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 /RA/
Repository Site Section
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Jack D. Parrott, Sr. On-Site Licensing Representative /RA/
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SUBJECT U.S. NUCLEAR REGULATORY COMMISSION ON-SITE LICENSING REPRESENTATIVES' REPORT ON YUCCA MOUNTAIN PROJECT FOR SEPTEMBER 1, 2002, THROUGH OCTOBER 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 September 1, 2002, through October 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-02-05

Memorandum to Janet R. Schlueter, Chief, dated: December 18, 2002
cc:

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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.

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U.S. NUCLEAR REGULATORY COMMISSION

ON-SITE LICENSING REPRESENTATIVES' REPORT

NUMBER OR-02-05

FOR THE REPORTING PERIOD OF SEPTEMBER 1, 2002 THROUGH OCTOBER 31, 2002

/s/

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

/s/

Jack D. Parrott
Sr. On-Site Licensing Representative
High-Level Waste Branch
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Reviewed and Approved By: ***RA***

~~Larry Campbell~~
Section Leader
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High-Level Waste Branch
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Enclosure

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NUMBER OR-02-05

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Figure 1: ESF/ECRB PLAN VIEW ALCOVE, NICHE AND BOREHOLE TESTING LOCATIONS

TRACKING REPORT FOR OPEN ITEMS

ACRONYMS AND ABBREVIATIONS

ACRO	TITLE
AMR	Analysis and Modeling Report
AP	Administrative Procedure
ATC	Alluvial Tracer Complex
BSC	Bechtel SAIC Company, LLCs.
BSCQA	Bechtel SAIC Company Quality Assurance
CAR	Corrective Action Request
CLST	Container Life and Source Term
CNWRA	Center for Nuclear Waste Regulatory Analyses
DOE	U.S. Department Of Energy
DR	Deficiency Report
DWM	Division of Waste Management
EBS	Engineered Barrier System
ECRB	Enhanced Characterization of the Repository Block
ESF	Exploratory Studies Facility
EWDP	Early Warning Drilling Program
FY	Fiscal Year
ICRP	International Commission on Radiological Protection
ITP	Installation Test Plan
IV	Independent Verification
IVT	Independent Validation Tester
IV&V	Independent Verification and Validation
KTI	Key Technical Issue
LA	License Application
NMSS	Nuclear Material Safety and Safeguards
No.	Number
NRC	U.S. Nuclear Regulatory Commission

ACRONYMS AND ABBREVIATIONS - continued -

ACRO	TITLE
NTS	Nevada Test Site
NUREG	Nuclear Regulatory Guide
OR	On-Site Representative
ORD	Office of Repository Development
OQA	Office of Quality Assurance
QA	Quality Assurance
QARD	Quality Assurance Requirements Description
RPC	Records Processing Center
SCM	Software Configuration Management
SDN	Software Deficiency Notice
SDS	Structural Deformation and Seismicity
TBV	To Be Verified
USGS	United States Geological Survey
V	Verification
VTP	Validation Test Plan
YMSCO	Yucca Mountain Site Characterization Office

EXECUTIVE SUMMARY

OBSERVATION OF BECHTEL SAIC COMPANY, LLC INDEPENDENT SOFTWARE VALIDATION SURVEILLANCE BSCQA-02-S-16

During this reporting period, the On-Site Representatives (ORs) observed the conduct of Bechtel SAIC Company Quality Assurance 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.

Based on observation of this surveillance of the project's qualified software baseline, the ORs agree with the team's overall conclusion that the current independent verification and validation (IV&V) process is not effective in ensuring the repeatability of baseline software. Pending the project's 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 is identified as **OR Open Item 02-11**.

REVIEW OF PROJECT CONTROLS FOR QUALIFICATION OF UNQUALIFIED DATA

The ORs reviewed the administrative controls defined in Administrative Procedure AP-SIII.2Q, "Qualification of Unqualified Data and the Documentation of Rationale for Accepted Data," Revision 1, ICN 0. The purposes of this procedure is to establish the processes used by the Office of Repository Development (ORD) for the qualification of unqualified data, and 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 Quality Assurance Requirements Description (QARD) Supplement III 2.4.C, AP-SIII.2Q inappropriately allows for the use of unqualified data, directly relied on to address safety and waste isolation issues, without being appropriately qualified in accordance with one or a combination of the methods defined in Nuclear Regulatory Guide (NUREG) 1298 and 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 is identified as **OR Open Item 02-12**.

DEFERRAL OF YUCCA MOUNTAIN SITE CHARACTERIZATION OFFICE QA AUDIT

As previously documented in U.S. Nuclear Regulatory Commission (NRC) Report Number 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 Office of Repository Design (ORD). Based on the results of this review, 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.

The ORs reviewed current project records related to this issue, including information contained in Deficiency Report (DR) No. Office of Quality Assurance (OQA) (O)-03-D-012, which had been initiated through the Employee Concerns Program. At the conclusion of this reporting period, no additional management actions had been initiated with respect to this apparent deviation, and the issues related to OR Open Item 02-08 remain unresolved. However, it is anticipated that this matter will be a topic for discussion at the forthcoming Quarterly QA meeting, scheduled for January 22, 2003.

REVIEW OF CORRECTIVE ACTION REQUEST BSC-02-C-01, TRAINING AND QUALIFICATION OF SUBCONTRACTOR PERSONNEL PERFORMING QUALITY - AFFECTING WORK

On November 27, 2001, Corrective Action Request (CAR) 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.

