

U.S. NUCLEAR REGULATORY COMMISSION  
ON-SITE LICENSING REPRESENTATIVE REPORT

NUMBER OR-97-07

FOR THE REPORTING PERIOD OF JULY 1-31, 1997

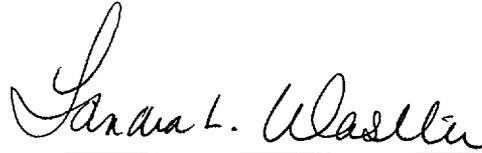


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## REPORT DETAILS

### 1.0 INTRODUCTION

The principal purpose of the On-Site Licensing Representative (OR) reports is to alert NRC staff, managers and contractors to information on the U.S. Department of Energy (DOE) programs for site characterization, repository design, performance assessment, and environmental studies that may be of use in fulfilling NRC's role during pre-licensing consultation. The principal focus of this and future OR reports will be on DOE's programs for the Exploratory Studies Facility (ESF), surface-based testing, performance assessment, data management systems and environmental studies. Relevant information includes new technical data, DOE's plans and schedules, and the status of activities to pursue site suitability and ESF development. The ORs also participate in activities associated with resolving NRC Key Technical Issues (KTI). In addition to communication of this information, any potential licensing concerns, or opinions raised in this report represent the views of the ORs and not that of NRC headquarters' staff. The reporting period for this report covers July 1-31, 1997.

### 2.0 OBJECTIVES

The function of the OR mission is to principally serve as a point of prompt informational exchange and consultation and to preliminarily identify concerns about site investigations relating to potential licensing issues. The ORs accomplish this function by communicating, consulting and identifying concerns. Communication is accomplished by exchanging information on data, plans, schedules, documents, activities and pending actions, and resolution of issues. The ORs consult with the DOE scientists, engineers, or managers with input from NRC Headquarters management on NRC policy, philosophy, and regulations. The ORs focus on such issues as quality assurance (QA), design controls, data management systems, performance assessment, and KTI resolution. A principle OR role is to identify areas in site characterization and related studies, activities, or procedures that may be of interest or concern to the NRC staff.

### 3.0 SUMMARY AND CONCLUSIONS

During this reporting period, the OR obtained clarification on issues pertaining to supplier evaluation, review and technical adequacy of technical reports, the graded approach to quality assurance, and the recent transition of the DOE quality assurance function.

#### 4.0 QUALITY ASSURANCE, ENGINEERING, AND NRC KEY TECHNICAL ISSUES

- The current listing and status of QA open items are provided in Enclosure 1.
- A meeting was held between the OR, DOE, and Management System Management and Operating Contractor (M&O) representatives to discuss any preliminary plans DOE may have regarding the draft NRC guidance released for public comment pertaining to the graded approach to quality assurance that DOE received earlier this month (Re: Federal Register Notice 62 FR 34321).

On June 25, 1997, NRC issued for public comment, drafts of four regulatory guides, three Standard Review Plan sections, and a NUREG document. This draft guidance basically addresses the use of probabilistic risk assessment in plant specific nuclear reactor activities. Parts of this guidance also address decision making for graded quality assurance. DOE indicated that this guidance will receive appropriate project staff review to determine whether this guidance may be applicable to the site characterization effort and licensing should Yucca Mountain be determined suitable for a geologic repository.

- It was noticed that a recent DOE QA Audit Report (UNR-ARP-97-17) of the M&O supplier at the University of Reno, Nevada Bureau of Mines and Geology (UNRNBMG), conducted at Reno, Nevada on May 19-21, and June 4, 1997, in Las Vegas Nevada, concluded that the QA program was found to be unsatisfactory and ineffective. The report further concluded that the Technical Specialist considered the technical work to be satisfactory if compared to industry standards. The study performed by the M&O supplier pertained to a deliverable to DOE on natural resources for Yucca Mountain. The report raised several questions from the OR QA perspective, namely:
  - o Was the data considered qualified if the work was considered satisfactory if compared to industry standards when the QA program was found to be unsatisfactory and ineffective?
  - o Was this a trend with suppliers performing natural resource studies? This question surfaced in view of an earlier DOE Audit Report (OQA-SA-96-021) of Activation Laboratories Ltd., (also performing natural resources studies) whereby the audit report concluded that their QA program was ineffective and the results of the data were considered indeterminate.

- o Was a "Stop Work" order considered?
- o The audit report notes that the study plan was abandoned. What was used in it's place and what did the procurement specifications require?
- o Since DOE has responsibility for auditing and surveilling all suppliers on a regular basis, why did this condition occur, especially when the work was almost completed?

Based on these observations, a meeting between the OR and DOE QA staff was scheduled to obtain clarification on the OR questions. DOE indicated that although the work may have been effective if compared to industry standards for the evaluation of areas for their mineral potential, the work would still be considered unqualified since the implementation of the UNRNBMG QA program was unsatisfactory and ineffective.

DOE also noted a pattern or possible trend with the implementation of procurement and management controls of those organizations being utilized as supplemental staff to the M&O. As a result of a compliance audit of Activation Laboratories Ltd. conducted July 29-30, 1996, Corrective Action Request (CAR) YM-96-C-009 was issued. The M&O corrective action to prevent recurrence was to require Activation Laboratories to become "supplemental staff" to the M&O and thereby, work under the M&O QA program procedures. This activity was never fully implemented and therefore, it was documented in part, in CAR YM-97-C-001. Additionally, Bechtel Nevada, Pacific Northwest Laboratories, Argonne National Laboratory, and University Systems, were also identified in CAR YM-97-C-001, as "supplemental" staff that should be performing work in accordance with the M&O's procedures, but were also found to be ineffectively implemented. CAR-YM-97-C-001 documents the M&O's method of procurement in which they consider suppliers as "supplemental staff" and therefore issue a contract without implementing the requirements of Quality Assurance Requirements and Description document (QARD) sections 4 & 7. It was also identified that when using this method, there was inadequate management oversight to ensure effective implementation of the necessary M&O procedures. In addition, it was determined that "supplemental staff" were not being directly supervised by the responsible M&O line management. The performance-based audit of the Natural Resources Study at UNRNBMG substantiated that the M&O procurement methods utilizing organizations as "supplemental staff" were not being adequately managed and controlled. A separate CAR was drafted (YM-97-C-003) to

address this problem but DOE determined that it would be more prudent to include this information in their evaluation of the M&O response to CAR-YM-C-001. Pertinent portions of this CAR are provided in Enclosure 2.

DOE indicated that a stop work order was considered when drafting CAR YM-97-C-003. The stop work order still remains an option should the response and corrective action to CAR YM-97-C-001 be unacceptable or ineffective.

DOE explained to the OR that there was no procurement document for this activity since it is handled as an internal M&O activity. The Study Plan was not required in the Statement of Work but identified only in the Project Planning Sheet which are the controlling documents. Study Plans are intended to be representative of an initial planning basis for management level exchanges on the scope and objectives and therefore, do not provide detailed design requirements or the methods for acquiring data.

UNRNBMG is one of the suppliers that is working under the M&O implementing procedures. The M&O's method of procurement for these types of suppliers is to consider them "supplemental staff" and issue a non-quality affecting contract without implementing the requirements of QARD sections 4 and 7. Since DOE QA is only involved with quality-affecting procurements, they were not always informed of the many suppliers being used by the M&O as "supplemental staff" suppliers. CAR YM-97-C-001 was written to document and correct this condition.

As a result of the discussions with DOE on this matter, it appears DOE has initiated sufficient corrective actions to correct and control this adverse condition. DOE will be evaluating the corrective action associated with CAR YM-97-C-001 to assure this pattern does not continue. The OR will follow this activity from a licensing perspective and

report on its progress in subsequent OR Reports and/or periodic NRC/DOE periodic QA meetings.

- As a result of DOE findings noted in DOE QA audits of the U.S. Geological Survey (USGS), NRC Observation Audit Report (OA-95-11) for the DOE Audit of USGS conducted in September 1995 (Audit YM-ARP-(95-20), listed an NRC Open Item for what appeared to be repetitive conditions pertaining to the USGS technical reviews for correctiveness, technical adequacy, completeness, accuracy, and compliance with established requirements. NRC concerns with USGS technical reviews were noted in the April/May 1996, June 1996, and

March 1997, OR Reports and tracked as NRC Open Item 7 in Enclosure 1.

