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December 9, 1999
Contract No. NRC-02-97-009
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Nuclear Regulatory Commission
ATTN: Dr. Bret W. Leslie
Division of Waste Management
Two White Flint North
11545 Rockville Pike
Mail Stop 7C6
Washington, DC 20555

Subject: Transmittal of "FEPs Database Analysis"

Dear Dr. Leslie:

This letter transmits "FEPs Database Analysis" (IM20.01402.561.000). The final title for this deliverable is "An Audit of the U.S. Department of Energy Treatment of Features, Events, and Processes at Yucca Mountain, Nevada, with Emphasis on the Evolution of the Near-Field Environment."

This work was conducted as an activity under the Evolution of the Near-Field Environment (ENFE) Key Technical Issue (KTI). As part of its preparation for a license application (LA) for the potential Yucca Mountain high-level nuclear waste repository, the U.S. Department of Energy (DOE) has developed a database of features, events, and processes (FEPs) that may affect repository performance. Specifically, this database is intended to support the DOE Total System Performance Assessment (TSPA) for the site recommendation and finally the anticipated LA. This review was conducted as part of ongoing issue resolution activities in the ENFE KTI. The objectives of the review were to evaluate the completeness of the database and to determine whether an adequate technical basis has been provided for those FEPs associated with coupled thermal-hydrologic-chemical processes that were screened out of DOE performance assessments.

The current version of the DOE FEPs database was found to be inadequate. This review found that the DOE's FEPs database is not comprehensive. Further, DOE has not provided adequate documentation on the categorization among entries in the database. This review also revealed a lack of transparency in the database.



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These results will be used to provide guidance to the DOE to improve future versions of the FEPs database with a goal of strengthening the basis for future TSPAs and the resulting LA. The analysis reported in the subject report provides enhanced guidance for ENFE KTI activities and serves as a tool for future reviews. This audit will also be used to develop acceptance criteria and review methods for scenario development to be included in the Yucca Mountain Review Plan.

If you have any questions about this deliverable, please call me (210)522-5540 or Dr. David Pickett (210)522-5582.

Sincerely yours,



English C. Percy, Manager
Geohydrology and Geochemistry

ECP:ar

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**"AN AUDIT OF THE U.S. DEPARTMENT OF ENERGY
TREATMENT OF FEATURES, EVENTS, AND PROCESSES
AT YUCCA MOUNTAIN, NEVADA, WITH EMPHASIS
ON THE EVOLUTION OF THE NEAR-FIELD
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