

Sandia Laboratories

Albuquerque, New Mexico 87115

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June 15, 1984 JUN 18 P3:20

WM Record File
A-1166

WM Project 10, 11, 16
Docket No. [initials]
PDR
LPDR (B, U, S)

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Dr. Richard Codell
Geotechnical Branch
Division of Waste Management
U.S. Nuclear Regulatory Commission
7915 Eastern Avenue
Silver Spring, MD 20910

Dear Dr. Codell:

Enclosed is the monthly report for FIN A-1166, Maintenance of Computer Programs, for May 1984. Please call or write if you have any questions or comments.

Sincerely,

Robert M. Cranwell

Robert M. Cranwell, Supervisor
Waste Management Systems
Division 6431

RMC:6431:jm

Enclosure

Copy to:
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A-1166 PDR

PROGRAM: Maintenance and Validation of Computer Programs FIN#: A-1166

CONTRACTOR: Sandia National Laboratories BUDGET PERIOD: 10/83-9/84

NMSS PROGRAM MANAGER: R. Codell BUDGET AMOUNT: \$130K

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

PRINCIPAL INVESTIGATORS: P. A. Davis FTS PHONE: 846-5421

PROJECT OBJECTIVES

The objective is a maintenance task that will ensure that the Sandia computer programs remain consistent with current operating systems, are as error-free as possible, and have up-to-date documentation for NRC. There is also a validation assessment task to identify real physical situations which could provide data for validation of the Sandia computer program.

ACTIVITIES DURING MAY 1984

SWIFT II Version 12.83

In executing and verifying the sample problems for the self-teaching curriculum under FIN A-1158, several inconsistencies between the current version of the SWIFT II code and the user's manual for this code being developed under FIN A-1266 were discovered. These have been reported and discussed with Mark Reeves, Geotrans, Inc. and are being resolved by Mark. As soon as the copy of the code presently installed and verified on the Sandia computer system has been updated with the required changes to make it consistent with the user's manual, it will be provided to the NRC.

Generalized NWFT/DVM

Significant progress has been made in the comparison of the Generalized and Fixed Network versions of NWFT/DVM during May. The Fortran coding for the Generalized Network has been isolated and incorporated in the Fixed Network Version of NWFT/DVM. The sample problems for the fixed network have been executed and verified. In addition, sample problems to verify the generalized network capabilities are being tested. Following this verification of the generalized network, the code to implement the mixing cell will be added to this new version of NWFT/DVM. The final result of this effort will be a new version of NWFT/DVM (to be renamed) that will incorporate the generalized network and the mixing cell as well as some other features to make the code efficient and useful.

QA of Computer Codes

As part of the quality assurance program under this task, an interactive, user friendly system is being developed in the Sandia computer system. All the current and standard versions of the codes such as SWIFT, SWIFT II, NWFT/DVM, DNET etc., are stored on the secure and open NOS disk systems of the computer, as well as being backed-up on magnetic tape. To facilitate access to these codes a program is being developed that will allow a user to select a standard version of any of these codes stored under QUALIB (Quality Assurance Library), automatically prepare a Fortran compilation from the update source of the code, edit the Fortran compilation to make changes if needed, and check this revised version of the code for Fortran errors. The user may then select a standard sample problem set (described in the user's manual for each code) and send the code to the open or secure sectors of the computer system for execution. If the user prefers a new or revised sample data set, the option to incorporate this set is available. This interactive system has been developed and has been tested on several codes. Meetings with the Sandia Staff will be used to identify other options or modifications that will make the system more useful and beneficial to the user. This system will allow frequent rerunning of the sample problems to verify the current versions of the computer codes that are being stored on the Sandia computer and to keep them consistent with any updates in the operating systems.