3864

Agency: DMEA
Container: B244 | Stack 6, Shelf 6, Pos 4
Location: DMEA Room

Applicant: Idaho Alta Metals Corp.
Status: Application Denied
Property: Empire Mine
Contract:
Site:
Year: 1955

Commodity: Copper
More:

State: ID
County: CUSTER
Section: 31
Other:
Township: 7
Dir: N
Other:
Range: 24
Dir: E
Other:
Meridian: Boise
Mining District:
Latitude: 43.8927
Longitude: -113.649
MRDS/MILS/MAS:

Location: Also Sec.36.T7N,R23E;
Sec.1.T6N,R23E.

Notes:

Names
Barcodes
Documents
Links
Pull File
Accesses
Print
Image
Close

Press <Enter> to Save and Close this form

Docket	Barcode	Location	Container	
3864	142641	1-Folder	B244	Stack 6, Shelf 6, Pos 4

Press <Esc> to Close this form

DMA Form 1

DEFENSE MINERALS ADMINISTRATION
Control Slip

CONTROLLED DOCUMENT

DMA Docket No. 3864

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This document has been recorded as

Exploration

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cy USGS; cy B M
cy Region I N. W. Dist.

Routing Slip

To:	500	Date	6/22/55
To:	Oper Comm	Date	9-26-55
To:	Oper Comm	Date	12-16-55
To:	Oper Comm	Date	12-28-55
To:	F. E. Johnson	Date	12-28-55
To:	[illegible]	Date	12-28-55
To:		Date	
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DO NOT DETACH

CONTROLLED DOCUMENT

File Copy
Surname
Griswold
Gechon
Kilsgaard
Selbridge
Hyman

UNITED STATES
DEPARTMENT OF THE INTERIOR 500
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.

DEC 29 1955

Mr. E. G. Bowen, Vice President
Idaho Alta Metals Corporation
Room 2701 - 52 Wall Street
New York, New York

Re: Docket No. DMEA-3864 (Copper)
Idaho Alta Metals Corporation
Empire Mine
Custer County, Idaho

Dear Mr. Bowen:

With reference to the cited application, we have had correspondence with the Field Team as to possible methods of exploration for the property cited in your application. However, actually, we do not believe it advisable that we try to arrive at a definite and specific program until your 1100 level crosscut currently being driven to develop overlying ore bodies has reached the general ore zone area.

At such a time, we believe it would be to your interest to reapply for DMEA assistance in a program which would first provide for drifting on this level toward the various areas believed to be mineralized, with such work to be supplemented by diamond drilling from desirable locations on the level. When this work is completed we should have a much better knowledge of the ore occurrences in the 1100-1300 horizon and any subsequent work could then be planned in a more intelligent manner.

Hence, at this time, we are denying your application, but completely without prejudice to the mine. It is our suggestion that, as soon as the 1100 level has reached a point where drifts may be started, you reapply. The Field Team would then again inspect the property in order to work out a program agreeable both to you and the Government regarding locations for drifting and diamond drilling. You may be sure that any such application will be given most serious consideration. We repeat that we have no prejudice toward the property; but we do feel that work presently under way is purely development and that subsequent exploratory work should be done in a progressive and logical sequence, utilizing all possible information available as the work advances.

Sincerely yours,

Administrator

WRGriswold/bjl (12/28/55)
Copy to: Docket
Admr. R. File
Op. Committee
Base Metals
Mr. Pennington (USBM)
Mr. Kiilsgaard (USGS)
Region I (2)
Chron.

R.L.H.

File Copy
Surname
Selfridge
Johnson

500

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.

DEC 29 1955

Mr. A. E. Weissenborn
Executive Officer
DMEA Field Team, Region I
Northwest District
South 157 Howard Street
Spokane 4, Washington

Re: Docket No. DMEA-3864 (Copper)
Idaho Alta Metals Corporation
Empire Mine
Custer County, Idaho

Dear Mr. Weissenborn:

We have your letter of December 6, regarding comparative costs of proposed work on the cited application. There are various reasons why we are not inclined to enter into a large project with the Applicant at this time. We are frankly dubious as to the Applicant's ability or financial means to handle a work program of this magnitude, nor do we understand why it is opposed to conducting any further exploration through the Empire Shaft.

