



98 East Naperville Road
Westmont, IL 60559-1595

ENGINEERS INTERNATIONAL, INC.

Telephone: 312/963-3460
Telex: 9106511931
Cable: ENGINT

12 October 1984
Ref. No. 1148-005
Project Letter No. 042

WM-RSS
WM Record-File
D1004
EI

WM Project 10, 11, 16
Docket No. _____
PDR ✓
LPDR ✓ *(B.N.S)*

Waste Management Engineering Branch
Division of Waste Management
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Distribution:

Attention: Mr. John Buckley, Project Officer
Mail Stop 623-SS

Buckley
Hink
(Return to WM, 623-SS) Joan - ticket

Subject: Contract No. NRC-02-84-002, (EI Project No. 1148)
"Technical Assistance for In Situ Testing"
01 August 1984 to 31 August 1984

12061 10/17/84

Dear Mr. Buckley:

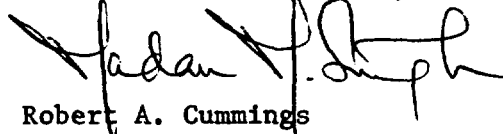
Enclosed is one (1) copy of the subject report as required by the contract. As required, the following persons are being sent copies:

- Office of the Director, NMSS
- Director, Division of Waste Management
- Contracting Officer
- Chief, High-Level Waste Technical Development Branch.

Should you have any questions, please do not hesitate to contact the undersigned.

Sincerely,

ENGINEERS INTERNATIONAL, INC.

for 
Robert A. Cummings
Project Engineer

RAC/ko

Enclosure

cc: Office of the Director, NMSS
 (ATTN: Program Support Branch) - 1
 Director, Division of Waste Management - 2
 Contracting Officer - 1
 High-Level Waste Technical Development Branch - 1
 (ATTN: Branch Chief)

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PDR WMRES EECENGI
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1567

ENGINEERS INTERNATIONAL, INC.

EI Project No. 1148

NRC Contract No. NRC-02-84-002

TECHNICAL ASSISTANCE FOR IN SITU TESTING

Sixth Monthly Report - 01 August 1984 to 31 August 1984

1.0 INTRODUCTION

This report covers the activities of Engineers International, Inc. (EI) during the period of 01 July 1984 through 31 July 1984. Professional personnel involved are Messrs. Singh, Cummings, Rajaram, Bhattacharya, Dunn, Mukherjee, Buma, and Wilkey.

2.0 PROJECT OBJECTIVE

This contract is intended to provide technical assistance to the NRC in reviewing plans and procedures for in situ testing that may be carried out in support of siting and design of a geologic HLW repository. Assistance is to be focused on underground stress, geotechnical instrumentation of test areas, rock mass strength, hydrological instrumentation of test areas, thermo-mechanical effects, excavation methods, and quality assurance for bulk measurements of geologic properties, as these relate to in situ testing.

Ultimately, these efforts are to aid the NRC in its responsibility for ensuring the proper siting, design, construction, operating, and decommissioning of geologic HLW disposal facilities such that the EPA limits for radionuclide release will not be exceeded.

3.0 ACTIVITIES DURING THE REPORTING PERIOD

3.1 Summary of Activities

Task Order 001

Task Order 001 has been completed.

Task Order 002

Task Order 002 has been completed.

Task Order 003

Effort on Task Order 003 during August was largely centered on the EA scoping reviews and on the Data Review Meeting in Columbus.

The EA scoping review was performed chiefly by the Project Engineer and consultants (see Section 3.2), with most of the Project Engineer's time involved in procuring and administering the consultants' input. The Senior Geohydrologist assisted the Project Engineer in preparing packages to guide Messrs. Hart and Brown. Dr. Hart reviewed the Vacherie and Cypress Creek EAs using materials sent from EI; the reviews were conducted in Minneapolis the week of 06 August. Mr. Brown carried out a detailed review of the Lavender Canyon EA at the EI Main Office from 30 July through 03 August, and completed his review later.

