

Sandia National Laboratories

Albuquerque, New Mexico 87185

September 15, 1990

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 August 1990 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,

Maya
for
E. J. Bonano

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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Tiktinsky

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September 15, 1990

3223 P. A. Davis
6410 D. A. Dahlgren
6416 E. J. Bonano
6416 L. L. Price
6416 K. K. Wahi
6416 D. A. Zimmerman
6416 1183.000 File

SUMMARY SHEET

August 1990 Monthly Report for FIN A1165

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

PROGRAM: Licensing-Methodology Assistance

**FIN A1165
Task I**

**CONTRACTOR: Sandia National
Laboratories**

**BUDGET PERIOD: 10/89 -
9/90**

NMSS PROGRAM MANAGER: P. Brooks

BUDGET AMOUNT: \$1K

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 AUGUST 1990

Task I has been completed.

PROGRAM: Identification and Analysis of
Uncertainties

FIN A1165
Task II

CONTRACTOR: Sandia National
Laboratories

BUDGET PERIOD: 10/89 -
9/90

NMSS PROGRAM MANAGER: P. Brooks

BUDGET AMOUNT: \$37K

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 AUGUST 1990

Subtask 2.1

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

A camera-ready copy of this report was sent to the NRC on August 27, 1990. This fulfills SNL's obligations with respect to Subtask 2.1.

Subtask 2.2/2.6c

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

A draft of this report was sent to the NRC on April 2, 1990. We are waiting for NRC comments. Internal SNL reviews have been 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.

A draft of this report was sent to the NRC on February 7, 1990. We are waiting for NRC comments. Internal reviews of the report have been completed.

Subtask 2.5

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 draft of this report was sent to the NRC on February 27, 1990, and we received NRC comments on May 23, 1990. Internal reviews of the report have been completed. Both the NRC comments and the comments resulting from internal review are being addressed.

PROGRAM: Probability Techniques

**FIN A1165
Task III**

**CONTRACTOR: Sandia National
Laboratories**

**BUDGET PERIOD: 10/89 -
9/90**

NMSS PROGRAM MANAGER: P. Brooks

BUDGET AMOUNT: \$16K

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 AUGUST 1990

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 draft of this report was sent to the NRC on February 21, 1990. We are currently waiting for NRC comments. Internal reviews of the report have been completed.

PROGRAM: Short-Term Technical Assistance

**FIN A1165
Task VI**

BUDGET AMOUNT: \$3K

PROGRAM 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 AUGUST 1990

No activity this month

FIN A1165
Total for Case 1183.000
August 1990

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 -----	2.8 -----
II. Direct Loaded Labor Costs	0	26
Materials and Services	0	0
ADP Support (computer)	0	0
Subcontracts	0	20
Travel	0	1
General and Administrative	0	5
Other (computer round-off)	0	0
TOTAL COSTS	0 -----	52 -----

III. Funding Status

Prior FY Carryover -----	FY 90 Projected Funding Level -----	FY 90 Funds Received to Date -----	FY 90 Funding Balance Needed -----
\$57K	\$57K	\$0K	None

FIN A1165, Task I - Licensing Methodology Assistance
 Subcase 1183.010
 August 1990

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 ---	0.6 ---
II. Direct Loaded Labor Costs	0	4
Materials and Services	0	0
ADP Support (computer)	0	0
Subcontracts	0	0
Travel	0	0
General and Administrative	0	0
Other (computer roundoff)	0	1
TOTAL COSTS	0 ---	5 ---

III. Funding Status

Prior FY Carryover -----	FY 90 Projected Funding Level -----	FY 90 Funds Received to Date -----	FY 90 Funding Balance Needed -----
\$1K	\$1K	None	None

FIN A1165, Task II - Identification and Analysis of Uncertainties
Subcase 1183.021
August 1990

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 ---	1.3 ---
II. Direct Loaded Labor Costs	0	15
Materials and Services	0	0
ADP Support (computer)	0	0
Subcontracts	0	-1
Travel	0	0
General and Administrative	0	2
Other (computer round-off)	0	-1
TOTAL COSTS	0 ---	15 ---

III. Funding Status

Prior FY Carryover -----	FY 90 Projected Funding Level -----	FY 90 Funds Received to Date -----	FY 90 Funding Balance Needed -----
\$37K	\$37K	None	None

FIN A1165, Task III - Probability Techniques
 Subcase 1183.030
 August 1990

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 -----	0.9 -----
II. Direct Loaded Labor Costs	0	7
Materials and Services	0	0
ADP Support (computer)	0	0
Subcontracts	0	21
Travel	0	1
General and Administrative	0	3
Other (computer round-off)	0	0
TOTAL COSTS	0 -----	32 -----

III. Funding Status

Prior FY Carryover -----	FY 90 Projected Funding Level -----	FY 90 Funds Received to Date -----	FY 90 Funding Balance Needed -----
\$16K	\$16K	None	None

FIN A1165, Task VI - Short Term Technical Assistance
 Subcase 1183.060
 August 1990

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 -----
\$3K	\$3K	None	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 - 4/2/90 Key Individuals - E. Bonano
Estimated Cost - \$0K Status - Waiting for NRC comments.**

**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 - M. Goodrich
Estimated Cost - \$0K Status - Waiting for NRC comments**

*** - 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 Key Individuals - T. Zimmerman
Estimated Cost - \$0K Status - Addressing NRC comments**

Task 3

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

**Submitted - 2/21/90 Key Individuals - G. Apostolakis,
R. Bras, L. Price,
K. Wahi
Estimated Cost - \$0K Status - Waiting for NRC comments**

Task 6

Short Term Technical Assistance

Funds Remaining - \$3K

DELIVERABLES SUBMITTED DURING THE CURRENT REPORTING PERIOD

<u>SUBTASK NUMBER</u>	<u>DELIVERABLE TITLE</u>	<u>DATE</u>	<u>STATUS</u>
2.1	Use of Performance Assessment in Assessing Compliance with the Containment Requirements in 40 CFR Part 191.	8/27/90	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 Dec. 1, 1988	Submitted Jan. 31, 1990	Completed
1.3e	Technical Basis for NRC Review of HLW Repository Modeling	Submitted June 14, 1989	Submitted Feb. 8, 1990	Completed
2.1	Techniques for Assessing Compliance with the EPA's HLW Repository Containment Requirement	Submitted Jan. 16, 1990	Submitted Aug.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	No due date.	Waiting for NRC comments.
2.3	Elicitation and Use of Expert Judgment in Performance Assessments for HLW Repositories	Submitted July 26, 1990	Submitted Apr. 23, 1990	Completed.
2.4a	Guidelines for Judging the Validity of Models for Performance Assessment of HLW Repositories	Submitted Feb. 7, 1990	No due date.	Waiting for NRC comments.

2.5	Risk Methodology for Geologic Disposal of Radioactive Waste: Scenario Selection Procedure	Submitted June 27, 1989	Submitted Mar. 26, 1990	Completed.
2.6a	A Review of Techniques for Propagating Data and Parameter Uncertainty in High-Level Radioactive Waste Repository Performance Assessment Models	Submitted May 31, 1989	Submitted Feb. 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 Feb. 27, 1990	No due date.	Addressing NRC comments.
3.2	Techniques for Determining Probabilities of Events and Processes Affecting the Performance of Geologic Repositories: Volume II --Suggested Approaches	Submitted Feb. 21, 1990	No due date.	Waiting for NRC comments.