



## Department of Energy

Washington, DC 20585

November 16, 1992

Mr. Robert M. Bernero  
Director  
Office of Nuclear Material  
Safety and Safeguards  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Dear Mr. Bernero:

This is in response to your letter dated August 31, 1992, in which you transmitted a copy of SECY-92-275, the Quarterly Progress Report on the Pre-Licensing Phase of the U.S. Department of Energy's (DOE) Civilian Radioactive Waste Management Program. In your cover letter, you expressed two areas of concern: the first summarized those issues addressed in your May 26, 1992, letter to DOE regarding the completeness and timeliness of DOE submittals; the second dealt with DOE's proposal not to submit the Management and Operating Quality Assurance program to the U.S. Nuclear Regulatory Commission (NRC) for review and acceptance. The latter concern is being addressed under separate cover. DOE's response to the first set of concerns is provided below.

In your May 26, 1992, letter, you requested that DOE provide a schedule with dates for planned DOE submittal of study plans and other site characterization documents for review. This information was provided to you on August 17, 1992. It is probable that, as of August 31, 1992, due to mailing delays, you had not yet received DOE's response to your request.

You also indicated the need for DOE to transmit only those study plans that are complete and have been approved by DOE's Office of Civilian Radioactive Waste Management (OCRWM). DOE has not transmitted incomplete study plans to NRC. However, we have sent grouped or individual activities from multi-activity study plans that may be performed by different participants or might be near-term activities relative to other study plan activities. DOE feels that it is not necessary to hold back approval of individual or grouped activities relevant to near-term work simply because out-year activities are still in preparation.

Your May 26, 1992, letter, on pages 2 and 3, expressed concern that DOE keep NRC informed of the status of study plans so that the NRC staff does not conduct a review of study plans that are

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out of date. In order to keep you continually apprised of the study plan status, and to enable you to plan for the review of DOE study plans, DOE will provide you, on a monthly basis, an update on the status of DOE study plans. Enclosure 1 contains the Study Plan Status report for September 1992. These reports will be transmitted to you from OCRWM.

We do not understand your criticism in the August 31, 1992, letter, that the DOE's Exploratory Studies Facility Alternatives Study (ESFAS) transmittal letter contained no explanation of how the document related to Site Characterization Analysis (SCA) open items. At the time the ESFAS was delivered to NRC, this was true. However, you made a specific request for the information in a September 4, 1991, letter to DOE and DOE provided this information in a March 3, 1992, letter to NRC.

With respect to ongoing correspondence regarding SCA open items, some of the material in your August 31, 1992, letter, has been overtaken by events. Beyond the closure of 59 comments in NRC's evaluation of DOE's December 1991 SCA responses (Bernero to Bartlett letter, dated 7/31/91) DOE has, to date, submitted documentation to NRC to resolve 24 additional objections, comments, and questions. These include:

Objection 1 - Roberts to Linehan letter, dated 11/26/91, and  
Roberts to Holonich letter, dated 3/3/92

Comments 12, 16, 34, 35, 57, 72, 127, 128, 130, and 132 -  
Roberts to Holonich letter, dated 3/3/92

Comments 100, 104, 106, 108, 110, 112, and 113 -  
Roberts to Holonich letter, dated 8/31/92

Comments 42 (partial closure, as stated, DOE's topical report on erosion will resolve Comment 42 ) and 43 -  
Roberts to Holonich letter, dated 7/23/92

Question 1 - Roberts to Linehan letter, dated 12/16/91

Question 31 - Roberts to Holonich letter, dated 10/16/92

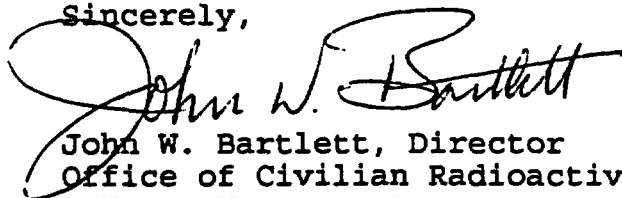
Questions 28 and 61 - Roberts to Holonich letter, dated 3/3/92

DOE regards all of the above objections, comments, and questions as resolved and is focusing on the remaining open items from the NRC July 31, 1991, letter. DOE does note that NRC lifted SCA objection 2 (Bernero to Bartlett letter, dated 3/2/92). In addition, NRC lifted objection 1, and closed open item comments 12, 16, 35, 57, 72, 127, 128 and 132, and question 61 (Bernero to Bartlett letter, dated 11/2/92). As DOE has previously informed NRC, as site characterization planning and data acquisition continue, DOE will address the remaining open items and provide documentation for their resolution in a letter.

Regarding your statement that DOE has not been responsive to your June 25, 1990, letter, stating concerns with the first Site Characterization Progress Report (PR), please note that DOE did provide a response to you in a June 17, 1991, letter from Shelor to Linehan (Enclosure 2). In its reply, DOE responded to what seemed to be NRC's four major concerns: (1) the relevance of the information in the PR to site characterization issues; (2) the completeness of data reported in the PR; (3) the level of detail in the PR; and (4) the status of NRC open items with regard to the Site Characterization Plan or study plans.

If you have any questions, please contact John Roberts of my staff at (202) 586-9896.

Sincerely,

  
John W. Bartlett, Director  
Office of Civilian Radioactive  
Waste Management

Enclosures: As Stated

cc:

C. Abrams, NRC  
D. Moeller, ACNW  
R. Loux, State of Nevada  
T. Hickey, Nevada Legislative Commission  
M. Baughman, Lincoln County, NV  
J. Bingham, Clark County, NV  
B. Raper, Nye County, NV  
P. Niedzielski-Eichner, Nye County, NV  
G. Derby, Lander County, NV  
P. Goicoechea, Eureka, NV  
C. Schank, Churchill County, NV  
F. Mariani, White Pine County, NV  
V. Poe, Mineral County, NV  
E. Wright, Lincoln County, NV  
J. Pitts, Lincoln County, NV  
R. Williams, Lander County, NV  
J. Hayes, Esmeralda County, NV  
M. Hayes, Esmeralda County, NV  
B. Mettam, Inyo County, CA

## **MONTHLY STUDY PLAN STATUS FOR SEPTEMBER 1992**

### **1.0 INTRODUCTION**

The following report summarizes the status of review and approval of Site Characterization Plan (SCP) study plans for the Yucca Mountain Project. Table 1 provides a summary status of all study plans that are currently planned or in review at the Yucca Mountain Site Characterization Project Office (Project Office), the Office of Civilian Radioactive Waste Management (OCRWM), and the U.S. Nuclear Regulatory Commission (NRC).

Section 2 of this report provides the major accomplishments in the process of developing study plans for the month of SEPTEMBER 1992. Section 3 summarizes the status of all study plans in the review process at the Project Office. Section 4 summarizes the status of study plan reviews that have been completed by the NRC and the State of Nevada.

### **2.0 STUDY PLAN HIGHLIGHTS FOR THE MONTH OF SEPTEMBER, 1992**

#### **2.1 NEW STUDY PLAN SUBMITTALS**

No new study plans were recieved by the Project Office in September.

#### **2.2 REVIEW COMMENTS COMPLETED**

Project Office reviews were completed for one Study Plan, 8.3.1.17.4.4 Quaternary Faulting Proximal to the Site within NE Trending Fault Zones, in September.

