and audit to demonstrate conformance with design and system readiness requirements. The tests should be performed in accordance with written test procedures; test results should be properly evaluated and acted on. The test program should include the following:

a. Installation Testing - Following construction, modification, repair or replacement, sufficient testing is performed to demonstrate that fire protection systems, emergency lighting and communication equipment will perform satisfactorily in service and that design criteria are met. Written test procedures for installation tests incorporate the requirements and acceptance limits contained in applicable design documents.

b. Periodic testing - The schedules and methods for periodic testing are developed and documented. Fire protection equipment, emergency lighting, and communication equipment are tested periodically to assure that the equipment will properly function and continue to meet the design criteria.

c. Programs are established for QA/QC to verify testing of fire protection systems and to verify that test personnel are effectively trained.

d. Test results are documented, evaluated, and their acceptability determined by a qualified responsible individual or group.

6.0 Inspection, Test, and Operating Status - Measures should be established to provide for the identification of items that have satisfactorily passed required tests and inspections. These measures should include provisions for:

a. Identification by means of tags, labels, or similar temporary markings to indicate completion of required inspections and tests, and operating status.

7.0 Nonconforming Items - Measures should be established to control items that do not conform to specified requirements to prevent inadvertent use of installation. These measures should include provisions to assure that:

a. Nonconforming, inoperative, or malfunctioning fire protection systems, emergency lighting, and communication equipment are appropriately tagged or labelled.

b. The identification, documentation, segregation, review disposition, and notification to the affected organization of nonconforming materials, parts, components, or services are procedurally controlled.

c. Documentation identifies the nonconforming item, describes the nonconformance and the disposition of the nonconforming item and includes signature approval of the disposition.

d. Provisions are established identifying those individuals or groups delegated the responsibility and authority for the disposition and approval of nonconforming items.

8.0 Corrective Action - Measures shall be established to ensure that conditions adverse to fire protection such as failures, malfunctions, deficiencies, deviations, defective components, uncontrolled combustible material and nonconformances are promptly identified, reported and corrected. These measures should assure:

a. Procedures are established for evalu tion of conditions adverse to fire protection (such as nonconformance, failures, malfunctions, deficiencies, deviations, and defective material and equipment) to determine the necessary corrective action.

b. In the case of significant or repetitive conditions adverse to fire protection, including fire incidents, the cause of the conditions is determined and analyzed, and prompt corrective actions are taken to preclude recurrence. The cause of the condition and the corrective action taken are promptly reported to cognizant levels of management for review and assessment.

9.0 Records - Records should be prepared and maintained to furnish evidence that the criteria enumerated above are being met for activities affecting the fire protection program. The following provisions should be included:

a. Records are identifiable and retrievable and should demonstrate conformance to fire protection requirements. The records should

BLACK & VEATCH

Request for Additional Information

1. The "Explanation of 'Quality Assurance'" on page 2.1 is unacceptable. To limit the definition of quality assurance in the program description to "the separate quality verification effort by Quality Assurance Group personnel..." is inconsistent with the 10 CFR Part 50 Appendix B definition (not fully reflected in the Black & Veatch definition on page 2-1) that quality assurance "comprises all those planned and systematic actions necessary to provide adequate confidence that a structure, system, or component will perform satisfactorily in service." A quality assurance program, as noted on page 2.1, is not an alternative to good technical work nor does it relieve line management of any responsibility. It includes, it is based upon, good technical work and good line management. That is, good technical work under good line management is a prerequisite of a good quality assurance program. Therefore, either delete the "Explanation of 'Quality Assurance'" or revise it to agree with the 10 CFR Part 50 Appendix B definition of quality assurance.

2. Part 2.4 of the topical report describes the relationship between the topical report, the Quality Assurance Program-Nuclear, and the B&V Project Instruction Manual, and Part 6.2 states that specific reviews are performed to assure that appropriate quality requirements are included in these documents. Describe the Quality Assurance Manager's role in the review of the B&V Project Instruction Manual(s) and other listed documents to assure consistency with the topical report. When only "selected" documents are reviewed as noted in the last sentence of Part 6.2, indicate who performs the selection and on what basis.

