

Sandia National Laboratories

Albuquerque, New Mexico 87185

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October 15, 1986 86 DEC -1 A11 322

Ms. Sandra Wastler
Repository Projects Branch
Division of Waste Management
U.S. Nuclear Regulatory Commission
7915 Eastern Avenue
Silver Spring, MD 20910

WM-RES
WM Record File
A1165
SNL

WM Project 10, 11, 16
Docket No. _____
PDR ☒
LPDR B, A, S

Distribution:

Wastler Same - ticket
Still
(Return to WM, 623-SS) *af*

Dear Ms. Wastler:

Enclosed is the summary of activities during October 1986 for the following tasks for FIN# A1165: (I) Assisting in the development of the Licensing Assessment Methodology; (II) Monitor and review aspects of DOE programs; (III) Identifying techniques for probability assignments; and (IV) Short-term technical assistance.

Sincerely,

Robert M. Cranwell

Robert M. Cranwell, Supervisor
Waste Management Systems
Division 6431

RMC:6431

Enclosure

Copy to:
Office of the Director, NMSS
Attn: Program Support
Robert Browning, Director
Division of Waste Management
Seth Coplan
Division of Waste Management
Hubert Miller
Division of Waste Management
Malcolm Knapp
Division of Waste Management
Enrico Conte, Branch Chief
Health Siting & Waste Management Division
John Randall
Division of Radiation Programs and
Earth Sciences
6400 R. C. Cochrell
6430 N. R. Ortiz
6431 R. M. Cranwell
6431 R. V. Guzowski

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PDR WMRES EXISANL
A-1165 PDR

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PROGRAM: Licensing-Methodology Assistance

