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MEMORANDUM FOR: Malcolm R. Knapp  
 High-Level Waste Licensing  
 Management Branch  
 Division of Waste Management

FROM: Stewart A. Silling  
 High-Level Waste Licensing  
 Management Branch  
 Division of Waste Management

SUBJECT: REVIEW OF VOLUME 2 OF SAI REPORT (NUREG/CR-1672)

Volume 2 of SAI's final report on its review of Sandia products was published in September, 1981. This volume contains reviews of five Sandia documents:

- (1) R. L. Iman and W. J. Conover, "Risk Methodology for Geologic Disposal of Radioactive Waste: A Distribution-Free Approach to Inducing Rank Correlation Among Input Variables for Simulation Studies," NUREG/CR-1262 (1980)
- (2) J. E. Campbell, D. E. Longsine, and M. Reeves, "The Distributed Velocity Method of Solving the Convective Dispersion Equation," NUREG/CR-1376 (1980)
- (3) J. E. Campbell, R. L. Iman, and M. Reeves, "Risk Methodology for Geologic Disposal of Radioactive Waste: Transport Model Sensitivity Analysis," NUREG/CR-1377 (1980)
- (4) R. L. Iman, W. J. Conover, and J. E. Campbell, "Risk Methodology for Geologic Disposal of Radioactive Waste: Small Sample Sensitivity Analysis Techniques for Computer Models, With an Application to Risk Assessment," NUREG/CR-1397 (1980)
- (5) F. W. Schwartz and F. A. Donath, "Scenario Development and Evaluation Related to the Risk Assessment of High-Level Radioactive Waste Repositories," NUREG/CR-1608 (1980)

In my review of SAI's third monthly report I have already commented on SAI's remarks on documents 2, 3, and 5 listed above. Therefore, I will

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comment here only on SAI's reviews of documents 1 and 4, which deal with statistics.

SAI's comments were similar for each of these two statistical reports. SAI does not find important technical errors in the work. However, they find some faults in the presentation and applications. Also, they believe that limitations of the work are not discussed adequately.

SAI finds the statistical reports obscure. The notation used is complex, and the reader is frequently unsure where the discussion is leading. SAI states that some results in NUREG/CR-1262 that should be proven are not.

On many previous Sandia reports, SAI has commented that each report seems isolated from the overall risk assessment program. The various pieces of work are not tied together by a complete modeling procedure. This observation is particularly true of the statistical reports.

SAI states that limitations of the statistical methods have not been adequately discussed. NUREG/CR-1262 does not discuss when or why rank transforms should be used. The SAI review of NUREG/CR-1397 states that "a great deal more needs to be done" in the exploration of limitations of the methods.

I have found Sandia's statistical reports to be very dense and hard to understand. Statistics is not my field of expertise, and I doubt that any member of our staff or the RES staff has the necessary background in statistics to keep Sandia honest in this field. We may wish to seriously consider hiring a statistician.

This memo completes ticket number WM-81-609.

ORIGINAL SIGNED BY

Stewart A. Silling  
High-Level Waste Licensing  
Management Branch  
Division of Waste Management

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