June 15, 1986

86 JUN 18 P12:36

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

Dear Mr. Coleman:

Enclosed is the monthly report on FIN A-1158, Repository Site Definition and Technology Transfer for May 1986. Please feel free to contact me if you have any questions or comments.

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
Robert Browning, Director
Division of Waste Management
Malcolm R. Knapp
Division of Waste Management
Enrico Conti, Branch Chief
Health Siting & Waste Management Division
John Randall
Division of Radiation Programs and
Earth Sciences
6400 R. C. Cochrell
6430 N. R. Ortiz
6431 R. M. Cranwell
6431 C. P. Harlan
6431 G. F. Wilkinson

WM-RES
WM Record File
A1158
SNL

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

Distribution:
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PROGRAM: Repository Site Definitions   FIN#: A-1158
                                                     Task I

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

NMSS PROGRAM MANAGER: N. M. Coleman   BUDGET AMOUNT: - 0 -

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

PRINCIPAL INVESTIGATORS: G. F. Wilkinson   FTS PHONE: 844-0074
                            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 MAY 1986

No activity.

PROGRAM: Technology Transfer   FIN#: A-1158
                                            Task II

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

NMSS PROGRAM MANAGER: N. M. Coleman   BUDGET AMOUNT: $115K

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

PRINCIPAL INVESTIGATORS: G. F. Wilkinson FTS PHONE: 844-0074
                           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 MAY 1986

SWIFT II Self-Teaching Curriculum (STC)

The SWIFT II STC is currently in the final stages of internal SNLA
administrative review. As mentioned in the previous report, it is
difficult to predict the length of time that this review will require.
However, we are hopeful that a camera-ready copy will be available for
transmittal to the NRC within the next few weeks.

SWIFT II Seminar

The SWIFT II technology transfer seminar has been scheduled for
August 19-21 at the NRC offices in Bethesda, MD. Current plans are to
prepare materials for approximately 15 attendees. Please advise as
soon as possible if you determine the attendance to be greater so that
we may plan accordingly.

TOUGH Code Documentation

On May 14, 1986, a final draft of the TOUGH code user's guide was
transmitted to the NRC for review. In a recent telephone
conversation, you advised that we should anticipate NRC comments in
late June. Based on that information, we anticipate transmittal of a
camera-ready copy to the NRC by late August or early September.

PROGRAM: Maintenance of Computer Codes   FIN#: A-1158
                                                     Task III

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

NMSS PROGRAM MANAGER: N. M. Coleman   BUDGET AMOUNT: $175K

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

PRINCIPAL INVESTIGATORS: G. F. Wilkinson   FTS PHONE: 844-0074
                              C. P. Harlan   FTS PHONE: 844-8164

PROJECT OBJECTIVE

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

ACTIVITIES DURING MAY 1986

Standard versions of the NWFTDVM and GENNET codes and sample problems
have been implemented on the INEL computing system. A brief
description of these codes is provided in the attachments. These
files may be accessed in the user area CRH. Listings of the internal
documentation for these codes have been included as attachments to
this monthly report.

In addition, the file QUAHELP has been expanded to include internal
documentation, a list of files and the interactive execution procedure
for NWFTDVM and GENNET. QUAHELP is now in an interactive menu-driven
format. To access it, type:

        GET,QUAHELP/UN=CRH
        BEGIN,,QUAHELP

We have contacted the local USGS office and received a tape of the
USGS-3D code. We are currently in the process of examining this copy
of the code to ensure that it is indeed the standard version (Posson),
and that it will operate on the SNLA computing system. At that point
we will be able to perform verification runs to ensure a degree of
quality assurance. In addition, a copy of the user's guide has been
requested from the USGS Branch of Distribution in Denver, Colorado.

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

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

NMSS PROGRAM MANAGER: N. M. Coleman   BUDGET AMOUNT: $87K

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

PRINCIPAL INVESTIGATORS: G. F. Wilkinson   FTS PHONE: 844-0074
                               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 MAY 1986

Work continued on researching existing verification/validation
exercises for the SWIFT II computer code. One area which has been
recently reviewed is the HYDROCOIN project.

PROGRAM: Short-term Technical Assistance   FIN#: A-1158
                                                           Task V

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

NMSS PROGRAM MANAGER: N. M. Coleman   BUDGET AMOUNT: $39K

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

PRINCIPAL INVESTIGATORS: G. F. Wilkinson   FTS PHONE: 844-0074
                               C. P. Harlan   FTS PHONE: 844-8164

PROJECT OBJECTIVE

To provide general technical assistance on waste management matters
relating to Tasks I-IV.

ACTIVITIES DURING MAY 1986

No activity.