During this reporting period, the ORs reviewed the current status of corrective and preventive actions associated with CAR BSC-02-C-001, to assess the effectiveness of these initiatives. Based on the ORs' evaluation of BSC's 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 several DRs, one of which documented an overall adverse quality condition, which represented a recurring condition indicative of an adverse quality trend.

Based on the reviews within this area, including related DRs, it was concluded that despite repeated attempts, during the last year, to resolve the deficiencies associated with the training and qualification of subcontractor personnel performing quality-affecting work, CAR BSC-02-C-01 and other related DRs remain open. These lingering conditions are of concern because they are indicative of an ineffective corrective action program. Therefore, pending the implementation of corrective actions to address the conditions adverse to quality identified in CAR BSC-02-C-01 and the related DRs, this issue is identified as **OR Open Item 02-13**.

EVALUATION OF CAR BSC (B)-02-C-129, "FAILURE TO PRESERVE QA RECORDS"

As previously documented in NRC Report Number OR-02-04, dated October 29, 2002, the ORs reviewed the initial conditions documented in CAR BSC (B)-02-C-129, dated July 19, 2002, which identified 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 approximately 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 had not been determined at the conclusion of this reporting period, it was established by the U.S. Department of Energy (DOE) that elements of the data represent the baseline data for the project and that the loss of this information could impact the license application (LA). Accordingly, the ORs will continue to monitor the resolution of CAR BSC (B)-02-C-129, and the results will be documented in a future report.

GENERAL SITE ISSUES

The site continues to operate without access to well water, by relying on stored water. As the stored water continues to be drawn down, water use has been further restricted at the site.

Two temporary work stand-downs, related to the introduction of tracers, fluids, and materials to the underground areas, and lock-out/tag-out procedures on electrical work, occurred during the reporting period.

The YMSCO has changed its name to the ORD.

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. The 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, that 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.

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. The testing and sampling are now scheduled for completion in January 2003. After completion, the bulkhead will be sealed again to allow for monitoring of moisture in the cross drift between Stations 17+63 and 22+01.

SURFACE-BASED FIELD TESTING

The cross-hole tracer tests at the well 19 complex of the Nye County Early Warning Drilling Program (EWDP) have been put on hold indefinitely, because of the State's nonrenewal of an expired permit waiver. Sampling of the Phase III wells was completed in September 2002. The drilling of the Phase IV wells began in October 2002.

During this reporting period, DOE has also begun conducting a disruptive-events (igneous-activity) field investigation in the area around Yucca Mountain, and a test of a potential system to monitor repository integrity.

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 continue at Atomic Energy of Canada, Ltd., laboratories.

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, and construction of Alcove 10 in the ECRB. The initiation of planned new tests and studies is somewhat 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 September 1, 2002, through October 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 BSC Independent Software Validation Surveillance BSCQA-02-S-16

On June 11, 2002, BSC submitted a complete response to CAR BSC-01-C-02, to address recurring deficiencies related to software controls and development. The DOE OQA subsequently accepted this response, which included a commitment to perform a surveillance on a sample of baseline software, to independently verify software functionally. During this reporting period, 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. To complete this process, a sample of approximately 10 percent of the baseline computer codes was selected for surveillance team evaluation. Specifically, the surveillance considered 50 codes on the baseline as of July 1, 2002, as well as the assessment of the repeatability of five major codes selected for their overall importance to the project.

AP-SI.1Q, "Software Management," constitutes the primary process for administrating activities associated with quality-affecting software. As required by AP-SI.1Q, the responsible manager for each software code is to assign an independent validation tester (IVT) to analyze the code before its submission to software configuration management (SCM) and subsequent release by SCM for use in quality-affecting activities. The IVT is also required to execute the installation test plan (ITP) and a validation test plan (VTP), to report any problems encountered, and to document these

test results. The processes described in AP-SI.1Q are designed to ensure that software available from SCM operates as designed and provides expected results within the range of validation. However, CAR BSC-01-C-02, identified that "Software that passed two AP-SI.1Q prescribed checking processes....has failed to function properly when implemented." The extent of condition for CAR BSC-01-C-02 identified approximately 160 of the 420 baseline codes (38 percent) which failed installation testing conducted by SCM personnel.

The surveillance test protocol consisted of implementing the ITP and the VTP, which were included as the baseline documentation for each of the selected codes. This process included subjecting the codes to the ITP to determine if the process resulted in replication of the ITP results without recourse to the software developer or the IVT who performed the testing as part of the software qualification effort. The second step involved tester execution of the VTP. If difficulties were encountered and the original results submitted to SCM could not be reproduced, the surveillance test team attempted to identify and resolve the issues, based on general software knowledge. If a test code did not pass either of the initial test steps, the surveillance tester consulted with the code developer and/or the original IVT. The acceptance criterion for this third step of testing was contingent on replication of the VTP results, with recourse to the original software developer. As delineated in the surveillance protocol, the number of recourse interactions between the tester and the code originator was limited to a maximum of three answered requests for additional information or instructions.

Based on the results of the surveillance team's independent validation process for software the following results were identified:

- Thirty-eight codes passed both ITP and VTP evaluations without recourse to the originator.
- Six codes required recourse to the originator to pass the ITP and/or VTP evaluations.
- Ten codes did not Pass the ITP and/or the VTP, even with recourse to the originator.
- One code did not pass initial testing; however, time constraints prevented recourse to the originator.