In response to the NRC concerns and DOE audit findings, DOE initiated a review of three USGS documents for technical adequacy. Discussions between the OR and DOE staff indicate this review process is essentially complete and the final report may be available by late August 1997. The focus of the review appears to have been directed towards procedural and policy compliance as opposed to technical adequacy. Technical adequacy in the OR's view would be inclusive of document calculations which apparently, were not part of this evaluation. Consequently, this evaluation will not provide sufficient information or confidence, that document calculations were independently reviewed to provide confidence that these calculations are indeed accurate. Therefore, NRC Open Item 7 cannot be closed at this time. This matter is under further discussion and consideration by DOE in response to the OR's concerns.

- A meeting between the OR and DOE QA management and staff was scheduled to discuss the recent transition progress in assigning DOE QA representatives to the appropriate technical discipline and/or project activity. Enclosure 3 reflects the organization and assigned individuals for the respective assignment(s). The purpose of this function is for the assigned QA representative to interface with the appropriate technical lead early enough in a particular activity or project to assure the proper QA controls and requirements are being considered and applied in a timely manner. DOE indicated that the M&O management and supervisors have been briefed on these assignments and that the briefing for the appropriate DOE managers and technical leads is scheduled for later on in the month of July 1997.

From the OR perspective, these assignments are intended to assure a "partnership" type relationship. Its main purpose is to encourage and promote better acceptance of the QA function and implementation of the QA program requirements. It is not intended to replace the established QA auditing or surveillance process. If this arrangement is properly implemented, there should be less deficiencies surfacing during the auditing or surveillance process.

## 5.0 EXPLORATORY STUDIES FACILITY AND KEY TECHNICAL ISSUES

### Exploratory Studies Facility (ESF) Testing:

The Tunnel Boring Machine (TBM) is dismantled at the South Portal of the ESF. Geologic mapping in the ESF is complete with the exception of Alcove 7 and niche study areas. ESF construction and testing activities continue in the South Ramp and in Alcoves 5, 6, 7 and niches. Temperature, pressure, relative humidity, and air velocity measurements are being collected at several locations in the ESF. Investigators continue to collect barometric pressure, temperature, and relative humidity data in Alcove 4 and monitor an evaporation test outside Alcove 3. Tensiometers and heat-dissipation probes installed at two locations in the South Ramp, and in Alcove 3, continue to measure the dry-out of tunnel wall rock. Investigators completed dry coring 24 shallow boreholes in the Paintbrush nonwelded tuff in the North Ramp and started drilling another 41 boreholes in the South Ramp for moisture studies. This core will be analyzed for saturation, porosity, and other moisture related characteristics. There was no new testing activity conducted in Alcoves 1 and 2 over this reporting period.

#### Alcove 5 (Thermal Testing Facility Access/Observation Drift, Connecting Drift, and Heated Drift)

The installation and hook-up of heaters and monitoring equipment for this test continues. This test is designed to heat approximately 15,000 cubic meters of rock in the repository horizon to 100 degrees centigrade or greater to investigate coupled thermal-hydrologic-mechanical-chemical processes. This test is scheduled to begin in December 1997.

#### Alcove 5 (Thermomechanical Alcove)

The Single Element Heater Test started on August 26, 1996. This test is designed to heat approximately 25 cubic meters of rock to 100 degrees centigrade or greater to investigate thermomechanical properties of rock in the potential repository horizon. The objectives for the heat-up phase of this test were met and the heater was turned off on May 28, 1997 to begin the six to nine month cool-down phase of this test. On July 17, 1997, preliminary instrumentation measurements in the block indicated rock mass temperatures of approximately 47.6 and 46.4 degrees centigrade at distances of 0.33 and 1.5 meters, respectively, from the midpoint of the heater element. On July 24, 1997, the heater was removed from the Single Element Heater Test block. Final results from this test are expected in early FY 98.

#### Alcove 6 (Northern Ghost Dance Fault Alcove)

Testing in Alcove 6 is designed to investigate the hydrochemical and pneumatic properties of the Ghost Dance Fault. The excavation of this alcove was completed in June 1997, and testing of this fault via two horizontal radial boreholes continued over this period. This alcove intersects the fault at station 1+54. At this location, the fault is approximately 1 meter wide with vertical offset of less than 5 meters.

#### Alcove 7 (Southern Ghost Dance Fault Alcove)

Constructors previously excavated this alcove to station 1+34 meters and then drilled a horizontal radial borehole from the end of this alcove to locate the Ghost Dance Fault. This borehole cut two splays of the Ghost Dance Fault at depths of approximately 30 and 63 meters, respectively. The alcove was then excavated an additional 16 meters to prepare for the first phase of borehole testing across the west splay of this fault. Over this reporting period, investigators completed air permeability testing and gas sampling across the west splay of the fault. Excavation of this alcove will advance another 33 meters to prepare for borehole testing across the east splay of this fault.

#### Niche Study

DOE has initiated work to reduce the uncertainty in amount of percolation flux through the potential repository horizon at Yucca Mountain. Investigators are in the process of excavating two niches in the right rib of the ESF Main Drift between Alcoves 5 and 6. Niche #1 (station 35+66) represents an area of potential fast percolation flux and Niche #2 (station 36+55) represents an area of potential slow percolation flux, based on the results of Chlorine 36 studies. Investigators hope to characterize these two locations to identify any difference in ambient conditions in fast and slow percolation flux areas. Niche testing activities include borehole logging, pneumatic testing, tracer injection and seepage testing.

#### Niche #1:

In June 1997, this niche was excavated approximately five meters. In July 1997, investigators constructed a steel bulkhead at the niche entrance to prevent rock dry-out and drilled six radial boreholes inside the niche. These boreholes will be instrumented to monitor ambient hydrologic characteristics of the rock. Tensiometers and heat-dissipation probes were also installed to measure any dry-out of niche wall rock.

Niche #2:

In July 1997, investigators continued air permeability and cross-hole tracer testing in seven boreholes drilled in and around the face of this niche. This niche is expected to be excavated in August 1997.

Surface-Based Testing:

Fran Ridge Large Block Heater Test

The Fran Ridge Large Block Test (LBT) started on February 28, 1997, and continues its heat-up phase. The heat-up phase of this test is expected to continue through the August-September 1997 time frame. Rock mass temperatures are projected to reach approximately 140 degrees centigrade, near heaters, and 60 degrees centigrade at the periphery of the block. On July 22, 1997, the preliminary temperature measurement in the plane of the heaters was 128 degrees centigrade. The purpose of this test is to gather data to evaluate thermal-hydrologic-mechanical-chemical processes in rock similar to potential repository horizon. This test will investigate: the development of a dry-out region around the heaters and a rewetting front after cessation of boiling; the development of heat pipes and the role of fractures in the reflux of condensed water; and the effects of changes in chemistry and mineralogy and their effect on hydrology. This test will also provide information on biological organism activity and help to discriminate among alternate conceptual models. A status report on the results of this test is expected to be submitted to DOE the end August 1997.

Borehole Testing:

The location of boreholes referenced in this section is provided in Enclosure 4.

C-Hole Complex

Tracer testing at the C-Hole Complex is currently being conducted in the Bullfrog-Upper Tram interval of the Crater Flat Group for the purpose of determining hydrologic properties in the saturated zone. Conservative (non-sorbing) tracer testing continues at the C-Hole Complex. On January 9, 1997, investigators injected up to 4 kilograms of the tracer Pyridone into borehole C#1 and up to 15 kilograms of the tracer 2,6 difluorobenzoic acid (DFBA) into borehole C#2. Breakthrough of DFBA occurred on January 16, 1997. Peak concentration values of DFBA were measured on January 21, 1997. In April 1997, Pyridone tracer was detected in low concentrations (0.116 parts per billion) in water samples collected from borehole C#3. Project scientists indicate that initial breakthrough may have occurred in March 1997. Pyridone concentration values are believed to have peaked, however sampling and analyses of water pumped

at C#3 will continue through August 1997. Testing of the overlying Prow Pass Tuff of the Crater Flat Group is planned to begin by December 1997.

#### New Boreholes Planned

DOE is proceeding with plans to drill two new boreholes (WT-24 and SD-6) in the Yucca Mountain area this year.

#### WT-24:

On July 23, 1997, drilling started on WT-24. The estimated total depth of this borehole will be approximately 2900 feet. The purpose of this borehole is to find the static water table, and to learn if the large hydraulic gradient or perched water is present in this area. If perched water is present, this borehole will seek to determine the thickness, water quality, and the hydraulic characteristics of the perched water zone. The predicted stratigraphy for WT-24, along with proposed coring and logging intervals are presented in Enclosure 5. Drilling Work Program (YMP/WP/97-02) and Field Work Package (FWP-SB-97-005) describe the drilling and testing activities for this borehole.

