1993

QA MANAGEMENT ASSESSMENT

OF THE

CIVILIAN RADIOACTIVE WASTE MANAGEMENT SYSTEM MANAGEMENT AND OPERATING CONTRACTOR

QUALITY ASSURANCE PROGRAM

FINAL REPORT

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EXECUTIVE SUMMARY

At the request of R.L. Robertson, the General Manager of the Civilian Radioactive Waste Management System ("CRWMS") Management and Operating Contractor ("M&O"), a quality assurance ("QA") management assessment was performed of the CRWMS M&O QA program during the period from March 4, 1993 through June 30, 1993. The purpose of this assessment was to evaluate the adequacy of the M&O QA program and the extent to which it appeared to be effectively implemented.

From its inception, this QA management assessment was designed to be viewed by all concerned as a positive vehicle for performance improvement. As such, the recommendations contained in this report should be treated as improvement opportunities; this was not a QA audit and these recommendations are not Corrective Action Reports ("CARs").

Also, the focus of this report has generally been placed on those areas of the M&O QA program that require improvement, rather than on the many aspects of the M&O QA program that appeared to be adequate and effectively implemented. It is important to keep this factor in mind when reviewing the observations and recommendations contained in this report in order to retain a balanced perspective regarding the adequacy and effectiveness of the M&O QA program.

The primary issues identified by the team during this QA management assessment can be summarized as follows:

(1) QA Culture: Many M&O personnel have had little/no prior experience working on a project which requires the stringent application of a regulated nuclear QA program. As a result, there does not appear to be an across-the-board appreciation of the need for the rigorous implementation of the M&O QA program or the possible consequences if this is not done (see pages 16-18 of this report for details and recommendations regarding this issue).

(2) Client Relations: There did not appear to be a focussed approach within the M&O toward developing effective working relationships with the Department of Energy's ("DOE") Office of Civilian Radioactive Waste Management ("OCRWM") regarding QA. For example, the frequency of interaction by M&O QA personnel with OCRWM QA staff and OCRWM's QA support contractor personnel has not been very extensive. As a result, the M&O appears to have been slow at times in sensing the QA-related needs and expectations of OCRWM QA personnel regarding the M&O's QA

program. Also, there is not an effective working relationship between the M&O Training Department and the DOE-Yucca Mountain Site Characterization Project Office ("YMPO") Training Office. As a result, the M&O does not appear to have benefitted much from existing QA-related training materials and systems that are available from elsewhere on the program (see pages 12-15, 19, and 21 of this report for details and recommendations regarding this issue).

(3) M&O QA Staff: Regarding the M&O QA organization: (a) many of the QA staff have little or no applicable nuclear QA experience; (b) only a few of the QA staff have prior OCRWM program QA experience; and (c) there is a tendency on the part of some of the QA staff to: wait for problems to develop before taking action, act like policemen/cops-on-the-beat; and be compliance-based/paper-oriented (see pages 11-14 of this report for details and recommendations regarding this issue).

(4) QA Lessons Learned: It does not appear that the M&O has taken advantage of the many QA lessons learned in the past on the OCRWM program. For example, in large part, the problems the M&O has experienced regarding its approach to QA audits could have been avoided by paying closer attention to the lessons learned by others as to what is expected by OCRWM in this area. It should not be necessary for the M&O to experience the same QA-related problems that others on the OCRWM program have already faced in order to be able to benefit from these lessons learned (see pages 15, 17, and 31-33 of this report for details and recommendations regarding this issue).

(5) QA Training: The present approach to training requires each M&O manager to individually: (a) track the extent to which each employee has reviewed the required Quality Administrative Procedures ("QAPs")/other procedures and changes thereto and (b) assure that each record of training is completed and submitted to the Training Department in an accurate and timely manner. This manual and decentralized approach has the following apparent weaknesses: it produces variable and inconsistent results; it represents a labor-intensive burden for the managers; it results in overkill in some instances through the "across-the-board" assignment of all QAP changes to all people within a group; and it has the potential for training records accountability problems (see pages 19-22 of this report for details and recommendations regarding this issue).

(6) Quality-Affecting Work: A number of M&O personnel performing technical work did not appear to be very well informed as to the extent to which the work they were doing was quality-affecting (see pages 23-24 of this report for details and recommendations regarding this issue).

(7) QA Audits and Surveillances: Weaknesses were noted in the following areas regarding the M&O surveillance program: number and coverage of surveillances; scheduling of surveillances; and approach to surveil-

lances. Weaknesses were noted in the following areas regarding the M&O audit program: approach for funding M&O audits; effectiveness of M&O audits; preparation prior to performing M&O audits; experience of M&O lead auditors; and approach to M&O audits (see pages 14 and 36-38 of this report for details and recommendations regarding this issue).

Additional observations and recommendations regarding other areas of opportunity are contained in the "Observations and Recommendations" section of this report (starting on page 11).

In summary, the QA management assessment team concluded that the implementation of the M&O QA program has been marginally effective for the work done during the past year. Action is recommended in a number of areas in order to improve the adequacy and effective implementation of the M&O QA program. If these recommendations are implemented in a timely and effective manner, the QA management assessment team is convinced that the M&O will make a step increase in QA program effectiveness during the coming months. However, if they are ignored, the assessment team feels that the implementation of the M&O QA program will soon become ineffective as the amount of quality-affecting work performed by the M&O increases in the coming months.

ACKNOWLEDGEMENTS

The QA management assessment team would like to thank all M&O personnel involved in this assessment for the excellent cooperation they provided to the team during the course of this assessment. This was displayed during their participation in the various group meetings and one-on-one interviews conducted by the assessment team at each of the three M&O locations. In all cases, those contacted during the assessment were open and candid in expressing their views regarding the M&O QA program. This cooperative attitude was due in large part to the emphasis provided by Robby Robertson and his staff regarding the need to make this assessment a positive vehicle for change.

The QA management assessment team would also like to thank the M&O personnel who took the time to respond to the questionnaire used by the assessment team to gather information regarding their perceptions of and experience with the M&O QA program. This input was extremely helpful from the standpoint of identifying areas requiring further probing by the assessment team.

The QA management assessment team is particularly grateful to Frank Nash of the M&O QA organization in Vienna. Throughout this assessment, Frank did an excellent job of supporting the assessment team as the M&O focal point for each of the many requests by the team (e.g., for copies of documents, to arrange meetings and meeting rooms, to resolve conflicts in the schedules, etc.).

The assessment team would also like to thank Linda Evans of the M&O in Las Vegas for her help in making the arrangements for the team's visit to Las Vegas. Finally, the team appreciates the "second efforts" provided by Jack Jackson and Glen Vawter to assure that the M&O-Las Vegas Office was adequately represented with respect to the number of questionnaire responses submitted to the team from there.

1.0 DISCUSSION

1.1 Introduction: At the request of R.L. Robertson, the General Manager of the Civilian Radioactive Waste Management System ("CRWMS") Management and Operating Contractor ("M&O"), a quality assurance ("QA") management assessment was performed of the CRWMS M&O QA program during the period from March 4, 1993 through June 30, 1993. The purpose of this report is to document the results of this assessment and provide recommendations for the M&O's consideration.

QA Management Assessment, Not a QA Audit: QA management assessments and QA audits are both valuable methods for evaluating the effectiveness of QA program implementation; each has its place; each is required by DOE/RW/-0333P, "Quality Assurance Requirements and Description" ("QARD"). In order to better understand the approach taken during this assessment, it is important to make a distinction between a QA management assessment and a QA audit. In the context of ASME NQA-1, a QA management assessment is performed under the guidance of Criterion 2, whereas an audit is conducted under the guidance of Criterion 18. Unlike an audit, those performing a QA management assessment are not required to be certified lead auditors/-auditors. In similar manner, there is no requirement to prepare detailed checklists in a QA management assessment. Also, in a QA management assessment, there tends to be more latitude to weigh and rely on subjective perceptions gathered through interviews (and, in this case, responses to a questionnaire; see below), whereas a QA audit tends to be more oriented toward the detailed examination of objective evidence in arriving at conclusions. These differences should be kept in mind when reviewing and applying the results contained in this report.

Positive Vehicle for Performance Improvement: From its inception, this QA management assessment has been designed to be viewed as an opportunity to more clearly determine how to significantly enhance the adequacy, effectiveness and value of the M&O QA program. Toward this end, all concerned have repeatedly been encouraged to: (a) view this QA management assessment as a positive vehicle for performance improvement and (b) view the recommendations developed as a result of this management assessment as improvement opportunities, not CARs.

1.2 Scope of QA Management Assessment: This QA management assessment was performed in order to: (a) evaluate the scope, adequacy and effective implementation of the CRWMS M&O QA program and identify areas where improve-

ment is needed, (b) identify areas of opportunity for reducing unnecessary QA controls and increasing the value/cost-effectiveness of the CRWMS M&O QA program, and (c) identify areas of opportunity for improving the quality of the work performed by the CRWMS M&O for Department of Energy's ("DOE") Office of Civilian Radioactive Waste Management ("OCRWM") and enhancing the ability of the CRWMS M&O to effectively implement the quality-related aspects of its mission. In response to a requirement in the "new" QARD (i.e., DOE/RW/-0333P, "Quality Assurance Requirements and Description"), the CRWMS M&O QA organization is currently conducting a detailed review of the adequacy of the CRWMS M&O QA program against the QARD and developing a matrix that identifies where the requirements of the QARD are contained in the CRWMS M&O QA implementing procedures. In order to avoid a duplication of this effort, the evaluation of the adequacy of the as-written CRWMS M&O QA program was not a primary focus during this assessment.

In accordance with Section 2.2.6B of the QARD and Revision 0 of M&O QAP-2-7 (Quality Administrative Procedure - "QAP"), particular attention was placed during this QA management assessment on an evaluation of the following:

1. Adequacy of the organizational structure and staff.

2. Adequacy and effectiveness of the QA program.

3. Adequacy of the personnel qualification and training program.

4. Effectiveness of the nonconformance and corrective action program.

5. Adequacy of the QA program management information tracking, evaluation, and reporting system.

1.3 Applicable Requirements: The requirements that were applicable during this assessment were as follows: OCRWM RW-0214, "Quality Assurance Requirements Document," Revision 4 and ICN 4.1; DOE/RW/0333P, "Quality Assurance Requirements and Description," Revision 0.

1.4 QA Management Assessment Team Members: The M&O General Manager appointed the following team to conduct the 1993 QA management assessment of the CRWMS M&O QA program:

T. Colandrea, Colandrea & Associates, Inc. (Team Leader)
J. Clark, Fluor Daniel
W. Engelke, B&W Fuel Company
R. Mele, Woodward Clyde Federal Services
Dr. L. Skidmore, TRW Systems Integration Group
J. Wells, Duke Engineering & Services Company

The Team Leader assured that the team members were (a) adequately qualified to perform this assessment and (b) independent of and had no direct responsibility for activities evaluated during this assessment.

1.5 Controlling Documents: The current revisions of the QAPs and the Implementing Line Procedures ("ILPs") were the controlling documents used by the assessment team as a source of information and a point of reference during this QA management assessment. Also, Revision 3 of the M&O Quality Assurance Program Description ("QAPD") was used by the team for guidance purposes only since it is being phased out shortly.

1.6 Methods for Performing the Assessment: The QA management assessment team employed the following vehicles during the planning and performance of this assessment:

QA Management Assessment Plan: The assessment team developed a QA Management Assessment Plan which was signed by the team leader on April 5, 1993 and approved by the CRWMS M&O General Manager on April 6, 1993. Included in the plan was a description of the scope of the QA management assessment, a list of applicable requirements, and a list of the team members.

Questionnaire: A questionnaire was sent to a wide cross-section of M&O personnel to gather information regarding their perceptions of and experience with the M&O QA program. Those responding to the questionnaire did not have to identify themselves, thereby allowing people to be very candid in their responses. The questionnaire contained 20 questions regarding various aspects of the M&O QA program, including nine questions which asked for a graded response ranging from "Very Effective/Adequate" to "Very Ineffective/Inadequate." Extensive narrative input was also provided by those responding to the questionnaire. A total of 90 people returned completed questionnaires, including three from the M&O-Charlotte office, 34 from the M&O-Las Vegas office, and 52 from the M&O-Vienna office, (one additional questionnaire response was received from a person who did not identify which office he/she was in).

The QA management assessment team found the information contained in the responses to the questionnaires very useful (e.g., in identifying areas requiring further probing by the assessment team). A summary of the results of the questionnaire responses is reflected in Attachment A of this report.

