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MEMORANDUM TO: Robert E. Browning, Director  
Division of Waste Management  
Office of Nuclear Material Safety and Safeguards

FROM: Brian K. Grimes, Director  
Division of Quality Assurance, Vendor,  
and Technical Training Center Programs  
Office of Inspection and Enforcement

SUBJECT: REVIEW OF BASALT WASTE ISOLATION PROJECT QA PLAN

In response to a request from the Repository Projects Branch, the QA Branch reviewed the "Basalt Waste Isolation Project Quality Assurance Plan," Revision 1, dated April 1986 (04-15-86) against the "Criteria for QA Program (High-Level Waste Repository Program)," (Appendix A of Enclosure 1 to the Browning to Bennett letter of June 29, 1984). This review resulted in the enclosed request for additional information (RAI).

The enclosed RAI should lead to a QA program description in compliance with NRC regulations which, when properly implemented, will meet DOE's programmatic QA responsibilities regarding the DOE Richland Operations Office waste storage investigations. We suggest the enclosed RAI be forwarded to DOE for response. We also suggest a working meeting between Basalt Waste Isolation (BWI) Division personnel and NRC so that we can develop a firm understanding of the functioning QA relationships and QA responsibilities for the BWI Project. We have found such meetings to be most beneficial when they are held after draft responses to RAIs have been prepared. We have several editorial comments which can also be discussed at the suggested working meeting.

Your staff or DOE representatives should contact J. Spraul before the suggested meeting if further clarification of the enclosed RAI is desired.

Brian K. Grimes, Director  
Division of Quality Assurance, Vendor,  
and Technical Training Center Programs  
Office of Inspection and Enforcement

Enclosure: As stated

Contact: J. Spraul, X-24530

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REQUEST FOR ADDITIONAL INFORMATION  
BASALT WASTE ISOLATION PROJECT QUALITY ASSURANCE PLAN  
REVISION 1, APRIL 15, 1986

1. The BWI Project Quality Assurance Plan was written prior to the following NRC June 1986 draft generic technical positions (GTPs):
  - a. Peer review.
  - b. Qualification of existing data.
  - c. Items and activities subject to QA requirements.

An evaluation should be made against the draft guidance of these GTPs, and differences between the plan and the draft GTPs should be addressed.
2. Expressions such as "are expected to" or "is expected that" are found throughout the plan. Change these expressions to "shall" or justify not doing so.
3. Section 1.3 and Appendix A of the plan describe QA responsibilities within the BWI Division. Identify who (by position title) in the Richland Operations Office is responsible for the overall BWI program. Clarify the meaning of the dashed lines, arrowheads, and ellipses on Figure 1.3 of the plan. Also indicate what ES&H stands for on Figure 1.3 and in Section 1.5 of the plan. (1.1)\*
4. Discuss how the Integrating Contractor avoids conflict of interest in its roles of project management and project participant. Clarify whether the Integrating Contractor, the Architect/Engineer, the Construction Manager, and other participants under direct contract to DOE for BWI Project work report to DOE-HQ, DOE-RL, or DOE-BWI Division. (1.3)
5. Section 1.2.2 of the plan indicates the BWI Division verifies effective implementation of the QA program. Clarify that this includes at least an annual audit of the Integrating Contractor. (1.4)
6. Sections 1.4 and 1.5 of the plan discuss QA interface with DOE-HQ and interdivision interface within DOE-RL respectively. Similarly, discuss the DOE-RL interface with Project participants. (1.6)

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\* The number in parenthesis after an RAI refers to the specific guidance in the NRC review plan.

