

PDR - (1)  
LPDR WM-10 (2)  
WM-11 (2)  
Sandia National Laboratories WM-16 (2)  
Albuquerque, New Mexico 87185

WM DOCKET CONTROL  
CENTER

WM-RES  
WM Record File  
A1158

WM Project 10, 11, 16  
Docket No.

August 15, 1987

'87 AUG 20 P2:27

PDR ✓  
LPDR ✓ (B, N, S)

Neil M. Coleman  
Hydrology Section  
Geotechnical Branch  
Division of Waste Management  
U.S. Nuclear Regulatory Commission  
7915 Eastern Avenue  
Silver Spring, MD 20910

Distribution:

Coleman

Loan-Ticket

(Return to WM, 623-SS)

Dear Mr. Coleman:

Enclosed is the monthly report on FIN A-1158, Repository Site Definition and Technology Transfer for July 1987. Please feel free to contact me at FTS 844-8368 or Charlene Harlan at FTS 844-8164 if you have any questions or comments.

Sincerely,

Robert M. Cranwell

Robert M. Cranwell, Supervisor  
Waste Management Systems  
Division 6416

RMC:6416

Copy to:  
Office of the Director, NMSS  
Attn: Program Support  
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WM Project: WM-10, 11, 16  
PDR w/encl  
(Return to WM, 623-SS)

WM Record File: A1158  
LPDR w/encl

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PDR WMRES EXISANL  
A-1158 PDR

4020

PROGRAM: Task I, Repository Site Definition

FIN#: A-1158

CONTRACTOR: Sandia National Laboratories

BUDGET PERIOD: 10/86 -  
9/87

NMSS PROGRAM MANAGER: N. M. Coleman

BUDGET AMOUNT: - 0 -

CONTRACT PROGRAM MANAGER: R. M. Cranwell

FTS PHONE: 844-8368

PRINCIPAL INVESTIGATOR: C. P. Harlan

FTS PHONE: 844-8164

PROJECT OBJECTIVE

To develop RSDs for candidate host media and provide data for use in developing and testing performance assessment methodologies for the various media.

ACTIVITIES DURING JULY 1987

No activity.

PROGRAM: Task II, Technology Transfer

FIN#: A-1158

CONTRACTOR: Sandia National Laboratories

BUDGET PERIOD: 10/86 -  
9/87

NMSS PROGRAM MANAGER: N. M. Coleman

BUDGET AMOUNT: \$150K

CONTRACT PROGRAM MANAGER: R. M. Cranwell

FTS PHONE: 844-8368

PRINCIPAL INVESTIGATOR: C. P. Harlan

FTS PHONE: 844-8164

#### PROJECT OBJECTIVE

To provide technical support for the transfer of the capability to use the information, analytical techniques, and tools developed for the NRC under the Performance Assessment Methodology program (FIN A-1266).

#### ACTIVITIES DURING JULY 1987

The NEFTRAN User's Manual, NUREG/CR-4766 is in Sandia's management sign-off. Once the sign-off is complete and any comments addressed, camera-ready copies will be sent to Sandia's Publications organization for printing. The final documents will then be forwarded to the NRC for distribution.

The camera-ready copy of the TOUGH User's Manual, NUREG/CR-4645, is at the NRC for final printing by the NRC Publications organization.

PROGRAM: Task III, Maintenance of Computer Codes

FIN#: A-1158

CONTRACTOR: Sandia National Laboratories

BUDGET PERIOD: 10/86 -  
9/87

NMSS PROGRAM MANAGER: N. M. Coleman

BUDGET AMOUNT: \$174K

CONTRACT PROGRAM MANAGER: R. M. Cranwell

FTS PHONE: 844-8368

PRINCIPAL INVESTIGATOR: C. P. Harlan

FTS PHONE: 844-8164

#### PROJECT OBJECTIVE

To implement a quality assurance program to maintain computer codes, report errors, document changes, and inform the NRC staff.

#### ACTIVITIES DURING JULY 1987

The final version of the NEFTRAN code was developed for the VAX computer system. During July, this code was moved across to the Sandia Open NOS system and QA'd. This process involved the following steps:

- (1) Place the VAX version into Update format. This requires all duplicated blocks (such as common blocks) be separated out from subprograms and identified as one 'comdeck'. Also, all subprograms are given different identifiers.
- (2) Create an Update correction deck to modify the internal code documentation and banner.
- (3) Include in the correction deck all hardware dependent changes required. This is the most time consuming part of converting a code from one machine to another since not all dependencies are initially evident. Some examples of these modifications are:
  - (a) Double precision variables on VAX become single precision on CDC.
  - (b) Quad precision variables on VAX become double precision on CDC.
  - (c) Some intrinsic function names must be changed.
- (4) Using Update, create a CDC version of NEFTRAN in the program library format.
- (5) From the program library, create a file containing the NEFTRAN FORTRAN source code.
- (6) Using the FTN5 compiler (ANSI 77), create binaries.
- (7) Run all sample problems and compare results with those generated on the VAX.

