**UNITED STATES**
**NUCLEAR REGULATORY COMMISSION**
**WASHINGTON, D.C. 20555-0001**

January 23, 2003

MEMORANDUM TO: Janet R. Schlueter, Chief
High-Level Waste Branch
Division of Waste Management
Office of Nuclear Material Safety and Safeguards

FROM: Robert M. Latta, Sr. On-Site Licensing Representative
Repository Site Section
Division of Waste Management
Office of Nuclear Material Safety and Safeguards

Jack D. Parrott, Sr. On-Site Licensing Representative
Repository Site Section
Division of Waste Management
Office of Nuclear Material Safety and Safeguards

SUBJECT U.S. NUCLEAR REGULATORY COMMISSION ON-SITE LICENSING REPRESENTATIVES' REPORT ON YUCCA MOUNTAIN PROJECT FOR NOVEMBER 1, 2002, THROUGH DECEMBER 31, 2002

The purpose of this letter is to transmit the U.S. Nuclear Regulatory Commission (NRC) On-Site Representatives' (ORs) report for the period of November 1, 2002, through December 31, 2002.

This report highlights a number of Yucca Mountain Project activities of potential interest to NRC staff. The ORs continue to respond to requests from NRC Headquarters staff to provide various documentation and feedback related to Key Technical Issues (KTIs) and their resolution. During this reporting period, the ORs continued to observe activities associated with Yucca Mountain site activities, KTIs, and audits. The ORs also attended various meetings and accompanied NRC staff on visits to Yucca Mountain.

If you have any questions on this report or its enclosures, please call Robert Latta on (702) 794-5048, or Jack Parrott on (702) 794-5047.

Enclosure: U.S. Nuclear Regulatory Commission On-Site Licensing Representatives' Report, Number OR-02-06

Memorandum to Janet R. Schlueter, Chief, dated: January 23, 2003
cc:

A. Kalt, Churchill County, NV
R. Massey, Churchill/Lander County, NV
I. Navis, Clark County, NV
E. von Tiesenhausen, Clark County, NV
G. McCorkell, Esmeralda County, NV
L. Fiorenzi, Eureka County, NV
A. Johnson, Eureka County, NV
A. Remus, Inyo County, CA
M. Yarbro, Lander County, NV
L. Stark, Lincoln County, NV
M. Baughman, Lincoln County, NV
L. Mathius, Mineral County, NV
L. Bradshaw, Nye County, NV
D. Chavez, Nye County, NV
D. Hammermeister, Nye County, NV
J. Larson, White Pine County, NV
J. Ray, NV Congressional Delegation
B. J. Gerber, NV Congressional Delegation
T. Story, NV Congressional Delegation
J. Reynoldson, NV Congressional Delegation
S. Joya, NV Congressional Delegation
K. Kirkeby, NV Congressional Delegation
R. Loux, State of NV
S. Frishman, State of NV
S. Lynch, State of NV
M. Paslov Thomas, Legislative Counsel Bureau
J. Pegues, City of Las Vegas, NV
M. Murphy, Nye County, NV
M. Corrandini, NWTRB
J. Treichel, Nuclear Waste Task Force
K. Tilges, Nuclear Issues Coordinator
M. Chu, DOE/Washington, D.C.
G. Runkle, DOE/Washington, D.C.
C. Einberg, DOE/Washington, D.C.
S. Gomberg, DOE/Washington, D.C.
N. Slater-Thompson, DOE/Washington, D.C.
W. J. Arthur, III , DOE/ORD
R. Dyer, DOE/ORD
C. Newbury, DOE/ORD
J. Ziegler, DOE/ORD
A. Gil, DOE/ORD
W. Boyle, DOE/ORD
D. Williams, DOE/ORD
D. Brown, DOE/OCRWM
S. Mellington, DOE/ORD
C. Hanlon, DOE/ORD
T. Gunter, DOE/ORD
S. Morris, DOE/ORD
K. Hess, BSC
D. Krisha, BSC
S. Cereghino, BSC
N. Williams, BSC
M. Voegele, BSC/SAIC
D. Beckman, BSC/B&A
W. Briggs, Ross, Dixon & Bell
P. Johnson, Citizen Alert

cc: (Continued)

R. Holden, NCAI

B. Helmer, Timbisha Shoshone Tribe

R. Arnold, Pahrump Paiute Tribe

R. Clark, EPA

F. Marcinowski, EPA

R. Anderson, NEI

R. McCullum, NEI

S. Kraft, NEI

J. Kessler, EPRI

D. Duncan, USGS

R. Craig, USGS

W. Booth, Engineering Svcs, LTD

E. Opelski, NQS

L. Lehman, T-REG, Inc.

S. Echols, ECG

J. Bacoch, Big Pine Paiute Tribe of the Owens Valley

R. Mike, Duckwater Shoshone Tribe

M. Smurr, BNFL, Inc.

T. Kingham, GAO

D. Feehan, GAO

E. Hiruo, Platts Nuclear Publications

G. Hernandez, Las Vegas Paiute Tribe

J. Birchim, Yomba Shoshone Tribe

R. Boland, Timbisha Shoshone Tribe

C. Meyers, Moapa Paiute Indian Tribe

R. Wilder, Fort Independence Indian Tribe

D. Vega, Bishop Paiute Indian Tribe

J. Egan, Egan & Associates, PLLC

J. Leeds, Las Vegas Indian Center

R. Saulque, Benton Paiute Indian Tribe

C. Bradley, Kaibab Band of Southern Paiutes

R. Joseph, Lone Pine Paiute-Shoshone Tribe

L. Tom, Paiute Indian Tribes of Utah

E. Smith, Chemehuevi Indian Tribe

V. McQueen, Sr., Ely Shoshone Tribe

D. Crawford, Inter-Tribal Council of NV

R. Quintero, Inter-Tribal Council of NV (Chairman, Walker River Paiute Tribe)

D. Eddy, Jr., Colorado River Indian Tribes

H. Jackson, Public Citizen

J. Wells, Western Shoshone National Council

R. Henning, BSC

I. Zabarte, Western Shoshone National Council

January 23, 2003

MEMORANDUM TO: Janet R. Schlueter, Chief
High-Level Waste Branch
Division of Waste Management
Office of Nuclear Material Safety and Safeguards

FROM: Robert M. Latta, Sr. On-Site Licensing Representative
Repository Site Section
Division of Waste Management
Office of Nuclear Material Safety and Safeguards

Jack D. Parrott, Sr. On-Site Licensing Representative
Repository Site Section
Division of Waste Management
Office of Nuclear Material Safety and Safeguards

SUBJECT U.S. NUCLEAR REGULATORY COMMISSION ON-SITE LICENSING REPRESENTATIVES' REPORT ON YUCCA MOUNTAIN PROJECT FOR NOVEMBER 1, 2002, THROUGH DECEMBER 31, 2002

The purpose of this letter is to transmit the U.S. Nuclear Regulatory Commission (NRC) On-Site Representatives' (ORs) report for the period of November 1, 2002, through December 31, 2002.

This report highlights a number of Yucca Mountain Project activities of potential interest to NRC staff. The ORs continue to respond to requests from NRC Headquarters staff to provide various documentation and feedback related to Key Technical Issues (KTIs) and their resolution. During this reporting period, the ORs continued to observe activities associated with Yucca Mountain site activities, KTIs, and audits. The ORs also attended various meetings and accompanied NRC staff on visits to Yucca Mountain.