Either of the recently proposed programs, a raise from the 1600 level or winze from the new 1100 level, would be designed primarily to explore the 1100-1300 horizon. Yet a review of the available maps strongly suggests that some of the old levels may contain good opportunities for substantial additional ore tonnages. It is our understanding that a great deal of the previous mining was done by lessees who were naturally interested primarily in getting out the higher grade ores. Very possibly, in the vicinity of old stopes, there may exist important amounts of milling grade ore. We are told "the sulphide mineralization . . . diminishes gradually toward the tactite sides", and also that "much of the mineralized ground has never been systematically sampled." Likewise, certain of the old levels may present just as favorable targets for diamond drilling as would be found lower down.

We are frankly skeptical of the Applicant's statement that the Empire Shaft is too small and too crooked to be utilized for further exploration work. A study of the shaft position on the various levels of the map indicates no significant deviation from the vertical; likewise, the maps show it as a two-compartment shaft. Furthermore, the utilization of this shaft would give service to various of the old levels, and permit exploration work at such locations also, if it appeared warranted.

R.C.H.

If the Applicant is inclined to drive the long 1100 foot crosscut, rather than merely sink the Empire Shaft another 100 feet, it is its own affair, since no Government funds are involved. Apparently the company's main concern at present is to extract known ores.

We are enclosing copies of our letter to the Applicant which denies its application without prejudice. We believe the letter is self-explanatory. Essentially, our position is this: We believe that the present main interest of the Applicant is to extract ore. If, later on, the Applicant has demonstrated its ability to do work in a businesslike manner, perhaps an exploration program can be worked out.

We are also enclosing the memorandums dated December 20 and December 21, 1955, by N. E. Nelson, USGS, and J. W. Pennington, USBM, respectively.

Sincerely yours,

George C. Selfridge

Chairman, Operating Committee (GCS)

Enclosures

APPROVED:

/s/ Robert W. Geehan (GCS)

Member, Bureau of Mines

Thor H. Kiilsgaard (GCS)

Member, Geological Survey

WRGriswold/bjl (12/28/55)

Copy to: Docket
Admr. R. File
Op. Committee
Base Metals
Mr. Pennington (USBM)
Mr. Kiilsgaard (USGS)
Chron.

File Copy
Surname
Griswold

UNITED STATES
DEPARTMENT OF THE INTERIOR 500
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.

Mr. A. E. Weissenborn
Executive Officer
DMEA Field Team, Region I
Northwest District
South 157 Howard Street
Spokane 4, Washington

Re: Docket No. DMEA-3864 (Copper)
Idaho Alta Metals Corporation
Empire Mine
Custer County, Idaho

Dear Mr. Weissenborn:

We have your letter of December 6, regarding comparative costs of proposed work on the cited application.

We would be most reluctant to enter into an exploration project in which the principal part of a comprehensive work program stemmed off from the top of a 300 foot vertical blind raise. Problems of ventilation and transport of men and materials would become magnified. Nor do we believe that the suggested costs could be realized; in effect the raise, after completion, would need to be converted into an adequate shaft prior to starting 1300 level work. Likewise a proper hoist would have to be installed; stations would be required at the 1600 and 1300 levels, etc.

As a matter of fact, would it not be better to delay action until the Operator has concluded, or at least obtained significant information from the new 1100 level which it is driving at its own expense. If such new level showed only a sparse ore occurrence, perhaps there would be little encouragement for further work.

Sincerely yours,

Chairman, Operating Committee

WRGriswold/er 12/16/55
Copy to: Docket
Admr R File
Op. Committee
Base Metals
Mr. Pennington, USBM
Mr. Millsgaard, USGS
Chron.

APPROVED:

Member, Bureau of Mines

Member, Geological Survey

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
WASHINGTON 25, D. C.

RECEIVED
DEC 21 1955

December 21, 1955

Memorandum

To: W. R. Griswold, Defense Minerals Exploration Administration

From: J. W. Pennington, Branch of Base Metals

Subject: Review of Modified Program, Docket No. DMEA - 3864 (copper), Idaho Alta Metals Corp., Empire Mines, Custer County, Idaho

The modified program to substitute a 240 foot winze from the 1,100 level to the 1,300 level for the originally proposed raise from the 1,600 level to the 1,000 level has been reviewed. To accomodate this, the applicant is driving a new 1,100 level adit of 1,300 to 1,400 feet in length.