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C     **************************************************************************
C     *                                                                        *
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C     *                                                                        *
C     **************************************************************************
C     *                                                                        *
C     *     CODE NAME          -   NWFTDVM                                      *
C     *                                                                        *
C     *     VERSION            -   RELEASE NOVEMBER 1981                        *
C     *                                                                        *
C     *     DESCRIPTION        -   THE NETWORK FLOW AND TRANSPORT/DISTRI-       *
C     *                            BUTED VELOCITY METHOD (NWFTDVM) MODEL        *
C     *                            SIMULATES GROUND WATER FLOW AND CONTAMI-     *
C     *                            NANT (RADIONUCLIDE) TRANSPORT.  THE          *
C     *                            DISTRIBUTED VELOCITY METHOD (DVM)            *
C     *                            PROVIDES FLEXIBILITY AND EFFICIENCY IN       *
C     *                            SOLVING THE RADIONUCLIDE TRANSPORT           *
C     *                            PROBLEM.  IT ALLOWS FOR THE TRANSPORT        *
C     *                            OF DECAY CHAINS OF ANY LENGTH, WITH          *
C     *                            ISOTOPES HAVING DIFFERENT RETARDATIONS       *
C     *                            AND WITH SOURCE RATES BEING LEACH- OR        *
C     *                            SOLUBILITY-LIMITED.                          *
C     *                                                                        *
C     *     LANGUAGE           -   ANSI STANDARD FORTRAN, VERSION 66           *
C     *                                                                        *
C     *     HARDWARE           -   CDC CYBER 76 SERIES MACHINES                 *
C     *                                                                        *
C     *     LIBRARIES          -   SUBROUTINE LEQT1B FROM THE INTERNATIONAL     *
C     *                            MATHEMATICAL AND STATISTICAL LIBRARIES       *
C     *                            (IMSL)                                       *
C     *                                                                        *
C     *     EVOLUTION          -   THE NETWORK FLOW AND TRANSPORT (NWFT)        *
C     *                            MODEL, SANDIA NATIONAL LABORATORIES,         *
C     *                            1978-1979                                    *
C     *                            NWFTDVM MODEL, SANDIA NATIONAL LABORA-       *
C     *                            TORIES, 1979-1981                            *
C     *                                                                        *
C     *     DOCUMENTATION      -   (1) NWFTDVM USER'S MANUAL                    *
C     *                                NUREG/CR-2081, SAND81-0886               *
C     *                            (2) NWFTDVM VERIFICATION                     *
C     *                                NUREG/CR-3378, SAND83-1466               *
C     *                                                                        *
C     *     SANDIA CONTACTS    -   ROBERT M. CRANWELL, DIVISION 6431            *
C     *                            CHARLENE L. HARLAN, DIVISION 6431            *
C     *                            GINGER F. WILKINSON, DIVISION 6431           *
C     *                                                                        *
C     **************************************************************************
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C      *********************************************************************
C      *                                                                 *
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C      *   OF ANY INFORMATION, APPARATUS, PRODUCT OR PROCESS DISCLOSED,  *
C      *   OR REPRESENTS THAT ITS USE BY SUCH THIRD PARTY WOULD NOT      *
C      *   INFRINGE PRIVATELY OWNED RIGHTS.                              *
C      *                                                                 *
C      *********************************************************************
C      *                                                                 *
C      *   CODE NAME        -   GENNET                                   *
C      *                                                                 *
C      *   VERSION          -   RELEASE JULY 1984                        *
C      *                                                                 *
C      *   DESCRIPTION      -   THIS CODE IS A MODIFIED VERSION OF THE   *
C      *                        NETWORK FLOW AND TRANSPORT/DISTRIBUTED   *
C      *                        VELOCITY METHOD (NWFTDVM) MODEL DOCU-    *
C      *                        MENTED IN NUREG/CR-2081.  NWFTDVM SIMU-  *
C      *                        LATES GROUND WATER FLOW AND CONTAMINANT  *
C      *                        (RADIONUCLIDE) TRANSPORT. THE DISTRIBUTED*
C      *                        VELOCITY METHOD (DVM) PROVIDES FLEXI-    *
C      *                        BILITY AND EFFICIENCY IN SOLVING THE     *
C      *                        RADIONUCLIDE  TRANSPORT PROBLEM.  IT     *
C      *                        ALLOWS FOR THE TRANSPORT OF DECAY CHAINS *
C      *                        OF ANY LENGTH, WITH ISOTOPES HAVING      *
C      *                        DIFFERENT RETARDATIONS, AND WITH SOURCE  *
C      *                        RATES BEING LEACH- OR SOLUBILITY-LIMITED.*
C      *                        THIS MODIFIED VERSION (GENNET) PROVIDES  *
C      *                        FOR A GENERALIZED NETWORK TO DESCRIBE THE*
C      *                        FLOW FIELD AND TRANSPORT PATH FOR RADIO- *
C      *                        NUCLIDES.  GENNET HAS THE SAME CAPABILI- *
C      *                        TIES AS NWFTDVM WITH THE ADDED FEATURE   *
C      *                        OF A USER SUPPLIED FLOW NETWORK.  FOR A  *
C      *                        DESCRIPTION OF THE NEW INPUT, REFER TO   *
C      *                        INPUT SUBROUTINE FLOWIN, AND FIND THE    *
C      *                        COMMENTS ON READING THE NETWORK AND      *
C      *                        BOUNDARY CONDITIONS.                     *
C      *                                                                 *
C      *   LANGUAGE         -   ANSI STANDARD FORTRAN, VERSION 66        *
C      *                                                                 *
C      *   HARDWARE         -   CDC CYBER 76 SERIES MACHINES             *
C      *                                                                 *
C      *   LIBRARIES        -   SUBROUTINE LEQT1B FROM THE INTERNATIONAL *
C      *                        MATHEMATICAL AND STATISTICAL LIBRARIES   *
C      *                        (IMSL)                                   *
C      *                                                                 *
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C       *     EVOLUTION           -   THE NETWORK FLOW AND TRANSPORT (NWFT)    *
C       *                             MODEL, SANDIA NATIONAL LABORATORIES,     *
C       *                             1978-1979                               *
C       *                             NWFTDVM MODEL, SANDIA NATIONAL LABORA-   *
C       *                             TORIES, 1979-1981                       *
C       *                             GENNET, SANDIA NATIONAL LABORATORIES,    *
C       *                             JULY 1984                               *
C       *                                                                     *
C.      *     DOCUMENTATION       -   (1) NWFTDVM USER'S MANUAL               *
C       *                                 NUREG/CR-2081, SAND81-0886          *
C       *                             (2) NWFTDVM VERIFICATION                *
C       *                                 NUREG/CR-3378, SAND83-1466          *
C       *                                                                     *
C       *     SANDIA CONTACTS     -   ROBERT M. CRANWELL, DIVISION 6431       *
C       *                             CHARLENE L. HARLAN, DIVISION 6431       *
C       *                             GINGER F. WILKINSON, DIVISION 6431      *
C       *                                                                     *
C       *********************************************************************
C
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A-1158
Total for 0976.010, 0976.020, 0976.030, 0976.040 and 0976.050
May 1986