#### SD-6:

This borehole will be located on the crest of Yucca Mountain and will penetrate the potential repository block. The start of drilling of this borehole is contingent on the completion of road upgrades, the construction of a drill pad for the LM-300, and drilling operations at WT-24. The predicted stratigraphy for SD-6 is presented in Enclosure 6. Drilling Work Program (YMP/WP/97-01) and Field Work Package (FWP-SB-97-002) describe the drilling and testing activities for this borehole.

#### Pneumatic Testing

Pneumatic data recording continues at boreholes UZ-4, UZ-5, UZ-7a, SD-12, NRG-7a, SD-7, and UZ-14. Nye County continues to record pneumatic data in NRG-4 and ONC-1.

#### OTHER ACTIVITIES

Over this reporting period, the ORs obtained following information in support of NRC KTI activities:

1. Copies of borehole water use/pumpage tables and well drillers logs for areas in Amargossa Valley were obtained from the State Engineer Office for use in borehole dilution analysis. This analysis will evaluate how variations in well construction practices (depth, screen placement, etc.), borehole spacing, and pumping rates might effect the transport of solutes from a potential repository at Yucca Mountain.

2. In response to an OR request, DOE provided the ORs with a description of the scope and acceptance criteria for enhanced work planned for risk reduction for Viability Assessment.

## 6.0 GENERAL

### 1. Appendix 7 Site Interactions

- On July 18, 1997, the OR and four representatives from NRC headquarters and the Center for Nuclear Waste Regulatory Analyses (CNWRA) visited the Yucca Mountain Site. There were no outstanding issues raised during the visit. This visit provided an orientation of Yucca Mountain site activities.
- On July 23-28, 1997, two representatives from the CNWRA visited the Yucca Mountain site area to conduct field work to examine the orientation, clustering, and relative frequency of fractures. The purpose of this activity was to prepare to independently evaluate DOE's fracture characterization data and concepts. There were no outstanding issues raised during this visit.
- On July 28, 1997, two representatives from the CNWRA visited the Yucca Mountain site to conduct a gravity survey across Fortymile Wash to assess buried structural features. The purpose of this activity was to prepare to independently evaluate DOE's three dimensional structural model of the site. There were no outstanding issues raised during this visit.

### 2. Other

- The ORs attended July 16-17, 1997, NRC/DOE Appendix 7 Meeting held in Las Vegas, NV, on DOE's 3D Geologic and Integrated Site Model of Yucca Mountain. The State of Nevada and Affected Units of Government were invited but did not attend. The agenda and subjects discussed at this meeting are provided in Enclosure 7. A summary of this meeting will be documented in a trip report by the NRC KTI Technical Lead.

- The regularly scheduled meeting with the ORs and the Yucca Mountain Site Characterization Office (YMSCO) Project Manager with Russ Dyer (Acting), YMSCO Assistant Managers, YMSCO QA representative, and various staff was

held on July 22, 1997. The agenda for the items discussed is provided in Enclosure 8.

- The ORs attended the Director's Program Review Video-Conference Meeting as presented to Mr. Lake Barrett, Acting Director of the Office of Civilian Radioactive Waste Management on July 31, 1997. The agenda for the items discussed are provided in Enclosure 9.

## 7.0 REPORTS

Over this reporting period the reports listed below were received in the NRC Las Vegas office.

### LOS ALAMOS

LA-13294-MS LOS ALAMOS NATIONAL LABORATORY YUCCA MOUNTAIN PROJECT PUBLICATIONS (1979-1996), E. R. Ruhala, S. Klein, 6/97

### NUREG

NUREG/CR-6505, Vol. 1 THE POTENTIAL FOR CRITICALITY FOLLOWING DISPOSAL OF URANIUM AT LOW-LEVEL WASTE FACILITIES, Uranium Blended with Soil, 6/97, L. Toran, C. Hopper, M. Nancy, C. Parks, J. McCarthy, B. Broadhead, V. Colten-Bradley

### SANDIA

SAND95-2183 GEOTECHNICAL CHARACTERIZATION FOR THE MAIN DRIFT OF THE EXPLORATORY STUDIES FACILITY, 7/97, D. Kicker, E. Martin, C. Brechtel, C. Stone, D. Kessel

N= WAITING NRC ACTION    O= NO FURTHER ACTION NEEDED  
D= WAITING DOE ACTION

	ISSUE	REFERENCE	STATUS
1	M&O DESIGN CONTROL PROGRAM	BERNERO TO DREYFUS LTR. 10/13/94	OPEN (N)
2	POTENTIAL OF CONSTRUCTION WORK TO IMPACT SITE CHARACTERIZATION OR THE WASTE CAPABILITY OF THE SITE	BERNERO TO DREYFUS LTR. 10/13/94	OPEN (N)
3	REQUEST FOR MORE DETAILS REGARDING QA CONCERNS AS WELL AS THE DESIGN OF THE ESF	BERNERO TO DREYFUS LTR. 10/13/94	OPEN (N)
4	LICENSE APPLICATION ANNOTATED OUTLINE (LAAO) INCOMPLETE AND EDITORIALY POOR	HOLONICH TO MILNER LTR. 8/15/95	OPEN (N)
5	LAAO CHAPTER 10 HEADINGS DO NOT REFLECT NRC GUIDANCE	HOLONICH TO MILNER LTR. 8/15/95	OPEN (N)
6	QUALITY CONTROLS APPLIED TO THE LAAO	HOLONICH TO MILNER LTR. 8/15/95	OPEN (N)
7	USGS TECHNICAL PROGRAM EFFECTIVENESS	HOLONICH TO MILNER LTR. 11/2/95	OPEN (D)
8	DATA QUALIFICATION	AUSTIN TO MILNER LTR. 3/18/96	OPEN (N)
9	LEVEL OF QUALITY OF WORK PRODUCTS	AUSTIN TO MILNER LTR. 10/24/96	OPEN (D)
10	EXEMPTION OS STATISTICAL ANALYSIS PROGRAMS FROM QA REQUIREMENTS	OBSERVER INQUIRY OF 11/12/96	CLOSED SEE #11 BELOW
11	DOE QARD SUPPLEMENT I GUIDANCE/REQUIREMENTS UNCLEAR FOR STATISTICAL ANALYSIS PROGRAM	SECTION 4.0 OF NRC ON-SITE FEB. 1997 REPORT	OPEN (D)

NRC QA ISSUES 1-10 WERE PRESENTED/DISCUSSED AT THE 12/5/96 QA MEETING.

ISSUE 11 HAS BEEN ADDED SINCE THAT MEETING, THEREBY CLOSING ISSUE 10 SINCE THIS PROBLEM INVOLVES A LARGER PROBLEM THAN THE ORIGINAL OBSERVER INQUIRY

NOTE: ALL THE ABOVE QA COMMENTS ARE DIRECTLY RELATED TOWARD IMPROVING INPUT AND ACQUISITION OF DATA FOR THE NRC KTI EFFORTS

RESOLUTION STATUS OF THE NRC OPEN QA ISSUES

<u>ISSUE</u>	<u>STATUS</u>
1,2,3	DOE responded to NRC in its September 25, 1996, letter (S. Brocoum to M. Bell). In general, the QA portion is considered acceptable based on: 1) the NRC November 14, 1994, verification exercise; 2) revisions improvements to the overall design process; 3) the recent DOE QA Transition Plan, NRC observations of DOE audits/surveillances of the design process and; 4) meeting and observations of the design process by the ORs. An Appendix 7 meeting was held on June 12, 1997, in order for the NRC Technical Lead to obtain additional review information to assist in the closure of the open items. As a result of this meeting, the NRC technical Lead was left with the impression that most of the open items remaining from the NRC in-field verification of April 1995, could now be closed (once the review of the documentation of objective evidence is completed), with perhaps one or two exceptions. Documentation for the results of this review and evaluation is being prepared by the NRC Technical Lead. The NRC representatives felt this type of Appendix-7 Meeting was very useful and productive and encourage more of this type of dialogue to close open items that surface in the future. (W. Belke QA Lead, M. Nataraja NRC Technical Lead).
4,5,6	DOE responded to NRC in its March 21, 1997, letter (S. Brocoum to J. Thoma). In this letter, DOE indicates that the LAAO development will be terminated. It is also indicated that, should a repository licensing application be recommended in the future, information from the LAAO may be used in addition to other current NRC guidance. Should DOE submit such documentation in the future, the NRC comments that surfaced during its review of the DOE LAAO submittal will be considered. At the May 12, 1997, NRC/DOE Qa Meeting, NRC stated it will document its rationale for closure of these items in a formal letter to DOE.
7	DOE has initiated a comprehensive technical review of three key USGS technical documents. Should this review yield no major technical deficiencies, NRC will close this item at a subsequent QA meeting or in the monthly OR Report.
8	In response to the NRC August 19, 1996, letter (J. Austin to S. Brocoum), DOE organized a working group for

improving the requirements and process for qualification of existing data. This was tracked by the ORs and presented at the 5/12/97 QA meeting, and will be discussed at an Appendix-7 type meeting if necessary. From the OR perspective, this revised methodology appears to be responsive to the NRC position expressed in the above August 19, 1996 letter. This methodology will be documented in the forthcoming Revision 8 to the DOE Quality Assurance and Requirements Document (QARD). Should the review by the NRC HQ staff of this revised methodology be acceptable, this open item will be closed in a subsequent QA meeting or in the monthly OR Report.

