

**Sandia National Laboratories**

Albuquerque, New Mexico 87185

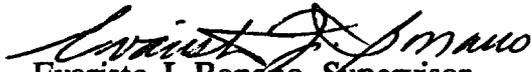
March 15, 1991

Mr. David H. Tiktinsky  
Office of Nuclear Material Safety  
and Safeguards  
Division of High-Level Waste Management  
U.S. Nuclear Regulatory Commission  
Mail Stop 6A-4  
Washington, DC 20555

Dear Mr. Tiktinsky:

Enclosed is the February 1991 monthly report for FIN A1165. If you have any questions or comments, please feel free to contact me at (FTS) 844-5303 or L. L. Price at (FTS) 844-6206.

Sincerely,

  
Evaristo J. Bonano, Supervisor  
Waste Management Systems  
Division 6416

EJB:6416

Enclosure

Copy to:

E. Davis  
Office of the Director, NMSS  
Attn: Program Support  
Robert Browning, Director  
Division of High-Level Waste Management  
Seth Coplan  
Division of High-Level Waste Management  
Pauline Brooks  
Division of High-Level Waste Management  
John Randall  
Division of Engineering

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PDR WMRES EXISANL  
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Tiktinsky

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March 15, 1991

3223 P. A. Davis  
3223 M. T. Goodrich  
6410 D. A. Dahlgren  
6416 E. J. Bonano  
6416 N. E. Olague  
6416 L. L. Price  
6416 K. K. Wahi  
6416 D. A. Zimmerman  
6416 1183.000 File

**SUMMARY SHEET**

**February 1991 Monthly Report for FIN A1165**

<b><u>Task</u></b>	<b><u>Activity</u></b>	<b><u>Costs</u></b>
I	Licensing Methodology Assistance	\$ 0K
II	Uncertainty Identification and Analysis	\$ 0K
III	Probability Techniques	\$ 0K
IV	Maintenance and Management of PA Codes	\$ 0K
V	Technical Assistance for SCP Review	\$ 0K
VI	Short Term Technical Assistance	\$ 0K

**PROGRAM: Licensing Methodology Assistance**

**FIN A1165  
Task I**

**CONTRACTOR: Sandia National Laboratories**

**BUDGET PERIOD: 10/90 - 9/91**

**NMSS PROGRAM MANAGER: P. Brooks**

**BUDGET AMOUNT: \$0K**

**CONTRACT PROGRAM MANAGER: E. J. Bonano**

**FTS PHONE: 844-5303**

**PRINCIPAL INVESTIGATOR: L. L. Price**

**FTS PHONE: 844-6206**

**PROJECT OBJECTIVE**

To assist in the overall development and integration of the licensing assessment methodology.

**ACTIVITIES DURING FEBRUARY 1991**

Task I has been completed.

**PROGRAM: Identification and Analysis of Uncertainties**

**FIN A1165  
Task II**

**CONTRACTOR: Sandia National Laboratories**

**BUDGET PERIOD: 10/90 - 9/91**

**NMSS PROGRAM MANAGER: P. Brooks**

**BUDGET AMOUNT: \$0K**

**CONTRACT PROGRAM MANAGER: E. J. Bonano**

**FTS PHONE: 844-5303**

**PRINCIPAL INVESTIGATOR: L. L. Price**

**FTS PHONE: 844-6206**

### **PROJECT OBJECTIVE**

To identify, analyze, and recommend generic methodologies for treating uncertainties associated with performance assessments of HLW repositories.

### **ACTIVITIES DURING FEBRUARY 1991**

#### **Subtask 2.1**

- I. Recommended techniques for assessing compliance with the EPA's HLW repository containment requirement (40 CFR 191.13)**

Completed.

#### **Subtask 2.2/2.6c**

- I. Identification, evaluation, quantification, and reduction of uncertainty in HLW repository performance assessments.**

Completed.

#### **Subtask 2.3**

- I. Elicitation and use of expert judgement in dealing with uncertainty in HLW repository performance assessments.**

Completed.

#### **Subtask 2.4**

##### **I. Methods for analyzing uncertainty in HLW repository performance assessment models.**

**NRC comments on this report have been addressed. The report was returned from management signoff for a few editorial corrections. Once these corrections have been made, it will continue the management signoff process. This process should be completed in early March and a copy of the camera-ready report sent at that time.**

#### **Subtask 2.5**

##### **I. A methodology for scenario development and screening.**

**Completed**

#### **Subtask 2.6**

##### **I. Recommended methodologies for the analysis of data and parameter uncertainty in HLW repository performance assessment.**

**Completed**

##### **IV. Uncertainty and sensitivity analysis in ground-water flow modeling.**

**This report was returned from SNL management signoff for editorial corrections. Once these have been made it will return to the signoff process. The report was also sent to the USGS for their management signoff process. We do not anticipate any difficulty in meeting the May 15, 1991 deadline established for this report.**

**PROGRAM: Probability Techniques**

**FIN A1165  
Task III**

**CONTRACTOR: Sandia National Laboratories**

**BUDGET PERIOD: 10/90 - 9/91**

**NMSS PROGRAM MANAGER: P. Brooks**

**BUDGET AMOUNT: \$0K**

**CONTRACT PROGRAM MANAGER: E. J. Bonano**

**FTS PHONE: 844-5303**

**PRINCIPAL INVESTIGATOR: L. L. Price**

**FTS PHONE: 844-6206**

### **PROJECT OBJECTIVE**

**To identify techniques for assigning probabilities to geologic processes and events.**

### **ACTIVITIES DURING JANUARY 1991**

#### **Subtask 3.2**

- I. Recommended techniques for estimating probabilities of events and processes affecting the performance of geologic repositories: assessing compliance with the EPA's containment requirements (40 CFR 191.13).**

**The comments from the internal reviewers have been addressed and most of the NRC comments have been addressed. Requests to use copyrighted figures were also sent. Because of the nature of the comments regarding Section 5 of this report, we have decided to rewrite this section. This may cause delivery of the final version of the report to be up to one month later than the March 31, 1991 due date.**

**PROGRAM: Short-Term Technical Assistance**

**FIN A1165  
Task VI**

**CONTRACTOR: Sandia National Laboratories**

**BUDGET PERIOD: 10/90 - 9/91**

**NMSS PROGRAM MANAGER: P. Brooks**

**BUDGET AMOUNT: \$0K**

**CONTRACT PROGRAM MANAGER: E. J. Bonano**

**FTS PHONE: 844-5303**

**PRINCIPAL INVESTIGATOR: L. L. Price**

**FTS PHONE: 844-6206**

**PROJECT OBJECTIVE**

To provide, on short notice, general technical assistance on HLW matters related to Tasks 1 through 5 that would not be provided in the normal course of the work in these tasks.

**ACTIVITIES DURING FEBRUARY 1991**

No activity this month

FIN A1165  
 Total for Case 1183.000  
 February 1991

THIS IS AN ESTIMATE ONLY AND MAY NOT MATCH THE INVOICES SENT TO NRC BY SANDIA'S ACCOUNTING DEPARTMENT.

	Current Month -----	Year -to- Date -----
I. Direct Manpower (man-months of charged effort)	0.0 ---	0 ---
II. Direct Loaded Labor Costs	0	0
Materials and Services	0	0
ADP Support (computer)	0	0
Subcontracts	0	0
Travel	0	0
General and Administrative	0	0
Other (computer round-off)	0	0
TOTAL COSTS	----- 0	----- 0

III. Funding Status

Prior FY Carryover -----	FY 90 Projected Funding Level -----	FY 90 Funds Received to Date -----	FY 90 Funding Balance Needed -----
\$ 0K	\$ 0K	\$ 0K	None

FIN A1165, Task I - Licensing Methodology Assistance  
 Subcase 1183.010  
 February 1991

THIS IS AN ESTIMATE ONLY AND MAY NOT MATCH THE INVOICES SENT TO NRC BY SANDIA'S ACCOUNTING DEPARTMENT.

	Current Month -----	Year -to- Date -----
I. Direct Manpower (man-months of charged effort)	0.0 ---	0 ---
II. Direct Loaded Labor Costs	0	0
Materials and Services	0	0
ADP Support (computer)	0	0
Subcontracts	0	0
Travel	0	0
General and Administrative	0	0
Other (computer round-off)	0	0
<b>TOTAL COSTS</b>	<u>0</u>	<u>0</u>

III. Funding Status

Prior FY Carryover -----	FY 91 Projected Funding Level -----	FY 91 Funds Received to Date -----	FY 91 Funding Balance Needed -----
\$ 0K	\$ 0K	\$ 0K	None

FIN A1165, Task II - Identification and Analysis of Uncertainties  
 Subcase 1183.020  
 February 1991

THIS IS AN ESTIMATE ONLY AND MAY NOT MATCH THE INVOICES SENT TO NRC BY SANDIA'S ACCOUNTING DEPARTMENT.

	Current Month -----	Year -to- Date -----
I. Direct Manpower (man-months of charged effort)	0.0 ---	0 ---
II. Direct Loaded Labor Costs	0	0
Materials and Services	0	0
ADP Support (computer)	0	0
Subcontracts	0	0
Travel	0	0
General and Administrative	0	0
Other (computer round-off)	0	0
<b>TOTAL COSTS</b>	<b>0</b> ---	<b>0</b> ---

III. Funding Status

Prior FY Carryover -----	FY 91 Projected Funding Level -----	FY 91 Funds Received to Date -----	FY 91 Funding Balance Needed -----
\$ 0K	\$ 0K	\$ 0K	None

FIN A1165, Task III - Probability Techniques  
 Subcase 1183.030  
 February 1991

THIS IS AN ESTIMATE ONLY AND MAY NOT MATCH THE INVOICES SENT TO NRC BY SANDIA'S ACCOUNTING DEPARTMENT.

	Current Month -----	Year -to- Date -----
I. Direct Manpower (man-months of charged effort)	0.0 ---	0 ---
II. Direct Loaded Labor Costs	0	0
Materials and Services	0	0
ADP Support (computer)	0	0
Subcontracts	0	0
Travel	0	0
General and Administrative	0	0
Other (computer round-off)	0	0
<b>TOTAL COSTS</b>	<b>0</b> ---	<b>0</b> ---

III. Funding Status

Prior FY Carryover -----	FY 90 Projected Funding Level -----	FY 90 Funds Received to Date -----	FY 90 Funding Balance Needed -----
\$ 0K	\$ 0K	\$ 0K	None

FIN A1165, Task VI  
 Subcase 1183.060  
 February 1991

**THIS IS AN ESTIMATE ONLY AND MAY NOT MATCH THE INVOICES SENT TO NRC BY SANDIA'S ACCOUNTING DEPARTMENT.**

	Current Month -----	Year -to- Date -----
I. Direct Manpower (man-months of charged effort)	0.0 ---	0.0 ---
II. Direct Loaded Labor Costs	0	0
Materials and Services	0	0
ADP Support (computer)	0	0
Subcontracts	0	0
Travel	0	0
General and Administrative	0	0
Other (computer round-off)	0	0
<b>TOTAL COSTS</b>	<b>0</b> ---	<b>0</b> ---

**III. Funding Status**

Prior FY Carryover -----	FY 90 Projected Funding Level -----	FY 90 Funds Received to Date -----	FY 90 Funding Balance Needed -----
\$ 0K	\$ 0K	\$ 0K	None

**Deliverables and Due Dates  
FIN A1165**

Task 1

**Subtask 1.1 - Components of an Overall Performance Assessment Methodology**

**Submitted - 1/31/90      Status - Completed**

**Subtask 1.3e - Technical Basis for Review of HLW Modeling Programs  
(Includes Subtasks 1.3b, 1.3c, and 1.3d)**

**Submitted - 2/8/90      Status - Completed**

Task 2

**Subtask 2.1 - Recommended Techniques for Assessing Compliance with the EPA's HLW  
Repository Containment Requirement**

**Submitted - 8/27/90      Status - Completed**

**Subtask 2.2/2.6c - Uncertainties Associated with Performance Assessment of High-Level  
Radioactive Waste Repositories: A Summary Report**

**Submitted - 10/31/90      Status - Completed**

**Subtask 2.3 - Elicitation and Use of Expert Judgment in HLW PA (Includes a portion of  
subtask 2.6e)**

**Submitted - 3/23/90      Status - Completed**

**Subtask 2.4a - Treating Uncertainties in PA Models**

**Submitted - 2/7/90      Key Individuals - N. Olague  
Estimated Cost - \$0K      Status - In management signoff**

\* - All costs are as of September 1, 1990

\*\* - Lead individual for a given report is in bold letters

**Subtask 2.5a - Scenario Development Methodology**

**Submitted - 3/26/90**

**Status - Completed**

**Subtask 2.6a - Methodologies for Data and Parameter Uncertainty**

**Submitted - 2/15/90**

**Status - Completed**

**Subtask 2.6d - Comparison of Uncertainty and Sensitivity Analysis Techniques  
(Includes Subtask 2.6e)**

**Submitted - 2/27/90**

**Estimated Cost - \$0K**

**Key Individuals - T. Zimmerman**

**Status - In management signoff**

**Task 3**

**Subtask 3.2 - Estimating Probabilities for Initiating Events and Processes**

**Submitted - 2/21/90**

**Estimated Cost - \$0K**

**Key Individuals - G. Apostolakis, R. Bras  
L. Price, K. Wahi**

**Status - Addressing NRC comments**

**Task 6**

**Short Term Technical Assistance**

**Funds Remaining - \$0K**

**DELIVERABLES SUBMITTED DURING THE CURRENT REPORTING PERIOD**

<u>Subtask Number</u>	<u>Deliverable Title</u>	<u>Date</u>	<u>Status</u>
None			

## SCHEDULE OF MILESTONES AND DELIVERABLES

<u>Subtask Number</u>	<u>Deliverable Title</u>	<u>Draft Due</u>	<u>Final Due</u>	<u>STATUS</u>
1.1	Components of an Overall Performance Assessment Methodology	Submitted December 1, 1988	Submitted January 31, 1990	Completed
1.3e	Technical Basis for NRC Review of HLW Repository Modeling	Submitted June 14, 1989	Submitted February 8, 1990	Completed
2.1	Use of Performance Assessment in Assessing Compliance with the Containment Requirements in 40 CFR Part 191	Submitted January 16, 1990	Submitted August 27, 1990	Completed
2.2/2.6c	Uncertainties Associated with Performance Assessment of High-level Radioactive Waste Repositories: A Summary Report	Submitted April 2, 1990	Submitted October 31, 1990	Completed
2.3	Elicitation and Use of Expert Judgment in Performance Assessment for High-Level Waste Repositories	Submitted July 26, 1990	Submitted April 23, 1990	Completed
2.4a	Approaches for the Validation of Models Used for Performance Assessment of High-Level Nuclear Waste Repositories	Submitted February 7, 1990	February 28, 1991	In management signoff.

2.5	Risk Methodology for Geologic Disposal of Radioactive Waste: Scenario Selection Procedure	Submitted June 27, 1989	Submitted March 26, 1990	Completed
2.6a	A Review of Techniques for Propagating Data and Parameter Uncertainties in High-Level Radioactive Waste Repository Performance Assessment Models	Submitted May 31, 1989	Submitted February 15, 1990	Completed
2.6d	A Comparison of Parameter Estimation and Sensitivity Analysis Techniques for Ground-Water Flow Models and Their Impact on the Uncertainty in Model Performance Predictions	Submitted February 27, 1990	May 15, 1991	In management signoff.
3.2	Techniques for Determining Probabilities of Events and Processes Affecting the Performance of Geologic Repositories: Volume II --Suggested Approaches	Submitted February 21, 1990	March 31, 1991	Addressing NRC comments.