

Sandia National Laboratories

P. O. Box 5800
Albuquerque, New Mexico 87185-1333

Managed by Martin Marietta Corporation
for the U.S. Department of Energy

L. E. Shephard
Manager, YMP Management Department, MS1333

MAR 17 1994

WBS: 1.2.9.2
QA: NA

Mr. Robert M. Nelson, Acting Project Manager
Yucca Mountain Site Characterization
Project Office
U. S. Department of Energy
Nevada Operations Office
Las Vegas, NV 89193-8608

Subject: Monthly Progress Report - February 1994

Dear Robert:

Enclosed is the input from Sandia National Laboratories for the February 1994 Monthly Progress Report. The sections on progress, issues, and deliverables/milestones were telecommunicated to Terri Rodriguez on March 15, 1994. The Variance, cost, performance, and FTE reports were FAXed to Ms. Rodriguez also on March 15, 1994.

You may contact Joe Schelling at (702) 794-7575 or Leigh Lechel at (505) 848-0844 if there are any questions.

Sincerely,



Les E. Shephard, Manager
YMP Management Department, 6302

LES:6302:ll
Attachment: As stated.

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Exceptional Service in the National Interest

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MAR 17 1994

Robert M. Nelson

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Copy to:

YMPO	J. R. Dyer
YMPO	S. B. Jones
YMPO	S. Brocoun
YMPO	W. B. Simecka
YMPO	D. Williams
YMPO	E. H. Petrie
YMPO	V. F. Ilori
NRC	P. S. Justice (2)
	301 E. Stewart Avenue, Room 203
	Las Vegas, NV 89101
M&O/TRW	S. J. Bodnar (2)
M&O/FD	E. M. Fortsch (2)
M&O/TRW	R. K. St. Clair (2)
ORNL	R. B. Pope
RSN	W. C. Kopatich
LANL	J. A. Canepa
LLNL	W. L. Clarke
USGS	L. R. Hayes
REECO	R. F. Pritchett
SAIC	M. D. Voegelé
RW-133	C. W. Conner
	USDOE/Forrestal Building
	1000 Independence Avenue, SW
	Washington, DC 20585
6300	D. E. Ellis
6302	L. E. Shephard
6115	P. B. Davies
6312	H. A. Dockery
6313	L. S. Costin
6318	R. R. Richards
6351	R. E. Thompson
6352	S. E. Sharpton
6302	F. J. Schelling
6319	J. V. Voigt
6352	D. Hampton
6352	A. P. Hotchkiss
6352	L. Lechel
6302	31/1292/MGMT/1.3/NQ
YMP CRF	

SANDIA NATIONAL LABORATORIES

YUCCA MOUNTAIN PROJECT

MONTHLY HIGHLIGHTS AND STATUS REPORT

FEBRUARY 1994

DISCLAIMER

Quality assurance checks on data contained or referenced in this report have been performed only to determine that the data have been obtained and documented properly. The SNL Project Department cautions that any information is preliminary and subject to change as further analyses are performed or as an enlarged and perhaps more representative data base is accumulated. These data and interpretations should be used accordingly. Milestones have been baselined and are included to show status.

1.2.2 Waste Package

Progress During Report Period

SNL continued developing the data acquisition system for the backfill thermal conductivity test. Test results for abrasivity and moisture content were received and will be incorporated into the final report.

1.2.3 Site Investigations

Progress During Report Period

The SNL technical procedure TP-0217, "Determination of water content and physical properties of laboratory rock samples," was issued as a controlled document. This procedure is required to support laboratory testing of core from the Systematic Drilling Program in an overflow situation if the USGS Hydrologic Research Facility laboratory cannot keep up with samples from both the unsaturated zone (UZ) matrix properties and systematic drilling programs.