Interviews: During this assessment, selected personnel were interviewed to discuss their perception of the adequacy and effectiveness of the M&O QA program. These discussions took place during the following visits by the assessment team members to the M&O's offices: (a) M&O-Las Vegas office on May 24-28, 1993; (b) M&O-Charlotte office on June 2-3, 1993; and (c) M&O-Vienna office on June 7-11, 1993.

Additional discussions took place on several other occasions at various locations in order to provide supplemental information to the assessment team. A list of the people contacted during the course of this QA management assessment is provided in Attachment B of this report.

Document Reviews: The assessment team also reviewed selected documents related to the M&O QA program (e.g., audit, surveillance, corrective action, and trend reports) to assess the effectiveness of QA program implementation.

1.7 Meetings and Assessment Visits: During the course of this QA management assessment, the team held meetings and made a series of assessment visits as follows:

March 24, 1993 "Kick-Off" Meeting with M&O General Manager: A meeting was held on March 24, 1993 in Vienna, Virginia between the QA management assessment team and the CRWMS M&O General Manager in order to (a) review the purpose of a QA management assessment, (b) discuss the approach which the assessment team planned to use, and (c) obtain any specific instructions or requirements for performing the assessment (e.g., it was agreed that the assessment team would assess the boundaries that exist between the M&O QA program and any other external QA controls that apply to M&O field activities at the Yucca Mountain site to determine if there are any conflicts that should be addressed).

March 24-25, 1993 Team Planning Meeting: A QA management assessment team planning meeting was held on March 24-25, 1993 in Vienna, Virginia to review the questionnaire draft, list of questions/-topics to pursue, approach to take, etc.

April 7-8, 1993 Team Planning Meeting: A QA management assessment team planning meeting was held on April 7-8, 1993 in Las Vegas, Nevada, to discuss performance indicators to be used during the assessment, make tentative team assignments, etc.

April 8, 1993 Pre-Assessment Conference: A pre-assessment conference was conducted on April 8, 1993 in Las Vegas, Nevada (and tele-conferenced to Vienna, Virginia) to present the QA Management Assessment Plan that was approved by the CRWMS M&O General Manager on April 6, 1993, introduce the assessment team, establish lines of communication, and present the assessment schedule.

May 5-6, 1993 Team Planning Meeting: A QA management assessment team planning meeting was held on May 5-6, 1993 in Lynchburg, Virginia to finalize plans for the management assessment, review preliminary responses to the questionnaires, etc.

May 24-28, 1993 Assessment of the M&O Las Vegas Office: The QA management assessment of the M&O-Las Vegas office was conducted during May 24-28, 1993.

June 2-3, 1993 Assessment of the M&O-Charlotte Office: The QA management assessment of the M&O-Charlotte office was conducted during June 2-3, 1993.

June 7-11, 1993 Assessment of the M&O-Vienna Office: The QA management assessment of the M&O-Vienna office was conducted during June 7-11, 1993.

June 22-23, 1993 Team Meeting: A QA management assessment team meeting was held on June 22-23, 1993 in San Diego, California to review the results of the assessment, plan the post-assessment presentation to M&O management, etc.

June 29, 1993 Meeting with M&O General Manager: A meeting was held on June 29, 1993 in Vienna, Virginia between the QA management assessment team and the CRWMS M&O General Manager in order to (a) brief him on the primary results and conclusions reached by the QA management assessment team and (b) broadly discuss the team's recommendations.

June 30, 1993 Post-Assessment Conference: A post-assessment conference was conducted with M&O management on June 30, 1993 in Vienna, Virginia (and tele-conferenced to Las Vegas, Nevada) to present and discuss the primary results and recommendations of the assessment. It was agreed that, upon receipt of the final report, the M&O QA Manager will coordinate responses to the assessment team report (including the identification of any actions to be taken to address recommendations made in the report).

1.8 QA Program Elements Reviewed: The adequacy and effectiveness of implementation of the following M&O QA program elements were evaluated during this QA management assessment:

QA Program Element #	QA Program Element Title
1:	ORGANIZATION
2:	QUALITY ASSURANCE PROGRAM
2A:	QA TRAINING
3:	DESIGN CONTROL
4:	PROCUREMENT DOCUMENT CONTROL
5:	IMPLEMENTING DOCUMENTS
6:	DOCUMENT CONTROL
16:	CORRECTIVE ACTION
17:	QUALITY ASSURANCE RECORDS

18: AUDITS AND SURVEILLANCES
19: SOFTWARE CONTROL

The QA management assessment team also evaluated the following QA program elements during this assessment: 7 ("CONTROL OF PURCHASED ITEMS AND SERVICES"), 10 ("INSPECTION"), 11 ("TEST CONTROL"), and 12 ("CONTROL OF MEASURING AND TEST EQUIPMENT"). However, there was little or no M&O activity in these areas. Consequently, the QA management assessment team had no observations or recommendations to make regarding these QA program elements.

1.9 Good Practices/Positive Points: Certain aspects of the M&O's QA program and its implementation were particularly impressive. These can be summarized as follows:

Positive Attitude by M&O QA People: People in the M&O QA organization generally have a positive outlook/attitude in their approach to QA, recognize their responsibilities and are dedicated to doing a good job.

Quarterly QA Program Status and Trend Reports: A review of the two Quarterly QA Program Status and Trend Reports issued to date by the M&O QA organization indicated that they were well-prepared and provided good visibility regarding the status of the M&O QA program.

Implementation of the Quality Review Board Approach: A Quality Review Board has been established by the M&O for the coordinated review of new and revised QAPs. This approach appears to be well-managed and represents an improvement for substantially reducing the time required to get a new or revised procedure through the review process.

Self-Evaluation Report of M&O Audit Program: In February, the M&O QA manager took the initiative to charter a review of the M&O audit program by Doug Franks of Duke Power. The review appeared to identify several meaningful recommendations for improving the M&O's approach to performing QA audits.

M&O Site QA Activities: The M&O Yucca Mountain site QA organization appears to be quite effective and proactive in supporting M&O, OCRWM, and participant efforts.

Records Management: The M&O records management organization appears to have a good attitude toward continual improvement. For example, they have taken the initiative to establish a task force for the purpose of streamlining the 17-series QAPs. This is needed and should improve the clarity and usefulness of these procedures.

2.0 OBSERVATIONS AND RECOMMENDATIONS

During the course of this QA management assessment, the assessment team made a number of observations regarding the adequacy and effectiveness of the M&O QA program. As stated previously, the focus of this report has generally been placed on those areas of the M&O QA program that require improvement, rather than on the many aspects of the M&O QA program that appeared to be adequate and effectively implemented. Accordingly, the purpose of this section of the report is to (a) summarize the team's observations regarding improvements which appear to be needed and (b) present the team's recommendations regarding how these improvements might be accomplished.

2.1 QA ORGANIZATION

OBSERVATIONS:

Experience of M&O QA Organization: A limited number of M&O QA personnel appear to have meaningful nuclear QA experience that is broadly applicable and effectively applied to the work they are doing. However, many of the M&O QA personnel have little or no applicable nuclear QA experience (i.e., "applicable" in terms of their current position responsibilities; for example, prior experience as a nuclear inspector is not considered to be applicable to someone whose position responsibilities entail the writing of QA-related procedures). That is, while there are many well-motivated and educated people in the QA organization, the number of people with applicable nuclear QA experience is limited.

This impacts the effectiveness of the M&O QA organization in several ways: (a) the inexperienced QA people are not able to effectively perform many of the QA responsibilities that the M&O QA organization is charged with accomplishing because they have not "been there before" and (b) the efforts of the experienced QA people are diluted because they spend part of their time working with and training the inexperienced people.

Furthermore, only a few M&O QA people have prior (i.e., other than the time spent in the M&O QA organization to date) OCRWM program QA experience. This is particularly important in order to understand OCRWM's approach to QA and the ways in which it differs from that used on other projects (e.g., in order to successfully perform QA audits on

the OCRWM program, [illegible] have to appreciate the [illegible]ferences in approach compared to how audits might be conducted within, say, a nuclear utility). Also, several of the M&O QA people who interact with the M&O technical organizations have little or no related technical background.

Approach Taken by M&O QA Organization: Based upon the results of the questionnaire and interviews conducted during this QA management assessment, a dichotomy appears to exist with respect to the approach taken by the M&O QA organization in implementing the QA program. That is, on the one hand, some view the M&O QA organization as: (a) proactive in getting out of their offices and involved early on/up front with the work in order to prevent problems; (b) a team player; and (c) performance-based/results-oriented. For example, in Las Vegas, the M&O Yucca Mountain site QA people appear to be taking a proactive stance in their approach to quality assurance. Also, some of the M&O QA people in Vienna are starting to focus more on working with their M&O line organization counterparts in order to address pertinent issues before they become full-blown problems.

On the other hand, some view the M&O QA organization as: (a) standoffish and reserved in that they tend to wait for a problem to develop before taking action; (b) policemen/cops-on-the-beat; and (c) compliance-based/paper-oriented. For example, it was felt that the M&O QA people tend to "hide in the bushes" and issue CARs or "gotcha's" after-the-fact rather than being proactive in working to avoid potential problems and identifying other problems early on to "nip them in the bud."

Also, based upon the interviews conducted during this assessment, it was perceived that M&O QA management has tended to be too focussed on day-to-day problems and fire-fighting drills at the expense of the broader QA issues on this program (e.g., staffing, training, procedural improvement, problem prevention, etc.). The shortage of qualified QA staff appears to have contributed to this problem.

Another perception gathered during this assessment was that the M&O QA manager has not always been treated as a full-fledged member of the M&O's top management team. This related primarily to the extent to which he has been invited to attend key meetings at which other M&O management personnel were present. However, it was also noted that it appears improvements are being made in this area with time; the M&O QA manager has become more actively involved in these activities in recent months.

Relationship With OCRWM QA: For the most part, the frequency of interaction by M&O QA personnel with OCRWM QA staff and their QA support contractor personnel has not been very extensive. Perhaps as a result, the M&O QA organization appears to have been slow at times in

sensing the QA-related needs and expectations of OCRWM QA personnel regarding the M&O's QA program (e.g., adequacy of the content of M&O responses to several recent OCRWM CARs). The situation has evidently been improving recently in Vienna but could still be more aggressive.

Internal Communication Within the M&O QA Organization: Communication and coordination between the M&O QA organizations in Vienna and Las Vegas does not appear to be very extensive. On the other hand, there appears to be good communication between M&O QA-Vienna and M&O QA-Charlotte offices.

Funding of the QA Organization: The current approach to budgeting the QA effort appears to place considerable pressure on QA management to extensively justify the funds needed to adequately implement its responsibilities. Whereas the QA organization should be accountable for justifying its budgetary needs to the General Manager, the budget process should not be done in a manner that inhibits them from doing an effective and independent job.

RECOMMENDATIONS:

Additional M&O QA Experience: Increase the overall effective level of experience of the staff within the M&O QA organization at both the Las Vegas and Vienna offices with respect to having enough people who have:

- Extensive applicable nuclear QA experience and prior OCRWM program QA experience/in-depth understanding of OCRWM QA

- An ability to effectively interface with and have the respect of the M&O line organizations (e.g., sound technical background)

To accomplish this upgrade: (a) fill any existing and all future openings in the M&O QA organization with heavily experienced QA people; (b) approach OCRWM Office of Quality Assurance ("OQA") management regarding the possibility of budget relief for the M&O QA organization; (c) investigate the possibility of a direct support charge for project QA support (see below); and (d) investigate the possibility of transferring some of the less experienced M&O QA people into other groups within the M&O organization where they can make a meaningful contribution; fill these vacancies with heavily experienced QA people.

Focus of the Additional M&O QA Experience: In particular, focus this increased level of M&O QA capability in two areas:

- Quality Project Engineering Support: Assign a quality project engineer to each of a series of key M&O line organizations (e.g., one M&O QA person to support J.L. Younker's group; another to support

R.M. Sandifer's g[illegible]p; etc.) to provide exten[illegible]e QA support to them on a daily basis. These M&O QA people would work hand-in-hand with their technical counterparts as a QA team player in areas such as the following:

- Assist in QA program planning and implementation
- Help prevent quality-related problems from occurring
- Help establish an appreciation of the need for the rigorous application of the QA program
- Assist in implementing the QA program in a manner that emphasizes results and performance

Consider funding this effort on a direct charge basis that is (a) paid for by the supported organization and (b) funded at a level that is agreed to jointly by the M&O QA manager and the manager of the supported organization (note: this approach has been taken by the M&O QA organization for the QA support of the Monitored Retrievable Storage and Multi-Purpose Canister effort and appears to be working well).