7. Clarify whether the Director, BWI Division, reports through the Office of Commercial Nuclear Waste (Section 1.3.1) or the Office of Civilian Nuclear Waste (Figure 1-2). Identify the onsite and offsite organizational elements which function under QA program controls or justify not doing so. Show the ES&H Division, the Procurement Division, and the Personnel Division on an organization chart. (1.7)
8. Describe measures which ensure that DOE-RL's BWI Division Quality Systems Branch Chief is involved in the aspects of the BWI Project that affect safety and/or waste isolation and how the extent of DOE-RL QA controls is determined. (1.8)
9. Identify a management position within DOE-RL, the Integrating Contractor, Architect/Engineer, and Construction Manager organizations that retains overall authority and responsibility for the applicable QA program. Describe the management, QA, and technical experience and knowledge requirements for these positions. Verify that each of these positions has the following characteristics:
  - a. Is at the same or higher organization level as the highest line manager directly responsible for performing activities affecting quality (such as design, engineering, site investigations, procurement, manufacturing, etc.) and is sufficiently independent from cost and schedule.
  - b. Has effective communication channels with other senior management positions.
  - c. Has responsibility for approval of QA Manual(s), changes thereto, and interpretations thereof.
  - d. Has no other duties or responsibilities unrelated to QA that would prevent full attention to QA matters. (1.10)
10. Describe measures which ensure that persons and organizations performing QA functions have direct access to management levels which will assure the ability to:
  - a. Identify quality problems.
  - b. Initiate, recommend, or provide solutions through designated channels.
  - c. Verify implementation of solutions.Describe how these actions are accomplished. (1.12)

11. Section 1.2.6 of the plan addresses stop work. Clarify the retention time of records of stop work requests. (1.12)
12. Identify items and activities covered by the QA program. Section 2.0 of the plan indicates that analytical processes are used to determine importance to safety and/or waste isolation. Clarify whether importance to safety and importance to waste isolation are defined as numerical performance objectives and standards. Justify why not if not. (2.1)
13. Section 3.2 of the plan indicates that Supplement 6 of the OGR QA plan addresses computer software control. Update Section 3.2 to reflect the fact that Supplement 6 of the OGR plan no longer addresses computer software. (2.2)
14. Section 2.4 of the plan indicates a management team assesses effectiveness of the overall Project QA program. Clarify that the management team is composed of personnel above or outside the DOE-RL QA organization. (2.7)
15. Section 3.1 of the plan indicates that design controls include those used to ensure the correct translation of design inputs into designs. Describe the controls which ensure that applicable regulatory requirements and design bases are reflected in design, procurement, and procedural documents. Also, describe measures which ensure that performance goals are specified for repository subsystems and components to support the establishment of data gathering and analysis needs. Discuss the timeliness of specifying these requirements. At the latest, planned performance allocation should be addressed in the SCP consistent with agreements reached in NRC/DOE meetings of April 17, 1981 and September 26 and 27, 1985 on this matter. (3.2)
16. Describe measures which ensure that (1) errors and deficiencies in approved design and design information documents are documented and (2) action is taken to ensure that all errors and deficiencies are corrected. (3.4)
17. Section 3.4 of the plan addresses design verification, and it includes in Section 3.4.4, "Design Verification by Similarity," an addition to the 3 methods of 10 CFR 50 Appendix B. This method would be acceptable if a fourth condition was added: (4) the design characteristics (attributes, features) that are not identical are identified and verified in a manner other than by similarity. Add such a condition or justify not doing so. Also, describe measures which ensure that design checking, which includes such things as confirmation of the numerical accuracy and computations and the accuracy of data input to computer codes, will be performed. (Confirmation that the correct computer code has been used is part of design verification.) Design verification should be performed by persons other than those performing design checking. Clarify whether personnel performing design verification can be associated with the responsible design organization. (3.7)