SNL began developing a new material properties model using the LYNX GMS system focused on thermal properties. Entry of available, but limited, thermal expansion data from samples taken from various North ESF Ramp drill holes was completed, and the data can be displayed in relationship to the preliminary geologic-unit modeling completed as part of the USGS Stratigraphic Studies program. Preliminary evaluation of thermal-expansion coefficients at 200°C indicates a strong correlation with a tentative rank-classification of intensity of vapor-phase alteration. A draft technical procedure for producing quality-affecting geologic "logs" using this rank-classification coding scheme was begun. Assuming that the correlation is validated by subsequent work and additional measurements, the process will allow much more detailed models of thermal-expansion behavior to be generated at a higher level of confidence.

Testing began for the study to examine the effects of sample saturation on thermal conductivity. Three samples of welded devitrified tuff and three samples of nonwelded zeolitic tuff are being used for the saturation effects study. The thermal conductivity of each sample is being measured at three nominal temperatures, and at five different saturation states (fully saturated, oven-dry, air-dry, and two other intermediate states).

Testing was completed on air-dry samples, vacuum saturated samples, and samples that were in two intermediate states (approximately 2/3 and 1/3 saturated). Significant delays in testing were experienced in February (see section on Issues and Concerns). Testing of two samples remains in order to complete the data acquisition for this study. These samples have not yet passed the oven drying criteria.

Six samples taken from below 416.0 feet were air-dried and tested at three nominal temperatures. Four of these measurements were reruns because the guard temperature of the low temperature (LT) test instrument was found to be out of specification during the calibration check. Testing of air dry samples

is continuing and saturated samples are ready for testing.

Testing was completed on 14 out of 40 samples selected for the study to examine the effects of sample size on thermal-expansion behavior. For this study, five samples of each of four different lithologies (welded devitrified, welded vitric, nonwelded vitric, and nonwelded zeolitic) are being tested. Pre- and post-test velocity measurements were completed on six samples. The post-test measurements indicated that velocity was up to 25 percent slower relative to the pre-test measurements for some samples, which indicates that the samples were significantly altered during thermal cycling.

The results of mechanical testing on samples from USW NRG-6 are included in a data report, "Bulk and Mechanical Properties of the Paintbrush Tuff Recovered from Borehole USW NRG-6: Data Report" (SAND93-4020) submitted to the Project Office for review on February 28, 1994 (Level 3 Milestone 103).

A lifecycle plan mandated by software quality assurance requirements was prepared and approved for qualifying the regional climate modeling code, RegCM2. SNL began installing the code on a computer workstation and developing the input needed for a software validation control run. The software validation will compare code output for current climate conditions against the output generated by earlier Cray runs.

SNL repeated benchmarking calculations that originally involved advection and diffusion, performed previously with the HYDROGEOCHEM and LEHGC0.0 codes, with LEHGC1.0, the most current version of LEHGC in support of a report on software verification/validation of LEHGC (Level 3 Milestone OS116).

Issues and Concerns

Several events have occurred during testing activities associated with thermal laboratory properties and thermal expansion testing studies that affected the progress of the testing and resulted in delays to the schedule. The Mettler balance used for weighing samples did not pass the calibration check and it was necessary for Mettler to repair and calibrate the balance; recently fabricated thermocouples would not pass the calibration using the NIST certified thermocouple, which limited the number of thermocouples available for calibrating the electronic ice reference, and consequently the thermal conductivity test equipment and sample drying oven; and one of the low temperature (LT) thermal conductivity testing instruments failed calibration. Further, preparation for and participation in the Technical Project Review delayed each of the activities in the site investigations work.

WBS 1.2.4 Repository

Progress During Report Period

SNL staff finished incorporating changes to Study Plan 8.3.1.15.1.5 responding to comments received from the Project Office reviewers. The revised Study Plan, and completed Study Plan Comment Resolution Forms were transmitted to the Project Office.

SNL met with the M&O designers and the tunnel boring machining (TBM) contractor to obtain details of the North Ramp design and TBM operation. These meetings were called to obtain information to support detailed experiment design for the access convergence test, and to learn what data is needed by the M&O design team to verify their design methodology being used in the construction of the ESF. Meetings were also held with the ESF ventilation designers, environmental monitors, ESF constructors and the potential repository ventilation designers to begin a process that would assure that air quality and ventilation measurements needed for repository ventilation design and for performance assessment calculations would be acquired.

