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10 September

David Tiktinsky - SS623
U.S. Nuclear Regulatory Commission
Division of Waste Management
Washington, D.C. 20555

"NRC Technical Assistance
for Design Reviews"
Contract No. NRC-02-85-002
FIN D1016

Dear David:

Enclosed is Progress Report No. 13 for the period 1-31 August 1986 on Task Orders No. 001, 002, and 003, Contract NRC-02-85-002. Also enclosed is the summary sheet for the August voucher. Please call me if you have any questions.

Sincerely,

A handwritten signature in cursive script that reads "Roger D. Hart".

Roger D. Hart
Program Manager

cc: J. Greeves, Engineering Branch
Office of the Director, NMSS
E. Wiggins, Division of Contracts
DWM Document Control Room

Encl.
rdh/ks

WM Record File *WM-RES*
D1016
ITASCA

WM Project *10, 11, 14*
Docket No. _____
PDR
LPDR *B, N, S*

Distribution:
Tiktinsky _____
Joan-Siebert _____
(Return to WM, 623-SS) _____
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ITASCA MONTHLY PROGRESS REPORT

Progress Report No. 13
NRC Technical Assistance
for Design Reviews

10 September 1986
Contract No. NRC-02-85-002

Reporting Period: 1 - 31 August 1986

1. INTRODUCTION

This progress report summarizes the work performed during August 1986 on NRC Contract No. NRC-02-85-002. Task Order No. 001 work consisted of attendance at a geostatistics meeting in Silver Spring and an Appendix 7 Site Visit to BWIP. For Task Order No. 002, work continued on the development of thermomechanical logic for FLAC and MUDEC. The draft paper on thermomechanical analyses for all high-level waste media was submitted and the in-situ testing point paper meeting was held. Approval for Task Order No. 003 was received.

2. ACTIVITIES DURING THE REPORTING PERIOD

- A. On 4 August, authorization was received to attend a three-day meeting (5-8 August 1986) in Silver Spring. The meeting topic was the applicability of geostatistics for high-level waste repositories (Task Order No. 001). Authorization was also received to attend a meeting on 14 August to discuss the in-situ testing at BWIP point paper (Task Order No. 002).
- B. Authorization was received on 4 August for the review of the following documents (Task Order No. 001):
- "Evaluation of Damaged Rock Zone Around Repository Openings" (S. Mitchell, Rockwell Computational Brief No. 573); and
 - "Geoengineering Design Parameters Workshop — Proceedings of a Workshop Held in Rapid City, South Dakota" (Rockwell SD-AWI-TI-299).
- C. On 4 August, the draft outline of the Rock Mechanics Seminar was sent to John Buckley (Task Order No. 002).

- D. From 5-7 August, Y. C. Kim attended a meeting in Silver Spring on the applicability of geo-statistics to high-level waste repositories. A trip report was submitted on 26 August (Task Order No. 001).
- E. Progress Report No. 12 (for July 1986) was mailed on 12 August.
- F. Copies of the draft report "A Review of Thermomechanical Analysis Methodologies for NNWSI, BWIP, and SRP" were delivered on 14 August 1986 (Task Order No. 002).
- G. On 14 August, a meeting to review the BWIP In-Situ Testing Point Paper was held in Silver Spring (Task Order No. 002).
- H. From 18-21 August, Itasca and NRC personnel visited the Lucky Friday Mine in Mullen, Idaho, and made an Appendix 7 Site Visit to BWIP in Hanford, Washington (Task Order No. 001).
- I. The cost revision to Task Order No. 003 was mailed to the NRC Division of Contracts on 19 August.
- J. On 19 August, the trip report for the Technical Quality Review Meeting for the Salt Environmental Assessment (held 21-24 July 1986) was submitted (Task Order No. 001).
- K. Authorization was received from E. J. Wiggins on 21 August for the performance of Task Order No. 3.
- L. On 21 August, notice of contract modifications for travel reimbursement rates was received from E. J. Wiggins.
- M. MUDEC Version 1.0 was sent to D. Tiktinsky on 27 August (Task Order No. 002).

3.0 RESULTS

A. Document reviews on-going in August:

"Draft SCP Chapter 2 for NNWSI"

Professional Labor: L. Lorig 1 hour

B. Other Works in Progress:

(1) Site Technical Position on In-Situ Testing at BWIP

Professional Labor:	C. Fairhurst	12 hours
	R. Hart	1 hour

(2) Verification of thermal analysis capabilities in FLAC.