- QA Audits and Surveillances: Conduct meaningful, performance-based audits and surveillances that look beyond just paper and form; concentrate instead on evaluating substance and results.

  Consider funding this effort out of the M&O QA Department's overhead budget. Eliminate the practice of charging the audited organization for the cost of performing the audits.

Approach Taken by M&O QA Organization: It is recommended that each person in the M&O QA organization embrace a results-oriented approach toward implementing their QA program responsibilities. For instance, they should be more forward-looking and proactive in helping identify, prevent and mitigate the consequences of problems (as opposed to backward-looking; being reactive to audits and surveillances; trying to fix things that have already been broken; etc.).

In similar manner, the focus of M&O QA management should be directed less on the day-to-day fighting of fire drills and more toward addressing the broader QA issues and overall responsibilities such as staffing needs, training requirements, delegation of responsibilities to subordinates, etc.

Relationship With OCRWM QA: Embrace a team attitude whereby M&O QA personnel are proactive in developing an effective working relationship with OCRWM QA personnel and their QA support contractor staff ("We" instead of "Us" and "Them").

Institute an ongoing policy of effective interaction by M&O QA personnel with OCRWM QA personnel and their QA support contractor staff on a day-in/day-out basis (e.g., to communicate QA-related progress within the M&O, identify QA-related issues which require attention, etc.).

Actively pursue a program of periodic meetings between M&O QA management and OCRWM QA management to define the client's QA-related needs, concerns and expectations regarding the M&O QA program. Capture and address these on an ongoing basis.

Internal Communication Within the M&O QA Organization: It is recommended that the M&O QA manager make a concerted, ongoing effort to increase the coordination and communication between the M&O QA organizations in Vienna and Las Vegas in order to identify and address QA-related needs, issues of importance, etc.

QA Lessons Learned on the OCRWM Program: With OCRWM OQA's concurrence and support, consider conducting a workshop directed at helping the M&O identify and benefit from the QA lessons learned on the OCRWM program. Attendees would include representatives from M&O QA, OCRWM OQA, and selected Participant QA groups. Also, make use of the benefits of closer, one-on-one working relationships between M&O QA personnel and OCRWM's QA support contractor personnel in terms of their knowledge of the QA lessons-learned in the past.

Funding of the QA Organization: Clearly identify what level of staffing is necessary for the M&O QA organization to carry out its responsibilities in an adequate manner. Once this has been done to the General Manager's satisfaction, remove the M&O QA organization from any further ongoing budget cycling, justifications, etc. Revisit this decision-making process once a year (unless there is a major, unforseen change in the overall level of M&O effort during the year).

QA Organizational Structure and Approach to QA: Determine what other changes, if any, are warranted in the M&O QA organizational structure and approach to QA (e.g., determine if the location of the M&O QA Audits group should be based in whole or in part at Las Vegas rather than Vienna). Also conduct an in-depth evaluation of the capabilities of the M&O QA personnel and their ability, individually and collectively, to perform their responsibilities. If indicated by the results of this evaluation, take action to upgrade the capability level of the M&O QA personnel accordingly.

2.2 QA PROGRAM

OBSERVATIONS:

Boundaries Between M&O QA Program and External Controls: During the planning phase of this QA management assessment, the M&O General Manager asked the assessment team to determine if problems are being experienced because M&O personnel have to work to both M&O and OCRWM procedures (e.g., Yucca Mountain site work that is done in part to the M&O QA program and in part to the OCRWM controls). From what the assessment team could ascertain, it doesn't appear that this is a problem; personnel interviewed during the QA management assessment were quite clear regarding their respective responsibilities under the two sets of procedures.

QA Culture/Appreciation for Nuclear QA Requirements: Many M&O personnel have had little or no prior experience working on a project which (a) requires the stringent application of a regulated nuclear QA program to the planning and performance of the work and (b) depends heavily on a recognition of the distinction between a quality of data versus a quality of hardware operation.

As a result, there does not appear to be an across-the-board understanding of:

- the need for the rigorous implementation of the M&O QA program
- the possible consequences if this is not done (e.g., in terms of questions that can be raised during licensing regarding the usability of data that were generated with less than rigorous implementation of the QA program)

This QA cultural gap tends to cause some M&O people to: (a) resist the QA program; (b) focus on paperwork and form rather than on results and substance; (c) give insufficient attention to detail when implementing the QA program; and (d) emphasize schedule rather than quality.

RECOMMENDATIONS:

Change the Culture Regarding QA:

- Management Support: Provide vigorous M&O top management support to foster the development of the correct QA culture and attitude toward QA. This should be reflected in a continuous and obvious commitment by top-level management to assure that the program is executed in

accordance with the QA requirements. It is also important for M&O management to make people understand why they need to rigorously implement the M&O QA program and the impact if this is not done.

- Accountability: Hold people accountable for the rigorous implementation of the M&O QA program (e.g., consider including this factor as part of the performance appraisal process used for each employee).

- Benefit From Lessons Learned: Benefit from the lessons learned on the OCRWM program regarding the importance of the correct QA culture and attitude toward QA. For example: (a) become familiar with the history leading up to and the results stemming from the OCRWM QA workshops in the 1990-1991 timeframe; apply these lessons learned to the M&O's approach to QA; (b) become familiar with and apply the lessons learned from the G4 borehole problem experienced on the OCRWM program in the late 1980s; and (c) hold a series of discussions with OCRWM OQA and others who have "been there before" on the OCRWM program with respect to how to foster an in-depth appreciation of the need to develop and implement a QA program in a rigorous manner.

  Also, benefit from the QA lessons learned within the nuclear power industry. For example, become familiar with NUREG-1055 entitled "Improving Quality and the Assurance of Quality in the Design and Construction of Nuclear Power Plants." In particular, heed the lessons learned regarding the Zimmer nuclear power plant project that are described within this document.

- Aggressive Education Program: Institute an aggressive education program for all M&O personnel to help them understand what QA is, why it is important to implement the QA program in a rigorous manner, consequences if this is not done (with particular emphasis on the impact during the licensing process), etc. As part of this program, emphasize that the M&O's rigorous approach to QA must be an imbedded way of life on a day-in/day-out basis (rather than just "getting up to speed" immediately prior to an audit).

- Utility Executive Input: As part of the education program, consider bringing in a senior utility executive (e.g., Bill Lee of Duke Power; EEI UWASTE management) to discuss this subject with M&O upper management (possibly video tape the session for all M&O personnel).

- Training Module Regarding Licensing Impact: Consider developing a video-taped training module for all M&O personnel which demonstrates

the importance of QA to survival during the licensing process with respect to the scrutiny that M&O data will receive (e.g., use role-playing by a scientist and an attorney to provide examples of successes and failures in licensing and the impact that QA/the lack of it can have on the acceptability of M&O data).

- Senior Staff Advisor: Consider bringing a senior technical advisor onto the General Manager's staff who has extensive prior experience working (a) in the nuclear arena and (b) on the OCRWM program. This person would provide active and ongoing input and guidance to M&O upper management as to how appropriate QA-related measures should be applied to the managerial and technical aspects of the work.

- Future Management Openings: When deciding who should fill future openings for management positions, consider weighing prior nuclear and OCRWM program experience more heavily than what may have been done in the past.

2.3 QA TRAINING

OBSERVATIONS:

Relationship Between the M&O Training Department and DOE-YMPO Training Office: There is not an effective working relationship between the M&O Training Department and the DOE-YMPO Training Office. As a result, the M&O does not appear to be adequately benefitting from (a) the existing QA-related training materials and systems that are available through the DOE-YMPO Training Office from elsewhere on the program and (b) QA-related training regarding the QA lessons-learned experienced by the OCRWM program in the past.

Manual, Decentralized System for Tracking of Required Training: QAP-2-1 indicates that managers and supervisors are responsible for assuring that personnel under their supervision receive applicable program indoctrination and complete assigned training prior to performing quality-affecting activities. This approach requires each manager/-supervisor to individually (a) identify which QAPs/other QA-related procedures each of his/her people must review (both initially when starting work and subsequently for each change to those procedures); (b) track the extent to which each employee has reviewed the required QAPs/other procedures and changes thereto; and (c) assure that the reading/self-study records of training for people in his/her group are completed and submitted to the Training Department in an accurate and timely manner.

This manual and decentralized approach to training appears to be faulted from the following standpoints:

- Variable and Inconsistent Results: Since the entire system is decentralized, there are almost as many different approaches being used for identifying and tracking of training as there are M&O managers. Some managers have devised an automated approach while others use a "back-of-the-envelope"/very informal system. This variable and inconsistent approach between M&O managers appears to be prone to oversights or delays in generating adequate documentation. It also leads to inconsistencies in the timeliness with which M&O personnel are trained.

- Labor-Intensive Burden: This approach places an unnecessary, labor-intensive burden on the managers.

- Overkill: This system also results in overkill in some cases. For example, during the interviews, it was indicated that the present approach has lead some M&O managers to the "across-the-board" assign-

ment of all QAP changes that come out to all people within his/her group. A typical case in point is reflected in the following response to the inquiry in the questionnaire regarding "Roadblocks to Quality:" "Having to read/be current with the QA procedures, 98% of which have nothing to do with what we do."

- Potential Training Records Accountability Problems: As currently structured, the M&O Training Department essentially plays a passive role in the maintenance of training records for people performing quality-affecting work. That is, the Training Department only collects and files those training records that are sent to it; they have no way of knowing whether or not they have all of the records of training for individuals performing activities affecting quality. As a result, failure on the part of a line manager to require the necessary training or submit the records of training to the Training Department would go undetected until some later point in time (e.g., during an audit).

Heavy Reliance on Reading/Self-Study Approach: There is heavy reliance within the M&O on the reading/self-study approach to training. This could lead to inconsistencies in the level of understanding achieved by M&O personnel regarding the M&O QA program, especially with complex procedures where the manner in which the controls should be implemented is not readily self-evident. Also, there is apparently little if anything being done to measure how well learning has taken place. Furthermore, the compliance-based approach to audits and surveillances used by the M&O to date has done little to verify that an adequate level of understanding has been achieved.

Emphasis on the Importance of QA: The training program does not appear to provide a sufficient education regarding what QA is, the overall importance of QA to the success of this program, and the consequences of not performing the work in rigorous conformance with the QA program.

Role of the M&O Training Manager: QAP-2-9 states that the M&O Training Manager will assess training effectiveness and ensure significant discrepancies are corrected. For the most part, it appears that the Training Manager plays a passive role in this regard and generally depends upon the M&O managers and supervisors to identify what the training needs are for M&O personnel. As a case in point, the Training Manager is only involved in the decision as to whether or not training is required for a change identified on a Procedure Change Notice ("PCN") if the "Other" block is checked on the PCN form (see 9/10/92 Revision of PCN form). Furthermore, the Training Manager is reportedly out of the "Training Required" decision process completely on the latest PCN form. Without the active input of the Training Manager into this decision-making process, it is felt that the results of training will tend to be inconsistent and could be inadequate.

Training Department Staffing Levels: The M&O Training Department in Las Vegas consists of two people. They are charged with supporting the training for over 400 M&O people. This staffing level does not appear to be adequate to assure that the QA-related training needs of the M&O in Las Vegas will be effectively met.

RECOMMENDATIONS:

Relationship with OCRWM Training: M&O upper management should recommend to the OCRWM Headquarters Training Officer that a facilitated workshop be conducted in order to identify a series of actions that are likely to result in improved communication, interchange, and rapport between the M&O Training Department and OCRWM Training. In addition to representatives from the respective training organizations, the workshop should also include responsible M&O and OCRWM management personnel.

Identify as part of the expected outcome of this workshop the means by which the M&O can receive the full benefit of (a) existing QA-related training materials and systems and (b) QA-related training that is available regarding the QA lessons learned from the past on the OCRWM program.

The objective of this workshop should also be to establish (a) the overall mission and goals for the M&O QA training program and (b) the milestones and target dates needed for accomplishing them.

Automated, Centralized Approach to QA-Related Training: Evaluate the alternative approaches for implementing an automated, centralized system for (a) capturing the decisions made by M&O managers regarding which QAPs/other quality-related procedures shall be reviewed by each employee prior to the start of work as well as when revisions to the QAPs/other procedures are issued; (b) tracking the status of the results of these reviews; and (c) assuring that the necessary records attesting to the completion of these reviews has been generated and submitted to a centralized facility in a timely manner.