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)	1.7	13.1
II.	Direct Loaded Labor Costs	14.0	109.0
	Materials and Services	0.0	0.0
	ADP Support (computer)	2.0	7.0
	Subcontracts	1.0	-16.0
	Travel	0.0	1.0
	Other (computer roundoff)	0.0	-1.0
	TOTAL COSTS	17.0	100.0

III. Funding Status

Prior FY Carryover	FY 86 Projected Funding Level	FY 86 Funds Received to Date	FY 86 Funding Balance Needed
$150K	$486K *	$336K *	- 0 -

* $70K of these funds were transferred to A-1755 by NRC Form 173
dated April 4, 1986.

A-1158, Task I
0976.010
May 1986

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	0.0
Materials and Services	0.0	0.0
ADP Support (computer)	0.0	0.0
Subcontracts	0.0	0.0
Travel	0.0	0.0
Other (computer roundoff)	0.0	0.0
TOTAL COSTS	0.0	0.0

III. Funding Status

Prior FY Carryover	FY 86 Projected Funding Level	FY 86 Funds Received to Date	FY 86 Funding Balance Needed
None	None	None	None

A-1158, Task II
0976.020
May 1986

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)	0.4	3.8
II.	Direct Loaded Labor Costs	3.0	32.0
	Materials and Services	0.0	0.0
	ADP Support (computer)	0.0	0.0
	Subcontracts	0.0	3.0
	Travel	0.0	0.0
	Other (computer roundoff)	0.0	-1.0
	TOTAL COSTS	3.0	34.0

III. Funding Status

Prior FY Carryover	FY 86 Projected Funding Level	FY 86 Funds Received to Date	FY 86 Funding Balance Needed
	$115K		-0-

A-1158, Task III
0976.030
May 1986

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)	1.1	7.1
II.	Direct Loaded Labor Costs	10.0	60.0
	Materials and Services	0.0	0.0
	ADP Support (computer)	2.0	7.0
	Subcontracts	1.0	-14.0
	Travel	0.0	0.0
	Other (computer roundoff)	0.0	0.0
	TOTAL COSTS	13.0	53.0

III. Funding Status

Prior FY Carryover	FY 86 Projected Funding Level	FY 86 Funds Received to Date	FY 86 Funding Balance Needed
	$175K		-0-

A-1158, Task IV
0976.040
May 1986

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	1.6
II. Direct Loaded Labor Costs	1.0	12.0
Materials and Services	0.0	0.0
ADP Support (computer)	0.0	0.0
Subcontracts	0.0	-5.0
Travel	0.0	1.0
Other (computer roundoff)	0.0	0.0
TOTAL COSTS	1.0	8.0

III. Funding Status

Prior FY Carryover	FY 86 Projected Funding Level	FY 86 Funds Received to Date	FY 86 Funding Balance Needed
	$87K		-0-

A-1158, Task V
0976.050
May 1986

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	0.6
II.	Direct Loaded Labor Costs	0.0	5.0
	Materials and Services	0.0	0.0
	ADP Support (computer)	0.0	0.0
	Subcontracts	0.0	0.0
	Travel	0.0	0.0
	Other (computer roundoff)	0.0	0.0
	TOTAL COSTS	0.0	5.0

III. Funding Status

Prior FY Carryover	FY 86 Projected Funding Level	FY 86 Funds Received to Date	FY 86 Funding Balance Needed
	$39K		-0-