As defined in the surveillance plan, the above noted codes that did not pass the test protocol were evaluated in accordance with the Software Deficiency Notice (SDN) process described in AP-SI.1Q. With respect to these results, the surveillance team identified that the lack of clarity and/or completeness of documentation was the fundamental problem with codes that did not pass the ITP and VTP testing process without recourse to the originator. Furthermore, the team determined that the baselined qualification packages of some software codes that passed the surveillance test protocol with recourse to the originator, were missing test cases, input files, and/or output files. These omissions were apparently attributable to the less comprehensive requirements in the previous procedure versions under which the codes were baseline. Other common problems associated with several of the codes that passed the surveillance test protocols for ITP/VTP, with recourse to the originator, included inconsistencies between the supplemental submissions to the qualification documentation. As a result of these inconsistencies, the integrity of the baseline documentation had been degraded and the

surveillance team had to contact the originators and/or originating organizations to determine which instructions and guidance materials were current.

As previously stated, in addition to the 50 randomly selected codes that comprised the test population for the surveillance, five codes were specifically selected for testing because of their importance to the project and their interface with other software codes. These codes included GOLDSIM v6.04.007 STN 10344; WAPDEG v4.06 STN 1000; NUFT v3.0s STN 10088; FEHM v12 STN 10086; and TOUGH v1.4 STN 10007. Based on the surveillance team's findings, the ITP/VTP results for GOLDSIM and WAPDEG were reproduced without recourse to the originator and the results for FEHM and TOUGH2, on two of the three platforms on which they were qualified, were reproduced with recourse to the originator. However, the results for NUFT and TOUGH2, on the PC platform, were not reproduced even with recourse to the originator and/or the originating organization. Accordingly, NUFT, TOUGH2, and the other 15 software codes that did not pass the surveillance test protocol without recourse to the originator are being evaluated in accordance with the SDN process, based on a commitment made in the completed response to CAR BSC-01-C-02.

Based on the results of this surveillance, DOE identified the following issues for the test population of codes.

1) The current IV&V process is not effective in identifying, correcting, or eliminating defects in software documentation before submission to the baseline.

2) Documentation of software codes on the baseline is not consistently complete and rigorous enough to permit duplication of software output by a competent individual, who was not involved in the original development or use of the software.

3) Involvement of the originator, or the code development organization, in the use of the baseline software, generally results in the resolution of problems with software documentation, allowing the duplication of the original software results. However, recourse to the originator did not consistently lead to successful resolution.

4) Problems identified and resolved with software operation during the surveillance appeared to be restricted to inaccuracies, inconsistencies, and omissions in the documentation baseline with the qualified codes.

Based on direct observation of BSCQA's surveillance of the project's qualified software baseline, the ORs agree 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, including NUFT, which is used in waste package performance, did not pass ITP and/or VTP surveillance testing, even with recourse to the originator, and are being evaluated outside the surveillance, in accordance with the SDN process. Therefore, pending the project's 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 is identified as **OR Open Item 02-11**.

1.2 Review of Project Controls for Qualification of Unqualified Data

During this reporting period, the ORs reviewed the administrative controls defined in 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 defined in AP-SIII.2Q, the term "unqualified data" describes the population of data not acquired nor developed in accordance with an approved QA program and not meeting the definition of accepted data. The term "accepted data" is used to describe data that are considered established fact (e.g., engineering handbooks, density tables, gravitational laws, or other physical constants) or data generally accepted by the scientific community and found to be technically defensible by those using it. The remaining category of "qualified data" is used to describe the set of data that was acquired or developed under an approved QA program that meets the requirements of 10 CFR Part 60, Subpart G (i.e., qualified from origin) - - or data that have undergone the qualification process in accordance with the requirements of the projects QARD.

Although not explicitly referenced in AP-SIII.2Q, NRC's Generic Technical Position on the "Qualification of Existing Data for High-Level Nuclear Waste Repositories," contained in NUREG-1298, is identified as a commitment document in the QARD. In particular, the methodology delineated in NUREG-1298, concerning the qualification of data not initially collected under an approved QA program, is described in Supplement III 2.4.C of the QARD. As defined in Supplement III 2.4.C, unqualified data directly relied on to address safety and waste isolation issues shall be qualified by one or a combination of the methods that follow:

1) Determination that the controls under which the data were generated are similar in scope, requirements, and implementation to the QARD;

2) Evaluation of corroborating data - Rationale for selecting one set of data to corroborate another set of data shall be clearly explained and justified;

3) Confirmatory testing;

4) Peer review, in accordance with Section 2.0, "Quality Assurance Program";

5) Technical assessment, to independently evaluate data, that includes one, or a combination, of the following:

   a. Determination that the employed methodology is acceptable;

   b. Determination that confidence in the data acquisition or developmental results is warranted; or

   c. Confirmation that the data have been used in similar applications.

Additionally, the QARD requires that methods 1, 2, and 3 above shall include a review to determine the technical correctness of the data, in accordance with established review criteria. The qualification process shall be planned and documented. Documentation shall include the acceptance criteria used to determine if the data are qualified, and rationale for discontinuing any qualification methods abandoned after the initiation of the qualification process.

Based on the defined classifications of data, the ORs reviewed the applicable sections of AP-SIII.2Q, to confirm that the rationale for the use of accepted data had been properly implemented. As a result of this review, a potential area of noncompliance was

identified, relative to the procedural controls contained in paragraph 5.4.1.d.3, which appear to conflict with the requirements of QARD Supplement III 2.4.C. Specifically, AP-SIII.2Q, paragraph 5.4.1.d.3, fourth bullet, allows the technical product originator to reclassify unqualified data (i.e., "Not Established Fact Data") as accepted data, based on its inclusion in a referenced or peer-reviewed journal or publication. However, this methodology does not agree with the explicit requirements of QARD Supplement III 2.4.C, or NUREG-1298, both of which establish the appropriate process for qualifying unqualified data that are directly relied on to address safety and waste-isolation issues.