The revised approach should be designed to provide greater accountability (from the standpoint of assuring that all necessary QA training records for an individual performing quality-affecting work have been received) and visibility (from the standpoint of providing feedback to the individual M&O managers to assist them in terms of more clearly identifying what training, and updates of training, are needed for each of the people within their group that performs quality-affecting work).

Among the possible approaches in this regard review the various training systems being used by others on the OCRWM program (e.g., the "real-time" approach to QA-related training used by DOE-YMPO).

Also, determine if the need for an automated, centralized QA-related training system can be met by the electronic document control system that is currently under consideration by the M&O. In this manner, each individual can electronically review those QAPs/other procedures designated by his/her manager on a local computer terminal with full accountability and little or no paperwork.

Role of the M&O Training Manager: Consider giving the M&O Training Manager a more active role in the determination of how much QA-related training each M&O employee should receive.

Evaluation of Approach to Training: Conduct an evaluation of (a) the approach that should be taken by the M&O to effectively educate M&O personnel regarding their QA-related responsibilities (e.g., the method for identifying who should receive training; the system for providing the training; personnel requirements; documentation; etc) and (b) the resources needed by the M&O Training Department to implement an effective program for QA-related training. Take advantage of the OCRWM program history and resources in this area when conducting this evaluation and implementing the recommendations stemming from it.

Education Program Regarding the Importance of QA: Implement an overall education program to ensure that M&O personnel understand what QA is, why it is important to implement the QA program in a rigorous manner, and the consequences if this is not done.

2.4 DESIGN CONTROL

OBSERVATIONS:

Quality-Affecting Work: There does not appear to be an effective method for clearly and consistently identifying whether or not the work being performed by any given M&O person at any given point in time is quality-affecting. As a result, a number of M&O personnel performing technical work did not appear to be very well informed as to the extent to which the work they were doing was quality-affecting. In these cases, it appeared that the individuals tended to make the assumption that the work was quality-affecting and proceeded accordingly. In part, this may be due to what appears to be a lack of centralized control within the M&O over the classification of items important to safety or waste isolation.

Part of the confusion in this area may also be caused by the wording of QAP-2-3. For example, Section 2 of QAP-2-3 contains a note which states: "This procedure is for classification of MRS MSA items only. The YMPO procedures will be used for classification of MGDS items. This restriction will remain in place until removed by the DOE." In spite of this clarification, there was extensive reference to the classification of MGDS items throughout QAP-2-3. For example, Attachment I of this QAP contains seven sheets to be used as the classification checklist for MGDS.

Additional confusion may also stem from OCRWM guidance which differentiates between whether or not an item will become a permanent part of the repository in determining if it on the "Q" List.

There seems to be an "all or nothing at all" mentality that is prevalent within the M&O regarding the application of QA controls to M&O work. That is, there is a tendency for people to (a) paint a distinct line of demarcation between quality-affecting work and non-quality-affecting work, (b) over-specify QA requirements on the former, and (c) ignore the application of QA on the latter.

Adequacy of Design Control Procedures: Existing QAPs regarding design control (i.e., the 3-series QAPs) are felt to be poorly written from the standpoint of being useful to an A-E organization and its design efforts. It is understood that these QAPs are in the process of being revised to correct this problem with a projected issue date of July 31, 1993.

Technical Requirements: Exploratory Studies Facility ("ESF") designs have been prepared in accordance with existing YMPO Design Requirements. However, the upcoming 90% review for surface and sub-

surface packages will be performed against new requirements documents prepared as part of the revised program document hierarchy. The new design requirements include additional requirements and some re-interpretations of existing requirements. As a result, there is a possibility that ESF design packages may not be in conformance with the new requirements. This situation has been recognized by the M&O and cross-reference matrices have been prepared to allow tracking of requirements.

Design Definition: Current ESF designs have been prepared without a documented Basis for Design. The need for these documents has been recognized by the M&O and the ESF Basis for Design document is nearing completion. For packages completed to date, the Basis for Design will only document the design.

Field Change Control Process: There have been numerous changes to field packages due to what appeared to be an inadequate review of the Raytheon Services Nevada ("RSN") design effort by the M&O before it was released to the field. Also, the Field Change Request ("FCR") system is felt to be convoluted, cumbersome and complex.

RECOMMENDATIONS:

Quality-Affecting Work: Establish an effective method for clearly and consistently identifying the extent to which the work to be performed by each M&O employee is quality-affecting. Consider developing and implementing an education program to establish a common understanding, increase the level of awareness, and establish an appreciation of the consequences of the classification process and how it impacts everyone's work on a day-to-day basis. Make sure that M&O personnel understand the classification of their work before they are allowed to proceed with it. Consider establishing the practice of having all changes to the Q-List reviewed and approved by an M&O change control process. Clearly document (a) the decisions as to which specific activities are quality-affecting and (b) the rationale for these decisions. Obtain OCRWM's buy-in as to the validity of these decisions.

Revise QAP-2-3 to clarify the guidance in this area, particularly with respect to classification of MGDS items. Also, pay particular attention to the requirements contained in the December 18, 1992 QARD regarding this subject.

Strengthen the M&O's approach to QA grading in order to more clearly and specifically apply the M&O QA program in a tailored manner (i.e., apply QA measures and controls in a manner that is commensurate with the consequences of doing the work incorrectly, complexity, quality history, etc.).

Adequacy of Design Control Procedures: There should be strong involvement of the individuals or organizations performing the work in preparation of the design control procedures.

Technical Requirements: Review new requirements with respect to additional or revised criteria to identify potential problem areas. Follow through with a thorough cross-check of new criteria against existing YMPO ESF Design Requirements.

Design Definition: Complete the ESF Basis for Design as soon as possible. Be sure the Basis for Design is in place for all future design work in the ESF, repository, and waste package areas.

Field Change Control Process: In the future, assure that there is an adequate review of all field packages before issue. Also, M&O management should recommend to OCRWM that a joint effort be undertaken to evaluate and reduce the complexity of the field change control procedures.

2.5 PROCUREMENT DOCUMENT CONTROL

OBSERVATIONS:

Quality-Affecting Procurements: There does not appear to be a method for consistently and effectively assuring that quality-affecting procurements are properly identified, evaluated and documented. This may be a result of the fact that M&O Vienna personnel determine whether or not M&O Las Vegas procurements are quality-affecting.

RECOMMENDATIONS:

Quality-Affecting Procurements: Consider implementing the following recommendations: (a) establish a practice whereby M&O-Las Vegas personnel are responsible for identifying and evaluating the extent to which Las Vegas-related procurements are quality-affecting; (b) give the M&O procurement group in Vienna the responsibility for screening procurement documents to assure that quality status has been identified (rather than having them make the determination regarding the extent to which the procurement is or isn't quality-affecting); (c) clearly identify the extent to which a procurement is quality-affecting on the procurement document; and (d) where appropriate, pass along applicable requirements to vendors.

2.6 IMPLEMENTING PROCEDURES

OBSERVATIONS:

Respect for the QA Procedures/Attitude Toward QA Controls: At the start of this QA management assessment, the perception held by some OCRWM QA people and others outside the M&O was that it was not uncommon for M&O personnel to not follow the QAPs. That is, M&O people reportedly did not always follow QA procedures because (a) they knew the procedures were wrong, (b) it would take too long to get them changed, and (c) they didn't have time to revise them because they would miss deadlines for getting the work done.

Based upon the observations made during this QA management assessment, it appears that this situation is not presently a problem. For example, in the design area, personnel generally recognize the need to follow procedures for quality-affecting work and appear to be diligent in doing so. However, there was a general feeling that the procedure revision process employed until recently was ineffective, cumbersome, and not timely.

Hierarchy of Procedures: The hierarchy of procedures (i.e., regarding the QAPs, ILPs, etc.) did not appear to be clearly understood (e.g., with respect to when it is appropriate to use an ILP rather than a QAP on the same subject). This issue is reportedly being addressed shortly in an upcoming revision to a QAP.

Complexity of Procedures: Certain of the QAPs contain a significant amount of detail and are difficult to understand. This problem has been recognized by the M&O and action is underway to address it (e.g., the 17-series QAPs are in the process of being streamlined to make them more user-friendly and easily understood).

User Input to Procedures: In some cases, M&O procedures (e.g., QAPs for the design control area) are written by groups other than or without adequate input from those performing work to those procedures. As a result: (a) there is reportedly a lack of sufficient "buy-in" from the users of these procedures; (b) the procedures do not appear to consistently represent the way that the users actually perform the work; (c) the procedures at times appear to lack credibility to the point that people have been hesitant to follow them; and (d) there have been occasional difficulties in implementing the procedures "as-written."

This concern is typified by the following questionnaire response: "Centralization of procedure responsibility is a weakness. Procedures for use at each location are controlled in Vienna. Thus, the procedure seems to over-emphasize M&O conformity without the flexibility to

respond to project-specific needs. For example, the M&O systems engineering manager in Vienna is responsible for procedures used by ESF design."

Recent implementation of a Quality Review Board approach for revising procedures appears to be helping in this area.

Stability of Procedures: The M&O QAPs appear to have been in a constant state of flux for some time with the issuance of numerous revisions and PCNs during the past year. On the one hand, it is important that the QAPs be kept current as "living documents." On the other hand, they should not be revised for very minor or editorial changes that can wait until a further point in time.

Proof-Testing of Procedures: Another factor which the assessment took into account in evaluating this area is the necessity to actively apply the controls contained in a QA-related procedure (or set of procedures) to a "real-world" environment where there is a clear-cut work product or deliverable produced as a result of applying the process. Proof-testing procedures in this manner is needed to "work the bugs out" of them, and to refine, hone and adjust them with time. The M&O has only recently had the opportunity to do this (e.g., the start of extensive field work was needed to point out problems with the Field Change Control process).

Other: The QA management assessment team identified several other concerns regarding the implementing procedures including the following: (a) inconsistent page numbering approach used for attachments; (b) inconsistencies in the manner in which PCNs are used; (c) paper-intensive PCN system; and (d) effectiveness of the PCN process. Each of these concerns was already recognized by the M&O and measures were underway at the time of this assessment to address them. The QA management assessment team reviewed and concurred with the proposed resolutions.

RECOMMENDATIONS:

Respect for the QA Procedures/Attitude Toward QA Controls: The recommendations made earlier in this report concerning the need to change the QA culture within the M&O will also be effective in addressing this area. Furthermore, the M&O General Manager recently issued a strongly-worded memo to all M&O personnel emphasizing the importance of following procedures. In addition, a change to QAP-5-1 is being made to provide what appears to be a meaningful approach for issuing a PCN on a "fast-track" basis. The only additional recommendation that the QA management assessment team would make at this time is for the M&O to consider performing a series of surveillances in the coming months to probe this area and make sure that it is under control.

User Buy-In to M&O Procedures: Actively involve the procedure users in the development and revision of QA-related procedures that affect their respective areas of responsibility. In the long term, consider implementing a policy whereby each QA-related procedure is written by those directly involved in its implementation.

Also, consider asking OCRWM OQA to informally review proposed changes to the M&O QA procedures early in the revision process in order to keep them apprised of (a) the general direction of the M&O QA program and (b) the specific provision(s) being proposed.

Stability of Procedures: Consider implementing a policy whereby each proposed change to a QAP is reviewed on a case-by-case basis to determine if (a) it is of sufficient importance to warrant an immediate change to the QAP or (b) it is of lower priority such that the change can be postponed to a later point in time without impacting the effectiveness of the M&O QA program.

Flow-Charting of Procedures: To improve the clarity of and the identification of interfaces between QA-related procedures, consider flow-charting the steps described within each QAP and ILP. Include a flow chart as an attachment to each procedure to aid users in better understanding the controls described in that procedure.

Other: Where necessary, consider the fast-track development of site-specific line procedures to describe applicable implementing details. Also, investigate the advantages of appointing someone within the M&O to be the procedures "czar." This person would be dedicated on a full-time basis to the coordination and overview of all QA-related procedures (e.g., one of the advantages of this approach would be that this person would spear-head the ongoing effort to make the procedures consistent and user-friendly).

2.7 DOCUMENT CONTROL

OBSERVATIONS:

QAP Change Control Problems: During the course of this assessment, concern had been expressed regarding the length of time required to change a QAP. This was reportedly due to the fact that (a) changes to QAPs used in Las Vegas required processing by and the approval of people in Vienna and (b) a large number of people were required to comment on and provide concurrence to each proposed change (even though many of the people involved in the review of a given change were not necessarily impacted by the QAP in question).