If you have any questions on this report or its enclosures, please call Robert Latta on (702) 794-5048, or Jack Parrott on (702) 794-5047.

Enclosure: U.S. Nuclear Regulatory Commission On-Site Licensing Representatives' Report, Number OR-02-06

| Distribution: | File Center | NMSS r/f | DWM r/f | HLWB r/f | LSN | ACNW |
|---|---|---|---|---|---|---|
| PUBLIC | JFirth | LCamper | BSpitzberg | EO'Donnell | MVirgilio | DHiggs |
| RNataraja | WPatrick | JGreeves | ACampbell | JBradbury | RJohnson | MYoung |
| TMcCartin | KStablein | JTrapp | KChang | NColeman | MFederline | SFlanders |
| TMatula | | | | | | |

ADAMS ACCESSION NUMBER: ML030220400

☒ Publicly Available ☐ Non-Publicly Available ☐ Sensitive ☒ Non-Sensitive

| OFFICE | DWM/HLWB/RSS | DWM/HLWB/RSS | DWM/HLWB/RSS | DWM/HLWB/RSS |
|---|---|---|---|---|
| NAME | RLatta/vlm /s/ | JParrott /s/ | LCampbell /s/ | |
| DATE | 01/16/2003 | 01/16/2003 | 01/23/2003 | |

**OFFICIAL RECORD COPY**

U.S. NUCLEAR REGULATORY COMMISSION

ON-SITE LICENSING REPRESENTATIVES' REPORT

NUMBER OR-02-06

FOR THE REPORTING PERIOD OF NOVEMBER 1, 2002 THROUGH DECEMBER 31, 2002


**/RA/**

Robert M. Latta
Sr. On-Site Licensing Representative
High-Level Waste Branch
Division of Waste Management

**/RA/**

Jack D. Parrott
Sr. On-Site Licensing Representative
High-Level Waste Branch
Division of Waste Management


Reviewed and Approved By: ***/RA/***


Larry Campbell
Section Leader
Repository Site Section
High-Level Waste Branch
Division of Waste Management


Enclosure

TABLE OF CONTENTS

U.S. NUCLEAR REGULATORY COMMISSION
ON-SITE LICENSING REPRESENTATIVE REPORT
NUMBER OR-02-06

PAGE

## ACRONYMS AND ABBREVIATIONS

| ACRO | TITLE |
|---|---|
| AMR | Analysis and Modeling Report |
| AOI | Audit Observation Inquiry |
| AP | Administrative Procedure |
| ATC | Alluvial Tracer Complex |
| BSC | Bechtel SAIC Company, LLCs. |
| BSCQA | Bechtel SAIC Company Quality Assurance |
| CAR | Corrective Action Report |
| CNWRA | Center for Nuclear Waste Regulatory Analyses |
| DOE | U.S. Department Of Energy |
| DR | Deficiency Report |
| DWM | Division of Waste Management |
| ECRB | Enhanced Characterization of the Repository Block |
| ESF | Exploratory Studies Facility |
| EWDP | Early Warning Drilling Program |
| FY | Fiscal Year |
| ITP | Installation Test Plan |
| IV | Independent Verification |
| IV&V | Independent Verification and Validation |
| KTI | Key Technical Issue |
| LA | License Application |
| LSN | License Support Network |
| No. | Number |
| NRC | U.S. Nuclear Regulatory Commission |
| NTS | Nevada Test Site |
| NUREG | Nuclear Regulatory Guide |

## ACRONYMS AND ABBREVIATIONS - continued -

| ACRO | TITLE |
|---|---|
| OCRWM | Office of Civilian Radioactive Waste Management |
| OR | On-Site Representative |
| ORD | Office of Repository Development |
| OQA | Office of Quality Assurance |
| QA | Quality Assurance |
| QARD | Quality Assurance Requirements Description |
| SDN | Software Deficiency Notice |
| SDS | Structural Deformation and Seismicity |
| TDLs | Technical Direction Letters |
| USGS | United States Geological Survey |
| V | Verification |
| VTP | Validation Test Plan |
| YMSCO | Yucca Mountain Site Characterization Office |

## EXECUTIVE SUMMARY

OBSERVATION OF THE DEPARTMENT OF ENERGY'S OFFICE OF QUALITY ASSURANCE AUDIT OF THE OFFICE OF REPOSITORY DEVELOPMENT

The ORs observed the conduct of the Department of Energy's (DOE's) Office of Quality Assurance (OQA) audit YMSCO-ARC-02-12 of the Office of Repository Development (ORD). The purpose of this compliance based audit was to evaluate the effectiveness of the quality assurance (QA) program implementation and to review the status of previously identified Office of Civilian Radioactive Waste Management (OCRWM) deficiency documents to determine the adequacy of completed corrective actions. Within the areas examined, DOE's audit team identified one deficiency. This deficiency concerned inadequate procedures describing the process that allowed the redirection of contract effort and the interpretation of technical work activities through Technical Direction Letters (TDLs).

Based on the observation of the subject audit and the review of related program documents, the ORs concurred with the audit teams findings as presented at the post audit conference. Although one deficiency was identified, the ORs noted areas of improvement related to ORD's implementation of the applicable QA program elements. The ORs identified one Audit Observation Inquiry (AOI) regarding the need for OQA to ensure that the procedure development and review process includes a documented evaluation to verify compliance with the requirements of the projects Quality Assurance Requirements Description (QARD.)

OR OPEN ITEM 02-01, INCLUSION OF OCWRM CONCERNS PROGRAM FINAL REPORT ISSUES IN THE CORRECTIVE ACTION RESOLUTION PROCESS

On June 12, 2001, DOE issued Corrective Action Report (CAR) Number (No.) BSC-01-C-002, which identified recurring software deficiencies related to inadequate procedural compliance, lack of supplemental procedures, and ineffective training for software development. This CAR was initiated by the OCRWM Concerns Program as a result of 15 documented concerns.

During this reporting period, the ORs reviewed the documentation associated with CAR No. BSC-01-C-002. The ORs determined that the issues presented by the OCRWM Concerns Program had been evaluated by OQA to ensure that each item cited in the report had been properly addressed in the CAR and included in the amended response. Therefore, OR Open Item 02-01, which was identified to track this issue is closed.

DEFERRAL OF YUCCA MOUNTAIN SITE CHARACTERIZATION OFFICE QA AUDIT

As documented in NRC Report OR-02-04, dated October 29, 2002, the ORs reviewed the project justification for deferring the annual compliance audit of the Yucca Mountain Site Characterization Office (YMSCO), currently the ORD. Based on the results of these reviews, the ORs determined that the justification for delaying the scheduled audit of the YMSCO organization did not appear to establish an adequate basis for deferral of a required audit activity. OR Open Item 02-08 was initiated to track the resolution of this issue.

During this reporting period, the ORs reviewed the corrective actions and verification closure records for DR No. OQA (O)-03-D-012, which had been initiated through the OCRWM Concerns Program to address this nonconforming condition. Based on the review of the final response to this DR and the associated verification activities, the ORs determined that appropriate actions had been taken to preclude recurrence. Therefore, OR Open Item 02-08, is closed.