SNL began preparing a report outlining the strategy for sealing and backfilling the ESF/Repository openings. The strategy for sealing emphasizes directing or isolating water from all sources entering shafts/ramps or the underground from the waste packages through the use of infiltration and diversion techniques. The report also provides general sealing concepts based on the current proposed designs.

SNL began planning a study plan for seal testing. This study plan will outline the rationale, concepts, and basic test concepts for in-situ sealing tests. The completion of this document will allow early FY 1995 field evaluations of borehole seal tests along with other critical seal evaluations such as the fracture grouting tests.

SNL met with the M&O to clarify specific design needs for package 2C and to identify appropriate revisions to original calculations. Extensions to the site-scale mechanical model were completed and the 100 kW/acre case rerun. SNL also began a rerun of cross-sectional analyses for the 100 kW/acre case according to agreed upon specifications. In addition, site-scale thermal analyses at 80 kW/acre were completed.

SNL and the Idaho National Engineering Laboratory (INEL), worked on a collaborative effort to begin a series of laboratory scale tests of small, layered polycarbonate models. These tests will be extremely useful for validating numerical analysis tools relative to defining rock mass behavior. During the month SNL and INEL reached an understanding of the scope of the project and a contract was initiated.

SNL prepared a draft work agreement that prescribes the activities for investigating the effects of silica phase transformations on the stresses in the proposed repository.

WBS 1.2.5 Regulatory

Progress During Report Period

SNL Technical Data Base staff had meetings with Task Leaders and Principal Investigators to determine the status of their respective data sets. This effort was part of an activity to create a comprehensive overview of the status of all WBS elements which are involved in the acquisition or development of data. The purpose of this overview is to ensure that all data is properly reported to the data bases.

SNL continued to use the TOUGH2 code to investigate possible dryout in the vicinity of a potential nuclear waste repository and the perching of water above the repository as a function of time after waste emplacement. A study was completed using a systematic variation of the fracture apertures. Calculations were extended to include a fracture-apertures range from 1 micrometer to 1 millimeter. The new results were incorporated into TSPA-1993.

The detailed lithologic logs defining the hydrogeologic units for the groundwater travel time (GWTT) effort were reworked. The twenty-three logs used in TSPA-1993 were converted from feet to meters and checked for accuracy and content. Four additional quality-affecting logs (NRG-2b, NRG-4, NRG-6, and UZ-14) were added to the data set, which brings the total to twenty-seven for the GWTT geostatistical simulations of Yucca Mountain. These additional data will assist in resolving the contacts in the Paintbrush Tuff members in the simulations.

The report, "Detailed Characterization and Preliminary Adsorption Model for Materials for an Intermediate-Scale Transport Experiment" (SAND94-0323C) was completed and submitted to the Project Office for review on February 28, 1994 (Level 3 Milestone OS143). The report summarizes the geochemical modeling conducted by SNL and LANL at the Experimental Engineered Test Facility, and describes the experimental and theoretical work predicting the migration of tracers through quartz sand in a caisson.

In collaboration with the USGS, SNL completed the comparison of physical experimentation and numerical simulation of matrix imbibition from a flowing fracture into Topopah Springs Tuff. Results are documented in the report, "Fracture-Matrix Interaction in Topopah Spring Tuff: Experiment and Numerical Analysis" (SAND94-0443C) which was submitted to the Project Office for review on February 11, 1994 (Level 3 Milestone OS140).

SNL completed documentation of the initial experimental investigations into scaling behavior of gas permeability measurements in Yucca Mountain tuffs. The report was submitted to the Project Office for review on February 11, 1994 (Level 3 Milestone OS146).