- 9 As a result of the LANL audit, DOE wrote 4 Deficiency Reports. Corrective action to close these Deficiency Reports is scheduled for completion in July 1997. If this corrective action satisfactorily addresses the NRC Open Item, it can be closed.
- 10 Closed
- 11 DOE has discussed the content of a future proposed clarification to the QARD (Revision 8) for this open item with the ORs. This was also discussed at the 5/12/97, QA meeting. From the OR perspective, this proposed QARD clarification when issued, should close this open item.

ORIGINAL  
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RADIOACTIVE WASTE MANAGEMENT  
U.S. DEPARTMENT OF ENERGY  
WASHINGTON, D.C.

8  
CAR NO. YM-97-C-001  
PAGE 1 OF 3  
QA: L

CORRECTIVE ACTION REQUEST

1 Controlling Document: QARD  
2 Related Report No.: M&O-ARC-97-09

3 Responsible Organization: M&O  
4 Discussed With: Bob Sandifer, Bob Morgan, Jack Bailey

5 Requirement:  
QARD, Rev. 5, Section 2.2.3 B states in part "The QA Program shall apply to activities related to the items on a Q-List (such as...procurement...)."  
QARD, Rev. 5, Section 4.2.1 states in part "Procurement documents issued by each Affected Organization shall include the following provisions, as applicable to the item or service being procured:  
A. A statement of the scope of work to be performed by the supplier.  
B. Technical Requirements...  
C. Quality Assurance Program Requirements..."

6 Description of Condition:  
Contrary to the above the following noncompliant conditions were noted:  
1 - Procurement of Quality Affecting services from the below identified suppliers were carried out as Non-Q in violation of the QARD requirements identified in Block #5. In discussion with M&O personnel it was discovered that the reason for this was M&O identification of the procurement as "Staff Augmentation", which is not subject to section 7 of the QARD. However, staff augmentation is only for activities or functions within the current scope of work, capability and normally performed by the M&O.  
  
University Systems (UNLV, UNR, DRI)  
University Systems Subcontractors (Activation Labs, USML, McMaster University - these independent organizations did not have M&O procurement documents which control the work, available for review)  
Kiewit  
Argonne National Laboratory  
Pacific Northwest Laboratory\* (Continued on page 3)

7 Initiator: Les Wagner Date 2/20/97  
8. Does a stop work condition exist? Yes \_\_\_ No  ; If Yes, Attach copy of S/WO  
If Yes, Check One: A  B  C

10. Recommended Actions:  
1. Perform investigative actions resulting in documented identification of all related deficiencies.  
2. Determine the impact on quality affecting activities performed under the procurement documents which were not controlled in accordance with QARD Sections 4 & 7 requirements.  
3. Provide training/instruction to M&O line management/tasks managers that if they identify an area in the QARD in which a requirement is not clear or is not understood, they need to formally request clarification from the Director, OQA to eliminate the possibility of making the wrong interpretation.

11 QA Review: [Signature] Date 2/24/97  
12 Response Due Date: 20 working days from issuance

3 Affected Organization QA Manager Issuance Approval: Donald G. Horton Signature [Signature] Date 3/3/97

2 Corrective Actions Verified: QAR Date  
23 Closure Approved by: ADDAM Date

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WASHINGTON, D.C.

8  Corrective Action Request  
 Stop Work Order

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QA: 1

RA  
6-2-97

CAR/SWO CONTINUATION PAGE

Block 6 - Description of Condition: (Continued from page 1)

\*Note that in May 1996 LLNL sent documented notification to PNL withdrawing all subcontract responsibility including the LLNL Quality Assurance Requirements Specification (QARS). Since that time, the CRWMS M&O has not completed actions to close the gap with the initiation of a "Q" Procurement Document which provide quality assurance requirements for the services supplied by this Supplier.

2 - Review of the Non-Q procurement documents for personal services of Ronald L. Bruhn and Walter J. Arabasz, PH.D. state that these two individuals are to perform work in accordance with USGS' QA Program with any additional training necessary provided by the M&O. USGS training records for these individuals revealed that they had received training in "YMP-USGS Orientation for Expert Elicitation," "Elicitation Process Training," and "Expert Elicitation" - QMP 3.16, Rev. 0. However, the Activity Evaluation covering the work to be performed by these two individuals stated this activity is subject to the requirements of the QARD as implemented by the following M&O procedures QAP-1-0, QAP-2-0, QAP-2-1, QAP-2-2, QAP-3-1, QAP-3-5, QAP-6-1, QAP-17-1, AP-16.1Q, AP-16.2Q, NLP-3-15, NLP-3-18. No M&O training records were available to indicate the additional training as identified by the Activity Evaluation covering the task "Update Preliminary Seismic Hazard Analysis for Yucca Mountain," was completed.

Note also that USGS QMP-3.16, Rev. 0 is currently under comment resolution with DOE with major problems needing to be resolved prior to DOE acceptance of the procedure.

OFFICE OF CIVILIAN  
RADIOACTIVE WASTE MANAGEMENT  
U.S. DEPARTMENT OF ENERGY  
WASHINGTON, D.C.

