

FY 1996 OCRWM QA Management Assessment

Preliminary Report for the Kiewit/PB Segment

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**FY 1996 OCRWM QA Management Assessment
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Introduction: The FY 1996 Quality Assurance (QA) Management Assessment is an integrated assessment of OCRWM and its major participants. The QA Management Assessment has two principal objectives: (1) evaluate the status, adequacy, and implementation effectiveness of OCRWM's QA Program, and (2) identify areas where improvement is needed.

A final report summarizing the results of the integrated QA Management Assessment and conclusions drawn by the assessment team with regard to the adequacy and effectiveness of the OCRWM QA Program will be provided to the OCRWM Director at the conclusion of all assessments. Preliminary reports consisting of an executive summary of the observations and recommendations identified during the individual assessments are also provided to the OCRWM Director after each assessment.

This preliminary report summarizes the observations and recommendations identified during the assessment of the Kiewit/Parsons Brinckerhoff-Yucca Mountain Project (Kiewit/PB) QA/Quality Control (QC) program.

On-site Assessment Dates: May 20-24, 1996, in Las Vegas, NV and at the Yucca Mountain Site.

Assessment Team: W. E. Booth, T. R. Colandrea (Team Leader), and J. R. Longenecker.

Conclusions: Based on the attributes evaluated during this assessment, the Kiewit/PB QA/QC Program is determined to be adequate and effective.

Previous QA Management Assessment Recommendations: This assessment was the first QA Management Assessment of the Kiewit/PB QA/QC program.

Executive Summary of Observations and Recommendations: The following attributes were assessed to determine the adequacy and effectiveness of Kiewit/PB's QA/QC program:

1. ***Effectiveness of Procedural Implementation:***

Observations: The Kiewit/PB quality-related procedure system is comprised of three major components: (1) Management Control procedures, (2) Quality Control procedures, and (3) Technical Control (construction) procedures. The Quality Control and Technical Control procedures are supplemented with inspection plans and travelers. The procedure system architecture appears to be well-designed and effective.

The procedures examined by the assessment team were easy to read and understand. Changes appear to be processed quickly and effectively. Assessment questionnaire responses and interviews expressed a concern regarding the high volume of changes to the

Kiewit/PB procedures. The procedure changes were attributed to numerous changes in the M&O's design specifications and drawings. These changes result in additional training in terms of procedural reading assignments. The Kiewit/PB procedure change process, however, appears to adequately accommodate the required changes.

A detailed QA audit of Kiewit/PB was conducted by OCRWM's Office of Quality Assurance (OQA) December 11-18, 1995 (Audit Number YM-ARC-96-03). The audit team identified sixteen deficiencies during the audit for which nine Deficiency Reports (DRs) and four Performance Reports (PRs) were issued (four deficiencies were combined into one deficiency document and seventeen deficiencies were corrected prior to the post-audit meeting). No Corrective Action Requests (CARs) were issued. QA Program Element 5.0 ("Implementing Documents") was determined to be unsatisfactorily implemented. The unsatisfactory determination was based upon several identified deficiencies that were related to inadequate procedures.

The QA Management Assessment team analyzed the deficiencies identified as a result of this audit and determined that approximately 66% were related to procedural inadequacies (typically minor in nature) while the balance involved failure to fully implement specific provisions within the procedures (also minor for the most part).

Implementation of the procedures appears to be becoming more effective as the procedures are used and improved.

Recommendations: None.

2. *Adequacy and Effectiveness of QA Training:*

Observations: The Kiewit/PB procedural training program¹ was evaluated during this assessment. For the most part, procedure training is based on self-study and supplemented, at times, with classroom sessions. This approach emulates the OCRWM-wide concept for procedure training.

During this assessment, concern was expressed regarding the effectiveness of self-study training with respect to (1) the extent to which this approach addresses misunderstandings or misinterpretations that may result from procedural changes and (2) the value of the self-study process compared to alternate approaches for procedural training. These concerns appear to be exacerbated by the large number of changes to the Kiewit/PB procedures.

¹ The scope of this assessment did not include an evaluation of the various site and tunnel access training programs such as GET and GUT, nor did it evaluate the various construction training programs such as the TBM Operator program and rock bolt installation program.

Specifically, the self-study training concept requires individuals to read selected procedures, including subsequent changes. It was generally felt that simply reading a procedure (1) does not adequately explain how the work is to be performed and (2) leaves some issues open to the interpretation without the opportunity to ask questions regarding intent. This reportedly can lead to inconsistencies in the quality of the resulting work or associated documentation.

Additionally, some procedures read during the self-study process may not be used for weeks or months after the self-study occurs. As a result, it was generally felt that there was little value in having the user perform a comprehensive study of the process described by the procedure during the self-study exercise. In this same vein, since the procedures are in the Kiewit/PB work packages and Kiewit/PB personnel must read them at the time the work is performed, the value of a previous self-study effort seems questionable. This was a concern to those interviewed during this assessment because it is inefficient to read the procedures when the changes are issued and then read them again at the time that the work is performed.

The documentation associated with self-study training appears to be extensive and, as a result, considerable effort is required to ensure that these records are completed in a consistent manner (e.g., in terms of the number of labor hours devoted to tracking and following up on required reading assignments and processing associated documentation).