WBS 1.2.9 Project Management

Progress During Report Period

Several project management activities were completed in February. Fourteen Basis of Estimates were transmitted to the Project Office on February 11, 1994. The Monthly Cost, Cost/FTE, Variance, CPR, and Executive Summary reports were transmitted to the Project Office on February 15, 1994. The monthly Task Leader Program Review Meetings were held on February 8-9, 1994. In addition to assessing activity progress, discussions of schedule and cost resulted in SNL submitting two C/SCRs. The Project Control staff also identified approximately 14 changes or clarifications needed to Level 3 milestones, so a process was implemented for tracking changes to Level 3 Milestones. Several letters documenting schedule slips or changes to

milestone criteria were drafted for Task Leaders to communicate to the respective YMP WBS Element Managers.

Changes to the SNL Contractor Work Breakdown Structure Dictionary were transmitted to the Project Office on February 8, 1994.

WBS 1.2.11 Quality Assurance

Progress During Report Period

SNL conducted an audit at the Geology Department of the University of New Mexico on February 26 and 27.

A Data Quality Evaluation Team from DOE EM-342 met with SNL staff during the weeks February 21 and February 28. The team conducted an assessment of the quality, traceability, and useability of data collected for the Waste Isolation Pilot Plant (WIPP) Project and requested that SNL provide a team member knowledgeable in QA. Representatives from the EPA observed the assessment. Although this activity was primarily supporting WIPP, it was an opportunity to gain insights into EPA approaches to data quality, which may be applicable to the Yucca Mountain Site Characterization Project in the future.

WBS 1.2.12 Information Management

Progress During Report Period

Four documents were added to the Controlled Document database and three controlled documents were recalled.

A total of 4,000 microfilm records were verified, 10 individual records and 33 record packages were submitted to the CRF.

WBS 1.2.15 Support Services

Progress During Report Period

SNL telecommunicated the Payments-Equal-To-Taxes Report to the Project Office during the week of February 21st.

SNL completed an internal SNL-mandated property inventory. The radiation scan of the first shipment of surplus inventory was completed and the property was transported to shipping and receiving for return to YMP.

SNL added a new Safety and Health section to its YMP Orientation Manual. The section includes a guidance letter from Winn Wilson, a chart of training requirements for visits to the site or for staff working full-time at the site, a schedule of the site-related training, and a list of and training schedule for Environmental Safety and Health (ES&H) in accordance with SNL's requirements.

A system was developed and implemented that will aid in verifying that matrixed, site-based personnel is in compliance with all mandated SNL training.

The first session of the "Geology for Non-Geologists" course was held on February 23 with 20 attendees. Videotapes of the classes conducted in FY 1993 will be available for self-study in late spring and will be shared with the Project Office's Training organization in keeping with Training's commitment to maximizing the utilization of our collective resources.

A total of 110 training assignments were distributed.

