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17 February 1987

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. 18 for the period 1-31 January 1987 on Task Orders No. 001, 002, 003 and 004, Contract NRC-02-85-002. Also enclosed is the summary sheet for the January voucher. This invoice reflects the changes in Itasca labor rates that became effective on 1 January 1987. Please call me if you have any questions.

Sincerely,

*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

8704230686 870217  
PDR WMRES EECITAS  
D-1016 PDR

WM-RES  
WM Record File  
D1016  
Itasca

WM Project 10, 11, 16  
Docket No. \_\_\_\_\_  
PDR ✓  
XPDR ✓ (B, N, S)

Distribution:  
\* Tiktinsky \* Joan - ticket  
(Return to WM, 623-SS) SAC

## ITASCA MONTHLY PROGRESS REPORT

Progress Report No. 18  
NRC Technical Assistance  
for Design Reviews

17 February 1987  
Contract No. NRC-02-85-002

Reporting Period: 1 - 31 January 1987

### 1. INTRODUCTION

This progress report summarizes the work performed during January 1987 on NRC Contract No. NRC-02-85-002. During January, work progressed on Task Orders No. 001, 002, 003, and 004.

### 2.0 ACTIVITIES DURING THE REPORTING PERIOD

- A. The draft report "Evaluation of Rockburst Potential at the Hanford Site" was submitted on 9 January (Task Order No. 003).
- B. From 12 to 15 January, M. Mack and R. Hart attended a seminar on thermomechanical modeling in Silver Spring. The thermal versions of FLAC and MUDEC were delivered at the same time. The trip report was submitted on 26 January (Task Order No. 002).
- C. Progress Report No. 17 and Invoice No. 017-87-003 were submitted on 19 January.

### 3.0 RESULTS

- A. Documents Submitted in January:

Draft "Evaluation of Rockburst Potential at the Hanford Site"  
(Task Order No. 003)

Professional Labor:            M. Board            32 hours

B. Work Completed in January:

The evaluations of the thermal versions of FLAC and MUDEC were completed in January and the codes delivered to the NRC (Task Order No. 002).

Professional Labor:	R. Hart	2 hours
	M. Mack	30 hours

C. Works in Progress:

- (1) incorporation of NRC comments into final thermomechanical paper (Task Order No. 002)

Professional Labor:	R. Hart	10 hours
	L. Lorig	3 hours

- (2) review and analysis of in-situ testing at BWIP (Task Order No. 001)

Professional Labor	M. Board	50 hours
	A. Brown	1 hour

- (3) site technical position on in-situ testing at NNWSI (Task Order No. 002)

Professional Labor	R. Hart	2 hours
	L. Lorig	2.5 hours

- (4) identification and prioritization of major underground system components for NNWSI (Task Order No. 003)

Professional Labor	L. Lorig	51.5 hours
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- (5) incorporation of creep model into FLAC (Task Order No. 004)

Professional Labor	P. Cundall	56 hours
	M. Mack	35 hours

4.0 QUALITY ASSURANCE

- A. Correspondence logs were monitored and updated. BWIP, NNWSI and SRP documents were received and catalogued.

- B. QA reviews for the following documents were completed and approved:

<u>Document No.</u>	<u>Reviewer</u>	<u>QA Reviewer</u>
001-02-5	R. Barnes & M. Board	A. Brown
001-02-6	R. Barnes & M. Board	A. Brown
001-02-7	R. Barnes & M. Board	A. Brown
001-02-8	R. Barnes & M. Board	A. Brown
001-02-16	M. Board	A. Brown
001-02-17	M. Board	A. Brown
001-02-18	A. Brown	M. Board
001-02-19	A. Brown	M. Board
001-02-21	M. Board	A. Brown
001-02-22	M. Board	A. Brown
001-02-23	M. Board	A. Brown

The signed document review cover sheets are being retained in the Itasca project files.

#### 5.0 DIFFICULTIES

The report on in-situ testing at BWIP required more effort than anticipated and, consequently, was not completed as planned. This report will be completed and submitted in February.

#### 6.0 ACTIVITIES PLANNED FOR THE NEXT REPORTING PERIOD

- A. The following reports will be completed and submitted in February:
- (1) the final technical position report on in-situ testing at BWIP (Task Order No. 002), including analysis of in-situ testing (Task Order No. 001); and
  - (2) outline of site technical position on in-situ testing in salt (Task Order No. 002).
- B. Work will continue on preparation of the following tasks:
- (1) incorporation of NRC comments into final thermomechanical paper (Task Order No. 002);
  - (2) identification and prioritization of major underground system components for NNWSI (Task No.003);

(3) incorporation of creep model into FLAC and MUDEC (Task Order No. 004).