RECOMMENDATIONS:

QAP Change Control Problems: Recent improvements regarding the process for making changes to QAPs have been instituted by the M&O. In particular, an M&O Quality Review Board has been formulated to jointly review each proposed change to a QAP. Based upon the actions of the Quality Review Board during the timeframe of this QA management assessment, it would appear that changes to QAPs are being made in a much more timely and effective manner. The only additional recommendation that the QA management assessment team would make at this time is for the M&O to consider performing a series of surveillances in the coming months to probe this area and make sure that progress continues to be made.

2.8 CORRECTIVE ACTION

OBSERVATIONS:

Lessons Learned: It does not appear that the M&O has taken advantage of the many QA lessons learned in the past on the OCRWM program:

- Several of the problems encountered during the recent OCRWM OQA surveillance and audits of the M&O were the same as/similar to findings experienced in audits of other participants that were conducted during the past 3-4 years (e.g., qualification of auditor personnel). Whereas some of these problems would probably have been experienced by any organization during the early stages of implementing their QA program, the M&O should have been able to avoid other problems if it had heeded the lessons from the past.

- In large part, the recent problems that the M&O experienced in its approach to performing audits could have been avoided by paying closer attention to the lessons learned by others as to what is expected by OCRWM in this area.

- In many ways, the M&O QA cultural issue discussed earlier in this report is similar to a QA cultural problem encountered virtually across the OCRWM program in the timeframe leading up to 1990-1991, when OCRWM OQA took aggressive action to address the matter through a series of workshops.

It should not be necessary for the M&O to experience the same QA-related problems that others on the OCRWM program have already struggled with and addressed in order to be able to benefit from these lessons learned.

Role of the Interfacing Manager in the CAR Process: Revision 0 of QAP-16-1 appears to give the "Interfacing Manager" undue influence over the CAR process with respect to decisions that are made regarding (a) whether or not any given CAR is valid, (b) whether or not a stop work order should be issued for that CAR, and (c) whether or not the observed condition is a significant condition adverse to quality. Based upon discussions with M&O QA personnel, it appears that the revision of QAP-16-1 that is currently underway will address this concern.

Sequence of Steps for the CAR Process: Revision 0 of QAP-16-1 does not appear to provide much in the way of details regarding the sequence in which the CAR form is completed. For example, the procedure does not clearly state when the determination is made as to whether or not a

finding is a significant condition adverse to quality (typically this should be done during the initial stages of completing the CAR and prior to submitting it to the organization assigned to take action to correct the condition). The confusion within the M&O that may exist in this regard was reinforced when a review of a cross-section of CARs showed that, on several of them, Block 11 (regarding whether or not the condition is considered to be significant) was left blank.

Role of M&O QA In the CAR Process: It appears that the M&O QA organization has not consistently taken an aggressive role in pursuing CARs with respect to assuring that (a) the extent of each problem has been thoroughly investigated, (b) the cause and action to prevent recurrence of significant conditions adverse to quality have been accurately identified, and (c) CARs are addressed in a timely and effective manner. As a case in point, on May 13, 1993, DOE-YMPO QA determined that the M&O's responses to CARs YM-93-036 and YM-93-037 were unsatisfactory because they addressed the examples in each CAR as separate, unrelated conditions (rather than addressing the condition adverse to quality as a general problem) and they did not adequately address actions to prevent recurrence of the problems. The QA management assessment team reviewed this matter and found that the M&O QA organization played a passive role in responding to these CARs to the point that an inadequate response was given to OCRWM.

QA Program Management and Information Tracking System: The M&O QA program management information tracking system appeared to be effectively implemented. In particular, the two Quarterly QA Program Trend and Status Reports that have been issued by the M&O QA group to date provided excellent visibility regarding the status of the M&O QA program.

Attitude Toward CARs: In general, M&O personnel perceive CARs with a negative connotation ("speeding ticket" mentality, punitive approach). As a result, some M&O people tend to resist having a CAR written "against" their area of responsibility since they view it as a "black mark." Also, self-identified CARs are virtually unheard of within the M&O.

RECOMMENDATIONS:

Lessons Learned: Make an aggressive effort to (a) clearly identify the nature and extent of the QA-related problems that have been experienced by others on the OCRWM program in the past and (b) apply these lessons learned in a manner that they are much less likely to be repeated on the M&O's QA program. As starting points in this direction, consider the following:

- 1990-1991 OCRWM QA Workshops: Benefit from (a) the extensive history regarding the scientist's QA-related concerns in the past on the OCRWM program which culminated in a series of workshops held by OCRWM OQA in the 1990-1991 timeframe and (b) the solutions and recommendations that resulted from these QA lessons-learned. As part of this effort, become familiar with the activities of the Quality Integration Group ("QIG") that was created as a result of these workshops. Investigate the possibility of having a senior technical representative from the M&O sit in on the QIG meetings.

- OCRWM Corrective Action Data Base: Become familiar with and apply the corrective action data base that OCRWM OQA has developed which describes the extent and nature of QA-related problems that have been experienced on the OCRWM program over the years (CER reportedly has an excellent computerized summary in this regard).

- Discussions With OCRWM OQA/QA Support Contractor Personnel: Discuss this subject at length with OCRWM OQA and their QA support contractor personnel to benefit from their experience in this area (e.g., examine the lessons learned from the G4 borehole issue where the primary cause for the loss of identification on core removed from this borehole was that the QA people who planned the work did not get out of their offices and interact with those that were going to do the work).

- QA Staff Additions With OCRWM QA Experience: Bring people into M&O QA who: (a) are highly respected for their knowledge of the OCRWM QA program and (b) have extensive OCRWM QA experience and a proven track record on how to implement an effective QA program.

Aggressive Pursuit of Corrective Action: Adopt a policy whereby each CAR is pursued in an aggressive manner to assure that (a) the extent of each significant condition adverse to quality is thoroughly investigated, (b) the cause and action to prevent recurrence of each significant condition adverse to quality is accurately identified, and (c) each CAR is addressed in a timely and effective manner.

Interaction With OCRWM QA Regarding CARs: M&O QA should interact with OCRWM QA on a frequent yet informal basis to keep them posted of (a) problems that are being/have been identified internally and (b) progress on/direction taken with respect to OCRWM CARs identified during OCRWM audits and surveillances of the M&O.

Sequence of Steps for the CAR Process: It is recommended that the timing as to when each portion of the CAR form is to be completed (particularly with respect to completing the "Significance" block) be clearly stated in the QAP. Consider including a flow-chart in the back of QAP-16-1 to improve the clarity in this regard.

Attitude Toward CARs: Examine the possible approaches that might be used for turning a CAR from (a) a negative perception to a positive vehicle for change and (b) being viewed as a black mark to a bench mark or vehicle to track progress. Include as one possibility the Ralph M. Parsons' company-wide approach that views CARs in a Total Quality Management ("TQM") light (see Attachment C for an example of how Parsons uses the CAR approach in a positive vein). Consider specialized training for all concerned regarding the purpose and value of CARs. Encourage people to self-identify problems in their areas of responsibility through the use of a CAR (e.g., institute a "no-fault" approach to problem identification).

2.9 QUALITY ASSURANCE RECORDS

OBSERVATIONS:

Records Accountability: There does not seem to be a system described in the QAPs to assure that all of the QA records that should be submitted to the records center are indeed sent there in a timely manner. For example, there does not appear to be a list of records that the Local Records Center ("LRC") uses to check receipt of incoming records on a one-for-one basis. As a result, the possibility exists that people can retain completed records within their desk drawer/file cabinet and not submit them to the applicable LRC within the ten working day time limit (and, further, not be called to task for not submitting them).

Records Not Related to QA: A perception exists within the M&O that the records system is capturing a large number of records that are not related to QA and which are not needed to attest to the quality of the work being done by the M&O. The extent to which this perception is factual could not be determined during the course of this QA management assessment.

Conflicting Interpretation of Records QA Requirements: Conflicting interpretations regarding the records QA requirements appear to have been imposed by M&O QA-Vienna and M&O QA-Las Vegas on the M&O groups responsible for implementing the records QA system (e.g., differing guidance was provided regarding the inclusion of non-QA records in the records procedures).

RECOMMENDATIONS:

Records Accountability: Investigate the extent to which there should be a more positive system of records accountability to assure that all QA records are submitted to the records center in a timely manner.

Records Not Related to QA: Perform a cost-benefit analysis in order to determine if it would be worthwhile to specifically exclude non-QA records from the records centers.

Conflicting Interpretation of Records QA Requirements: M&O QA-Vienna should take the lead in determining the extent to which this is a problem and, if it is, in assuring that consistent guidance is provided in this area.

2.10 AUDITS AND SURVEILLANCES

OBSERVATIONS:

M&O Surveillance Program: The following weaknesses were noted regarding the M&O surveillance program:

- Number and Coverage of Surveillances: The surveillances performed by the M&O appeared to be limited in both number and extent (e.g., only a portion of one surveillance conducted in 1992 by the M&O QA-Las Vegas office addressed Criterion 3 regarding design control).

- Scheduling of Surveillances: In Las Vegas, surveillances appeared to be more or less conducted on the spur-of-the-moment with essentially no advanced schedule as to what specific areas would be examined and when.

- Compliance-Based Approach to Surveillances: In general, the surveillances conducted to date by the M&O appear to have been focused on compliance and documentation. Whereas this may have been appropriate during earlier stages of implementation of the M&O QA program, it is time to redirect the surveillance effort more toward performance and results.

M&O Audit Program: The following weaknesses were noted regarding the M&O audit program:

- Approach for Funding M&O Audits: The practice of charging the M&O audit effort to the audited parties is flawed in that it (a) has resulted in resentment by the audited parties toward the QA program/M&O QA organization and (b) places undue pressure on the M&O QA organization to have to justify the scope and frequency of audits to the audited parties. Furthermore, this approach appears to be inconsistent with that taken by OCRWM OQA with others in the program (e.g., USGS).

- Effectiveness of M&O Audits: It was generally felt that the recent OCRWM QA surveillance and audits of the M&O identified problems that the M&O audit program should have typically caught (e.g., the qualification of auditor personnel).

- Preparation Prior to Performing M&O Audits: Earlier in the year, there were two "false starts" in the implementation of the M&O audit

program. In one instance, the audit was turned into a surveillance and in the other it was converted into a scoping visit. In both cases, it appeared that the M&O auditors could have been better prepared and schooled in the manner in which audits are conducted on the OCRWM program.

- Experience of M&O Lead Auditors: There appeared to be little depth of experience within the M&O QA organization with respect to qualified lead auditors. In particular, there is virtually no one who has had prior (i.e., other than the "in-house" experience gained by M&O QA people who have been in the M&O QA organization during the past two years), first-hand OCRWM program experience leading an audit. This may have contributed to the recent problems experienced by the M&O in effectively implementing the audit process on the OCRWM program.

- Compliance-Based Approach to M&O Audits: As stated previously for the M&O surveillances, the audits performed to date by the M&O appear to have been primarily focussed on compliance and documentation with little input from technically-qualified personnel.

It should be noted that the M&O QA organization has recognized the need to improve the audit and surveillance effort, and corrective measures have been started in this regard (e.g., an evaluation of the M&O audit program was performed in February 1993 by D.M. Franks of Duke Power).

RECOMMENDATIONS:

M&O Surveillance Program: Institute an aggressive, performance-based approach to surveillances with the following points in mind:

- Frequency and Coverage of Surveillances: Perform a large number of hard-hitting surveillances, particularly in areas where the greatest activity is underway (e.g., design).

- Surveillance Schedule: Issue a schedule showing upcoming surveillances; update it on a periodic basis (e.g., monthly) to reflect any changes in coverage; obtain the frequent input of the M&O line organizations (e.g., at the weekly staff meetings) as to areas where surveillances should be performed.

- Real-Time Surveillances: Conduct the surveillances as early in the process/as far "up-stream" as possible, rather than waiting until after-the-fact to just examine records of the work.

- Performance-Based Surveillances: Where possible, focus the M&O surveillances on an evaluation of the results of and products produced in accordance with the M&O QA program. Where appropriate, use people who are technically-qualified in the area being surveilled to perform or assist in the performance of surveillances.

M&O Audit Program: Institute an aggressive, performance-based approach to QA audits with the following points in mind:

- Approach for Funding M&O Audits: Eliminate the current practice of charging the audited parties for the cost of the M&O audits. Instead, implement an approach to funding the audits which gives the M&O QA group adequate flexibility to conduct audits in the areas of greatest need.

- Experienced Lead Auditors: Add one or more highly-qualified lead auditors with extensive OCRWM program experience to the M&O QA staff.