Professional Labor:	R. Hart	1 hour
	M. Mack	45 hours

(3) Verification of thermal analysis capabilities in MUDEC

Professional Labor:	M. Mack	28 hours
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(4) Thermomechanical Point Paper

Professional Labor:	R. Hart	48 hours
	L. Lorig	8 hours
	M. Mack	7 hours
	K. Wahi	5 hours

4.0 QUALITY ASSURANCE

Correspondence, document review logs, and trip logs were monitored and updated. BWIP and SRP documents were received and catalogued in the reference library.

5.0 DIFFICULTIES

No specific difficulties were experienced during this reporting period.

6.0 ACTIVITIES PLANNED FOR THE NEXT REPORTING PERIOD

- A. The NNWSI In-Situ Test Paper outline will be submitted and a meeting held to review it (18 September).
- B. On 15-17 September, a rock mechanics analysis seminar will be held in Silver Spring.
- C. The final thermomechanical point paper is to be submitted pending receipt of comments from NRC.
- D. The testing of thermal logic in MUDEC is to be completed.

- E. An Appendix 7 Site Visit to ONWI is tentatively planned.
- F. A meeting is scheduled on 29 September to discuss the identification and prioritization of major underground system design components for NNWSI.

7.0 MEETINGS/TRIPS DURING THE REPORTING PERIOD

- A. Y. C. Kim participated in the meeting on the applicability of geostatistics meeting in Silver Spring (5-7 August)

Y. C. Kim 48 hours

- B. Attendance at the meeting held in Silver Spring on 14 August to discuss the point paper on in-situ testing at BWIP by Mark Board, Adrian Brown, and Roger Hart.

M. Board 16 hours
A. Brown (NWC) 16 hours*
R. Hart 8 hours

8.0 SCHEDULE AND COST PROJECTION

The billing summary for the August invoice is attached. Costs are well within the limit authorized for Task Orders No. 001, 002, and 003.

Based on discussions held in conjunction with the 14 August meeting, the following schedule was devised for Task Order No. 002 work.

Task 1 In-Situ Testing Point Papers

Subtask 1 (BWIP) — report presented 14 August 1986; final report due date to be determined by NRC

Subtask 2 (NNWSI) — outline to be discussed at NRC on 18 September; final paper presentation to be determined

Subtask 3 (SRP) — outline to be discussed at NRC; date to be determined after review of Salt Generic Test Plan (Golder Associates)

*not included on invoice; to be billed next month

Task 2 Thermomechanical Analysis

Subtask 1 (Thermomechanical Point Paper)

final report due 10 working days after receipt of NRC
comments

rock mechanics analysis meeting to be held 15-17 September

thermomechanical modeling meeting, date to be determined

Subtask 2 (Thermomechanical Modeling Capabilities)

FLAC completed
MUDEC to be completed by 26 September

Respectfully submitted,



Roger D. Hart
Program Manager
10 September 1986

Attach.
rdh/ks

VOUCHER

Payor's Name and Address

U.S. Nuclear Regulatory Commission
Division of Accounting
Office of the Controller
ATTENTION: GOV/COM Accounts Section
Washington, D.C. 20555

(a) Contract Number: NRC-02-85-002
(b) Title of Project: Technical Assistance
for Design Reviews of High-Level Waste
Geologic Repositories
(c) Voucher Number: 013-86-087
(d) Date of Voucher: September 10, 1986
(e) Contract Amount: \$1,312,270.80
(f) Fixed Fee: \$ 104,981.66

Payee's Name and Address

Itasca Consulting Group, Inc.
P.O. Box 14806
Minneapolis, Minnesota 55414

Individual to contact:

John J. Markham (612-623-9599)

(g) This voucher represents reimburseable costs from August 1, thru August 31, 1986