C. L. Lorig and J. Daemen are tentatively scheduled to make an Appendix VII site visit to Las Vegas beginning the last week in February. Official notification has not been received.

#### 7.0 MEETINGS/TRIPS DURING THE REPORTING PERIOD

M. Mack and R. Hart attended a seminar on thermomechanical modeling in Silver Spring, 12-15 January (Task Order No. 002)

R. Hart	34 hours
M. Mack	34 hours

#### 8.0 SCHEDULE AND COST PROJECTION

The billing summary for the January invoice is attached. Costs are well within the limit authorized for all four task orders.

The Task Labor Summary for Task Order No. 002 indicates that Task 2 (Thermomechanical Analysis) is currently 21 hours over the estimated labor amount. However, because of the labor mix in which more assistant level labor was utilized, this task remains well within the budget. There is sufficient money available in the task to complete the final thermomechanical paper and to document the thermal capabilities of FLAC and MUDEC.

Respectfully submitted,



Roger D. Hart  
Program Manager  
17 February 1987

Attach.  
rdh/ks

Feb-87  
 TASK ORDER 001  
 TASK 2

TASK LABOR SUMMARY

REVIEW OF DOCUMENTS

LABOR CATEGORY	BUDGETED HRS	TOTAL HRS BILLED	HRS REMAINING
PROGRAM MGR	96	40	56
ADMIN MGR	120	101	19
SR. ENGINEER	980	693.5	286.5
ASST. ENGINEER	300	3	297
SR. REVIEWER	48	0	48
QA	48	17	31
SECRETARIAL	200	262.5	-62.5
	-----	-----	-----
TOTAL ITASCA	1792	1117	675
CONSULTANT			
	-----		
J. DAEMEN	168	172	-4
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	396	68
SUBCONTRACTOR-NWC			
	-----		
PRIN. INVEST.	256	91	165
SR ENGINEER	144	0	144
ENGINEER/GEOL	208	31.5	176.5
DRAFTING	0	2	-2
CLERICAL	100	62.5	37.5
	-----	-----	-----
TOTAL SUBCONT	708	187	521
	=====	=====	=====
TOTAL TASK	2964	1700	1264

Feb-87

## TASK LABOR SUMMARY

TASK ORDER 002

TASK 1

SITE SPECIFIC IN-SITU TESTING POINT PAPERS

LABOR CATEGORY	BUDGETED HRS	TOTAL HRS BILLED	HRS REMAINING
PROGRAM MGR	72	13	59
ADMIN MGR	96	39.5	56.5
SR. ENGINEER	872	537	335
SR REVIEW	12	12	0
QA	48	6.5	41.5
SECRETARIAL	126	82	44
	-----	-----	-----
TOTAL ITASCA	1226	690	536
CONSULTANT			
	-----		
J. DAEMEN	72	42	30
I. FARMER	40	0	40
K. WAHI	72	0	72
	-----	-----	-----
TOTAL CONSULT	184	42	142
SUBCONTRACTOR-NWC			
	-----		
PRIN. INVEST.	72	37	35
ASST. PROF.	0	4	-4
CLERICAL	8	18	-10
	-----	-----	-----
TOTAL SUBCONT	80	59	21
	=====	=====	=====
TASK TOTAL	1490	791	699

Feb-87

TASK LABOR SUMMARY

TASK ORDER 002  
TASK 2

THERMOMECHANICAL ANALYSES

LABOR CATEGORY	BUDGETED HRS	TOTAL HRS BILLED	HRS REMAINING
PROGRAM MGR	54	19	35
ADMIN MGR	72	45.5	26.5
SR. ENGINEER	592	407	185
ASST. ENGINEER	320	575	-255
SR REVIEW	88	0	88
QA	16	7	9
SECRETARIAL	112	192.5	-80.5
	-----	-----	-----
TOTAL ITASCA	1254	1246	8
CONSULTANT			
	-----		
J. DAEMEN	0	24	-24
K. WAHI	80	85	-5
	-----	-----	-----
TOTAL CONSULT	80	109	-29
	=====	=====	=====
TASK TOTAL	1334	1355	-21
	=====	=====	=====
TASK ORDER TOT	2824	2146	678

