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WIM Project 10, 11, 16

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High Level Waste Technical Development Branch
Division of Waste Management
U.S. Nuclear Regulatory Commission
7915 Eastern Avenue
Mail Stop 623-SS
Silver Spring, MD 20910

Attention: Mr. Trueman Seamans, Mail Stop 623-SS, Project Officer

Subject: NRC Contract No. NRC-02-82-030 (EI Project No. 1085)
"Technical Assistance For Design Reviews"
Monthly Technical Report Covering the Period of
01 June to 30 June 1983

Ladies and Gentlemen:

Enclosed please find 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

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

Sincerely,

ENGINEERS INTERNATIONAL, INC.

V. Rajaram
Project Manager

VR/ja
Enclosure

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

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ENGINEERS INTERNATIONAL, INC.

EI Project No. 1085

NRC Contract No. NRC-02-82-030

TECHNICAL ASSISTANCE FOR DESIGN REVIEWS

Eleventh Monthly Report - 01 June to 30 June 1983

1.0 INTRODUCTION

This progress report covers the activities of Engineers International, Inc. (EI) during the period 01 June to 30 June 1983. Professional personnel involved were Messrs Kendorski, Hambley, Aucutt, Dunn, Schubert, Wilkey, Mark, Ma, A. Mukherjee, S. Mukherjee, Rahim, and Baker, and Drs. Rajaram and Singh. The hours spent on the project by both professional and non-professional personnel are given below:

<u>NAME</u>	<u>TITLE</u>	TASK ORDER:							
		003		004		005			
		<u>TASK I</u>	<u>TASK II</u>	<u>TASK I</u>	<u>TASK II</u>	<u>TASK I</u>	<u>TASK II</u>		
M. Singh	Principal/Gen. Consultant	2	-	5	-	-	-	-	-
V. Rajaram	Project Manager	47	-	59	-	8	-	-	
F. Kendorski	Engineering Manager	-	-	8	-	-	-	8	
D. Hambley	Project Engineer	4	-	112.50	-	4	-	-	
D. Aucutt	Quality Assurance Engineer	-	-	16	-	-	-	-	
P. Wilkey	Principal Civil Engineer	-	-	-	-	8	-	-	
M. Dunn	Senior Mining Engineer	6.50	-	-	-	7	-	-	
S. Mukherjee	Senior Mining Engr	-	-	14	-	-	-	-	
J. Schubert	Senior Hydrogeologist	-	-	1	-	-	-	-	
M. Ma	Staff Engineer	12	-	101.50	-	-	-	-	
C. Mark	Staff Engineer	12	-	35.50	-	-	-	-	
A. Mukherjee	Staff Engineer	-	-	59	-	-	-	-	
M. Rahim	Staff Engineer	-	-	88	-	-	-	-	
C. Baker	Geologist	-	-	35	-	-	-	-	
B. Kruder	Draftsman	3.25	-	4.50	-	0.50	-	-	
L. Todryk	Manager of Adm. Ser.	1.50	-	4	-	-	-	-	
B. Tallant	Technical Typist	-	-	-	-	1.50	-	-	
J. Anderson	Technical Typist	4	-	3	-	-	-	-	
C. Kantowski	Technical Typist	-	-	2	-	-	-	-	
K. Onorato	Technical Typist	7.50	-	-	-	-	-	-	
S. Dahl	Librarian	4	-	31.50	-	-	-	-	
TOTAL		103.75	-	579.50	-	29	-	8	

2.0 PROJECT OBJECTIVE

The objective of this contract is to provide technical assistance to the NRC in reviewing site characterization plans and other documents related to repository design and construction to ensure the safety of personnel, and the protection of the population and environment from radionuclide release.

3.0 ACTIVITIES DURING THE REPORTING PERIOD

3.1 Summary of Activities

Task Order 003

Sessions of the Rapid Excavation and Tunneling Conference (in Chicago) related to Shaft Drilling techniques were attended by the Project Engineer and project staff. The NRC-approved technical paper concerning repository design was presented at the 24th U. S. Rock Mechanics Symposium, College Station, Texas by the Project Manager.

Task Order 004

The following documents were received from the NRC during the reporting period:

- NVO-196-24, Bibliography of Published Reports, Papers and Articles of the NNWSI
- NUREG-0997, Draft Technical Position on Waste Package Reliability
- U. S. Nuclear Regulatory Commission Technical Position, Borehole and Shaft Sealing of High-Level Nuclear Waste Repositories
- U. S. Nuclear Regulatory Commission Technical Position, Draft NRC Review Plan, QA Programs for Site Characterization of High-Level Nuclear Waste Repositories
- Letter from Seth Coplan, NRC, to Dr. Donald Vieth, DOE regarding exploratory shaft construction concerns at NNWSI
- GeoTrans Site Technical Position on NTS ground water issues
- Williams and Associates Site Technical Position on NTS ground water issues.