Kiewit/PB's training program was evaluated during a surveillance of Kiewit/PB conducted by OQA July 18-21, 1995 (Surveillance Number YM-SR-95-038). During this surveillance, fourteen files of Kiewit QA/QC personnel were selected at random and reviewed to ensure implementation of selected elements of the Kiewit/PB procedure governing initial evaluation, selection, indoctrination, training, and qualification of Kiewit/PB personnel. The results were satisfactory. This area was also evaluated during other surveillances by OQA. For example, the position descriptions, personnel qualifications, and training records reviewed during Surveillance YMP-SR-95-039 conducted June 21, through July 11, 1995, were found to be in accordance with procedural requirements.

Recommendation No. 1: The self-study approach to procedure training is being implemented by all major program participants. The assessment team will discuss this matter with responsible OCRWM managers and make an appropriate recommendation in the final report. In the meantime, it is recommended that Kiewit/PB consider bringing the affected people together informally (e.g., similar to the 10-minute "tool-box" meetings on safety) each time there is a significant change to a procedure in order to discuss the change and ensure that all concerned clearly understand what the change is and why it is being made. The experienced Kiewit/PB QA/QC people could take the lead in ensuring that these informal face-to-face reviews accomplish their intended purpose and are conducted in a cost-effective manner compared to the self-study approach.

3. *Adequacy and Effectiveness of the Corrective Action Program:*

Observation: A surveillance of Kiewit/PB was conducted by OQA May 10-11, 1995 (Surveillance Number YMP-SR-95-029). This surveillance evaluated six CARs to determine if the individual responsible for the corrective action had developed a response addressing all actions required by Block 11 of the CAR. The results of this evaluation were found to be unsatisfactory; of the six CARs, responses to four did not include details regarding remedial action, the extent of the condition, and the actions to preclude recurrence. Based upon these results, CAR YM-95-040 was issued.

Since then, the Kiewit/PB approach to corrective action has matured to the point where there appears to be considerable attention to detail in the tracking and follow-up of deficiencies. This was particularly evident with respect to the efforts of the Kiewit/PB quality engineering specialist who coordinates and pursues the resolution of deficiencies. It was also apparent in the interaction between Kiewit/PB QA department and Kiewit/PB's line management regarding the identification of meaningful and timely corrective action. For example, the Kiewit/PB QA and QC managers meet on a bi-weekly basis with the Kiewit/PB construction manager to review the results of QA/QC monitoring and determine areas where additional emphasis is needed.

The Kiewit/PB Project Manager appears to be well aware of the status of open deficiencies and aggressively pursues identified problems until closure. The corrective action program receives good visibility throughout the project by means of the monthly corrective action report summary issued by OQA and a weekly status log published by the Kiewit/PB QA department.

There were no CARs regarding significant Kiewit/PB QA program deficiencies to review during the assessment. However, a few repetitive deficiencies were noted by the assessment team along with some deficiencies that have been open for several months. This situation does not appear to be a concern at this time.

Recommendations: None.

4. *Effectiveness of QA program application to OCRWM program elements considered critical to mission success:*

Observation: (Q-Listed Items and Activities) Kiewit/PB implements its formal QA program according to the QA classification designation on design drawings and specifications produced by the M&O. Specifications prescribe the method of inspection or testing to be used to ensure that important design features conform to design requirements for each item or activity. The Kiewit/PB QC department accepts or rejects the item based on the results of the inspections and tests.

Recent changes to specifications have permitted the Kiewit/PB QC department to use sampling plans and monitoring techniques as a basis for accepting work (e.g., installed steel sets) rather than performing 100% inspection on each item. Inspection plans are prepared to define the inspection technique (monitor or witness) and sampling plan. Inspection plans are reviewed by the M&O. This quality control technique is being referred to as "QA grading."

Recommendation No. 2: It is recommended that Kiewit/PB work with the M&O to identify additional areas where the QA grading concept can be effectively applied.

Observation: (Kiewit/PB Surveillances): Kiewit/PB surveillances are planned and conducted in a manner that appears to provide good coverage of specifications and related implementation procedures. At the time of this assessment, approximately 31 surveillances have been conducted during FY 1996. In general, the Kiewit/PB surveillances appear to be thorough, well documented, and effective in identifying problem areas.

Recommendations: None.

Observation: (Kiewit/PB Records) Kiewit/PB appears to be doing an effective job of identifying and collecting documentation attesting to the quality of the work performed by Kiewit/PB. The experience of Kiewit/PB records personnel interviewed during this assessment was impressive. Records packages reviewed by the assessment team were well-organized, clearly identified, and easily retrieved. Records are accumulated in manageable, self-contained segments (e.g., comprising 200 meters of the tunnel) that are typically completed in relatively short order. A Kiewit/PB team effort was evident to ensure that each records package is closed in a timely manner.

Recommendations: None.

5. *Adequacy of resources and personnel provided to achieve and assure quality:*

Observation: The resources provided by Kiewit/PB to properly execute the QA program appear to be adequate.

Recommendations: None.

Programmatic/Hardware Deficiencies: No programmatic or hardware deficiencies were identified during this assessment.