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WM Record File  
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SNL

WM Project 10, 11, 16  
Docket No. \_\_\_\_\_  
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MEMORANDUM FOR: Frank Costanzi, Chief  
Waste Management Branch  
Division of Engineering, RES

Distribution: \_\_\_\_\_  
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Joseph Bunting, Chief  
Systems Engineering and Evaluation Branch  
Division of High-Level Waste Management, NMSS

Ronald Ballard, Chief  
Technical Review Branch  
Division of High-Level Waste Management, NMSS

FROM: B. Joe Youngblood, Chief  
Operations Branch  
Division of High-Level Waste Management, NMSS

SUBJECT: REVIEW OF HLW PERFORMANCE ASSESSMENT PROGRAM DOCUMENTS

An important programmatic focus within the Operations Branch, DHLWM concerns system performance assessments of deep geologic repositories for high-level radioactive waste (HLW). In particular, the Compliance Demonstration Section is concerned with the numerous uncertainties - of crucial licensing importance - inherent in any evaluation of the performance of a HLW repository over the 10,000-year period required by the regulations. The contract "Technical Assistance for Performance Assessment" (FIN A-1165) with Sandia National Laboratories (SNL) is designed to provide NRC staff with assistance in all areas of performance assessment, but with particular emphasis in three areas:

- (1) the identification and analysis of uncertainties associated with HLW repository performance assessments,
- (2) the development and implementation of a licensing assessment methodology, and
- (3) the identification and analysis of quantitative techniques for assigning probabilities of occurrence to potentially disruptive events and processes.

Because the NRC staff review of many aspects of the DOE's HLW program, including the Site Characterization Plans (SCPs), must be informed by an understanding of overall performance assessment needs and of what uncertainties the DOE is attempting to resolve or to bound with the particular activity proposed, I would like to obtain your review of three draft documents recently prepared for DHLWM by SNL as part of the FIN A-1165 contract.

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The first of these documents is entitled "Treatment of Uncertainties in the Performance Assessment of Geologic High-Level Radioactive Waste Repositories". The purpose of this so-called Scoping Document is the preliminary identification and evaluation of the main sources of uncertainty and the potential techniques for quantifying and reducing these uncertainties. This is the initial document of a task that will require a series of major documents expanding on the different aspects of the uncertainty problem. It is meant to put forward a logical framework for considering uncertainty and to summarize the diverse aspects of the problem in a single document. It is intended that this document itself will be expanded into a formal report, one important addition being consideration of both quantifiable and unquantifiable uncertainties in addressing the Environmental Protection Agency's (EPA's) containment requirement (40 CFR Part 191, Section 191.13). The current document should be reviewed primarily to determine the applicability of the logic employed to the various technical sections within the HLW program.

The second document is an interim report under the licensing assessment methodology task of FIN A-1165. The major part of this report consists of a categorization and tabulation of performance assessment components into elements and subelements, with the intent of tracking their status. This document should be reviewed for correctness, completeness, and approach.

The third document is entitled "Techniques for Determining Probabilities of Events and Processes Affecting the Performance of Geologic Repositories". This is a formal report consisting of a literature review in which the quantitative techniques for assigning probabilities of occurrence to potentially disruptive events and processes are identified and evaluated. An incomplete draft of this document was received in March 1986 and subsequently reviewed by NRC staff. With the exception of any new sections (primarily a chapter on geochemistry), this document need only be reviewed to see how SNL responded to previous NRC staff comments. This document is not yet available, but should be so in the next week or two, and it will be distributed then with further information concerning the review.

Daniel A. Galson (x74623) of my staff is the Project Manager for the FIN A-1165 contract. Please provide him with comments on the first two documents by September 25, 1987. Note that he has already informally distributed copies of the first document to specific individuals within the various technical sections, including R. Codell and J. Pohle (Hydrology), J. Trapp (Geology and Geophysics), D. Brooks (Geochemistry), C. Peterson (Waste Package), J. Buckley (Rock Mechanics), D. Fehring (System Engineering), and J. Randall (Research). It is considered that these individuals (among others), in coordination with

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their Section Leaders and Branch Chiefs, should be able to provide the necessary technical depth and breath for review of documents arising from HLOB's performance assessment program.

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B. Joe Youngblood, Chief  
Operations Branch  
Division of High-Level Waste Management  
Office of Nuclear Material Safety  
and Safeguards

Enclosures:  
As stated

cc: Robert E. Browning, Director  
HLWM/NMSS

SEP 10 1987

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MEMORANDUM FOR: Costanzi, RES  
 Bunting, HLSE  
 Ballard, HLTR

FROM: Youngblood, HLOB

SUBJECT: REVIEW OF HLW PERFORMANCE ASSESSMENT PROGRAM DOCUMENTS

DATE: SEP 10 1987

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