Other effort during August was spent preparing the detailed comments regarding the ES construction and sealing letter. It had been decided that some of the 23 supporting references to this document should be reviewed as key documents. This work was undertaken during August, and preliminary reviews were prepared. (Additional resources will be needed to complete these reviews; such finding was requested during the reporting period, as described further in this section.) The rough comments on the ES letter were completed on 13 August. These were sent to NRC, as a marked-up typed draft, on 13 August.

The Project Engineer, and Messrs. Hart and Brown, attended the Data Review Meeting with ONWI in Columbus, OH, from 20 through 24 August 1984. The Project Engineer also was engaged in limited administrative activities, organizing the consultants' participation and on trip wrap-up, such as trip reporting, collection of consultants' expense vouchers, filing of notes and handouts, and so on. The meeting was very informative and brought the NRC review team up to date on the salt repository project status far more efficiently and effectively than could have been done by pursuing published reports.

Also, several documents were procured at the Data Review Meeting, and others remaining to be located were identified. The status of these is as follows.

Palo Duro SCR - unreleased--still in preparation.

SAND-80-1375 - was acquired but is unreviewed.

This is a summary document on the Bell Canyon testing and merits a review.

ONWI-363 - was acquired but not yet reviewed.

It deals with healing of salt fractures and merits a review.

DOE/EA-0028 - was acquired but not yet reviewed.

This is an early (1978) document outlining drilling plans in the Palo Duro Basin and probably has been suspended. It may contain some background that could be of value.

ORNL/TM-6809 - was acquired and reviewed for data content.
Review is not in final form, however.

Martin, R. J., 1983 - this turns out to be the first in an extensive series of data reports by Applied Research Associates, subcontractors to SWECO for geomechanics testing for the Palo Duro Basin. This testing is still ongoing. No released reports exist. We did examine some unreleased/unapproved data reports during the Data Review Meeting that contained scattered instances of ambiguous or erroneous data.

BFER reports (3) on discontinuities in salt--
Howard Hume at ONWI recollects having seen these reports but was unable to produce them at the meeting. These have been requested from ONWI but have not arrived.

O-TM-18 -- This is an early DOE report on site characterization that we were told is now completely out-of-date. Since the siting program has changed since O-TM-18 was issued, we feel there would be no value in reviewing it.

Other effort during the reporting period was spent on miscellaneous project management and administrative items.

- Some work was done to upgrade the Task Order filing system to accept the EA scoping review materials. Additional work is needed.
- A revised cost estimate for the EA scoping reviews (Task Order Modification No. 1) was prepared and telecopied on 08 August
- Preparation of the July monthly report
- Preparation and submittal of a request for Modification No. 2 to allay costs incurred by EI to maintain the Task Order in view of the extensive delays, for an in-depth review of the ES sealing document, for travel days beyond those anticipated, and for review of additional documents, including reference checks on the 3rd Draft EAs. This request for modification was sent to NRC on 13 August 1984
- Correction and resubmittal of Data Reviews.

Typographical errors were discovered on several Data Review sheets submitted in June; these were corrected and the substitute pages were prepared during August and sent to NRC along with the August monthly report.

Task Order 004

The level of effort during the month was light, and consisted of administrative activities and document reviews.

Documents reviewed during August are: SAND 83-0280, SAND 80-2813, USGS-474-317, USGS 1543-6 and UCID-19785. Two other documents have been received: the parent document to the American Geophysical Union Transactions abstract on hydrofracturing at the Nevada Test Site, by Healy, Hickman, Zoback, and Ellis; and NVO-196-27. These two have not been reviewed. SAND-82-1896C still has not been received.

Remaining activities centered on administration of the Task Order. The modification RFP for the EA scoping reviews was received by telefax on 30 August. A time extension of Task Order 004 (Modification 1) was also received during August. The Data Review Meeting report was sent on 01 August.

