

THE AEROSPACE CORPORATION



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WM Record-File
A-4165

WM Project 10/11/16
Docket No. [initials]
PDR [initials]
LPDR [initials]

Mr. Kien C. Chang
Mail Stop 623-SS
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Distribution:
KChang Juan-Ticket
(Return to WRA, 623-SS) CZ

Dear Mr. Chang:

MONTHLY REPORT -- MAY

Attached is the Monthly Progress Report for the project entitled, "Preparation of Engineering Analysis for High-Level Waste Packages in Geologic Repositories" (FIN A-4165-4). The financial information will be transmitted separately.

Please call me if you have any questions.

Very truly yours,

Kenneth W. Stephens
Manager, Technology Assessments
Eastern Technical Division

KWS/gbf
Attachment

- cc: G.E. Aichinger SD/PMR (letter only)
- Office of the Director, NMSS
- Director, Div. of Waste Management, NMSS (2)
- J.T. Greeves, Engineering Branch, NMSS
- E.A. Wick, Engineering Branch, NMSS
- M.B. McNeil, Waste Management Branch, RES
- Branch Chief, Waste Management Branch, RES
- T. Johnson, Engineering Branch, NMSS

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REPORT PERIOD: May 1984

MONTHLY PROGRESS REPORT

FIN A-4165-4

CONTRACTOR: The Aerospace Corporation, Washington, D.C.

SPONSOR: Nuclear Regulatory Commission
Office of Nuclear Material Safety and Safeguards

WORK PERFORMED/TECHNICAL PROGRESS

Work during May involved: support for the BWIP Barrier Materials Test Plan meeting on May 8 and 9, continuing examination of performance assessment methodologies, briefings to NRC staff, and preparation of the Program Plan for FY 1985.

Scheduled Work

During May, the work involving methodologies for performance assessment continued with the preparation of the interim report which is due July 6. The report is structured to discuss the methodologies used by DOE (basalt, salt, and tuff), the current NRC programs under consideration, and other methodologies (such as those used by EPA).

As the information covering the DOE approaches was being assimilated, it became clear that there is a great deal less difference across programs than might have been expected. In general, the trend appears to be one of using the best available process models, such as for groundwater flow, and then coupling the results with whatever reliability assessment is chosen. This means that for cases in which there are good three-dimensional process models, they can be used. If the best available models are less complex, then they are the ones that will be applied.

This trend of separating the process modeling from the reliability modeling, as opposed to use of a consolidated super-model, will enable the analysts to optimize use of resources. This is especially significant, because the reliability modeling itself can become quite involved, and mathematical simplifications may be necessary. In the case of the tuff repository, the best three-dimensional and two-dimensional process models will be used, but the overall reliability analysis will be essentially one-dimensional; practicality was cited as the reason. Although the basalt and salt projects are less explicit in describing their strategy, they are expected to use a similar philosophy.

The methodology review has revealed that although the DOE programs have made good progress with respect to performance assessment, there is still much to be done. Aerospace will monitor the evolving DOE work and will use it in the further methodology work between now and the time at which a definitive recommendation can be made regarding the method(s) NRC should use for its independent analysis.

On May 22, Aerospace briefed new NRC Materials Section management on the project. During that meeting, plans were finalized for the Aerospace work through FY 1985. The Methodology Report and a revised Program Plan were scheduled for delivery on July 6, and a revision to the fault tree report was scheduled for August 17. The next major milestone will be the recommendation, by December 21, of the preferred NRC performance assessment method.

The development of the Program Plan is continuing, concurrent with the methodology review. Included in the Program Plan will be a synopsis of the work that has been accomplished this year and a discussion of its relationship to the strategy for FY 1985.

Special Support

As described in the April monthly report, Aerospace assisted NRC in preparing for the BWIP Barrier Materials Test Plan meeting held in Gaithersburg on May 8 and 9, and participated in the meeting. The results clarified the BWIP position somewhat and disclosed some areas requiring further study in the methodology review. The meeting also confirmed our observation that the BWIP performance assessment details must be available before we can recommend a preferred approach.

WORK PLANNED FOR NEXT MONTH

The work during June will concentrate on refinement and completion of the Methodology Report and the revised Program Plan.

We understand that a meeting of the Performance Assessment National Review Group will be held in Gaithersburg July 9-13. Unless the meeting is restricted to DOE and its contractors, it is important that Aerospace attend. The performance assessment strategies of all the DOE repository programs will be discussed in relation to each other. This information will be invaluable in our work. During June, we will discuss attendance at this meeting with the NRC.