SANDIA NATIONAL LABORATORIES

YUCCA MOUNTAIN PROJECT

MONTHLY PROGRESS REPORT

AUGUST 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.

1.2.3 Site Investigations

Progress During Report Period

Systematic Acquisition of Site-Specific Subsurface Information: Coring of hole USW SD-9 resumed on August 23 at depth of 1489 feet in rocks of the upper tuffs of Calico Hills. Total cored depth was 1492 feet as of August 24. The perched-water problem encountered in late July was resolved by reaming the 6-inch borehole to a diameter of 8-1/2 inches and setting 7-inch casing with an inflatable packer to a depth of 1489 feet. Thus far, the perched-water interval, first encountered at approximately 1353 feet, appears to have been sealed off. Completion of hole SD-9 is a precursor to Sandia level 3 milestones 0S84 and 0S85.

Drilling of hole USW SD-12 was suspended at a total cored depth was 1401 ft on August 19, because of continuing problems with the mechanical integrity of weld-joints on the dual-wall drill pipe. Completion of hole SD-12 is a precursor to Sandia level 3 milestones 0S82 and 0S83.

Pad construction for drill hole USW SD-7 is complete. SD-7 is a combined ESF South Ramp/Systematic Drilling Program drill hole located at the approximate location where the Main Test Level drift and South Ramp meet.

Three-Dimensional Rock Characteristics Models: Geostatistical models constructed in support of repository-design activities evaluating thermal effects have been used in a number of thermal calculations using the finite-element computer code, COYOTE. Two-dimensional thermal profiles at various times after "emplacement" of waste in a "repository," resulting from thermal modeling of the geostatistical images, have been compared against "baseline" thermal models involving (1) uniform, homogeneous material properties; (2) homogeneous, horizontally layered properties; and (3) homogeneous, sloped-layer properties. Two SAND reports have been drafted to summarize both the geostatistical and thermal modeling and are in internal SNL review.

Significant progress has been made in implementing the soft-data link between the GSLIB sequential Gaussian simulation algorithm, SGSIM and three-dimensional geologic information contained in geometric ("geologic") models constructed using the Lynx GMS modeling technique. FORTRAN coding of several code segments has been written in prototype format. These segments include programming necessary to identify the failure of the simulation algorithm to locate any conditioning information within the data-search subroutine. An updated status report describing recent developments in this software development effort is was submitted as SNL Level 3 Milestone 0S79 on August 31,1994.

Determination of Heat Capacity: All of the heat capacity samples have been crushed and splits of the powders allocated for chemical analysis. These data will be used to calculate theoretical heat capacities with measured values.

Laboratory Thermal Expansion Testing: SNL Level 3 Milestone 0S89, "TDIF Submittal, Sample Size Effects on Thermal Expansion", was submitted on August 5, 1994.

Laboratory Determination of Mechanical Properties of Intact Rock : In the study of the mechanical properties of NRG drill hole samples at NER, the testing of NRG-7/7A samples from depth range 898-1451 feet was completed in July and the results were submitted on TDIF numbers 303340 and 303384. A set of additional samples have been received from NRG-6. These samples will be tested at elevated pressures of 5 and 10 MPa in order to begin the characterization of the pressure effect on mechanical properties at a wide range of porosities. Data analysis is continuous as the data are collected, including comparison with previous data from smaller samples.

SNL Level 3 Milestone 0S104, "Report on Experimental Results on NRG-7 Samples", was met on August 19, 1994 by the submittal of SNL Report SAND94-1996.

Laboratory Determination of Mechanical Properties of Fractures: SNL Level 3 Milestone 0S101, "Report on Experiment Data on NRG-7 Samples", was met on August 24, 1994 by the submittal of SAND94-1995.

Retardation Sensitivity Analysis: During this month, additional progress was made on reports describing the evaluation of the LEHGC code. A model simulating transport in discrete fracture-media has been developed to test LEHGC. The model was patterned after the one described by Grisak and Pickens in their article Solute Transport Through Fractured Media, published in the August 1980 volume of Water Resources Research. A preliminary configuration was run in LEHGC with promising results, however, after modifications were made to duplicate the tests described by Grisak and Pickens, it was apparent that LEHGC is not duplicating their models output. Attempts to solve two CHEMVAL test problems continued. The results of the SNL calculations are similar to those of the other CHEMVAL participants. A version of LEHGC previously modified to perform the chemical equilibrium calculations in parallel on the nCUBE is being used to carry out timing studies to evaluate the benefit of executing LEHGC on a massively parallel platform.

Preparation of the Study Plan for Sandia activities under this WBS Element continued; completion of final draft for review is expected during September.

A draft letter report describing the status of the LEHGC2.0 was completed.

DELIVERABLES COMPLETED THIS MONTH

EVENT	WBS NUMBER	DUE DATE	EXPECTED DATE	COMPLETED DATE	SLIP	DESCRIPTION	COMMENTS
OS79	1.2.3.2.2.2.2	01-SEP-94	01-SEP-94	31-AUG-94	0	Progress Report on Linked Modeling Software.	
OS89	1.2.3.2.7.1.2	31-JUL-94	11-AUG-94	05-AUG-94	4	Report on Sample Size Effects on Thermal Expansion.	
OS104	1.2.3.2.7.1.3	29-JUL-94	30-AUG-94	19-AUG-94	14	Report on Experiment Results on NRG-7 Samples.	
OS101	1.2.3.2.7.1.4	29-JUL-94	30-AUG-94	24-AUG-94	17	Report on Experiment Data on NRG-7 Samples.	

