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98 East Naperville Road  
Westmont, IL 60559-1595

**ENGINEERS INTERNATIONAL, INC.**

DEC 15 P3:39

Telephone: 312/963-3460  
Facsimile: 312/968-6884  
Telex: 280102 ICO OAKR  
Cable: ENGINT

08 December 1986  
Ref. No. 1148-07-03  
Project Letter No. 088

WM-RES  
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  
7915 Eastern Avenue  
Silver Spring, MD 20910

Distribution:  
X Buckley  
X Still  
(Return to WM, 623-SS)  
X Joanne - ticket  
ST

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

Subject: Contract No. NRC-02-84-002  
"Technical Assistance for In Situ Testing"  
EI Project No. 1148  
Monthly Progress Report Covering the Period of  
01 November through 30 November 1986

Dear Mr. Buckley:

Enclosed is one 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 us.

Sincerely,

ENGINEERS INTERNATIONAL, INC.

Madan M. Singh  
Project Manager

8701220026 861208  
PDR WMRES EECENGI  
D-1004 PDR

MMS/SB/PJH/bt

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 Dev. Branch (Attn: Branch Chief) - 1

# ENGINEERS INTERNATIONAL, INC.

EI Project No. 1148

NRC Contract No. NRC-02-84-002

## TECHNICAL ASSISTANCE FOR IN SITU TESTING

Monthly Report - 01 November through 30 November 1986

### 1.0 INTRODUCTION

This report covers the activities of Engineers International, Inc. (EI) during the period of 01 November through 30 November 1986. Professional personnel involved are Dr. Madan M. Singh, Messers. Peter J. Huck, Swapan Bhattacharya, and Anthony W. Laurito.

By mutual agreement of the NRC Project Officer and the EI Project Engineer, reports are not submitted on a monthly basis during periods when no Task Orders are active.

### 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, thermomechanical 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. Task Order 003 has been completed.

Task Order 004. Task Order 004 has been completed.

Task Order 005. Task Order 005 has been completed.

Task Order 006. Task Order 006 has been completed.

Task Order 007. Reporting and management activities only.

Task Order 008

Subtask 01. Work continued on contacting operating mines in the Nevada Test Site area to obtain information on past mining experience. To date, only one mine contacted has workings in tuff and had minor water inflow problems. Further information on this mine is being obtained.

Due to difficulties in finding mines within the area that have relevant experience, an effort was made to obtain information from other sources. One source currently under review is the neighboring weapons' test tunnels in the area. Another source may be a mine in Colorado which Sandia has visited for mining experience in tuff. Other possibilities are also being considered.

Subtask 02. Ventilation modeling using the CLIMSIM code was completed for the vertical emplacement scheme using several different mechanisms for simulating the thermal input. It appears that the DOE source documents do not represent an integrated analysis. For example, the thermal rock model predicts drift wall temperatures that would be obtained if a specified power (360 watts/linear meter) could be removed by ventilation. The DOE ventilation plans, however, will not be able to provide this cooling power except on an emergency basis to single panels, and a period of several months would be required to bring a panel to a workable temperature. This appears to be adequate if a single canister is to be retrieved, but not if problems develop in several panels.

Subtask 03. Work continued at a low level on reviewing information related to sealing aspects at BWIP.

#### 4.0 DIFFICULTIES

Completion of Subtasks 01 and 03 will be delayed. A copy of a memorandum from Mr. Huck to Mr. John Buckley discussing this delay is attached.

#### 5.0 ACTIVITIES PLANNED FOR NEXT REPORTING PERIOD

Task Order 007

Mr. Bhattacharya will visit the NRC Las Vegas Field office to assist in a document review.

Task Order 008

Subtask 01. The mining experience data from neighboring weapons'

test tunnels should be obtained and reviewed during this period. Efforts will continue in setting up a field trip venue and schedule.

Subtask 02. Modeling of the horizontal emplacement scheme will be completed and a draft report submitted for this subtask.