Therefore, contrary to the requirements of QARD Supplement III 2.4.C, AP-SIII.2Q inappropriately allows for the use of unqualified data, directly relied on to address safety and waste-isolation issues, without being qualified in accordance with one or a combination of the methods defined in NUREG-1298 and 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 are a of noncompliance, this issue is identified as **OR Open Item 02-12**.

1.3 Deferral of YMSCO 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. 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 current project records related to this issue including information contained in DR No. OQA (O)-03-D-012, which had been initiated through the Employee Concerns Program. This DR documented that, contrary to the requirements of Subsection 18.2.1 E of the QARD, which states, in part, that "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. At the conclusion of this reporting period, no additional management actions had been initiated with respect to this apparent deviation and the issues related to OR Open Item 02-08 remain unresolved. However, it is anticipated that this matter will be a topic for discussion at the forthcoming Quarterly QA meeting, scheduled for January 22, 2003.

1.4 Control of Assumptions Used as Technical Input to Models

On October 24, 2002, DOE's OQA issued DR BSC (O)-03-D-014, which identified a condition, adverse to quality, involving the use of unqualified data, as direct input into models, by characterizing the data as "assumptions." As stated in AP-3.10Q, Section 3.2, the term assumption is defined as "A statement or proposition that is taken to be true in the absence of direct confirming data or evidence." However, as documented in DR BSC (O)-03-D-014, two instances were identified where unqualified data have been directly used as input to models and potentially other analyses documented in Analysis

and Model Reports (AMRs), by classifying the data as assumptions.

The DR also documented that AP-3.15, Attachment 4, requires that data which are classified as unqualified shall receive a "to-be-verified" (TBV) designation as an input status designator. Contrary to this requirement, the selection criteria, in the Input Status Decision Checklist for two AMRs, which should have resulted in a TBV designation, were incorrectly identified as "N/A-Reference Only," even though the cited text clearly indicated that data had been directly used as model input.

At the conclusion of this reporting period the response to this DR and the determination of the extent of condition were still under review. Accordingly, the ORs will continue to monitor this issue and document the results in a future report.

1.5 Review of CAR BSC-02-C-01, "Training and Qualification of Subcontractor Personnel Performing Quality-Affecting Work"

On November 27, 2001, CAR 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 of 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-7.6Q, "Indoctrination and Training of Personnel," and AP2.2Q, "Establishment of Required Education and Experience of Personnel," were being appropriately implemented. The CAR was initiated after an OQA surveillance of purchasing practices, in accordance with AP-7.6Q, "Procurement of Items and Services," and AP-7.7Q, "Acceptance of Items and Services." The results of this surveillance, which examined the contracting of equipment-calibration services and personal services, were documented in QA surveillance records BSC-SR-02-02.

As stated in the surveillance report, the functional manager, for the technical work performed by Geomatrix Consultants, failed to determine what training requirements matrix and job function(s) were applicable to the work, and to subsequently provide this information to the BSC Training Department/Human Resources. As a result, the training requirements matrix was not considered for the new assignment of personnel, and the required verification of education and experience of personnel for the Geomatrix Consultants was not performed.

Subsequent to the identification of this issue, the surveillance team reviewed the BSC Training Department Database and found that approximately 90 personnel performing work on the project were unassigned, and that approximately 40 inactive personnel were not assigned. Based on the extent of condition evaluation, BSC could not objectively determine if appropriate position descriptions had been developed for these individuals or if the requisite verification of education and experience checks had been performed. The surveillance team also determined that seven DRs had been issued, within the preceding 20 months, concerning training and qualification discrepancies. Based on the recurring nature of these conditions, which were indicative of an adverse quality trend, CAR BSC-02-C-001 was initiated on November 27, 2001.

After the issuance of CAR BSC-02-C-001, a root-cause analysis was performed and corrective actions were initiated to address the results of this analysis. These corrective actions included revising the applicable "Scope of Work" to incorporate all BSC

subcontractors performing quality-affecting work, and the designation of functional managers for the individuals identified as unassigned. Additionally, LP-4.3Q-BSC, "Subcontracts," was revised with instructions being added to address personnel training and qualifications. Although the root-cause analysis established that the condition was generally limited to the Engineering organization, it was also determined that because no program controls were in place to ensure that functional managers were informed of subcontractor personnel working on the project, an additional 158 individuals were identified and added to the Engineering department functional training matrix.