DELIVERABLES PAST DUE

EVENT	WBS NUMBER	DUE DATE	EXPECTED DATE	COMPLETED DATE	SLIP	DESCRIPTION	COMMENTS
OS69	1.2.2.4.3	14-JUN-94	30-SEP-94		75	Report on Backfill Thermal Conductivity Experiment.	
OS82	1.2.3.2.2.2.1	01-JUN-94	31-OCT-94		105	Submit Initial TDIF Data Transfer Report SD-12.	
OS83	1.2.3.2.2.2.1	02-NOV-94	31-MAY-95		140	Submit Final TDIF Drillhole & Data Report SD-12.	
OS84	1.2.3.2.2.2.1	26-SEP-94	31-OCT-94		24	Submit Initial TDIF Data Transfer Report SD-9.	
OS85	1.2.3.2.2.2.1	28-FEB-95	30-JUN-95		86	Submit Final Drillhole & Data Report SD-9.	
OS88	1.2.3.2.2.2.1	31-JUL-94	30-SEP-94		43	Summary Evaluation on Surface Transects/ Down-Hole Sampling.	
OS12	1.2.3.2.6.2.1	02-MAY-94	13-OCT-94		114	SAND Rpt Summary of Data Collection and Analysis for NRG holes.	
OS155	1.2.3.2.6.2.1	18-JAN-94	30-SEP-94		179	Ltr Rpt Summary of Available Drillhole 2C Data.	
OS156	1.2.3.2.6.2.1	15-JUN-94	01-MAR-95		174	Ltr Rpt Summary of Available Design Package 8B.	
OS108	1.2.3.2.7.1.1	15-SEP-94	30-SEP-94		10	Report on Sample Characterization.	
OS109	1.2.3.2.7.1.1	31-AUG-94	30-SEP-94		21	Report on Results of Heat Capacity Measurements.	
OS91	1.2.3.2.7.1.2	15-SEP-94	30-SEP-94		10	Report on Thermal Expansion Data.	
OS105	1.2.3.2.7.1.3	31-AUG-94	01-MAY-95		163	SAND Report for Experiments on Sample SD-12.	
OS80	1.2.3.2.8.3.3	30-SEP-94	31-MAY-95		163	Develop Models for Earthquake Ground Motion.	
OS116	1.2.3.4.1.5.1	01-APR-94	30-SEP-94		126	SAND Rpt on Verification/Validation of LEHGC 1.0.	

DELIVERABLES PAST DUE (cont.)

EVENT	WBS NUMBER	DUE DATE	EXPECTED DATE	COMPLETED DATE	SLIP	DESCRIPTION	COMMENTS
OS96	1.2.3.6.2.1.6	15-SEP-94	31-OCT-94		31	Report on Application of Regional-Local Climate Transformation Methods.	
OS75	1.2.4.2.1.1.4	30-SEP-94	30-MAR-95		120	Conduct In Situ Design Verification Experiments.	
OS124	1.2.4.2.3.1	30-SEP-94	15-SEP-95		238	Develop Hybrid Numerical Models.	
P654	1.2.5.4.1	23-DEC-93	16-SEP-94		181	Nominal Case Scenario Description.	
OS131	1.2.5.4.1	15-SEP-94	15-SEP-95		249	Rpt on Tectonics Scenario Selection.	
OS132	1.2.5.4.1	15-SEP-94	15-SEP-95		249	Rpt on Human Intrusion Scenario Selection.	
OS157	1.2.5.4.1	15-SEP-94	14-OCT-95		20	Submit Memo on Status of Features, Events and Processes (FEP) Database.	
OS144	1.2.5.4.6	19-JAN-94	30-SEP-94		178	Memo Report on Progress of Report Development on Geochemical Experimentation and Modeling In Support of Caisson Experiment.	
OS152	1.2.5.4.6	15-AUG-94	20-SEP-94		24	Submit SAND Report on Measurement of Sorption under Unsaturated Conditions.	
OS154	1.2.5.4.7	14-SEP-94	14-OCT-94		21	SAND Report Based on Sensitivity Analysis.	

DELIVERABLES EXPECTED TO COMPLETE NEXT MONTH

EVENT	WBS NUMBER	DUE DATE	EXPECTED DATE	COMPLETED DATE	SLIP	DESCRIPTION	COMMENTS
OS69	1.2.2.4.3	14-JUN-94	30-SEP-94		75	Report on Backfill Thermal Conductivity Experiment.	
OS88	1.2.3.2.2.2.1	31-JUL-94	30-SEP-94		43	Summary Evaluation on Surface Transects/ Down-Hole Sampling.	
OS155	1.2.3.2.6.2.1	18-JAN-94	30-SEP-94		179	Ltr Rpt Summary of Available Drillhole 2C Data.	T. Sullivan requested that data for more than drill hole 2C be included in report
OS108	1.2.3.2.7.1.1	15-SEP-94	30-SEP-94		10	Report on Sample Characterization.	
OS109	1.2.3.2.7.1.1	31-AUG-94	30-SEP-94		21	Report on Results of Heat Capacity Measurements.	
OS90	1.2.3.2.7.1.2	30-SEP-94	30-SEP-94		0	Report on Saturation Effects on Thermal Expansion.	
OS91	1.2.3.2.7.1.2	15-SEP-94	30-SEP-94		10	Report on Thermal Expansion Data.	
OS94	1.2.3.2.7.1.2	30-SEP-94	30-SEP-94		0	Report on Data Analysis for Thermal Properties.	
OS106	1.2.3.2.7.1.3	30-SEP-94	30-SEP-94		0	Report on Time Dependent Mechanical Properties of Intact Tuff.	
OS116	1.2.3.4.1.5.1	01-APR-94	30-SEP-94		126	SAND Rpt on Verification/Validation of LEHGC 1.0.	
OS98	1.2.3.6.2.1.6	14-SEP-94	14-SEP-94		0	Report on Current Climate Validation Analysis.	
OS71	1.2.4.2.1.1.2	30-SEP-94	30-SEP-94		0	Submit Study Plan 8.3.1.15.1.6.	
OS119	1.2.4.2.1.2	30-SEP-94	30-SEP-94		0	Report on Lab Testing on Jointed Structures.	
OS120	1.2.4.2.1.2	30-SEP-94	30-SEP-94		0	Report on Plans for Rock Mass Creep Issues.	
OS121	1.2.4.2.1.2	30-SEP-94	30-SEP-94		0	Conduct Analyses on Silica Phase Transformation.	
OS122	1.2.4.2.3.1	30-SEP-94	30-SEP-94		0	Report on Development of Continuum Joint Model.	
OS100	1.2.4.6.1	30-SEP-94	30-SEP-94		0	Develop Sealing Design Strategy Report.	