Upon the completion of this adit, it is recommended that a Field Team examination be made of the property to obtain information necessary for evaluation of the exploration program.

J. W. Pennington

Copy to: Division of Minerals
Branch of Base Metals
J. W. Pennington
F i l e s
Thor Kiilsgaard, U.S.G.S.
R. W. Geehan

RECEIVED
DEC 21 1955

December 21, 1955

Memorandum

To: W. R. Griswold, Defense Minerals Exploration Administration

From: J. W. Pennington, Branch of Base Metals

Subject: Review of Modified Program, Project No. DMEA - 3064 (copper), Idaho Alta Metals Corp., Empire Mines, Custer County, Idaho

The modified program to substitute a 340 foot winze from the 1,100 level to the 1,300 level for the originally proposed raise from the 1,600 level to the 1,000 level has been reviewed. To accomodate this, the applicant is driving a new 1,100 level adit of 1,300 to 1,400 feet in length.

Upon the completion of this adit, it is recommended that a Field Team examination be made of the property to obtain information necessary for evaluation of the exploration program.

J. W. Pennington

J. W. Pennington

JWPennington/vr

Copy to: Division of Minerals
Branch of Base Metals
J. W. Pennington
F i l e s
Thor Kiilsgaard, U.S.G.S.
R. W. Graham

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WASHINGTON 25, D. C.

RECEIVED
DEC 20 1955

December 20, 1955

Re: DMEA 3864
Idaho Alta Metals Corp.
Empire Mine
Custer Co., Idaho
$36,931.67 - Copper

Memorandum

To: W. R. Griswold, Defense Minerals Exploration Administration

From: N. E. Nelson, U. S. Geological Survey

Subject: Acknowledgment of receipt of engineer's estimate of cost of revised application.

The applicant, under date of September 24, 1955, and following conferences in Washington, submitted an alternate proposal for work in the old mine. Instead of raising 600 feet from the 1600- to the 1000-foot level and opening a level at the 1300, the applicant now proposes to sink from the 1100 level, being driven by the applicant, to the 13 level. The sinking will cost more than raising from the 1600 to a 1300 level, but raising the additional 200 feet to the new 1100-foot level for ventilation would cost about $17,000 (200 feet at ± $85.00/ft.). The cost for the 600 feet is taken at $71.59, of which the section from the 1300 to the 1100 level would be the top 200 feet and the most expensive part. The cleanup in the 1600 level will not be immediately necessary. The estimated cost is $1,215.29.

Therefore the estimated cost to get to the 1300 level figures at:--

Estimate of Sept. 6, 1955		Estimate of Dec. 5, 1955	
Cleanup, 1600 level	$ 1,215.29	Sinking 240 feet	$36,931.67
Raising, 500 ft. at $70.00/ft.*	35,000.00		
Totals	$36,215.29		$36,931.67

*Estimate

According to Mr. Bowen the water table is probably 700 feet below the 1600 level so pumping costs do not enter, but the charge for hoisting of rock and ore will continue to be an item.

N. E. Nelson

N. E. Nelson

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WASHINGTON 25, D. C.

RECEIVED
DEC 20 1955

December 20, 1955

Re: DMEA 3864
Idaho Alta Metals Corp.
Empire Mine
Custer Co., Idaho
$36,931.67 - Copper

Memorandum

To: W. R. Griswold, Defense Minerals Exploration Administration

From: N. E. Nelson, U. S. Geological Survey

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NENelson:iml
G-12/20/55
cc: Director's reading, 4212
Branch reading, 4212; DMEA (3);
Docket file; R. M. Meyer, 3623

N. E. Nelson

N. E. Nelson

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

~~WASHINGTON 25, D.C.~~

1201 N. Division St.
Spokane 2, Washington
December 6, 1955

RECEIVED
DEC 12 1955

Answered
Betty

Docket

Mr. George C. Selfridge, Chairman
DMEA Operating Committee
Department of the Interior
Washington 25, D. C.

Re: Docket No. DMEA 3864 (copper)
Idaho Alta Metals Corporation
Empire Mine
Custer County, Idaho

Dear Mr. Selfridge:

Enclosed are four copies of a cost analysis by A. L. Service, Bureau of Mines Engineer, for shaft sinking at the Empire mine, together with copies of a letter written by the applicant concerning the revised proposal.