18. Clarify whether procedures prescribe the extent of documentation required for design verification. (3.9)
19. Section 3.6 of the plan addresses design changes. Clarify whether a configuration control system is in place such that design changes, including field changes, are analyzed to ensure they are required, are subject to the same design controls as the original design, are communicated to all affected groups and individuals, and are considered for changes to procedures and training. (3.10)
20. Section 5.0 of the plan refers to personnel "who meet the independence criteria specified in Section 3.4 of this QAP." Clarify what these criteria are.
21. Section 5.2 of the plan requires review of technical procedures by QA personnel. Clarify whether DOL-RL requires such review of administrative procedures (Categories 1 and 2 per Section 5.1 of the plan), instructions, and drawings. Also clarify whether "each participating entity in the Project" as specified in Section 5.0 of the plan is the same as "each Project participant" which is used elsewhere in the plan. (5.1)
22. Describe the scope of the DOE-RL document control program and identify the types of documents controlled by this program. Section 6.1 of the plan describes what the BWI Division requires of all Project participants in the area of document control. Clarify that the BWI Division requires the same of DOE-RL. This clarification should be made, as appropriate, throughout the plan since page v of the plan indicates that "all project participants" does not include the BWI Division of DOE-RL. (Section 4.1 and 7.0 are examples where clarification is required.) (6.1)
23. Describe measures which ensure that obsolete or superseded documents are removed and replaced by applicable revisions at work areas in a timely manner. (6.4)
24. Section 7.3.1 and 10.4 of the plan address mandatory hold points for inspection or witnessing and use the term "where appropriate." Identify the organization(s) that determine when these (and similar) activities are appropriate. (7.1 and 10.5)
25. Describe the BWI Division Quality Systems Branch and other DOE-RL organizational responsibilities for qualification of special processes, equipment, and personnel. Provide examples of processes during site characterization that will be classified as special processes and those that will not. (9.2)
26. Clarify that special processes (standard or not standard) are required to be in conformance with applicable codes, standards, QA procedures, and specifications. The last sentence of Section 9.2 of the plan requires that participant's QA Plan describes QA's role in special processes. Clarify whether the BWI Division requires involvement of QA organizations. (9.3)

28. Section 7.5 of the plan indicates that DOE-RL's BWI Division is responsible for ensuring that delivered items and materials comply with applicable QA requirements, but Section 10 assigns inspection to Project participants. Describe how the BWI division meets the responsibility noted from Section 7.5 without performing inspections. Indicate how the BWI Division participates in determining when inspections are required and in defining how and when inspections are performed. (10.1)
29. Section 10.2 of the plan addresses inspector qualification and permits inspections by personnel outside QA organizations. Clarify that inspections are accomplished by individuals or groups who do not have direct responsibility for performing the work being inspected. The inspection function may be part of the line organization provided that the QA organization performs periodic surveillance to confirm sufficient independence from the individuals who performed the activity. (10.2)
30. Section 10.2 also refers to personnel with "particular" or "special" expertise. Describe QA's involvement in determining the expertise required commensurate with the technical complexity of the inspection function and the acceptability of the qualifications of the inspector. Also clarify that the qualifications and certifications of inspectors (both in and outside QA) are documented and kept current. Section 10.2 uses the term, "participant's QA inspection function." Clarify whether this is the same as the participant's QA organization. (10.2)
31. Describe measures which ensure that, when practicable, tests of structures, systems, and components shall be at conditions which simulate both normal and anticipated off-normal operations. (11.5)
32. Describe the scope of the QA program for the control of M&TE and identify the types of equipment to be controlled. (12.1)
33. Sections 12, 13, and 14 of the plan appear somewhat inconsistent. Sections 12 and 13 make the Integrating Contractor responsible for the controls, but 14 doesn't. Sections 13 and 14 address each Project participant, but 12 doesn't. Section 12 addresses cognizant QA organizational responsibilities, but 13 and 14 don't. Sections 12 and 13 specify surveillance and audit by DOE BWI Division QS, but 14 doesn't. Clarify these sections to eliminate these apparent inconsistencies, and describe how the involved organizations will meet their assigned responsibilities.
34. Describe measures which ensure that nonconforming items and samples are segregated from those which are acceptable. (15.1)
35. Section 15.2 of the plan requires that "use-as-is" and "repair" dispositions receive technical review and approval at the next higher level of project participation. Describe QA responsibilities regarding this review and approval. (15.2)