DELIVERABLES EXPECTED TO COMPLETE NEXT MONTH (cont.)

EVENT	WBS NUMBER	DUE DATE	EXPECTED DATE	COMPLETED DATE	SLIP	DESCRIPTION	COMMENTS
OS81	1.2.4.6.2	30-SEP-94	30-SEP-94		0	Conduct Initial Field Verification of Borehole Sealing Performance.	
OS134	1.2.5.4.1	15-SEP-94	15-SEP-94		0	Report on Single Fracture Model Development.	
OS135	1.2.5.4.1	15-SEP-94	15-SEP-94		0	Report on Nonisothermal Process Information.	
OS136	1.2.5.4.1	15-SEP-94	15-SEP-94		0	Report on Model for Geochemical Retardation Effects.	
OS137	1.2.5.4.1	15-SEP-94	15-SEP-94		0	Report on TOSPAC Enhancements.	
OS127	1.2.5.4.1	15-SEP-94	15-SEP-94		0	Progress Report on Nonisothermal Modeling and Experiments.	
OS128	1.2.5.4.1	15-SEP-94	15-SEP-94		0	Report on Conduct of Thermal Evaluation of Geostatistical Property Models.	
OS129	1.2.5.4.1	15-SEP-94	15-SEP-94		0	Report Results of Sensitivity of GWTT Simulations.	
OS144	1.2.5.4.6	19-JAN-94	30-SEP-94		178	Memo Report on Progress of Report Development on Geochemical Experimentation and Modeling In Support of Caisson Experiment.	
OS152	1.2.5.4.6	15-AUG-94	20-SEP-94		24	Submit SAND Report on Measurement of Sorption under Unsaturated Conditions.	

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

WBS ELEMENT (3rd)	ACTUAL COSTS	PARTICIPANT** HOURS	SUBCON. HOURS	PURCHASE COMMITMENTS	SUBCON. COMMITMENTS	ACCRUED* COSTS	APPROVED BUDGET	APPROVED FUNDS	CUMULATIVE COSTS
1.2.1	20000	53	208.00	1123.00	9016.43	N/A	182000	171382	105000
1.2.2	-1000	0	0.00	0.00	0.00	N/A	50000	49999	50000
1.2.3	489000	2168	4432.00	83832.00	2131013.65	N/A	4729000	4814618	3313000
1.2.4	249000	925	2528.00	20775.00	99618.29	N/A	2554000	3041956	2577000
1.2.5	242000	1843	624.00	104779.23	437819.69	N/A	4500000	4960500	4133000
1.2.6	33000	248	112.00	0.00	352.50	N/A	120000	120001	116000
1.2.9	117000	880	736.00	2269.58	88928.70	N/A	1400000	1357149	1126000
1.2.11	68000	280	736.00	2096.00	62146.28	N/A	1000000	999999	844000
1.2.12	129000	291	2928.00	6606.00	68823.84	N/A	500000	499999	451000
1.2.15	-60000	490	-1344.00	8348.80	38908.43	N/A	495000	494999	439000
*** Total ***	1286000	7178	10960.00	229829.61	2936627.81		15530000	16510602	13154000

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

SNL FTEs: 49.5
Contractor FTEs: 68.5

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.

Inc. Dollars in Thousands

Yucca Mtn. Site Char. Project-Planning & Control System
PACS Participant Work Station (PPWS)
WBS Status Sheet (WBS02)

WBS No. - 1.2

WBS Title - YUCCA MOUNTAIN PROJECT

Parent WBS No. -

Parent WBS Title -

Element ID - ZZ

Statement of Work

See the current WBS Dictionary

Cost/Schedule Performance

Id	Description	Current Period BCWS	BCWP	ACWP	SV	CV	FY1994 Cumulative to Date BCWS	BCWP	ACWP	SV	CV	FY1994 at Completion BAC	EAC	VAC
1.2.1	SYSTEMS ENGINEERING	14	14	30	0	-16	169	169	135	0	34	182	165	17
1.2.2	WASTE PACKAGE	0	3	0	3	3	50	39	50	-11	-11	50	50	0
1.2.3	SITE INVESTIGATIONS	355	804	460	449	344	4521	4039	3904	-482	135	4864	4526	338
1.2.4	REPOSITORY	149	220	77	71	143	2406	2461	2654	55	-193	2554	2847	-293
1.2.5	REGULATORY	353	586	340	233	246	4156	4096	4473	-60	-377	4500	4778	-278
1.2.6	EXPLORATORY STUDIES FACILI	6	6	4	0	2	114	114	120	0	-6	120	120	0
1.2.9	PROJECT MANAGEMENT	114	114	88	0	26	1286	1286	1214	0	72	1400	1400	0
1.2.11	QUALITY ASSURANCE	79	79	82	0	-3	921	921	926	0	-5	1000	1000	0
1.2.12	INFORMATION MANAGEMENT	40	40	-85	0	125	461	461	366	0	95	500	500	0
1.2.15	SUPPORT SERVICES	37	37	57	0	-20	458	458	496	0	-38	495	496	-1
Total		1147	1903	1053	756	850	14542	14044	14338	-498	-294	15665	15882	-217

