



U.S. Department of Energy
Office of Inspector General
Office of Audit Services

Audit Report

Yucca Mountain Project Document Suspension

OAS-M-08-07

April 2008



Department of Energy

Washington, DC 20585

April 28, 2008

MEMORANDUM FOR THE DIRECTOR, OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT

FROM:

William S. Maharay
William S. Maharay
Deputy Inspector General

SUBJECT:

INFORMATION: Audit Report on "Yucca Mountain Project
Document Suspension"

BACKGROUND

The Department of Energy's Office of Civilian Radioactive Waste Management (OCRWM) is preparing to obtain a license from the Nuclear Regulatory Commission to construct a permanent repository at Yucca Mountain for the disposal of high-level radioactive waste and spent nuclear fuel. In December 2005, OCRWM identified design process inadequacies and suspended the approval of new documents 'important to waste isolation' or safety analysis that were subject to quality assurance procedures. Waste isolation refers to limiting radioactive exposure to the public after the waste is placed in the repository; while safety refers to limiting exposure prior to emplacement.

OCRWM lifted the suspension in October 2006 after its contractor, Bechtel SAIC Company, LLC (BSC), revised its quality assurance procedures. Subsequently, the Office of Inspector General and OCRWM received allegations concerning the effectiveness of the suspension. The objective of our inquiry was to determine whether quality assurance procedures were followed – specifically, whether quality affecting documents that were important to waste isolation and safety were issued during the suspension or reclassified so that they would not be subject to the established quality assurance process.

OBSERVATIONS

Prior to our audit, OCRWM performed an internal review and determined that BSC had issued five documents that were questionable under the terms of the suspension. Our independent review confirmed that these five documents were issued during the suspension period. However, we determined that issuance of the documents had no material effect on quality since they were revised after the suspension, reviewed under the new quality assurance requirements, or were not affected by any requirement changes. We did not identify any documents that were reclassified during the suspension. A discussion of these and related matters follows.



Analyses of Documents Issued During Suspension

As stated previously, both the Office of Inspector General and OCRWM received a complaint, submitted through the Nuclear Regulatory Commission, alleging that documents had been inappropriately processed during the suspension. OCRWM conducted an internal review and identified five documents, which had been issued during the suspension and were defined as important to waste isolation or safety. These documents included three change notices to a previously issued waste isolation or safety document and two studies related to waste isolation or safety.

Based upon its review, OCRWM issued a condition report to the Corrective Action Program requiring the contractor to address the issuance of the five documents in question. BSC officials responded by indicating that the documents had either been revised since the suspension, reviewed under the new quality assurance requirements, or the documents were not affected by any requirement changes. The OCRWM Concerns Program reviewed BSC's actions and accepted them as sufficient to close the condition report.

The Office of Inspector General conducted an independent examination of the facts surrounding the allegation. The examination included a review of all documents issued during the suspension period by the contractor. Our analysis identified the same five documents that were quality affecting and were either important to waste isolation or safety. A further examination of the matter confirmed that the issuance of the documents had not impacted quality since the documents had been either revised and reviewed under the new quality assurance requirements after the suspension, or were not affected by any of the quality assurance requirements.

During the course of the Office of Inspector General examination of the matter, we did not find any evidence to support the allegation that BSC inappropriately reclassified documents so that they would not be subject to the suspension. However, we identified two procedural issues relating to quality assurance that had not been fully resolved. These issues are discussed below.

Justification for Use of Unqualified Data Supporting Quality Documents

Our examination identified one case where data that was not subject to quality assurance procedures was used as input to support waste isolation documents without sufficient justification. According to OCRWM's procedures, data used as direct input for safety and waste isolation issues must meet applicable quality assurance requirements. Unqualified data can be used only if its status as unqualified data is clearly identified and its use is justified.

In the specific case, an unqualified study was used as input to four waste isolation documents. However, there was insufficient justification for the use of the study, which was not always identified as containing unqualified data. We discussed the issue with OCRWM officials, and they agreed that additional justification was needed to support the use of the unqualified study in waste isolation reports. OCRWM issued a condition

report and directed its contractor to review the use of unqualified data in waste isolation and safety documents, including studies, drawings, specifications, and calculations. In response, BSC analyzed nuclear facility calculations and other engineering documents and determined that the calculations and documents using unqualified data contained sufficient justification. However, we determined that BSC's review did not completely address the concerns raised. In conducting its analysis, BSC examined 2 of the 4 documents that we identified and determined that there was sufficient justification for using the unqualified data. The contractor did not fully analyze the remaining 2 waste isolation documents. BSC told us that it would analyze the remaining documents; however, the contractor subsequently closed the condition report without performing the analysis. In responding to a draft of this report, OCRWM officials informed us that BSC had reviewed the remaining 2 documents and that the condition report would be updated to include the results of the supplemental review.

Documentation and Resolution of Review Comments

During our review, we also noted other quality assurance procedural issues that OCRWM had previously identified, but had not been fully resolved. OCRWM conducted an internal assessment in January 2007 and found that BSC was not (1) consistently documenting review comments and their resolution, and (2) tracking document changes and their impact on other documents. OCRWM prepared a condition report for each concern and directed BSC to correct the noted conditions. The issues were classified as minor conditions adverse to quality or opportunities for improvement. BSC addressed the issues raised by modifying its procedures and closed the associated condition reports.