OBSERVATION OF BECHTEL SAIC COMPANY, LLC (BSC) INDEPENDENT SOFTWARE

VALIDATION SURVEILLANCE, (BSCQA)-02-S-16

As documented in NRC Report OR-02-05, dated December 18, 2002, the ORs observed the conduct of Surveillance BSCQA-02-S-16. As a result of this surveillance, it was determined that the current independent verification and validation (IV&V) process is not effective in ensuring the repeatability of baseline software. In response to this item, BSC issued a letter on November 22, 2002, to DOE, which described the project's approach for re-testing of legacy software. Legacy codes are those that were qualified in accordance with the requirements of AP-SI.1Q, "Software Management," Revision 3, ICN 4 or earlier versions (i.e., prior to May 17, 2002). As described in the letter, legacy codes used in License Application (LA) supporting technical products will be re-tested using a newly developed IV&V process. The letter also contains an express commitment, from BSC to DOE, to complete the re-testing of LA supporting legacy codes by the date of certification of the License Support Network (LSN).

Although the letter describes the projects general approach to address the re-testing of legacy software, the specific aspects of the newly developed IV&V process have not been established and it is uncertain if the legacy codes will undergo IV&V prior to use. Additionally, at the conclusion of the reporting period, the evaluation of the codes that did not pass the surveillance protocol had not been completed and there did not appear to be a defined process in place to address the codes that do not pass the new IV&V process. Therefore, pending the resolution of these issues, OR Open Item 02-11, associated with the resolution of this issue, will remain open.

REVIEW OF PROJECT CONTROLS FOR QUALIFICATION OF UNQUALIFIED DATA

As documented in NRC Report OR-02-05, dated December 18, 2002, the ORs reviewed the administrative controls defined in procedure AP-SIII.2Q, "Qualification of Unqualified Data and the Documentation of Rationale for Accepted Data," Revision 1, ICN 0. The purpose of this procedure is to establish the process used by the ORD for the qualification of unqualified data. This procedure also establishes the process for the documentation of the rationale for considering data to be "accepted." As a result of this review, a potential area of noncompliance was identified in that contrary to the requirements of the QARD Supplement III 2.4.C, procedure AP-SIII.2Q inappropriately allows for the use of unqualified data, directly relied upon to address safety and waste isolation issues, without being appropriately qualified in accordance with one or a combination of the methods defined in NUREG-1298 and the QARD Supplement III 2.4.C.

The ORs determined that DOE is currently performing a comprehensive evaluation of the data management process and that improved program controls are anticipated. As envisioned by DOE, the enhanced data management process would address the apparent procedural discrepancy between AP-SIII.2Q and the requirements of the QARD Supplement III 2.4.C. However, at the conclusion of this reporting period, DOE had not completed their assessment of the project's data management process and the issues related to the apparent procedural noncompliance associated with procedure AP-SIII.2Q had not been effectively addressed. Therefore, the associated OR Open Item 02-12 will remain open.

## REVIEW OF CAR No. BSC-02-C-01, TRAINING AND QUALIFICATION OF SUBCONTRACTOR PERSONNEL PERFORMING QUALITY AFFECTING WORK

On November 27, 2001, CAR No. BSC-02-C-01 was issued as a result of multiple examples involving the failure of project management to establish the necessary training requirements matrix and job functions for subcontractor personnel. As documented in NRC Report OR-05-02, dated December 18, 2002, the ORs reviewed the current status of corrective and preventive actions associated with CAR No. BSC-02-C-01, to assess the effectiveness of these initiatives.

Based on the reviews within this area, it was concluded that despite repeated attempts, during the last year, to resolve the deficiencies associated with the training and qualification of sub-contractor personnel performing quality affecting work, CAR No. BSC-02-C-01 and other related DRs remain open. At the conclusion of this reporting period, CAR No. BSC-02-C-01, which is over 400 days old, remained open and project efforts related to the resolution of the related DRs were not complete. Accordingly, OR Open Item 02-13, will remain open.

## GENERAL SITE ISSUES

As of December 19, 2002, the site regained access to well water for potable use through a joint stipulation by DOE and the State of Nevada.

## EXPLORATORY STUDIES FACILITY TESTING

The drift-scale thermal test continues its cool-down phase. Transient liquid water with unusual properties was detected in one borehole in the thermal test area earlier this year. DOE attributes the presence of this anomalous water to the reaction of condensation within the borehole with introduced materials, in the form of neoprene packers. Periodic video inspection of the drift-scale thermal test canisters has also revealed a small stain on the seventh canister. This canister stain has appeared since the initiation of the cool-down phase. DOE is investigating the source of the anomalous borehole water and the cause of the canister stain.

During this reporting period, DOE has also started preparations for Phase I of a ground support test in the south ramp of the Exploratory Studies Facility (ESF).

## ENHANCED CHARACTERIZATION OF REPOSITORY BLOCK TESTING

The bulkhead at the near end of the sealed portion of the enhanced characterization of the repository block (ECRB) cross drift (Station 17+63) was opened on June 24, 2002, to allow access for geotechnical testing and sampling between Stations 17+63 and 22+01. Entries beyond the bulkhead at Station 22+01 to make observations and replace equipment are scheduled for January and February 2003.

## SURFACE-BASED FIELD TESTING

The drilling of the Nye County Early Warning Drilling Program (EWDP) Phase IV wells started in October 2002, and continued through this reporting period.

## LABORATORY STUDIES

The natural convection test and the breached drip-shield test at the Atlas facility have been formally concluded. There are currently no on-going tests at the facility. The tests on radionuclide transport in saturated and nonsaturated non-welded tuff at Atomic Energy of Canada, Ltd., laboratories have also been concluded.

## UPCOMING NEW TESTS AND STUDIES

Geotechnical sampling and tests are planned for the Pena Blanca, Mexico, site (natural analog program). Also planned for Fiscal Year (FY) 2003 are deep-water well drilling in Inyo County, California, construction of Alcove 10 in the ECRB, and further use of the Atlas facility for a thermal management dispersion test. The initiation of planned new tests and studies is uncertain at this time because of the lack of an FY 2003 appropriation for the Yucca Mountain Project.

## REPORT DETAILS

INTRODUCTION

The principal purpose of the OR report is to inform NRC managers, staff, and contractors of information on the DOE programs in repository design, performance assessment, performance confirmation, and environmental studies, that may be useful in fulfilling NRC's role during pre-licensing consultation. The primary focus of this and future OR reports will be on DOE's programs for subsurface- and 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 the LA. The ORs also take part in activities associated with resolving NRC KTIs. This report covers the period of November 1, 2002, through December 31, 2002.

OBJECTIVES

The OR mission is to serve principally as a point of prompt information exchange and to identify preliminary concerns with site investigations and potential licensing issues. The ORs carry out this role by gathering and evaluating information, identifying concerns, and raising more significant issues to NRC management's attention. Communication with DOE is accomplished by exchanging information on data, plans, schedules, documents, activities and pending actions, and resolution of issues. The ORs interact with DOE scientists, engineers, and managers, with input from NRC Headquarters management, regarding the implementation of NRC policy, programs, and regulations. The ORs also focus on such issues as QA, design controls, data management systems, performance assessment, and KTI resolution. A primary OR role is to identify areas in site studies, activities, or procedures that may be of interest or concern to the NRC staff.

## 1 QA AND ENGINEERING

### 1.1 Observation of the Department of Energy's Office of Quality Assurance Audit of the Office of Repository Development

During this reporting period, the ORs observed the conduct of DOE's OQA audit YMSCO-ARC-02-12 of the ORD. The purpose of this compliance based audit was to evaluate the effectiveness of the QA program implementation and to review the status of previously identified Office of Civilian Radioactive Waste Management (OCRWM) deficiency documents to determine the adequacy of completed corrective actions. Areas that were evaluated against the criteria contained in the projects QARD included: Organization; QA Program; Procurement Control and Implementing Documents; Control of Purchased Items and Services; Corrective Action; Document Control; QA Records; and Control of the Electronic Management of Data.