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	7703	7862	7939	8144	8229	8662	8594	7913	7882	7029	7309	7160	94426
LABOR	639	638	638	643	647	695	708	632	627	498	536	524	7425
SUBS	485	543	588	555	597	580	580	555	556	505	526	513	6583
OTHER	154	155	145	141	142	139	124	130	130	91	85	86	1522
CAPITAL	0	0	10	0	0	0	0	0	0	125	0	0	135
Total BCWS	1278	1336	1381	1339	1386	1414	1412	1317	1313	1219	1147	1123	15665

Inc. Dollars in Thousands

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	9344	7819	7333	8685	7178	7492	0	89013
LABOR	547	689	754	647	665	772	565	582	644	529	563	0	6957
SUBS	316	272	551	609	736	964	543	387	404	685	523	0	5990
OTHER	101	180	169	221	-82	291	119	46	176	72	-33	0	1260
CAPITAL	0	0	0	0	0	0	0	0	0	131	0	0	131
Total ACWP	964	1141	1474	1477	1319	2027	1227	1015	1224	1417	1053	0	14338

Resource Distributions

Fiscal Year 1994	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
BCWS	1278	1336	1381	1339	1386	1414	1412	1317	1313	1219	1147	1123	15665
BCWP	1311	1416	1279	1367	1135	1325	1055	1140	1162	951	1903	0	14044
ACWP	964	1141	1474	1477	1319	2027	1227	1015	1224	1417	1053	0	14338
ETC	0	0	0	0	0	0	0	0	0	0	0	1544	1544

Fiscal Year Distribution

	Prior	FY1994	FY1995	FY1996	FY1997	FY1998	FY1999	FY2000	FY2001	FY2002	FY2003	Future	At Complete
BCWS	15134	15665	28045	36946	52136	56262	60678	56845	42605	0	0	0	364316
BCWP	14647	14044	0	0	0	0	0	0	0	0	0	0	
ACWP	13393	14338	0	0	0	0	0	0	0	0	0	0	
ETC	0	1544	29703	36428	52446	56698	60768	56589	42504	0	0	0	364411

Yucca Mountain Site Characterization Project
Variance Analysis Report
Status Through: AUGUST

PARTICIPANT: SNL PEM: TYNAN WBS: 1.2.3.2.2.2.1

WBS TITLE: SYSTEMATIC ACQUISITION OF SITE-SPECIFIC SUBSURFACE INFO.

P&S ACCOUNT: 0S32221

FY 1994 Cumulative to Date									FY 1994 at Completion					
BCWS	BCWP	ACWP	SV	%	SPI	CV	%	CPI	BAC	EAC	VAC	%	IEAC	TCPI
415	250	158	-165	-39.8	60.2	92	36.8	158.2	455	185	270	59.3	288	759.3

Analysis

Cumulative Schedule Variance:

Drilling at SD-12 has proceeded more slowly than anticipated, due in part to repeated blocking of the kelly pipe/hose that conducts cuttings from the rig to the cyclone during the reaming portion of the drilling cycle and continuing problems with the mechanical integrity of weld-joints on the dual-wall drill pipe. An additional issue is the use of only a single crew shift on this hole, thus resulting in significant lost time starting up and shutting down each day.

The late start of SD-9 is also contributing to the behind schedule variance. SD-9 was scheduled to start on March 31, 1994, but did not start until May 17, 1994.

The reduction in crew shifts and the slower than anticipated drilling schedule will push completion of SD-12 from May 1, 1994 to the currently estimated date of January 1, 1994. The delayed start of SD-9 will push its scheduled completion from August 8, 1994 to at least October 8, 1994. These late completion dates will have a significant impact on the completion of Level 2 Milestone T282.

This variance is unrecoverable unless a decision is made to use 3 crew shifts per day, and even then the schedule will only be partially recoverable. An alternative would be to rebaseline the entire Systematic Drilling Program.

P&S ACCOUNT: 0S32221

Analysis (cont.)

Variance at Completion:

This variance is a direct result of being behind schedule. SNL will underrun this effort in FY94 because much of the work has been delayed to FY95.

The forecasted impact is a reduction of $270,000 in the WBS 1.2.3.2.2.2.1 EAC for FY94. The FY95 EAC has been increased to reflect the delay of work into FY95.

This variance is unrecoverable unless a decision is made to use 3 crew shifts per day, and even then the variance will only be partially recoverable. An alternative would be to rebaseline the entire Systematic Drilling Program.

