Sandia National Laboratories
Albuquerque, New Mexico 87185

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Ms. M. J. Wise
Repository Projects Branch
Division of Waste Management
U.S. Nuclear Regulatory Commission
7915 Eastern Avenue
Silver Spring, MD 20910

Dear Ms. Wise:

Enclosed is the monthly report on FIN A-1158, Repository Site Description and Technology Transfer for December 1983.

Please feel free to contact me if you have any questions or comments.

Sincerely,

R. M. Cranwell (NRO)

Nestor R. Ortiz, Supervisor
Waste Management Systems
Division 6431

NRO:6431:jm

Enclosure

Copy to:
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A-1158 PDR

PROGRAM:	Repository Site Data and Technology Transfer	FIN#:	A-1158
CONTRACTOR:	Sandia National Laboratories	BUDGET PERIOD:	10/83 - 9/84
NMSS PROGRAM MANAGER:	M. J. Wise	BUDGET AMOUNT:	$80K
CONTRACT PROGRAM MANAGER:	N. R. Ortiz	FTS PHONE:	844-5644
PRINCIPAL INVESTIGATORS:	P. A. Davis	FTS PHONE:	846-5421
	M. D. Siegel	FTS PHONE:	846-5448

PROJECT OBJECTIVES

The first objective is to insure through technical support, problem definition, and documentation the timely, thorough, and efficient transfer of the information, analysis techniques, and analysis tools developed for the U.S. Nuclear Regulatory Commission (NRC) by the methodology program. The second objective is to develop reference repositories in media other than bedded salt (i.e., basalt, domed salt, welded tuff, and granite).

ACTIVITIES DURING DECEMBER 1983

Technology Transfer

A seminar on SWIFT II was presented by Mark Reeves (Geotrans Inc.) on December 13, 1983 at Sandia National Laboratories. Those in attendance included M. S. Y. Chu, R. M. Cranwell, E. J. Bonano, N. R. Ortiz, G. E. Runkle, M. D. Siegel and C. D. Updegraff. The course provided a general description of the SWIFT II computer code, implementation of the modeling concepts, sample problems to demonstrate use of the code, and special topics. SWIFT II differs from SWIFT (version 1.81) by providing dual porosity and free-water surface capabilities and incorporates two years of computer code maintenance. The code is capable of handling fluid flow, heat transport, brine migration, and radionuclide decay chain transport in porous, fractured media. SWIFT II contains all the capabilities of the SWIFT computer code plus the additional options outlined above. Some new approaches were discussed for use of the SWIFT II code in curvilinear coordinate systems. This short course provided a good overview of SWIFT II and stimulated useful discussions concerning its application to various systems.

An initial draft of the SWIFT II Self-Teaching Curriculum is being prepared by M. Reeves (Geotrans, Inc.) and is approximately 75 percent complete. The report will be ready for

internal Sandia review in early February and is expected to be sent to NRC in camera-ready form by March 15, 1984. The sample problems to illustrate the SWIFT II computer code have been used in seminars at NRC and Sandia National Laboratories and seem to be adequate for illustrating the additional capabilities of SWIFT II.

Short Term Technical Assistance

The final draft of the letter report describing calculations of the sensitivity of radionuclide discharge to rate constants for reactions between radionuclide species was completed and forwarded to the NRC. An initial draft of this report was described in the November monthly report but was not sent to the project manager due to the need for modifications in the Appendix and Figures. The enclosed draft supersedes the initial draft.

The final draft of a report describing the population balance approach to the modeling of colloidal transport was completed by our subcontractor, Dr. H. E. Nuttall. This report was reviewed and modified by Sandia staff and a draft letter report was submitted to the NRC. Additional funds have been requested under Short Term Technical Assistance to integrate the information in this report with that of our earlier letter report submitted by Dr. E. J. Bonano to produce a SAND report.

Repository Site Data (RSD)

The activity on this task remains at a low level pending approval of the program plan for unsaturated tuff.

During December, the tabulation of the mineralogy and petrology for each of the stratigraphic units within the unsaturated zone was completed. This tabulation included data from recently obtained reports as described in the October monthly. An isopach map of the Tivá Canyon member was completed. Data for this map consists of drill-hole data and data from published cross sections.

Following Dr. Wahi's attendance at the BWIP/NRC Workshop on Underground Test Plan, the review comments on the Draft In-Situ Test Plan Document were finalized. A trip report was also prepared. A copy of the trip report and finalized comments by Dr. Wahi and Mr. Board are attached.

Work was initiated to perform some analytical heat transfer calculations that would assist in the definition of "disturbed zone" associated with the thermal response of the repository. A preliminary report was submitted to Mr. M. Weber of NRC that summarizes the results of those calculations.

Meetings and Workshops

A trip report that summarizes papers particularly relevant to performance assessment modeling presented at the seventh annual symposium for the Scientific Basis for Nuclear Waste Management (Boston, November 14-17) is being forwarded to the NRC under a separate cover.

Milestones

Pending agreement of program plan for unsaturated tuff RSD with NRC.

Anticipated Problems

Delays in the approval of the program plan for the unsaturated tuff RSD require adjustments in the dates of the milestones.

A-1158
0976.010
December 1983

THIS IS AN ESTIMATE ONLY AND MAY NOT MATCH THE INVOICES SENT TO NRC BY SANDIA'S ACCOUNTING DEPARTMENT.

		Month	Current Year-to-Date
I.	Direct Manpower (man-months of charged effort)	0.6	0.0
II.	Direct Loaded Labor Costs	6.0	15.0
	Materials and Services	0.0	0.0
	ADP Support (computer)	0.0	0.0
	Subcontracts*	2.0	17.0
	Travel	1.0	1.0
	Other	0.0	0.0
	TOTAL COSTS	9.0	33.0

Other = rounding approximation by computer

III. Funding Status

Prior FY Carryover	FY84 Projected Funding Level	FY84 Funds Received to Date	FY84 Funding Balance Needed
175K	275K	175K	100K

*Geotrans Inc.

A-1158
0976.020
December 1983

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		Month	Current Year-to-Date
I.	Direct Manpower (man-months of charged effort)	2.1	0.0
II.	Direct Loaded Labor Costs	20.0	65.0
	Materials and Services	0.0	0.0
	ADP Support (computer)	0.0	1.0
	Subcontracts*	14.0	32.0
	Travel	0.0	1.0
	Other	0.0	0.0
	TOTAL COSTS	34.0	99.0

Other = rounding approximation by computer

III. Funding Status

Prior FY Carryover	FY84 Projected Funding Level	FY84 Funds Received to Date	FY84 Funding Balance Needed
395K	505K	395K	110K

*Energy Management and Technology - A credit of $4031 will be given for this charge.
Nuttal and Associates Inc.
SAI

A-1158

TOTAL FOR 0976.010 and 0976.020

December 1983

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		Month	Current Year-to-Date
I.	Direct Manpower (man-months of charged effort)	2.7	0.0
II.	Direct Loaded Labor Costs	26.0	80.0
	Materials and Services	0.0	0.0
	ADP Support (computer)	0.0	1.0
	Subcontracts	16.0	49.0
	Travel	1.0	2.0
	Other	0.0	0.0
	TOTAL COSTS	43.0	132.0

Other = rounding approximation by computer

III. Funding Status

Prior FY Carryover	FY84 Projected Funding Level	FY84 Funds Received to Date	FY84 Funding Balance Needed
570K	780K	570K	210K