3. Part 2.2 of the topical report states that Table 2.1 defines the applicability of QA related regulatory guides to B&V. Please include Regulatory Guides 1.26 and 1.29 in Table 2.1. Please update the Regulatory Guide 1.88 commitment to Revision 2 dated October 1976 and 1.94 to Revision 1, April 1976. The Black & Veatch Positions given in Table 2.1 are acceptable except as noted below.

   a. Regulatory Guide 1.28, Position 5: Explain the significance of "as necessary."

   b. Regulatory Guide 1.29, Position 6: It is the staff position that deficient areas must be corrected and correction must be independently verified. Please revise the Black & Veatch Position to meet this staff position or provide some alternative for our evaluation.

   c. Regulatory Guide 1.37, Position 1: Please add a commitment that adequate controls will be applied to preclude harmful effects of the removal process.

d. Regulatory Guide 1.38, Position 1: Please add a commitment that the protection level selected will not be less restrictive than noted in Article 2.7.

e. Regulatory Guide 1.38, Position 4: In order to minimize potential damage during shipment, the staff position is that Section 4.3.4 should be followed. The stated Black & Veatch Position is unacceptable. Please delete or revise.

f. Regulatory Guide 1.38, Position 5: It appears the reference should be to Appendix Section A3.4.1 (4) and (5).

g. Regulatory Guide 1.38, Position 6: It is not clear whether or not the Black & Veatch Position relative to heat exchangers or tanks containing carbon steel meets the requirement of the last sentence of A.3.4.2(3). Please clarify.

h. Regulatory Guide 1.38, Position 7: Please provide justification for this position for our evaluation or delete it.

i. Regulatory Guide 1.64, Position 2: Please indicate what specific requirements and recommendations of Section 11 will not be met (if any) and provide specific alternatives for our evaluation.

j. Regulatory Guide 1.94: Please provide justification for this position for our evaluation or delete it.

k. Regulatory Guide 1.123: Please provide justification for this position for our evaluation or delete it.

The last ANSI Standard listed in Table 2-1 is N45.2.12-1977. This is acceptable only as clarified by the regulatory position of Regulatory Guide 1.144 issued "For Comment" in January 1979. Otherwise, we require a commitment to Revision 3, Draft 4, dated February 1974 which is included in Revision 1 of WASH-1283 ("Gray Book"). Please revise Table 2-1 accordingly.

Finally, reference to specific ANSI standards in the text of the topical report (see pages 15-1, 17-1, and 18-1) should be to the referencing Regulatory Guide listed in Table 2.1, and the words "the applicable provisions of" should be deleted or explained.

4. Part 1.4 of the topical report indicates the QA Group reviews quality assurance manuals. Clarify whether these are B&V manuals, vendor manuals, or both.

5. Describe measures which assure that verified computer codes are certified for use and only certified codes are used. Also, provide a commitment that the development, control, and use of computer codes will be done in accordance with the QA program and describe how the QA program will be applied.

6. Part 2.3 of the topical report indicates the QA program is applicable to items so identified in "project essential items listed." Please provide a commitment that the project essential items lists will show Appendix B applied to each item so identified in applicant's Safety Analysis Reports. Also identify personnel authorized to approve changes to these lists and describe methods controlling its distribution. Also, note that the lists will include related consumables in addition to the structures, systems, and components that come under the Appendix B QA program.

7. The project essential items lists should identify fire protection as a system covered by the QA program (with such a commitment in the topical report) or the topical report should identify the QA controls for fire protection. (Reference: Attachment 6 to NRC letter to utilities - "Fire Protection Functional Responsibilities," August 29, 1977 [attached])

8. Provide a commitment in the topical report to comply with 10 CFR Part 50.55a. Also, for items covered by Section III of the ASME Code (Classes 1, 2, & 3) provide a commitment that the Code quality assurance requirements will be supplemented by the specific guidance addressed in the regulatory positions of the applicable Regulatory Guides.

9. Provide a summary description on how responsibilities and control of quality-related activities are transferred from Black & Veatch to the plant owner during phaseout of Black & Veatch design and procurement activities.

10. Indoctrination and training of personnel is discussed in part 2.6, page 2-4, of the topical report. Clarify that the indoctrination and training program is such that:

    a. Personnel responsible for performing quality-affecting activities are instructed as to the purpose, scope, and implementation of the quality-related manuals, instructions, and procedures.

    b. Personnel verifying activities affecting quality are trained in the principles, techniques, and requirements of the activity being performed.

    c. For formal training programs, documentation includes the objective, content of the program, attendees, and date of attendance.

    d. Proficiency of personnel performing and verifying activities affecting quality is maintained by retraining, reexamining, and/or recertifying as determined by management or program commitment.

11. Briefly describe the activities associated with the preparation and review of design documents mentioned in part 3.1 of the topical report. Indicate the organizational responsibilities for preparing, reviewing, approving, and verifying design documents such as system descriptions, design input and criteria, design drawings, design analyses, computer programs, specifications, and procedures.

12. Describe measures which assure that deviations from specified quality standards are identified and procedures are established to ensure their control.

13. In part 3.6, briefly describe the internal and external design interface controls, procedures, and lines of communication among participating design organizations and across technical disciplines for the review, approval, release, distribution, and revision of documents involving design interfaces.