The ORs observed various aspects of the audit and reviewed selected records and documentation associated with training and qualification of personnel, self-assessment results, procurement document controls, implementing procedures, and corrective actions. The ORs also participated in the daily team meetings and the Audit Team Leader/ORD management meetings. Based on the results of these observations, the ORs determined that the audit team was well prepared and technically qualified. The audit checklist was comprehensive and effectively organized and the audit team performed a thorough evaluation.

Within the areas examined, DOE's audit team identified one potential deficiency, one observation, two recommendations, and four program strengths. The potential deficiency concerned inadequate procedures describing the process that allowed the redirection of contract effort and the interpretation of technical work activities through TDLs. As determined by the audit team, the applicable Line Procedure (LP)-4.1Q, "Procurement Action," does not provide for the use of TDLs to redirect technical work nor did it require the same level of control as the procurement document that described the original scope of work. The audit team's observation involved the identification of an incorrect accession reference number, which was corrected during the audit. The recommendations pertained to training records and procedural enhancements and the program strengths included improved self-assessment capabilities, effective use of procurement checklists, and the self-identification of conditions adverse to quality.

As a result of the audit, the ORs identified one AOI, YMSCO-ARC-02-12-01. Specifically, the ORs noted that to assure compliance with the requirements of the QARD, OQA had previously performed programmatic reviews during the procedure development and revision process in accordance with AP-5.1 "Procedure Development." However, subsequent to DOE's decision to transfer procedure ownership from OCRWM to BSC, OQA no longer performs this verification function, and it was not clear how OQA will continue to assure that future procedure revisions would meet the requirements of the QARD. Although this issue was not directly related to the audit scope, it was determined that the generic implications of this item were relevant to DOE's implementation of the QA Program. Therefore, pending the development of an appropriate process to ensure that comprehensive programmatic reviews are performed during the procedure development and revision process, this item is identified as an AOI.

Based on the observation of the subject audit and the review of related program documents, the ORs concurred with the audit team findings as presented at the post audit conference. Not withstanding the potential deficiency that was identified, the ORs noted areas of improvement related to ORD's implementation of the applicable QA program elements. These areas of improvement included greater management attention and support for correcting conditions adverse to quality; enhanced self-assessment capabilities; emphasis on verification of training and qualification for personnel; and better self-identification capabilities. Within the areas examined, one AOI was identified regarding the need for OQA to ensure that the procedure development and review process includes a documented evaluation to verify compliance with the requirements of the QARD.

1.2 <u>OR Open Item 02-01, Inclusion of OCRWM Concerns Program Final Report Issues in the Corrective Action Resolution Process</u>

As previously documented in NRC OR Report No. 01-02, dated April 9, 2002, the effective implementation of corrective action for deficiencies related to software development and configuration control has been a continuing problem for the Yucca Mountain Project. On June 12, 2001, DOE issued CAR No. BSC-01-C-02, which identified recurring software deficiencies related to inadequate procedural compliance, lack of supplemental procedures, and ineffective training for software development. This CAR was initiated by the OCRWM Concerns Program as a result of 15 documented concerns. The NRC staff reviewed this CAR to determine if the requirements of AP -16.1Q, "Management of Conditions Adverse to Quality," were properly implemented and to discern if the DR/CAR program appropriately addressed the identified deficiencies and software concerns.

During the review of the issues documented in CAR No. BSC-01-C-02, the NRC staff reviewed the information related to the original concerns identified through the OCRWM Concerns Program that provide the basis for the details included in CAR No. BSC-01-C-02. This information was presented in a OCRWM Concerns Program final report, issued on September 14, 2001. The report effectively summarized the 15 concerns related to software issues documented during interviews conducted by the employee concern program. However, this report which had a limited distribution had not been provided to either the responsible BSC line organization for consideration during the development of the CAR's final response or to OQA for evaluation of the CAR's corrective actions. Because the CAR had been written as a summary of the constituent issues, a number of the specific items that were documented in the OCRWM Concerns Program final report as key elements of the problem, were not explicitly documented in the "description-of-condition" block of the CAR.

The NRC staff determined that without the detailed information contained in the OCRWM Concerns Program final report, the basis for review and acceptance of the proposed resolution of CAR No. BSC-01-C-02 may not have adequately addressed each of the issues. Therefore, OR open Item 02-01 was identified pending the clarification/ resolution of this issue.

During this reporting period, the ORs reviewed the documentation associated with CAR No. BSC-01-C-02 to confirm that the issues identified in the OCRWM Concerns Program final report were appropriately addressed. Based on the results of this review, it was determined that the issues presented by the OCRWM Concerns Program had been evaluated by OQA to ensure that each item cited in the report had been properly addressed in the CAR, and included in the amended response. Therefore, OR Open Item 02-01 is closed.

1.3 Deferral of Yucca Mountain Site Characterization Office QA Audit

As previously documented in NRC Report OR-02-04, dated October 29, 2002, the ORs reviewed the project justification for deferring the annual compliance audit of the YMSCO, currently the ORD. Based on the results of these reviews, it was determined that the justification for delaying the scheduled audit of the YMSCO organization did not appear to establish an adequate basis for deferral of a required audit activity. Given that the required performance of annual audits represents a minimum periodicity to verify QA program compliance, and that the justification for delaying the scheduled audit of YMSCO for 3 months did not appear to be adequately supported, this example of an apparent deviation from the requirements of Subsection 18.2.1 E of the QARD was identified as OR Open Item 02-08.

During this reporting period, the ORs reviewed the corrective actions and verification closure records for DR No. OQA (O)-03-D-012, which had been initiated through the OCRWM Concerns Program. This DR documented that contrary to the requirements of Subsection 18.2.1 E of the QARD, which states in part, "Internal audits of work to verify QA program compliance shall be performed annually . . .", the OQA Acting Director rescheduled QA program audits beyond the annual requirement.

Based on the review of the final response to this DR and the associated verification activities, it was determined that the extent of condition and impact assessment had been properly performed. It was also concluded that the defined remedial and corrective actions that reinforced the requirement to perform annual audits on a 12-

month periodicity appeared adequate to preclude recurrence. Therefore, OR Open Item 02-08 is closed.

1.4 Observation of Bechtel SAIC Company, LLC Independent Software Validation Surveillance BSCQA-02-S-16

As documented in NRC Report OR-02-05, dated December 18, 2002, the ORs observed the conduct of Surveillance BSCQA-02-S-16. The purpose of this surveillance was to evaluate the effectiveness of the current independent validation process and to determine the functionality of the baseline software. In order to complete this process, a sample of approximately 10% of the baselined computer codes were selected for evaluation by the surveillance team. Specifically, the surveillance considered 50 codes on the baseline as of July 1, 2002, as-well-as the assessment of the repeatability of 5 major codes selected for their overall importance to the project.

Based on observation of this surveillance, the ORs concurred with the team's overall conclusion that the current IV&V process is not effective in ensuring the repeatability of baseline software. Although the surveillance did not identify specific problems with software functionality for the codes that were tested, it is noted that seven of the codes did not pass the installation test plan (ITP) and/or the validation test plan (VTP) surveillance testing even with recourse to the originator. Included in the codes that did not pass the surveillance test protocol was NUFT, which is used in waste package performance. These testing anomalies are currently being evaluated outside the surveillance in accordance with the Software Deficiency Notice (SDN) process. Pending the projects evaluation of the cumulative effects of the surveillance team's findings, and the establishment of an effective IV&V function for quality-affecting software, this issue was identified as OR Open Item 02-11.