#### **2.3 COMMENT RESOLUTION MEETINGS**

No comment resolution meetings were held in September.

#### **2.4 STUDY PLAN REVISIONS**

Two minor revisions of existing study plans, 8.3.1.5.1.3 Climatic Implications of Terrestrial Paleoecology and 8.3.1.17.3.4 Effect of Local Site Geology on Surface and Subsurface Motion, were recieved and approved by the Project Office in September.

#### **2.5 COMMENT VERIFICATION**

One Study Plan, 8.3.1.17.4.3 Quaternary Faulting within 100km of Yucca Mountain, including the Walker Lane, was returned to reviewers to verify the resolution of their comments and two Study Plans, 8.3.1.4.3.1 Systematic Acquisition of Site Specific

Subsurface Information and 8.3.1.9.2.1 Natural Resource Assessment of Yucca Mountain, Nye County, completed verification of comment resolution in September.

## **2.6 STUDY PLANS APPROVALS**

No study plans were approved by the Project Office in September.

## **2.7 COMPLETED NRC REVIEWS**

One study plan phase I review was completed during September, ie. 8.3.1.5.3.1 Climatic Implications of Terrestrial Paleoecology.

## **3.0 CURRENT STATUS OF ALL STUDY PLANS**

### **3.1 PLANS IN REVIEW**

The following study plans have not yet completed the screening and technical reviews by the Project Office.

| Identification/Organization | Date Draft Transmitted |
|-----------------------------|------------------------|
| None                        |                        |

### **3.2 STUDY PLANS AWAITING COMMENT RESOLUTION MEETINGS**

Comments have been transmitted to the authors, and the Project Office is awaiting notification that the author is ready for a comment resolution meeting or notification that proposed resolutions have been agreed upon between the PI and reviewers without the need for a meeting.

| Identification/Organization   | Date Comments Sent to PI |
|---|--------------------------|
| 8.3.4.2.4.1: Characterization of Chemical and Mineral Changes in the Postemplacement Environment/LLNL | 03/13/90                 |
| 8.3.4.2.4.2: Hydrologic Properties of the Waste Package Environment/LLNL                              | 03/23/90                 |

### 3.3 STUDY PLANS IN REVISION

3.3.1 Comment Resolution Meetings have been held, and the following study plans are being revised by the authors in response to comments.

| Title/Organization   | Comment Resolution Meeting Date |
|--|---------------------------------|
| 8.3.1.3.3.2/8.3.1.3.3.3: Kinetics and Thermodynamics of Mineral Evolution/Conceptual Model of Mineral Evolution/LANL | 03/14/90                        |
| 8.3.1.3.4.1/8.3.1.3.4.3: Batch Sorption Studies/ Development of Sorption Models/LANL                                 | 02/14/90                        |
| 8.3.1.3.6.1: Dynamic Transport Column Experiments/LANL   | 08/29/90                        |
| 8.3.1.3.6.2: Diffusion/LANL  | 08/30/90                        |

3.3.2 No Comment Resolution meeting is required, and the following study plans are being revised by the authors in response to comments.

| Title/Organization  | Comments Transmitted to PI |
|---|----------------------------|
| 8.3.1.2.2.2 R1: Water Movement Test/LANL  | 5/12/92                    |
| 8.3.1.3.1.1: Groundwater Chemistry Model/LANL   | 5/6/92                     |
| 8.3.1.3.5.1/2: Dissolved Species Concentration Limits and Colloid Behavior/LANL       | 11/08/91                   |
| 8.3.1.5.1.6: Characterization of Future Regional and Environment                      | 01/30/92                   |
| 8.3.1.12.2.1 R1: Meteorological Data Collection at the Yucca Mountain Site/SAIC       | 6/17/92                    |
| 8.3.1.15.1.4: Laboratory Determination of the Mechanicqal Properties of Fractures/SNL | 5/12/92                    |

|   |          |
|---|----------|
| 8.3.1.15.1.8: In Situ Design Verification   | 10/10/91 |
| 8.3.1.2.2.9: Site Unsaturated Zone Modeling<br>and Synthesis/USGS                             | 02/27/92 |
| 8.3.1.17.3.3.2: Ground Motion from Regional<br>Earthquakes and UNEs/SNL                       | 02/27/92 |
| 8.3.1.17.4.4: Quaternary Faulting Proximal to<br>the Site within NE Trending Fault Zones/USGS | 09/25/92 |

#### **3.4 STUDY PLANS IN VERIFICATION AUDIT**

The following study plans are being audited by reviewers to verify that comments have been satisfactorily responded to.

| Identification/Organization  | Date Draft<br>Transmitted |
|--|---------------------------|
| 8.3.1.2.3.3: Site Saturated Zone Hydrologic<br>Synthesis and Modeling/USGS                           | 03/31/92                  |
| 8.3.1.17.3.5: Ground Motion at the Site from<br>Controlling Seismic Events/USGS                      | 04/14/92                  |
| 8.3.1.17.4.3: Quaternary Faulting within 100 km of<br>Yucca Mountain, including the Walker Lane/USGS | 09/22/92                  |
| 8.3.4.2.4.3: Mechanical Properties of the Waste<br>Package Environment/LLNL                          | 10/08/91                  |

#### **3.5 BEING PREPARED FOR PROJECT OFFICE APPROVAL**

|  |          |
|--|----------|
| 8.3.1.3.4.2: Biological Sorption and Transport/LANL                                | 12/07/91 |
| 8.3.1.4.3.1: Systematic Acquisition of Site-Specific<br>Subsurface Information/SNL | 09/04/92 |
| 8.3.1.5.2.1.1: Characterization of Quaternary<br>Regional Hydrology/USGS           | 08/10/92 |
| 8.3.1.5.2.2: Characterization of Future Regional                                   | 07/14/92 |

## Hydrology due to Climate Change

8.3.1.8.2.1: Analysis of Waste Package Rupture due to Tectonic Processes and Events/SAIC 08/11/91

8.3.1.9.2.1: Natural Resource Assessment of Yucca Mountain, Nye County/USGS 09/28/92

### 3.6 APPROVED STUDY PLANS

None

### 4.0 STUDY PLANS IN REVIEW AT NRC AND THE STATE OF NEVADA

#### 4.1 NRC ACCEPTANCE REVIEW

The following study plans are in Phase 1 review at the NRC.

| Identification/Organization  | Transmittal Date |
|--|------------------|
| 8.3.1.2.2.1 R1: Characterization of Unsaturated Zone Infiltration/USGS   | 06/1/92          |
| 8.3.1.2.2.2: Water Movement Tracer Tests/LANL  | 02/09/89         |
| 8.3.1.2.2.4(.4, .5, .7, .8, .9): Characterization of the Yucca Mountain Unsaturated Zone Percolation-- Exploratory Shaft Facility Study/USGS | 02/09/89         |
| 8.3.1.2.2.5: Diffusion Tests in the ESF/LANL   | 6/8/92           |
| 8.3.1.2.2.8: Fluid Flow in Unsaturated, Fractured Rock   | 9/01/92          |
| 8.3.1.2.3.2: Characterization of the Saturated Zone Hydrochemistry   | 6/5/92           |
| 8.3.1.3.7.1: Retardation Sensitivity Analysis/LANL   | 9/01/92          |
| 8.3.1.4.2.1: Characterization of Vertical and Lateral Distribution of Stratigraphic Units in the Site Area/USGS                              | 6/22/92          |



|   |          |
|---|----------|
| 8.3.1.4.2.2(except .3 & .5): Characterization of<br>Structural Features within the Site Area/USGS | 02/09/89 |
| 8.3.1.4.2.2(3. & .5): Characterization of Structural<br>Features within the Site Area/USGS        | 6/15/92  |
| 8.3.1.15.1.1: Laboratory Thermal Properties   | 01/25/91 |
| 8.3.1.15.1.2: Laboratory Thermal Expansion Testing/SNL  | 10/04/90 |
| 8.3.1.15.1.3: Laboratory Determination of the<br>Mechanical Properties of Intact rock             | 06/21/91 |
| 8.3.1.15.1.5: Excavation Investigations/SNL   | 02/09/89 |
| 8.3.1.15.2.1.2: Characterization of Site Ambient<br>Stress Conditions/USGS                        | 02/09/89 |
| 8.3.1.17.4.5: Detachment Faults at or Proximal to<br>Yucca Mountain/USGS                          | 08/12/92 |