14. Describe measures which assure that design verification by design review and/or alternative calculations is completed prior to release for procurement, manufacturing, construction or to another organization for use in other design activities. Note that when this timing cannot be met, the design verification may be deferred providing that the justification for this action is documented and the unverified portion of the design output document and other design output documents based on the unverified data are appropriately identified and controlled.

15. Briefly describe controls for design documents that reflect the commitments of the SAR. The controls should differentiate between documents that receive formal design verification by interdisciplinary or multi-organizational teams and those which can be reviewed by a single individual. Design documents subject to procedural control should include specifications, calculations, computer programs, system descriptions, SAR when used as a design document, and drawings such as flow diagrams, piping and instrument diagrams, control logic diagrams, electrical single line diagrams, structural systems for major facilities, site arrangements, and equipment locations. Clarify whether specialized reviews are used when uniqueness or special design considerations warrant.

16. Clarify whether procedures identify the reponsibilities of the design verifier, the areas and features to be verified, the pertinent considerations to be verified, and the documentation required.

17. When design verification requires testing, describe how Black & Veatch assures that testing is performed as early as possible.

18. Clarify whether the procedures mentioned in part 4.1 of the topical report require applicable inspection and test requirements as well as special process instructions in procurement documents.

19. Please expand the list on page 6-2 to include:

    a. Design documents (e.g., calculations, drawings, specifications, analyses) including documents related to computer codes.
    b. Procurement documents.
    c. "As-built" documents.
    d. Topical reports.
    e. Nonconformance reports.

    or indicate why these documents should be omitted. Also show who (or what organization) reviews and concurs with the QA-related aspects of the documents listed on page 6-2. If other than QA, describe the qualification requirements.

20. Describe measures which assure that procurement documents prepared by Black & Veatch require the supplier to furnish the following records to the purchaser:

    a. Documentation that identifies the purchased item and the specific procurement requirements (e.g., codes, standards, and specifications) met by the item.

    b. Documentation identifying any procurement requirements that have not been met.

    c. A description of those nonconformances from the procurement requirements dispositioned "accept as is" or "repair."

21. Describe the Black & Veatch organizational responsibilities and interfaces between design, procurement, and QA for procurement document preparation, selection of suggested bidders, and review of information submitted by contractors.

22. Describe the criteria for determining processes that are controlled as special process and provide a more comprehensive list of processes that will be treated as special processes.

23. Describe measures which Black & Veatch uses during its review of suppliers' special process procedures to assure:

    a. Special processes are appropriately identified and controlled.

    b. Organizational responsibilities are described for qualification of special processes, equipment, and personnel.

    c. Procedures, equipment, and personnel associated with special processes are qualified and are in conformance with applicable codes, standards, QA procedures, and specifications.

    d. Procedures are established for recording evidence of acceptable accomplishment of special processes using qualified procedures, equipment, and personnel.

    e. Qualification records of procedures, equipment, and personnel associated with special processes are established, filed, and kept current.

24. Identify the individuals or groups with authority to evaluate and recommend disposition of Procurement Deviation Requests.

25. Briefly describe the procedures used to disposition "nonconformances which do not affect original design."

26. Discuss Black & Veatch involvement in and corrective action taken as the result of construction difficulties and field failures of Black & Veatch designed items.

27. Describe the involvement of Black & Veatch management in the corrective action system.

28. Section 17 of the topical report should be expanded to address the following:

    a. Describe Black & Veatch organizational responsibilities for activities related to records.

    b. Describe record storage facilities.

29. Describe measures which assure that an audit plan is prepared which identifies audits to be performed, audit frequencies, and audit schedules, assuring effective QA throughout the activities important to safety.

30. The list of audit areas on page 18-1 appears to be too limiting. So, too, is the sentence that says, "The procedures or checklists will identify the records and design activities to be evaluated." (Emphasis added.) Provide a commitment that audits will be performed in all areas where 10 CFR Part 50 Appendix B is applicable and revise the list and sentence accordingly.

31. Describe measures which assure that audits are conducted by trained personnel having no direct responsibility in the area being audited.

32. Provide a description that emphasizes how the docketed QA program description, particularly the Regulatory Guides and ANSI standards listed in Table 2-1, will be properly carried out.

Editorial Comments:

p. 3-2: delete "only"
p. 6-1: change "are" to "is"
p. 8-1: change "provide" to "require"
p. 8-1: change "or" to "and"
p. 13-1: delete "as guidance"

Note: Black & Veatch position On Sections 3.7.1(1) and 3.7.2 of ANSI N45.2.2-1977 (Topical page 2-9) is under review.