FIN#: A-1165
Task I

CONTRACTOR: Sandia National
Laboratories

BUDGET PERIOD: 10/86 -
9/87

NMSS PROGRAM MANAGER: S. Wastler

BUDGET AMOUNT: - ? -

CONTRACT PROGRAM MANAGER: R. M. Cranwell

FTS PHONE: 844-8368

PRINCIPAL INVESTIGATORS: R. M. Cranwell
R. V. Guzowski

FTS PHONE: 844-8368
FTS PHONE: 844-3583

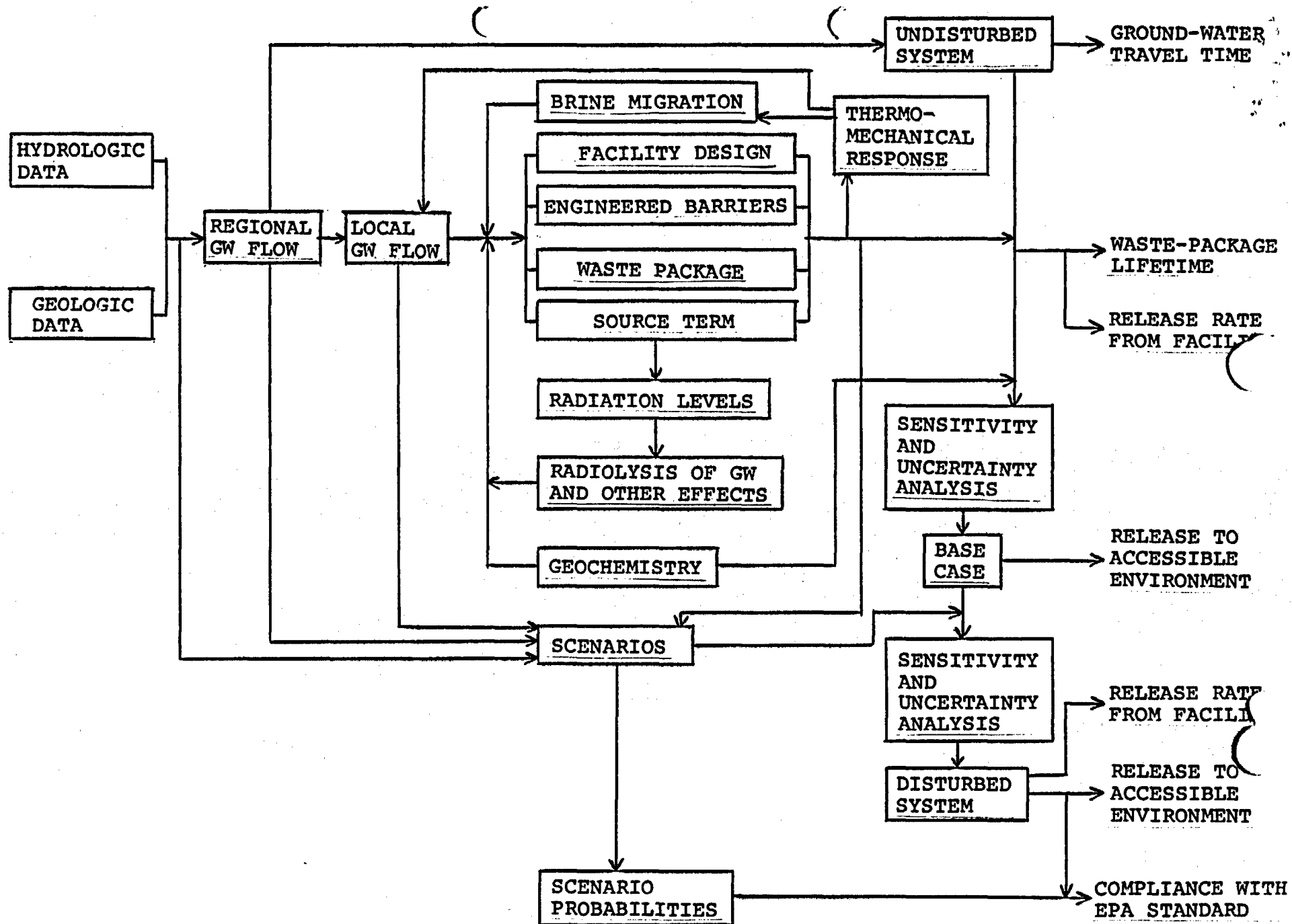
PROJECT OBJECTIVE

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

ACTIVITIES DURING OCTOBER 1986

A revised figure of the relationship between the components of a performance assessment was constructed. In addition, an outline of a scheme to keep track of the status of the components was developed. A rough draft of the figure and a first draft of the tracking scheme are included, as is a draft breakdown of one component of the performance assessment.

R. Hunter is no longer the principal investigator of this task. The new principal investigators are R. Cranwell and R. Guzowski.



COMPONENT/SITE

Topic

Subtopic

- Status:
1. Not to be considered/not relevant
 - a. authorized by/date
 - b. documentation
 2. To be considered in future
 - a. by whom
 - b. starting date
 - c. NRC program manager
 3. Work in progress
 - a. by whom
 - b. statement of work
 - c. completion date
 - d. NRC program manager
 4. Work completed
 - a. by whom
 - b. reference
 - c. critique of reference/critiquer
 - d. recommendations for additional work
 - e. summary of reference
 - f. NRC program manager during work
 - g. current NRC program manager
 5. In-progress non-NRC-sponsored work to be used
 - a. by whom
 - b. statement of work
 - c. comments on SOW
 - d. completion date
 - e. program manager/organization
 6. Completed non-NRC-sponsored work to be used
 - a. by whom
 - b. reference
 - c. critique of reference/critiquer
 - d. recommendations for additional work
 - e. summary of reference
 - f. program manager/organization
 - g. authorizer to use non-NRC work
 - h. documentation for decision
 - i. NRC program manager

GEOLOGIC DATA

Stratigraphy

Regional scale

- thickness of each unit and lateral variations
- depth to contacts

Local scale

- thickness of each unit and lateral variations
- depth to contacts of units
- depth to contacts of subdivisions of units
- thickness of subdivisions of units