#### 4.2 STUDY PLANS ACCEPTED BY THE NRC

The following study plans have been accepted by the NRC.

| Identification/Organization  | Acceptance<br>Date |
|--|--------------------|
| 8.3.1.2.1.1: Characterization of the Meteorology for Regional Hydrology and Meteorological Monitoring/USGS | 10/21/91           |
| 8.3.1.2.1.2: Characterization of Run-off and Streamflow/USGS   | 08/14/92           |
| 8.3.1.2.1.3: Characterization of the Regional Ground-Water Flow System/USGS                                | 10/4/91            |
| 8.3.1.2.1.4: Regional Hydrologic Synthesis and Modeling  | 5/6/92             |
| 8.3.1.2.2.1: Characterization of Unsaturated Zone Infiltration/USGS  | 5/31/91            |
| 8.3.1.2.2.3: Characterization of Percolation in the Unsaturated Zone--Surface Based Study/USGS             | 3/26/92            |
| 8.3.1.2.2.6: Characterization of Gaseous-Phase Movement in the Unsaturated Zone                            | 10/07/91           |
| 8.3.1.2.2.7: Hydrochemical Characterization of the Unsaturated Zone/USGS                                   | 05/01/92           |
| 8.3.1.2.3.1.1-6: Characterization of the Site Saturated Ground-Water Flow System                           | 12/06/91           |
| 8.3.1.2.3.1.7: Testing of the C-Hole Site with Reactive Tracers  | 12/06/91           |
| 8.3.1.3.2.1: Mineralogy, Petrology, and Chemistry of Transport Pathways/LANL                               | 03/13/91           |
| 8.3.1.3.2.2: History of Mineralogic and Geochemical Alteration of Yucca Mountain                           | 04/27/92           |

|   |          |
|---|----------|
| 8.3.1.5.1.2: Paleoclimate Study: Lake, Playa, and Marsh Deposits  | 04/27/92 |
| 8.3.1.5.1.3: Climatic Implications of Terrestrial Paleoeecology/USGS  | 09/03/92 |
| 8.3.1.5.1.4: Analysis of the Paleoenvironmental History of the Yucca Mountain Site                                  | 12/06/91 |
| 8.3.1.5.2.1: Characterization of the Quaternary Regional Hydrology/USGS   | 06/08/90 |
| 8.3.1.8.1.1: Probability of Magmatic Disruption of the Repository/LANL  | 10/5/91  |
| 8.3.1.8.5.1: Characterization of Volcanic Features/LANL   | 08/20/90 |
| 8.3.1.9.2.2: Water Resource Assessment for Yucca Mountain/SAIC  | 5/4/92   |
| 8.3.1.12.2.1: Meteorological Data Collection at the Yucca Mountain Site   | 11/12/91 |
| 8.3.1.14.2: Studies to Provide Soil and Rock Properties of Potential Locations of Surface and Subsurface Facilities | 01/24/92 |
| 8.3.1.16.1.1: Characterization of Flood Potential of the Yucca Mountain Site/USGS                                   | 05/08/91 |
| 8.3.1.17.3.1: Relevant Earthquake Sources   | 5/18/92  |
| 8.3.1.17.3.4: Effects of Local Site Geology on Surface and Subsurface Ground Motions/USGS                           | 6/8/92   |
| 8.3.1.17.4.1: Historical and Current Seismicity/USGS  | 05/14/91 |
| 8.3.1.17.4.2: Evaluating the Location and Recency of Faulting Near Prospective Surface Facilities/SNL               | 03/16/90 |
| 8.3.1.17.4.6: Quaternary Faulting Within the Site Area/USGS   | 10/3/91  |
| 8.3.1.17.4.10: Geodetic Leveling/USGS   | 10/4/91  |

#### 4.3 COMMENTS ON APPROVED STUDY PLANS

The following approved study plans have been the subject of written comments by the NRC and the State of Nevada. The status of the responses to these comments is given below.

| Study Plan   | Source & No.<br>of Comments |    | Status                 |
|--|-----------------------------|----|------------------------|
| 8.3.1.2.1.1: Characterization<br>of the Meteorology for Regional<br>Hydrology and Meteorological<br>Monitoring | NV                          | 10 | Response sent 7/13/92  |
| 8.3.1.2.1.2: Regional Surface<br>Water Run-Off and Streamflow  | NV                          | 7  | Response sent 8/20/91  |
|  | NRC                         | 2  | In preparation         |
| 8.3.1.2.1.4: Regional Hydrologic<br>Synthesis and Modeling   | NRC                         | 1  | Response sent 7/10/92  |
| 8.3.1.2.2.6: Characterization<br>of Gas Phase Movement in the<br>Unsaturated Zone                              | NRC                         | 1  | Response sent 7/23/92  |
|  | NV                          | 16 | Response sent 7/27/92  |
| 8.3.1.2.3.1.1-6: Characterization<br>of the Site Saturated Zone Ground<br>Water Flow System                    | NRC                         | 2  | In preparation         |
| 8.3.1.2.3.1.7: Testing of the<br>C-Hole Site with Reactive Tracers   | NRC                         | 2  | In preparation         |
| 8.3.1.3.2.1: Mineralogy,<br>Petrology and Chemistry<br>Along Transport Pathways                                | NRC                         | 6  | Response sent 10/29/91 |
| 8.3.1.5.1.4: Analysis of the<br>Paleoenvironmental History<br>of the Yucca Mountain Site                       | NRC                         | 1  | In preparation         |
| 8.3.1.5.2.1: Quaternary<br>Regional Hydrology  | NRC                         | 9  | Response sent 12/19/90 |
|  | NV                          | 10 | Response sent 9/19/91  |