36. Section 15.1 of the plan requires that each nonconformance be documented. Clarify that nonconformance documentation identifies the item, describes the nonconformance, shows the disposition of the nonconformance, and includes signature approval of the disposition. (15.3)
37. Section 15.4 of the plan states that "The Project" will monitor and analyze nonconformance trends on a Project-wide basis. Identify what organization is responsible for these activities. Clarify that the trend analyses are used to help identify root causes of nonconformances. Identify the management level of DOE responsible to review and assess significant results of the nonconformance trend information. (15.4)
38. Describe measures which ensure that the significance of each nonconformance is assessed to determine whether corrective action is required to prevent recurrence. Identify the organization responsible for this assessment. (16.2)
39. Describe the scope of the record program. That is, identify by type of data what records will be maintained within the records management system. (17.1)
40. Describe the responsibilities of the project participants' QA organizations in the records management system. (17.2)
41. Section 17.3 of the plan addresses an archival facility for long-term storage of project records. Describe record storage facilities to be used prior to the availability of such a facility. (17.4)
42. Section 18.3 of the plan addresses audit scheduling. Clarify that audit scheduling considers the safety importance of the activities being performed. (18.2)
43. Section 18.13.2 of the plan addresses follow-on activities by auditing organizations. Clarify that these include analysis of audit data by the QA organization with the results being reported to responsible management for review, assessment, and appropriate action. (18.4)
44. Describe measures which ensure that audited organizations describe in a formal report the corrective action to be taken to address adverse audit findings and that this report is submitted to responsible management and the auditing organization. (18.7)
45. Clarify that technical audits which provide a comprehensive independent verification and evaluation of procedures and activities affecting quality are included in the audit program, that audit team membership includes personnel (not necessarily from the QA organization) having technical expertise in the areas being audited, and that audit team leaders are from the QA organization. (18.9)

46. Appendix A of the plan gives exceptions/clarifications to the NRC review plan. The following comments result from the staff review of Appendix A:
- a. The last sentence of clarification item 1 states that QA program controls are exercised by line functions. Clarify whether "line functions" refer to BWI Division personnel. If so, identify these line functions with the organization shown in Figure 1-2 of the plan. If not, identify what is meant by "line functions." Also clarify whether the "QA program controls" are the surveillances performed by BWI Division technical personnel as described in Section 18 of the plan. If not, clarify what is meant by QA program controls.
  - b. Clarification item 2 states that qualified individual(s) or organizational element(s) will be identified within DOE's organization, prior to initiation of activities, as responsible for assuring that delegated work meets established quality standards. Identify such individual(s) or organizational element(s) with this responsibility for ongoing delegated work. (1.5)
  - c. Clarification item 3 indicates that DOE will identify a DOE management position that retains overall authority and responsibility for: (1) performing QA functions relative to direct quality affecting activities within DOE, (2) verifying effectiveness of quality-related controls applicable to quality affecting work performed by DOE personnel, and (3) verifying proper performance of QA functions within contractor QA programs. Clarify who (by position title) has these responsibilities within DOE-RL for the BWI Project.
  - d. Clarification item 4 indicates that both DOE and contractor verification of conformance to established requirements may be performed by people outside the QA organization. When this is the case, clarify that the QA organization performs periodic surveillance to confirm sufficient independence from the individuals who performed the activity.
  - e. The last sentence of clarification item 7 states: "Geological data acquisition "testing" is not considered to belong to the "special process" category for purposes of process demonstration. Explain the QA significance of this statement.
  - f. Clarification item 9 is acceptable if only "samples" will require handling, preservation, storage, etc; i.e., if no structures, systems, components, or other materials are involved. If this is not the case, delete this clarification or justify not doing so.



- g. Section 16.0 of the plan defines significant problems, and Appendix A of the plan describes significant conditions adverse to quality. Rectify these terms and their definitions or justify not doing so. (16.4)