

U.S. DEPARTMENT OF ENERGY

SWMS



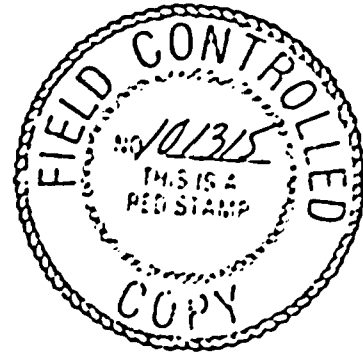
YUCCA MOUNTAIN

SITE CHARACTERIZATION

PROJECT

# ENGINEERED BARRIER - LARGE BLOCK EXPERIMENT SITE PREPARATION - PHASE I

REV. 0



FIRST SUBMITTAL

## JOB PACKAGE 93-10

RECEIVED

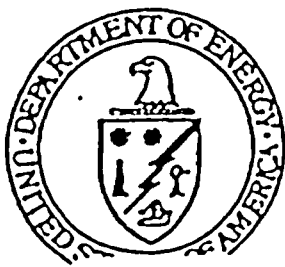
AUG 05 1993

ENCLOSURE 3

AUGUST 1993

DOCUMENT AND RECORDS CENTER

UNITED STATES DEPARTMENT OF ENERGY


 9403080198  
PDR WASTE  
WM-11

940223

PDR



Department of Energy  
Yucca Mountain Site Characterization  
Project Office  
P. O. Box 98608  
Las Vegas, NV 89193-8608

WBS:1.2.7.3  
QA: N/A

AUG 05 1993

YUCCA MOUNTAIN SITE OFFICE  
FIELD OPERATIONS CENTER

Job Package: 93-10  
Date: August 5, 1993  
Job Title: Engineered Barrier  
Large Block Experiment-Phase I

Robert F. Pritchett, REECO, Las Vegas, NV  
William C. Kopatich, RSN, Las Vegas, NV  
Ronald D. Oliver, LANL, Las Vegas, NV  
Willis L. Clark, LLNL, Livermore, CA

JOB PACKAGE (JP) AUTHORIZATION (SCP: N/A)

This is your authorization to proceed with JP 93-10 in accordance with the enclosed JP and the following requirements:

1. The purpose of the Job Package (JP) is for site preparation for the Engineered Barrier-Large Block Experiment (LBE) conducted at Fran Ridge. This work includes excavation of the existing outcrop, sample collection, and vertical drilling.
2. The participants involved are Lawrence Livermore National Laboratory (LLNL), Reynolds Electrical and Engineering Co., Inc. (REECo); and Raytheon Services Nevada (RSN).
3. The specific work requirements are as indicated below:
  - a. LLNL and its subcontractor, Sandia National Laboratories, will provide scientific staff to oversee the site preparation and construction, conduct the sawing and conduct other scientific site preparation activities.
  - b. REECO will provide labor, materials and equipment to conduct non-scientific site preparation and has the responsibility of ensuring a safe working site.
  - c. RSN will provide engineering support, field monitoring, reporting, and surveying support.

AUG 05 1993

4. Cost overruns that exceed 10% of the planned budget must be approved by the Change Control Board.
5. All field personnel must be aware and knowledgeable of the Field Operating Instructions (FOI) system and must comply with applicable FOIs for those activities performed.
6. Field personnel head count must be reported to the Ranch Control, Field Operations Center by 8:30 a.m. each day. The daily progress reports will be provided to the Field Operations Center by 8:30 a.m. each day following the day of activity.
7. All personnel working at the job site shall have completed the required General Employee Training (GET) and General Employee Radiological Training (GERT). Those personnel wishing to visit the job site shall have completed the GET or shall be escorted by an individual that has completed GET.
8. All personnel will adhere to the requirements of the Yucca Mountain Project (YMP) Safety & Health Plan YMP-90-37, current revision.
9. Identification of hazardous activities or conditions associated with the work shall be the responsibility of any and all participants actively involved in the implementation.
10. All participants shall adhere to the Occurrence Reporting and Process System (ORPS) for accident reporting per AP 2.9, current revision (including spill reporting and excess tracer usage).
11. A YMP Field Operations Permit 93-015 is included. A copy of the permit must be posted in a conspicuous place at the work site as well as a copy of the JP being made available.