| Study Plan   | Source & No.<br>of Comments | Status   |
|--|-----------------------------|--|
| 8.3.1.8.1.1: Probability of<br>Volcanic Eruption Penetrating<br>the Repository                                 | NV 24<br>NRC 13             | Response sent 7/19/92<br>In preparation            |
| 8.3.1.8.5.1: Characterization of<br>Volcanic Features  | NV 5<br>NRC 3               | Response sent 8/23/91<br>Response sent 7/24/91     |
| 8.3.1.9.2.2: Water Resource<br>Assessment of Yucca Mountain  | NRC 1                       | Response sent 6/29/92                              |
| 8.3.1.12.2.1: Meteorological Data<br>Collection at the Yucca Mountain<br>Site                                  | NV 5                        | In preparation                                     |
| 8.3.1.14.2: Studies to Provide<br>Soil and Rock Properties for<br>Potential Locations of Surface<br>Facilities | NRC 1<br>NV 10              | Response sent 8/07/92<br>Response sent 8/21/92     |
| 8.3.1.16.1.1: Characterization<br>of Flood Potential   | NV 9<br>NRC 1               | Response sent 6/6/91<br>Telecon resolution 8/15/92 |
| 8.3.1.17.3.1: Relevant Earthquake<br>Sources   | NRC 1                       | In preparation                                     |
| 8.3.1.17.3.4: Effect of Local Site<br>Geology on Surface and<br>Subsurface Motion                              | NRC 1                       | In preparation                                     |
| 8.3.1.17.4.1: Historic and<br>Current Seismicity   | NRC 3                       | Telecon resolution 8/15/92                         |
| 8.3.1.17.4.2: Location and<br>Recency of Faulting Near<br>Prospective Surface Facilities                       | NRC 16<br>NV 3              | Response sent 12/19/90<br>Response sent 10/15/90   |
| 8.3.1.17.4.6: Quaternary Faulting  | NRC 1                       | Response sent 12/16/91                             |

## LEGEND FOR TABLE 1

|                           |   |
|---------------------------|---|
| Submit to YMP             | Gives the actual date of the submission of the draft study plan.  |
| Screening Review Complete | Date that screening review was recieved by the Project Office.<br>Screening reviews were not done for some study plans submitted early in the process. These are indicated by the word "None". Revs. 2 & 3 of AP-1.10Q did not require a screening review. Plans reviewed under Rev. 2 & 3 are indicated by "NA". |
| Comments to PI            | Date that review comments were transmitted to the Principal Investigator for review.  |
| Comment Resol. Meeting    | Date that comment resolution meeting to agree on proposed comment resolutions was completed. An "N/A" indicated that a comment resolution meeting was not required.   |
| PI Revision Complete      | Date that revised study plan that responds to Project Office and Headquarters comments is submitted to the Project Office.  |
| Verify Comm. Res.         | Date that the verification of actual dispositions of comments is completed by reviewers.  |
| PO Approve                | Date that Project Office approves the plan.   |
| Submit To NRC             | The date that the study plan is submitted to the NRC for review.  |
| NRC Phase 1 Review        | Date that NRC Acceptance and Start-Work Reviews are completed.  |
| NRC Phase 2 Review        | Date that NRC Detailed Technical Reviews are completed or note that none will be completed or the review will be deferred.  |