DELIVERABLES COMPLETED THIS MONTH

<u>EVENT</u>	<u>WBS NUMBER</u>	<u>DUE DATE</u>	<u>EXPECTED DATE</u>	<u>COMPLETED DATE</u>	<u>SLIP</u>	<u>DESCRIPTION</u>	<u>COMMENTS</u>
N/A	1.2.3	N/A	N/A	FEB-94		TDIF 302417, Data Transmittal Package for Mechanical Properties Data (Grain Density, Porosity, Unconfined Strength, Elastic Properties, and Indirect Tensile Strength) for Drill Hole UE25 NRG-4: Samples from depth 378.1 ft. to 695.8 ft.	
N/A	1.2.3	N/A	N/A	FEB-94		TDIF 303003, Data Transmittal Package for Mechanical Properties Data (Ultrasonic Velocities, Static Elastic Properties, Triaxial Strength, Dry Bulk Density, and Porosity) for Drill Hole UE25 NRG-4 Samples from Depth 527.0 ft.	
OS103	1.2.3.2.7.1.3	19-JAN-94	14-FEB-94	28-FEB094	28	SAND-Experiments on Samples from NRG-6	Delays in drilling resulted in delays to test program
N/A	1.2.3.2.7.1.3	N/A	N/A	1-FEB-94	N/A	SAND94-0305C, "Mechanical and Bulk Properties in Support of ESF Design Issues"	To be presented at the 1994 IHLRWM Conference
N/A	1.2.3.2.7.1.3	N/A	N/A	1-FEB-94	N/A	SAND94-0306C, "Relation Between Static and Dynamic Rock Properties in Welded and Nonwelded Tuff"	To be presented at the 1994 North American Rock Mechanics Symposium
N/A	1.2.3.6.2.1.6	N/A	N/A	8-FEB-94	N/A	SAND94-4002C, "Paleoclimate Validation of a Numerical Climate Model"	To be presented at the 1994 IHLRWM Conference
N/A	1.2.4	N/A	N/A	FEB-94		TDIF 302418, Data Transmittal Package for North Ramp Starter Tunnel Rock-Mass Monitoring Data: Plots of Drift Convergence and Convergence Rate for ESF Starter Tunnel; and Plots of Rock Bolt Load Cells. Quarterly Transmittal of Data Covering Dates 6/1/93-12/14/93	
N/A	1.2.4.2.3.2	N/A	N/A	17-FEB-94	N/A	SAND94-0343C, "Thermal and Seismic Impacts on the North Ramp at Yucca Mountain"	To be presented at the 1994 IHLRWM Conference
N/A	1.2.4.2.1.1.4	N/A	N/A	8-FEB-94	N/A	SAND94-0348C, "Construction Monitoring Activities in the ESF Starter Tunnel" Mountain"	To be presented at the 1994 IHLRWM Conference

DELIVERABLES COMPLETED THIS MONTH (continued)

<u>EVENT</u>	<u>WBS NUMBER</u>	<u>DUE DATE</u>	<u>EXPECTED DATE</u>	<u>COMPLETED DATE</u>	<u>SLIP</u>	<u>DESCRIPTION</u>	<u>COMMENTS</u>
N/A	1.2.5.4.1	N/A	N/A	9-FEB-94	N/A	SAND94-0207C, "Constraining Local 3-D Models of the Saturated-Zone, Yucca Mountain, Nevada"	To be presented at the 1994 IHLRWM Conference
N/A	1.2.5.4.1	N/A	N/A	3-FEB-94	N/A	SAND94-0087C, "Effect of Fractures on Repository Dryout"	To be presented at the 1994 IHLRWM Conference
N/A	1.2.5.4.4	N/A	N/A	1-FEB-94	N/A	SAND94-0185C, "Modeling Heterogeneous Unsaturated Porous Media Flow at Yucca Mountain"	To be presented at the 1994 IHLRWM Conference
OS140	1.2.5.4.6	28-JAN-94	9-FEB-94	9-FEB-94	7	Report-Details on Fracture Matrix Studies (SAND94-0443C)	
OS146	1.2.5.4.6	17-JAN-94	14-FEB-94	11-FEB-94	18	Report-Scaling Studies (SAND94-0326C)	
OS143	1.2.5.4.6	1-FEB-94	14-FEB-94	28-FEB-94	18	Rpt. on Geochemical Models for Caisson Experiment (SAND94-0323C)	
N/A	1.2.9.2.2	15-FEB-94		15-FEB-94	N/A	Monthly Progress Report, Cost/FTE Report, Variance Reports, etc. - January	
N/A	1.2.9.2.2	N/A	N/A	8-FEB-94	N/A	Revisions to SNL Contractor WBS Index and Dictionary	