If you have any questions pertaining to the JP Authorization Letter or the JP itself, please contact me at 295-5914.



Winfred A. Wilson  
Site Manager

YMP:WAW-93/180

Enclosures:

1. Notice to Proceed.
2. JP 93-10
3. Field Operations Permit 93-015.

AUG 05 1993

cc w/encls:

C. J. Mason, REECO, Mercury, NV  
D. M. Wonderly, REECO, Mercury, NV  
T. M. Leonard, REECO, Mercury, NV  
E. L. Wright, RSN, Las Vegas, NV  
Don Cunningham, RSN, Mercury, NV  
E. L. Watson, RSN, Mercury, NV  
Jim Blink, LLNL, Las Vegas, NV  
D. S. Kessel, SNL, 6302, Albuquerque, NM  
J. F. Schilling, SNL, Las Vegas, NV  
R. W. Craig, USGS, Las Vegas, NV  
R. R. Schneider, SAIC/YMSO, Mercury, NV  
H. L. Lohn, SAIC, Las Vegas, NV  
C. L. Lugo, SAIC, Las Vegas, NV  
D. R. Williams, YMP, NV  
W. A. Girdley, YMP/YMSO, Mercury, NV  
Ken Skipper, YMP/YMSO, Mercury, NV  
Jay Mukherjee, YMP, NV

cc w/o enccls:

L. D. Foust, M&O/TRW, Las Vegas, NV  
S. C. Smith, SAIC, Las Vegas, NV  
G. D. Milligan, SAIC, Mercury, NV  
C. P. Gertz, YMP, NV  
M. B. Blanchard, YMP, NV  
J. R. Dyer, YMP, NV  
W. R. Dixon, YMP, NV  
W. B. Simecka, YMP, NV  
R. E. Spence, YMP, NV  
J. T. Sullivan, YMP, NV  
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M. E. Ryder, YMP, NV  
V. F. Ioril, YMP, NV

# YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT FIELD OPERATIONS PERMIT

Estimated Start Date 8-9-93Permit Number 93-015

Date Permit Closed \_\_\_\_\_

Job Package Number 93-10

Date J.P. Closed \_\_\_\_\_

Date Approved 7-30-93Sponsoring Field Agency(ies): Lawrence Livermore National Laboratories (LLNL), Reynolds Electric and Engineering Co. (REECo), Raytheon Services Nevada (RSN)Field Activity/Operation: (brief description) Large Block Experiment--Phase I, including excavation drilling, sawing, logging, and sample collection.Field Points of Contact:

	<u>Telephone #</u>	<u>Radio Net</u>
Field Work Coordinator <u>J. Blink</u>	<u>4-7157</u>	<u>14</u>
Construction/Drilling, etc. <u>T. Leonard</u>	<u>5-5983</u>	<u>14</u>
Field Engineering <u>R. Coppage</u>	<u>4-7226</u>	<u>14</u>
Principal Investigator(s) <u>W. Lin</u>	<u>(510)422-7162</u>	<u>14</u>
Site Safety Coordinator <u>G. Milligan</u>	<u>5-5801</u>	<u>14</u>

Are radioactive or hazardous materials involved? ☐ Yes ☒ No

If Yes, explain: \_\_\_\_\_

Permit approved by TOD: (if required) \_\_\_\_\_ Date: \_\_\_\_\_

## The following guidelines apply to this work:

- ☒ 1. Provisions of applicable YMP-FOIs/NTS-SOPs except as may be described below.
- ☒ 2. All YMP materials being transported off the NTS must be processed through the YMSO-FOC and REECo RAMATROL.
- ☒ 3. The YMSO-FOC (5-5915) will be notified upon completion of this operations permit.
- ☒ 4. Safety and health coordination responsibilities assigned.
- ☒ 5. All hazardous waste packaged in appropriate containers and reported to the YMSO-FOC.
- ☒ 6. Personnel field safety training completed.
- ☒ 7. Head counts and personnel location are to be reported to YMSO-FOC each day before 0830 hours.
- ☒ 8. Daily progress reports provided to YMSO-FOC by 0830 hours the day following activity.
- ☒ 9. YMSO-FOC to notify OCC upon completion of activity.
- ☒ 10. All accidents are to be reported to the YMSO-FOC as soon as possible.
- \_\_\_\_ 11. Comments/remarks \_\_\_\_\_

None.