8  Corrective Action Request  
 Stop Work Order

NO. YM-97-C-001

PAGE \_\_\_\_\_ OF \_\_\_\_\_

QA: L

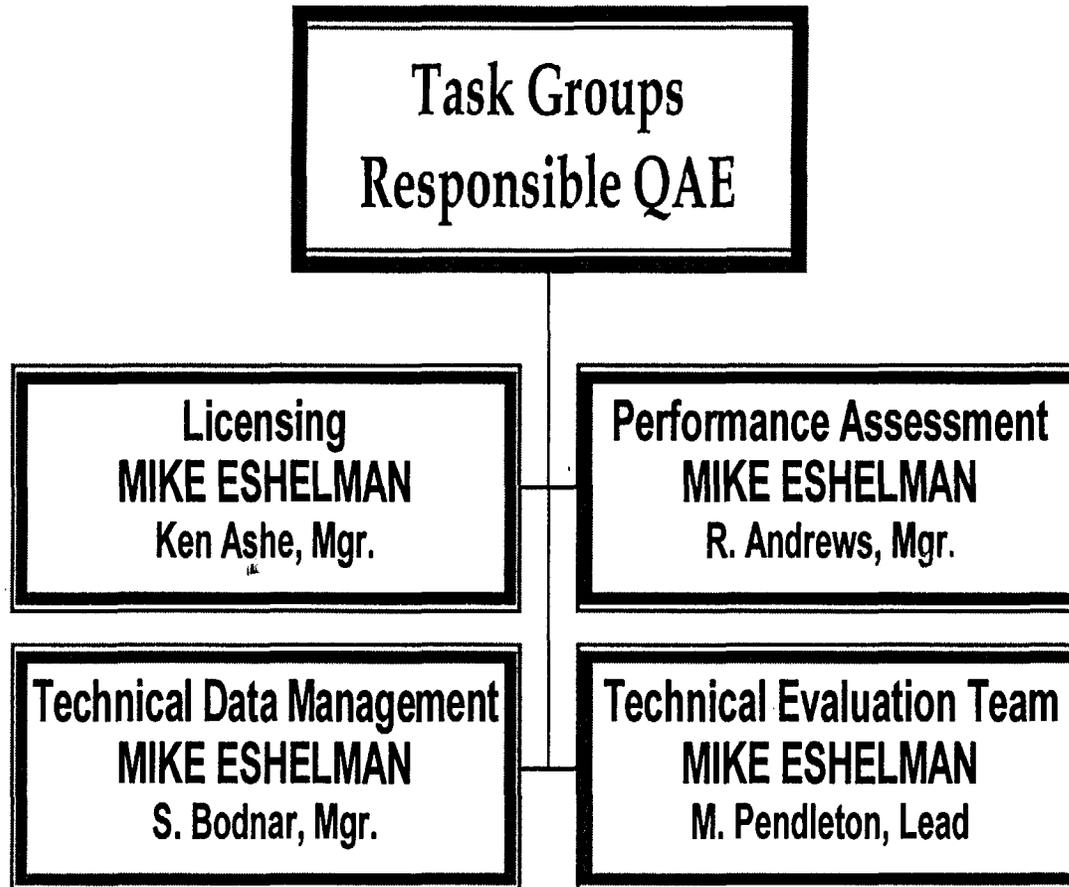
CAR/SWO CONTINUATION PAGE

Following the issuance of this CAR, OQA performed audits on the following organizations: University of Nevada, Reno (UNR); Bechtel Nevada (BN), and Pacific Northwest National Laboratory (PNNL) in which it was identified that these organizations were not working in accordance with the CRWMS M&O QA procedures as required through the CRWMS M&O procurement documents. The CRWMS M&O needs to ensure the investigative actions committed in Block 15 for "Extent of Condition and Impact", includes: 1) identifying all individuals and organizations working to the M&O procedures at the direction of Memorandum Purchase Orders, Statements of Work or Subcontracts; 2) determining which individuals or organizations are not fully implementing the M&O procedures as required; and 3) evaluating the impact on quality affecting activities for those individuals or organizations who have not adequately implemented the M&O QA procedures.

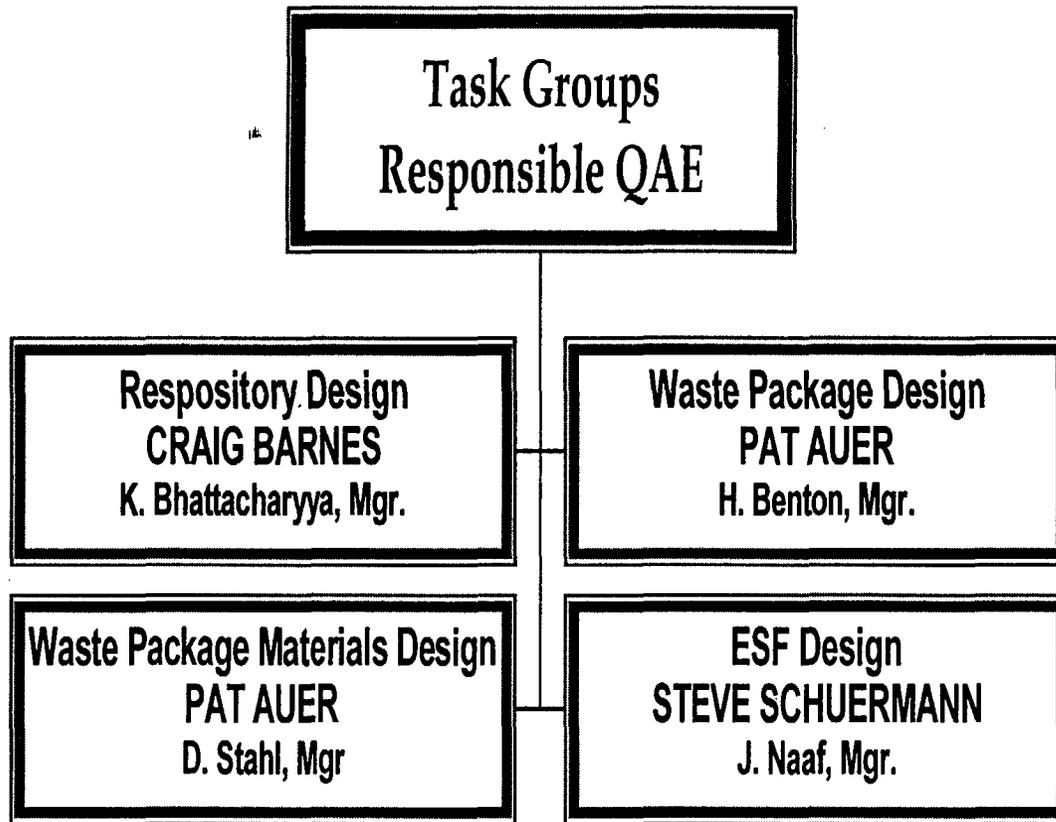
  
Lester W. Wagner, QAR

7/10/97  
Date

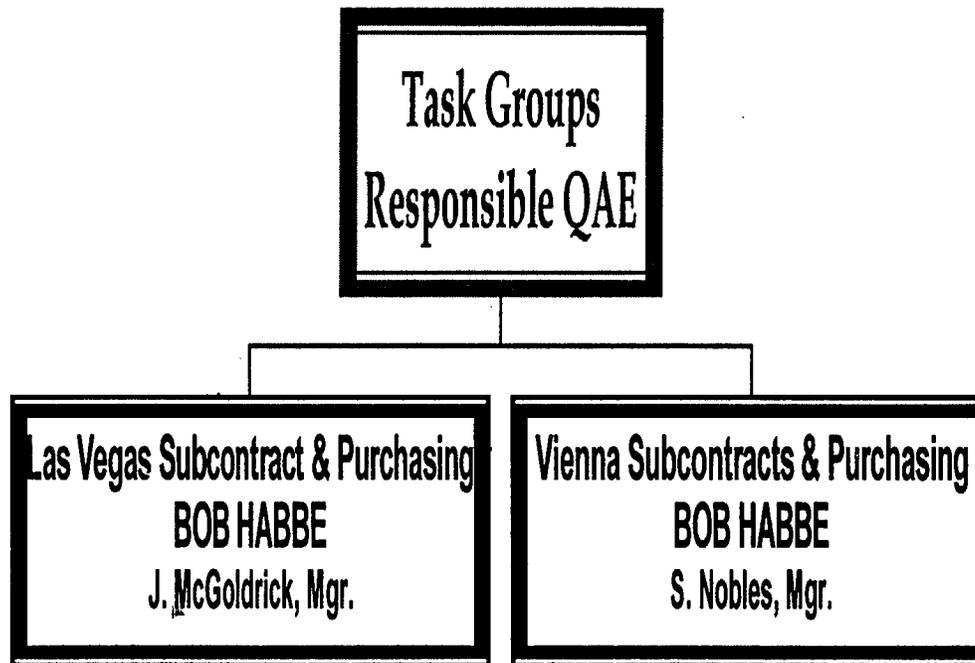
**REGULATORY OPERATIONS**  
**JEAN YOUNKER, MGR.**



**MGDS DEVELOPMENT  
ALDEN SEGREST, MGR.**



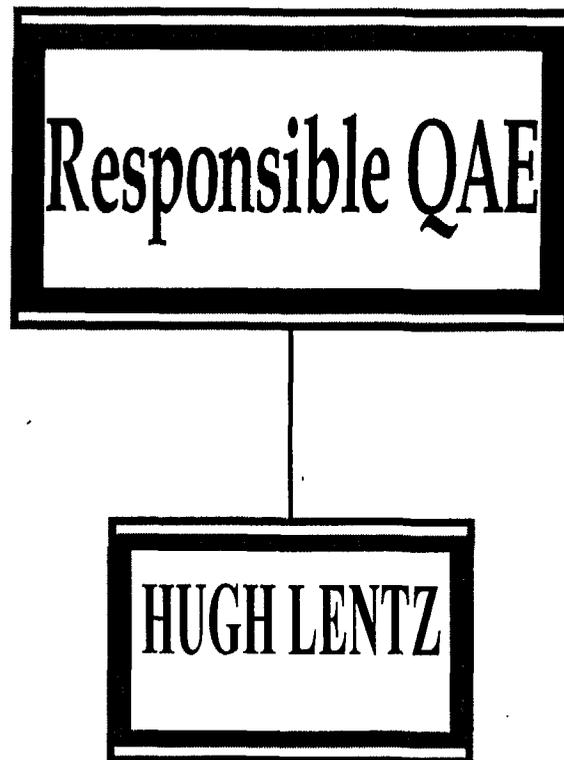
**CONTRACTS AND SUBCONTRACT**  
**E. J. McDONNELL, MGR.**