Peter B. Davis for Chris Rautman 9-15-94

P&S ACCOUNT MANAGER DATE

J E Sharpton for 9/16/94

TPO DATE

Yucca Mountain Site Characterization Project
Variance Analysis Report
Status Through: AUGUST

PARTICIPANT: SNL **PEM: TYNAN** **WBS: 1.2.3.2.2.2.2**

WBS TITLE: THREE-DIMENSIONAL ROCK CHARACTERISTICS MODELS

P&S ACCOUNT: 0S32222

FY 1994 Cumulative to Date									FY 1994 at Completion					
BCWS	BCWP	ACWP	SV	%	SPI	CV	%	CPI	BAC	EAC	VAC	%	IEAC	TCPI
278	254	397	-24	-8.6	91.4	-143	-56.3	64.0	302	451	-149	-49.3	472	88.9

Analysis

Cumulative Cost Variance:

This variance is primarily due to unplanned support required to set up various work stations with Lynx modeling software and other software. Additionally, several new people were added to this effort in FY94. The cost required to bring them up the learning curve was not factored into the planning for WBS 1.2.3.2.2.2.2.

At this time there is no impact to any Level 2 milestones or successor activities. However, the EAC of WBS 1.2.3 has been increased.

This overrun cannot be recovered without receiving additional budget to cover the unplanned activities.

Variance at Completion:

See the Cumulative Cost Variance above.

Peter B. Davis for Chris Rautman 9-15-94
P&S ACCOUNT MANAGER DATE

AE Shaffer for 9/16/94
TPO DATE

Yucca Mountain Site Characterization Project
Variance Analysis Report
Status Through: AUGUST

PARTICIPANT: SNL . PEM: SULLIVAN WBS: 1.2.3.2.6.2.1

WBS TITLE: SURFACE FACILITIES EXPLORATION PROGRAM

P&S ACCOUNT: 0S32621

FY 1994 Cumulative to Date									FY 1994 at Completion					
BCWS	BCWP	ACWP	SV	%	SPI	CV	%	CPI	BAC	EAC	VAC	%	IEAC	TCPI
203	201	272	-2	-1.0	99.0	-71	-35.3	73.9	220	290	-70	-31.8	298	105.6

Analysis

Variance At Completion:

This variance is due to the following:

1) Unanticipated planning of the characterization program for non-lithified tuffs at Exile Hill (out-of-scope).
2) Unplanned documentation of results of investigations of non-lithified tuffs at Exile Hill (out-of-scope).

At this time there is no impact to any Level 2 milestones or successor activities. However, the EAC of WBS 1.2.3. has been increased.

This overrun can only be recovered by increasing the budget to cover the out-of-scope work that was authorized by the PWBS Manager.

S E Shaffer Jr 9/16/94
P&S ACCOUNT MANAGER DATE

S E Shaffer Jr 9/16/94
TPO DATE

Yucca Mountain Site Characterization Project
Variance Analysis Report
Status Through: AUGUST

PARTICIPANT: SNL **PEM: SULLIVAN** **WBS: 1.2.3.2.6.2.3**

WBS TITLE: SURFACE FACIL. FIELD TESTS & CHAR. MEAS.

P&S ACCOUNT: 0S32623

FY 1994 Cumulative to Date									FY 1994 at Completion					
BCWS	BCWP	ACWP	SV	%	SPI	CV	%	CPI	BAC	EAC	VAC	%	IEAC	TCPI
390	459	488	69	17.7	117.7	-29	-6.3	94.1	425	532	-107	-25.2	452	-77.3

Analysis

Variance At Completion:

This variance is due to the following:

1) Unplanned trenching on Exile Hill (out-of-scope).
2) Encountering a soil deposit when rock was anticipated.
3) Unplanned rock mass quality for surface outcrops (out-of-scope).
4) Additional surface mapping for the South Ramp (out-of-scope).
5) Unplanned boreholes at 2C and 2D (out-of-scope).
6) Unplanned structural log for UZ14 (out-of-scope).

At this time there is no impact to any Level 2 milestones or successor activities. However, the EAC of WBS 1.2.3. has been increased.

This overrun can only be recovered by increasing the budget to cover the out-of-scope work that was authorized by the PWBS Manager.

JE Shaptn 9/16/94
P&S ACCOUNT MANAGER / DATE

JE Shaptn 9/16/94
TPO / DATE

Yucca Mountain Site Characterization Project
Variance Analysis Report
Status Through: AUGUST

PARTICIPANT: SNL **PEM: BOYLE** **WBS: 1.2.3.2.7.1.1**

WBS TITLE: LABORATORY THERMAL PROPERTIES

P&S ACCOUNT: 0S32711

FY 1994 Cumulative to Date									FY 1994 at Completion					
BCWS	BCWP	ACWP	SV	%	SPI	CV	%	CPI	BAC	EAC	VAC	%	IEAC	TCPI
808	762	690	-46	-5.7	94.3	72	9.4	110.4	880	690	190	21.6	797	0.0

Analysis

Variance At Completion:

This effort will underrun because much of the work will not be completed until FY95. This is due to delayed receipt of samples for testing, samples breaking during the test process, and breakage of test equipment during the test process.

The EAC has been reduced for FY94. The amount of this reduction has been added to FY95.

This variance is unrecoverable in FY94 primarily because of the unavailability of samples that were planned to be tested in FY94. However, this variance will be recovered in FY95.