During this reporting period, the ORs reviewed the current status of corrective and preventive actions associated with CAR BSC-02-C-001, to assess the effectiveness of these initiatives. This assessment included the review of: (1) BSC's "Root Cause Analysis," dated January 25, 2002; (2) "Request for Extended Processing," dated February 8, 2002; (3) "Final Amended Response," dated February 27, 2002; (4) "Amended Response," dated May 13, 2002; (5) BSC's "Request for Closure," dated August 22, 2002; and (6) OQA's "Unsatisfactory Verification Report," dated October 23, 2002. The ORs also reviewed the results of BSC's surveillance report BSCQA-02-S-09, completed in May of 2002, which revealed that not all 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. Although the surveillance resulted in identification of three additional examples of contractor personnel who did not have the required verification of education/experience, as well as the documentation of procedural implementation issues, BSC requested the closure of CAR BSC-02-C-001, contingent on the verification of corrective actions. However, based on the ORs evaluation of BSC's follow-up surveillance, it did not appear that adequate implementation had been demonstrated, or that an appropriate justification had been established for this closure. 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)-02-176, dated August 12, 2002, that remain open. It was also determined that DR BSC (O)-D-176, dated September 25, 2002, identified program deficiencies 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, it was concluded that despite repeated attempts, during the last year, to resolve the deficiencies associated with the training and qualification of subcontractor personnel performing quality-affecting work, CAR BSC-02-C-01 and other related DRs remain open. These lingering conditions are of concern because they are indicative of an ineffective corrective action program. Therefore, pending the implementation of corrective actions to address the conditions adverse to quality identified in CAR BSC-02-C-01 and the related DRs, this issue is identified as **OR Open Item 02-13**.

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

As previously documented in NRC Report Number OR-02-04, dated October 29, 2002, the ORs reviewed the initial conditions documented in CAR BSC (B)-02-C-129, dated

July 19, 2002, which identified that, contrary to the requirements of QARD, Section 17.2.7 A, the Records Processing Center (RPC) failed to adequately preserve QA records in the form of raw data archived on magnetic tapes. As described in the CAR, this condition represents approximately 1600 accession numbers dating back to 1987. The description of condition further states that the magnetic tapes have a finite life expectancy, and no process has been maintained to ensure preservation of the recorded data. Some tapes have deteriorated and the data were not migrated to currently acceptable media. It was also noted that no procedures have been instituted to ensure the appropriate migration of QA records on electronic media, when the media become obsolete, or the media are no longer accepted per RPC administrative controls.

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 approximately 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. Accordingly, the ORs will continue to monitor the resolution of CAR BSC (B)-02-C-129, and the results will be documented in a future report.

2. OUTREACH ACTIVITIES

2.1 Staff Participates in OR Open House

On September 17, 2002, NRC held an open house in Las Vegas, Nevada. Participants included staff from the Division of Waste Management (DWM), including the ORs, as well as personnel from the Spent Fuel Project Office and the Center for Nuclear Waste Regulatory Analyses (CNWRA). The purpose of the open house was to allow members of the community to meet the ORs, obtain information on their roles, and discuss issues related to pre-licensing activities for the proposed high-level waste repository at Yucca Mountain. The open house provided an effective forum for the constructive exchange of information, with more than 35 individuals representing the public, citizen groups, and community members. The continued involvement of NRC representatives at community activities, such as the open house, enhances opportunities for public interaction and represents an important extension of the Agency's public outreach program.

2.2 Office of Nuclear Material Safety and Safeguards Management Representative Visit Nye County, Nevada

On October 23, 2002, the Deputy Director of the Office of Nuclear Material Safety and Safeguards (NMSS), a staff member from the DWM, and the ORs visited Nye County, Nevada. The purpose of this visit was to meet with county officials, including two Commissioners, local business representatives, and community members, to discuss NRC's oversight role in the potential licensing of the high-level waste repository at Yucca Mountain and to gain a better understanding of community concerns and perspectives. During these interactions, NMSS management clearly explained the independent role of NRC and effectively showed the willingness of the Agency to listen to the needs of affected communities. The visit to Nye County was productive and all the contacted community members appreciated the opportunity to meet and discuss items of local importance with NRC representatives.

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 to Nevada Test Site (NTS) water wells for water supply to the project. Before this, DOE installed a 3,785,000-liter (1-million-gallon) water reservoir in NTS Area 25, just east of Fortymile Wash, along the road to Yucca Mountain. Access to certain surface areas at the project has been restricted to reduce the need to spray water for dust suppression. The quality of the water in the reservoir does not allow it to be used for site drinking water and for use in underground tests at this time. DOE may apply for a permit from the State to treat this water for potable and testing use.

Site Work Stand Downs

Two temporary work stand-downs, related to the introduction of tracers, fluids, and materials to the underground areas, and lock-out/tag-out procedures on electrical work, occurred during the reporting period. The stand-down on tracers, fluids, and materials is related to DR BSC-02-C-090, issued in March 2002. This DR stemmed from the improper documentation of quantities of non-quality-affecting materials being installed underground. Continued problems in this area led to change in status, of this DR, to a CAR and a temporary work stand-down because of the introduction of tracers, fluids, and materials to the Exploratory Studies Facility (ESF)/Enhanced Characterization of the Repository Block (ECRB) during this reporting period. There was also another temporary work stand-down related to site-wide electrical work, because of non-compliance with lock-out/tag-out procedures.

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 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.

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 January 2003.

The geotechnical rock property coring was completed in August 2002. The slot test was prepared during this reporting period and is continuing. This work is now scheduled to be completed in January 2003, at which time the bulkhead at Station 17+63 will be resealed.

The ORs will monitor the geotechnical work to be performed in this section of the ECRB cross drift over the next 2 months, 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.

EWDP Phase III Status

All Nye County EWDP Phase III field work was completed as of March 31, 2002. Nye County water sampling at the EWDP Phase III piezometer wells was accomplished during the week of August 26, 2002. In addition to Nye County, samples were taken for

DOE by Los Alamos National Laboratory, the U.S. Geological Survey (USGS), and the University of Nevada-Las Vegas. Samples were also taken for NRC by CNWRA, and by a State of Nevada contractor, for State purposes. The multiple-screen monitoring wells were sampled by the end of September 2002. A map of all current 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 28P is located about 16 kilometers (10 miles) south-southeast of the proposed repository. The planned depth of this well is 610 meters (2000 feet). 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. Because non-renewal of these permits will impact efforts to validate the saturated zone flow and transport models, other alternatives to this testing are being investigated.

