

SEP 15 1988

SUTRA

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MEMORANDUM FOR: John Voglewede, Chief
Information Technology Services Branch
Office of Administration and Resources Management

FROM: Seth Coplan, Section Leader
Systems Performance Section
Geosciences and Systems Performance Branch
Division of High-Level Waste Management
Office of Nuclear Material Safety
and Safeguards

SUBJECT: CONVERSION OF FORTRAN PROGRAM FOR EFFICIENT CRAY OPERATION

Richard Codell and of my section and Tim McCartin of the Office of Research, are running a computer program, SUTRA, for calculating the flow of water and heat in unsaturated rock. This work is being performed in connection with INTRAVAL, an international study for comparing and validating computer programs used for the licensing of nuclear repositories. Furthermore, we expect that this computer program will be used in the review of the license application for the high-level waste repository at Yucca Mountain Nevada. SUTRA has been run successfully on the NIH computer as well as the INEL Cray XMP-24. The processing speed on the Cray was not appreciably better than for the NIH computer. We suspect that SUTRA was not written with the Cray computer in mind, and that great improvements would be possible by modifying the program. Since we expect long run times with these simulations, we would like to see an improvement of SUTRA for the Cray computer. We therefore request that you convert the SUTRA code to a fully vectorized form for optimum speed. We further request that this work be completed by late October if possible, so that the program can be used to produce output for the forthcoming INTRAVAL meeting in mid-November. Please contact Richard Codell at X2-0408 for details on accessing the FORTRAN and data files for this task.

Seth Coplan, Section Leader
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