During this reporting period, the ORs evaluated the project's response to issues identified during the software validation surveillance, and current activities related to re-testing of all LA supporting codes as part of a revised IV&V process. Specifically, the ORs reviewed a letter from N. Williams (BSC), to J. Ziegler (DOE), dated November 22, 2002, which described the projects approach for re-testing of legacy software. As described in the letter, legacy codes are those that were qualified in accordance with the requirements of AP-SI.1Q, "Software Management," Revision 3, ICN 4 or earlier versions. Based on the review of the letter, it was determined that legacy codes used in LA supporting technical products will be re-tested using a newly developed IV&V process. The letter also contains an express commitment by BSC, to complete the re-testing of LA supporting legacy codes by the date of certification of the LSN.

Although the letter describes the projects general approach to address the re-testing of legacy software, the specific aspects of the newly developed IV&V process have not been established, and it is uncertain whether or not the legacy codes will undergo IV&V prior to use. Furthermore, at the conclusion of the reporting period, the evaluation of the codes that did not pass the surveillance test protocol had not been completed, and there did not appear to be a defined process in place to address the codes that do not pass the new IV&V process. Therefore, pending the resolution of software issues related to: (1) implementing the IV&V function prior to use; (2) evaluation of the significance and impact of the codes that did not pass the software validation surveillance; and (3) the establishment of a process to effectively address codes that do not pass the new IV&V process, OR Open Item 02-11 will remain open.

1.5 Review of Project Controls for Qualification of Unqualified Data

As documented in NRC Report OR-02-05, dated December 18, 2002, the ORs reviewed the administrative controls defined in procedure AP-SIII.2Q, "Qualification of Unqualified Data and the Documentation of Rationale for Accepted Data," Revision 1, ICN 0. The purpose of this procedure is to establish the process used by the ORD for the qualification of unqualified data. This procedure also establishes the process for the documentation of the rationale for considering data to be "accepted."

As a result of this review, a potential area of noncompliance was identified in that contrary to the requirements of the QARD Supplement III 2.4.C, procedure AP-SIII.2Q inappropriately allows for the use of unqualified data, directly relied upon to address safety and waste isolation issues, without being appropriately qualified in accordance with one or a combination of the methods defined in NUREG-1298 and the QARD Supplement III 2.4.C. Additionally, an area of concern was identified with respect to the adequacy of the BSCQA procedure change control program which failed to identify this issue during the review and concurrence process. Therefore, pending the appropriate resolution of the potential area of noncompliance, this issue was identified as OR Open Item 02-12.

Based on discussions with the Director of OQA, it was determined that DOE is currently performing a comprehensive evaluation of the data management process and that improved program controls are anticipated. As envisioned, the enhanced data management process would address the apparent procedural discrepancy between AP-SIII.2Q, and the requirements of the QARD Supplement III 2.4.C. However, at the conclusion of this reporting period, DOE had not completed their assessment of the project's data management process, and the issues related to the apparent procedural noncompliance associated with procedure AP-SIII.2Q had not been effectively addressed. Therefore, OR Open Item 02-12 remains open.

1.6 Review of Corrective Action Request BSC-02-C-01, Training and Qualification of Subcontractor Personnel Performing Quality Affecting Work

On November 27, 2001, CAR No. BSC-02-C-01 was issued as a result of multiple examples involving the failure of project management to establish the necessary training requirements matrix, and job functions for subcontractor personnel. The CAR identified that numerous individuals were listed as "Unassigned" in the Training department database, and that it was unknown if the individuals had performed quality- affecting work. The CAR also indicated that it could not be determined if the requirements of AP-2.1Q, "Indoctrination and Training of Personnel" and AP-2.2Q, "Establishment of Required Education and Experience of Personnel", were being appropriately implemented.

As documented in NRC Report OR-02-05, dated December 18, 2002, the ORs reviewed the current status of corrective and preventive actions associated with CAR No. BSC-02-C-01, to assess the effectiveness of these initiatives. This assessment included the review of the results of BSC's Surveillance Report BSCQA-02-S-09, completed in May of 2002, which revealed that not all of the corrective actions stated in the response to the CAR had been completed. As a result of the unsatisfactory findings of the initial surveillance, BSC requested that a follow-up surveillance be performed to assure that all departments and all BSC functional managers were effectively implementing the identified corrective actions. The ORs reviewed the results of the follow-up surveillance documented in BSC's Surveillance Report BSCQA-02-S-62, dated September 3, 2002.

Based on the ORs evaluation of BSCs follow-up surveillance, it did not appear that adequate implementation had been demonstrated or that an appropriate justification had been established for the closure of the CAR. Concerns related to the inadequate implementation of corrective actions were also identified, with respect to similar deficiencies documented in DR BSC-01-D-129, dated September 7, 2001, and DR BSC (B)-02-D-159, dated August 8, 2002, that remain open. It was also determined that DR BSC(O)-D-176, dated September 25, 2002, identified program deficiencies related to inadequate verification of education and experience. As documented in this DR, an overall adverse quality condition was identified which represented a recurring condition indicative of an adverse quality trend.

Based on the reviews within this area, the ORs concluded that despite repeated attempts, during the last year, to resolve the deficiencies associated with the training and qualification of sub-contractor personnel performing quality affecting work, CAR No. BSC-02-C-01 and other related DRs remain open. Therefore, pending the implementation of effective corrective actions to address the conditions adverse to quality identified in CAR No. BSC-02-C-01 and the related DRs, this issue was identified as OR Open Item 02-13. At the conclusion of this reporting period, CAR No. BSC-02-C-01, which is over 400 days old, remained open and project efforts related to the resolution of the related DRs were not complete. Accordingly, OR Open Item 02-13, will remain open.

1.7 Evaluation of CAR No. BSC(B)-02-C-129, "Failure to Preserve QA Records"

As discussed in NRC Report Number OR-02-04, dated October 29, 2002, the ORs reviewed the initial conditions documented in CAR No. BSC (B)-02-C-129, dated July 19, 2002, which concluded that contrary to the requirements of QARD, Section 17.2.7 A, the Records Processing Center failed to adequately preserve QA records in the form of raw data archived on magnetic tapes. Subsequent to the identification of this condition, the project developed a report listing the accession numbers with the associated titles for affected QA records. Of the approximate 14,000 QA records originally identified, a population of approximately 4000 QA records was found to need migration and preservation. Although the impact of this condition has not been determined at the conclusion of this reporting period, it was established that elements of the data represent the baseline data for the project, and that the loss of this information could impact the LA. The ORs will continue to monitor the resolution of CAR No. BSC (B)-02-C-129, and the results will be documented in a future report. It is also anticipated that this matter will be a topic for discussion at the forthcoming Quarterly QA meeting, scheduled for January 22, 2003.

## 2. OUTREACH ACTIVITIES

2.1 University of Nevada, Las Vegas, Symposium on Transportation

On November 14, 2002, a representative from the Spent Fuel Project Office participated in a symposium on transportation of spent nuclear fuel at the University of Nevada, Las Vegas. The session was part of a series involving the Yucca Mountain education project, that is intended to inform students and the interested public about key issues related to the proposed geological repository. The audience included students; faculty; the press; NRC staff (including members of the Division of Waste Management, the ORs, and the Office of the General Counsel); members of focus groups; and interested citizens. Although the Yucca Mountain education project focuses on university students,

all sessions are open to the public and these events are advertised in the local media.