Task Order 005

Nearly all the documents for review were sent during August. The previous monthly report (July, 1984) listed the document review status as of 20 August 1984. NUREG/CR-3065 and the Dowell paper on BWIP ES-1 sealing were reviewed and the reviews sent on 30 August. RHO-BW-SA-294P still has not been received.

Other minor effort went into administration. The request for proposal for Modification No. 1, EA scoping reviews, was received on 30 August.

Task Order 006

Task Order 006 has been completed.

3.7 Results

Task Orders 001 and 002

Task Orders 001 and 002 are complete.

Task Order 003

Task Order 003 is nearly complete. Those documents acquired at the Data Review Meeting that are on the review list remain to be reviewed; aside from these, key document reviews are complete. Funds for the EA scoping reviews are essentially exhausted and the remaining funds will be used to compile and transmit the results during the next reporting period. There will not be sufficient funds to support the scoping review of

all 7 salt EAs. The professional staff utilization from 01 August to 31 August is:

<u>Name</u>	<u>Title</u>	<u>Hours This Period</u>
M. M. Singh	Project Manager	2
R. A. Cummings	Lead Project Engineer	87½
M. F. Dunn	Senior Mining Engineer	60
S. Bhattacharya	Senior Mining Engineer	50
A. Mukherjee	Mining Engineer	1
V. Rajaram	Assistant Project Manager (Senior Mining Engineer)	1
G. Buma	Senior Geologist	59
R. Hart	Consultant	96
A. Brown	Consultant	22

Messrs. Dunn and Bhattacharya were involved in document and data reviews. Mr. Dunn reviewed the supporting references to the ES letter. Mr. Bhattacharya assisted in this and checked and corrected data reviews. Mr. Cummings and Mr. Buma participated in document reviews and the EA scoping review. Mr. Cummings also attended the Data Review Meeting, along with Messr. Hart and Brown. Messrs. Hart and Brown also participated in the EA scoping reviews; since we have not received a full voucher from Mr. Brown, only a partial total is reflected above. Messrs. Singh, and Rajaram were involved in general Task Order management. Mr. Mukherjee assisted in assembling reference material to Mr. Hart.

Task Order 004

On Task Order 004, the document reviews are about 90 percent complete, with all documents in-house now completely reviewed. Available funding is essentially exhausted. The professional staff utilization for the period is:

<u>Name</u>	<u>Title</u>	<u>Hours This Period</u>
M. M. Singh	Project Manager	10
R. A. Cummings	Lead Project Engineer	3
S. Bhattacharya	Senior Mining Engineer	20
V. Rajaram	Assistant Project Manager (Senior Mining Engineer)	1
G. Buma	Senior Geologist	12

Messrs. Singh, Rajaram, and Cummings were engaged in overall project administration, the additional hours for Dr. Singh being due to his role as group leader for tuff. Messrs. Bhattacharya and Buma were engaged in data and document reviews.

Task Order 005

Document and data reviews are 95% complete, except for those few documents not yet received. Administrative costs related to the preparation of the July monthly report on the part of Messrs. Bhattacharya and Cummings were billed this time to Task Order 005. Messrs. Mukherjee, Buma, and Rajaram were engaged in reviews. Professional staff utilization is as follows:

<u>Name</u>	<u>Title</u>	<u>Hours This Period</u>
V. Rajaram	Assistant Project Manager	72
A. Mukherjee	Mining Engineer	99
G. Buma	Senior Geologist	21
S. Bhattacharya	Senior Mining Engineer	8
R. A. Cummings	Lead Project Engineer	1

Task Order 006

Task Order 006 is complete.

4.0 ACTIVITIES PLANNED FOR NEXT REPORTING PERIOD

For Task Order 003, written comments on the EA scoping review will be completed and sent to NRC. For Task Order 004 and 005, the scoping reviews on the draft EAs will commence. The remaining data and document reviews will be performed. No travel is planned on any of the tasks.

5.0 DIFFICULTIES

Delays in obtaining documents continue, and have cost both manpower and time. The extended term over which these Task Orders are active has increased the administrative burden attributable to the project and made it difficult to maintain continuity of effort.

