

Sandia National Laboratories

Albuquerque, New Mexico 87185

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June 15, 1986

Mr. John Peshel  
Engineering Branch  
Division of Waste Management  
U.S. Nuclear Regulatory Commission  
7915 Eastern Avenue  
Silver Spring, MD 20910

Dear Mr. Peshel:

The enclosed monthly report summarizes the activities during the month of May for FIN A-1755.

If you have any questions, please feel free to contact me at FTS 844-8368 or E. J. Bonano at FTS 844-5303.

Sincerely,

*Robert M. Cranwell*

Robert M. Cranwell  
Supervisor  
Waste Management Systems  
Division 6431

RMC:6431

Enclosure

Copy to:  
Office of the Director, NMSS  
Attn: Program Support Branch  
6400 R. C. Cochrell  
6430 N. R. Ortiz  
6431 R. M. Cranwell  
6431 E. J. Bonano  
6431 K. K. Wahi  
6431 L. R. Shippers

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PDR WMRES EXISANL  
A-1755 PDR

WM-RES  
WM Record File  
A1755  
SNL

WM Project 10, 11, 16  
Docket No. \_\_\_\_\_  
PDR ✓  
LPDR ✓ (B, N, S)

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PROGRAM: Coupled Thermal-Hydrological- Mechanical Assessments and Site Characterization Activities for Geologic Repositories FIN#: A-1755

CONTRACTOR: Sandia National Laboratories BUDGET PERIOD: 10/85 - 9/86

DRA PROGRAM MANAGER: J. Peshel BUDGET AMOUNT: 226K

CONTRACT PROGRAM MANAGER: R. M. Cranwell FTS PHONE: 844-8368

PRINCIPAL INVESTIGATORS: E. J. Bonano FTS PHONE: 844-5303  
L. R. Shipers FTS PHONE: 846-3051

#### 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 MAY 1986

##### Activities and Accomplishments

The primary effort during the month of May was focussed on the CorStar/Teknekron Benchmark Problems. The difficulty concerning excessive salt creep, discussed in the last monthly report, has been resolved. An inconsistency in the thermomechanical equation-of-state was discovered that resulted in the accumulation of excess thermal stress. After appropriate corrections, the response obtained for Problem 6.1 (Project Salt Vault simulation) was much more realistic.

A meeting was held with Douglas Vogt and Richard Chapman (CorStar/Teknekron) at Sandia from May 12 to May 14. Krishan Wahi and Larry Shipers (SNLA) explained the input data set-up, special updates, and code limitations for each of the Benchmark Problems. With the exception of Problem 6.3, partial or complete simulation results for all the problems were turned over to CorStar. Two input data files were supplied for each problem: 1. fortran updates and 2. STEALTH input. All of these data files were stored on floppy disks and given to CorStar along with printouts, microfiche, and plot output for all completed runs. A set of handwritten notes for Problems 2.4, 2.8, and 2.9 were also given to CorStar. The written notes for the remaining problems are in preparation and will be supplied to CorStar when completed.

In addition, two of the BWIP documents, one concerning Rock Mechanics Data and the other concerning the EPASTAT computer code, have been reviewed in part. It is expected that these reviews will be completed during June 1986.

Also, a study of the effects of a parametric variation on the creep calculated by the exponential time law was undertaken. This work should also be completed during the month of June 1986.

#### Travel

None.

#### Problems Encountered

As stated in the previous monthly report, current month and year-to-date expenditure figures reported in this month do not reflect actual expenditures as this contract is being overcharged. Actual expenditures for the month are approximately \$15K.

A-1755  
 1628.010  
 MAY 1986

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

|  | Current<br>Month | Year<br>-to-<br>Date |
|--|------------------|----------------------|
|  | -----            | -----                |
| I. Direct Manpower (man-months<br>of charged effort) | 0.6              | 7.1                  |
| II. Direct Loaded Labor Costs                        | 7.0              | 74.0                 |
| Materials and Services                               | 0.0              | 0.0                  |
| ADP Support (computer)                               | 2.0              | 6.0                  |
| Subcontracts   | 36.0             | 204.0                |
| Travel   | 0.0              | 1.0                  |
| Other (computer roundoff)                            | 0.0              | 1.0                  |
|  | -----            | -----                |
| TOTAL COSTS  | 45.0             | 286.0                |

III. Funding Status

| Prior FY<br>Carryover | FY 86 Projected<br>Funding Level | FY 86 Funds<br>Received to Date | FY 86 Funding<br>Balance Needed |
|-----------------------|----------------------------------|---------------------------------|---------------------------------|
| -----                 | -----                            | -----                           | -----                           |
| 31K                   | 226K                             | 195K                            | None                            |