Subtask 03. Work will continue on the preparation of the point paper.

6.0 MEETINGS/TRIPS DURING THE REPORTING PERIOD

None.

7.0 SCHEDULE AND COST PROJECTIONS

The cost summaries to 30 November 1986, broken down by Task Order, are attached. The costs to date, and the cost projections for the next month, are also attached.

Respectfully submitted,

ENGINEERS INTERNATIONAL, INC.



Peter J. Huck  
Project Engineer

SB/PJH/bt

Attachments

18-A

STATUS - 1148 TASK 007

<u>Assign- ment</u>	<u>Subtask</u>	<u>Project</u>	<u>Description</u>	<u>Date Assigned</u>	<u>Date Sent to NRC</u>
01	02	SPRO	Draft EA review	4/17/86	4/07/86
01	02	SPRO	FEA & SCP Planning Meeting	4/17/86	4/10/86
02	01	NNWSI	Binnall et al 1985 - Crit Param		5/09/86
02	01	NNWSI	Langkopf & Gnirk - Rock Mass Class		5/09/86
03	01	SPRO	Bechtel - WIPP Prelim Design	4/20/86	6/19/86
03	01	SPRO	USDOE - Summary WIPP Site/Validation	4/20/86	
03	01	BWIP	FEA Doc Review - Chap 1 - 4	4/20/86	6/18/86
03	01	BWIP	FEA Doc Review - Chap 5 - 7	4/20/86	6/18/86
03	01	NNWSI	FEA Doc Review - Chap 1 - 4	4/20/86	6/16/86
03	01	NNWSI	FEA Doc Review - Chap 5 - 7	4/20/86	6/16/86
03	01	SPRO	FEA Doc Review - Chap 1 - 4	4/20/86	6/27/86
03	01	SPRO	FEA Doc Review - Chap 5 - 6	4/20/86	6/27/86
03	01	SPRO	FEA Doc Review - Chap 7	4/20/86	6/27/86
03	03	BWIP	FEA Doc Review Meeting	4/20/86	6/17/86
03	03	NNWSI	FEA Doc Review - Chap 1 - 4	4/20/86	6/11/86
03	03	NNWSI	FEA Doc Review - Chap 5 - 7	4/20/86	6/16/86
03	03	SPRO	FEA Doc Review - Chap 1 - 6	4/20/86	6/27/86
03	03	SPRO	FEA Doc Review - Chap 7	4/20/86	6/27/86
04	01	BWIP	SD-BWI-TI-274	5/13/86	8/25/86
04	01	BWIP	SD-BWI-ER-012 Rev. 2	5/13/86	6/17/86
04	01	BWIP	SD-BWI-DP-011 Rev. 2	5/13/86	8/25/86
04	01	BWIP	SD-BWI-ER-006	5/13/86	8/25/86
04	01	BWIP	RHO-BWI-SA-123	5/13/86	8/25/86
04	01	BWIP	S.J. Mitchell - Eval DRZ	5/13/86	8/25/86
04	01	BWIP	SD-BWI-DP-041 - Rock Data	5/13/86	8/25/86
04	01	BWIP	J. Vasey - Design/Support Excav	5/13/86	8/25/86
05	01	NNWSI	Keystone 6310-85-1	4/29/86	6/27/86
06	01	BWIP	SD-BWI-TI-299	6/10/86	8/25/86
06	01	BWIP	RHO-BW-ST-73P	6/10/86	
06	01	NNWSI	SAND-84-2620	6/10/86	10/30/86
07	01	NNWSI	Sealing Letter Response	9/11/86	9/17/86
08	01	NNWSI	Draft SCP Chapter 2	8/28/86	10/03/86
09	02	SRPO	Doc Review Meetings Columbus & Irvine	9/11/86	10/22/84
10	02	SRPO	Doc Review Meeting Shaft Grouting	9/23/86	10/22/84
11	02	BWIP	Meeting Lucky Friday		11/07/86