12 Oct 92

## Study Plan Tracking Sheet

| #    | SP NAME/SCOPE  | SP NUMBER     | SUBMIT TO YMP | SCREENING REVIEW COMPLETE | COMMENTS TO PI | COMMENT RESOL MEETING | PI REVISION COMPLETE | VERIFY COMMENT RESOL | FO APPROVE | SUBMIT TO NRC | NRC PHASE I REVIEW | NRC PHASE II REVIEW |
|------|--|---------------|---------------|---------------------------|----------------|-----------------------|----------------------|----------------------|------------|---------------|--------------------|---------------------|
| 1    | CHAR OF MET FOR REG HYDRO AND MET MONITOR/USGS       | 8.3.1.2.1.1   | 6/26/90       | 6/27/90                   | 10/1/90        | 11/9/90               | 11/9/90              | 2/25/91              | 3/1/91     | 6/21/91       | 10/21/91           | NONE                |
| 2    | CHAR RUNOFF AND STREAM FLOW/USGS                     | 8.3.1.2.1.2   | 3/27/89       | NA                        | 10/17/89       | 2/28/90               | 3/22/90              | 7/17/90              | 8/21/90    | 10/1/90       | 5/14/91            | 8/11/92             |
| 3    | CHAR OF REG GRD W FLOW SYSTEM/USGS                   | 8.3.1.2.1.3   | 3/1/90        | 3/14/90                   | 7/3/90         | 8/23/90               | 9/17/90              | 10/19/90             | 1/18/91    | 2/15/91       | 10/1/91            | NONE                |
| 4    | REG HYDRO SYS SYN AND MODELING/USGS                  | 8.3.1.2.1.4   | 6/6/90        | 6/29/90                   | 3/14/91        | NA                    | 5/8/91               | 10/2/91              | 12/18/91   | 1/15/92       | 5/6/92             |                     |
| 5    | CHAR UNSAT ZONE INFILTRATION/USGS                    | 8.3.1.2.2.1   | 3/9/90        | 3/14/90                   | 7/3/90         | 9/12/90               | 9/17/90              | 10/15/90             | 1/18/91    | 3/1/91        | 5/31/91            | NONE                |
| 6    | WATER MOVEMENT TEST/ANL, REV 0                       | 8.3.1.2.2.2   | 9/23/87       | N/A                       | COMPLETE       | 10/23/87              | 10/30/87             | 1/9/89               | 11/9/89    | 2/9/89        | DEFERRED           |                     |
| 6R1  | WATER MOVEMENT TEST/ANL, REV 1                       | 8.3.1.2.2.2   | 10/17/91      | NA                        | 5/12/92        |                       |                      |                      |            |               |                    |                     |
| 7    | CHAR PERCOL IN UZ SURFACE BASED STUDY/USGS           | 8.3.1.2.2.3   | 8/12/88       | NA                        | 1/23/89        | 1/30-31/89            | 2/20/90              | 1/9/91               | 04/08/91   | 5/10/91       | 3/26/92            |                     |
| 8    | CHAR YUC MTN PERCO UNSAT ZONE ESF INVEST/USGS        | 8.3.1.2.2.4   |               |                           |                |                       |                      |                      |            |               |                    |                     |
|      | (4,5,7,8,9)  |               | 9/9/87        | NA                        | 12/7/88        | 10/19/87              | 1/4/89               | 1/9/89               | 18/9/89    | 2/9/91        | DEFERRED           |                     |
| 8R1  | CHAR YUC MTN PERCO UNSAT ZONE ESF INVEST/USGS        | 8.3.1.2.2.4   |               |                           |                |                       |                      |                      |            |               |                    |                     |
|      | (1,2,3,6,10)   |               |               |                           |                |                       |                      |                      |            |               |                    |                     |
| 9    | DIFFUSION TESTS IN ESF/ANL                           | 8.3.1.2.2.5   | 11/1/88       | 11/18/88                  | 2/28/90        | 8/28/90               | 6/11/91              | 1/24/92              | 4/22/92    | 6/8/92        |                    |                     |
| 10   | CHAR GAS PHASE MOVEMENT IN UZ/USGS                   | 8.3.1.2.2.6   | 6/12/89       | 7/14/89                   | 3/9/90         | 5/24/90               | 5/24/90              | 04/03/91             | 6/11/91    | 6/24/91       | 10/30/91           | NONE                |
| 11   | HYDROCHEM CHAR OF UZ/USGS                            | 8.3.1.2.2.7   | 10/24/88      | 11/4/88                   | 3/8/89         | 3/29-31/89            | 6/27/89              | 4/10/90              | 9/18/90    | 5/8/91        | 5/1/92             | DEFERRED            |
| 12   | FLUID FLOW IN UNSAT, TRAC ROCK/USGS                  | 8.3.1.2.2.8   | 9/7/90        | 10/3/90                   | 5/01/91        | NA                    | 11/26/91             | 5/28/92              | 8/12/92    | 9/1/92        |                    |                     |
| 13   | SITE UZ MODELING & SYNTHESIS/USGS                    | 8.3.1.2.2.9   | 1/25/91       | NA                        | 2/27/92        |                       |                      |                      |            |               |                    |                     |
| 14   | CHAR SITE SAT ZONE GRD W FLOW SYS/ANL (7)            | 8.3.1.2.3.1   | 2/8/88        | NA                        | 7/15/89        | 9/1-2/89              | 11/16/89             | 1/1/90               | 2/22/90    | 4/6/90        | 12/6/91            | DEFERRED            |
| 15   | CHAR SITE SAT ZONE GRD W FLOW SYS/USGS (1,6)         | 8.3.1.2.3.1   | 5/31/89       | 6/15/89                   | 11/1/89        | 4/4-17/90             | 5/18/90              | 10/15/90             | 2/13/91    | 3/7/91        | 12/6/91            | DEFERRED            |
| 15R1 | CHAR SITE SAT ZONE GRD W FLOW SYS/ANL (8)            |               |               |                           |                |                       |                      |                      |            |               |                    |                     |
| 16   | CHAR SAT ZONE HYDROCHEM/USGS                         | 8.3.1.2.3.2   | 3/28/90       | 5/9/90                    | 11/27/90       | 5/21-22/91            | 11/27/91             | 3/11/92              | 4/22/92    | 6/5/92        |                    |                     |
| 17   | SAT ZONE HYDRO SYSTEM SYNTH AND MODELING/USGS        | 8.3.1.2.3.3   | 9/4/90        | 10/12/90                  | 8/30/91        | N/A                   | 3/31/92              |                      |            |               |                    |                     |
| 18   | GROUND WATER CHEMISTRY MODEL/ANL                     | 8.3.1.3.1.1   | 3/15/91       | NA                        | 5/6/92         |                       |                      |                      |            |               |                    |                     |
| 19   | MIN, PET, CHEM OF TRANSPORT PATHWAYS/ANL             | 8.3.1.3.2.1   | 1/22/88       | 5/24/88                   | 7/13/88        | 8/4-5/88              | 12/23/88             | 9/12/89              | 6/13/89    | 11/30/89      | 8/20/90            | DEFERRED            |
| 20   | DIST OF MIN AND GEOCHEM ALT OF YUCCA MTN/ANL         | 8.3.1.3.2.2   | 3/28/88       | NA                        | 5/25/89        | 6/1/89                | 6/13/91              | 9/23/91              | 12/18/91   | 1/11/92       | 4/27/92            | DEFERRED            |
| 21   | NAT ANLOG HYDROTHERM SYS IN TUFF/ANL                 | 8.3.1.3.3.1   |               |                           |                |                       |                      |                      |            |               |                    |                     |
| 22   | KINETICS AND THERMODYN OF MIN EVOL/ANL               | 8.3.1.3.3.2   | 2/23/89       | 3/1/89                    | 11/1/89        | 3/14/90               |                      |                      |            |               |                    |                     |
| 22   | CONCEPTUAL MODEL OF MINERAL EVOL/ANL                 | 8.3.1.3.3.3   | 2/23/89       | 3/1/89                    | 11/1/89        | 3/14/90               |                      |                      |            |               |                    |                     |
| 24   | BATCH SORPT STUDIES AND DEVEL SORPT MODELS/ANL       | 8.3.1.3.4.1/3 | 1/4/89        | 1/18/89                   | 10/13/89       | 2/14/90               |                      |                      |            |               |                    |                     |
| 25   | BIOLOGICAL SORPTION & TRANSPORT/ANL                  | 8.3.1.3.4.2   | 12/12/88      | 1/5/89                    | 3/12/90        | 6/21/90               | 8/28/91              | 12/7/91              |            |               |                    |                     |
| 26   | DISSOLVED SPECIES CONC LIMITS AND COLLOID BEH/ANL    | 8.3.1.3.5.1/2 | 9/7/90        | NA                        | 11/8/91        | NA                    |                      |                      |            |               |                    |                     |
| 27   | DYNAMIC TRANSPORT COLUMN EXPERIMENTS/ANL             | 8.3.1.3.6.1   | 7/24/89       | 8/9/89                    | 5/24/90        | 8/29/90               |                      |                      |            |               |                    |                     |
| 28   | DIFFUSION/ANL  | 8.3.1.3.6.2   | 7/24/89       | 8/9/89                    | 5/10/90        | 8/30/90               |                      |                      |            |               |                    |                     |
| 29   | RETARDATION SENSITIVITY ANALYSIS/ANL                 | 8.3.1.3.7.1   | 12/14/88      | 2/8/89                    | 3/12/90        | 7/31/90               | 6/18/91              | 7/28/92              | 8/11/92    | 9/1/92        |                    |                     |
| 30   | DEMON APPLI AB DATA TO REPOS TRANS CALC/ANL          | 8.3.1.3.7.2   |               |                           |                |                       |                      |                      |            |               |                    |                     |
| 31   | GASEOUS RAD TRANS CALC AND MEASURE/ANL               | 8.3.1.3.8.1   |               |                           |                |                       |                      |                      |            |               |                    |                     |
| 32   | CHAR VERT/AT DIST STRAT UNITS SITE AREA/USGS (1,2,4) | 8.3.1.4.2.1   | 4/12/90       | 5/10/90                   | 2/8/91         | 12/20/91              | 2/3/92               | 4/30/92              | 6/9/92     | 6/22/92       |                    |                     |
| 32R1 | CHAR VERT/AT DIST STRAT UNITS SITE AREA/USGS (3,5)   | 8.3.1.4.2.1   |               |                           |                |                       |                      |                      |            |               |                    |                     |
| 33   | CHAR STRUCTURAL FEATURES W/IN SITE AREA/USGS         | 8.3.1.4.2.2   | 9/4/87        | NA                        | Done           | 10/22/87              | 4/13/88              | 2/3/89               | 2/03/89    | 2/9/89        | DEFERRED           |                     |