We would like to call to your attention the difference in cost in reaching the 1300 level through 240 feet of shaft from the 1100 level versus 300 feet of raise from the 1600 level.

Cost of shaft and facilities	$36,931.67

Cost by raising (cost analysis submitted on September 7, 1955)

Raising:	First 300 feet	=	50 days
	second 300 "	=	75 "
	Total	=	125 days

Factor for labor and equipment depreciation =
50/125 = 0.4

Rehabilitate 1600 level	$ 1,215.29
Labor & supervision = 0.4 x $16,448.54	6,579.42
Materials & supplies = 1/2 x $24,417.46	12,208.73
Equipment depreciation = 0.4 x $1,965.90	786.36
	$20,789.80

From this comparison of costs it is apparent that it would cost about $16,141.87 more to reach the 1300 level through a shaft than by raising. Other disadvantages of shaft sinking are possible pumping costs and hoisting all exploration rock. The locations of the proposed shaft and raise are approximately the same (N. 25,500, E. 26,250) so the crosscutting to the vein would be about the same in both cases.

Mr. Service reports that the 1100 level crosscut adit had just been portaled on October 31.

By Field Team, Region I, NW District

A. E. Weissenborn

A. E. Weissenborn, Exec. Officer
U. S. Geological Survey

Thomas E. Howard

Thomas E. Howard, Acting Member
U. S. Bureau of Mines

Enclosures

cc: USGS (2)

IDAHO ALTA METALS CORPORATION

HAILEY, IDAHO

RECEIVED DEC 12 1955

Matthew L. Blair, President
E. G. Bowen, Vice President
Herbert B. Jones, Secretary & Treasurer

Room 2701, 52 Wall St.
New York 5, N. Y.

September 24, 1955

Mr. A. E. Weissenborn, Executive Officer
Defense Minerals Exploration Administration
South 157 Howard Street
Spokane 4, Washington

Re: Docket No. DMEA-3864
Modification

Dear Mr. Weissenborn,

Thursday, the 22nd, I was in Washington for an interview with Messrs Nelson and Griswald. We discussed in considerable detail the proposed development program as outlined by your office for the Empire Mine, Custer County, Idaho. I told these gentlemen about the improvements that we are making at the Empire to facilitate the production of ore.

Perhaps the most significant thing is the fact that we have already finished 5/8ths mile of new road to the surveyed portal of our 1100 Level Adit. We figure it will take 8 or 9 weeks to complete this Adit. Actually, this 1100 Adit is 125 feetvertically below the 1000 Level. As you know, the 1000 Level is a station 300 feet below the collar of the Empire shaft at the 700 Level. This Empire shaft has a single hoisting compartment with a cage that brings up only about 1200 lbs. of muck at a load. It was absolutely unworkable. On account of the very considerable tonnage of ore exposed at the 900 Level, the 1000 Level and 3 winzes from the 1000 Level to the 1050 Level and 1 winze in particular is ore all the way down from the 1000 Level to a depth of 125 feet, we have decided to run this 1100 Level Adit at our own expense. This 1100 Adit will be 7½ by 8 feet in the clear and some 1300 to 1400 feet in length. We will intersect that large ore zone at a point somewhat to the NE of the bottom of the Empire shaft. We know we have diamond drill holes below this elevation proving the ore goes down.

When I told Mr. Griswald about this 1100 Level Adit, he suggested my writing you and urging you to accept our letter modifying the development program outlined by Mr. Vhay to this extent; that we drop the idea for the time being of running a 600 foot vertical raise from the 1600 Level to the 1000 Level; that instead, Mr. Griswald suggested, you approve the sinking of a 3 compartment vertical shaft from the 1100 Level down to a new 1300 Level; that from the bottom of this shaft we should provide for 1000 to 1500 feet of drifting both ways on this 1300 Level; also, the diamond drilling program as suggested by Mr. Vhay should be carried out.

We think this is a very workable and precise manner in which to use

Mr. A. E. Weissenborn September 24, 1955

the DMMA money. Mr. Grinwald was quite positive on this point and, I believe, it is a very minor like thing to do. It will necessitate an entirely new budget. It will take somewhat more money but will open up new ore at this greater depth.

