



UNITED STATES  
**NUCLEAR REGULATORY COMMISSION**

WASHINGTON, D.C. 20555-0001

January 6, 1995

Mr. Ronald A. Milner, Acting Director  
 Office of Program Management and Integration  
 Office of Civilian Radioactive Waste Management  
 U.S. Department of Energy  
 1000 Independence Avenue, S.W.  
 Washington, D.C. 20585

**SUBJECT: MINUTES OF THE OCTOBER 12, 1994, QUALITY ASSURANCE MEETING**

Dear Mr. Milner:

I am transmitting the enclosed minutes of the October 12, 1994, quality assurance (QA) meeting. The meeting was held at the U.S. Department of Energy (DOE) office in Las Vegas, Nevada. Attendees included representatives from the U.S. Nuclear Regulatory Commission, the DOE, the Nuclear Waste Technical Review Board, the DOE Office of Civilian Radioactive Waste Management's (OCRWM's) Management and Operating Contractor (M&O), the Los Alamos National Laboratory, the Lawrence Livermore National Laboratory, OCRWM's Quality Assurance Technical Support Service Contractor, Reynolds Electrical & Engineering Company, the State of Nevada, and other organizations.

At this meeting, DOE presented information on the following topics: (1) status of DOE/Nye County cooperative drilling program, (2) status of DOE fiscal year 1995 audit/surveillance schedule and proposed changes, (3) update on QA overview of site characterization field activities, (4) QA program changes, (5) status of implementation of the revised Quality Assurance Requirements and Description document, (6) status of M&O Design Package 2C, (7) update on status of DOE's triennial audit program, and (8) OCRWM use of software/computer codes for 10 CFR Parts 71 and 72 applications that have been used successfully in NRC licensing/certification processes.

The NRC presented information on the following topics: (1) status of its QA open items, (2) results of NRC observations of recent DOE audits, (3) status of NRC review of QA program changes, (4) status of the NRC letter to DOE regarding the M&O QA program, (5) planned in-field verification of the Yucca Mountain site activities, and (6) status of replacement of NRC's on-site representatives.

The State of Nevada expressed concerns regarding its perceived lack of timeliness of the NRC letter to DOE regarding the M&O QA program and the NRC's apparent lack of progress in resolving the recent NRC staff vacancies. The NRC staff responded that the decision process was nearing completion. A letter discussing NRC's concerns with the M&O QA program was sent (Bernero to Dreyfus, October 13, 1994) and persons to fill the vacant positions were formally announced by letter (Knapp to Barrett, November 8, 1994).

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If you have any questions regarding this letter or the enclosed meeting minutes, please contact Pauline Brooks of my staff at (301) 415-6604.

Sincerely,

Joseph J. Holonich, Chief  
High-Level Waste and Uranium  
Recovery Projects Branch  
Division of Waste Management  
Office of Nuclear Material Safety  
and Safeguards

Enclosure: Meeting Minutes

- cc: R. Loux, State of Nevada
- J. Meder, Nevada Legislative Counsel Bureau
- R. Nelson, YMPO
- C. Einberg, DOE/Wash, DC
- M. Murphy, Nye County, NV
- M. Baughman, Lincoln County, NV
- D. Bechtel, Clark County, NV
- D. Weigel, GAO
- P. Niedzielski-Eichner, Nye County, NV
- B. Mettam, Inyo County, CA
- V. Poe, Mineral County, NV
- W. Cameron, White Pine County, NV
- R. Williams, Lander County, NV
- L. Fiorenzi, Eureka County, NV
- J. Hoffman, Esmeralda County, NV
- C. Schank, Churchill County, NV
- L. Bradshaw, Nye County, NV
- W. Barnard, NWTRB
- R. Holden, NCAI
- E. Lowery, NIEC
- S. Brocoum, YMPO
- R. Arnold, Pahrump, NV

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JJankovich, SCDB	CHAughney, IMTB	FSturz, IMTB	DDrapkin, LSSA

\*See previous concurrence

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OFC	HLUR*	E	HLUR*	E	HLUR*	HLUR	
NAME	PPBrooks/jk		JSpraul		RJohnson	JHolonich	
DATE	12/29/94		12/29/94		12/29/94	01/6/95	

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R. Milner

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*Rec'd via letter 11/6/95*

## MINUTES OF THE OCTOBER 12, 1994, QUALITY ASSURANCE MEETING

A meeting of the staff of the U.S. Nuclear Regulatory Commission and representatives of the U.S. Department of Energy (DOE), Office of Civilian Radioactive Waste Management (OCRWM), to discuss items of mutual interest with regard to quality assurance (QA), was held at DOE offices in Las Vegas, Nevada, on October 12, 1994. Other attendees included representatives from the Nuclear Waste Technical Review Board (NWTRB), the DOE OCRWM's Management and Operating Contractor (M&O), the Los Alamos National Laboratory, the Lawrence Livermore National Laboratory, OCRWM's Quality Assurance Technical Support Service Contractor (QATSS), Reynolds Electrical & Engineering Company (REECo), the State of Nevada, and other organizations. An attendance list is included as Attachment 1. Attachment 2 is the agenda for the meeting and shows the attachment numbers for the overheads/handouts presented during the meetings.

At this meeting, DOE presented information on the following topics: (1) status of DOE/Nye County cooperative drilling program, (2) status of DOE fiscal year (FY) 95 audit/surveillance schedule and proposed changes, (3) update on QA overview of site characterization field activities, (4) QA program changes, (5) status of implementation of the revised Quality Assurance Requirements and Description document (QARD), (6) status of M&O Design Package 2C, (7) update on status of DOE's triennial audit program, and (8) OCRWM use of software/ computer codes for Parts 71 and 72 applications that have been used successfully in NRC licensing/certification processes.

The NRC presented information on the following topics: (1) status of its QA open items, (2) results of NRC observations of recent DOE audits, (3) status of NRC review of QA program changes, (4) status of the NRC letter to DOE regarding the M&O QA program (issued on October 13, 1994 - Bernero to Dreyfus), (5) planned in-field verification of the Yucca Mountain site activities, and (6) status of replacement of NRC's on-site representatives.

The State of Nevada expressed concerns regarding its perceived lack of timeliness of the NRC letter to DOE regarding the M&O QA program and the NRC's apparent lack of progress in resolving the recent NRC staff vacancies. The NRC indicated that the decision process was nearly complete and decisions would be announced soon.

The meeting began with opening remarks followed by self-introduction of the attendees. Following the introductions, NRC presented an update on the status of its QA open items. The three QA open items resulting from previous observation audits of EM-343 were closed in NRC Observation Audit Report 94-08 for EM-323 dated August 22, 1994. For the first time since QA open items have been presented at these meetings all QA open items are closed. Attachment 3 summarizes the information on open items.

NRC followed with a summary report of NRC observations of the OCRWM's Office of Quality Assurance Headquarters audit HQ-94-03 of the QA program of the Office of Waste Management High-Level Waste Division (EM-323); and YMQAD audits of REECo (YMP-94-04), Science Applications International Corporation (YMP-94-05), the USGS (YMP-94-06), and OCRWM Headquarters (YMP-94-07). The report indicated that the NRC found the audits to be useful and effective, problems were relatively minor, and corrective actions appropriate.

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Implementation of the audited QA program was found to be adequate in the programmatic areas audited. Attachment 4 contains more details.

The State of Nevada inquired as to reasons for the NRC's apparent lack of progress in expressing its concerns regarding the M&O. NRC stated that greater progress may be expected once the staff is again at full-strength and key positions in NRC's on-site office are filled. The selection process for the positions is nearing completion and is expected to be announced by November.

The status of the DOE/Nye County cooperative drilling program was then presented by DOE. Nye County has developed a draft Quality Assurance Program Manual. The NRC will receive an information copy of this document. A short job package for the drilling program is being developed by DOE and several evaluation packages (test interference, waste interference, and determination of importance) are scheduled to be completed in October. See Attachment 5.

DOE then summarized the baseline audits performed in FY 94 and those scheduled for FY 95 and listed proposed changes to the FY 95 audit schedule (Attachment 6). It was noted that the postponement of the first two audits of the M&O was designed to allow time for completion of corrective actions in the areas to be audited. At NRC's request, DOE agreed to provide a copy of the EM audit schedule indicating, to the extent possible, which audits DOE is going to observe. This will aid the NRC in planning its observation audits for FY 95.