The authorized time and funding were not sufficient to review all 7 of the 4th Draft EAs, chiefly because the reference materials were not available to us and because the cross-referencing of sections in the EAs required us to cover several times as much material as was specifically assigned to us for review.

Funding on the three active Task Orders is nearly exhausted on each. Much of this situation has arisen because the delays mentioned above. This matter needs to be discussed and resolved soon.

6.0 MEETING/TRIPS DURING THE REPORTING PERIOD


The Project Engineer, and Consultants attended the Data Review Meeting in Columbus, OH, between 20 August to 24 August.

7.0 SCHEDULE AND COST PROJECTIONS

The cost summaries, to 31 August 1984 and broken down by Task Order, are attached. The cost and uncosted obligations to date, and the cost projections for the next 2 months, also are attached for each person.

Respectfully submitted,

ENGINEERS INTERNATIONAL, INC.

for 
Robert A. Cummings
Lead Project Engineer

RAC/ko

Enclosures

CONTRACT NO. NRC-02-84-002

PROJECT COSTS THROUGH AUGUST 1984

TASK	CURRENT MONTH	CUMULATIVE TO DATE		TOTAL TO DATE	COST PROJECTIONS FY 1984 - 1985		TOTAL CONTRACT LIMIT
		FY 84	FY85		Sept.	Oct.	
ORDER 003							100,274.00
I	23,564.00	81,757.00	-	81,757.00	7,500.00	5,000.00	
II	- 0 -	- 0 -	-	- 0 -	- 0 -	- 0 -	
ORDER 004							100,478.00
I	3,519.00	63,841.00	-	63,841.00	2,000.00	2,000.00	
II	- 0 -	- 0 -	-	- 0 -	- 0 -	- 0 -	
ORDER 005							59,066.00
I	12,767.00	53,468.00	-	53,468.00	4,000.00	1,500.00	
II	- 0 -	- 0 -	-	- 0 -	- 0 -	- 0 -	
ORDER 006							
I	1,146.12	3,000.94	-	3,000.94	- 0 -	- 0 -	



98 East Naperville Road
Westmont, IL 60559-1595

ENGINEERS INTERNATIONAL, INC.

Telephone: 312/963-3460
Telex: 9106511931
Cable: ENGINT

13 October 1984
Ref. No. 1148-005
Project Letter No. 043

Waste Management Engineering Branch
Division of Waste Management
U. S. Nuclear Regulatory Commission
Washington, DC 20555

Attention: Mr. John Buckley, Project Officer
Mail Stop 623-SS

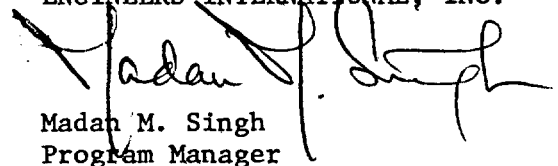
Subject: Contract No. NRC-02-84-002, (EI Project No. 1148)
"Technical Assistance for In Situ Testing"
01 August 1984 to 31 August 1984

Dear Mr. Buckley:

The subject monthly report was sent to you yesterday. The enclosed attachments were however left out inadvertently. These are being sent now, and should reach you at the same time as the report itself. Please excuse the inconvenience caused. The regular distribution list is being sent a copy of these also, at this time.

Sincerely,

ENGINEERS INTERNATIONAL, INC.