R E Finley 9/16/94 S E Shaffer 9/16/94

P&S ACCOUNT MANAGER DATE TPO DATE

Yucca Mountain Site Characterization Project
Variance Analysis Report
Status Through: AUGUST

PARTICIPANT: SNL **PEM: BOYLE** **WBS: 1.2.3.2.7.1.4**

WBS TITLE: LAB. DETERMINATION OF THE MECH. PROP. OF FRACTURES

P&S ACCOUNT: 0S32714

FY 1994 Cumulative to Date									FY 1994 at Completion					
BCWS	BCWP	ACWP	SV	%	SPI	CV	%	CPI	BAC	EAC	VAC	%	IEAC	TCPI
517	353	317	-164	-31.7	68.3	36	10.2	111.4	550	346	204	37.1	494	679.3

Analysis

Cumulative Schedule Variance:

This effort is behind schedule due to a delay in receiving samples. Late drilling, late sample selection, and longer than anticipated sample processing are the primary causes of this delay.

At this time there is no impact to any Level 2 milestones or successor activities.

This underrun is unrecoverable because the additional manpower required to make up for the lost time is unavailable.

Variance At Completion:

Due to a delay in receiving samples (late drilling, late sample selection, and longer than anticipated sample processing), approximately $164,000 of this effort will not be completed in FY94, resulting in a Cumulative Cost Variance for FY94. In addition, a contract for sample preparation that was planned will not be needed, resulting in a further expected underrun of approximately $40,000.

At this time there is no impact to any Level 2 milestones or successor activities. However, the EAC of WBS 1.2.3. has been reduced for FY94 and increased for FY95.

This underrun is unrecoverable because the additional manpower required to make up for the lost time is unavailable.

RE Finley 9/16/94
P&S ACCOUNT MANAGER DATE

SE Shaytan 9/16/94
TPO DATE

Yucca Mountain Site Characterization Project
Variance Analysis Report
Status Through: AUGUST

PARTICIPANT: SNL **PEM: CRAWLEY** **WBS: 1.2.3.6.2.1.6**

WBS TITLE: FUTURE REGIONAL CLIMATE AND ENVIRONMENTS

P&S ACCOUNT: 0S36216

FY 1994 Cumulative to Date									FY 1994 at Completion					
BCWS	BCWP	ACWP	SV	%	SPI	CV	%	CPI	BAC	EAC	VAC	%	IEAC	TCPI
593	605	252	12	2.0	102.0	353	58.3	240.1	615	586	29	4.7	256	3.0

Analysis

Cumulative Schedule Variance:

WBS 1.2.3.6.2.1.6 is under-accrued by approximately $300,000 in the subcontracts cost element.

At this time there is no impact to any Level 2 milestones or successor activities.

These charges will be accrued in September 1994.

J E Shapter Jr 9/16/94
P&S ACCOUNT MANAGER DATE

J E Shapter Jr 9/16/94
TPO DATE

Yucca Mountain Site Characterization Project
Variance Analysis Report
Status Through: AUGUST

PARTICIPANT: SNL **PEM: WHITE** **WBS: 1.2.4.2.1.1.4**

WBS TITLE: IN SITU DESIGN VERIFICATION

P&S ACCOUNT: 0S42114

FY 1994 Cumulative to Date									FY 1994 at Completion					
BCWS	BCWP	ACWP	SV	%	SPI	CV	%	CPI	BAC	EAC	VAC	%	IEAC	TCPI
420	415	588	-5	-1.2	98.8	-173	-41.7	70.6	455	648	-193	-42.4	644	66.7

Analysis

Cumulative Cost Variance:

This variance is primarily due to delaying the Access Convergence Study to FY95. Effort which was to have been completed as part of the Access Convergence Study had to be completed under the In Situ Design Verification. This effort is out-of-scope and unfunded. Another out-of-scope activity that was completed was the instrumentation of the Starter Alcove. Also, certain instrumentation installation that was budgeted for FY93 was delayed by construction and had to be completed in FY94, without any carryover funding.

This work was discontinued in April with the following impacts:

1. Installation of the pressure cells at the end of the starter tunnel to measure initial stress relaxation around the tunnel as the TBM begins excavation cannot be completed.

2. Data reports cannot be completed (Level 3 Milestone 0S75) and scientific notebook records of the instrumentation in the starter tunnel cannot be processed into the records system.

3. Geotechnical support, closure measurements, and other instrumentation that is planned as part of the TBM excavations will not be ready to support the start of TBM operations in August 1994.

4. Level 2 Milestones Z927, Z928, and Z929 cannot be completed without data from the In Situ Design Verification Experiments.

P&S ACCOUNT: 0S42114

Analysis (cont.)

This variance cannot be recovered without additional funding. A letter was sent on 01/19/94 requesting an additional $200,000 of funding that was removed from the Access Convergence Study on 10/04/93 and placed in Management Reserve. This money was to have been released to SNL pending determination of how much additional funding would be required to complete those efforts necessary to the In Situ Design Verification that were to have been completed as part of the Access Convergence Study.

Variance At Completion:

See the Cumulative Cost Variance above.

R E Finley 9/16/94 J E Sharpton Jr 9/16/94

P&S ACCOUNT MANAGER **DATE** **TPO** **DATE**

Yucca Mountain Site Characterization Project
Variance Analysis Report
Status Through: AUGUST

PARTICIPANT: SNL **PEM: WHITE** **WBS: 1.2.4.2.3.1**

WBS TITLE: CERTIFICATION OF DESIGN METHODS

P&S ACCOUNT: 0S4231

FY 1994 Cumulative to Date									FY 1994 at Completion					
BCWS	BCWP	ACWP	SV	%	SPI	CV	%	CPI	BAC	EAC	VAC	%	IEAC	ICPI
438	456	480	18	4.1	104.1	-24	-5.3	95.0	452	525	-73	-16.2	476	-8.9

Analysis

Variance at Completion:

This WBS will overrun because SNL was directed by the Assistant Manager for Engineering and Field Operations to complete the work without receiving the necessary funding. After substantially completing this effort, SNL was informed that no funding was available.