An update on coverage of the Yucca Mountain Site Characterization field activities was provided by DOE. Field coverage was summarized in several different ways as shown in Attachment 7. To date, twenty-one surveillances of field activities of affected organizations have been completed. In FY 94, DOE completed 22 surveillances and 3 audits of on-site activities. As a result of these surveillances and audits, 22 Corrective Action Requests (CARs) were issued. Of these 22 CARs, 9 have been issued since the last QA meeting in June 1994. In addition to the CARs, 93 Nonconformance Reports in accordance with YAP 15.1Q have been initiated by the affected organizations.

Next DOE discussed proposed changes in its QA program, describing the objectives of the changes and the options considered. Attachment 8 summarizes the description. The recommended option, to consolidate the QA verification functions in the Office of Quality Assurance, is to be phased in during FY 1995. Under the new program, all affected organizations are to receive compliance audits annually and vendors will be audited triennially. It is expected that changes to DOE's Quality Assurance Requirements Document (QARD) will be minimal. It was noted in the ensuing discussion, that the effect on NRC and State observations of audits is as yet unknown. The State recommended that DOE implement the program quickly in view of NRC concerns.

NRC presented preliminary results of its ongoing review of documents which define compliance with the QARD for the organizations involved in site characterization activities at the Yucca Mountain site. So far, the applicable documentation received for four organizations have been considered: Yucca Mountain Site Characterization Office Technical and Management Support

Services, Raytheon Services Nevada, the U.S. Geological Survey, and REECo. The NRC stated that it would like to see a clear and full commitment to comply with the QARD in each signed and dated policy statement.

The current status of the Exploratory Studies Facility (ESF) Design Package 2C was discussed. Attachment 9 provides information on the applicable ESF layout, package deliverables and design status. It was noted that NRC and the State of Nevada will be kept informed of progress on the ESF.

NRC indicated that its in-field verification of Yucca Mountain field activities is still planned for FY 1995, but there has been little progress as yet.

DOE raised the question of whether it would be acceptable for OCRWM to use computer codes that have been developed for Parts 71 and 72 applications and used successfully in NRC licensing or certification processes. It was stated that, as long as it is shown that the computer codes will be used for the same things as in transportation and storage applications as in the NRC licensing process, use of the computer codes by OCRWM should be acceptable.

In closing remarks, the concerns expressed by the State of Nevada at the beginning of the meeting regarding NRC's apparent lack of progress in dealing with concerns about the M&O were reiterated and discussed. DOE expressed its appreciation for NRC coming to Las Vegas for this meeting, thus giving many more people a chance to participate.

The meeting was adjourned after the participants tentatively set the next NRC/DOE QA meeting date as January 18, 1995. It was agreed by those present that, if practical, the next meeting would be conducted by videoconference.

Pauline P. Brooks  
Pauline P. Brooks  
High-Level Waste and Uranium  
Recovery Projects Branch  
Division of Waste Management  
Office of Nuclear Material Safety  
and Safeguards

Frederick C. Rodgers  
Frederick C. Rodgers  
Regulatory Integration Branch  
Office of Civilian Radioactive  
Waste Management  
U. S. Department of Energy

### NRC-DOE QA MEETING ATTENDENCE LIST

Room 450, 101 Convention Center Drive, Las Vegas, Nevada  
October 12, 1994

NAME	ORGANIZATION	PHONE NUMBER
A. I. Arceo	QATSS	702-794-7737
Bill Belke	NRC	301-415-5874
Wayne Booth	Weston	202-646-6750
Pauline Brooks	NRC	301-415-6604
Bob Clark	DOE	202-586-1238
Jim Clark	Fluor Daniel	714-975-5676
Tom Colandria	Colandria & Associates	619-487-7510
John L. Day	LATA/LANL	505-662-9080
D. M. Franks	M&O QA	703-204-8872
W. J. Glasser	REECO	702-764-7562
Hank Greene	QATSS	702-764-7369
Phil Hammond	M&O	702-256-5153
Catherine Hampton	DOE	702-794-7973
Donald G. Horton	DOE	702-794-7675
Sam Horton	QATSS	702-794-7399
John Jankovich	NRC	301-415-7274
Kent B. Johnson	M&O	702-452-4412
Robert L. Johnson	NRC	301-415-7282
Susan Jones	DOE	702-794-7613
Robb Keele	QATSS	702-794-7442
Mary G. McDaniel	QATSS	702-794-7592
Royce Monks	LLNL	510-422-6518
Robert A. Morgan	M&O	703-204-8761
Richard Peck	QATSS	202-488-5438
Ron Peterson	DOE/EM-37/INEL	208-526-9939
R. E. Powe	QATSS	702-794-7749
Frank Randall	NWTRB	703-235-4473
Ron Ruth	M&O	702-794-7130
R. M. Sandifer	M&O	702-794-1869
Jim Schmidt	QATSS	702-794-7709
Norman T. Simms	M&O	702-794-7314
Dick Spence	DOE	702-794-7504
Jack Spraul	NRC	301-415-5615
John Therien	QATSS	702-794-7862
Les Wagner	QATSS	202-488-5420
Susan Zimmerman	State of Nevada	702-687-3744

## AGENDA

### NRC/DOE MEETING ON QUALITY ASSURANCE October 12, 1994

Introductory Remarks	A11	
QA Open Items	NRC	3*
Update on Observation of Recent DOE Audits	NRC	4
Status of DOE/Nye County Cooperative Drilling Program	DOE	5
Status of DOE FY 95 Audit/Surveillance Schedule and Any Proposed Changes	DOE	6
Update on QA Overview of Site Characterization Field Activities	DOE	7
Discussion of QA Program Changes	DOE	8
Status of Review of QA Program Changes	NRC	
Status on Implementation of the Revised QARD	DOE	
Status of M&O Design Package 2C	DOE	9
Status of NRC letter on M&O QA	NRC	
Update on Planned Field Verification of Yucca Mountain Site Activities	NRC	
Update on Status of DOE's Triennial Audit Program	DOE	
Discussion of OCWRM Use of Software/Computer Codes for Parts 71 and 72 Applications That Have Been Used Successfully in NRC Licensing/Certification Processes	DOE	
Status of NRC Replacement of On-Site Representatives	NRC	
Items of Concern to the State of Nevada	NV	
Closing Remarks	A11	
Adjournment		

\* Attachment number

**SUBJECT: STATUS OF NRC/DOE QA OPEN ITEMS - OCTOBER 12, 1994**

<b><u>ITEM</u></b>	<b><u>DESCRIPTION</u></b>	<b><u>STATUS</u></b>	<b><u>RECOMMENDATION FOR CLOSURE/REMARKS</u></b>
2-93	Response to NRC Observation Audit Report 93-04 for EM-343 dated 2/17/93	CLOSED	(1) Weakness 5.9.2 - No list of items and activities covered by the EM-343 QA program scope of work. DOE 11/18/93 letter to NRC closes CAR written by DOE. NRC will request clarification during next EM-343 audit regarding Investigative Action, Root Cause Determination, and Corrective Action to Preclude Recurrence sections of closed CAR. LIST OF ITEMS AND ACTIVITIES PREPARED (SEE SECTION 5.6 NRC OBSERVATION AUDIT REPORT 94-08 FOR EM-323 DATED AUGUST 22, 1994 BELOW)
4-93	Response to NRC Observation Surveillance Report 93-S3 for EM-343 dated 7/1/93	CLOSED	(1) Waste Acc. Product Specifications for Vitrified High-Level Waste Forms performed without procedure. NRC requests DOE inform NRC of actions taken by EM-343 to preclude this type of recurrence.  PROCEDURE (SPP 4.16) REVISED
5-93	Responses to NRC Observation of Sav,. Riv. Audit dated 6/25/93	CLOSED	(1) Deviations documented as Observations and not DCARs. (2) No list of items and activities covered by the DWPf QA program scope of work (See Item 2-93 above)  CLOSED - SEE ITEM 2-93 ABOVE

### **5.6 Closure of NRC Open Items**

There were three items being held open by the NRC staff as the result of previous observation audits of EM-343. These open items were concerned with 1) deviations from requirements found by EM-343 being reported as observations rather than being documented and tracked to completion as requests for corrective action, 2) preparation of a technical document without a covering procedure, and 3) the scope of the QA program. These open items were resolved during this audit on the bases of (correspondingly) 1) a revision to SPP 5.01 that more clearly defined observations and deviations and verification that the revised SPP 5.01 has been implemented effectively; 2) a revision to SPP 4.16 to address the preparation, review, and comment resolution of technical documents and verification of the correction of the work that resulted in the open item; and 3) a list of items and activities important to safety and/or waste isolation has been prepared, reviewed by the EM-323 Technical Review Group, and will be approved by EM-323.