	<u>AMOUNT BILLED</u>	
	<u>(k) Current Period</u>	<u>(l) Inception to Date</u>
(h) <u>DIRECT COSTS</u>		
(1) Direct Labor	\$ 6,615.58	\$ 47,668.21
(2) Materials, Supplies and Noncapitalized Equipment	-0-	-0-
(3) Consultants	3,653.08	62,690.45
(4) Travel - Domestic	1,462.60	11,394.96
(5) Subcontract	-0-	21,947.44
(6) Other Costs	408.09	3,028.42
TOTAL DIRECT COSTS	<u>\$ 12,139.35</u>	<u>\$ 146,729.48</u>
(i) <u>INDIRECT COSTS</u>		
G & A Expense 106% of Cost Element (1)	\$ 7,012.51	\$ 50,528.32
TOTAL DIRECT AND INDIRECT COSTS	<u>19,151.86</u>	<u>197,257.80</u>
(j) <u>FIXED-FEE EARNED</u>	<u>1,532.15</u>	<u>15,780.61</u>
(m) <u>TOTAL AMOUNTS CLAIMED</u>	<u>20,684.01</u>	<u>213,038.41</u>
(n) <u>ADJUSTMENTS</u>	-0-	-0-
(o) <u>GRAND TOTALS</u>	<u>\$ 20,684.01</u>	<u>\$ 213,038.41</u>

SUPPORTING INFORMATION

**TASK ORDER-001
TASK 2 DOCUMENT REVIEWS**

(h) DIRECT COSTS

(1) Direct Labor

Labor Category -----	Name -----	Hours Billed -----	Rate -----	Total -----
Admin. Manager	J. Markham	6.0	\$24.04	\$144.24
Sr. Engineer	L. Lorig	5.0	\$19.95	\$99.75
Secretarial	L. Gaarder	1.0	\$8.25	\$8.25
	K. Sikora	2.5	\$9.28	\$23.20
QA	K. Sikora	1.0	\$9.28	\$9.28

Total Direct Labor				\$284.72

(6) Other Costs

Copies	\$42.20 *
Telephone	\$15.38 *
Postage	\$1.12 *

	\$58.70

TOTAL DIRECT COSTS	\$343.42

(i) INDIRECT COSTS

G & A Expense (1.06 x Direct Labor) \$301.80

TOTAL DIRECT AND INDIRECT COSTS **\$645.22**

(j) FIXED FEE EARNED

\$51.62

(m) TOTAL AMOUNT CLAIMED
=====

\$696.84
=====

* Invoice Attached

SUPPORTING INFORMATION

**TASK ORDER-001
TASK 4 TECHNICAL MEETINGS**

(h) DIRECT COSTS

(1) Direct Labor		Hours		
Labor Category	Name	Billed	Rate	Total

Prog. Manager	R. Hart	7.0	\$22.12	\$154.84
Admin. Manager	L. Gaarder	2.0	\$8.25	\$16.50
	J. Markham	6.0	\$24.04	\$144.24
Sr. Engineer	M. Board	32.0	\$22.02	\$704.64
Secretarial	L. Gaarder	3.0	\$8.25	\$24.75
	K. Sikora	6.0	\$9.28	\$55.68
QA	K. Sikora	1.5	\$9.28	\$13.92

Total Direct Labor				\$1,114.57

(3) Consultants				
Labor				
	Y. C. Kim	48.0	\$55.00	\$2,640.00 *

Total Consultant Labor				\$2,640.00

Expenses/Travel

Date				

From	To	Traveller	Costs	
-----	--	-----	-----	
8/5/86	8/7/86	Y.C. Kim	1) Airfare	\$400.00 *
	Destination		2) Hotel	\$146.32 *
	-----		3) Meals	\$128.36 *
From	To	Purpose	4) Transportation	\$50.00 *
-----	--	-----		
Tucson	Wash. D.C.	Geostatistics review meeting		-----
				\$724.68

Total Consultant Travel	\$724.68
Total Consultant Labor & Expenses	\$3,364.68

SUPPORTING INFORMATION

**TASK ORDER-001
TASK 4 TECHNICAL MEETINGS**

(4) Travel

Date		Traveller	Costs	
From	To			
8/18/86	8/22/86	M. Board	1) Airfare	\$581.00 *
	Destination		2) Hotel	\$100.06 *
			3) Meals	\$80.51 *
			4) Transportation	\$41.00 *
			5) Telephone	\$5.43 *
Mpls, MN	Richland, WA	BWIP Appendix VII Site Visit		----- \$808.00
Total Itasca Travel				\$808.00