Feb-87

TASK LABOR SUMMARY

TASK ORDER 003  
TASK 1 ROCKBURST POTENTIAL AT BWIP

LABOR CATEGORY	BUDGETED HRS	TOTAL HRS BILLED	HRS REMAINING
PROGRAM MGR	8	0	8
ADMIN MGR	16	14	2
SR. ENGINEER	160	149	11
SR REVIEW	16	0	16
QA	6	0	6
SECRETARIAL	36	36	0
	-----	-----	-----
TOTAL ITASCA	242	199	43
SUBCONTRACTOR-NWC			
	-----		
PRIN. INVEST.	40	0	40
SR ENGINEER	24	0	24
CLERICAL	8	0	8
	-----	-----	-----
TOTAL SUBCONT	72	0	72
	=====	=====	=====
TASK TOTAL	314	199	115

Feb-87  
TASK ORDER 003

TASK LABOR SUMMARY

TASK 2 IDENTIFICATION AND PRIORITIZATION OF MAJOR  
UNDERGROUND SYSTEM DESIGN COMPONENTS FOR NNWSI

LABOR CATEGORY	BUDGETED HRS	TOTAL HRS BILLED	HRS REMAINING
PROGRAM MGR	6	2	4
ADMIN MGR	12	11	1
SR. ENGINEER	80	68	12
QA	4	3	1
SECRETARIAL	20	22	-2
	-----	-----	-----
TOTAL ITASCA	122	106	16
CONSULTANT			
-----			
J. DAEMEN	80	18.5	61.5
	-----	-----	-----
	80	18.5	61.5
	=====	=====	=====
TASK TOTAL	202	124.5	77.5
	=====	=====	=====
TASK ORDER TOT	516	323.5	192.5

Feb-87  
TASK ORDER 004

TASK LABOR SUMMARY

TASK 1 THERMOMECHANICAL MODELING FOR SRP, BWIP AND NNWSI

LABOR CATEGORY	BUDGETED HRS	TOTAL HRS BILLED	HRS REMAINING
PROGRAM MGR	20	0	20
ADMIN MGR	20	4	16
SR. ENGINEER	40	6	34
ASST ENGINEER	120	35	85
ASSOC./REVIEWER	120	104	16
QA	8	0	8
SECRETARIAL	12	3.5	8.5
TOTAL ITASCA	340	152.5	187.5
TASK TOTAL	340	152.5	187.5
TASK ORDER TOT	340	152.5	187.5

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

Individual to contact:

John J. Markham (612-623-9599)

- (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: 018-87-015
- (d) Date of Voucher: February 17, 1987
- (e) Contract Amount: \$1,312,270.80
- (f) Fixed Fee: \$ 104,981.66

(g) This voucher represents reimburseable costs from January 1 thru January 31, 1987

AMOUNT BILLED

	(k) <u>Current Period</u>	(l) <u>Inception to Date</u>
(h) <u>DIRECT COSTS</u>		
(1) Direct Labor	<u>\$ 9,191.53</u>	<u>\$ 77,666.44</u>
(2) Materials, Supplies and Noncapitalized Equipment	<u>-</u>	<u>-</u>
(3) Consultants	<u>346.50</u>	<u>71,338.52</u>
(4) Travel - Domestic	<u>1,855.83</u>	<u>16,206.35</u>
(5) Subcontract	<u>216.91</u>	<u>28,157.04</u>
(6) Other Costs	<u>205.10</u>	<u>4,437.75</u>
TOTAL DIRECT COSTS	<u>11,815.87</u>	<u>197,806.10</u>
(i) <u>INDIRECT COSTS</u>		
G & A Expense 106% of Cost Element (1)	<u>9,743.01</u>	<u>82,326.42</u>
TOTAL DIRECT AND INDIRECT COSTS	<u>21,558.88</u>	<u>280,132.52</u>
(j) FIXED-FEE EARNED	<u>1,724.71</u>	<u>22,410.58</u>
(m) TOTAL AMOUNTS CLAIMED	<u>23,283.59</u>	<u>302,543.10</u>
(n) ADJUSTMENTS	<u>-</u>	<u>-</u>
(o) GRAND TOTALS	<u>23,283.59</u>	<u>302,543.10</u>

SUPPORTING INFORMATION

TASK ORDER-001  
 TASK 2 DOCUMENT REVIEWS  
 (h) DIRECT COSTS

(1) Direct Labor		Hours			
Labor Category	Name	Billed	Rate		Total
<hr/>					
Admin. Manager	L. Gaarder	2.0	\$8.89		\$17.78
	J. Markham	1.0	\$25.96		\$25.96
Sr. Engineer	M. Board	50.0	\$23.56		\$1,178.00
<hr/>					
Total Direct Labor					\$1,221.74