| #     | SP NAME/SCOPE  | SP NUMBER      | SUBMIT TO YMP | SCREENING REVIEW COMPLETE | COMMENTS TO PI | COMMENT RESOL MEETING | PI REVISION COMPLETE | VERIFY COMMENT RESOL | DO APPROVE | SUBMIT TO NRC | NRC PHASE I REVIEW | NRC PHASE II REVIEW |
|-------|--|----------------|---------------|---------------------------|----------------|-----------------------|----------------------|----------------------|------------|---------------|--------------------|---------------------|
| 65 R1 | METHEOREOLOGICAL DATA COLLECT YUCCA MTN SITE/SAIC, REV 1                                       | 8.3.1.12.2.1   | 3/31/92       | 4/21/92                   | 6/17/92        |                       |                      |                      |            |               |                    |                     |
| 66    | STUDIES TO PROVIDE SOIL/ROCK PROP OF POTENTIAL LOCATIONS OF SURFACE/SUBSURFACE FACILITIES/USGS | 8.3.1.14.2     | 7/15/91       | 7/23/91                   | 8/11/91        | NA                    | 8/21/91              | 9/22/91              | 10/01/91   | 10/16/91      | 1/21/92            |                     |
| 67    | LAB THERMAL PROPERTIES/SNL   | 8.3.1.15.1.1   | 3/17/88       | NA                        | 11/1/89        | 12/5/89               | 3/16/90              | 5/23/90              | 10/21/90   | 1/25/91       | DEFERRED           |                     |
| 68    | LAB THERMAL EXPANSION TESTING/SNL  | 8.3.1.15.1.2   | 12/1/88       | 12/20/88                  | Done           | 8/1/89                | 11/20/89             | 5/23/90              | 8/21/90    | 10/1/90       | DEFERRED           |                     |
| 69    | LAB DETERMIN MECH PROP INTACT ROCK/SNL   | 8.3.1.15.1.3   | 2/8/88        | NA                        | 7/6/88         | 7/7/88                | 11/29/88             |                      | 5/21/91    | 6/21/91       | DEFERRED           |                     |
| 70    | LAB DETERMIN MECH PROP FRACTURES/SNL   | 8.3.1.15.1.4   | 10/23/91      | 2/5/92                    | 5/12/92        |                       |                      |                      |            |               |                    |                     |
| 71    | EXCAVATION INVESTIGATION/SNL   | 8.3.1.15.1.5   | 3/26/87       | NA                        | Done           | 6/9/87                | 9/1/87               | 5/27/88              | 1/19/89    | 2/9/89        | DEFERRED           |                     |
| 72    | IN SITU THERMOMECH PROPS/SNL   | 8.3.1.15.1.6   |               |                           |                |                       |                      |                      |            |               |                    |                     |
| 73    | IN SITU MECHANICAL PROPS/SNL   | 8.3.1.15.1.7   |               |                           |                |                       |                      |                      |            |               |                    |                     |
| 74    | IN SITU DESIGN VERIFICATION/SNL  | 8.3.1.15.1.8   | 3/20/90       | 4/12/90                   | 10/10/91       | NA                    |                      |                      |            |               |                    |                     |
| 75    | CHAR SITE AMBIENT STRESS CONDITIONS/USGS (2)   | 8.3.1.15.2.1   | 9/22/87       | NA                        | Done           | 12/4/87               | 2/23/88              | 2/9/89               | 1/11/89    | 2/9/89        | DEFERRED           |                     |
| 75 R1 | CHAR SITE AMBIENT STRESS CONDITIONS/USGS (1)   | 8.3.1.15.2.1   |               |                           |                |                       |                      |                      |            |               |                    |                     |
| 76    | CHAR SITE AMBIENT THERMAL COND/USGS  | 8.3.1.15.2.2   |               |                           |                |                       |                      |                      |            |               |                    |                     |
| 77    | CHAR OF FLOOD POTENTIAL YUCCA MTN SITE/USGS  | 8.3.1.16.1.1   | 3/10/89       | 5/2/89                    | 10/13/89       | 4/18/90               | 4/27/90              | 8/6/90               | 9/17/90    | 10/11/90      | 5.8.91             | NONE                |
| 78    | LOC OF ADEQ WATER SUPPLY CONST OPER, CLOS, DECOMM OF A MOHS AT YUCCA MTN/SAIC                  | 8.3.1.16.2.1   |               |                           |                |                       |                      |                      |            |               |                    |                     |
| 79    | DETERMINE PRECLOS HYDRO COND UZ YUCCA MTN/USGS WRD   | 8.3.1.16.3.1   |               |                           |                |                       |                      |                      |            |               |                    |                     |
| 80    | POTENTIAL FOR ASH FALL AT SITE/LANL  | 8.3.1.17.1.1   |               |                           |                |                       |                      |                      |            |               |                    |                     |
| 81    | FAULTING POTENTIAL AT REPOSITORY/SAIC  | 8.3.1.17.2.1   |               |                           |                |                       |                      |                      |            |               |                    |                     |
| 82    | RELEVANT EARTHQUAKE SOURCES/USGS   | 8.3.1.17.3.1   | 8/1/90        | 8/22/90                   | 12/28/90       | NA                    | 5/1/91               | 11/15/91             | 12/18/91   | 1/16/92       | 5.18.92            |                     |
| 83    | UNDERGROUND NUCLEAR EXPLOSION SOURCES/SNL  | 8.3.1.17.3.2   |               |                           |                |                       |                      |                      |            |               |                    |                     |
| 84    | GRD MOTION FROM REG EARTHQUAKE AND UNE/USGS  | 8.3.1.17.3.3.1 |               |                           |                |                       |                      |                      |            |               |                    |                     |
| 85    | GRD MOTION FROM REG EARTHQUAKE AND UNE/USGS  | 8.3.1.17.3.3.2 | 8/1/90        | 8/10/90                   | 2/27/92        | NA                    |                      |                      |            |               |                    |                     |
| 86    | EFFECT LOCAL SITE GEOL. ON SRF&SUBSRF MOTION/USGS  | 8.3.1.17.3.4   | 7/6/90        | 7/23/90                   | 1/23/91        | NA                    | 4/16/91              | 8/26/91              | 11/14/91   | 12/1/91       | 6.8.92             | NONE                |
| 87    | GRD MOTION AT SITE FROM CONTROL SEIS EVENT/USGS  | 8.3.1.17.3.5   | 10/4/90       | NA                        | 2/27/92        | NA                    | 4/14/92              |                      |            |               |                    |                     |
| 88    | PROBABILISTIC SEISMIC HAZARD ANALYSES/USGS   | 8.3.1.17.3.6   |               |                           |                |                       |                      |                      |            |               |                    |                     |
| 89    | HISTORICAL AND CURRENT SEISMICITY/USGS   | 8.3.1.17.4.1   | 10/17/89      | 10/25/89                  | 4/30/90        | 6/20/90               | 7/6/90               | 9/4/90               | 9/17/90    | 10/22/90      | 5/11/91            | NONE                |
| 90    | LOC & REGENCY OF FAULT NEAR PROSPEC SUR FACI/USGS  | 8.3.1.17.4.2   | 12/6/88       | 12/14/88                  | Done           | 1/19/89               | 2/16/89              | 6/21/89              | 5/22/89    | 7/10/89       | 11/24/89           | 4.16.90             |
| 91    | QUAT 100KM YUCCA MIN. INCL. WALKER LANE/USGS   | 8.3.1.17.4.3   | 3/25/92       | 4/6/92                    | 6/17/92        | N/A                   | 9/22/92              |                      |            |               |                    |                     |
| 92    | QUAT FAULT PROXIMAL TO SITE W/IN NE TREND FAULT ZONES/USGS                                     | 8.3.1.17.4.4   | 8/5/92        | 8/5/92                    | 9/25/92        |                       |                      |                      |            |               |                    |                     |
| 93    | DETACH FAULTS AT OR PROX TO YUCCA MTN/USGS   | 8.3.1.17.4.5   | 5/1/90        | 5/9/90                    | 5/21/91        | 2/6/92                | 3/25/92              | 6/9/92               | 7/20/92    | 8/12/92       |                    |                     |
| 94    | QUAT FAULTING W/IN SITE AREA/USGS  | 8.3.1.17.4.6   | 10/14/88      | NA                        | Done           | 4/13/89               | 5/25/89              | 10/11/90             | 1/23/91    | 2/19/91       | 10/3/91            | NONE                |
| 95    | SUBSR GEOMFI AND CONCEALED EXTEN OF QUAT FAULTS AT YUCCA MTN/USGS                              | 8.3.1.17.4.7   |               |                           |                |                       |                      |                      |            |               |                    |                     |
| 96    | STRESS FIELD WITHIN/PROX TO SITE AREA/USGS   | 8.3.1.17.4.8   |               |                           |                |                       |                      |                      |            |               |                    |                     |
| 97    | TECT GEOMORPH YUCCA MIN REG/USGS   | 8.3.1.17.4.9   |               |                           |                |                       |                      |                      |            |               |                    |                     |
| 98    | MODE TECT LEVELING/USGS  | 8.3.1.17.4.10  | 3/10/90       | 4/19/90                   | 8/8/90         | 9/20/90               | 9/21/90              | 10/15/90             | 1/18/91    | 2/11/91       | 10/1/91            | NONE                |