At this time there is no impact to any Level 2 milestones or successor activities. However, the EAC of WBS 1.2.4 has been increased.

This overrun cannot be recovered without receiving additional budget to cover the scope of work. However, work on several activities has been terminated to reduce the magnitude of the overrun.

P&S ACCOUNT MANAGER	9-15-94 DATE	TPO	9/16/94 DATE

Yucca Mountain Site Characterization Project
Variance Analysis Report
Status Through: AUGUST

PARTICIPANT: SNL **PEM: WHITE** **WBS: 1.2.4.2.3.2**

WBS TITLE: DESIGN ANALYSIS

P&S ACCOUNT: 0S4232

FY 1994 Cumulative to Date									FY 1994 at Completion					
BCWS	BCWP	ACWP	SV	%	SPI	CV	%	CPI	BAC	EAC	VAC	%	IEAC	TCPI
337	337	409	-2	-0.6	99.4	-74	-22.1	81.9	365	425	-60	-16.4	446	187.5

Analysis

Variance at Completion:

This effort will overrun due to an accelerated schedule and to the additional requirement of a second deliverable. More effort than anticipated was required to produce the first deliverable because the M&O requested SNL to accelerate the schedule in order to meet the M&O's Design Schedule. In addition, after the M&O received the first deliverable, an unplanned/out-of-scope deliverable was requested, also at an accelerated level of effort.

An additional $60,000 has been added to the Estimate to Complete. At this time there is no impact to any Level II milestones or successor activities.

This overrun is unrecoverable unless the out-of-scope effort is funded.

RE Finley 9/16/94 SE Sharpton for 9/16/94

P&S ACCOUNT MANAGER DATE TPO DATE

Yucca Mountain Site Characterization Project
Variance Analysis Report
Status Through: AUGUST

PARTICIPANT: SNL **PEM: GIL** **WBS: 1.2.5.1.1**

WBS TITLE: REGULATORY COORDINATION AND PLANNING

P&S ACCOUNT: 08511

FY 1994 Cumulative to Date									FY 1994 at Completion					
BCWS	BCWP	ACWP	SV	%	SPI	CV	%	CPI	BAC	EAC	VAC	%	IEAC	TCPI
184	184	323	0	0.0	100.0	-139	-75.5	57.0	200	350	-150	-75.0	351	59.3

Analysis

Cumulative Cost Variance:

This variance is caused by unanticipated effort associated with preparing for and attending the Technical Progress Review (TPR) and planning for Scenario A. Neither of these efforts were budgeted for.

At this time there is no impact to any Level 2 milestones or successor activities. However, the EAC of WBS 1.2.5. has been increased.

This overrun is unrecoverable unless the out-of-scope effort, which was authorized by the WBS Manager, is funded.

Variance At Completion:

See the Cumulative Cost Variance above.

W. George Pettis 9/15/94 S E Shapton for 9/16/94

P&S ACCOUNT MANAGER DATE TPO DATE

Yucca Mountain Site Characterization Project
Variance Analysis Report
Status Through: AUGUST

PARTICIPANT: SNL **PEM: GIL** **WBS: 1.2.5.2.2**

WBS TITLE: SITE CHARACTERIZATION PROGRAM

P&S ACCOUNT: 0S522

FY 1994 Cumulative to Date									FY 1994 at Completion					
BCWS	BCWP	ACWP	SV	%	SPI	CV	%	CPI	BAC	EAC	VAC	%	IEAC	TCPI
244	244	128	0	0.0	100.0	116	47.5	190.6	286	150	136	47.6	150	190.9

Analysis

Cumulative Cost Variance:

This effort will underrun in FY94 because fewer resources than planned have been requested to support intra- and inter-agency interactions. Also, fewer resources than planned have been needed to support study plans and the Semi-Annual Report.

There is currently no impact to any milestones or deliverables. The EAC for this effort has been reduced.

This variance is unrecoverable unless more support is required for the efforts mentioned above.

Variance at Completion:

See the Cumulative Cost Variance above.

J E Sharpton 9/16/94 J E Sharpton 9/16/94

P&S ACCOUNT MANAGER DATE TPO DATE

Yucca Mountain Site Characterization Project
Variance Analysis Report
Status Through: AUGUST

PARTICIPANT: SNL **PEM: SMISTAD** **WBS: 1.2.5.4.1**

WBS TITLE: TOTAL SYSTEM PERFORMANCE ASSESSMENT

P&S ACCOUNT: 0S541

FY 1994 Cumulative to Date									FY 1994 at Completion					
BCWS	BCWP	ACWP	SV	%	SPI	CV	%	CPI	BAC	EAC	VAC	%	IEAC	TCPI
1226	1195	1447	-31	-2.5	97.5	-252	-21.1	82.6	1305	1505	-200	-15.3	1580	189.7

Analysis

Cumulative Cost Variance:

This variance is due to the greater than anticipated effort to prepare the TSPA-II report for submittal to the DOE. The budget for this report was based on the costs incurred on the TSPA-I report. However, TSPA-II turned out to be more than twice as big as TSPA-I, requiring more effort to write, review, and produce it than planned. Also, much of the computational work for TSPA-II that was scoped and budgeted for in FY93 was actually accomplished in FY94, with no FY93 carryover. Additionally, SNL was required to prepare for and attend several out-of-scope meetings requested by the DOE to present the TSPA-II report's progress. Another factor was 264 hours for the Sandia Expert Panel Review Team, which was unbudgeted.