Other Surfaced-based Testing

During this reporting period, DOE continued conducting 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

Engineered Barrier System Testing (Atlas Facility)

All FY 2002 EBS testing at the test facility located in North Las Vegas known as the Atlas facility has been completed. The test results will be used to support the EBS degradation and transport process model report.

Laboratory Study of Radionuclide Transport in Non-Welded Tuff

Migration experiments with a dye tracer and with radioisotopes continued in both blocks during this reporting period. During August 2002, addition of the two most strongly sorbing radionuclides, ^{60}Co and ^{137}Cs, was terminated, to avoid radiation levels in the block from becoming excessive. Under saturated conditions, the geological material is retaining most of the injected ^{99}Tc so that the concentration of this radioisotope in the eluted ground-water has now fallen below the limit of detection. Chemically reducing conditions are being maintained in the saturated block. Approximately 1 year after the start of the migration experiment under unsaturated conditions, ^{3}H, the fluorescein anion, and ^{99}Tc have started to elute from the tuff block. This corresponds to a linear

flow velocity of ~1m(3.3 ft)/year or ~2 mm(0.08 in)/day.

3.6 Upcoming New Tests and Studies

Pena Blanca (Natural Analog Program)

As of the end of October 2002, the drill rig was still at the U.S./Mexico border awaiting clearance to cross into Mexico. 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.

4.0 GENERAL ACTIVITIES

4.1 Meetings

Staff Attends DOE Igneous Activity Peer Review Meeting

On September 5, 2002, staff from NRC, including the ORs, and CNWRA personnel attended the DOE-sponsored peer review on the consequences of igneous activity on a potential repository at Yucca Mountain, Nevada. Members from the State of Nevada, the affected units of local government, representatives of the Nuclear Waste Technical Review Board, USGS, and other interested parties also were there. The peer review panel is reviewing the DOE program as related to igneous activity, specifically to address concerns with possible magma-repository interactions, as discussed in the Woods, et al., 2002, paper published in Geophysical Research Letters. The purpose of this meeting was to discuss the results of the panel's interim report.

The panel provided suggestions on additional work that could be accomplished and additional information regarding the general properties of magma, studies on waste package and waste form interactions with magma, and on ash redistribution. The panel's final report will be available in the January 2003 time frame, and in the March 2003 time frame, DOE will prepare a report with a response to the panel's report and a discussion of work that will be undertaken by DOE before submitting a potential LA.

Fall Meeting of the Nuclear Waste Technical Review Board

On September 10, 2002, NRC staff, including an OR, attended the fall meeting of the Nuclear Waste Technical Review Board held in Las Vegas, Nevada. The meeting agenda included programmatic and technical subjects. The Director of the Office of Civilian Radioactive Waste Management, DOE, provided an overview and status of the Yucca Mountain project. Several technical presentations were made, which included: (1) science and engineering update of DOE's program; (2) regional ground-water monitoring program by Inyo County; (3) interim report of the igneous consequences

peer review panel; (4) corrosion testing; (5) repository design; and (6) post-closure thermal conditions. A round-table discussion was held on performance assessment results, including analyses for evaluating repository barriers. A staff member from, respectively, NRC's DWM and NRC's Advisory Committee on Nuclear Waste participated in the round-table discussion.

Licensing Support Network Advisory Review Panel Public Meeting

On September 18-19, 2002, DWM staff, including the ORs took part in the Licensing Support Network Advisory Review Panel (hereafter, panel) Public Meeting in Las Vegas, Nevada. The Secretary of the Commission chairs the panel, consisting NRC; DOE; and affected units of local government. The panel provides advice to NRC on the hardware, software, formatting standards, operating conditions, and other areas directed by the Secretary of the Commission. During the course of the meeting, DWM staff made two presentations to the panel. The first presentation was a summary of the proposed revisions to the "Topical Guidelines for the Licensing Support Network," which has been issued for public comment. The second presentation was a summary of the June 2002 Electronic Submissions Technical Exchange between NRC and DOE. Other presentations by panel members included a progress report; system security risk assessment; experience of local counties in setting up licensing support network web sites; participant training needs; review of relevancy; NRC plans for a digital courtroom; and a demonstration of the latest version of the Licensing Support Network website features.

137TH Meeting of the Advisory Committee on Nuclear Waste

On September 25, 2002, NRC staff, including an OR, participated in the 137th meeting of the Advisory Committee on Nuclear Waste, in Las Vegas, Nevada. The NRC staff provided separate presentations on the status of the KTI resolution process, a framework for conducting quantitative evaluations of the performance of a potential repository at Yucca Mountain, and a summary of public comments received on the draft, Revision 2, Yucca Mountain Review Plan. For the KTI resolution process, the update included the status of the 293 agreements between NRC and DOE; discussion of issue resolution activities completed in FY 2002; and a discussion on the issue resolution activities planned for FY 2003. The staff also provided the Committee with an overview of the Integrated Issue Resolution Status Report (NUREG-1762) and how it fit into the issue resolution process. In addition, NRC staff presented its framework for conducting quantitative evaluations of the performance of a potential repository at Yucca Mountain. The results of the staff evaluations will be used to support the staff's prelicensing interactions with DOE. Furthermore, NRC staff presented a summary of public comments received on the draft Yucca Mountain Review Plan (Revision 2).