Our examination indicated that although BSC had taken certain action, the previously identified issues had not been fully resolved. Reviewers providing formal comments continued to write directly on some engineering documents or send their comments by e-mail messages, instead of using required comment sheets. Also, ten of the sixteen engineering documents that we examined since the procedures changed did not clearly indicate how formal comments had been addressed. OCRWM officials told us that reviewers are required to sign the Engineering Document Review record indicating that their comments were resolved. However, we found that these documents were not always used to show how the comments were resolved.

In addition, when documents changed, BSC procedures emphasized using the Document Input Reference System (DIRS) to conduct impact analyses to review the relationship among documents or to review Infoworks, a separate engineering system, for reference relationships, depending on the type of design input, i.e., calculations, scientific test data, etc. However, we found that engineering groups did not always follow the revised procedure. Specifically, some engineers told us that they relied on weekly staff meetings to determine whether or not document revisions impacted other documents. As a result, neither OCRWM nor BSC could be assured that all relevant documents and other information had been identified that could be affected by a change and the impact of the change had been assessed.

OCRWM officials told us that the design of controls over inputs to quality-affecting design and preclosure safety analyses is sound and meets regulatory requirements. Our

concern, however, in bringing the above examples to management's attention relates to the consistency to which the controls are implemented.

OCRWM Follow-up

Although OCRWM required BSC to correct the issues associated with the use of unqualified data and resolution of reviewer comments, agency officials did not examine the effectiveness of BSC's corrective actions. OCRWM personnel assigned levels of significance or potential consequence to each condition report, ranging from A to D. For the previous cited issues, OCRWM assigned Level Cs and Ds to the condition reports for the above areas. OCRWM officials told us that follow-up was optional for these lower level condition reports.

Recommendations:

We recognize that resources need to be applied based on an assessment of risk. Nonetheless, the fact that the contractor's actions did not effectively address the aforementioned issues raises concerns as to the adequacy of actions taken in response to the agency's condition reports. To address this matter, we recommend that OCRWM conduct:

1. Follow-up reviews of the condition reports that we identified in this report; and,
2. On a selective basis, follow-up reviews to ensure that other actions contained in condition reports, assigned a Level C or D, are effectively implemented.

Management Comments

Management concurred with our recommendations. OCRWM has already started follow-up reviews on some condition reports and additional reviews will be conducted to ensure effective implementation of corrective actions for other condition reports. Management comments are included as Attachment 2.

Auditor Comments

Management comments were responsive to our recommendations.

Attachments

cc: Acting Deputy Secretary
Under Secretary of Energy
Chief of Staff
Team Leader, Audit Liaison Team, CF-1.2

SCOPE AND METHODOLOGY

We reviewed engineering and preclosure safety analysis documents (PCSA) dated between December 19, 2005, and October 15, 2006, to determine if any documents subject to the quality assurance requirements were issued. We also reviewed whether quality affecting procedures and processes were followed in the development of engineering and PCSA documents. Specifically, we analyzed whether BSC prepared, reviewed, approved, changed and tracked engineering and PCSA documents according to established policies and procedures. In addition, we analyzed BSC's justification and use of unqualified data in quality affecting documents. The audit was conducted from October 2007 through February 2008 at the Office of Repository Development and Bechtel SAIC offices in Las Vegas, Nevada.

We conducted our performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objective. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives. We included tests of compliance with those laws and regulations which could, if not observed, have a direct and material effect on the internal control structure.

An exit conference was held on April 24, 2008, at the OCRWM offices in Las Vegas, Nevada.

MANAGEMENT COMMENTS

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Department of Energy
Washington, DC 20585

April 9, 2008

MEMORANDUM FOR: GEORGE W. COLLARD
ASSISTANT INSPECTOR GENERAL
FOR PERFORMANCE AUDITS
OFFICE OF INSPECTOR GENERAL

FROM: EDWARD F. SPROAT, III, DIRECTOR
OFFICE OF CIVILIAN RADIOACTIVE
WASTE MANAGEMENT

SUBJECT: Comments on Inspector General Draft Report on "Yucca
Mountain Project Document Suspension"

A handwritten signature in black ink, appearing to read "E. Sproat, III".

The purpose of this memorandum is to provide the Office of Civilian Radioactive Waste Management's response to the draft IG Report recommendations and our detailed comments on the draft report.

We appreciate the opportunity to comment on the draft report. If you have any questions, please contact Paul G. Harrington of my staff at 702-794-5415.

Attachments



**Responses to Recommendations in Draft Audit Report
"Design of the Engineered Barrier System at the Yucca Mountain Site"**

RECOMMENDATION 1

We recommend that the Office of Civilian Radioactive Waste Management (OCRWM) conduct follow-up reviews of the condition reports that we identified in this report.

MANAGEMENT DECISION

Concur.

OCRWM has already begun such follow-up reviews, resulting in the additional documentation to be provided in CR 11489. Other CRs as identified in the report will be reviewed.

Estimated date of closure: May 30, 2008

RECOMMENDATION 2

We recommend that OCRWM conduct, on a selective basis, follow-up reviews to ensure that other actions contained in condition reports assigned a Level C or D, are effectively implemented.

MANAGEMENT DECISION

Concur.

OCRWM will perform follow-up reviews on selected Level C and D condition reports to ensure effective implementation.

Estimated date of closure: September 30, 2008

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