### 2.2 Staff Attends Meeting of Clark County Yucca Mountain Nuclear Waste Advisory Committee

On November 14, 2002, the ORs attended a public meeting of the Clark County Yucca Mountain Nuclear Waste Advisory Committee. Items discussed at this meeting included updates on the status of Nevada's lawsuits against the DOE, NRC, and the Environmental Protection Agency, and a briefing on the county's nuclear waste program activities. Additional topics discussed involved the status of Clark County's public outreach program, concerns related to the potential shipment of high-level waste, and the development of specific local and regional impact recommendations to be presented to the Board of County Commissioners. The meeting provided an opportunity for an effective information exchange between the affected units of local government, community opinion leaders, Native American tribal representatives, and citizen groups.

## 3 FIELD AND LABORATORY TESTING

### 3.1 General Issues

#### Site Access to Water Supply

In early April 2002, the State of Nevada terminated DOE's permits to access Nevada Test Site (NTS) water wells for water supply to the project. Project access to water for potable purposes on a temporary bases was regained as of December 19, 2002, through a joint stipulation by DOE and the State of Nevada. This stipulation does not establish the permanent water rights DOE would need for construction and operation of a repository. This issue is the subject of continuing legal action between DOE and the State of Nevada.

### 3.2 ESF Testing

The excavation of the ESF main drift, completed in 1997, allows the collection of scientific and engineering data at Yucca Mountain. DOE continues testing in the ESF main drift to supply data to support DOE's ongoing scientific studies. Figure 1 shows the ESF test locations. Ongoing ESF testing activities are summarized below.

#### Alcove 5 (Drift-Scale Test)

In accordance with the established DOE test plan, power to the heated drift was turned off in mid-January 2002, and the 4-year cool-down of the facility is being monitored. DOE is performing periodic visual and video inspection, water sampling, gas sampling, neutron logging, and electrical-resistance tomography. The data from this test have primarily been used as input to the Thermal Testing Analysis/Modeling Report (AMR).

Borehole 75, in the drift-scale heater test, has produced unusual water during the cool-down period sampling. DOE characterized the water as discolored (brownish yellow), high in trace metals, chloride (but not fluoride), and sulfur. Conductivity has been measured at 10 to 100 times stronger than other drift-scale test waters. An investigation is underway to determine if this unusual water is the product of the exposure of packer materials (neoprene and stainless steel) to hydrothermal environments, and a complete chemical analysis of the water is being conducted.

Periodic video inspection of the drift-scale thermal test canisters has also revealed a small stain on the seventh canister that has appeared since the initiation of the cool-down phase. The cause of this stain is under investigation.

South Ramp

DOE has initiated preparations for Phase I of a ground support test in the south ramp of the ESF. This new test will be looking at issues related to the use of rock bolts in the drifts of the proposed repository.

## 3.3 ECRB Testing

The excavation of the ECRB cross drift, completed in October 1998, allows the collection of scientific and engineering data in stratigraphic units that constitute the bulk of the potential repository horizon. DOE continues ECRB testing to supply data to support DOE's ongoing scientific studies. Figure 1 describes the ECRB test locations. ECRB testing activities are summarized below.

Sealed Portion of the ECRB Cross-drift

In an ongoing effort to monitor moisture conditions in the sealed portions of the ERCB, the ECRB bulkheads from Station 22+01 and beyond were closed on November 14, 2001. The bulkhead at Station 17+63 was closed on December 20, 2001. Before the closure of those bulkheads, project personnel installed enhanced monitoring and collection equipment, including remote cameras and moisture-collection devices, in accordance with the revised test plan. Plastic sheets and drip cloths infused with a pH-sensitive chemical were installed near the crown of the tunnel, and numerous sample bottles were placed to collect possible drips from rock bolts.

DOE re-opened the bulkhead at Station 17+63, on June 24, 2002. The main purpose for this entry, which was to last about 4 months, is to take geotechnical rock property samples and to do a slot test in the lower lithophysal zone between Stations 17+63 and 22+01. The bulkhead at Station 17+63 will be resealed after completion of the sampling, now scheduled for February 2003.

The geotechnical rock property coring was completed in August 2002. The slot test is continuing during this reporting period. This work is now scheduled to be completed in January 2003. The ORs will monitor the geotechnical work to be performed in this section of the ECRB cross drift, and the integrity of the bulkhead at 22+01, until the re-establishment of the bulkhead at 17+63.

## 3.4 Surface-Based Field Testing

Nye County EWDP

The EWDP was initiated as part of the Nye County Nuclear Waste Repository Project Office Yucca Mountain Oversight program. The purpose of the EWDP is to establish a ground-water monitoring system to protect the residents of Nye County in Amargosa and Pahrump Valleys against potential radionuclide contamination.

The program is also intended to provide geologic and hydrologic information to DOE's Yucca Mountain program. The targeted area is located in the hydrogeologic system south of Yucca Mountain. The questions planned to be investigated are: 1) the origin of spring deposits; 2) the geology and hydraulic properties of valley-floor sediments; 3) the recharge; and 4) ground-water-flow patterns. By understanding this information, the monitoring system can be better designed to provide early warning of contamination of the water resources of Nye County. A map of all phase I-III EWDP well locations can be viewed at: http://www.nyecounty.com/Figures/tsg02184.jpg

EWDP Phase IV Status

EWDP Phase IV began the week of October 20, 2002, with the abandonment of wells EWDP-5S and -2D. Drilling at new well site 28P began on October 21, 2002. Well EWDP-28P, located about 16 kilometers (10 miles) south-southwest of the proposed repository, was drilled to a total depth of 634 meters (2080 feet) for geologic sampling. The borehole was then plugged back to 139 meters (455 feet) and a single screen piezometer was completed on November 19, 2002, from 113-137 meters (370-450 feet). The drilling of well EWDP-27P, located about 13 kilometers (8 miles) south-southwest of the proposed repository, started on November 20, 2002. Updates to the status of the Phase IV drilling project can be found at: http://www.nyecounty.com/ewdpmain.htm

Alluvial Tracer Complex

The Alluvial Tracer Complex (ATC) is a joint Nye County and DOE Cooperative Testing Program to investigate flow and transport properties of the saturated alluvium, using wells drilled as part of the EWDP. Part of the ATC testing program was to include cross-hole tracer tests at well EWDP-19D/D1, in which tracers would have been introduced via observation wells. Well 19D1, which is located in the deepest zone in the saturated alluvium, was scheduled to be pumped, during those tests, to recover the tracers, through lateral flow from the observation wells. However, these tracer tests are currently on hold since the State Engineer has not renewed permit waivers for the cross-hole test tracers.

Other Surfaced-based Testing

During this reporting period, DOE continued a disruptive-events (igneous-activity) field investigation in the area around Yucca Mountain and began initial investigations on repository integrity monitoring, using a passive single seismic sub-array.

## 3.5 Laboratory Studies

Laboratory Study of Radionuclide Transport in Non-Welded Tuff

Migration experiments with a dye tracer and with radioisotopes continued in both blocks into this reporting period. The experiments were concluded in November 2002. A report will be issued in the near future.

## 3.6 Upcoming New Tests and Studies

Pena Blanca (Natural Analog Program)

The drill rig and other equipment has been withdrawn from the U.S./Mexico border. Further work on this activity will likely be deferred for the period of time that is required for the Yucca Mountain Project's FY 2003 budget to be appropriated.