DELIVERABLES PAST DUE

<u>EVENT</u>	<u>WBS NUMBER</u>	<u>DUE DATE</u>	<u>EXPECTED DATE</u>	<u>COMPLETED DATE</u>	<u>SLIP</u>	<u>DESCRIPTION</u>	<u>COMMENTS</u>
OS147	1.2.3.2.2.2.2	28-JAN-94	31-MAR-94		44	Submit Draft SP to YMP for Acceptance in the SP Review Process	
OS155	1.2.3.2.6.2.1	18-JAN-94	14-APR-94		61	Ltr Rpt Summary of Available Drillhole 2C Data	T. Sullivan (WBS element mgr) requested that data for more than drill hole 2C be included in report
OS17	1.2.4.2.1.2	15-NOV-93	1-APR-94		91	SAND-Test Interference Calculations	
OS23	1.2.4.2.3.2	23-DEC-93	29-APR-94		85	Ltr. Rpt. Seismic Analysis	
OS72	1.2.4.2.3.2	31-JAN-94	31-MAR-94		42	Rpt on Mech. Behavior of Accesses for Package 2C	Milestone was partially met with submittal of the report, "Design Support Analysis: North Ramp Design Package 2C" (SAND93-4021) 12/20/93
P654	1.2.5.4.1	23-DEC-93	29-APR-94		85	Nominal Case Scenario Description	
OS05	1.2.5.4.3	23-DEC-93	31-MAR-94		64	Thermal Loading Studies	
OS27	1.2.5.4.6	30-SEP-93	30-MAR-94		120	Paper-Fracture Wetted Region Structural Function	
OS29	1.2.5.4.6	30-SEP-93	31-AUG-94		228	SAND-Prel. Analysis Gravity Driven Fingering	Milestone deleted - information contained in this report will now be included in the integrated PA report to be submitted as L3 milestone OS134
OS38	1.2.5.4.6	30-SEP-93	30-MAR-94		120	SAND-Detail Charac. Mat. Tracers Caisson Exp.	
OS39	1.2.5.4.6	30-SEP-93	30-JUN-94		185	SAND-Scoping Studies Large Scale Saturated Pathway	

DELIVERABLES EXPECTED TO COMPLETE NEXT MONTH

<u>EVENT</u>	<u>WBS NUMBER</u>	<u>DUE DATE</u>	<u>EXPECTED DATE</u>	<u>COMPLETED DATE</u>	<u>SLIP</u>	<u>DESCRIPTION</u>	<u>COMMENTS</u>
OS78	1.2.3.2.2.2.2	30-MAR-94	30-MAR-94			Progress Report on Development of Linked Strat-Geo Software	
OS147	1.2.3.2.2.2.2	28-JAN-94	31-MAR-94		44	Submit Draft SP to YMP for Acceptance in the SP Review Process	
OS70	1.2.4.2.1.1.1	30-MAR-94	30-MAR-94			Submit Access Convergence Test Plan	
OS74	1.2.4.2.1.1.4	30-MAR-94	30-MAR-94			Submit Construction Monitoring Experiment Plan for North Ramp	
OS72	1.2.4.2.3.2	31-JAN-94	31-MAR-94		42	Rpt on Mech. Behavior of Accesses for Package 2C	Milestone was partially met with submittal of the report, "Design Support Analysis: North Ramp Design Package 2C" (SAND93-4021) 12/20/93
OS05	1.2.5.4.3	23-DEC-93	31-MAR-94		64	Thermal Loading Studies	
OS10	1.2.5.4.4	31-MAR-94	31-MAR-94			SAND Report on INTRAVAL	
OS142	1.2.5.4.6	1-MAR-94	1-MAR-94			Publish User's Manual for LEHGC1.0	
OS27	1.2.5.4.6	30-SEP-93	30-MAR-94		120	Paper-Fracture Wetted Region Structural Function	
OS38	1.2.5.4.6	30-SEP-93	30-MAR-94		120	SAND-Detail Charac. Mat. Tracers Caisson Exp.	

