



REPORT PERIOD: February 1984

MONTHLY PROGRESS REPORT

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

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

WORK PERFORMED/TECHNICAL PROGRESS

Work during February involved: (1) continuing examination of fault tree/event tree methods, (2) investigation of methodologies for package performance analysis, and (3) review of particular NRC contractor documents, as requested.

Scheduled Work

The majority of the effort during February was directed toward accomplishing two tasks in parallel -- further examination of fault trees/event trees, and review of methodologies used by DOE and others for waste package performance analysis.

The fault tree/event tree work is proceeding to develop a reduced fault tree for use in trial runs of fault tree codes. The objective is to set up a prototype which: (1) demonstrates the feasibility of using fault tree/event tree methods in general and, (2) illustrates the data requirements (and availabilities). The prototype analysis is scheduled for delivery in June.

The parallel methodology - review effort is examining what BWIP is doing with respect to performance assessment, along with other methodologies such as those used in the Sandia far-field analysis. Although available information on the BWIP approach is being reviewed, it appears that much of the detail cannot be obtained prior to the BWIP Waste Package Workshop, which has been delayed until mid-April. Accordingly, the target date for the Aerospace methodology report (30 April) will have to be rescheduled to permit assimilation of the new material and finalizing of the report.

On 6 February, K. Stephens and S. Smith of Aerospace attended the Program Review in Silver Spring for the waste work at Sandia. It appears that there is good potential for cross-fertilization between the Sandia projects and the Aerospace project. The Sandia scenario

analysis, which used event trees, will be helpful in assuring that the scenarios applied by Aerospace, BWIP, and Sandia are compatible. Similarly, the Aerospace work related to the waste package itself will supplement the overall Sandia analysis.

On 14 February, the Program Review for this project and the Oak Ridge FIN B-0288 project was held in Silver Spring. The issues raised during the meeting will be considered as a part of our continuing examination of fault tree/event tree methods. In particular, the prototype analysis will identify gaps in available data and will clarify issues related to the analysis techniques themselves.

On 29 February, B. Crane and L. Boesch of Aerospace met with K. Chang of NMSS and persons from the Division of Risk Analysis (N. Eisenberg, R. Shepard, T. McCartin, and D. Rasmuson) to discuss the mathematical approaches DRA uses in performing risk analyses of engineered systems. The meeting generated valuable information concerning the differences among the methodologies used in power plant analysis, the waste repository package, and the far-field analysis. On 22 March, Aerospace and persons from DRA will meet with Sandia in Albuquerque to discuss areas of common interest to both Aerospace and Sandia.

#### Special Support

Also during February, Aerospace received, for review, two NRC contractor documents -- Draft Staff Technical Position on Environmental Parameters and "Determination of the Waste Package Environment for a Basalt Repository -- Phase I, Gamma Irradiation Conditions in the Absence of Methane." Comments on the DSTP were transmitted on 10 February, and additional discussions were held later in the month. The other document is still under review. It will be of special interest in the upcoming BWIP Waste Package Workshop, because the document appears to be at variance with the BWIP contention that conditions within the repository will be "reducing".

#### WORK PLANNING FOR NEXT MONTH

During March, Aerospace will continue both the fault tree/event tree work and the methodology review. The NRC comments on the first draft of the fault trees/event trees were received in early March and will be addressed in a revised draft scheduled for completion by the time of the BWIP Waste Package Workshop. Development of the prototype analysis will continue.

The methodology review will concentrate on: (1) understanding the methodologies used by BWIP and others, and (2) presenting the methodologies in a manner that enables cross-comparison on a common basis. The methodology review report will include a discussion of the fault tree/event tree approach and its attributes in relation to those of the other methods.