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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

JUL 8 1982

MEMORANDUM FOR: Distribution

FROM: James C. Malero
Transportation and Materials Risk Branch
Division of Risk Analysis
Office of Nuclear Regulatory Research

SUBJECT: HIGH-LEVEL RADIOACTIVE WASTE COMPUTER CODE AND
DOCUMENTATION ISSUANCE AND AVAILABILITY

The Nuclear Regulatory Commission (NRC) is making available to the public a computer code and associated documentation for estimating the movement of radioactive waste in geological media. This code and the models upon which it is based were developed by the Sandia National Laboratories and its subcontractors for the NRC under an interagency agreement with the Department of Energy. The computer code, designated the Sandia Waste Isolation Flow and Transport (SWIFT) code, and its theoretical bases have been under development since 1976 as part of the NRC program to develop a risk assessment methodology for geologic disposal of high-level radioactive waste. The SWIFT code is being released for public review and comment at this time primarily as part of the ongoing NRC effort to obtain peer review of the high-level waste risk assessment methodology.

The SWIFT code was developed to treat simultaneously the interdependent physical phenomena of Darcian fluid flow in saturated geologic media, heat transport, salt transport, and migration of contaminants (including those undergoing radioactive decay). The SWIFT code employs finite difference algorithms to solve the equations describing these interdependent phenomena. In general these equations describe time varying processes in a three-dimensional region; however, the code may be employed to treat steady state problems and problems in one or two dimensions.

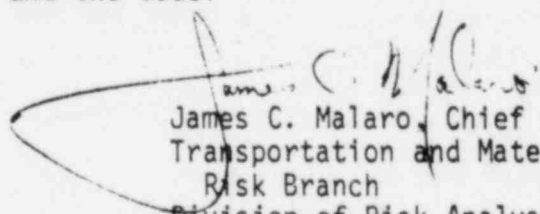
The computer code, SWIFT code, SWIFT release 4.81; the user's manual, NUREG/CR-2234; and the SWIFT self-teaching curriculum, NUREG/CR-1968, may be obtained from the Software Center, Argonne National Laboratory, 9700 South Cass Avenue, Argonne, Illinois 60439, Telephone: (312)972-7250. NUREG/CR-2324 contains a microfiche copy of the FORTRAN source listing of the code.

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Three documents describing the code and its analytical bases are available from NRC and NTIS: NUREG/CR-0424, "Risk Methodology for Geologic Disposal of Radioactive Waste: The Sandia Waste Isolation Flow and Transport (SWIFT) Model," NUREG/CR-2324, "User's Manual for the Sandia Waste Isolation Flow and Transport Model (SWIFT) - Release 4.81," and NUREG/CR-1968, "SWIFT Self-Teaching Curriculum." These reports are available for inspection or copying for a fee at the NRC Public Document Room, 1717 H Street NW, Washington, DC. Purchasing information may be obtained by writing to the Director, Division of Technical Information and Document Control, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Attention: Sales Manager. GPO Deposit Account Holders may charge their order by calling (301)492-9530. Copies of both reports are also available for purchase through the National Technical Information Service (NTIS), Springfield, VA 22161.

The NRC plans to continue development and use of models such as those contained in SWIFT and other computer codes as part of the program to develop a risk methodology for the geologic disposal of high-level waste. Even though this model development is still under way, the models used in SWIFT are being made publicly available in order that its developers can benefit from a technical peer review encouraged by their release and so that the public can take advantage of the capability currently achieved by SWIFT. Neither the United States Government nor any agency thereof makes any warranty or assumes any liability for any third party's use of the models in the SWIFT code. The NRC encourages the public to evaluate and use the models in the SWIFT code and invites public comment based on such evaluation and usage. In particular, comments that contain critical evaluations of the documentation of the models and the code, report on problems in running the code, and expose suspected errors in the code are invited. These written comments should be sent to James C. Malaro, Chief, Transportation and Materials Risk Branch, Division of Risk Analysis, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Attention: SWIFT.

Comments received after February 28, 1983 will be considered if it is practical to do so, but assurance of consideration cannot be given except as to comments received on or before February 28, 1983. If sufficient interest in the models implemented by the SWIFT code is displayed by the technical community through the type and number of comments and requests received, the NRC staff may hold one or more technical informational workshops pertaining to issues raised in the public comments on the models and the code.



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