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WM Project 10, 11, 16
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Tiktinsky *loan-ticket
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12 August 1986

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

Sincerely,


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

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ITASCA MONTHLY PROGRESS REPORT

Progress Report No. 12
NRC Technical Assistance
for Design Reviews

12 August 1986
Contract No. NRC-02-85-002

Reporting Period: 1 - 31 July 1986

1. INTRODUCTION

This progress report summarizes the work performed during July 1986 on NRC Contract No. NRC-02-85-002. Task Order No. 001 work consisted of document reviews for BWIP and NNWSI and a QA technical review of the Final Environmental Assessment for SRP. For Task Order No. 002, work continued on the Site Technical Position on In-Situ Testing at BWIP, on the development of thermo-mechanical logic for FLAC, and on the preparation of a paper on thermo-mechanical analyses for all high-level waste media. Additionally, a one-week meeting on geomechanics was held in Minneapolis. A proposal for Task Order No. 003 was submitted in July.

2. ACTIVITIES DURING THE REPORTING PERIOD

- A. J. Daemen participated in the NNWSI FEA Review held in Silver Spring on 1-3 July.
- B. On 14 June, a trip report was submitted for Dr. Y.C. Kim's visit to the 27th U.S. Symposium on Rock Mechanics held in Tuscaloosa, Alabama, on 23-25 June.
- C. From 14-18 July, D. Tiktinsky and J. Buckley attended a meeting on geomechanics modeling at the Itasca offices in Minneapolis.
- D. Trip reports were submitted on 15 July for the QA technical review meetings of the Deaf Smith and NNWSI FEAs (attended by J. Daemen) and the BWIP FEA (attended by R. Rajaram).
- E. A draft copy of the point paper "In-Situ Testing at the Hanford Site" was delivered to D. Tiktinsky on 18 July.
- F. On 18 July, Itasca submitted a trip report for the Richton Dome Technical Review Meeting attended by I. Farmer and K. Wahi, 23-27 June, in Silver Spring.

ITASCA

- G. On 21-24 July, A. Brown participated in the QA review meeting for the SRP Final Environmental Assessments. The meeting was held in Silver Spring.
- H. The document review of "The State of In-Situ Stresses Determined by Hydraulic Fracturing of the Hanford Site" by Kim et al (RHO-BWI-ST-73P) was transmitted on 25 July.
- I. On 25 July, Itasca received a request for proposal for Task Order No. 003. The proposal was submitted on 31 July.
- J. The document review of "Final Report: G-Tunnel Heated Block Experiment" by Zimmerman et al (SAND84-2620) was transmitted on 29 July.

3.0 RESULTS

A. Document reviews completed and submitted in July:

- (1) "The State of In-Situ Stresses Determined by Hydraulic Fracturing of the Hanford Site" by Kim et al (RHO-BWI-ST-73P)

Professional Labor:	M. Board	24 hours
	R. Hart	1 hour

- (2) "Final Report: G-Tunnel Heated Block Experiment" by Zimmerman et al (SAND84-2620)

Professional Labor:	J. Daemen	8 hours
	R. Hart	1 hour
	L. Lorig	14 hours

- (3) QA Review of Final Environmental Assessments for SRP

Professional Labor:	B. Basse (NWC)	2 hours
	A. Brown (NWC)	38 hours

B. Document reviews initiated in June

"Evaluation of Damaged Rock Zone Around Repository Openings" by S. Mitchell (Rockwell Computational Brief No. 573)

Professional Labor: M. Board 24 hours

C. Other Works in Progress

- (1) Site Technical Position on In-Situ Testing at BWIP (draft report submitted on 18 July)

Professional Labor: M. Board 68 hours
A. Brown (NWC) 8 hours

- (2) Verification of thermal analysis capabilities in FLAC

Professional Labor: M. Mack 26 hours

- (3) Thermal-mechanical Point Paper

Professional Labor: R. Hart 45 hours
L. Lorig 86 hours
M. Mack 54 hours
K. Wahi 75 hours

4.0 QUALITY ASSURANCE

Correspondence, document review logs, and trip logs were monitored and updated. BWIP 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 draft thermal-mechanical paper will be submitted.
- B. Y. C. Kim will attend a three-day meeting in Silver Spring, 5-7 August, on the applicability of geostatics for a high-level waste repository.
- C. On 14 August, two Itasca engineers will attend a meeting in Silver Spring to discuss the final point paper prepared by Itasca on in-situ testing at BWIP.
- D. An Appendix 7 site visit to BWIP plus an underground visit to the Lucky Friday Mine in Mullen, Idaho, is planned for 18-22 August.
- E. Two meetings are tentatively scheduled in Silver Spring, 27 and 28 August, to discuss the outlines for the in-situ testing papers for tuff and salt.