- OCRWM Approach to Audits: Extensively and carefully observe the manner in which others on the OCRWM program conduct QA audits. Factor the results of these observations into the M&O's approach to performing audits. Conduct M&O audits using lead auditors who have a successful track record for performing audits elsewhere on the OCRWM program. Do this at least until the results of the M&O audits have achieved a measure of success. Instead of full-scope audits, consider performing a series of smaller-scope audits that are more likely to be successful steps in the right direction.

- Doug Franks Report: Devise a plan of action regarding the recommendations in the evaluation report prepared by Doug Franks. Include milestones and target dates. Informally review the plan with OCRWM OQA for their input.

- Performance-Based Approach to Audits: Where possible, focus the M&O audits on an evaluation of the results of and products produced in accordance with the M&O QA program. Where appropriate, use people who are technically-qualified in the area being audited to perform or assist in the performance of audits. Also, use QA audits as a tool to identify problems in a proactive, timely and effective manner. As such, the M&O audits should typically and routinely be identifying problems prior to OCRWM QA finding them.

2.11 SOFTWARE CONTROL

OBSERVATIONS:

Verification and Validation: A potential problem may exist in that certain preliminary performance assessment calculations are apparently being made in support of quality-affecting work on the ESF without a complete verification and validation of the computer model that is being used. OCRWM is reportedly aware of this situation. Also, the M&O is apparently in the process of drafting a letter to OCRWM to request an exemption for use of non-verified codes and non-qualified data in specific instances such as this where it is either impractical or impossible to do a complete verification and validation.

Acquired Software: The current revision of QAP-19-1 does not address specific requirements for dealing with acquired software. This has apparently caused some difficulties for M&O personnel in Las Vegas who are attempting to verify and validate the codes there.

RECOMMENDATIONS:

Verification and Validation: It is recommended that the M&O work jointly with OCRWM to determine what actions should be taken regarding the use of certain codes for quality-affecting activities without complete verification and validation. Specifically, in a timely manner, determine: (a) whether a CAR should be issued for any of the quality-affecting work performed to date on the ESF and (b) how to deal with the use of non-qualified data and non-verified codes in those instances where it is impractical and/or impossible to do otherwise until site data are available.

Acquired Software: Revise QAP-19-1 to include specific requirements for addressing the extent of verification and validation needed for acquired software.

3.0 RECOMMENDATIONS FOR IMPROVING THE VALUE/COST-EFFECTIVENESS OF THE M&O QA PROGRAM

Manual, Decentralized System for Tracking of Required Training: The manual and decentralized approach to training described earlier in this report places an unnecessary, labor-intensive burden on the managers and results in overkill in some cases. It is recommended that the M&O implement an automated, centralized system in this area. Determine if this need can be met by the electronic document control system that is currently under consideration by the M&O. In this manner, each individual can electronically review those QAPs/other procedures designated by his/her manager on a local computer terminal with full accountability and little or no paperwork.

Conceptual Designs: Some conceptual design activities are being performed under a full-blown QA program, even though none of the work will be used as part of the licensing base. That is, the consequences of doing this work incorrectly would have no impact on the licensing process. As a result, it is not necessary to control these conceptual activities as tightly as is currently done. It is recommended that the M&O review this subject at length with OCRWM in order to determine if ground rules can be established to provide flexibility in the manner in which conceptual design work is controlled in those instances where there would be no impact resulting from performing the work incorrectly.

Minor Changes to QAPs: In the past, the M&O has issued some PCNs for very minor or editorial changes to a QAP even though it did not appear to be necessary to issue these changes right away (e.g., the nature of the change was such that it had essentially no impact on the operation). Consider implementing a policy whereby each proposed change to a QAP is reviewed on a case-by-case basis to determine if (a) it is of sufficient importance to warrant an immediate change to the QAP or (b) it is of lower priority such that the change can be postponed to a later point in time without impacting the effectiveness of the M&O QA program.

Administrative Detail in QAPs: The QAPs in general contain a considerable amount of administrative detail that tends to make them more voluminous, unwieldy, complicated, and difficult to understand than need be. Consider including as part of the Quality Review Board charter the ongoing goal of eliminating unnecessary administrative detail from the QAPs.

Distribution and Review of QAPs: It appears as though very few people are aware of the fact that the M&O Document Control group can issue controlled copies of only those QAPs that are requested (i.e., each M&O manager can request those specific QAPs that are needed by a person in his/her group), rather than the full set.

Also, some M&O managers have taken an across-the-board approach to training whereby they require their people to review all QAPs and all PCNs to QAPs regardless of whether or not these people are involved in work that uses all of the QAPs.

It is recommended that the M&O more closely tailor the issuance of specific QAPs to the needs of each person by (a) making it widely known that controlled copies of selected QAPs can be issued to M&O people on an individual basis and (b) establishing a policy whereby all M&O managers are strongly encouraged to be specific as to which QAPs their people need to review.

Records Not Related to QA: A perception exists that the records system is capturing a large number of records that are not related to QA and which are not needed to attest to the quality of the work being done by the M&O. It is recommended that the M&O perform a cost-benefit analysis in order to determine if it would be worthwhile to specifically exclude non-QA records from the records centers.

Records Capture System: A system to capture incoming mail within the records center appeared to the assessment team to be overkill. It is recommended that this approach be re-visited to determine if it can be streamlined. Also, the development of an effective records accountability system (see section 2.9 of this report) could reduce the need for this labor-intensive effort.

4.0 CONCLUSIONS AND STATEMENT OF QA PROGRAM EFFECTIVENESS

In summary:

- The QA management assessment team concluded that the implementation of the M&O QA program has been marginally effective for the work done during the past year.
- Action is recommended in a number of areas in order to improve the effective implementation of the M&O QA program.
- View these recommendations as improvement opportunities, not CARs.
- Implement them and you will make a step increase in QA program effectiveness during the coming months.
- Ignore them and you will soon become ineffective as the amount of quality-affecting work performed by the M&O increases in the coming months.

5.0 IDENTIFICATION OF CONDITIONS ADVERSE TO QUALITY

A potential problem was identified by the QA management assessment team as follows:

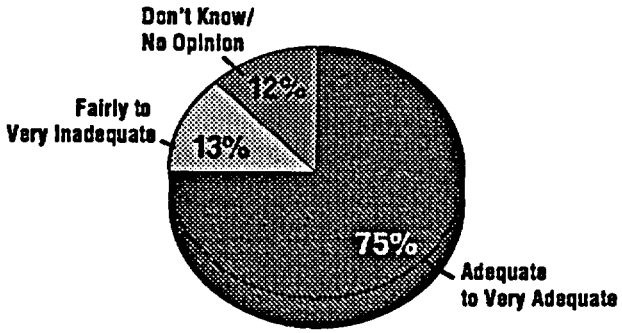
> Verification and Validation: A potential problem may exist in that certain preliminary performance assessment calculations are apparently being made in support of quality-affecting work on the ESF without a complete verification and validation of the computer model that is being used. OCRWM is reportedly aware of this situation. Also, the M&O is apparently in the process of drafting a letter to OCRWM to request an exemption for use of non-verified codes and non-qualified data in specific instances such as this where it is either impractical or impossible to do a complete verification and validation.

The M&O should investigate this issue to determine if it: (a) represents a condition adverse to quality for any of the quality-affecting work performed to date on the ESF and (b) should be documented on a Corrective Action Report.

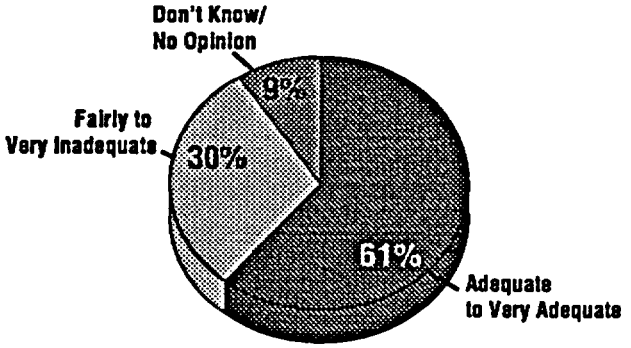
6.0 ATTACHMENTS

ATTACHMENT A: RESULTS OF QUESTIONNAIRE

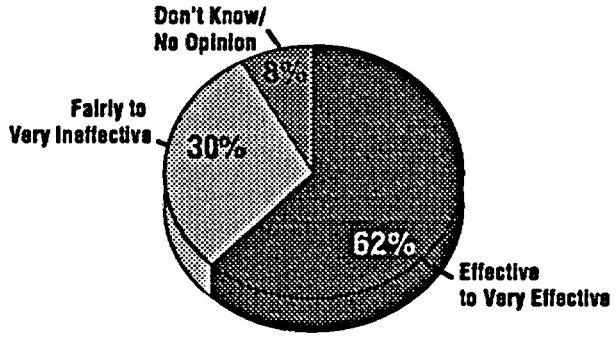
A questionnaire was sent to a wide cross-section of M&O personnel to gather information regarding their perceptions of and experience with the M&O QA program. A total of 90 people returned completed questionnaires. The questionnaire contained 20 questions regarding various aspects of the M&O QA program, including nine questions which asked for a graded response ranging from "Very Effective/Adequate" to "Very Ineffective/Inadequate." The results of these nine questions are displayed below in the form of "pie charts."