**YUCCA MOUNTAIN QUALITY ASSURANCE DIVISION (YMQAD) AUDIT OF REYNOLDS ELECTRICAL & ENGINEERING COMPANY, INC.**

**INTRODUCTION**

During May 2-6, 1994, the Nuclear Regulatory Commission Division of Waste Management observed a Department of Energy (DOE), Office of Civilian Radioactive Waste Management (OCRWM), Office of Quality Assurance, Yucca Mountain Quality Assurance Division (YMQAD) audit of Reynolds Electrical & Engineering Company, Inc. (REECO). The audit, YMP-94-04, was conducted at the REECO offices in Las Vegas, Nevada, and at the Nevada Test Site (NTS) in Mercury, Nevada. The audit evaluated the adequacy and effectiveness of the REECO quality assurance (QA) program in sixteen programmatic areas. The State of Nevada was invited to send a representative to observe at this audit, but chose not to do so.

This report addresses the effectiveness of the YMQAD audit and the adequacy and implementation of the QA controls in the audited areas of the REECO QA program.

**OBJECTIVES**

The objectives of the audit by YMQAD were to determine whether the REECO QA program and its implementation meet the applicable requirements and commitments of the OCRWM Quality Assurance Requirements and Description document (QARD), and REECO's Yucca Mountain Project Management Control Procedures (MCPs) and Technical Control Procedures (TCPs).

The NRC staff's objective was to gain confidence that YMQAD and REECO are properly implementing the requirements of their QA programs in accordance with the OCRWM QARD, the REECO MCPs and TCPs, and Title 10 of the Code of Federal Regulations (10 CFR), Part 60, Subpart G (which references 10 CFR Part 50, Appendix B).

**MANAGEMENT SUMMARY AND CONCLUSIONS**

The NRC staff based its evaluation of the YMQAD audit process and the REECO QA program on direct observations of the auditors; discussions with the audit team, REECO and contractor personnel; and reviews of the audit plan, the audit checklists, and other pertinent documents. The NRC staff has determined that the YMQAD Audit YMP-94-04 was useful and effective in determining the adequacy and degree of implementation in the areas examined. The audit was organized and conducted in a thorough and professional manner. Audit team members were independent of the activities they audited. The audit team was well qualified in the QA disciplines, and its assignments and checklist items were adequately described in the audit plan.

The NRC staff agrees with the preliminary YMQAD audit team finding that implementation of the REECO QA program is adequate in the programmatic areas audited. No preliminary Corrective Action Requests (CARs) were identified by the YMQAD audit team.

YMQAD should continue to closely monitor implementation of the REECO QA program to ensure that future QA program implementation is effective. The NRC

may conduct its own independent audits at a later date to assess implementation of the REECo QA program.

#### **Summary of NRC Staff Findings**

##### **5.9.1 Observations**

The NRC staff did not identify any Observations relating to deficiencies in either the audit process or the REECo QA program.

##### **5.9.2 Good Practices**

No new good practices were identified.

##### **5.9.3 Weaknesses**

No weaknesses were identified.

**YUCCA MOUNTAIN QUALITY ASSURANCE DIVISION (YMQAD) AUDIT OF THE YMQAD TECHNICAL AND MANAGEMENT SUPPORT SERVICES CONTRACTOR (T&MSS) - SCIENCE APPLICATIONS INTERNATIONAL CORPORATION**

**INTRODUCTION**

During May 16-20, 1994, members of the Nuclear Regulatory Commission Division of Waste Management quality assurance (QA) staff observed a U.S. Department of Energy (DOE), Office of Civilian Radioactive Waste Management (OCRWM), Office of Quality Assurance, Yucca Mountain Quality Assurance Division (YMQAD) audit of the QA program of the YMQAD Technical and Management Support Services Contractor (T&MSS) - Science Applications International Corporation. The audit, YMP-94-05, was conducted at the T&MSS offices in Las Vegas and at the Yucca Mountain Site, Mercury, Nevada. The audit evaluated the adequacy and effectiveness of the T&MSS QA program in all applicable QA programmatic areas and two technical areas. The audit was the first YMQAD audit of the T&MSS since the T&MSS QA program was revised to meet the requirements of OCRWM's "Quality Assurance Requirements and Description" document (QARD - DOE/RW-0333P). The State of Nevada did not participate in this audit.

This report addresses the effectiveness of the YMQAD audit and the adequacy of implementation of QA controls in the audited areas of the T&MSS QA program.

**OBJECTIVES**

The objectives of the audit by YMQAD were to determine whether the T&MSS QA program and its implementation meet the applicable requirements and commitments of the QARD, the T&MSS Quality Assurance Program Description (QAPD), and associated implementing procedures.

The NRC staff's objective was to gain confidence that YMQAD and T&MSS are properly implementing the requirements of their QA programs in accordance with the OCRWM QARD and Title 10 of the Code of Federal Regulations (10 CFR), Part 60, Subpart G (which references 10 CFR Part 50, Appendix B).

**MANAGEMENT SUMMARY AND CONCLUSIONS**

The NRC staff has determined that YMQAD Audit YMP-94-05 was useful and effective. The audit was organized and conducted in a thorough and professional manner. Audit team members were independent of the activities they audited. The audit team was well qualified in the QA and technical disciplines, and its assignments and checklist items were adequately described in the audit plan.

The NRC staff agrees with the preliminary YMQAD audit team finding that implementation of the T&MSS QA program is adequate in the QA programmatic areas audited. One preliminary Corrective Action Request (CAR) was discussed by the YMQAD audit team at the post-audit meeting. Five other potential CARs were acceptably resolved by the T&MSS organization during the audit. Neither the preliminary nor potential CARs identified by the YMQAD audit team are significant in terms of the overall T&MSS QA program.

YMQAD should continue to closely monitor implementation of the T&MSS QA program to ensure that the deficiency identified during this audit is

corrected in a timely manner and that future QA program implementation is effective. The NRC staff expects to participate in this monitoring as observers and may perform its own independent audits at a later date to assess implementation of the T&MSS QA program.

### **Summary of NRC Staff Findings**

The NRC staff agrees with the preliminary YMQAD audit team finding that implementation of the T&MSS QA program is adequate in each of the QA programmatic areas audited. The NRC staff did not observe any deficiencies in either the audit process or the T&MSS QA program.

Several questions on the clarity of documentation arose during the audit. These were satisfactorily answered and did not adversely reflect on the QA program. However, the fact that they arose could lead one to consider whether some guidelines and/or training on the design of forms is appropriate at this time.

During the audit it was noted that the size of the T&MSS QA organization had been reduced from 16 to 6 people, including the manager and a secretary. QA personnel had been performing non-QA activities; but, with this personnel reduction, the current personnel level no longer allow this. QA Programmatic areas do not appear to be adversely affected by this reduction. However, any significant increase in work scope could overload the QA organization.

The NRC staff recognized the system that the T&MSS had established to control the "shelf life" of calibrated items of M&TE before they are put into service as a good practice. The system can significantly increase the time between calibrations without reducing the quality of the resulting data.

## YUCCA MOUNTAIN QUALITY ASSURANCE DIVISION AUDIT OF UNITED STATES GEOLOGICAL SURVEY (USGS)

### **INTRODUCTION**

During June 20-24, 1994, members of the Nuclear Regulatory Commission Division of Waste Management Quality Assurance (QA) staff observed a U.S. Department of Energy (DOE), Office of Civilian Radioactive Waste Management (OCRWM), Yucca Mountain Quality Assurance Division (YMQAD) audit of the quality assurance program of the United States Geological Survey (USGS). The audit, YMP-94-06, was conducted at the USGS offices in Denver, Colorado. The audit evaluated the adequacy and effectiveness of the USGS QA program in all applicable QA programmatic areas and three technical areas. USGS management was informed at the opening meeting that this audit may be used as a QA programmatic baseline which would permit increasing the audit period from annual to triennial with periodic focused surveillances. The State of Nevada or other interested parties did not participate in this audit.