## Study Plan Tracking Sheet

[illegible]

| #     | SP NAME/SA CODE   | SP NUMBER    | SUBMIT TO YMP | SCREENING REVIEW COMPLETE | COMMENTS TO PI | COMMENT RESOL MEETING | PI REVISION COMPLETE | VERIFY COMMENT RESOL | PO APPROVAL | SUBMIT TO SRC | SRC PHASE I REVIEW | SRC PHASE II REVIEW |
|-------|---|--------------|---------------|---------------------------|----------------|-----------------------|----------------------|----------------------|-------------|---------------|--------------------|---------------------|
| 34 R1 | 2 MORE ACTIVITIES C.U.S/GSIS  | 8.3.1.4.2.2  | 2/27/90       | 3/22/90                   | 8/21/90        | 6/13/91               | 7/29/91              | 2/10/92              | 4/22/92     | 6/15/92       |                    |                     |
| 35    | THREE DIMENSIONAL GEOLOGIC MODEL/USGS   | 8.3.1.4.2.3  |               |                           |                |                       |                      |                      |             |               |                    |                     |
| 36    | SYST ACQ SITE SPEC SUBSURF INFO/SNL   | 8.3.1.4.3.1  | 3/27/90       | 4/13/90                   | 10/2/90        | 7/1/92                | 7/28/92              | 9/4/92               |             |               |                    |                     |
| 37    | THREE DIMENSIONAL ROCK CHAR MODEL/SNL   | 8.3.1.4.3.2  |               |                           |                |                       |                      |                      |             |               |                    |                     |
| 38    | CHAR MODERN REGIONAL CLIMATE/USGS   | 8.3.1.5.1.1  |               |                           |                |                       |                      |                      |             |               |                    |                     |
| 39    | PALEOCLIM STUDY: LAKE, PLAYA, MARSH DEPS/USGS   | 8.3.1.5.1.2  | 10/25/90      | NA                        | 3/27/91        | NA                    | 5/9/91               | 10/25/91             | 10/31/91    | 12/8/91       | 1/27/92            | DEFERRED            |
| 40    | CLIMATIC IMPLICATION TERREST PALEOECOLOG/USGS   | 8.3.1.5.1.3  | 2/11/91       | NA                        | 6/25/91        | NA                    | DONE                 | 12/11/91             | 1/17/92     | 6/5/92        | 9/3                | DEFERRED            |
| 41    | ANALYSIS PALEOENV HIST YUCCA MTN REGION/USGS  | 8.3.1.5.1.4  | 3/30/90       | 4/13/90                   | 8/13/90        | 10/9-11/90            | 10/24/90             | 1/9/91               | 5/29/91     | 6/23/91       | 12/8/91            | DEFERRED            |
| 42    | PALEOCLIM-PALEOENVIRO SYNTHESIS/USGS  | 8.3.1.5.1.5  |               |                           |                |                       |                      |                      |             |               |                    |                     |
| 43    | CHAR FUTURE REG CLIMATES AND ENVIRON/SNL  | 8.3.1.5.1.6  | 6/7/91        | 7/10/91                   | 1/30/92        | N/A                   |                      |                      |             |               |                    |                     |
| 44    | CHAR OF THE QUATERNARY REG HYDRO/USGS (3,4,5)   | 8.3.1.5.2.1  | 1/26/88       | NA                        | 12/9/88        | 12/20/88              | 5/15/89              | 6/8/89               | 6/8/89      | 1/10/89       | 11/21/89           | CONF                |
| 45 R2 | CHAR OF THE QUATERNARY REG HYDRO/USGS (1)   | 8.3.1.5.2.1  | 9/25/90       | NA                        | 8/8/91         | NA                    | 3/31/92              | 8/10/92              |             |               |                    |                     |
| 46    | CHAR FUTURE REG HYDRO DUE TO CLIM CHANGES/USGS  | 8.3.1.5.2.2  | 1/16/91       | NA                        | 8/7/91         | NA                    | 5/1/92               | 7/14/92              |             |               |                    |                     |
| 47    | DISTRIB AND CHAR PRESENT AND PAST EROSION/USGS  | 8.3.1.6.1.1  |               |                           |                |                       |                      |                      |             |               |                    |                     |
| 48    | INFLU FUT CL COND ON LOC & RATES OF ERO/USGS  | 8.3.1.6.2.1  |               |                           |                |                       |                      |                      |             |               |                    |                     |
| 49    | EVAL EFFECT OF FUT TECT ON ERO AT YUC MTN/USGS  | 8.3.1.6.3.1  |               |                           |                |                       |                      |                      |             |               |                    |                     |
| 50    | DEV TOPICAL RPT EFFECTS OF ERO ON THE HYDRO, GEOCHEM, AND ROCK CHAR AT YUCCA MTN/USGS           | 8.3.1.6.4.1  |               |                           |                |                       |                      |                      |             |               |                    |                     |
| 51    | PROB MAGMATIC ERUPT PENETRATE THE REPOSIT/ANL   | 8.3.1.8.1.1  | 3/29/89       | 4/5/89                    | 9/12/89        | 9/28/89               | 6/19/90              | 9/10/90              | 9/19/90     | 3/5/91        | 10/5/91            | YES                 |
| 52    | EFFECTS OF VOL ERUPT PENETRATE REPOSIT/ANL  | 8.3.1.8.1.2  |               |                           |                |                       |                      |                      |             |               |                    |                     |
| 53    | ANAL WST PKG RUP DUE TO TECT PROC & EVENT/SAIC  | 8.3.1.8.2.1  | 12/15/89      | 1/31/90                   | 10/30/90       | 11/20/91              | 12/10/91             | 8/11/92              |             |               |                    |                     |
| 54    | ANAL EFFECTS OF TECT PROC & EVENT ON AVE PERC FLUX RATES OVER REPOSIT/USGS                      | 8.3.1.8.3.1  |               |                           |                |                       |                      |                      |             |               |                    |                     |
| 55    | ANAL EFF OF TECT PROC & EVENT CHGS WTR TBL FLV/USGS   | 8.3.1.8.3.2  |               |                           |                |                       |                      |                      |             |               |                    |                     |
| 56    | ANAL EFF OF TECT PROC & EVENT ON LOCAL FRAC PERM AND EFFECTIVE POROSITY/USGS                    | 8.3.1.8.3.3  |               |                           |                |                       |                      |                      |             |               |                    |                     |
| 57    | ANAL EFF TECT PROC & EVENT ON RK GEOCHEM PROP/USGS  | 8.3.1.8.4.1  |               |                           |                |                       |                      |                      |             |               |                    |                     |
| 58    | CHAR OF VOLCANIC FEATURES/ANL   | 8.3.1.8.5.1  | 12/14/88      | 1/17/89                   | 6/20/89        | 7/12/89               | 1/2/90               | 3/15/90              | 4/18/90     | 5/15/90       | 8/20/90            | 1/18/91             |
| 59    | CHAR IGNEOUS INTRUSIVE FEATURES/USGS-GD   | 8.3.1.8.5.2  |               |                           |                |                       |                      |                      |             |               |                    |                     |
| 60    | INVEST FOLDS IN MIOCENE AND YNG RKS OF REG/USGS-GD  | 8.3.1.8.5.3  |               |                           |                |                       |                      |                      |             |               |                    |                     |
| 61    | EVAL NAT PROC THAT COULD AFFECT LG TERM SURVIVABIL SURFACE MARKER SYS AT YUCCA MTN/M&O          | 8.3.1.9.1.1  |               |                           |                |                       |                      |                      |             |               |                    |                     |
| 62    | NAT RES ASSESS YUCCA MTN, NYE COUNTY/USGS   | 8.3.1.9.2.1  | 7/13/90       | 8/16/90                   | 1/7/91         | NA                    | 1/13/92              | 9/28/92              |             |               |                    |                     |
| 63    | WATER RES ASSESS YUCCA MTN, NV/SAIC   | 8.3.1.9.2.2  | 10/6/89       | 1/30/90                   | 8/15/90        | 5/9/91                | 12/26/90             | 6/13/91              | 8/26/91     | 9/20/91       | 5/1/92             |                     |
| 64    | EVAL DATA NEEDED TO SUPP ASSESS LIKLIHOOD FUT INADVER HUMAN INTRU YUC MTN EXPLO/EXT NAT RES/M&O | 8.3.1.9.3.1  |               |                           |                |                       |                      |                      |             |               |                    |                     |
| 65    | EVAL POTENTIAL EFFECT OF EXPLOIT NAT RES ON HYDRO CHAR AT YUCCA MTN/M&O                         | 8.3.1.9.3.2  |               |                           |                |                       |                      |                      |             |               |                    |                     |
| 66    | METEOROLOGICAL DATA COLLECT YUCCA MTN SITE/SAIC   | 8.3.1.12.2.1 | 9/28/90       | NA                        | 2/1/91         | 2/25/91               | 2/21/91              | 2/26/91              | 3/20/91     | 5/16/91       | 11/12/91           | NO                  |