Mineralogy of each unit

- lateral variations
- vertical variations

Rock properties of each unit and subunit

density

porosity

- total matrix
- effective matrix
- total fracture
- effective fracture

fracture characteristics

- density
- orientation
- aperture

mechanical characteristics

- thermal conductivity
- specific heat
- thermal diffusivity
- thermal expansion

mechanical characteristics

- compressive strength
- tensile strength
- elastic constants
- values as function of temperature and pressure
- variations of properties as function of:

- temperature
- pressure
- combined pressure and temperature
- mineralogy
- location within unit

Structure

folds

- location
- orientation
- type
- amplitude
- history (age(s) of deformation)
- associated fractures
- density

orientation
aperture

Faults

location
orientation
type
amount of displacement
width of fault zone
porosity of fault zone
history (age(s) of movement on fault)
associated fractures
density
orientation
aperture

Regional stability

type of movement (uplift or subsidence or both)
amount of movement
history (age(s) of movement)

Geomorphic processes (each process could be listed separately)

type of process
rate of change
history of process
variations with time

Seismicity

locations of epicenters
regional scale
local scale
frequency of occurrence
magnitude
displacement as function of magnitude

Volcanism

location of volcanic centers
dimensions of volcanic centers
type of volcanic activity
history of each center
history of each type of volcanic activity

Natural resources

type (metallic, nonmetallic, energy, water)
locations of each type
origin/age of each location or type of resource
history of exploitation
potential resources

PROGRAM: Monitor/Review Aspects of DOE and
Other National and International
Waste Management Programs

FIN#: A-1165
Task II

CONTRACTOR: Sandia National
Laboratories

BUDGET PERIOD: 10/86 -
9/87

NMSS PROGRAM MANAGER: S. Wastler

BUDGET AMOUNT: -?-

CONTRACT PROGRAM MANAGER: R. M. Cranwell

FTS PHONE: 844-8368

PRINCIPAL INVESTIGATORS: R. M. Cranwell
R. V. Guzowski

FTS PHONE: 844-8368

FTS PHONE: 844-3583

PROJECT OBJECTIVE

To monitor and review the performance-assessment aspects of DOE and other national and international management programs.

ACTIVITIES DURING OCTOBER 1986

No activity.

PROGRAM: Probability Techniques

FIN#: A-1165
Task III

CONTRACTOR: Sandia National
Laboratories

BUDGET PERIOD: 10/86 -
9/87

NMSS PROGRAM MANAGER: S, Wastler

BUDGET AMOUNT: -?-

CONTRACT PROGRAM MANAGER: R. M. Cranwell

FTS PHONE: 844-8368

PRINCIPAL INVESTIGATORS: R. M. Cranwell
R. V. Guzowski

FTS PHONE: 844-8368
FTS PHONE: 844-3583

PROJECT OBJECTIVE

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

ACTIVITIES DURING OCTOBER 1986

R. Guzowski reviewed the report entitled Techniques For Determining Probabilities And Uncertainties Of Events And Processes Affecting The Performance Of Geologic Repositories: A Literature Review (R. L. Hunter and C. J. Mann, eds). Comments were submitted to R. Hunter for consideration as to incorporation into the report.

Work continued on Chapter 3 (Thermomechanical Effects) of the above report.

R. Guzowski and R. Cranwell began work on a scoping report entitled Techniques For Determining Probabilities Of Disruptive Events And Processes At And Near High-Level Radioactive Waste Repositories. This report was requested by S. Coplan and S. Wastler at a meeting in Silver Springs at the end of September.

R. Hunter is no longer the principal investigator for this task. The new principal investigators are R. Cranwell and R. Guzowski.