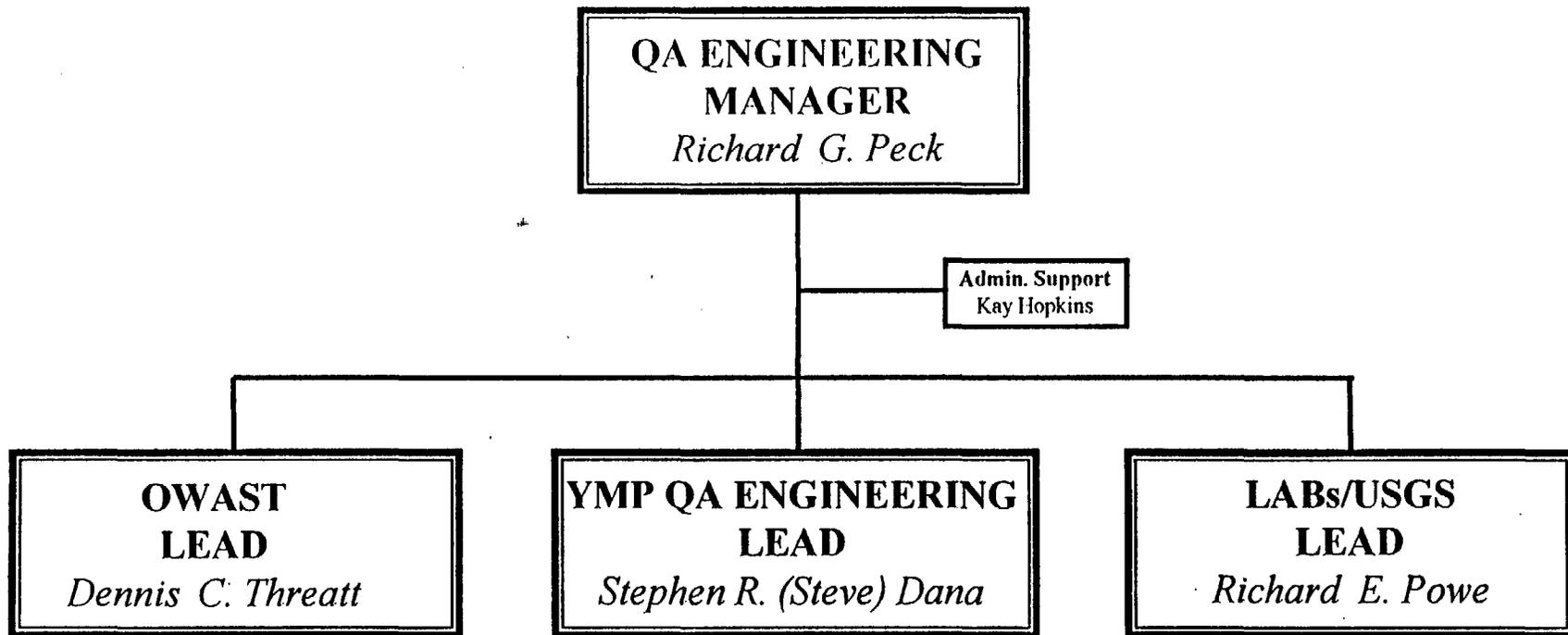
# SCIENTIFIC PROGRAM OPERATIONS

LARRY HAYES, MGR.

Responsible QAE



HUGH LENTZ



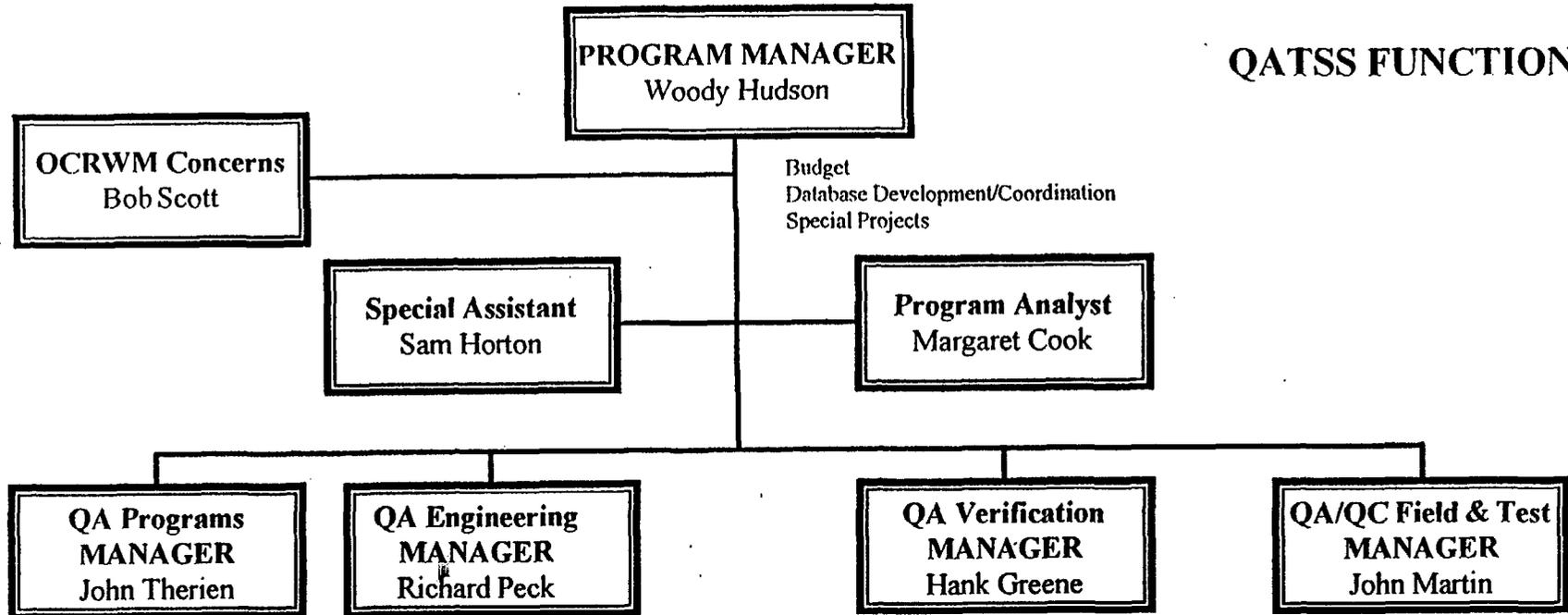
*James J. (Jim) George*  
*Gary D. Wood*

HQ Training Support - *Don Hendrix*

*Pat Auer*  
*Craig Barnes*  
*Mike Eshelman*  
*Robert Habbe*  
*Hugh Lentz*  
*Steve Schuermann*  
*Pete Smith*

LANL - *Lawrence A. (Larry) Souza*  
 LBNL - *John E. Therien (Acting)*  
 LLNL - *John E. Therien (Acting)*  
 SNL - *James F. (Jim) Graff*  
 USGS - *Ardell M. Whiteside*  
 USGS - *Donna J. Sinks*

# QATSS FUNCTIONS



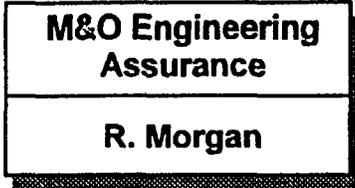
Budget  
Database Development/Coordination  
Special Projects

QARD  
QARD Interpretation  
QA Program Matrixes  
QA training support  
Procedures  
Procedure consolidation  
Surveillances

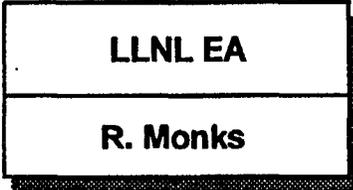
Design Reviews  
Scientific Investigation (Data Qualification,  
Expert Elicitation, Viability Assessment)  
OWAST (MPC, NSF and H-L Waste,  
Transportation, Federal Receiving Facility)  
Change Control  
Configuration Management  
Procurement  
Labs/USGS  
Technical Reviews  
Surveillances  
*Performance Assessment*  
*Licensing*

Audits  
Supplier Audits  
Surveillances  
Surveillance Coordination  
Corrective Actions  
Trending

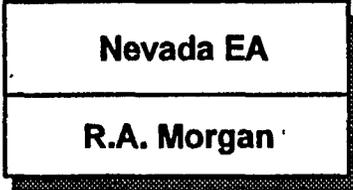
NDE  
Inspections  
Receiving  
Work Package Coordination  
Inspection Planning  
Testing  
NCR Coordination  
Field Change Control  
Surveillances



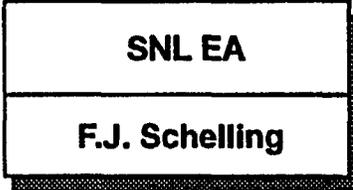
R. Williams



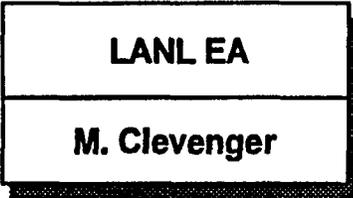
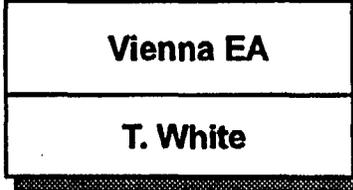
C. Brumburgh\*