This report addresses the effectiveness of the YMQAD audit and the adequacy of implementation of QA controls in the audited areas of the USGS QA program.

### **OBJECTIVES**

The objectives of the audit by YMQAD were to determine whether the USGS QA program and its implementation meet the applicable requirements and commitments imposed by OCRWM, through the "Quality Assurance Requirements and Description" document (QARD, DOE/RW-0333P), the USGS Quality Management Procedures (QMPs), and associated implementing procedures.

The NRC staff's objective was to gain confidence that YMQAD and USGS are properly implementing the requirements of their QA programs in accordance with the QARD and Title 10 of the Code of Federal Regulations (10 CFR), Part 60, Subpart G (which references 10 CFR Part 50, Appendix B).

### **MANAGEMENT SUMMARY AND CONCLUSIONS**

The NRC staff based its evaluation of the YMQAD audit process and the USGS QA program on direct observations of the audit team members; discussions with audit team and USGS personnel; and reviews of the audit plan, the audit checklists, and pertinent USGS documents. The NRC staff has determined that the YMQAD Audit YMP-94-06 was useful and effective. The audit was organized and conducted in a thorough and professional manner. Daily team caucuses involved in-depth discussion of difficulties and concerns and sharing of information. Daily Audit Team/USGS management meetings were held to briefly discuss potential corrective action items and concerns. Auditors having concerns were present and provided clarification as required. Audit team members were sufficiently independent of the activities they audited. The audit team was well qualified in the QA and technical disciplines, and its assignments and checklist items were adequately described in the audit plan.

The NRC staff agrees with the preliminary audit team finding that implementation of the USGS QA program is adequate in the QA programmatic areas audited except for Elements 4.0, 7.0, and 16.0 which were considered unsatisfactory due to the deficiencies identified. An evaluation of the

technical activities during the audit indicated effective implementation. Eight preliminary Corrective Action Requests (CARs) were discussed by the YMQAD audit team at the post-audit meeting. Seven other deficiencies were acceptably resolved by the USGS organization during the audit. Although none of the deficiencies identified by the YMQAD audit team are significant in terms of the overall USGS QA program, we do not believe that this audit provides a good basis for extending the evaluation period from annual to triennial.

YMQAD should continue to closely monitor implementation of the USGS QA program to ensure that the deficiencies identified during this audit are corrected in a timely manner and that future QA program implementation is effective. Surveillance of corrective action implementation should be considered prior to QA program baselining. The NRC staff expects to participate in this monitoring and may perform its own independent audits at a later date to assess implementation of the USGS QA program.

### Summary of NRC Staff Findings

#### 5.10.1 Observations

The NRC staff did not identify any observations relating to deficiencies in either the audit process or the USGS QA program. Although none of the deficiencies identified by the YMQAD audit team are significant in terms of the overall USGS QA program, we do not believe that this audit provides a good basis for extending the evaluation period from annual to triennial.

#### 5.10.2 Good Practices

The two technical specialists performed exceptionally well in auditing the technical and scientific activities.

#### 5.10.3 Weaknesses

The NRC staff noted a weakness in that the Technical Specialist conducting the audit of Study Plan 8.3.1.17.4.12 was also one of the project reviewers of this in-preparation document. While this is considered, in this case, to be a minor concern as it did not compromise the audit, it is a practice which should be avoided.

A second weakness noted by the NRC staff is that USGS procedures assign the principal investigator the responsibility of determining whether or not quality checks are performed. While some latitude needs to be given to the principal investigators, leaving the quality checking completely to their discretion appears to be contrary to a good quality program. While many of the details of when and how to conduct quality checks may be best left to the discretion of the principal investigator, it appears that the USGS procedures should be strengthened by requiring that quality checks be performed.

**OFFICE OF QUALITY ASSURANCE HEADQUARTERS AUDIT OF THE OFFICE OF WASTE MANAGEMENT HIGH-LEVEL WASTE DIVISION (EM-323)**

**INTRODUCTION**

During June 27-July 1, 1994, members of the Nuclear Regulatory Commission Division of Waste Management quality assurance (QA) staff observed a U.S. Department of Energy (DOE), Office of Civilian Radioactive Waste Management (OCRWM), Office of Quality Assurance Headquarters audit of the QA program of the Office of Waste Management High-Level Waste Division (EM-323). The audit, HQ-94-03, was conducted at the EM-323 offices in Germantown, Maryland. The audit evaluated the adequacy and effectiveness of the EM-323 QA program in all applicable QA programmatic areas. The State of Nevada did not participate in this audit.

This report addresses the effectiveness of the Headquarters audit and the adequacy of implementation of QA controls in the audited areas of the EM-323 QA program.

**OBJECTIVES**

The objectives of the audit by the Headquarters team were to determine whether the EM-323 QA program and its implementation meet the applicable requirements and commitments of the OCRWM "Quality Assurance Requirements and Description" document (QARD - DOE/RW-0333P) and the EM-323 Standard Practice Procedures (SPPs) which comprise the EM-323 QA program.

The NRC staff's objective was to gain confidence that Headquarters and EM-323 are properly implementing the requirements of their QA programs in accordance with the OCRWM QARD and Title 10 of the Code of Federal Regulations (10 CFR), Part 60, Subpart G (which references 10 CFR Part 50, Appendix B).

**MANAGEMENT SUMMARY AND CONCLUSIONS**

The NRC staff has determined that Headquarters Audit HQ-94-03 was useful and effective. The audit was organized and conducted in a thorough and professional manner. Audit team members were independent of the activities they audited. The audit team was well qualified in the QA discipline, and its assignments and checklist items were adequately described in the audit plan.

The NRC staff agrees with the preliminary Headquarters audit team finding that the overall implementation of the EM-323 QA program is indeterminate, awaiting resolution of OCRWM comments regarding the acceptability of the EM-323 QA program description to meet the OCRWM QA program requirements. Four preliminary Corrective Action Requests (CARs) were discussed by the Headquarters audit team at the post-audit meeting. Three other potential CARs were acceptably resolved by the EM-323 organization during the audit. Neither the preliminary nor potential CARs identified by the Headquarters audit team are significant in terms of the overall EM-323 QA program.

Headquarters should continue to closely monitor implementation of the EM-323 QA program to ensure that the deficiencies identified during this audit are corrected in a timely manner and that future QA program implementation is effective. The NRC staff expects to participate in this monitoring as

observers and may perform its own independent audits at a later date to assess implementation of the EM-323 QA program.

#### **Summary of NRC Staff Findings**

The NRC staff agrees with the preliminary Headquarters audit team finding that the overall implementation of the EM-323 QA program is indeterminate, awaiting resolution of OCRWM comments regarding the acceptability of the EM-323 QA program description to meet the OCRWM QA program requirements. The staff does not disagree with the effectivity findings of the audit team for the individual SPPs. The NRC staff did not observe any deficiencies in the audit process.

##### **5.7.1 Weakness**

The ATL could have presented a more deliberate and focused presentation during the post-audit meeting which would have better benefitted the EM-323 members in attendance.

##### **5.7.2 Good Practices**

The integration of the sub-team comments by the ATL at the daily audit team caucus was handled well and there was good use of the potential CAP tracking board. A complete audit notebook with checklists, SPPs, and supporting documentation was available for the observers.

## YUCCA MOUNTAIN QUALITY ASSURANCE DIVISION AUDIT OF OCRWM HEADQUARTERS

### INTRODUCTION

During July 18-22, 1994, members of the U.S. Nuclear Regulatory Commission Division of Waste Management quality assurance (QA) staff observed the U.S. Department of Energy (DOE), Office of Civilian Radioactive Waste Management (OCRWM), Yucca Mountain Quality Assurance Division (YMQAD) audit of the QA program of the OCRWM Headquarters activities, including the activities of the Energy Information Agency (EIA) which provides support to OCRWM Headquarters. The audit, YMP-94-07, was conducted at the OCRWM Headquarters in Washington, DC and at the EIA offices in Silver Spring, MD. The audit evaluated the adequacy and effectiveness of the OCRWM Headquarters QA program in all applicable QA programmatic areas. The State of Nevada did not participate in this audit.