Inyo County Well Drilling

In FY 2003, Inyo County, California, plans to begin drilling five deep monitoring wells in the county, as part of its Yucca Mountain oversight program. The county's rationale for drilling these new wells is to: 1) evaluate regional ground-water flow through the southern Funeral Mountains; 2) establish structural controls on flow paths and discharge areas; and 3) evaluate potential zones of mixing between the deep regional ground-water systems and the local shallow ground-water systems to the northeast. The county is currently establishing the location of the new wells. Initiation of this project will also likely be deferred for the period of time that is required for the Yucca Mountain Project's FY 2003 budget to be appropriated.

Alcove 10

Alcove 10 in the ECRB is a proposed thermal test on the repository horizon in the cross drift that is proposed for construction in FY2003.

Atlas Facility

FY 2003 thermal management dispersion testing at the Atlas facility is pending. DOE is drafting a test plan.

## 4.0 GENERAL ACTIVITIES

### 4.1 Meetings

NRC/DOE Technical Exchange and Management Meeting

On November 5-6, 2002, the Division of Waste Management (DWM) conducted a publically available technical exchange and management meeting with the recently instituted DOE Yucca Mountain ORD, in Las Vegas, Nevada. Meeting topics included: (1) potential use of a phased approach to repository construction; (2) proposed alternate design of the repository; (3) DOE's document hierarchy; (4) LA projects; and (5) the level of design detail in the LA. DOE also presented a preliminary LA "Table of Contents."

At the meeting, the State of Nevada provided a paper on its views about using 10 CFR Part 50 provisions (Preliminary Safety Analysis Report/Final Safety Analysis Report concept) in licensing a repository under Part 63. A Nuclear Energy Institute representative indicated that his organization plans to submit a position paper on this same topic in the near future.

NRC/DOE Appendix 7 Meeting on Pre-closure Seismic Design Strategy

On November 7, 2002, staff from the DWM and the Center for Nuclear Waste Regulatory Analyses participated in an Appendix 7 meeting with DOE. Representatives from the State of Nevada and Nye County observed the meeting. The purpose was for DOE to present a modification to its proposed Pre-closure strategy, with the rationale for an additional 2000-year return period design basis earthquake. DOE also indicated that this strategy will incorporate risk information obtained from its Pre-closure risk assessment. At the meeting, DOE indicated that it would provide NRC with a white paper, within 2

months, to explain its rationale for adding a new design basis earthquake and to address NRC staff comments made at the November 7, 2002, meeting.

NRC/DOE Technical Exchange on Electronic Submissions

On December 10, 2002, NRC staff, including the ORs, and DOE staff held the second technical exchange concerning the electronic submission of documents associated with a potential license application and associated proceedings for a Yucca Mountain high-level waste repository. NRC and DOE discussed technical issues and potential challenges that could affect the electronic submission of documents. NRC staff provided presentations on NRC HLW architecture; Electronic Information Exchange process and pilots; Electronic Hearing Docket for a potential HLW proceeding; electronic courtroom; technical issues associated with a potential license application submission and other large documents; status of putting NRC HLW documentary collection on the LSN; and status of LSN test server. DOE and its contractor Bechtel SAIC provided presentations on "Sensitive Homeland Security Information Processing Controls" and "DOE's Experience, Progress, and Solutions in Delivering Large Documents to the Public."

NRC/DOE Technical Exchange on Adoption of DOE's EIS

On November 13, 2002, NRC staff, including the ORs, participated in a technical exchange on the NRC's criteria for adoption of DOE's Environmental Impact Statement for Yucca Mountain. The NRC's EIS adoption determination process, including opportunities for public participation, were described and discussed. Also discussed was DOE's process for identification and evaluation of new information or consideration of areas of additional analyses.

Observation of Bechtel SAIC Company, LLC, Quality Assurance Audit of Lawrence Berkeley National Laboratory

On November 12-20, 2002, Division of Waste Management staff including the ORs, observed the BSCQA audit of Unsaturated Zone (UZ) Flow and Transport AMRs. The audit was performed at the Lawrence Berkeley National Laboratory (LBNL) in Berkeley, California, and continued at the Yucca Mountain Project Office in Las Vegas, Nevada. The limited-scope performance-based audit evaluated BSC's and LBNL's implementation of the Office of Civilian Radioactive Waste Management QA program regarding activities pertaining to the development of UZ Flow and Transport AMRs for license application. The audit team evaluated the effectiveness of the analysis and activities for the UZ Flow and Transport AMRs and the quality of resultant end products. Seven potential deficiencies were identified by DOE, and two AOIs were generated by the NRC. The AOIs requested clarification regarding assurance that only qualified data will be needed for licensing application and the review and approval of data. The staff reviewed the audit team findings and agreed with the results as presented at the post-audit briefing.

## 4.2 Site Visits

On December 11 and 12, 2002, an OR participated in a field trip given for the DOE's Igneous Consequences Peer Review Panel. The field trip concentrated on viewing outcrops of igneous intrusions and eruptions in the southern Nevada area and comparing them to the scenarios for igneous intrusion at Yucca Mountain.

There were no outstanding issues raised as a result of these visits.