(6) Other Costs

Copies	\$36.40 *	
Telephone	\$49.14 *	
Postage	\$7.89 *	
	-----	\$93.43

TOTAL DIRECT COSTS

\$5,380.68

(i) INDIRECT COSTS

G & A Expense (1.06 x Direct Labor)

\$1,181.44

TOTAL DIRECT AND INDIRECT COSTS

\$6,562.12

(j) FIXED FEE EARNED

\$524.97

(m) TOTAL AMOUNT CLAIMED

\$7,087.09

*** Invoice Attached**

SUPPORTING INFORMATION

TASK ORDER-002

TASK 1 SITE SPECIFIC IN-SITU POINT PAPERS

(h) DIRECT COSTS

(1) Direct Labor		Hours			
Labor Category	Name	Billed	Rate		Total

Prog. Manager	R. Hart	9.0	\$22.12		\$199.08
Admin. Manager	L. Gaarder	2.0	\$8.25		\$16.50
	J. Markham	4.0	\$24.04		\$96.16
Sr. Engineer	L. Lorig	28.5	\$19.95		\$568.58
	M. Board	16.0	\$22.02		\$352.32
Sr. Reviewer	C. Fairhurst	12.0	\$52.50		\$630.00
Secretarial	L. Gaarder	7.5	\$8.25		\$61.88
	K. Sikora	2.0	\$9.28		\$18.56
QA	K. Sikora	1.5	\$9.28		\$13.92

Total Direct Labor					\$1,957.00

(4) Travel

From	Date	Traveller	Costs	
-----	-----	-----	-----	
8/13/86	8/15/86	M. Board	1) Airfare	\$288.00 *
	Destination		2) Hotel	\$143.00 *
	-----		3) Meals	\$67.20 *
From	To	Purpose	4) Transportation	\$137.75 *
-----	-----	-----	5) Phone	\$18.65 *
Mpls, MN	Wash, D.C.	BWIP In Situ Paper Review		-----
				\$654.60
Total Itasca Travel				\$654.60

(6) Other Costs

Copies	\$74.10 *	
Telephone	\$17.11 *	
Postage	\$0.78 *	

		\$91.99

TOTAL DIRECT COSTS		\$2,703.59

(i) INDIRECT COSTS

G & A Expense (1.06 x Direct Labor) \$2,074.42

TOTAL DIRECT AND INDIRECT COSTS **\$4,778.01**

SUPPORTING INFORMATION

TASK ORDER-002

TASK 1 SITE SPECIFIC IN-SITU POINT PAPERS

(j) FIXED FEE EARNED

\$382.24

(m) TOTAL AMOUNT CLAIMED

\$5,160.25

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* Invoice Attached

SUPPORTING INFORMATION

TASK ORDER-002
TASK 2 THERMOMECHANICAL ANALYSIS

(h) DIRECT COSTS

(1) Direct Labor		Hours		Total
Labor Category	Name	Billed	Rate	
-----	----	-----	-----	-----
Prog. Manager	R. Hart	1.0	\$22.12	\$22.12
Admin. Manager	L. Gaarder	3.0	\$8.25	\$24.75
	J. Markham	6.0	\$24.04	\$144.24
Sr. Engineer	M. Board	4.0	\$22.02	\$88.08
	R. Hart	48.0	\$22.12	\$1,061.76
	L. Lorig	4.0	\$19.95	\$79.80
Asst. Engineer	M. Mack	80.0	\$12.00	\$960.00
Secretarial	L. Gaarder	30.0	\$8.25	\$247.50
	K. Sikora	65.5	\$9.28	\$607.84
QA	K. Sikora	2.5	\$9.28	\$23.20

Total Direct Labor				\$3,259.29

(3) Consultants Labor				
	K. Wahi	5.0	\$57.68	\$288.40 *

Total Consultant Labor				\$288.40
Total Consultant Labor & Expenses				\$288.40

(6) Other Costs				
	Copies		\$119.47 *	
	Telephone		\$42.36 *	
	Postage		\$2.14 *	

				\$163.97

TOTAL DIRECT COSTS				\$3,711.66

(i) INDIRECT COSTS				
	G & A Expense (1.06 x Direct Labor)			\$3,454.85

TOTAL DIRECT AND INDIRECT COSTS **\$7,166.51**

(j) FIXED FEE EARNED **\$573.32**

(m) TOTAL AMOUNT CLAIMED **\$7,739.83**

* Invoice attached

Sep-86
 TASK ORDER 001
 TASK 2

TASK LABOR SUMMARY

REVIEW OF DOCUMENTS

LABOR CATEGORY	BUDGETED HRS	TOTAL HRS BILLED	HRS REMAINING
PROGRAM MGR	96	33	63
ADMIN MGR	120	78	42
SR. ENGINEER	980	497.5	482.5
ASST. ENGINEER	300	0	300
SR. REVIEWER	48	0	48
QA	48	16	32
SECRETARIAL	200	224.5	-24.5
TOTAL ITASCA	1792	849	943
CONSULTANT			
J. DAEMEN	168	156	12
I. FARMER	88	80	8
ASST. ENGINEER	208	0	208
R. BARNES	0	20	-20
K. WAHI	0	74	-74
R. RAJARAM	0	50	-50
TOTAL CONSULT	464	380	84
SUBCONTRACTOR-NWC			
PRIN. INVEST.	256	68	188
SR ENGINEER	144	0	144
ENGINEER/GEOL	208	31	177
DRAFTING	0	2	-2
CLERICAL	100	35	65
TOTAL SUBCONT	708	136	572
TOTAL TASK	2964	1365	1599

Sep-86
 TASK ORDER 001
 TASK 4

TASK LABOR SUMMARY

TECHNICAL MEETINGS

LABOR CATEGORY	BUDGETED HRS	TOTAL HRS BILLED	HRS REMAINING
PROGRAM MGR	62	37	25
ADMIN MGR	76	69.5	6.5
PRIN. INVEST.	588	33	555
SR. ENGINEER	1108	316	792
SR REVIEW	0	24	-24
QA	32	11.5	20.5
SECRETARIAL	148	82.5	65.5
TOTAL ITASCA	2014	573.5	1440.5
CONSULTANT			
J. DAEMEN	588	152	436
I. FARMER	104	61	43
K. WAHI	0	109	-109
R. RAJARAM	0	30	-30
Y. KIM	0	80	-80
TOTAL CONSULT	692	432	260
SUBCONTRACTOR-NWC			
PRIN. INVEST.	588	147	441
CLERICAL	44	28	16
TOTAL SUBCONT	632	175	457
TASK TOTAL	3338	1180.5	2157.5
TASK ORDER TOT	6545	2570	3975

Sep-86
 TASK ORDER 002
 TASK 1

TASK LABOR SUMMARY

SITE SPECIFIC IN-SITU TESTING POINT PAPERS

LABOR CATEGORY	BUDGETED HRS	TOTAL HRS BILLED	HRS REMAINING
PROGRAM MGR	72	11	61
ADMIN MGR	96	24.5	71.5
SR. ENGINEER	872	397.5	474.5
SR REVIEW	12	12	0
QA	48	4.5	43.5
SECRETARIAL	126	56	70
	-----	-----	-----
TOTAL ITASCA	1226	505.5	720.5
CONSULTANT			

J. DAEMEN	72	0	72
I. FARMER	40	0	40
K. WAHI	72	0	72
	-----	-----	-----
TOTAL CONSULT	184	0	184
SUBCONTRACTOR-NWC			

PRIN. INVEST.	72	8	64
CLERICAL	8	0	8
	-----	-----	-----
TOTAL SUBCONT	80	8	72
	=====	=====	=====
TASK TOTAL	1306	513.5	792.5

Sep-86
TASK ORDER 002
TASK 2

TASK LABOR SUMMARY

THERMOMECHANICAL ANALYSES

LABOR CATEGORY	BUDGETED HRS	TOTAL HRS BILLED	HRS REMAINING
PROGRAM MGR	54	10	44
ADMIN MGR	72	21.5	50.5
SR. ENGINEER	592	262	330
ASST. ENGINEER	320	273	47
SR REVIEW	88	0	88
QA	16	4.5	11.5
SECRETARIAL	112	155	-43
TOTAL ITASCA	1254	726	528
CONSULTANT			
K. WAHI	80	85	-5
TOTAL CONSULT	80	85	-5
TASK TOTAL	1334	811	523
TASK ORDER TOT	2640	1324.5	1315.5