(5) Subcontract  
 Nuclear Waste Consultants, Inc. \$216.91 \*

(6) Other Costs

	Postage	\$2.40	
		<hr/>	\$2.40

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TOTAL DIRECT COSTS \$1,441.05

(i) INDIRECT COSTS

G & A Expense (1.06 x Direct Labor)	\$1,295.04
	<hr/>

TOTAL DIRECT AND INDIRECT COSTS \$2,736.09

(j) FIXED FEE EARNED \$218.89

(m) TOTAL AMOUNT CLAIMED \$2,954.98

\* Invoice Attached

SUPPORTING INFORMATION

TASK ORDER-002

TASK 1 SITE SPECIFIC INSITU TESTING POINT PAPERS

(h) DIRECT COSTS

(1) Direct Labor		Hours		Rate	Total
Labor Category	Name	Billed			
Prog. Manager	R. Hart	2.0		\$24.04	\$48.08
Admin. Manager	L. Gaarder	2.0		\$8.89	\$17.78
Sr. Engineer	L. Lorig	2.5		\$21.15	\$52.88
Secretarial	K. Sikora	1.0		\$10.34	\$10.34
<b>Total Direct Labor</b>					<b>\$129.08</b>

(3) Consultants Labor					
	J. Daemen	6.0		\$57.75	\$346.50
<b>Total Consultant Labor</b>					<b>\$346.50</b>

<b>Total Consultant Travel</b>	<b>\$0.00</b>
<b>Total Consultant Labor &amp; Expenses</b>	<b>\$346.50</b>

(4) Travel

Date		Traveller	Costs	
From	To			
12/17/86	12/19/86	L. Lorig	1) Car rental (#)	\$56.25 *
Destination				

From	To	Purpose	
Mpls, Mn	Wash.DC	Insitu Testing paper review	
			\$56.25
<b>Total Itasca Travel</b>			<b>\$56.25</b>

(6) Other Costs

Copies	\$78.70 *
Telephone	\$29.31 *
Postage	\$9.01
<b>Total</b>	
<b>\$117.02</b>	

**TOTAL DIRECT COSTS** **\$648.85**

(i) INDIRECT COSTS

G & A Expense (1.06 x Direct Labor) \$136.82

**TOTAL DIRECT AND INDIRECT COSTS** **\$785.67**

SUPPORTING INFORMATION

TASK ORDER-002

TASK 1 SITE SPECIFIC INSITU TESTING POINT PAPERS

(j) FIXED FEE EARNED	\$62.85
-----	-----

(m) TOTAL AMOUNT CLAIMED	\$848.52
=====	=====

\* Invoice Attached

# Not previously claimed on December invoice

**SUPPORTING INFORMATION**

**TASK ORDER-002  
 TASK 2 THERMOMECHANICAL ANALYSIS  
 (h) DIRECT COSTS**

<b>(1) Direct Labor</b>			<b>Hours</b>		
<b>Labor Category</b>	<b>Name</b>		<b>Billed</b>	<b>Rate</b>	<b>Total</b>
-----	-----		-----	-----	-----
Admin. Manager	L. Gaarder		2.0	\$8.89	\$17.78
	J. Markham		2.0	\$25.96	\$51.92
Sr. Engineer	R. Hart		51.0	\$24.04	\$1,226.04
	L. Lorig		3.0	\$21.15	\$63.45
Asst. Engineer	M. Mack		64.0	\$12.50	\$800.00
Secretarial	K. Sikora		1.0	\$10.34	\$10.34
					-----
<b>Total Direct Labor</b>					<b>\$2,169.53</b>

**(4) Travel**

<b>Date</b>				
<b>From</b>	<b>To</b>	<b>Traveller</b>	<b>Costs</b>	
-----	-----	-----	-----	
1/11/87	1/16/87	R. Hart	1) Airfare	\$318.00 *
	Destination		2) Hotel	\$330.00 *
	-----		3) Meals	\$131.74 *
From	To	Purpose	4) Car Rental	\$215.55 *
-----	-----	-----	5) Parking	\$14.00
Mpls, Mn	Wash.DC	Thermo-	6) Telephone	\$4.44
		mechanical modeling seminar		-----
				<b>\$1,013.73</b>

<b>Date</b>				
<b>From</b>	<b>To</b>	<b>Traveller</b>	<b>Costs</b>	
-----	-----	-----	-----	
1/11/87	1/16/87	M. Mack	1) Airfare	\$318.00 *
	Destination		2) Hotel	\$330.00 *
	-----		3) Meals	\$126.41 *
From	To	Purpose	4) Telephone	\$5.94
-----	-----	-----	5) Parking	\$5.50
Mpls, Mn	Wash.DC	Thermomechanical		-----
		modeling seminar		<b>\$785.85</b>

**Total Itasca Travel** **\$1,799.58**

**(6) Other Costs**

Copies	\$55.90 *
Telephone	\$1.60
Postage	\$7.38
	-----
	<b>\$64.88</b>

**TOTAL DIRECT COSTS** **\$4,033.99**

SUPPORTING INFORMATION

TASK ORDER-002

TASK 2 THERMOMECHANICAL ANALYSIS

(i) INDIRECT COSTS

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G & A Expense (1.06 x Direct Labor)

\$2,299.70

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TOTAL DIRECT AND INDIRECT COSTS

\$6,333.69

(j) FIXED FEE EARNED

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\$506.70

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(m) TOTAL AMOUNT CLAIMED

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\$6,840.39

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\* Invoice Attached

SUPPORTING INFORMATION

TASK ORDER-003  
 TASK 1 POINT PAPER ON ROCKBURST POTENTIAL  
 (h) DIRECT COSTS

(1) Direct Labor		Hours			
Labor Category	Name	Billed	Rate		Total
-----					
Admin. Manager	J. Markham	2.0	\$25.96		\$51.92
	L. Gaarder	2.0	\$8.89		\$17.78
Sr. Engineer	M. Board	32.0	\$23.56		\$753.92
Secretarial	K. Sikora	22.0	\$10.34		\$227.48
-----					
Total Direct Labor					\$1,051.10

-----  
 TOTAL DIRECT COSTS \$1,051.10

(i) INDIRECT COSTS

-----  
 G & A Expense (1.06 x Direct Labor) \$1,114.17

-----  
 TOTAL DIRECT AND INDIRECT COSTS \$2,165.27

(j) FIXED FEE EARNED

-----  
 \$173.22

(m) TOTAL AMOUNT CLAIMED

-----  
 \$2,338.49  
 =====

SUPPORTING INFORMATION

TASK ORDER-003

TASK 2 IDENTIFICATION OF UNDERGROUND SYSTEM DESIGN COMPONENTS

(h) DIRECT COSTS

(1) Direct Labor		Hours			
Labor Category	Name	Billed	Rate		Total
-----					
Admin. Manager	L. Gaarder	2.0	\$8.89		\$17.78
	J. Markham	1.0	\$25.96		\$25.96
Sr. Engineer	L. Lorig	51.5	\$21.15		\$1,089.23
Secretarial	L. Gaarder	1.0	\$8.89		\$8.89
	K. Sikora	1.0	\$10.34		\$10.34
QA	K. Sikora	1.0	\$10.34		\$10.34
-----					
Total Direct Labor					\$1,162.54

(6) Other Costs

Telephone	\$20.40 *			\$20.40
-----				

TOTAL DIRECT COSTS

\$1,182.94

(i) INDIRECT COSTS

G & A Expense (1.06 x Direct Labor)	\$1,232.29
-----	

TOTAL DIRECT AND INDIRECT COSTS

\$2,415.23

(j) FIXED FEE EARNED

\$193.22

(m) TOTAL AMOUNT CLAIMED

\$2,608.45

\* Invoice Attached

SUPPORTING INFORMATION

TASK ORDER-004  
 TASK 1 THERMOMECHANICAL MODELING

(h) DIRECT COSTS

(1) Direct Labor		Hours			
Labor Category	Name	Billed	Rate		Total
-----					
Admin. Manager	L. Gaarder	2.0	\$8.89		\$17.78
	J. Markham	2.0	\$25.96		\$51.92
Sr. Reviewer	P. Cundall	56.0	\$52.50		\$2,940.00
Asst. Engineer	M. Mack	35.0	\$12.50		\$437.50
Secretarial	K. Sikora	1.0	\$10.34		\$10.34
-----					
Total Direct Labor					\$3,457.54

(6) Other Costs

Telephone	\$0.40
	-----

\$0.40

TOTAL DIRECT COSTS

\$3,457.94

(i) INDIRECT COSTS

G & A Expense (1.06 x Direct Labor)	\$3,664.99
	-----

TOTAL DIRECT AND INDIRECT COSTS

\$7,122.93

(j) FIXED FEE EARNED

\$569.83

(m) TOTAL AMOUNT CLAIMED

\$7,692.76

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