This report addresses the effectiveness of the audit and the adequacy of implementation of QA controls in the audited areas of the OCRWM Headquarters QA program.

### OBJECTIVES

The objectives of the audit were to determine whether the OCRWM Headquarters QA program and its implementation meet the applicable requirements and commitments of the OCRWM "Quality Assurance Requirements and Description (QARD, DOE/RW-0333P)" document and associated implementing procedures.

The NRC staff's objective was to gain confidence that OCRWM Headquarters, EIA, and YMQAD are properly implementing the requirements of their QA program in accordance with the OCRWM QARD and Title 10 of the Code of Federal Regulations (10 CFR), Part 60, Subpart G (which references 10 CFR Part 50, Appendix B).

### MANAGEMENT SUMMARY AND CONCLUSIONS

The NRC staff has determined that OCRWM Headquarters Audit YMP-94-07 was useful and effective. The audit was organized and conducted in a thorough and professional manner. Audit team members were independent of the activities they audited. The audit team was well qualified in the QA discipline, and its assignments and checklist items were adequately described in the audit plan.

The NRC staff agrees with the preliminary audit team finding that the overall implementation of the OCRWM Headquarters QA program is adequate in the QA programmatic areas audited. Two preliminary Corrective Action Requests (CARs) were discussed by the audit team at the post-audit meeting. Two other potential CARs were acceptably resolved by the OCRWM Headquarters organization during the audit. Neither the preliminary CARs nor those corrected during the audit were significant in terms of the overall implementation of the OCRWM Headquarters QA program. A previous audit had found that software controls had not been implemented at the EIA. Corrective action had not been completed, so this area remained ineffective.

The OCRWM Headquarters QA program should continue to be monitored to ensure that the deficiencies identified during this audit and previous audits are corrected in a timely manner and that future QA program implementation is

effective. The NRC staff expects to participate in this monitoring as observers and may perform its own independent audits at a later date to assess implementation of the OCRWM Headquarters QA program.

#### **Summary of NRC Staff Findings**

The NRC staff agrees with the preliminary YMQAD audit team finding that the overall implementation of the OCRWM Headquarters QA program is effective, and that the applicable QA programmatic elements are effective with the exception of Software at EIA. The NRC staff did not observe any deficiencies in the audit process or in the OCRWM Headquarters QA program.

The ATL and DOE Representative for the audit noted that, with the assumption of many activities by the M&O, and with some of the OCRWM Headquarters groups moving to the Yucca Mountain Site Characterization Office, the scope of activities at OCRWM Headquarters has been significantly reduced. Subsequent audits of a similar nature should therefore require less time and/or fewer people. The NRC staff concurred with that assessment.

#### **5.7.1 Good Practice**

A good practice was noted during this audit of maintaining a status record of all potential deficiencies identified during the audit and their eventual disposition: CAR initiated, corrected during the audit, or recommendation.

## **NRC/DOE MEETING ON QUALITY ASSURANCE**

### **STATUS OF DOE/NYE COUNTY COOPERATIVE DRILLING PROGRAM**

**Nye County has developed a draft Quality Assurance Program Manual detailing the controls they will impose for site investigation activities. It was reported, by NYE county, that this manual will be approved and presented to the Nuclear Regulatory Commission for their review and comment by the week of October 17, 1994.**

**The first Borehole which Nye County plans to drill is UE-25-ONC #1 which is located between the C Well Complex and UZ-16 Borehole. A Job Package for the Nye County Drilling program is being developed by DOE and Test Interference Evaluations (TIE), Waste Interference Evaluations (WIE) and Determination of Importance Evaluations (DIE) are scheduled to be completed by the week of October 28, 1994.**

**The following RTN baseline  
audits were performed in FY 94:**

**YMP-94-03 of RSN conducted 1/24-28/94**

**YMP-94-04 of REECo conducted 5/2-6/94**

**YMP-94-05 of SAIC conducted 5/16-20/94**

**YMP-94-06 of USGS conducted 6/20-24/94**

**YMP-94-09 of SNL conducted 8/29-9/2/94**

**RTN baseline audits scheduled for  
FY 95:**

- **M&O; Las Vegas, NV & Vienna, VA; date to be determined**
- **LLNL; 2/95**
- **OCRWM YMSCO; 3/95**
- **OCRWM HQ; 4/95**
- **LANL; 5/95**

# PROPOSED CHANGES TO FY 95 AUDIT SCHEDULE

**M&O, Las Vegas 10/31-11/4/94; PB 4**

Postponed until sufficient end products are available to support audit

**RW/EM/M&O; Washington & Vienna 11/14-18/94; PB 6**

RW deleted from audit scope (covered during audit of OCRWM HQ) . EM portion will be conducted 11/7-11/94

**M&O; Las Vegas, NV; 1/23-27/95; ALL**

Consolidated to perform a full scope RTN baseline audit of the entire M&O organization at a later date.

**M&O, ORNL, EIA; VA, TN, MD; 1/23-27/95; PB 11**

Postponed until M&O implementation of the Characteristics Data Base is sufficient to support an audit of this area

# FIELD ACTIVITIES UPDATE

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October 12, 1994

# FIELD ACTIVITIES UPDATE

Surveillances of Field Activities for  
FY'94

YMQAD Staff has completed 21  
surveillances of Field Activities of  
Affected Organizations

# FIELD ACTIVITIES UPDATE

## Surveillances Completed by OQA of Field Activities

AFFECTED ORGANIZATION	TOTAL NUMBER OF SURVEILLANCES	SURVEILLANCES SINCE 6/15/94
LANL	1	0
M&O	3	1
REEC <sub>o</sub>	9	1
RSN	2	0
USGS	2	2
YMSCO	4	2
LLNL	1	0

# FIELD ACTIVITIES UPDATE

## QA Verification of Field Activities by Affected Organizations for FY'94

### Completed Audits/Surveillances

M&O	1
LANL	1
LLNL	1
REEC <sub>o</sub>	19
RSN	3
SNL	2
T&MSS	5
USGS	5

*Note: Inspections included for M&O*

# FIELD ACTIVITIES UPDATE

**Corrective Action Requests Issued and  
Closed Related to Field and Test Activities  
for FY'94**



**CARs issued - 22**



**CARs closed - 9**

# FIELD ACTIVITIES UPDATE

Corrective Action Requests Issued Related  
to Field and Test Activities  
since last presentation (6/15/94)



CARs issued - 9

# FIELD ACTIVITIES UPDATE

## Reviews Completed - FY'94

- ▶ Job Packages Reviewed - 12
- ▶ Test Planning Packages Reviewed - 14

# Status of Nonconformances

**Affected Organizations initiated  
93 Nonconformance Reports in  
accordance with YAP 15.1Q**

**25 NCRs have been initiated to  
disposition internal conditions:**

**RSN - 1**

**T&MSS - 23**

**USGS - 1**

**68 NCRs have been initiated to disposition  
nonconforming conditions that involve more  
than one Affected Organization**

# YMQAD SITE SUPPORT ACTIVITIES

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- **NCR Coordinators**
- **Conduct Surveillances**
- **Provide QA Program Support for Field and Test Activities**
- **Witness and Monitor Construction Activities**
- **Interface with NRC, State, and County Representatives**
- **Facilitate Tours**
- **Attend Surface based Testing, Construction, QA/QC, FCCB, and Sample Overview Committee Meetings**

# Purpose of Study

- **Respond to DOE-IG Concerns Regarding QA Support to AOs**
- **Review of Roles and Responsibility of OQA in Support of OCRWM Program**
- **Respond to Independent Overview Organization Concerns**
  - **NWTRB**
  - **EEI**
  - **IG**
  - **GAO**
- **Consistency With DOE Strategic Plan “Achieve GREATER Results with LESS Money”**