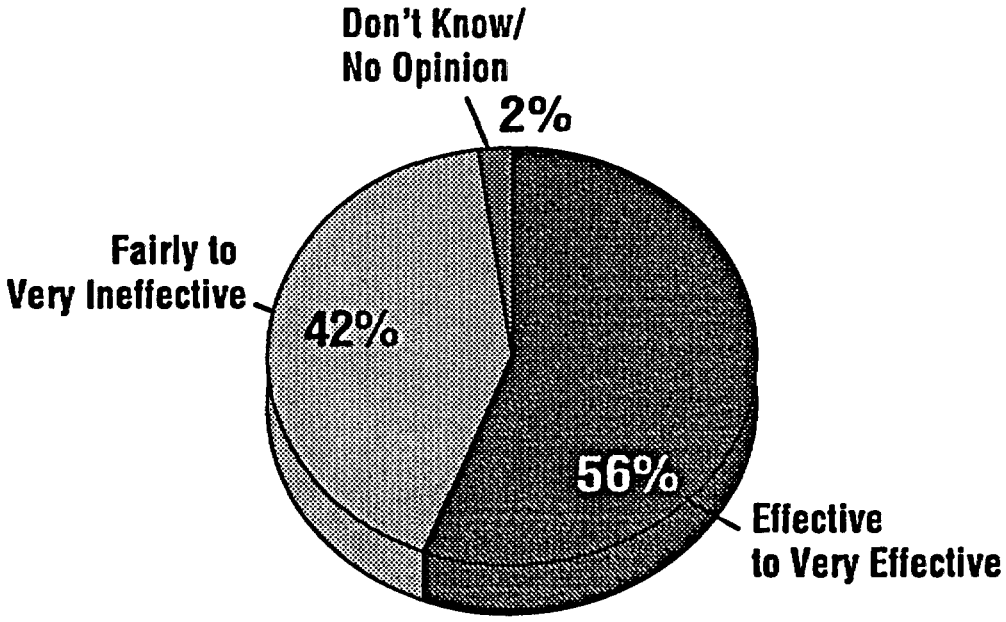
Adequacy of QA
Organizational Structure



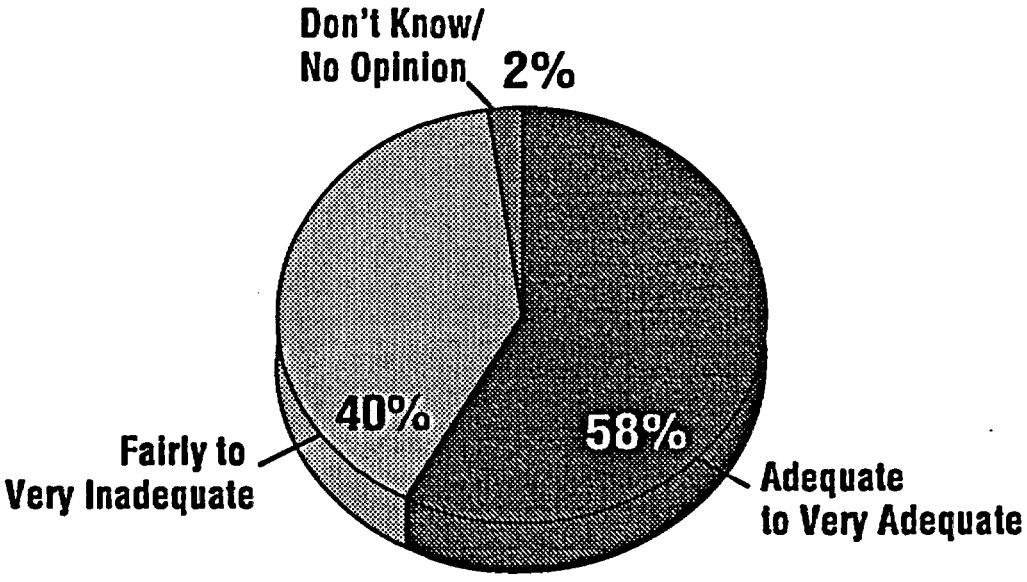
Adequacy of
QA Staff



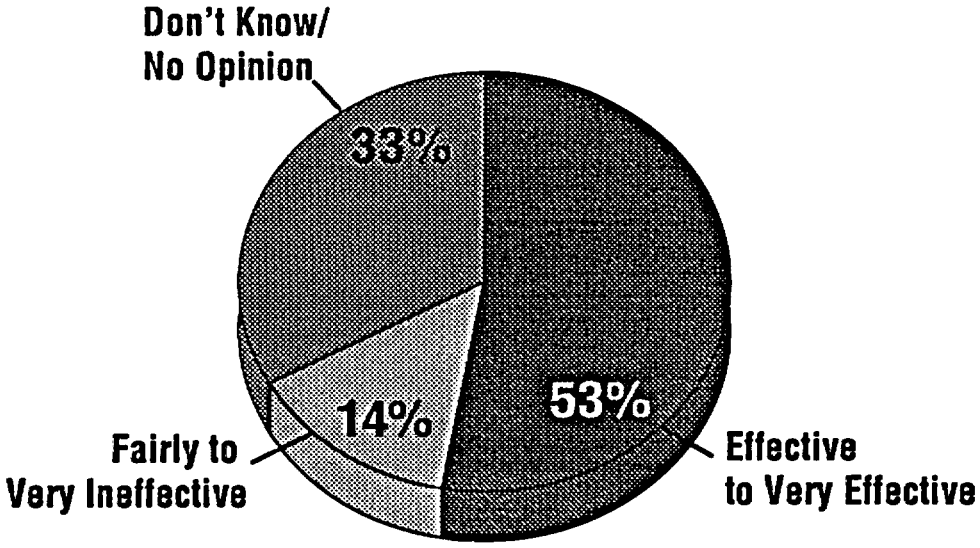
Effectiveness of
QA Staff



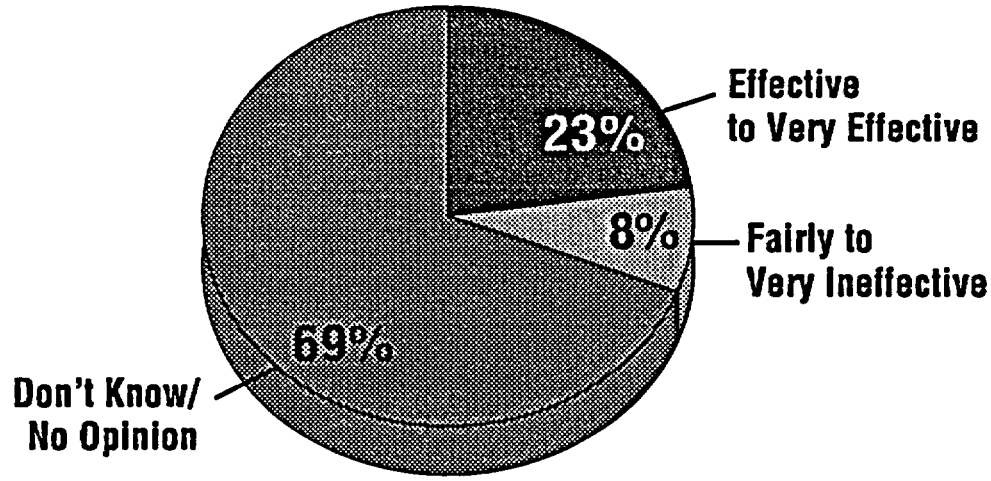
Effectiveness of Personnel Qualification & Training Program



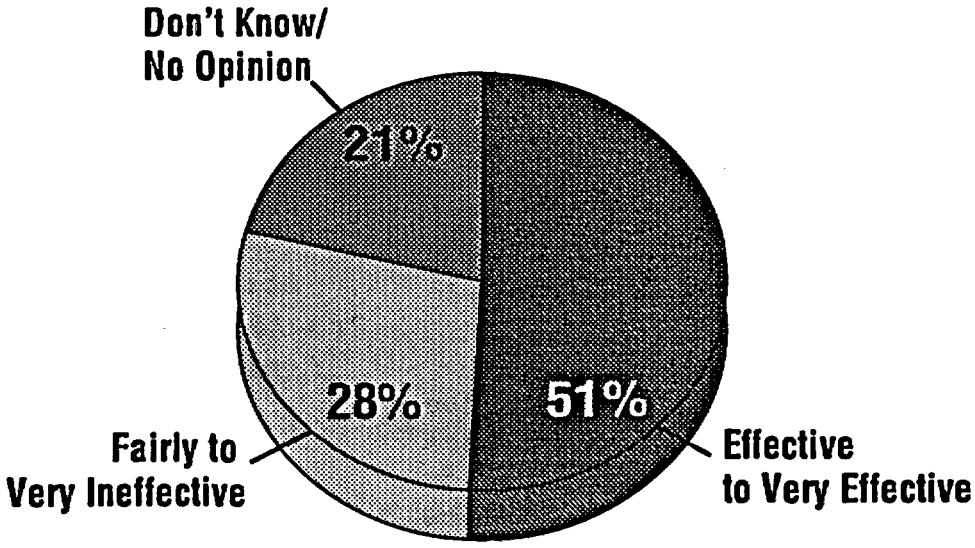
Identification of "Quality-Affecting" Activities



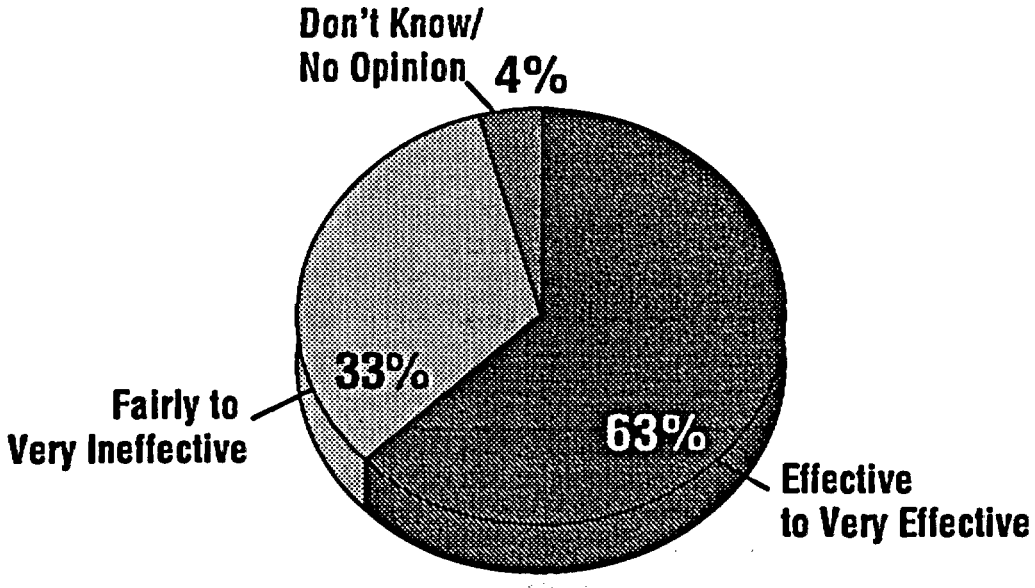
Effectiveness of Nonconformance & Corrective Action Program



Effectiveness of QA Program Management Information Tracking System



Effectiveness of QA Audit & Surveillance Program



Overall Effectiveness Of QA Program

ATTACHMENT B: PEOPLE CONTACTED

The following people were contacted during the course of this QA management assessment:

Name	Organization	Attended Pre-Assessment Conference	Attended Post-Assessment Conference
D.B. Abel	M&O-Las Vegas Office	X	
G.S. Abend	M&O-Las Vegas Office		
S.A. Adame	M&O-Las Vegas Office		X
C.B. Aderholdt	M&O-Charlotte Office		
F. Afshar	M&O-Las Vegas Office		
R.W. Andrews	M&O-Vienna Office		
D.R. Anthony	M&O-Charlotte Office		
F.C. Arth	M&O-Las Vegas Office		
W. Bailey	M&O-Vienna Office		
K.L. Baxter	M&O-Vienna Office		
W.E. Beasley	M&O-Vienna Office	X	
J.C. Becerra	M&O-Las Vegas Office		
H.A. Benton	M&O-Las Vegas Office		
J.R. Beyer	M&O-Las Vegas Office		
M.L. Birch	M&O-Vienna Office		
J. Blandford	M&O-Vienna Office		
S.J. Bodnar	M&O-Las Vegas Office		
W.E. Booth	R.F. Weston-Wash. D.C.		
R.J. Brackett	M&O-Vienna Office	X	X
T.J. Bruno	M&O-Wash. D.C. Office	X	
G.A. Carruth	M&O-Vienna Office	X	X
J.R. Cassidy	M&O-Vienna Office		
C.W. Chagnon	M&O-Charlotte Office		
T. Childress	M&O-Charlotte Office		
P. Chomentowski	M&O-Vienna Office		X
G.T. Chulick	M&O-Vienna Office		X
R.W. Clark	DOE OCRWM-Wash. D.C.		
J.R. Clark	M&O-Vienna Office		X
M.D. Collins	M&O-Vienna Office		
J.O. Cowles	M&O-Vienna Office	X	X

Name	Organization	Attended Pre-Assessment Conference	Attended Post-Assessment Conference
T.J. Coyle	M&O-Vienna Office		
H.C. Dameron	M&O-Vienna Office		X
R.G. Eble	M&O-Charlotte Office		
H. Ebner	M&O-Las Vegas Office		
J.L. Elliot	M&O-Vienna Office	X	
L.G. Engwall	M&O-Las Vegas Office		
L.J. Evans	M&O-Las Vegas Office		
B.T. Farmer	M&O-Vienna Office		X
T.A. Faries	Fluor Daniel-Irvine	X	
S.K. Farnsworth	M&O-Vienna Office		
L.D. Foust	M&O-Las Vegas Office	X	X
J.W. Frank	M&O-Las Vegas Office	X	
B.R. Gardella	REECO-Las Vegas		
T.C. Geer	M&O-Las Vegas Office		
J. Gilray	NRC-Las Vegas		
O.J. Gilstrap	M&O-Charlotte Office		
R.W. Godman	M&O-Vienna Office	X	X
P. Gottlieb	M&O-Las Vegas Office		
K.M. Green	M&O-Vienna Office		
L.A. Gutierrez	M&O-Las Vegas Office		
M.G. Hannigan	M&O-Las Vegas Office		
V.A. Harris	M&O-Vienna Office		X
P.S. Hastings	M&O-Las Vegas Office		
G. Heaney	SAIC-Las Vegas		
W.O. Henry	M&O-Charlotte Office		
N.W. Hodgson	M&O-Las Vegas Office	X	
S.A. Hoffman	M&O-Vienna Office		
P.R. Horsmon	M&O-Vienna Office		X
D.G. Horton	DOE-OCRWM, Las Vegas	X	
S.H. Horton	SAIC-Las Vegas	X	
J. Houseworth	M&O-Las Vegas Office	X	
W.R. Hunt	M&O-Charlotte Office		
J.A. Jackson	M&O-Las Vegas Office		X
B.J. Jennings	M&O-Vienna Office		
R. Jiu	M&O-Las Vegas Office		
J.B. Justice	M&O-Las Vegas Office		
R.B. Justice	M&O-Las Vegas Office	X	
C.L. Kelly	M&O-Vienna Office		
A.S. Kubo	M&O-Vienna Office	X	X
L.J. Lee	M&O-Las Vegas Office		