7.0 MEETINGS/TRIPS DURING THE REPORTING PERIOD

- A. J. Daemen participated in the NNWSI FEA Review in Silver Spring, 1-3 July.
- B. Adrian Brown, of NWC, participated in the QA review of the SRP FEA in Silver Spring from 21 to 24 July.

J. Daemen 24 hours

A. Brown 46 hours

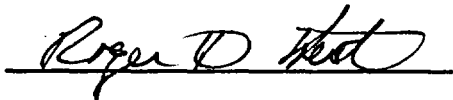
- B. A meeting on geomechanics modeling was held at Itasca offices in Minneapolis from 14 to 18 July. D. Tiktinsky and J. Buckley represented NRC at this meeting. Itasca professional labor for meeting preparation and attendance is as follows:

M. Board 10 hours
R. Hart 6 hours
L. Lorig 30 hours

8.0 SCHEDULE AND COST PROJECTION

The billing summary sheet for the July invoice is attached. Costs are well within the limit authorized for both Task Orders No. 001 and No. 002. Because of the schedule disruption caused by FEA reviews, new project milestones were discussed and agreed upon with D. Tiktinsky during his visit to Minneapolis. The revised schedule is attached.

Respectfully submitted,

A handwritten signature in cursive script, appearing to read "Roger D. Hart", is written over a horizontal line.

Roger D. Hart
Program Manager
12 August 1986

Attach.
rdh/ks

REVISED SCHEDULE FOR TASK ORDER NO. 002

NRC CONTRACT NO. 02-85-002

Task 1 (Site-Specific In-Situ Testing Point Papers)

Subtask 1 (BWIP)

Final Point Paper Presented at NRC

14 August 1986

Subtask 2 (NNWSI)

Outline discussed at NRC

27 August 1986

Final Point Paper Presented at NRC

30 September 1986

Subtask 3 (SRP)

Outline discussed at NRC

28 August 1986

Final Point Paper Presented at NRC

15 October 1986

Task 2 (Thermomechanical Analysis)

Subtask 1 (Thermomechanical Point Paper)

Point Paper

Draft

Final

8 August 1986

10 working days after
receiving NRC comments

Meetings

Geomechanical Modeling Meeting at Itasca

14-18 July 1986

Rock Mechanics Analysis Meeting at NRC

15-19 September 1986

Thermomechanical Modeling Meeting-Itasca

29 September - 3 October 1986

Subtask 2 (Thermomechanical Modeling Capabilities)

FLAC/MUDEC Code Review and Verification

26 September 1986

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

Payee's Name and Address

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

(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: 012-86-079
(d) Date of Voucher: August 12, 1986
(e) Contract Amount: \$1,312,270.80
(f) Fixed Fee: \$ 104,981.66

Individual to contact:

John J. Markham (612-623-9599)

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

AMOUNT BILLED

	(k) <u>Current Period</u>	(l) <u>Inception to Date</u>
(h) <u>DIRECT COSTS</u>		
(1) Direct Labor	\$ 9,531.32	\$ 41,052.63
(2) Materials, Supplies and Noncapitalized Equipment	-	-
(3) Consultants	6,174.00	59,037.37
(4) Travel - Domestic	199.19	10,004.56
(5) Subcontract	8,617.80	21,947.44
(6) Other Costs	450.31	2,620.33
TOTAL DIRECT COSTS	\$ 24,972.62	\$ 134,662.33
(i) <u>INDIRECT COSTS</u>		
G & A Expense 106% of Cost Element (1)	\$ 10,103.20	\$ 43,515.81
TOTAL DIRECT AND INDIRECT COSTS	35,075.82	178,178.14
(j) FIXED-FEE EARNED	2,806.06	14,254.23
(m) TOTAL AMOUNTS CLAIMED	37,881.88	192,432.37
(n) ADJUSTMENTS	-	-
(o) GRAND TOTALS	\$ 37,881.88	\$ 192,432.37