NRC and DOE Appendix 7 Meeting on Interpretation of Aeromagnetic Data at Yucca Mountain

On September 30, 2002, staff from NRC, including the ORs, and CNWRA representatives met with representatives of DOE and USGS to discuss the results and interpretation of a recent aeromagnetic survey of the Yucca Mountain Region. The discussions focused on the USGS Open File Report 02-020, "Aeromagnetic Expression of Buried Basaltic Volcanoes Near Yucca Mountain, Nevada," and the CNWRA report, "Evaluation of Geophysical Information Used to Detect and Characterize Buried Volcanic Features in the Yucca Mountain Region." A follow-up meeting is planned to

discuss the overall effect that this information has on the probability of igneous activity at the potential Yucca Mountain site.

Presentation to the State of Nevada's Legislative Committee on High-Level Radioactive Waste

On October 8, 2002, the ORs attended a presentation by an NRC staff member to the State of Nevada's Legislative Committee on High-Level Radioactive Waste, in Las Vegas, Nevada. At the Committee's request, staff presented material on NRC's role and responsibilities in accepting and reviewing a LA for construction authorization for the proposed high-level waste repository at Yucca Mountain, Nevada. DOE, State of Nevada, and affected units of State and local governments also presented information on aspects of the high-level waste programs in which they are involved.

NRC and DOE Quarterly QA and Management Public Meetings

On October 16-17, 2002, NRC staff, including the ORs, met with DOE to discuss QA and management issues on the DOE Yucca Mountain program. Both meetings were two-way video conferences, hosted at the YMSCO, with connection to NRC Headquarters in Washington, DC. The CNWRA in San Antonio, Texas, took part by telecommunications. Both meetings were open to the public.

The purpose of the meetings was to discuss the status of the QA program at the potential repository site at Yucca Mountain, Nevada. Presentations included the status of the Management Improvement Initiatives Implementation; status of the DOE QA program; results of the DOE Semi-Annual Self-Assessment; and status of KTI agreement items. As part of the meetings, the status of previous action items was presented by DOE and accepted by NRC. Also, DOE agreed to address several new action items by providing additional information requested by NRC. If necessary, DOE and NRC will have additional public meetings to address the new action items identified during meetings.

NRC, DOE Appendix 7 Meeting on Container Life and Source Term

On October 22, 2002, staff from DWM and the CNWRA attended an Appendix 7 meeting with DOE's Yucca Mountain staff, in Las Vegas, Nevada. Approximately 20 representatives from DOE, the Nuclear Waste Technical Review Board, the State of Nevada, and the public attended the meeting concerning the Container Life Source Term (CLST). DOE presented information on the preliminary results and future testing and modeling plans relating to CLST Agreement 1.01. CLST 1.01 addresses the water chemistry that may contact the waste package or drip shield currently identified for the proposed geologic repository at Yucca Mountain. The water chemistry is directly relevant to the type and rate of corrosion that is postulated for the waste package and the drip shield. During the meeting the NRC staff shared specific concerns that have arisen, based on the Center's confirmatory testing and literature reviews. DOE indicated that it would consider the specific concerns. Additionally, DOE identified the time frame, for revisions to AMRs, that would provide relevant information to CLST 1.01. The meeting was regarded as helpful for NRC's CLST technical staff and provided an effective method for discussions regarding future meetings on topics relevant to CLST.

ORs Meet with Staffer from the House Energy and Commerce Committee

On October 31, 2002, the ORs received a drop-in visit from Mr. Dwight Cates, a staffer from the House Energy and Commerce Committee. Mr. Cates and the ORs discussed the ORs' perception of DOE's progress towards a potential LA and NRC's plans and schedule for finalization of the Yucca Mountain Review Plan.

4.2 Site Visits

On September 4, 2002, an OR accompanied a new NRC employee on an orientation tour of the Yucca Mountain site and vicinity.

On September 19, 2002, the ORs accompanied two members of NRC's Inspector General staff on an tour of Yucca Mountain and the NTS low-level radioactive waste disposal area.

On September 24, 2002, an OR accompanied members and staff of the NRC's Advisory Committee on Nuclear Waste on an tour of Yucca Mountain and the NTS low-level radioactive waste disposal area.