Once the output results were duplicated, the code and sample problems were placed in the QA Library and notebooks generated containing documentation, procedures, a listing of the FORTRAN source code, and listings of the sample problem input and output. In addition, interactive documentation on NEFTRAN was added to the 'QUAHELP' on-line help procedure describing the code and its use on the current system.

During July, a tape was created for INEL containing NEFTRAN and SWIFT (version 4.81) and all associated sample problem files. Once the tape is received at INEL, these codes will be installed and sample problems re-run for verification.

In reference to the A1158 PM's question July 15, 1987, concerning the codes COYOTE, SANCHE, MERLIN and QMESH, and their installation at NESC (the Argonne code distribution center), please refer to the April 1987 progress report dated May 15, 1987, where this information is provided.

PROGRAM: Task IV, Code Validation and Verification      FIN#: A-1158

CONTRACTOR: Sandia National Laboratories      BUDGET PERIOD: 10/86 -  
9/87

NMSS PROGRAM MANAGER:      N. M. Coleman      BUDGET AMOUNT: \$50K

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

PRINCIPAL INVESTIGATOR:      C. P. Harlan      FTS PHONE: 844-8164

**PROJECT OBJECTIVE**

To assemble the various tests that have been performed to help validate and verify various portions of relevant codes and recommend any additional feasible tests.

**ACTIVITIES DURING JULY 1987**

No activity.

PROGRAM: Task V, Short-term Technical Assistance

FIN#: A-1158

CONTRACTOR: Sandia National Laboratories

BUDGET PERIOD: 10/86 -  
9/87

NMSS PROGRAM MANAGER: N. M. Coleman

BUDGET AMOUNT: \$25K

CONTRACT PROGRAM MANAGER: R. M. Cranwell

FTS PHONE: 844-8368

PRINCIPAL INVESTIGATOR: C. P. Harlan

FTS PHONE: 844-8164

PROJECT OBJECTIVE

To provide general technical assistance on waste management matters relating to Tasks I, II, III, IV, and VI

ACTIVITIES DURING JULY 1987

No activity.

PROGRAM: Task VI, T. A. in Numerical Modeling

FIN#: A-1158

CONTRACTOR: Sandia National Laboratories

BUDGET PERIOD: 10/86 -  
9/87

NMSS PROGRAM MANAGER: N. M. Coleman

BUDGET AMOUNT: \$65K

CONTRACT PROGRAM MANAGER: R. M. Cranwell

FTS PHONE: 844-8368

PRINCIPAL INVESTIGATOR: C. P. Harlan

FTS PHONE: 844-8164

#### PROJECT OBJECTIVE

Provide expert opinion input to NRC reviews of DOE site screening, site characterization, and technical development programs. Work includes numerical modeling assessments and participation in technical meetings, site visits and workshops.

#### ACTIVITIES DURING JULY 1987

Work under this task during July included; final editing of the text of the BWIP report, continued drafting of the report figures, preparation for and participation in the NRC's meeting on the ground-water travel-time rule, and a review of the Williams and Associates' report on categorization of uncertainty.

Final editorial changes to the BWIP report included a more detailed description of our conceptual model and an extension of the Summary and Recommendations section. In addition, work is continuing on the drafting and editing of the figures. To date, Tech-Reps (the company subcontracted to draft the figures) has provided us with only about 30 of the 136 figures. Their current estimate for a completion date is the end of August. Originally, we intended to send the report out for review only when the figures had been completed. However, Neil Coleman (NRC) has decided the report should go out for review prior to that time. Therefore, the report will go out for review with some final figures and some draft figures. Tech-Reps was requested to focus on several of the draft figures that were of extremely poor quality. Once we have obtained those figures, the report will be sent to the NRC for review.

On July 14, 15 and 16, Paul Davis participated in the NRC's workshop on the ground-water travel-time rule. The original purpose of the meeting was to formulate a generic technical position (GTP) paper on the rule. However, the purpose changed to producing a regulatory guide on the rule soon after the workshop started. This guide was produced and a summary of the process involved in arriving at the positions stated in the guide are soon to be released by the NRC for public comment.

Finally, a review of the Williams and Associates' report "Categorizing Uncertainty in Order to Demonstrate Compliance with 10CFR60.113(a)(2): Pre-Waste-Emplacement Groundwater Travel Time" was performed by Paul



Davis. Major review comments and a marked copy of the report were sent to Jeff Poole (NRC) August 7.

