PROGRAM: Coupled Thermal-Hydrological-Mechanical Assessments and Site Characterization Activities for Geologic Repositories

FIN#: A-1755

CONTRACTOR: Sandia National Laboratories

BUDGET PERIOD 10/84-9/85

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BUDGET AMOUNT: 365K

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PROJECT OBJECTIVES

To provide technical assistance to NRC in the assessment of coupled thermal-hydrological-mechanical phenomena and site characterization activities for high-level waste repositories.

ACTIVITIES DURING OCTOBER 1984

Activities and Accomplishments

Review of the various salt EA's and the basalt EA have been completed. Written comments on all but Vacherie Dome and Cypress Creek Dome have been submitted. Written comments for these two sites are in preparation.

On October 15 and 16, a project review meeting was held at Sandia. the meeting was attended by SNL staff and John Peshel of NRC. On-going activities in the project as well as proposed activities for FY85 were discussed. A copy of the minutes of the meeting is attached. SNL will prepare statements of the activities proposed for FY85 by November 15, 1984.

A small amount of effort was spent in finalizing the draft of the thermomechanical-property data for the unsaturated tuff RSD.

Problems Encountered

None.

Travel

None.

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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)	0.7	0.7
II.	Direct Loaded Labor Costs	7.0	7.0
	Materials and Services	0.0	0.0
	ADP Support (computer)	0.0	0.0
	Subcontracts	10.0	10.0
	Travel	0.0	0.0
	Other	0.0	0.0
	TOTAL COSTS	17.0	17.0

Other = rounding approximation by computer

III. Funding Status

Prior FY Carryover	FY85 Projected Funding Level	FY85 Funds Received to Date	FY85 Funding Balance Needed
115K	365K	250K	None

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		Month	Current Year-to-Date
I.	Direct Manpower (man-months of charged effort)	0.6	2.6
II.	Direct Loaded Labor Costs	4.0	26.0
	Materials and Services	0.0	0.0
	ADP Support (computer)	3.0	12.0
	Subcontracts	32.0	98.0
	Travel	0.0	1.0
	Other	0.0	-2.0
	TOTAL COSTS	39.0	135.0

Other = rounding approximation by computer

III. Funding Status

Prior FY Carryover	FY84 Projected Funding Level	FY84 Funds Received to Date	FY84 Funding Balance Needed
None	250K	250K	None

SNLA/NRC Project Review Meeting

Meeting Minutes

October 15, 1984

Introduction - Tito and Nestor

Presentation of Sandia's Organizational structure - Tito

Discussion of the role of each individual who is expected to participate in the project (Sandia staff and contract personnel) - Tito and Krishan

SNLA advised NRC (Peshel) on the status of the review of each draft EA. Pointed out some problem areas with respect to calendar time as well as man-months provided to perform the review. Peshel gave SNLA a package that has a complete set of instructions and supporting material to do the reviews. SNLA expressed that they would like to involve a hydrologist in the review process to the extent that coupled effects (such as thermal-hydrological and mechanical-hydrological) need to be addressed.

SNLA proposed and discussed a number of ideas:

1. Sensitivity analyses with DNET to study the shaft-seal failure problem.

2. A three-dimensional thermal/hydrologic calculation with SWIFT II to model the BWIP site.

3. Near-field thermomechanical response calculations for the revised BWIP design and emplacement geometry. Either SANCHO and/or STEALTH would be used.

4. Involvement of a hydrologist in the EA review (as mentioned earlier).

5. A literature review of analytical and experimental work relating stress and permeability. Effects of temperature may also be included.

6. Would like to get involved in the NRC-funded programs of verification and validation of thermomechanical codes.

SNLA plans to submit these ideas in the form of "mini-proposals" to the NRC during the next few weeks.

Peshel presented some ideas for work which could be potentially beneficial to NRC in the field of Rock Mechanics and design of repositories:

1. Maximum radial stress on emplaced canister

2. Maximum volumetric room closure

3. Maximum surface uplift and subsequent permeability increase between the surface and the repository. Depth of the perturbed zones.

4. Importance of perimeter drifting for site characterization

5. Retrievability in salt.

Peshel also suggested a possibility that Sandia's proposed item No. 1 could be expanded to include a study of flow through disturbed zone of the shafts around plugs and seals of different geometries. Jaak Daemen should provide the expertise for design (geometries) of the plugs and seals to be compared.

A tour of the rock mechanics lab was conducted by Barry Butcher and Wolfgang Wawersik of SNLA. A majority of the ongoing testing is on the creep response of rock salt.

October 16, 1984

Gene Runkle presented SNLA programs for QA and computer code maintenance. Verification and validation of the codes developed by SNLA for the waste management projects were also described.

L. Tyler (SNLA) gave a presentation on Sandia's role and work on the WIPP Project.

The meeting activities were summarized and minutes were written at the conclusion of the meeting.