SUPPORTING INFORMATION

TASK ORDER-001
TASK DOCUMENT REVIEWS
(h) DIRECT COSTS

(1) Direct Labor		Hours		
Labor Category	Name	Billed	Rate	Total
Prog. Manager	R. Hart	5.0	\$22.12	\$110.60
Admin. Manager	L. Gaarder	1.5	\$8.25	\$12.38
	J. Markham	7.0	\$24.04	\$168.28
Sr. Engineer	R. Hart	2.0	\$22.12	\$44.24
	L. Lorig	14.0	\$19.95	\$279.30
	M. Board	48.0	\$22.02	\$1,056.96
Secretarial	L. Gaarder	8.5	\$8.25	\$70.13
	K. Sikora	20.0	\$9.28	\$185.60
QA	K. Sikora	1.0	\$9.28	\$9.28
Total Direct Labor				\$1,936.77
(3) Consultants Labor				
	J. Daemen	8.0	\$57.75	\$462.00 *
Total Consultant Labor				\$462.00
Total Consultant Labor & Expenses				\$462.00
(5) Subcontract				
Nuclear Waste Consultants, Inc.			\$132.19 *	
			\$661.98 *	
			\$2,886.68 *	
				\$3,680.85
(6) Other Costs				
	Copies	\$109.84 *		
	Telephone	\$22.25 *		
	Postage	\$15.09 *		
				\$147.18
TOTAL DIRECT COSTS				\$6,226.80
(i) INDIRECT COSTS				
G & A Expense (1.06 x Direct Labor)				\$2,052.98
TOTAL DIRECT AND INDIRECT COSTS				\$8,279.78
(j) FIXED FEE EARNED				\$662.38
(m) TOTAL AMOUNT CLAIMED				\$8,942.16

* Invoice Attached

SUPPORTING INFORMATION

TASK ORDER-001
TASK 4 TECHNICAL MEETINGS
(h) DIRECT COSTS

(1) Direct Labor		Hours Billed	Rate	Total
Labor Category	Name			
Prog. Manager	R. Hart	2.0	\$22.12	\$44.24
Admin. Manager	L. Gaarder	18.0	\$8.25	\$148.50
	J. Markham	3.0	\$24.04	\$72.12
Secretarial	K. Sikora	7.0	\$9.28	\$64.96
	L. Gaarder	9.5	\$8.25	\$78.38
QA	K. Sikora	0.5	\$9.28	\$4.64

Total Direct Labor				\$412.84

(3) Consultants Labor				
	J. Daemen	24.0	\$57.75	\$1,386.00 *

Total Consultant Labor				\$1,386.00
Total Consultant Labor & Expenses				\$1,386.00

(4) Travel

From	To	Traveller	Costs	
6/15/86	6/18/86#	M. Board	1) Hotel	\$43.20 *
	Destination		2) Cab	\$32.00 *
			3) Car Rental	\$115.99 *
			4) Mileage	\$8.00 *
From	To	Purpose		
Mpls	Wash.D.C.	FEA Review		

Total Itasca Travel				\$199.19

(5) Subcontract		
Nuclear Waste Consultants, Inc.		\$4,343.93

(6) Other Costs		
Copies	\$61.25 *	
Telephone	\$5.75 *	
Postage	\$5.85 *	

		\$72.85

TOTAL DIRECT COSTS	\$6,414.81
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(1) INDIRECT COSTS

Expenses not previously claimed.

SUPPORTING INFORMATION

TASK ORDER-001

TASK 4 TECHNICAL MEETINGS

----- G & A Expense (1.06 x Direct Labor)	\$437.61 -----
 TOTAL DIRECT AND INDIRECT COSTS	 \$6,852.42
(j) FIXED FEE EARNED -----	\$548.19 -----
(m) TOTAL AMOUNT CLAIMED =====	\$7,400.61 =====

*** 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
Admin. Manager	L. Gaarder	2.5	\$8.25		\$20.63
	J. Markham	5.0	\$24.04		\$120.20
Sr. Engineer	M. Board	68.0	\$22.02		\$1,497.36
Secretarial	L. Gaarder	1.0	\$8.25		\$8.25
	K. Sikora	20.0	\$9.28		\$185.60
QA	K. Sikora	0.5	\$9.28		\$4.64

Total Direct Labor	\$1,836.68
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(5) Subcontract	
Nuclear Waste Consultants, Inc.	\$593.02 *

(6) Other Costs	
Copies	\$55.97 *
Telephone	\$14.88 *
Postage	\$25.19 *

	\$96.04

TOTAL DIRECT COSTS	\$2,525.74
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(i) INDIRECT COSTS	
G & A Expense (1.06 x Direct Labor)	\$1,946.88

TOTAL DIRECT AND INDIRECT COSTS	\$4,472.62
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(j) FIXED FEE EARNED	\$357.81
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(m) TOTAL AMOUNT CLAIMED	\$4,830.43
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* Invoice Attached