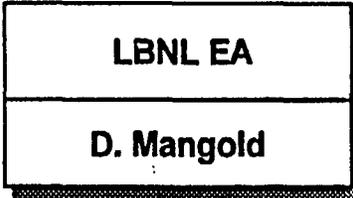
C. Bartley  
R. Berlien  
M. Franks  
W. Hunt  
R. Justice  
F. Zinkevich



R. Prize\*



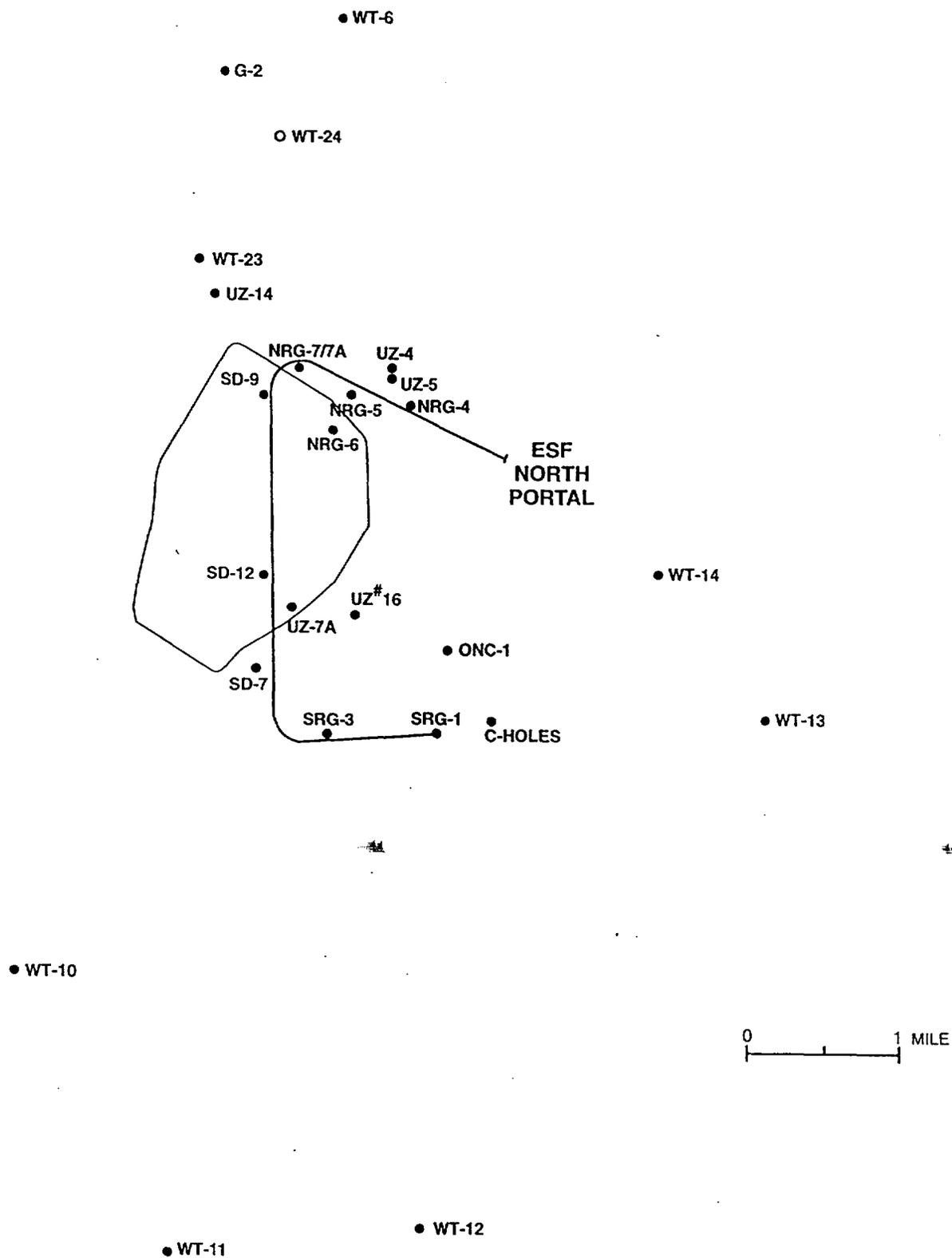
J. Young (LATA)\*  
A. Sanchez-Pope (ESS)\*  
T. Ickes (LATA)\*  
C. Martinez (LATA)\*



Vivi Fissekidou\*

\* Part Time

# Selected Borehole Locations



SELHOLES.CDR.123/9-7-95

N750000E

N760000E

SD-6

LOCATION MAP

SD-6

Map Source: Technical  
Database 7/1997  
Draft Status

SCALE 1:6000



## Description of Modeled Units and Elevations for WT-24

Description of Modeled Units	Project Stratigraphy	Thermal/ Mechanical	Approx. Elev.	Depth / thickness	Coring Interval	Sidewall Coring & Logging	Hazardous Mineral Zone
crystal-poor densely welded vitric sub-zone of Tiva Canyon Tuff		TCw	4900	0/217			
crystal-poor non- partly-welded vitric sub-zones of Tiva Cyn. Tuff	Tpcpv1-2	PTn	4683	217/24			
pre-Tiva Canyon Tuff bedded tuff	Tpbt4	PTn					
Yucca Mountain Tuff	Tpy	PTn	4659	241/204			
pre-Yucca Mountain Tuff bedded tuff	Tpbt3	PTn					
Pah Canyon Tuff	Tpp	PTn	4455	445/158			
pre-Pah Canyon Tuff bedded tuff	Tpbt2	PTn	4297	603/5			
Topopah Spring Tuff upper non-partly-welded vitric sub-zones	Tptrv2-3	PTn	4292	608/-			
Topopah " " upper densely welded vitric sub-zone	Tptrv1	TSw1	-	NP			
Topopah " " xl-rich nonlithophysal zone	Tptrn	TSw1	4283	617/176			
Topopah " " xl-rich lithophysal zone	Tptrl	TSw1	4107	793/84			
Topopah " " lithic rich member	Tptf	TSw1					
Topopah " " upper lithophysal zone	Tptpul	TSw1	4023	877/228			
Topopah " " middle nonlithophysal zone	Tptpmn	TSw2	3795	1105/15			
Topopah " " lower lithophysal zone	Tptpll	TSw2	3780	1120/312	Last 12'		
Topopah " " lower nonlithophysal zone	Tptpln	TSw2	3468	1432/47			
Topopah " " lower densely welded vitric sub-zone	Tptpv3	TSw3	3421	1479/52			
Perched water anticipated at this elevation				1520	(Total 200')		
Topopah " " non- partly-welded vitric sub-zones	Tptpv1-2	CHn1	3369	1531/21			
pre-Topopah Spring Tuff bedded tuff	Tpbt1	CHn1	3348	1552/18			
Calico Hills Formation undifferentiated	Tac	CHn1	3330	1570/1045	First 20'		
pre-Calico Hills Formation bedded tuff	Tacbt	CHn2			2455 elev.		
Prow Pass Tuff upper nonwelded zone	Tcp [unw]	CHn3	2285	2615/523	Total 150		
Prow Pass Tuff welded zone	Tcp [w]	PPw			2605 elev.		
Prow Pass Tuff lower nonwelded zone	Tcp [lnw]	CFUn					
pre-Prow Pass Tuff bedded tuff	[bt]	CFUn					
Bullfrog Tuff upper nonwelded zone	Tcb [unw]	CFUn	1762	3138/333			
Bullfrog Tuff welded zone	Tcb [w]	BFw					
Bullfrog Tuff lower nonwelded zone	Tcb [lnw]	CFMn1					
pre-Bullfrog Tuff bedded tuff	[bt]	CFMn2					
Tram Tuff undifferentiated	Tct	CFMn2 <sup>4</sup>	1429	3471			
pre-Tram Tuff bedded tuff	[bt]	n/a					
lower Tertiary units undifferentiated	n/a	n/a					
Paleozoic and older units	n/a [pz]	n/a					
Water Table			2410	2390			
Total Depth				3850'			