PAGE NO. 1
03/08/94

YMP PLANNING AND CONTROL SYSTEM(PACS)
MONTHLY COST/FTE REPORT
Participant: SNL PERIOD: FEB 94

WBS ELEMENT (3rd)	ACTUAL COSTS	PARTICIPANT** HOURS	SUBCON. HOURS	PURCHASE COMMITMENTS	SUBCON. ACCRUED* COMMITMENTS	ACCRUED* COSTS	APPROVED BUDGET	APPROVED FUNDS	CUMULATIVE COSTS
1.2.1	12000	-149	112.00	200.00	5790.09	N/A	182000	164131	24000
1.2.2	30000	-473	352.00	0.00	5263.08	N/A	50000	49088	58000
1.2.3	359000	-6908	4016.00	125616.00	759181.39	N/A	4985000	3775730	1407000
1.2.4	259000	-6193	1600.00	8993.00	413585.41	N/A	2864000	2191197	1282000
1.2.5	425000	-12490	2960.00	104739.47	591044.47	N/A	4374000	4030696	2213000
1.2.6	13000	-184	64.00	0.00	18048.18	N/A	130000	66939	18000
1.2.9	39000	-3686	-416.00	189.00	151716.47	N/A	1400000	1185432	557000
1.2.11	83000	-1483	1024.00	2096.00	1156134.61	N/A	1000000	798110	430000
1.2.12	19000	-370	1040.00	5711.00	143921.36	N/A	500000	125000	200000
1.2.15	80000	-1687	1024.00	4711.30	62017.11	N/A	495000	447778	186000
*** Total ***	1319000	-33623	11776.00	252255.77	3306702.17		15980000	12834101	6375000

** Participant hours negative due to one-time balance of hours reported with actual SNL Financial System Hours expended

SNL FTEs: 51.4

Contractor FTEs: 73.6

DISCLAIMER:

The Commitment Amounts displayed on this report represent estimates based upon the best available data and should be treated as approximations.

* Note: The SNL Financial system reports Accruals as Actual Costs.

WBS No. - 1.2	WBS Manager -	
WBS Title - YUCCA MOUNTAIN PROJECT		
Parent WBS No. -	Parent WBS Manager -	
Parent WBS Title -		

Statement of Work

See the current WBS Dictionary

Cost/Schedule Performance														
Id	Description	Current Period					FY1994 Cumulative to Date					FY1994 at Completion		
		BCWS	BCWP	ACWP	SV	CV	BCWS	BCWP	ACWP	SV	CV	BAC	EAC	VAC
1.2.1	SYSTEMS ENGINEERING	15	15	12	0	3	81	81	24	0	57	182	155	27
1.2.2	WASTE PACKAGE	7	7	30	0	-23	44	22	58	-22	-36	50	78	-28
1.2.3	SITE INVESTIGATIONS	410	264	359	-146	-95	1954	1745	1407	-209	338	4995	4885	110
1.2.4	REPOSITORY	281	206	259	-75	-53	1254	1231	1282	-23	-51	2864	2865	-1
1.2.5	REGULATORY	386	356	425	-30	-69	1905	1947	2213	42	-266	4374	4472	-98
1.2.6	EXPLORATORY STUDIES FACILI	11	11	13	0	-2	56	56	18	0	38	130	122	8
1.2.9	PROJECT MANAGEMENT	117	117	39	0	78	589	589	557	0	32	1400	1364	36
1.2.11	QUALITY ASSURANCE	84	84	83	0	1	431	431	430	0	1	1000	1056	-56
1.2.12	INFORMATION MANAGEMENT	43	43	19	0	24	215	215	200	0	15	500	506	-6
1.2.15	SUPPORT SERVICES	43	43	80	0	-37	220	220	186	0	34	495	498	-3
Total		1397	1146	1319	-251	-173	6749	6537	6375	-212	162	15990	16001	-11

Resource Distributions by Element of Cost

Fiscal Year 1994

Budgeted Cost of Work Scheduled

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
LBRHRS	7708	7866	7946	8139	8233	8528	8601	7973	7933	7774	7752	7653	96106
LABOR	640	639	639	644	647	677	679	616	608	590	574	560	7513
SUBS	485	543	588	565	607	608	614	579	573	568	554	533	6817
TRAVEL	0	0	0	0	0	0	0	0	0	0	0	0	0
PM&E	0	0	0	0	0	0	0	0	0	0	0	0	0
OTHER	155	156	146	142	143	140	137	137	134	130	122	108	1650
CAPITAL	0	0	10	0	0	0	0	0	0	0	0	0	10
Total BCWS	1280	1338	1383	1351	1397	1425	1430	1332	1315	1288	1250	1201	15990