SUPPORTING INFORMATION

TASK ORDER-002

TASK 2 THERMOMECHANICAL ANALYSIS

(h) DIRECT COSTS

(1) Direct Labor		Hours			
Labor Category	Name	Billed	Rate		Total
Prog. Manager	R. Hart	2.0	\$22.12		\$44.24
Admin. Manager	L. Gaarder	2.5	\$8.25		\$20.63
	J. Markham	7.0	\$24.04		\$168.28
Sr. Engineer	L. Lorig	116.0	\$19.95		\$2,314.20
	M. Board	10.0	\$22.02		\$220.20
	R. Hart	49.0	\$22.12		\$1,083.88
Asst. Engineer	M. Mack	80.0	\$12.00		\$960.00
Secretarial	K. Sikora	57.0	\$9.28		\$528.96
QA	K. Sikora	0.5	\$9.28		\$4.64
Total Direct Labor					\$5,345.03

(3) Consultants

Labor	K. Wahi	75.0	\$57.68	\$4,326.00 *
Total Consultant Labor				\$4,326.00

Total Consultant Labor & Expenses	\$4,326.00
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(6) Other Costs

Telephone	\$52.95 *
Copies	\$79.10 *
Postage	\$2.19 *

\$134.24

TOTAL DIRECT COSTS

\$9,805.27

(1) INDIRECT COSTS

G & A Expense (1.06 x Direct Labor)

\$5,665.73

TOTAL DIRECT AND INDIRECT COSTS

\$15,471.00

(j) FIXED FEE EARNED

\$1,237.68

(m) TOTAL AMOUNT CLAIMED

\$16,708.68

* Invoice Attached

Aug-86
 TASK ORDER 001
 TASK 4

TASK LABOR SUMMARY

TECHNICAL MEETINGS

LABOR CATEGORY	BUDGETED HRS	TOTAL HRS BILLED	HRS REMAINING
PROGRAM MGR	62	30	32
ADMIN MGR	76	61.5	14.5
PRIN. INVEST.	588	33	555
SR. ENGINEER	1108	284	824
SR REVIEW	0	24	-24
QA	32	10	22
SECRETARIAL	148	73.5	74.5
TOTAL ITASCA	2014	516	1498
CONSULTANT			
J. DAEMEN	588	152	436
I. FARMER	104	61	43
K. WAHI	0	109	-109
R. RAJARAM	0	30	-30
Y. KIM	0	32	-32
TOTAL CONSULT	692	384	308
SUBCONTRACTOR-NWC			
PRIN. INVEST.	588	147	441
CLERICAL	44	28	16
TOTAL SUBCONT	632	175	457
TASK TOTAL	3338	1075	2263
TASK ORDER TOT	6545	2449	4096

Aug-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	72	48
SR. ENGINEER	980	492.5	487.5
ASST. ENGINEER	300	0	300
SR. REVIEWER	48	0	48
QA	48	15	33
SECRETARIAL	200	221	-21
TOTAL ITASCA	1792	833.5	958.5
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	1349.5	1614.5

Aug-86

TASK LABOR SUMMARY

TASK ORDER 002

TASK 1 SITE SPECIFIC IN-SITU TESTING POINT PAPERS

SUBTASK 1 BWIP

LABOR CATEGORY	BUDGETED HRS	TOTAL HRS BILLED	HRS REMAINING
PROGRAM MGR	24	2	22
ADMIN MGR	32	18.5	13.5
SR. ENGINEER	304	353	-49
SR REVIEW	4	0	4
QA	16	3	13
SECRETARIAL	42	46.5	-4.5
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TOTAL ITASCA	422	423	-1
SUBCONTRACTOR-NWC			

PRIN. INVEST.	72	8	64
CLERICAL	8	0	8
	-----	-----	-----
TOTAL SUBCONT	80	8	72
	=====	=====	=====
SUBTASK TOTAL	502	431	71

Aug-86
TASK ORDER 002
TASK 2

TASK LABOR SUMMARY

THERMOMECHANICAL ANALYSES

LABOR CATEGORY	BUDGETED HRS	TOTAL HRS BILLED	HRS REMAINING
PROGRAM MGR	54	5	49
ADMIN MGR	72	12.5	59.5
SR. ENGINEER	592	206	386
ASST. ENGINEER	320	193	127
SR REVIEW	88	0	88
QA	16	2	14
SECRETARIAL	112	59.5	52.5
	-----	-----	-----
TOTAL ITASCA	1254	478	776
CONSULTANT			

K. WAHI	80	80	0
	-----	-----	-----
TOTAL CONSULT	80	80	0
	=====	=====	=====
TASK TOTAL	1334	558	776