Agency Representative Signature (if required)

Permit Issued By

CC: TEST OPERATIONS DIVISIONS, NV  
OCC-CP-1, MS 210  
TEST SITE OFFICE, MS 701  
YUCCA MOUNTAIN SITE OFFICE, MS 717



Department of Energy  
Yucca Mountain Site Characterization  
Project Office  
P. O. Box 98608  
Las Vegas, NV 89193-8608

WBS 1.2.9  
QA: N/A

JUL 30 1993

Winfred A. Wilson, Site Manager, YMP, Mercury, NV, H/S 717

NOTICE TO PROCEED ON JOB PACKAGE (JP) 93-10, "ENGINEERED BARRIER - LARGE BLOCK EXPERIMENT - PHASE I" (SCP: N/A)

This notice to proceed is your authorization to commence field work in accordance with the documents contained or referenced in the enclosed JP. You may not exceed your assigned cost or schedule thresholds.

The JP Coordinator for this activity is Ronald Oliver of Los Alamos National Laboratory Technical Coordination Office. If you have any questions, please contact either Jay Mukherjee at 794-7894 or Ronald D. Oliver at 794-7095.

  
Carl P. Gertz  
Project Manager

PCB:JM-5367

Enclosure:  
JP 93-10

cc w/encl:

L. R. Hayes, USGS, Las Vegas, NV  
R. W. Craig, USGS, Las Vegas, NV  
J. A. Canepa, LANL, Los Alamos, NM  
N. Z. Elkins, LANL, Las Vegas, NV  
R. D. Oliver, LANL, Las Vegas, NV  
R. F. Pritchett, REECO, Las Vegas, NV  
W. C. Kopatich, RSN, Las Vegas, NV  
L. D. Foust, M&O/TRW, Las Vegas, NV  
R. R. Schneider, SAIC, Las Vegas, NV  
S. C. Smith, SAIC, Las Vegas, NV  
W. R. Dixon, YMP, NV  
J. R. Dyer, YMP, NV  
W. A. Girdley, YMP, Mercury, NV, H/S 717  
N. B. Simecka, YMP, NV

YMP-057-RO  
8/19/91

YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT  
JOB PACKAGE APPROVAL

1. Job Number 93 10
2. Job Title Engineered Barrier - Large Block Experiment Site Preparation - Phase I
3. Summary of Scope Site Preparation at Fran Ridge
4. Responsibilities: Name Ron Oliver Responsibility JPC
5. Participants LLNL/REECO/RSN Organization/Individual Wunan Lin Responsibility PI
6. Milestones:  
Early Start July 1, 1993  
Late Start September 7, 1993  
Early Finish October 1, 1993  
Late Finish December 24, 1993
7. Project Package Total Cost \$787K
8. WBS (3rd Level) 1.2.2
9. TPO Concurrences: W. Clarke J. A. Blair  
R. Prichett H. H. Lin for RFP  
W. Kopatich H. H. Lin for WCK

10. YMPO Approvals:

Vincent L. Lin 7/27/93  
PCB Date

W. B. Senecker 7/29/93  
Responsible Division Director (EDD) Date

John M. Schnecko 7/29/93  
W. B. Senecker Division Director (POCD) Date

James Jones 7/28/93  
Division Director (RSED) Date

Vincent L. Lin 7/29/93  
Site Manager Date

W. B. Senecker 7/28/93  
Director, QA Date

Marcell Blum 7-30-93  
YMPO - Project Manager Date

**JOB PACKAGE 93-10  
ENGINEERED BARRIER - LARGE BLOCK EXPERIMENT  
SITE PREPARATION - PHASE I**

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## A. JOB PACKAGE

### 1. SCOPE OF WORK

#### a. GENERAL SCOPE DESCRIPTION

This job package (JP) describes site preparation for the Engineered Barrier - Large Block Experiment (LBE) conducted at Fran Ridge by the Lawrence Livermore National Laboratory (LLNL) principal investigator (PI) with construction support provided by Reynolds Electrical and Engineering Company, Inc. (REECo) and Raytheon Services Nevada (RSN).