**Department of Energy**

Washington, DC 20585

**JUN 17 1991**

Mr. John J. Linehan, Acting Director  
Repository Licensing and Quality Assurance  
Project Directorate  
Division of High-Level Waste Management  
Office of Nuclear Material Safety  
and Safeguards  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555

Dear Mr. Linehan:

Enclosed is the third progress report entitled, "Site Characterization Progress Report: Yucca Mountain, Nevada, Number 3," for April 1, 1990, through September 30, 1990. This report is transmitted for your information to show the reformatting of the document and for information on the status of the study plans.

The U.S. Nuclear Regulatory Commission (NRC) comments on the first progress report (PR) (reference NRC letter to DOE; Bernero to Bartlett, dated June 25, 1990) centered around four major concerns, summarized as follows: (1) the relevance of the information in the PR to site characterization issues; (2) the completeness of data reported in the PR; (3) the level of detail in the PR; and (4) the status of NRC open items with regard to the Site Characterization Plan (SCP) or study plans.

When the NRC comments were received in July 1990, it was too late in the production cycle of the second PR to permit significant modification. However, the U.S. Department of Energy (DOE) believes that NRC concerns 2, 3, and 4 have been addressed in the third PR. The report was recently released to the public.

With respect to NRC's first concern, DOE agrees that the PR should report the significance of the work reported. However, please note that information reported in the PR includes the data, analyses, and conclusions that reside in the primary literature produced by project scientists. For such information, some discussion of important conclusions is desirable, but detailed discussion is deferred to the original reference. In addition, the eventual programmatic importance of such technical support documentation is not always immediately apparent, as the regulatory implications of technical data cannot be evaluated until after the studies have been completed. The PR role is an informational reference that is in addition to, and not a

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substitute for, other programmatic documents where the relationship of primary data to technical or licensing issues is dealt with. Similarly, the PR is not the mechanism for controlling changes to technical baselines, only to report when a change has been made.

With respect to NRC concerns 2 and 3, the level of detail of the PR has been expanded significantly to include a separate heading for each SCP study, activity, information need, and performance and design activity. In essence, the manner in which data were reported in the Yucca Mountain Site Characterization Project Office (YMPO) Technical Status Report (previously published separately) has been adopted for the PR.

With respect to NRC concern 4, PR tables 2.1 and 2.2 provide a status for NRC open items from comments on the SCP/Consultation Draft; the statutory SCP; the schedule for preparation, review, and approval of study plans; and various Exploratory Studies Facility open items. The tables provide a suggestion for a possible means of resolution for each of the items NRC has not indicated as closed. These suggestions are the means to continue a dialogue toward resolution and are not meant to indicate a committed DOE course of action.

An additional concern was expressed during a DOE/NRC management meeting held on January 24, 1991, with respect to the role of the PR in light of the DOE responses to comments in the Site Characterization Analysis (SCA). At issue was the relationship of the PR annotated bibliography with three management plans referenced in the DOE SCA responses and cover letter to the NRC.

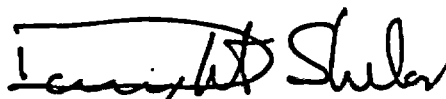
The PR bibliography section included publications of recent research and various studies carried out by scientists working for the U.S. Geological Survey, the national laboratories, and other DOE contractors that are supported by the Nuclear Waste Fund. These references are not part of the DOE document hierarchy of management plans. The bibliography is directed primarily at those in the technical community and the public who wish to be informed of recent work carried out by the Office of Civilian Radioactive Waste Management (OCRWM), and not exclusively at the NRC. This draft PR does not include a bibliography section, but instead references the Yucca Mountain Project (YMP) Bibliography, updates of which are published semiannually.

With respect to the reference and bibliography section of the PR, the NRC receives copies of all technical publications produced by YMPO participants at the following stations in Washington, DC: (1) Document Control Desk, (2) Senior Project Manager for Yucca Mountain Repository Project Branch, and (3) Repository Licensing and Quality Assurance Project Directorate, as well as the NRC

site representative in Las Vegas. Additional addresses could be added at NRC's request. Copies of all publications sponsored by the OCRWM are also available to the NRC through the Uniform Category (UC-800) standard distribution system. Additional copies of the items referenced in the PR and the bibliography can be obtained through the National Technical Information Service (NTIS) in Springfield, Virginia. The YMP Bibliography contains directions for acquiring all references contained in it through NTIS. DOE will forward copies to the NRC of any reference in the PR that is not available through the open literature, published symposia proceedings, or the standard channels for distribution of Government reports identified above. Such items would include, for example, uncontrolled copies of YMPO controlled documents.

Should you have any further questions in this regard, please contact Linda Desell of my office at (202) 586-1462.

Sincerely,



Dwight E. Shelor  
Acting Associate Director for  
Systems and Compliance  
Office of Civilian Radioactive  
Waste Management

Enclosure:

"Site Characterization Progress Report: Yucca Mountain,  
Nevada, Number 3"