PROGRAM: Short-Term Technical Assistance

FIN#: A-1165
Task IV

CONTRACTOR: Sandia National
Laboratories

BUDGET PERIOD: 10/86 -
9/87

NMSS PROGRAM MANAGER: S. Wastler

BUDGET AMOUNT: -?-

CONTRACT PROGRAM MANAGER: R. M. Cranwell

FTS PHONE: 844-8368

PRINCIPAL INVESTIGATORS: R. M. Cranwell
R. V. Guzowski

FTS PHONE: 844-8368
FTS PHONE: 844-3583

PROJECT OBJECTIVE

To provide general technical assistance on waste-management matters on the request of the NMSS PM.

ACTIVITIES DURING OCTOBER 1986

A scoping report entitled Treatment Of Uncertainties In The Performance Assessment Of Geologic High-Level Radioactive Waste Repositories was completed and sent to S. Wastler. This report was written by R. Cranwell and E. Bonano and reviewed by R. Guzowski and P. Davis.

R. Hunter is no longer the principal investigator for this task. The new principal investigators are R. Cranwell and R. Guzowski.

A-1165

Total for 1183.010, 1183.020, 1183.030, and 1183.040.
October 1986

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)	1.1 -----	1.1 -----
II. Direct Loaded Labor Costs	12	12
Materials and Services	3	3
ADP Support (computer)	0	0
Subcontracts	7	7
Travel	1	1
Other (computer roundoff)	1	1
	-----	-----
TOTAL COSTS	24	24

III. Funding Status

Prior FY Carryover -----	FY 87 Projected Funding Level -----	FY 87 Funds Received to Date -----	FY 87 Funding Balance Needed -----
\$138K	\$613K	-0-	\$475K

A-1165, Task I
1183.010
October 1986

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)	0.5 ---	0.5 ---
II. Direct Loaded Labor Costs	5	5
Materials and Services	3	3
ADP Support (computer)	0	0
Subcontracts	4	4
Travel	0	0
Other (computer roundoff)	0	0
	---	---
TOTAL COSTS	12	12

III. Funding Status

Prior FY Carryover -----	FY 87 Projected Funding Level -----	FY 87 Funds Received to Date -----	FY 87 Funding Balance Needed -----
4K	--	-0-	--

* information on funding for FY87 not available.

A-1165, Task II
1183.020
October 1986

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)	0.2 -----	0.2 -----
II. Direct Loaded Labor Costs	3	3
Materials and Services	0	0
ADP Support (computer)	0	0
Subcontracts	0	0
Travel	0	0
Other (computer roundoff)	0	1
	-----	-----
TOTAL COSTS	3	3

III. Funding Status

Prior FY Carryover -----	FY 87 Projected Funding Level -----	FY 87 Funds Received to Date -----	FY 87 Funding Balance Needed -----
51	-*-	-0-	-*-

* information on funding for FY87 not available.

A-1165, Task III
1183.030
October 1986

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)	0.3 ---	0.3 ---
II. Direct Loaded Labor Costs	3	3
Materials and Services	0	0
ADP Support (computer)	0	0
Subcontracts	3	3
Travel	1	1
Other (computer roundoff)	0	0
	---	---
TOTAL COSTS	7	7

III. Funding Status

Prior FY Carryover -----	FY 87 Projected Funding Level -----	FY 87 Funds Received to Date -----	FY 87 Funding Balance Needed -----
-0-	-*-	-0-	-*-

* information on funding for FY87 not available

A-1165, Task IV
1183.040
October 1986

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 ---	0.1 ---
II. Direct Loaded Labor Costs	1	1
Materials and Services	0	0
ADP Support (computer)	0	0
Subcontracts	0	0
Travel	0	0
Other (computer roundoff)	1	1
	---	---
TOTAL COSTS	2	2

III. Funding Status

Prior FY Carryover -----	FY 87 Projected Funding Level -----	FY 87 Funds Received to Date -----	FY 87 Funding Balance Needed -----
8K	--	-0-	--

* information on funding for FY87 not available.