At this time there is no impact to any Level 2 milestones or successor activities. However, the EAC for WBS 1.2.5 has been increased.

This overrun is unrecoverable, unless the out-of-scope effort is funded.

Variance At Completion:

See the Cumulative Cost Variance above.

W. George Parkin 9/15/94 JE Shaytan for 9/16/94

P&S ACCOUNT MANAGER DATE TPO DATE

Yucca Mountain Site Characterization Project
Variance Analysis Report
Status Through: AUGUST

PARTICIPANT: SNL **PEM: SMISTAD** **WBS: 1.2.5.4.5**

WBS TITLE: INTERACTIVE GRAPHICS INFORMATION SYSTEM

P&S ACCOUNT: 0S545

FY 1994 Cumulative to Date									FY 1994 at Completion					
BCWS	BCWP	ACWP	SV	%	SPI	CV	%	CPI	BAC	EAC	VAC	%	IEAC	TCPI
344	344	430	0	0.0	100.0	-86	-25.0	80.0	375	440	-65	-17.3	469	310.0

Analysis

Cumulative Cost Variance:

The level of effort required to maintain adequate computer systems support for SNL is much higher than was anticipated when this effort was planned. Requests for support on UNIX, Novell LAN, and personal computer systems have greatly exceeded what was budgeted. Additionally, establishing SNL-YMP computer network operations at the BDM Bldg. was budgeted for and scoped in FY93 but accomplished in FY94 with no FY93 carryover.

At this time there is no impact to any Level 2 milestones or successor activities. However, the EAC for WBS 1.2.5 has been increased.

This overrun is unrecoverable unless the effort associated with FY93 is funded. A CSCR was submitted to YMSCO in May 1994 to request funding for this effort. Efforts are currently underway to determine if any types of support can be eliminated. By doing this, SNL hopes to keep the overrun under $125,000 (the amount that is associated with establishing the SNL-YMP network in FY94).

Variance At Completion:

See the Cumulative Cost Variance above.

P&S ACCOUNT MANAGER 9/15/94 DATE

TPO 9/16/94 DATE

Yucca Mountain Site Characterization Project
Variance Analysis Report
Status Through: AUGUST

PARTICIPANT: SNL **PEM: SPENCE** **WBS: 1.2.11.5**

WBS TITLE: QUALITY ASSURANCE - QUALITY ENGINEERING

P&S ACCOUNT: 0SB5

FY 1994 Cumulative to Date									FY 1994 at Completion					
BCWS	BCWP	ACWP	SV	%	SPI	CV	%	CPI	BAC	EAC	VAC	%	IEAC	TCPI
134	134	215	0	0.0	100.0	-81	-60.4	62.3	146	240	-94	-64.4	234	48.0

Analysis

Variance At Completion:

This variance is due to underestimation of the level of support that has been required to implement QA procedures throughout SNL-YMP organizations in FY94.

At this time there is no impact to any Level 2 milestones or successor activities. The EAC of WBS 1.2.11 will remain the same because this overrun is offset by underruns in other 1.2.11 areas.

This overrun can only be recovered by increasing the budget to cover the out-of-scope work that was authorized by the PWBS Manager.

P&S ACCOUNT MANAGER 9/16/94 DATE

TPO 9/16/94 DATE

Yucca Mountain Site Characterization Project
Variance Analysis Report
Status Through: AUGUST

PARTICIPANT: SNL **PEM: GANDI** **WBS: 1.2.12.2.2**

WBS TITLE: LOCAL RECORDS CENTER OPERATION (LRC)

P&S ACCOUNT: 0SC22

FY 1994 Cumulative to Date									FY 1994 at Completion					
BCWS	BCWP	ACWP	SV	%	SPI	CV	%	CPI	BAC	EAC	VAC	%	IEAC	TCPI
378	378	270	0	0.0	100.0	108	28.6	140.0	410	399	11	2.7	293	24.8

Analysis

Variance at Completion:

This WBS is under-accrued by approximately $100,000 in the subcontracts cost element.

At this time there is no impact to any Level 2 milestones or successor activities.

These charges will be accrued in September 1994.

A E Shapton 9/15/94
P&S ACCOUNT MANAGER / DATE

A E Shapton 9/16/94
TPO / DATE

F 1050-A (6-92)

TEMPORARY DELEGATION OF AUTHORITY

Temporary delegations of authority are delegations by an absent Director or above to a Manager in direct line authority within the absent principal's organization.

TO: Distribution:

Temporary approval authority for

Name: L. E. Shephard Level: Department Org. 6302
YMP Technical Proj. Officer

is delegated to the individual(s) listed below for the stated dates.

Approval authority is delegated to:	Organization	EFFECTIVE DATES From date	Through date
S. E. Sharpton	6352	9/16/94	9/16/94

Approved by Delegating Manager

SEP 15 1994

Date

Check appropriate blocks below for distribution:

☐ SNL, ALBUQUERQUE

153 Capital Accounting Services (2 copies)
7616 Property Management Systems
7437-1 Visitor Access & Administration Section

☐ SNL, LIVERMORE

153 Capital Accounting Services
8523 Financial & Technical Library
8532 Property Management

Notify Dept. 8523 by telephone.

Copy to:

INSTRUCTIONS:

- Each copy must bear an original, or reproduction of the original signature of the delegating Manager.
- Both "From" and "Through" dates must be completed.
- The original form is to be filed in the Originating Organization.
- The temporary delegation will be in effect only for the stated period and will be void upon the return of the principal.
- Related SLI: SLI 1050