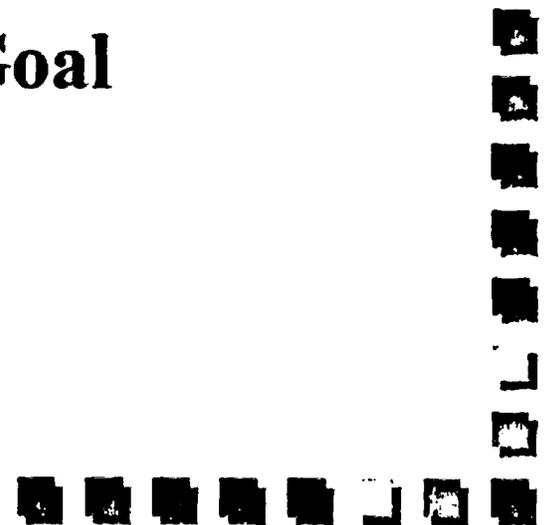


# Background

## ➤ Improvements

- **Single Description/Requirements Document (QARD)**
- **Elimination of Affected Organizations' QA Plans**
- **OQA Support Contract Consolidation**
- **Consolidated Qualified Supplier List (QSL)**

## ➤ Continued Improvement - OQA Goal



# Options Evaluated

## ➤ Option I

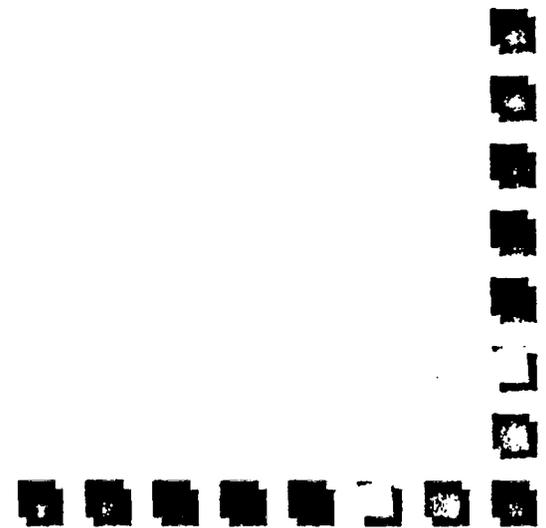
- Consolidate QA Verification Functions

## ➤ Option II & III

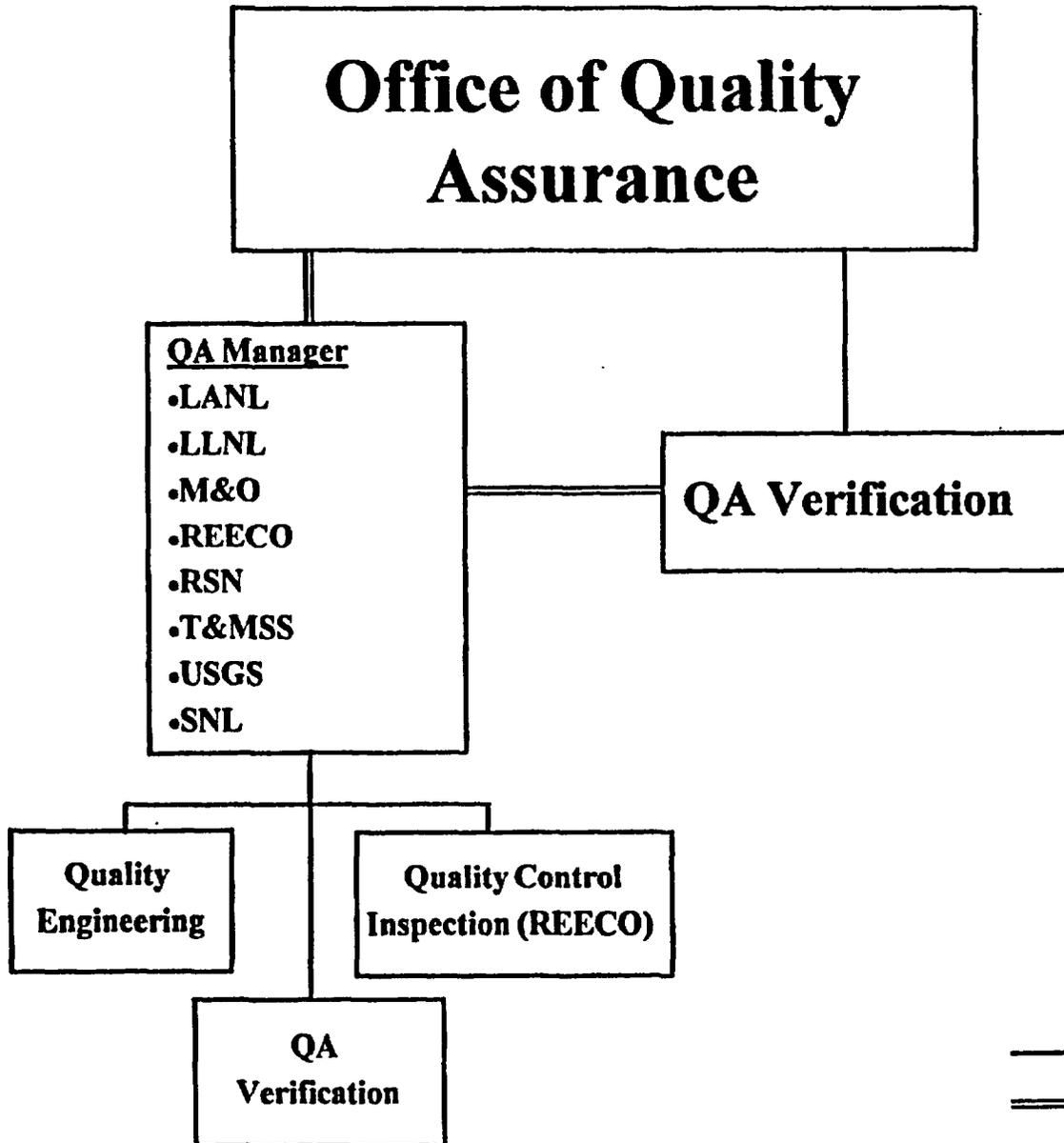
- Consolidate QA Engineering Functions

## ➤ Option IV

- Consolidate QA Management

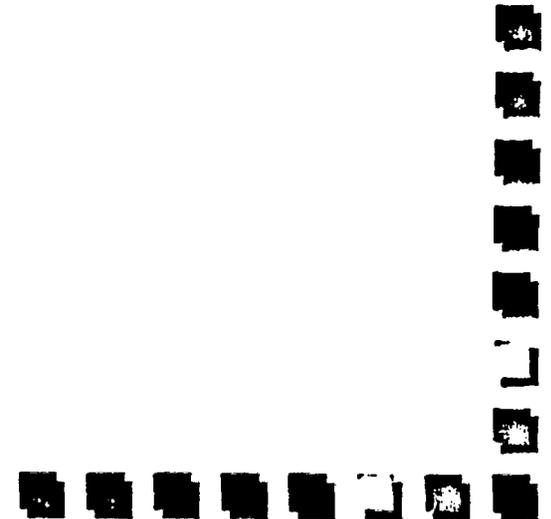


# Current



# Precedence

- **Multiple Layers of QA Verification**
- **Increases Cost with Minimal Increase in Quality**

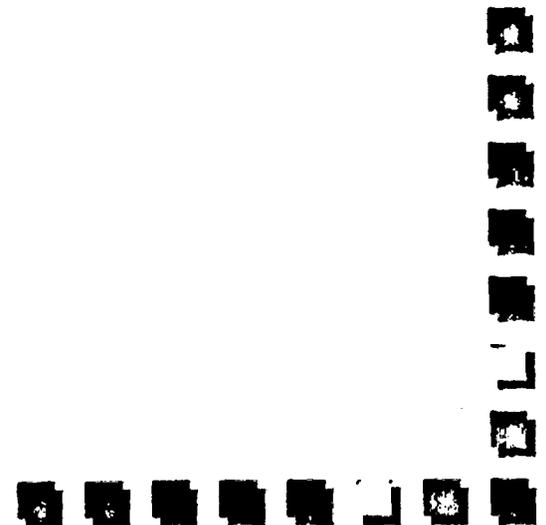


# Recommendation

## ➤ Break Precedence

- Implement Option I

## ➤ Table Options II, III and IV



# **Basis for Recommendation**

## **➤ Option I**

### **• Pros**

- ❖ Cost Savings - In Excess of \$2.3 Mil per Year**
- ❖ Eliminate Redundancy**
- ❖ Ownership**
- ❖ Macro vs Micro View**
- ❖ Consistency**
- ❖ Coordination of Verification Function**
- ❖ Consolidation**
- ❖ Independence**