Madan M. Singh
Program Manager

MMS/ms

Enclosure

cc: Office of the Director, NMSS
(ATTN: Program Support Branch) -1
Director, Division of Waste Management -2
Contracting Officer -1
High-Level Waste Technical Development Branch -1
(ATTN: Branch Chief)

'84 OCT 15 P4:11

WM DOCKET CONTROL
CENTER

EMPLOYEE EXPENSE ACCOUNT

EMPLOYEE # _____

 NAME: R. A. CUMMINGS

SHEET _____

OF _____

APPROVED: _____

PROJECT/PROPOSAL # _____

PROJECT SHORT TITLE OR OFFICE ACCOUNT _____

 PERIOD: 8/20/84 TO 8/24/1984

DATE	LOCATION	EXPLANATION OF EXPENDITURE	RECEIPT/ VOUCHER #	AMOUNT U.S. DOLLARS
8/20	Chicago, IL	Airfare		326.00
8/20	Columbus, OH	Hotel		32.85
8/20	Columbus, OH	Meals		29.20
8/20	Columbus, OH	Taxi		18.00
8/20	Columbus, OH	Telephone		17.73
8/21	Columbus, OH	Hotel		32.85
8/21	Columbus, OH	Meals		28.82
8/21	Columbus, OH	Misc.		4.25
8/22	Columbus, OH	Hotel		32.85
8/22	Columbus, OH	Meals		22.20
8/22	Columbus, OH	Parking		2.00
8/23	Columbus, OH	Hotel		32.85
8/23	Columbus, OH	Meals		21.10
8/23	Columbus, OH	Telephone		0.35
8/24	Columbus, OH	Meals		18.00
8/24	Columbus, OH	Telephone		.60
8/24	Westmont, IL	Limousine		18.00
8/24	Columbus, OH	Car Rental		255.83

 TOTAL (CREDIT ADVANCE ACCOUNT) 893.48

 SIGNATURE: for R.A. Cummings

 DATE: 8/29/84

ACCOUNT # _____

REPORT # _____

ENTERED _____

EMPLOYEE EXPENSE ACCOUNT

EMPLOYEE # [] [] [] [] [] [] [] [] NAME: Roger D. HART (ITASCA) SHEET OF [] [] [] [] [] [] APPROVED:

PROJECT/PROPOSAL #						PROJECT SHORT TITLE OR OFFICE ACCOUNT						PERIOD: August 20 TO August 24 1984			
[]	[]	[]	[]	[]	[]	Task Order 003 Ref. No. 1148-003-042									
DATE	LOCATION	EXPLANATION OF EXPENDITURE								RECEIPT/VOUCHER #	AMOUNT U.S. DOLLARS				
8/20/84		Airfare (Mpls-Columbus,Ohio-Mpls)									462.00				
8/20-8/24	Columbus, OH	Hotel (Holiday Inn - 4 nights @ \$32.85/night)									131.40				
8/20/84	Columbus, OH	Meals									30.00				
8/21/84	"	Meals									29.88				
8/22/84	"	Meals									29.70				
8/23/84	"	Meals									28.50				
8/24/84	"	Meals									27.00				
8/20-8/24		Parking									3.00				
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TOTAL (CREDIT ADVANCE ACCOUNT)										741.48					

SIGNATURE: Roger D. Hart DATE: August 27, 1984 G/L ACCOUNT # [] [] [] [] [] [] [] [] REPORT # [] [] [] [] [] [] [] []

PERSONAL REFERENCE # [] [] [] [] [] [] [] [] ENTERED

EXPENSE RECORD - ADRIAN BROWN

RECEIVED

Job: 1025

Title: WMC / ISR

Month: JUL/AUG 84

DATE	LOCATION	DESCRIPTION	DEFECT	INDIRECT	NOTES
			ENGINEER'S	INTERNATIONAL	
			WESTMONT, ILLINOIS	60559	
7/31	DEN/CHI	PARKS 100 + 125	225-		AX
7/31	CHI	TAXI OGD → HOTEL	30-		
7/31	✓	LUNCH	18-77		WMC
8/1	✓	BREAKFAST	14-29		
8/1	✓	DINNER	13-		
8/2	✓	BREAKFAST	3-00		WMC
8/2	✓	DINNER	13-35		WMC
8/3	✓	BREAKFAST	3-		WMC
8/3	DEN	PARKING	18-00		✓
8/3	CHI	HOTEL	170-90		AX
	2				
TOTALS			509-33		

Signed:

Adrian Brown

Date:

8/19/84

No:

84-026