Name	Organization	Attended Pre-Assessment Conference	Attended Post-Assessment Conference
P.C. Lentz	M&O-Vienna Office		
W.J. Leonard	M&O-Las Vegas Office		
J.R. Levine	M&O-Vienna Ofiice		
P.M. Lovett	M&O-Vienna Office		
J. Low	M&O-Las Vegas Office		
M.A. Lugo	M&O-Las Vegas Office	X	
C. Lukasik	DOE-OCRWM, Wash. D.C.		
J.S. Martin	SAIC-Las Vegas		
R.A. McCarthy	SAIC-Las Vegas		
J.M. McConaghy	M&O-Charlotte Office		
A.C. McHenry	M&O-Vienna Office	X	
J.J. Miller	M&O-Vienna Office		
R.A. Morgan	M&O-Vienna Office		X
R.B. Murthy	DOE-OCRWM, Wash. D.C.		
F.E. Nash	M&O-Vienna Office		X
C.J. Nesbitt	M&O-Las Vegas Office		
M.B. Paige	M&O-Vienna Office	X	
J.J. Penhaker	M&O-Vienna Office		
M.F. Penovich	M&O-Las Vegas Office		
W.L. Petrie	M&O-Las Vegas Office		
P.A. Pimentel	M&O-Las Vegas Office		
D.A. Plebuch	M&O-Vienna Office		
R.E. Powe	SAIC-Las Vegas		
D.C. Pullen	M&O-Charlotte Office		
C. Rehkop	DOE-OCRWM, Las Vegas		
F. Ridolphi	M&O-Vienna Office		
R.L. Robertson	M&O-Vienna Office	X	X
A.B. Rust	M&O-Las Vegas Office		
R.P. Ruth	M&O-Las Vegas Office		
R.M. Sandifer	M&O-Las Vegas Office		X
R.S. Saunders	M&O-Las Vegas Office		
P.H. Schlereth	M&O-Vienna Office		X
N.L. Seagle	M&O-Charlotte Office		
A.M. Segrest	M&O-Vienna Office		X
D.E. Sestek	M&O-Las Vegas Site		
H.L. Setzer	M&O-Vienna Office	X	
D.E. Shelor	DOE-OCRWM, Wash. D.C.		
M.A. Shepherd	M&O-Vienna Office	X	
W.B. Simecka	DOE,OCRWM-Las Vegas		
S. Sinnock	M&O-Las Vegas Office		

Name	Organization	Attended Pre-Assessment Conference	Attended Post-Assessment Conference
V.M. Skrinak	M&O-Vienna Office	X	X
R.J. Smith	M&O-Vienna Office		
R.E. Spence	DOE-OCRWM, Las Vegas	X	
H.C. Stafford	M&O-Las Vegas Office	X	X
C.T. Statton	M&O-Las Vegas Office		X
J.P. Stenbit	TRW Syst. Int. Group	X	X
J.L. Stern	M&O-Vienna Office		X
T.R. Stevens	B&W-Lynchburg	X	
A.C. Tayfun	M&O-Vienna Office		
E.C. Taylor	M&O-Vienna Office		
B.R. Teer	M&O-Vienna Office		
J.E. Therien	SAIC-Las Vegas		
J.L. Tierney	M&O-Vienna Office		
M.D. Vance	M&O-Vienna Office		
A.E. Van Luik	M&O-Las Vegas Office		
G.P. Vaslos	M&O-Vienna Office	X	X
R.G. Vawter	M&O-Las Vegas Office		
P.D. Viggiano	M&O-Vienna Office		
W.J. Waggoner	M&O-Las Vegas Office		
R. Wagstaff	M&O-Charlotte Office		
A.T. Watkins	M&O-Las Vegas Office		
J.V. Watson	M&O-Vienna Office		
B. Wemheuer	M&O-Las Vegas Office	X	
D.S. White	M&O-Vienna Office		
R.J. White	M&O-Vienna Office	X	X
J.L. Younker	M&O-Las Vegas Office		
S.W. Zimmerman	State of Nevada		

ATTACHMENT C: EXAMPLE OF CAR USED IN A POSITIVE VEIN

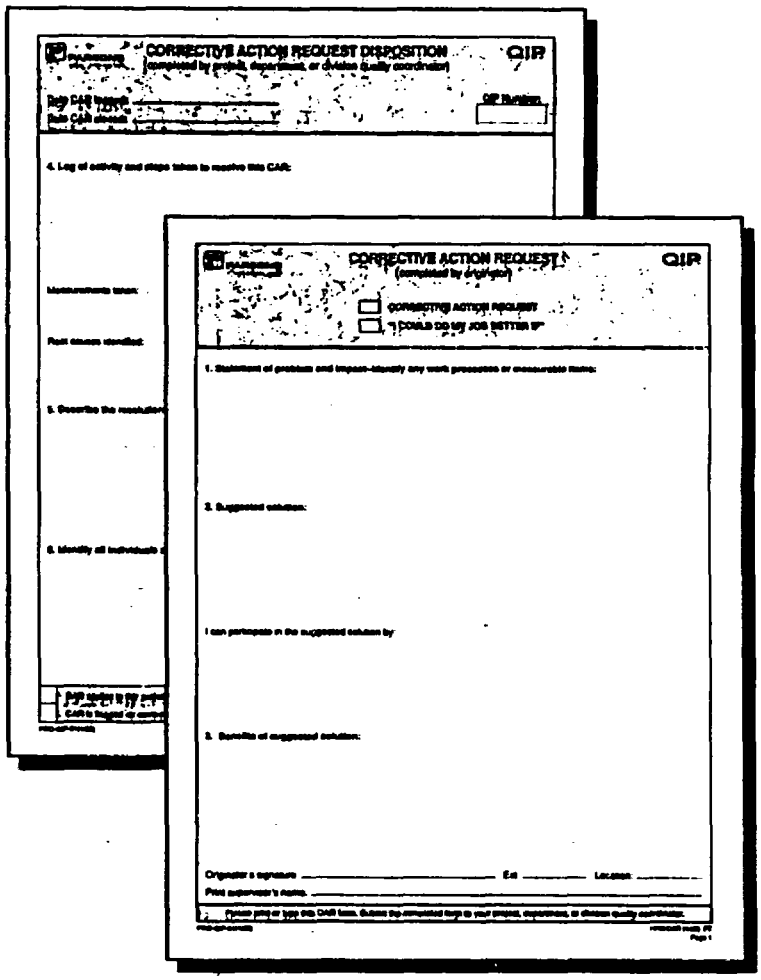
PARSONS QIP

PURPOSE OF A CAR

The Parsons quality improvement process (QIP) has created the corrective action request (CAR) to help identify and eliminate problems in your work process. This procedure has been designed to identify the root cause of a problem and take action to eliminate that problem.

When should a CAR be written?

- If input to your work processes prevents the output from conforming to your customer's requirements, check the box marked **CORRECTIVE ACTION REQUEST** at the top of the CAR form.
- If an improvement is possible in areas of your work process (such as training, work tools, work procedures, or customer communications), check the box marked **I COULD DO MY JOB BETTER IF** at the top of the CAR form.

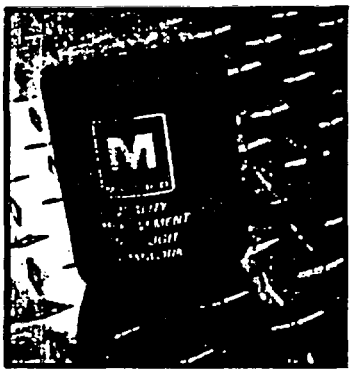


However, the CAR form is not intended to be used for conditions that do not directly impact your work process or the quality of your work, such as building facilities (restrooms, carpeting, parking, etc.) or company benefits (working hours, cafeteria, insurance, etc.). Take those concerns to your section or department manager.

A key in making the corrective action process work for you is to identify the impact that the problem is having on your work. Because the project, department, and company resources are limited, attention is usually given to areas where the greatest benefits can result.

On the cutting edge of Quality . . .

Active CAR System on Metro Red Line Results in Continuous Improvement



Metro Red Line Quality souvenir mug

Quality is exciting and real on the Metro Red Line Project! The joint effort among RMP, Parsons De Leuw and Dillingham Construction, N.A. Inc., known as Parsons-Dillingham, makes quality on this project successful.

The strength behind the quality improvement process (QIP) on the project is active *communication.* Parsons-Dillingham and the Metro Red Line client, the Rail Construction Corporation (RCC), have formed a Partnership for Excellence in Rail Construction (PERC), with both groups endorsing a plan to further communication efforts using the Corrective Action Request (CAR) system. The PERC process emphasizes a total quality management initiative that focuses the resources and energies of the Metro Red Line partners on a common mission and vision, and on key areas that are targeted for results as developed jointly by the RCC and its partners. Parsons-Dillingham has taken The Parsons Corporation's QIP initiatives and tailored them to support the client's objectives.

The QIP was implemented on the Metro Red Line Project in May 1991. The first step toward creating better communication began with an exchange of information in the form of the RMP quality improvement fundamentals training program. Among those trained were 172 Parsons-Dillingham employees and 43 others, including client personnel, managers and the RCC's president and CEO.

A Parsons-Dillingham QIP steering committee, representing a cross section of people, was then developed for the project. The committee, which has a six-to-eight-person rotating membership, includes clients, resident engineers from the field, and personnel from cost and scheduling, public relations, quality control and quality assurance. This group meets twice a month during lunchtime. The committee reviews the activities of Corrective Action Teams (CATs) working within the QIP, reviews the status of all CARs, publishes meeting minutes and handles any other project business that pertains to quality.

Morschauser

"Your use of the CAR process...is exactly what developers of the quality improvement process envisioned."

-George Morschauser

A formal recognition program acknowledges employee recommendations and requests. CARs are posted at all field and office locations, and various prizes are awarded. A souvenir coffee mug is awarded to individuals who submit a CAR or recommendation that is considered for implementation. Awards of $100 are made for each CAR or recommendation that is implemented and makes a substantial contribution to improvement on the project. A quarterly award of $250 is given for the most outstanding CAR or recommendation, and a $2,500 award is made each calendar year for the most outstanding CAR or recommendation implemented during the year.

"Since the beginning of this program in November 1992, there has been a marked increase in the number of CARs submitted," said Ron Trepp, manager, quality assurance and QIP coordinator for the Metro Red Line Project. "The

Szarama received a $250 cash award for the implementation of her timesaving Corrective Action Request.

objective of submitting a CAR is not to change the world but to make simple improvements that collectively improve the quality of work processes."

Trepp believes the CAR system is a key part of the QIP and is vitally important to Parsons' standards for quality. "Even if we're on the right track, if we're standing still, we're going to get run over by the train," he said. "This program is one way we can increase our overall competitiveness, position and cost-effectiveness. Our goal is continuous improvement."

Since the implementation of the recognition program, a variety of awards has been presented to employees as well as clients. Diane Curzon, document control manager for Parsons-Dillingham, is one member of a team quality effort incorporating the client's PERC quality process and Parsons' QIP. Curzon suggested an improvement in the design change process for the Metro Red Line Project. The client/contractor quality team recognized the problems and then took steps to examine the current process. The next step was to list the desired results and improvements. As a result of brainstorming and flowcharting the processes, they were able to streamline the work, prioritize the changes and focus on those changes which impacted the construction schedule.

"We were able to reduce the design change process time by 10 days," said Curzon enthusiastically. "Now there are procedures and continuity."

Members of the project hold monthly information exchanges entitled "Coffee with..." featuring topical speakers. During one such recent gathering, Gary Steinke, senior contracts administrator, was recognized for his CAR submission. Steinke received $100 for his proactive effort to improve the backcharge process, resulting in more efficient operations for closing contracts on the project.

Marcy Szarama, an assistant resident engineer, turned in a CAR that resulted in technical specifications for the Wilshire/Western Station being put on the computer network. The specification is a contract document that defines all the technical requirements for construction, thus drastically reducing the need for paper copies. Specifications are now readily available to everyone who needs them. Szarama received $250 for her CAR that resulted in reduced time required to retrieve the specifications and expedited the process used to review specification information.

Patricia Bills, Area 2 field office manager, received $100 for her CAR suggesting the reduction of turnaround time for requisitioning and receiving office supplies at various field office locations. The CAT was successful in reducing the turnaround time from two weeks to three days. The CAR also led to a new process and inventory system.

George Morschauser, RMP project manager for the Metro Red Line Project, expressed his view of the ongoing CAR process in letters he sent to the recipients, "Your use of the CAR process for continuous improvement is exactly what developers of the quality improvement process envisioned. Your initiative is an example of how we can all work to continuously improve our performance."

Joel J. Sandberg, vice president and project manager of Segment 2 for the RCC, also recently commended several Parsons project employees for their excellent CARs and efforts to improve quality on the job. In a letter to Parsons-Dillingham, Sandberg praised the project for its outstanding contributions to the CAR process.