### **• Cons**

- ❖ Defense in Depth Reduced**
- ❖ Minor QA Program Changes Required**



# Recommendation

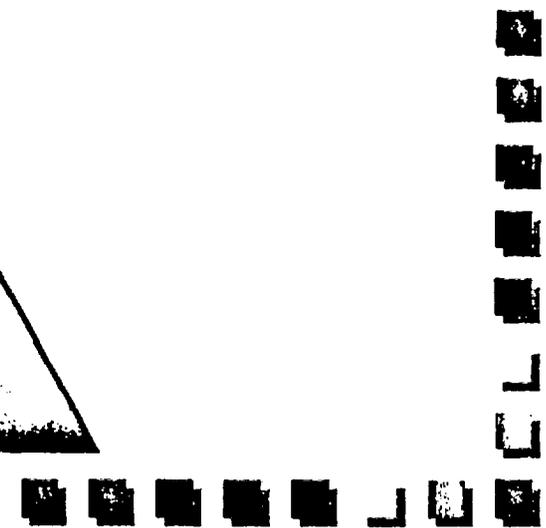
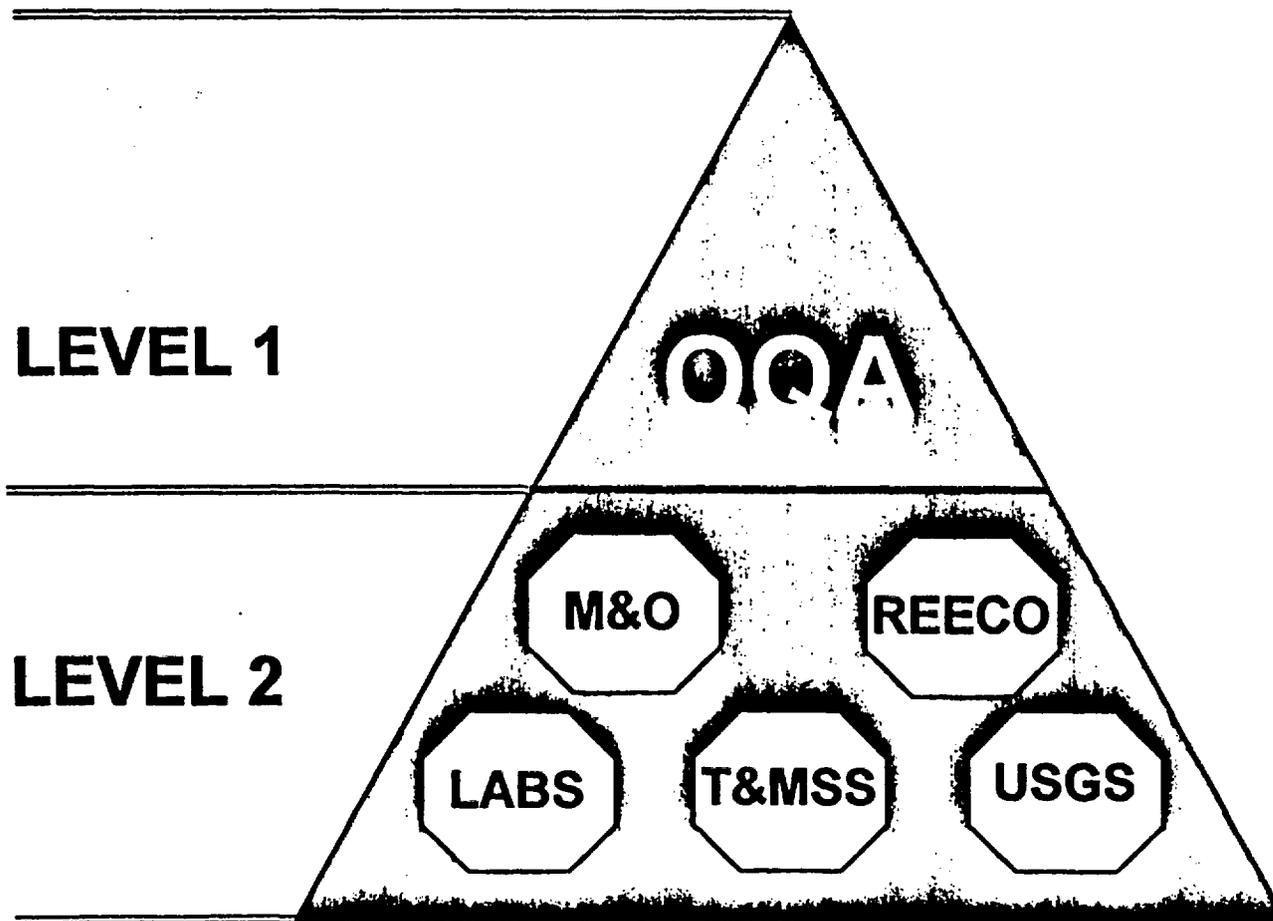
## ➤ Implement Option I