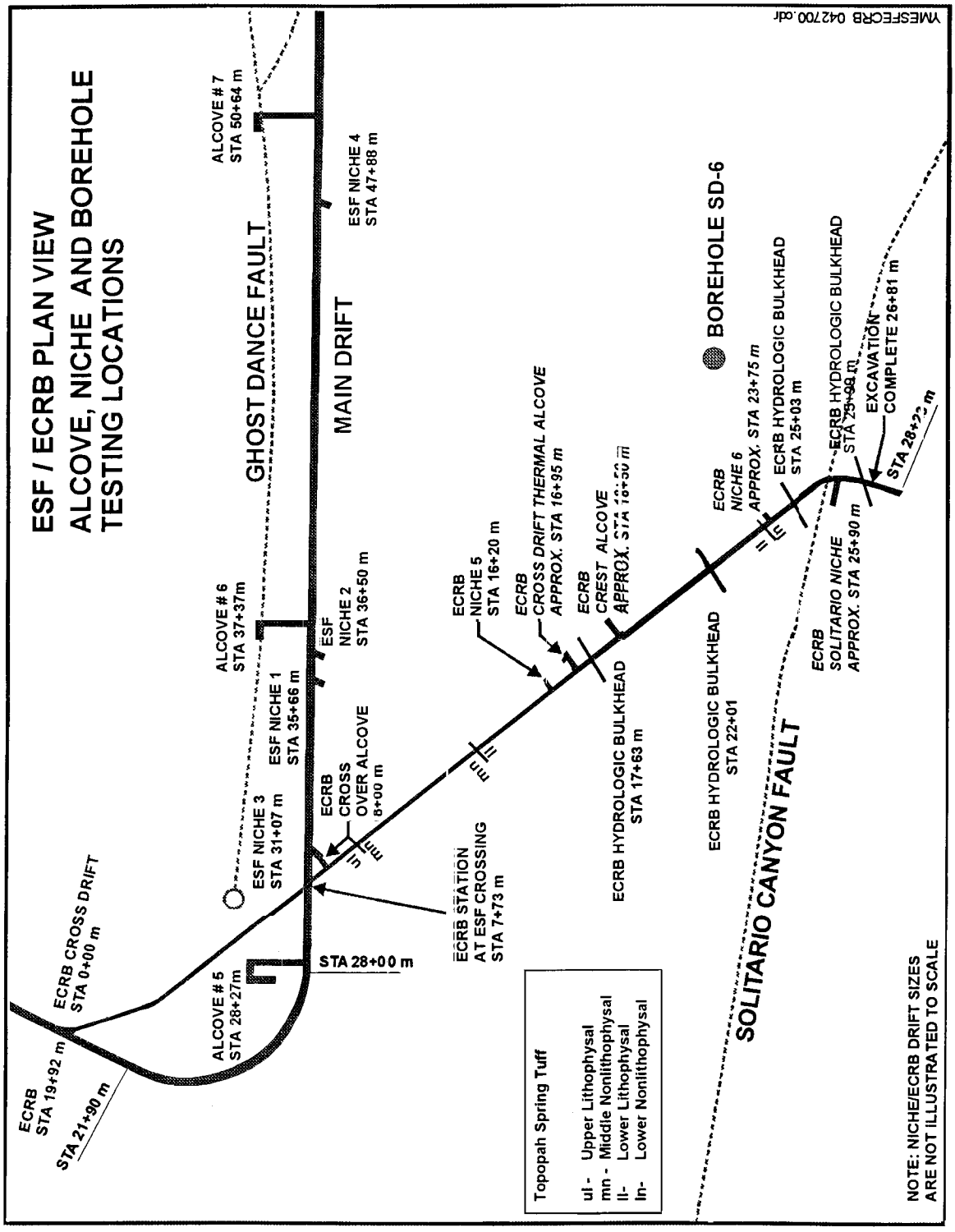
On October 1, 2002, an OR accompanied staff from the NRC's High-Level Waste Branch and CNWRA on an igneous activity field trip in the Crater Flat area west of Yucca Mountain and to the Yucca Mountain Project's Sample Management Facility to view drill cuttings retrieved from the drilling of some of Nye County's EWDP wells.

On October 7, 2002, an OR visited the site to observe routine site operations activities.

On October 22, 2002, NRC Commissioner Greta Dicus toured the Yucca Mountain site. The ORs led Commissioner Dicus, members of her staff, the NRC NMSS Deputy Director, and members of the International Commission on Radiological Protection (ICRP) on this tour. The tour included an entrance into the ESF (main tunnel), with stops that included the drift-scale thermal test and the moisture-monitoring station for the continuing infiltration studies. The tour also visited the tunnel-boring machine, parked at the south portal to the main tunnel, and the crest of Yucca Mountain. The ICRP members, in particular, found the site visit informative and helpful for better understanding the activities occurring at Yucca Mountain.

On October 23, 2002, the NRC, NMSS, Deputy Director, an NRC, DWM, staff member, and the ORs visited Nye County, Nevada. The purpose of this visit was to meet with county officials, including two county commissioners, local business representatives, and community members, to discuss NRC's oversight role in the potential licensing of the high-level waste repository at Yucca Mountain and to gain a better understanding of community concerns and perspectives. During these interactions, NMSS management clearly explained the independent role of NRC and effectively showed the willingness of the Agency's willingness to listen to the needs of affected communities. The visit to Nye County was productive and all the contacted community members appreciated the opportunity to meet and discuss items of local importance with NRC representatives.

There were no outstanding issues raised as a result of these visits.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ECRB STA 19+92 m
STA 21+90 m
ALCOVE # 5 STA 28+27m
ALCOVE # 6 STA 37+37m
ALCOVE # 7 STA 50+64 m
ESF NICHE 3 STA 31+07 m
ESF NICHE 1 STA 35+66 m
ESF NICHE 2 STA 36+50 m
ESF NICHE 4 STA 47+88 m
ECRB CROSS OVER ALCOVE STA 8+00 m
STA 28+00 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 18+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 SOLITARIO NICHE APPROX. STA 25+90 m
ECRB HYDROLOGIC BULKHEAD STA 25+99 m
EXCAVATION COMPLETE 26+81 m
STA 28+22 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

Figure 1

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

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.Cprocedure AP-SIII.2Q inappropriately allows for the use of unqualified data - BSCQA procedure change control pro-gram failed to identify this issue.	OR Report No: OR-02-05	Date Item Closed:
OR Open Item 02-11	Based on surveillance not 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 contro 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:
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:
OR Open Item 02-06	Unqualified Data Impact Assessment - NRC staff identified unqualified data that could be replaced with qualified data for the performance	OR Report No: OR-02-01	Date Item Closed:

	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 Open Item 02-05	Provisions are in place that allow for model validation to continue pas 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 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: