

Sandia National Laboratories

Albuquerque, New Mexico 87185

May 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 monthly report for FIN A1165 for April 1991 through May 10th, 1991. All tasks of FIN A1165 have been completed; therefore, this is the last monthly report that we will be sending you 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
A-1165 PDR

4/26.1
A 1165
NH4/11

SUMMARY SHEET

April 1991 Monthly Report for FIN A1165

<u>Task</u>	<u>Activity</u>	<u>Costs</u>
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 APRIL 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 APRIL 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.

Completed.

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.

A camera-ready copy of this report was sent to the NRC on April 25, 1991. This fulfills SNL's obligation with respect to Subtask 2.6d.

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 APRIL 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).**

A camera-ready copy of this report was sent to the NRC on May 10, 1991. This fulfills SNL's obligation with respect to Subtask 3.2.

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 APRIL 1991

No activity this month

FIN A1165
 Total for Case 1183.000
 April 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	<u>0</u>	<u>0</u>

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
 April 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	<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
 April 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 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
 April 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 VI
 Subcase 1183.060
 April 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
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

**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 - 3/7/91 Status - Completed

* - 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 - 4/25/91 Status - Completed

Task 3

Subtask 3.2 - Estimating Probabilities for Initiating Events and Processes

Submitted - 5/10/91 Status - Completed

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>
2.6d	A Comparison of Parameter Estimation and Sensitivity Analysis Techniques and Their Impact on the Uncertainty in Ground Water Flow Model Predictions, NUREG/CR-5522, SAND90-0128	April 25, 1991	Completed
3.2	Techniques for Determining Probabilities of Events and Processes Affecting the Performance of Geologic Repositories: Volume II - Suggested Approaches, NUREG/CR- 3964, SAND86-0196	May 10, 1991	Completed

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	Submitted March 7, 1991	Completed

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 and Their Impact on the Uncertainty in Ground Water Flow Model Predictions	Submitted February 27, 1990	Submitted April 25, 1991	Completed
3.2	Techniques for Determining Probabilities of Events and Processes Affecting the Performance of Geologic Repositories: Volume II --Suggested Approaches	Submitted February 21, 1990	Submitted May 10, 1991	Completed