- Phase in during FY 95

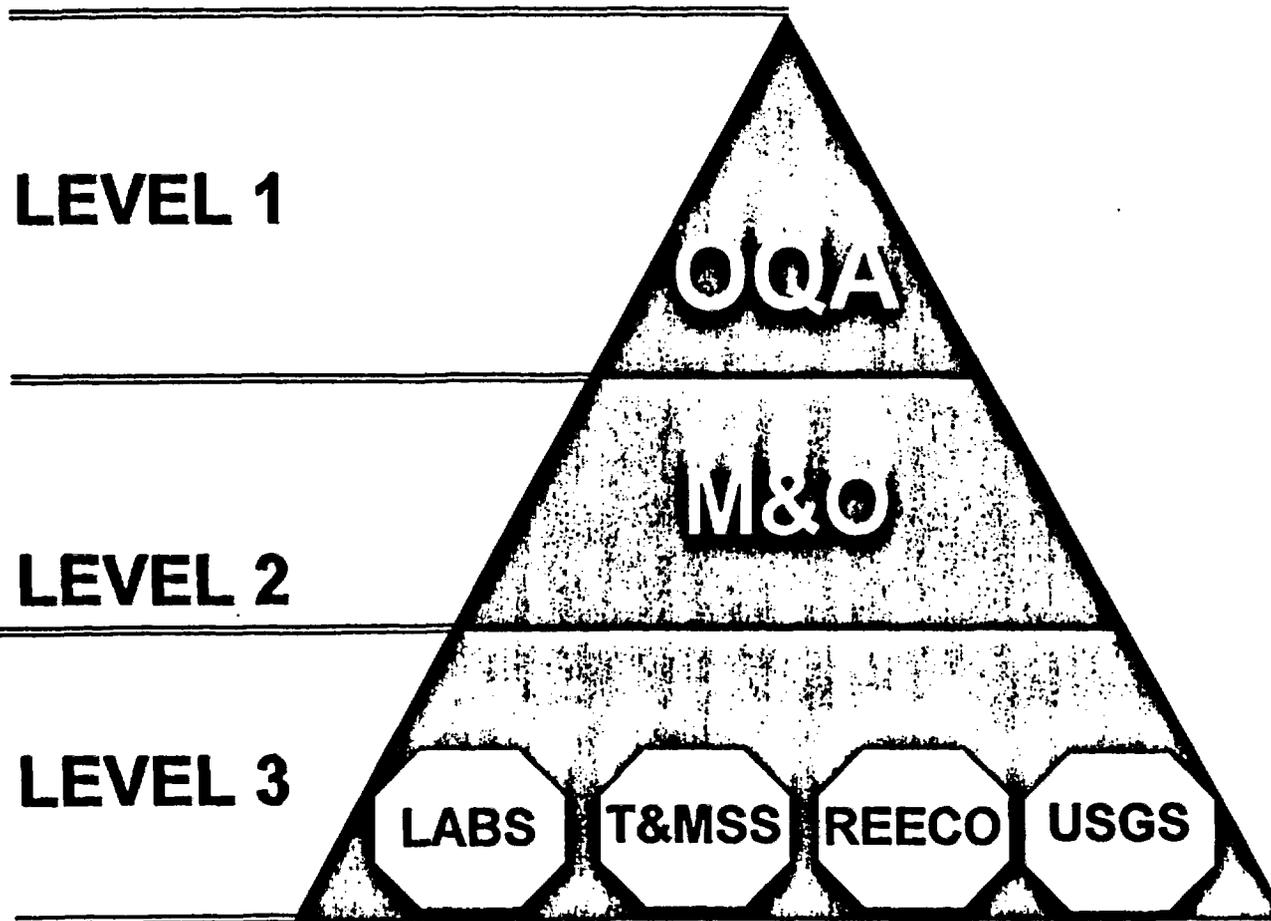
## ➤ Table Options II, III and IV



# CURRENT FLOW DOWN OF QA VERIFICATION FUNCTION



# INTEGRATED FLOW DOWN OF QA VERIFICATION FUNCTION



品質管理部門

品質管理部門

# OQA VISION OF QA VERIFICATION FUNCTION

LEVEL 1

OQA



# Implementation Schedule

- ▶ Identify Programmatic Impacts
  - OCRWM
  - AOs
  
- ▶ Develop Transition Plan
  
- ▶ Complete Transition During FY 95

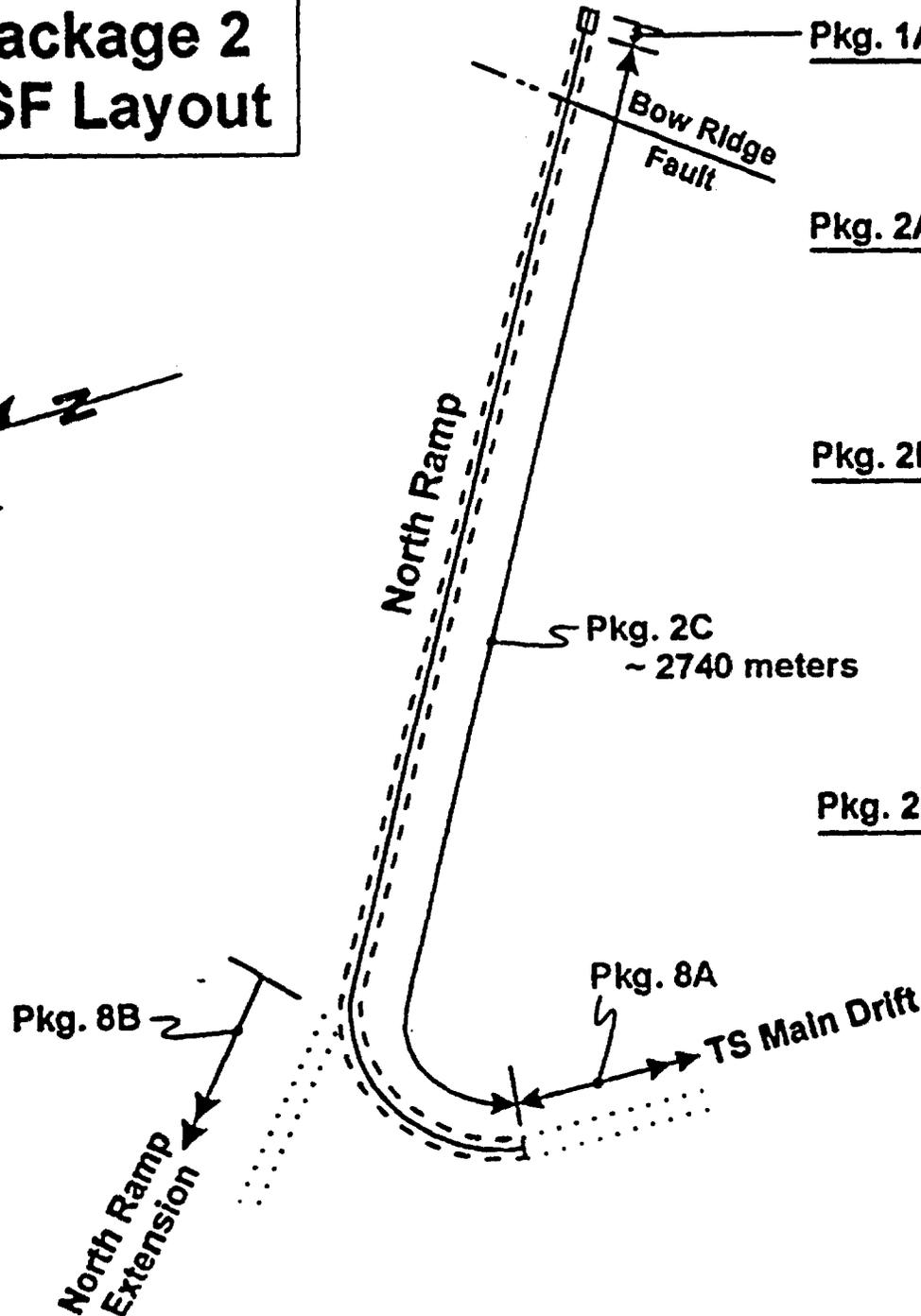
# **ESF Subsurface Design**

## **Package 2C - Current Status**

### **NUCLEAR REGULATORY COMMISSION**

**Robert M. Sandifer**  
**October 12, 1994**

# Package 2 ESF Layout



Pkg. 1A - Starter Tunnel  
with TBM Launch Chamber

Pkg. 2A - Procurement Specs

- Surface & Sub-Surface Conveyors
- Switchgear/Transformers/Power Centers

Studies/Calculations/Analysis

Pkg. 2B - Procurement Specs

- Locomotives/Rail Cars
- Concrete Inverts
- Mapping Gantry
- Ventilation System
- Sub-surface Trolley System

Studies/Calculations/Analysis

Pkg. 2C - Construction Drawings & Specs

- North Ramp Excavation
- Utilities
- Electrical & Instrumentation
- Structural Supports & Concrete
- Sub-surface Trolley System

Studies/Calculations/Analysis

# Package 2C Deliverables

<u>Discipline</u>	Number		
	<u>Drawings</u>	<u>Specs</u>	<u>Calc/ Analysis</u>
Subsurface	44 (Q = 33)	11 (Q = 6)	11 (Q = 6)
Mechanical	21	11	5
Electrical & I/C	59	2	1
Civil/Structure	17 (Q = 6)	4 (Q = 1)	8 (Q = 2)
DIE	-	-	1
<b>Totals</b>	<b>141 (Q = 39)</b>	<b>28 (Q = 7)</b>	<b>26 (Q = 8)</b>

# **Split of Package 2C to Support TBM Operation**

- **2C-1**      **Products to advance TBM 40 feet  
(TBM Checkout)**
- **2C-2**      **Products to advance TBM beyond  
40 feet**
- **2C-3**      **Products for steel sets at Bow  
Ridge**
- **2C-4**      **Balance of 2C products**

# **2C-1 Design Items for 40 Ft TBM Advance**

- **Summary of work specification (Non Q)**
- **Constructor Quality Control/Quality Assurance Specification (Q)**
- **Subsurface General Construction Specification Rev 01 (Q)**
- **4 excavation layout drawings (Q)**

## **2C-2 Design Items to Continue TBM Advance Beyond 40 Ft**

- **Summary of work specification (Non Q)**
- **Subsurface general construction specification (Q)**
- **Balance of excavation layout drawings (Q)**
- **Ground support drawings (less steel sets) and rockbolt specification (Q)**
- **Invert and rail installation specifications (Non Q)**

## **2C-3 Steel Set Design**

**Required for installation of steel sets, but not restart of TBM**

- **Steel set drawings and specification (Q)**
- **Structural support brackets drawings (Q)**

## **2C-4 Balance of Design Package**

- **Shotcrete and tunnel grouting specifications (Q)**
- **Drill and blast design (Q)**
- **Electrical systems (conveyor, power, supply, trolley system, etc.) (Non Q)**
- **Mechanical systems (conveyor, utilities, etc.) (Non Q)**

# 2C-4 Balance of Design Package

(Cont'd)

- **Structural supports (Non Q)**
- **Ventilation system (Non Q)**
- **Rock drills and assemblies specification (Non Q)**
- **Alcoves and refuge chamber (Non Q)**
- **Utilities arrangements (Non Q)**

# Current Design Status

- **Partial release of 2C Q products (2C-1) required to advance the TBM the first 40 feet (TBM checkout) is issued**
- **Remainder of 2C Q products will be issued in three parts**

	<u>Description</u>	<u>Release for 6.2 Review</u>
2C-2	Products to advance TBM beyond 40 ft.	10/12/94
2C-3	Products for steel sets at Bow Ridge	10/17/94
2C-4	Balance of 2C products	10/22/94