This JP is established to support the activities necessary to isolate and prepare the large block test location for the Engineered Barrier - Large Block Experiment - Phase I to be conducted at the Fran Ridge Test Site. The work is limited to preparation of a site in suitable volcanic tuff for subsequent test construction and implementation. Site preparation will include excavation of the existing outcrop, sample collection, vertical drilling for instrumentation emplacement in the proposed large block volume, large block isolation (saw cuts), block geophysical logging, and trailer setup.

#### b. SPECIFIC REFERENCES TO SCOPING DOCUMENTS

##### Test Requirements

Scientific Investigation Plan (SIP) (Large Block Testing of Coupled Thermal-Mechanical-Hydrological-Chemical Processes), SIP-NF-2, Rev. 0 or current revision. This SIP is linked to Study Plan 8.3.4.2.4.4.1 because the LBE is a precursor test to the Engineered Barrier System Field Tests to be conducted in the Exploratory Studies Facility (ESF). Study Plan 8.3.4.2.4.4.1 Rev. 0 is currently undergoing a U.S. Department of Energy Technical Quality Assurance and management review. The functional requirements basis for activities in this JP is provided by the "Exploratory Studies Facility Design Requirements," YMP/CM-0019, Section 1.2.6.3.2, Test Support Facilities. The following supplement this scoping document and establish test requirements for this activity:

Specifications - The basis for the administrative Work Plan (WP), sketches and construction is controlled by the supplemental functional requirements in attachment 1.

Procedures - Current versions of the following procedures guide data collection by the LLNL PI.

##### Procedure Number

##### Procedure

033-YMP-QP-3.4

Scientific Notebooks

The current version of AP-6.26Q, "Submission and Documentation of Non-Borehole Samples to the Sample Management Facility," shall be used to document collection and ensure traceability of samples taken from the Fran Ridge Site.

Quality Requirements - The following quality assurance grading reports (QAGR) associated with the construction activities have been approved:

<u>Participant</u>	<u>QAGR</u>	<u>WBS</u>	<u>Subject</u>
LLNL	LLNL-QAG-L-061,R0 (An LLNL Document)	1.2.2.2.4 Rock Blocks	LBT-01 Collect or Isolate

c. SPECIFIC SCOPE DEFINITION BY PARTICIPANT

LLNL and its subcontractor, Sandia National Laboratories, will provide scientific staff to oversee the site preparation and construction, conduct the sawing, and conduct other scientific site preparation activities.

REECo will provide labor, materials and equipment to conduct non-scientific site preparation and has the responsibility of ensuring a safe working site.

RSN will provide engineering support, field monitoring, reporting, and surveying support.

d. WORK BREAKDOWN STRUCTURE DEFINITION BY PARTICIPANT

"The Yucca Mountain Project Work Breakdown Structure Index and Dictionary Annex II to the Project Management Plan," YMP/CC-0001, defines work scope associated with implementation of this activity by participants. This work scope includes both support for planning and field implementation, and work conducted by the Pls. The discrete support for this activity is identified under Work Breakdown Structure (WBS) 1.2.2.2.4.

Attachment 2 identifies appropriate WBS elements including planning and scheduling accounts and summary accounts.

e. FINANCIAL GUIDANCE FOR PLANNING AND SCHEDULING ACCOUNTS

See Attachment 3 for financial guidance for planning and scheduling accounts.

f. GENERAL GUIDANCE FOR SUMMARY ACCOUNTS

See Attachment 3 for general guidance for summary accounts.

g. DEFINITION OF SCOPE COMPLETION

The scope of this JP will be completed when the activities identified in the administrative WP 93-10 for site preparation are complete. The PI will notify the LANL Field Test Representative (FTR) in writing when the activity is complete.