WBS No. - 1.2 - YUCCA MOUNTAIN PROJECT

Resource Distributions by Element of Cost

Fiscal Year 1994 Actual Cost of Work Performed													
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
LBRHRS	6341	15060	21603	31781	-33623	0	0	0	0	0	0	0	41162
LABOR	547	689	754	647	665	0	0	0	0	0	0	0	3302
SUBS	316	272	551	609	736	0	0	0	0	0	0	0	2484
TRAVEL	0	0	0	0	0	0	0	0	0	0	0	0	0
PM&E	0	0	0	0	0	0	0	0	0	0	0	0	0
OTHER	101	180	169	221	-82	0	0	0	0	0	0	0	589
CAPITAL	0	0	0	0	0	0	0	0	0	0	0	0	0
Total ACWP	964	1141	1474	1477	1319	0	0	0	0	0	0	0	6375

Resource Distributions													
Fiscal Year 1994	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
BCWS	1280	1338	1383	1351	1397	1425	1430	1332	1315	1288	1250	1201	15990
BCWP	1313	1418	1281	1379	1146	0	0	0	0	0	0	0	6537
ACWP	964	1141	1474	1477	1319	0	0	0	0	0	0	0	6375
ETC	0	0	0	0	0	1328	1412	1398	1354	1398	1409	1327	9626

Fiscal Year Distribution													At Complete
Prior	FY1994	FY1995	FY1996	FY1997	FY1998	FY1999	FY2000	FY2001	FY2002	FY2003	Future		
BCWS	15134	15990	29631	42435	48185	50224	54404	46938	35109	0	0	0	338050
BCWP	14647	6537	0	0	0	0	0	0	0	0	0	0	
ACWP	13393	6375	0	0	0	0	0	0	0	0	0	0	
ETC	0	9626	29938	41163	48554	55560	55161	47840	25378	1595	0	0	334583

**Yucca Mountain Site Characterization Project
Variance Analysis Report
Status Thru: FEBRUARY**

PARTICIPANT: SNL PEM: SMISTAD WBS: 1.2.5.4.1

WBS TITLE: TOTAL SYSTEM PERFORMANCE ASSESSMENT

P&S ACCOUNT: 08541

FY 1994 Cumulative to Date									FY 1994 at Completion					
BCWS	BCWP	ACWP	SV	SV%	SPI	CV	CV%	CPI	BAC	EAC	VAC	VAC%	IEAC	ICPI
542	576	799	34	6.3	106.3	-223	-38.7	72.1	1230	1305	-75	-6.1	1706	129.2

Analysis

Cumulative Cost Variance:

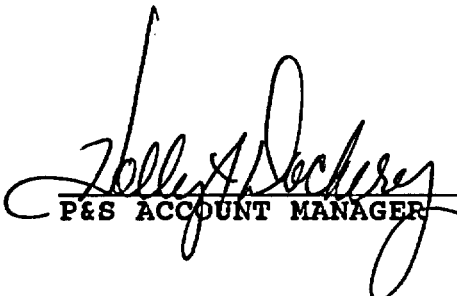

The majority of the cost overrun was caused by the effort to submit the TSPA-II report to DOE for programmatic review. This report would not have met the project schedule without the level-of-effort used during November and December. In addition to writing this report, a Sandia Expert Panel Review Team, which was not budgeted for, also charged 264 hours.

At this time there is no impact to any level II milestones or successor activities.

A CSCR has been initiated by the project office to transfer 75K into this P&S account from CRWMS M&O PA under 12541 to SNL. This additional funding will be used to fund an existing contract, thus supporting the cost overrun.

Cumulative Schedule Variance:

Variance At Complete:

	<u>3/11/94</u>		<u>3/11/94</u>
P&S ACCOUNT MANAGER	DATE	TPO	DATE