## Description of Modeled Units and Elevations for USW SD-6 (QA:N/A)

Description of Modeled Units	Project Stratigraphy	Thermal/ Mechanical	Approx. Elev.	Depth / thickness	Coring Interval	Sidewall Coring & Logging	Hazardous Mineral Zone
crystal-poor densely welded vitric sub-zone of Tiva Canyon Tuff	Tpcpln	TCw	4895	0 / 446	Last 26'		
crystal-poor non- partly-welded vitric sub-zones of Tiva Cyn. Tuff	Tpcpv1-2	PTn	4449	446 / 39			
pre-Tiva Canyon Tuff bedded tuff	Tpbt4	PTn					
Yucca Mountain Tuff	Tpy	PTn	4410	485 / 35			
pre-Yucca Mountain Tuff bedded tuff	Tpbt3	PTn					
Pah Canyon Tuff	Tpp	PTn					
pre-Pah Canyon Tuff bedded tuff	Tpbt2	PTn	4375	520 / 27			
Topopah Spring Tuff upper non-partly-welded vitric sub-zones	Tptrv2-3	PTn	4348	547 / 24			
Topopah ** upper densely welded vitric sub-zone	Tptrv1	TSw1	4324	571 / 10			
Topopah ** xl-rich nonlithophysal zone	Tptm	TSw1	4314	581 / 95	First 20' (Total 181')		
Topopah ** xl-rich lithophysal zone	Tptrl	TSw1	4229	666 / 12			
Topopah ** lithic rich member	Tptf	TSw1					
Topopah ** upper lithophysal zone	Tptpul	TSw1	4217	678 / 169			
Topopah ** middle nonlithophysal zone	Tptpmn	TSw2*	4048	847 / 163	(Total 70')		
Topopah ** lower lithophysal zone	Tptpll	TSw2	3885	1010 / 289	+/-35'@3672		
Topopah ** lower nonlithophysal zone	Tptpln	TSw2	3596	1299 / 175	Last 20'		
Perched water anticipated at this depth			3596	1299			
Topopah ** lower densely welded vitric sub-zone	Tptpv3	TSw3	3421	1474 / 50			
Topopah ** non- partly-welded vitric sub-zones	Tptpv1-2	CHn1	3371	1524 / 42	(Total 468')		
pre-Topopah Spring Tuff bedded tuff	Tpbt1	CHn1	3329	1566 / 4			
Calico Hills Formation undifferentiated	Tac	CHn1	3325	1570 / 182			
pre-Calico Hills Formation bedded tuff	Tacbt	CHn2					
Prow Pass Tuff upper nonwelded zone	Tcp [unw]	CHn3	3143	1752 / 399	First 170' Last 40'		
Prow Pass Tuff welded zone	Tcp [w]	PPw					
Prow Pass Tuff lower nonwelded zone	Tcp [lnw]	CFUn			(Total 50')		
pre-Prow Pass Tuff bedded tuff	[bt]	CFUn					
Bullfrog Tuff upper nonwelded zone	Tcb [unw]	CFUn	2744	2151 / 274	First 10'		
Bullfrog Tuff welded zone	Tcb [w]	BFw					
Bullfrog Tuff lower nonwelded zone	Tcb [lnw]	CFMn1					
pre-Bullfrog Tuff bedded tuff	[bt]	CFMn2					
Tram Tuff undifferentiated	Tct	CFMn2, TRW	2470	2425			
pre-Tram Tuff bedded tuff	[bt]	n/a					
lower Tertiary units undifferentiated	n/a	n/a					
Paleozoic and older units	n/a [pz]	n/a					
Water Table			2410	2485			
Total Depth				2800			

DRAFT DISCUSSION POINTS  
APPENDIX 7 VISIT: DOE'S 3D INTEGRATED SITE GEOLOGIC MODEL -  
DATA, INTERPRETATIONS, USES AND NRC FEEDBACK

WEDNESDAY, 16 JULY 97

8:00 - 8:15 Purpose and objectives of this meeting (M. Tynan, P. Justus)  
8:15 - 8:50 Overview and purpose/uses of ISM (M. Tynan)  
8:50 - 9:50 Overview of NRC/CNWRA Site Geologic Framework Model  
(L. McKague, D. Skelton)  
9:50 - 10:10 Break  
10:10 - 10:45 ISM 1, ISM 2.0, plans for ISM 3 (R. Clayton)  
10:45 - 12:00 ISM 2.0 (R. Clayton, Wm. Zelinski, C. Rautman)  
12:00 - 1:00 Lunch  
1:00 - 2:45 ISM 2.0, continued  
2:45 - 3:00 Break  
3:00 - 3:30 NRC informal feedback on ISM 2.0 (All NRC/CNWRA)  
3:30 - 4:00 DOE/NRC summary and selection of breakout-session topics (Scope:  
stratigraphic units and thicknesses, faults- Paintbrush Canyon dominant,  
potentiometric surface, matrix porosity, bulk lithophysal porosity, saturated  
hydraulic conductivity, density, thermal conductivity, zeolite and silica phases  
distributions, perched water bodies, possible ties between faults and offset of  
Paleozoic surface; ref: ISM 2.0, Rev 00, February 1997, WBS 1.2.3.9.5QA:L)  
4:00 Adjourn

THURSDAY, 17 JULY 97

8:00 - 8:15 Objectives & organization of poster/breakout sessions (M. Tynan, P. Justus)  
8:15 - 8:45 Poster sessions and discussions (DOE, NRC/CNWRA)  
8:45 - 10:00 Breakout sessions and discussions (DOE)  
10:00 - 10:20 Break  
10:20 - 12:00 Breakout sessions and discussions (DOE)  
12:00 - 1:00 Lunch  
1:00 - TBD Breakout sessions and discussions (DOE)  
TBD Additional feedback, if warranted (All NRC/CNWRA)  
by 4:00 Adjourn

AGENDA FOR JULY 22, 1997, MEETING WITH W. BARNES

- STATUS OF REVISING PROCEDURAL AGREEMENT & APPENDIX 7 MEETINGS
- STATUS DOE TECHNICAL REVIEW OF USGS TECHNICAL REPORTS
- JUNE 11, 1997 ESF MEETING
- DATA QUALIFICATION REVIEW
- NRC DRAFT REG. GUIDE/QA MEETING GRADED APPROACH
- DOE CO REPORT STATUS/ACTIONS
- JUNE 11-12, 1997, APPENDIX 7 MEETING
- STATUS NRC MOVE TO SUMMERLIN
- STATE OF NEV. LETTER TO NRC
- P. JUSTUS APPENDIX 7 MEETING 7/16-17, & SITE VISIT 7/18
- NRC SITE VISITS 6/4 (NRC et. al.), 6/7,8,9 (CNWRA et. al.), 6/10 (NRC), 6/27 (NRC)
- STATUS OF NRC/DOE OF MAY 1996, STATE OF NEVADA REPORT FROM J. SZYMANSKI THAT WAS DISCUSSED AT JAN. 1997 NWTRB MEETING IN PARUMPH
- DOE YAP 30.12 REVIEW PROCESS
- ANY FOLLOW UP RECOMMENDATIONS FROM NOV. 25, 1996, LETTER TO D. DREYFUS/L. BARRETT ON DOCUMENTATION OF DECISIONS
- STATUS PROPOSED E/W DRIFT
- AVAILABILITY OF WORKSCOPE ON "ENHANCED WORK FOR RISK REDUCTION FOR VA FOR FY 97"

(C:\WBARNES)

**AGENDA**  
 Director's Program Review  
 Thursday, July 31, 1997  
 Videoconference Rooms: M&O Contractor (Dunn Loring),  
 DOE/Forrestal, Room GF-277, and YMSCO Blue Room

<u>Time (PST)</u>	<u>Subject</u>	<u>Presenter</u>
7:00 AM - 7:05 AM	Recognition of Visitors	Conner
7:05 AM - 7:10 AM	Opening Remarks	Barrett
7:10 AM - 7:20 AM	Program Status Overview Program Performance Status	Rouso
7:20 AM - 8:20 AM	YMSCO Overview Summary of Significant YMSCO Activities In Licensing, TSPA and Engineering Significant Activities & Accomplishments - Scientific Program YMP Performance Measurement	Barnes  Brocoum  Williams Spence
8:20 AM - 8:50 AM	WAST Project Overview WAST Performance Measurement	Shelor Bokhari
8:50 AM - 9:05 AM	Quality Assurance Overview QA Performance Measurement	Horton
9:05 AM - 9:25 AM	Program Management and Administration Overview PM&A Performance Measurement	Rouso Trebules
9:25 AM - 9:35 AM	Review of the Day's Action Items	Conner
9:35 AM - 9:45 AM	Questions from Visitors	All
9:45 AM - 10:00 AM	Lunch at Seats	
10:00 AM - TBD	Executive Session	