B. SPECIAL CONDITIONS

1. SPECIAL PROJECT OFFICE CONDITIONS

a. CHANGE CONTROL

Cost overruns that exceed 10% (percent) of the planned budget must be approved by the Change Control Board. The budget estimate for this JP is provided in Section C2.a Budget.

b. REPORTING/DOCUMENTATION REQUIREMENTS

The TCO will coordinate with the Field Test Coordinator (FTC) to report JP-related problems to the Site Manager (SM) or the Field Operations Center (FOC) on an as necessary basis. The TCO will provide regular reports to the FTC and Field Engineering Branch (FEB) Chief, addressing construction progress. The PI, REECO, RSN, Johnson Control (JC) and Technical and Management Support Services/Science Applications International Corporation (SAIC) will provide information necessary to support TCO reporting requirements.

The PI or designee will track test-related usage of Tracers, Fluids, and Materials (TFM) identified by performance criteria or constraints in attachment 1, and will provide a copy of such use to the Job Package Record Coordinator (JPRC). REECO will submit records on construction-related use of TFM identified by attachment 1 to the appropriate Document and Records Center (DRC) file (DRC-059) and copies of such information to the TCO. RSN will provide final sketches or illustrations of site preparation construction to the JPRC.

c. RECORD TURNOVER PACKAGE REQUIREMENTS

JP records shall be submitted to the DRC under tracking number DRC-059. PI records (other than those listed below) may be submitted to either the LLNL or Yucca Mountain Site Characterization Project Office (YMPO) Local Records Center (LRC) or DRC.

The JPRC will coordinate and monitor the development of the JP DRC records package. The DRC records package shall contain documents that demonstrate compliance with YMP procedures. The completed DRC records package for this test will, at a minimum, contain (or reference) the following:

1. field change requests for the JP;
2. field work plan and revisions;
3. corrective action reports, if applicable;
4. TCO field reports;
5. JP-related use of TFM;
6. JP-related survey data, notes, and plots;
7. copies of sample collection reports and, if applicable, sample transmittal forms; and
8. copies of photo mission forms and photo transmittal records.

d. SUMMARY OF OPEN PREREQUISITES

No open prerequisites exist.

e. SIGNIFICANT INTERFACES

No significant interfaces exist which would, if not identified, result in a serious safety hazard, a significant degradation of quality, or a significant cost or schedule impact.

f. ADMINISTRATIVE HOLD POINTS

Site preparation activities can only be conducted within the approved environmental access area specified by Reference A.3 of attachment 1 until additional areas have met environmental compliance criteria. Project and Operations Control Division (POCD) shall specify additional requirements by letter. Distribution of that letter shall constitute authorization to extend site preparation activities to the new boundaries.

2. SPECIAL FIELD CONDITIONS

a. SAFETY TRAINING REQUIREMENTS

Reference: Letter, Canepa to Wilson, "Use of ESF testing PSAR as source of safety analyses," TWS-EES-13-02-93-104, dated February 8, 1993.

Reference: Letter, Berry to File, "Preliminary Safety Analysis Review, Engineered Barrier - Large Block Experiment - Job Package 93-10," TWS-EES-13-LV-07-93-11, dated July 7, 1993.

Reference: Procedure, "Activity-Specific ES&H Standard Operating Procedure, Rock Saw System," SP472758.

Personnel requiring access to the test site must be escorted by an individual that has completed required General Employee Training (GET). All participants are

responsible for the safety of their personnel and will adhere to standard project safety plans, procedures, and practices.

b. FIELD ORIENTATION REQUIREMENTS

No special requirements are identified.

c. RESOURCE ALLOCATIONS

Common use resources are available through the FOC logistics coordinator (J. Grundman, 5-5975).

d. POINTS OF CONTACT (ACTIVITY SPECIFIC)

FOC Visitor Control	L. Camp	5-5915
LANL PE	R. Oliver	4-7095
LANL JPC/JPRC	R. Oliver	4-7095
LANL ESF FTR	K. Dye	5-6180
M&O Construction Site Manager	M. Renegar	5-3699
REEC Co Construction Dept. Manager	T. Leonard	4-7255
REEC Co Superintendent	J. Catozzi	4-7304
RSN Engineering Coordinator	R. Coppage	4-7226
JC Photo Coordinator	D. Unglesbee	5-5921
T&MSS/SMF Contact	M. Mapa	5-4258
LLNL PI	W. Lin	(510) 422-7162
LLNL Testing Coordinator	J. Blink	4-7157
YMPO FTC	W. Girdley	5-7927
YMP-EDD FEB Chief	D. Stucker	4-7275
YMPO SM	W. Wilson	5-5915

e. SPECIAL INSTRUCTIONS

Evaluations to address potential test interference and waste isolation impacts (including planned use of TFM) are referenced in attachment 1 and appropriate controls have been incorporated into attachment 1 as supplemental constraints.

f. SUMMARY OF OPEN PREREQUISITES

No open prerequisites have been identified.

g. INTERFACES

Field interactions are identified and documented by the current revision of WP 93-10

h. ADMINISTRATIVE (NON-TECHNICAL) HOLD POINTS

No administrative hold points have been identified.

i. WORK ACCEPTANCE AND TURNOVER

The PI, LANL TCO Representative, and YMPO FTC are responsible for accepting the work as completed.

j. FIELD CHANGE CONTROL BOARD (FCCB)

The FCCB will convene on the order of the SM. The SM or designee is the chair of the FCCB.

C. COST/SCHEDULE SUMMARY

1. SCHEDULE

a. INTEGRATED NETWORK

The integrated network and matrix for the activity are included in Attachments 2 and 3.

This integrated network excludes participant efforts expended on:

- 1) Study plan/scientific investigation plans;
- 2) quality assurance;
- 3) environmental, safety and health;
- 4) technical procedure development; and
- 5) data processing.

The network is expressly limited to job package document and site preparation for Yucca Mountain site field activities.

The network task dates, duration, and costs are estimates and are subject to change.

"Funding Work" figures represent total monthly distributed budget dollars, by summary accounts, for the scheduled period of performance.

b. YMPO MILESTONES

No Level 1 or 2 long-range plan milestones are associated with this activity.

2. BUDGET

a. PARTICIPANT FIELD BUDGET PROJECTIONS

LLNL	\$261K
REEC <sub>o</sub>	\$420K
RSN	\$40K
Matrix	\$66K

See attachments 2 & 3 for further detail.

b. P&S ACCOUNT BUDGET

See attachments 2 & 3 for further detail.

c. TOTAL BUDGET

The total budget for this activity is estimated to be \$787K.



**FRAN RIDGE**  
**SUPPLEMENTAL FUNCTIONAL REQUIREMENTS FOR ENGINEERED BARRIER - LARGE**  
**BLOCK EXPERIMENT SITE PREPARATION - PHASE I**

Attachment 1 References

- A.1 "Exploratory Studies Facility Design Requirements, " Appendix B, Sections B-2.2.41, "Repository Horizon Near-Field Hydrologic Properties," and B-2.2.42, "Repository Horizon Rock-Water Interaction," YMP/CM-0019, Rev. July 2, 1992.
- A.2 "Technical Requirements for the Yucca Mountain SCP Surface-Based Testing," Appendix D, YMP/CM-0007, Rev. November 6, 1992.
- A.3 Letter: Costin to Oliver, "Description of Block Cutting Activities Required for Forming the LLNL Large Block Test at Fran Ridge," 75/12224/WA-076/1.4/QA, dated July 2, 1993.
- A.4 "Waste Isolation Evaluation Large Block Experiment," LV.PA.CEB.5/93-059, June 9, 1993
- A.5 "Test Interference Evaluation for Fran Ridge Test Planning Support For The Engineered Barrier - Large Block Experiment - Test Planning Package T-93-3," Document Identifier Number: B00000000-01717-2200-00031, Rev. 00, July 1993.
- A.6 Letter: Dixon to Dyer, "Approval of Land Access and Environmental Compliance for Primary Large Block Testing Area Near the Fran Ridge Test Pits," POCD:JCM-4322, dated May 21, 1993.
- A.7 Memorandum: Lugo to Statton, "Evaluation for Constraints and Commitments Made in Regard to the Fran Ridge Heater Block Tests," LV.RL.CJG.5/93.093, dated May 26, 1993.

A consolidated list of supplemental functional requirements, derived from section references and focused on specific construction needs for this phase of the activity, is found below. References A.1 and A.2 provide statements of performance criteria and constraints on which the following are based. References A.4 thru A.7 provide the basis for constraints to address potential impacts to waste isolation, test interference, and environmental compliance. Note: performance criteria and constraints follow the format established in reference A.1.

Scope of Work

The Large Block Testing of Coupled Thermal-Mechanical-Hydrological-Chemical Processes is described in Section 8.3.4.2.4.4 of the Site Characterization Program Baseline, in B-2.2.41 and B-2.2.42 of the Exploratory Studies Facility Design Requirements, in the Scientific Investigation Plan for the Large Block Test, SIP-NF-2, Rev. 0, and in draft Study Plan 8.3.4.2.4.4.1, Rev. 0.

The work will pertain to preparing a site with suitable volcanic tuff for subsequent test construction. Site preparation will include excavation of the existing outcrop. This entails leveling a defined area to within a prescribed tolerance. The work will also include sample collection, vertical drilling for instrumentation emplacement in the proposed large block, block geophysical logging, large block isolation (saw cuts), and trailer setup.

### Supplemental Functional Requirements

1. Provide the test area, construction support, and operational flexibility to prepare the site for the Large Block Experiment at Fran Ridge.

### Performance Criteria

- 1a. Necessary access area(s) are required for outcrop excavation, vertical drilling, large block isolation (saw cuts) and trailer setup.
  - i. An access road leading to the base of the large block volume is required.
- 1b. When outcrop excavation is completed, the area of the outcrop must be leveled such that saw cutting and vertical drilling can be accomplished.
  - i. A sump or tank (with oil separator) is required to recirculate drilling and cutting fluids.
  - ii. Excavation activities will be surveyed.
  - iii. An area at least 30' (8.23m) back from the front face of the block and at least 36' (10.97m) wide is required to be leveled to allow for emplacement of the rock saw.
  - iv. The front face of the block must be excavated to allow drainage of initial saw cuts.
- 1c. When complete, appropriate water, power, drilling apparatuses and core bits must have been available to accomplish vertical drilling activities.
  - i. Vertical holes will be surveyed.
  - ii. Vertical instrumentation borehole sizes to a maximum of 3" (7.62cm) in diameter will be cored in the excavated surface of the block before isolation (saw cuts).
  - iii. An effort must be made to maintain parallelism between holes.
  - iv. Sample Management Facility support is required.
  - v. Samples should be photographed.
- 1d. When complete, appropriate water, power, lifting and assembly setup equipment must have been provided for suitable isolation of the large block volume.
  - i. A drill, rock bolts and a track are required for saw operation.
  - ii. A suitable portable water source, sump and irrigation pump are required.
  - iii. A generator, cables, compressors, mining and lifting equipment suitable to operate a 150kW/100hp/440V Rock Saw are required.

- 1e. All required permits and appropriate instrumentation must be available to conduct geophysical logging of the vertical boreholes.
- 1f. When complete, a trailer must be provided at the surface of the test area. Parking space at the trailer pad and a generator is required.

#### Interface Control Requirements

1. The engineering support contractor and constructor shall interface with the PI and Project Engineer to meet scientific needs.
2. The activity must be integrated with other scientific investigations to assure that the ability to characterize the site or isolate nuclear waste at Yucca Mountain is not compromised.

#### Constraints

- A. All water and permanently implanted materials used during site preparation activities must be recorded.
- B. Avoid enhancing run-off drainage into Test Pit #1 or #2.
- C. Avoid any substance other than water or other approved TFMs from contacting the large block volume.
- D. Material must be prevented from falling into saw cut slashes or boreholes.
- E. Excavation and block isolation methods must minimize inducing new or affecting existing fractures in the block and must maintain block integrity.
- F. Use of explosives is to be pre-approved by the PI. No more than 4 pounds of explosive per shot is to be used per 20 feet (6.1) standoff distance needed to avoid any affects on existing fractures.

#### Assumptions

1. There is no other activity in the vicinity such that the thermal load and/or mechanical load will affect the test, and vice versa. The mapping activity between Test Pits #1 and #2 will neither affect nor be affected by the test or construction.

Engineered Barrier - Large Block Experiment - (JP 93-10)									
Site Preparation - Fran Ridge									
LANL ESF Test Coordination Office									
IO	Name	Dur	Start	1 93	Q2 93	Q3 93	Q4 93		
				F	M	A	M	J	J
1	ENGINEERED BARRIER - FRAN RIDGE LRQ. BLOCK TESTS	141d	3/17/93						
2	Test Planning Milestones	93d	3/17/93						
3	Initiation of TPP T-93-3	0d	3/17/93						
4	Initiation of JP 93-10	0d	7/2/93						
5	Initiation of Site Preparation	0d	7/27/93						
6	Phase I - Site Selection	14d	8/14/93						
7	Project Manager Authorization Letter	0d	5/14/93						
8	Environmental Clearance for Site Confirmed	0d	5/21/93						
9	Clean Site North of Pits	5d	5/28/93						
10	Select Large Block Location	3d	6/1/93						
11	Phase IA - Demonstration of Saw Cuts	74d	6/21/93						
12	Project Manager Authorization Letter	0d	7/7/93						
13	Start Large Block Saw Demonstration Cuts	0d	8/18/93						
14	Saw Shipped to Site	15d	6/21/93						
15	Construction Support	50d	7/15/93						
16	Demonstration Block Cuts - Prototype Saw	50d	7/15/93						
17	Demonstration Cuts - Large Block Saw	34d	8/16/93						
18	JOB PACKAGE PREPARATION - EBS LRQ. BLOCK TEST	89d	4/7/93						
19	Job Package Preparation - Discrete	63d	4/22/93						
20	LLNL Planning Input	60d	4/22/93						
21	Engineering Design/Specification Development & Procurement	60d	5/5/93						
22	REECo Test Construction Planning & Procurement	28d	6/18/93						
23	Job Package Preparation - Matrix Support	89d	4/7/93						
24	Los Alamos TCO Coordination & Planning (JP Development)	45d	5/26/93						
25	LLNL Coordination & Planning (JP Review)	12d	7/12/93						
26	Engineering Coordination & Planning (Work Plan Development)	41d	6/1/93						
27	REECo ESF Test Mgt (JP Review & Support Plan)	30d	6/16/93						
28	CRWMS M&O Waste Isolation Eval (JP Development)	35d	4/22/93						
29	CRWMS M&O Test Interference Eval (JP Development & TFM)	80d	4/22/93						
30	CRWMS M&O Networking & Baseline Plan Support (JP Development)	80d	4/7/93						
31	SITE PREPARATION - EBS LRQ. BLOCK TEST	63d	7/28/93						
32	Site Preparation - Discrete	63d	7/28/93						
33	LLNL Site Preparation Monitoring	80d	7/28/93						
34	RSH Field Survey & Processing	80d	7/28/93						
35	REECo Test Construction & Procurement	60d	7/28/93						
36	Construction Implementation - Matrix Support Elements	63d	7/28/93						
37	Los Alamos TCO Coord. & Planning (Field Test Coord)	80d	7/28/93						
38	Los Alamos TCO Test Mgt (Project Engineer Support)	80d	7/28/93						
39	T&MSS Sample Management Facility	10d	7/28/93						
40	Engineering & Survey Support/Survey Processing - Interim WBS	80d	7/28/93						
41	CRWMS M&O Network & Baseline Plan Support (Mo Cost/ Progress)	80d	7/28/93						
42	JC Photo & Processing	10d	7/28/93						
Project 93-10 Date 7/27/93 Revision 00				Critical  Milestone Activity  Summary Progress  Rolled Up					
TP33A MPP				ADMINISTRATIVE USE ONLY					