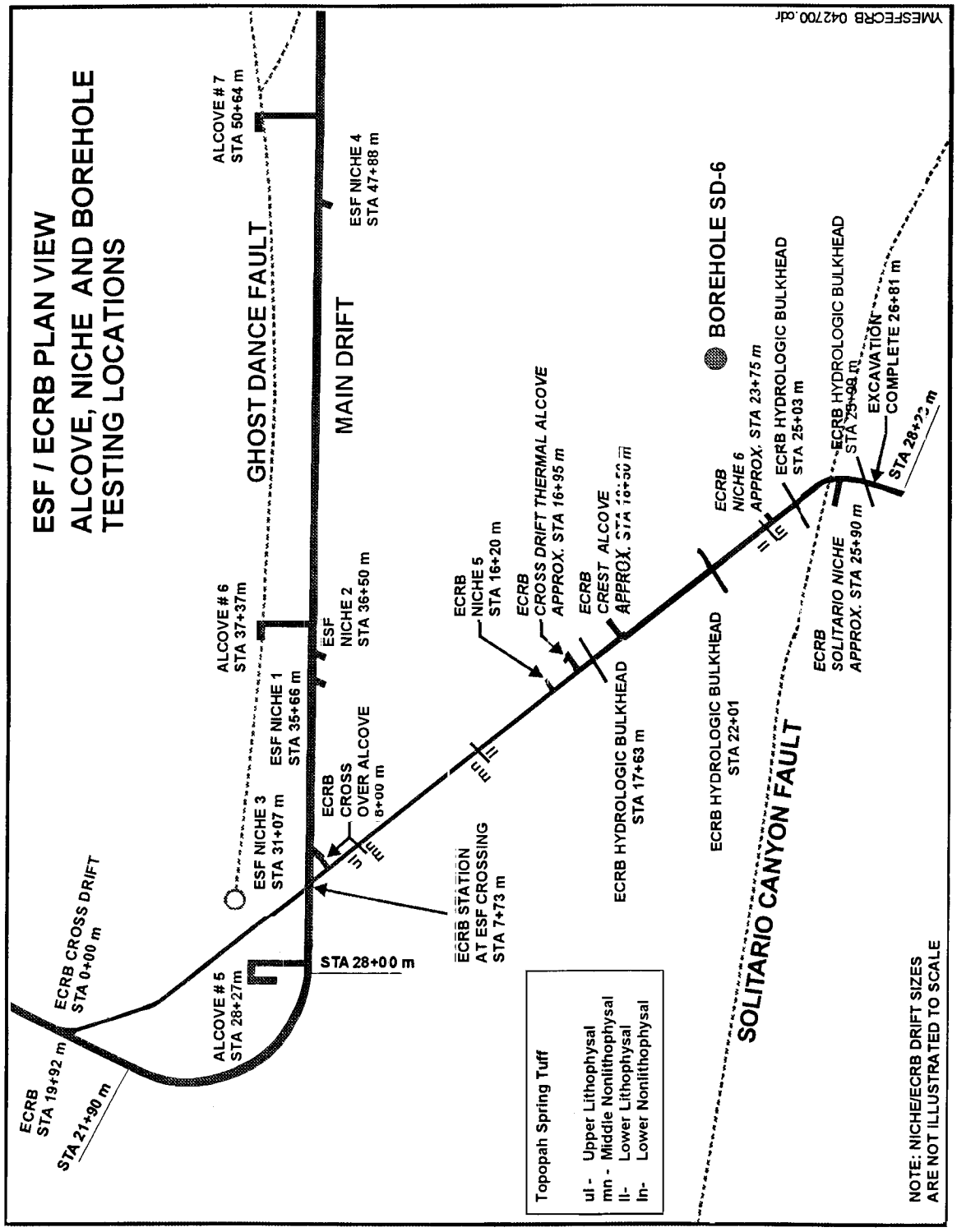
ESF / ECRB PLAN VIEW
ALCOVE, NICHE AND BOREHOLE
TESTING LOCATIONS
GHOST DANCE FAULT
MAIN DRIFT
BOREHOLE SD-6
SOLITARIO CANYON FAULT
ECRB CROSS DRIFT STA 0+00 m
ECRB STA 19+92 m
STA 21+90 m
ALCOVE # 5 STA 28+27m
STA 28+00 m
ALCOVE # 6 STA 37+37m
ESF NICHE 3 STA 31+07 m
ESF NICHE 1 STA 35+66 m
ESF NICHE 2 STA 36+50 m
ECRB CROSS OVER ALCOVE 8+00 m
ALCOVE # 7 STA 50+64 m
ESF NICHE 4 STA 47+88 m
ECRB STATION AT ESF CROSSING STA 7+73 m
ECRB NICHE 5 STA 16+20 m
ECRB CROSS DRIFT THERMAL ALCOVE APPROX. STA 16+95 m
ECRB CREST ALCOVE APPROX. STA 16+50 m
ECRB HYDROLOGIC BULKHEAD STA 17+63 m
ECRB HYDROLOGIC BULKHEAD STA 22+01
ECRB NICHE 6 APPROX. STA 23+75 m
ECRB HYDROLOGIC BULKHEAD STA 25+03 m
ECRB HYDROLOGIC BULKHEAD STA 25+90 m
ECRB SOLITARIO NICHE APPROX. STA 25+90 m
EXCAVATION COMPLETE 26+81 m
STA 28+00 m
Topopah Spring Tuff
ul - Upper Lithophysal
mn - Middle Nonlithophysal
ll - Lower Lithophysal
ln - Lower Nonlithophysal
NOTE: NICHE/ECRB DRIFT SIZES ARE NOT ILLUSTRATED TO SCALE
YMESFECRB 042700.cdr

Figure 1

## ***U.S. NRC On-Site Licensing Representatives' Tracking Report for Open items Followed in Bi-Monthly OR Report***

| | | | |
|---|---|---|---|
| (For NRC tracking only)<br>AOI-YMSCO-ARC-02-12-01 | Identifies the need for DOE OQA to ensure that procedure development and review process includes a documented evaluation to verify compliance with the requirements of the projects QARD | OR Report No. OR-03-01 | Date Item Closed: |
| OR Open Item 02-13 | The current status of corrective & preventive actions associated w/CAR #BSC-02-C-01 revealed that not all corrective actions stated had been complete. | OR Report No: OR-02-05 | Date Item Closed: |
| OR Open Item 02-12 | Contrary to requirements of the QARD Supplement III 2.4.C procedure AP-SIII.2Q inappropriately allows for the use of unqualified data - BSCQA procedure change control program failed to identify this issue. | OR Report No: OR-02-05 | Date Item Closed: |
| OR Open Item 02-11 | Based on surveillance identifying specific problems w/Soft-ware functionality for codes tested, 7 including NUFT did not pass ITP and/or VTP surveillance. | OR Report No: OR-02-05 | Date Item Closed: |
| OR Open Item 02-10 | Pending appropriate evaluation & documentation of the design control attributes associated with requirements of 10CFR §63.44 and Part 21 | OR Report No: OR-02-04 | Date Item Closed: |
| OR Open Item 02-09 | Pending revision of engineering procedures, to include appropriate design verification considerations. | OR Report No: OR-02-04 | Date Item Closed: |
| OR Open Item 02-08 | The required performance of annual audits' justification for delaying a scheduled audit of YMSCO for 3-months with an additional extension does not appear to be adequately supported. Deviation from requirement of Sub-section 18.2.1 E of the QARD. | OR Report No: OR-02-04 | Date Item Closed:<br>**OR Report No.: OR-02-06**<br>**January 23, 2003** |
| OR Open Item 02-07 | Model Validation Impact Assessment - addressed the effect of inappropriately validated models on TSPA-SR. Many cases of impact assessments used TSPA-SR results to evaluate the local impacts. It's unclear how this practice evaluated the cumulative impact of all the models in question. | OR Report No: OR-02-01 | Date Item Closed: |

## ***U.S. NRC On-Site Licensing Representatives' Tracking Report for Open items Followed in Bi-Monthly OR Report***

| | | | |
|---|---|---|---|
| OR Open Item 02-06 | Unqualified Data Impact Assessment - NRC staff identified unqualified data that could be replaced with qualified data for the performance assessment. For risk-significant components, an evaluation of unqualified data that is replaced with qualified data would help determine if efforts should be under-taken to qualify the removed data. | OR Report No: OR-02-01 | Date Item Closed: |
| OR Open Item 02-05 | Provisions are in place that allow for model validation to continue past issuance of the documentation. The models used in the performance assessment should have adequate support for their representation at the time the performance assessment documentation is issued. | OR Report No: OR-02-01 | Date Item Closed: |
| OR Open Item 02-04 | Number of criteria have been developed related to various forms of review. If a review is relied upon for model validation, it should be directed at validating the model and it should encompass the full body of information to the extent practical. | OR Report No: OR-02-01 | Date Item Closed: |
| OR Open Item 02-03 | More objective criteria (comparison to data not used in the development of the model) typically results in higher confidence in model validation are not distinguished from the more subjective, problematic criteria. | OR Report No: OR-02-01 | Date Item Closed: |
| OR Open Item 02-02 | Current process controls specify that one or more of 9-criteria may be utilized to validate a model. All of the criteria should in-crease confidence in the modeling process, some criteria do not appear to be appropriate for addressing whether the model is valid for its intended use. | OR Report No: OR-02-01 | Date Item Closed: |
| OR Open Item 02-01 | Failure to properly include the specific issues identified in the OCRWM Concerns Program Final Report in the resolution process may result in not adequately addressing the original employees concern. | OR Report No: OR-02-01 | Date Item Closed:<br>**OR Report No.: OR-02-06**<br>**January 23, 2003** |

Created in Corel Quattro Pro - C:\MyFiles\Open Items.wb3