A-1158, Task I, Repository Site Definition  
 0976.010  
 JULY 1987

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

	Current Month -----	Year -to- Date ----
I. Direct Manpower (man-months of charged effort)	0.0 ---	0.0 ---
II. Direct Loaded Labor Costs	0	0
Materials and Services	0	0
ADP Support (computer)	0	0
Subcontracts	0	0
Travel	0	0
Other (computer roundoff)	0	0
G & A	0	0
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TOTAL COSTS	0	0

### III. Funding Status

Prior FY Carryover -----	FY 87 Projected Funding Level -----	FY 87 Funds Received to Date -----	FY 87 Funding Balance Needed -----
\$ OK	\$ OK	\$ OK	\$ OK

A-1158, Task II, Technology Transfer  
0976.020  
JULY 1987

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

	Current Month -----	Year -to- Date ----
I. Direct Manpower (man-months of charged effort)	0.2 ---	4.1 ---
II. Direct Loaded Labor Costs	2	33
Materials and Services	0	0
ADP Support (computer)	0	0
Subcontracts	6	115
Travel	0	0
Other (computer roundoff)	-1	-1
G & A	1	-4
	---	---
TOTAL COSTS	8	143

III. Funding Status

Prior FY Carryover -----	FY 87 Projected Funding Level -----	FY 87 Funds Received to Date -----	FY 87 Funding Balance Needed -----
\$ 46K	\$150K	\$104K	\$ OK

A-1158, Task III, Maintenance of Computer Codes  
 0976.030  
 JULY 1987

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

	Current Month -----	Year -to- Date ----
I. Direct Manpower (man-months of charged effort)	0.9 ---	8.7 ---
II. Direct Loaded Labor Costs	9	70
Materials and Services	0	0
ADP Support (computer)	1	12
Subcontracts	4	35
Travel	0	0
Other (computer roundoff)	-1	-1
G & A	2	15
	---	---
TOTAL COSTS	15	131

### III. Funding Status

Prior FY Carryover -----	FY 87 Projected Funding Level -----	FY 87 Funds Received to Date -----	FY 87 Funding Balance Needed -----
\$108K	\$174K	\$ 66K	\$ OK

A-1158, Task IV, Code Validation and Verification  
 0976.040  
 JULY 1987

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

	Current Month -----	Year -to- Date ----
I. Direct Manpower (man-months of charged effort)	0.0 ---	0.3 ---
II. Direct Loaded Labor Costs	0	3
Materials and Services	0	0
ADP Support (computer)	0	0
Subcontracts	2	41
Travel	0	0
Other (computer roundoff)	1	0
G & A	0	6
	---	---
TOTAL COSTS	3	50

### III. Funding Status

Prior FY Carryover -----	FY 87 Projected Funding Level -----	FY 87 Funds Received to Date -----	FY 87 Funding Balance Needed -----
\$ 50K	\$ 50K	\$ OK	\$ OK

A-1158, Task V, Short-term Technical Assistance  
 0976.050  
 JULY 1987

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

	Current Month -----	Year -to- Date ----
I. Direct Manpower (man-months of charged effort)	0.0 ---	0.0 ---
II. Direct Loaded Labor Costs	0	0
Materials and Services	0	0
ADP Support (computer)	0	0
Subcontracts	0	0
Travel	0	0
Other (computer roundoff)	0	0
G & A	0	0
	---	---
TOTAL COSTS	0	0

### III. Funding Status

Prior FY Carryover -----	FY 87 Projected Funding Level -----	FY 87 Funds Received to Date -----	FY 87 Funding Balance Needed -----
\$ 20K	\$ 25K	\$ 5K	\$ 0K

A-1158, Task VI, T. A. in Numerical Modeling  
 0976.060  
 JULY 1987

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

	Current Month -----	Year -to- Date ----
I. Direct Manpower (man-months of charged effort)	0.7 ---	0.8 ---
II. Direct Loaded Labor Costs	7	8
Materials and Services	0	0
ADP Support (computer)	0	0
Subcontracts	0	24
Travel	0	0
Other (computer roundoff)	0	0
G & A	1	3
	---	---
TOTAL COSTS	8	35

### III. Funding Status

Prior FY Carryover -----	FY 87 Projected Funding Level -----	FY 87 Funds Received to Date -----	FY 87 Funding Balance Needed -----
\$ OK	\$ 65K	\$ 65K	\$ OK

A-1158  
 Total for Case 0976  
 JULY 1987

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

	Current Month -----	Year -to- Date -----
I. Direct Manpower (man-months of charged effort)	1.8 ---	13.9 ---
II. Direct Loaded Labor Costs	18	114
Materials and Services	0	0
ADP Support (computer)	1	12
Subcontracts	12	211
Travel	0	0
Other (computer roundoff)	-1	1
G & A	4	21
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TOTAL COSTS	34	359

### III. Funding Status

Prior FY Carryover -----	FY 87 Projected Funding Level -----	FY 87 Funds Received to Date -----	FY 87 Funding Balance Needed -----
\$224K	\$464K	\$240K	\$0K