Detailed review of identified concerns including retrievability, design of stable openings, water inflow into repository, engineered barriers, shaft sealing, waste package conveyance safety systems, and quality assurance continued.

A meeting was held on Wednesday, 29 June 1983, with the Project Officer and other NRC staff at Silver Spring, MD. During the meeting NRC comments on the draft Site Technical Positions (STP's) were discussed in detail.

Task Order 005

The following documents were received from the NRC during the reporting period:

- SAND81-2628 WIPP Research and Development Program: In Situ Testing Plan
- ONWI-414, Repository Sealing Program Plan: Repository in Salt
- DOE/CH/10140-1 Area Geological Characterization Report for the Palo Duro and Dalhart Basins, Texas.
- DOE/NWTS-80(2), Geologic Disposal of Radioactive Wastes. Program Plan for Field Tests in Salt
- Letter from Lawrence Chase, NRC, to J. O. Neff, DOE, regarding site characterization concerns in salt.

A meeting was held on Thursday, 30 June 1983, with NRC staff to initiate work on Task Order 005. Among the topics discussed were candidate sites, and information obtained at the Sixth International Symposium on Salt.

3.2 Results

Task Order 003

As a result of the Rapid Excavation and Tunneling Conference session on shaft drilling techniques, project staff became more conversant with the specialized drilling techniques planned for the BWIP Exploratory Shaft and the problems that can be encountered with such techniques.

The paper at the 24th U. S. Symposium on Rock Mechanics was well received, and generated discussion on design requirements for satisfying the retrievability criteria in 10CFR60.

Task Order 004

At the meeting held with NRC staff on 29 June 1983, it was resolved that the following STP's will be revised to incorporate NRC's comments and a second draft submitted:

- 4.1.1. radionuclide release prior to permanent closure
- 4.1.2. retrievability
- 4.2. stability of repository openings

- 4.5. shaft and borehole sealing

It was further decided that a STP incorporating all the design issues, including the confirmation of geotechnical and design parameters, would also be prepared and submitted. NRC comments on the draft STP's will be incorporated in preparing the final letter report.

Task Order 005

At the meeting held with NRC staff on 30 June 1983, it was agreed that there would be close collaboration between EI, NRC, and NRC's other contractors.

Issues will be developed on the basis of review of the salt documents, and reviewed with NRC staff before preparing the STP's.

4.0 QUALITY ASSURANCE

The quality assurance program initiated by EI is continually being followed. This includes logging all documents received from the NRC, a document sign-off sheet accompanied by appropriate signatures for EI documents, and a document control log listing all letters and reports sent by EI in chronological order, each having a reference number.

5.0 DIFFICULTIES

None

6.0 ACTIVITIES PLANNED FOR THE NEXT REPORTING PERIOD

Task Order 003

The draft letter report on Shaft Drilling and Sealing will be revised and a final report submitted. It will also comment on the following areas:

- additional sealing documents received during May 1983
- the 10-ft core loss zone in borehole RRL-2.

Task Order 004

The following STP's will be revised to incorporate NRC's comments:

- 4.1.1. radionuclide release prior to permanent closure
- 4.1.2. retrievability
- 4.2. stability of repository openings
- 4.5. shaft and borehole sealing

A STP covering all the design issues, including the confirmation of geotechnical and design parameters, will also be prepared and

submitted. A final letter report on the several STP's submitted earlier will be prepared incorporating NRC comments.

Task Order 005

The following documents will be reviewed and a draft letter report incorporating comments on them will be submitted to the NRC.

- 78-56-R, Kaiser Special Study No. 3, Retrieval from Backfilled Regions
- NWTS-Repository No. 1-Waste Retrieval from Backfilled Regions, Stearns - Roger
- DOE/NWTS-80(2), Geologic Disposal of Radioactive Waste: Program Plan for Field Tests in Salt
- ONWI - 283, Engineering Feasibility Studies for Candidate Salt Domes: National Waste Terminal Storage Repository No. 1, Special Study No. 5
- ONWI-400, In Situ and Laboratory Geotechnical Test Results from borehole GD-1 in Southeast Utah
- ONWI-414, Repository Sealing Program Plan: Repository in Salt
- ONWI-405, Schematic Design for Penetration Seals for a Reference Repository in Bedded Salt.

7.0 MEETINGS/TRIPS DURING THE REPORTING PERIOD

A meeting was held with NRC staff at the NRC offices in Silver Spring, MD, on 29-30 June 1983. NRC's comments on the draft STP's for NNWSI were discussed and a kick-off meeting was held concerning Task Order 005 for the evaluation of the salt sites. A meeting report will be submitted during the next reporting period.

8.0 SCHEDULE AND COST PROJECTIONS

Schedule and cost projections for June 1983 are attached.

Respectfully submitted,

ENGINEERS INTERNATIONAL, INC.


Douglas F. Hambley
Project Engineer

DFH/ja