We would appreciate your acceptance of this modified program.

Very truly yours,

E. G. Bowen

E. G. Bowen
Executive Vice President

RECEIVED
DEC 12 1955

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
~~WASHINGTON 25, D.C.~~

1201 N. Division St.
Spokane 2, Washington
December 5, 1955

RECEIVED
DEC 12 1955

MEMORANDUM

To: DMEA Field Team, Region I, Northwest District

From: A. L. Service, Mining Engineer, Bureau of Mines

Subject: Preliminary cost analysis for 240 feet of 1½-compartment shaft, Docket No. DMEA-3864 (copper), Idaho Alta Metals Corp., Empire Mine, Custer County, Idaho

The following cost analysis for shaft sinking is submitted as an alternate to raising at the Empire mine. This method was suggested in Mr. Selfridge's letter of September 29 and the applicant's letter of September 24.

The proposed work is to consist of two shaft stations, on the 1100 and 1300 level, a shaft installation on the 1100 level and shaft pocket on the 1100 level, and 240 feet of shaft including a 40-foot sump. The shaft stations shall be 9x12x30 feet or at least 3200 cubic feet, and the shaft shall be not less than 4x8 feet inside timber.

If the Government should decide to participate in this proposed project, the following unit costs are recommended for consideration.

Cost Analysis for Proposed 240-foot Shaft

Preparation work:

Drive 35- foot tail drift, excavate shaft station, shaft raise and pocket, and install shaft equipment. 31 days (1.19 mo.)

Shaft sinking:

Sink vertical 1½-compartment 4'x8' shaft from the1100 level to the 1300 level, including a 40-foot sump and shaft pocket and station on the 1300 level. Total length of shaft to be not more than 240 feet. 60 days (2.3 months)

Preparatory work: Shaft station on 1100-ft. level, 9'x12'x30' or at least 3200 cu.ft. 18 days (.7 mo.)

1. Independent contracts.
   None

2. Labor and supervision.

4 miners @ $14.55/day x 1.083 O.T.	$1,134.72	
2 surfacemen @ $13.82/day x 1.083 O.T.	538.92	
Engineer-supt. @ $600/mo.	420.00	
FICA, etc. 11%	230.30	$2,323.94

3. Operating Materials and Supplies

Explosives, fuse and caps	$ 302.95	
Lumber and misc. supplies	250.00	
Steel and bits	113.30	
Power (diesel and gas)	140.00	806.25

4. Operating Equipment
   To be furnished:

Item	Use allow.	Use period	Total	
1 500 cfm compressor	$206.41	.7 mo.	$ 144.49	
1 vent fan	18.60	"	13.02	
1 diesel locomotive	81.66	"	57.16	
5 ore cars	16.25	"	11.38	
2 air receivers	14.88	"	10.42	
2 rock drills	33.00	"	23.10	
1 loader	51.62	"	36.13	295.70

5. Rehabilitation and Repairs.
   None

6. New Buildings and Improvements.
   None

7. Miscellaneous.
   None

Total cost of station	$3,425.89
Cost per cu. ft.	$ 1.07

Shaft installation, tail drift, shaft raise and pocket, and install shaft equipment on 1100 level. 26 days (1 mo.)

1. Independent contracts.
   None

2. Labor and supervision.

4 miners @ $14.55/day x 1.083 O.T.	$1,639.04	
2 surfacemen @ $13.82/day x 1.083 O.T.	778.44	
Engineer-supt. @ $600/mo.	600.00	
FICA, etc. 11%	331.92	$3,349.40

3. Operating Materials and Supplies.

35' tail drift 5'x7' @ $9.014/ft. 1/	$ 315.49	
Shaft preparation, cutting dump pocket and shaft raise, estimated at 2,950 cu.ft. @ $0.23/cu.ft.	678.50	
Timber - 30 feet @ $13.92/ft.	417.60	1,411.59

1/ Cost taken from drifting costs in original analysis.

4. Operating Equipment.
   To be furnished.

Item	Deprec.	Use period	Total	
1 500 cfm compressor	$206.41	1 mo.	$ 206.41	
1 vent fan	18.60	"	18.60	
1 diesel locomotive	81.66	"	81.66	
5 ore cars	16.25	"	16.25	
2 air receivers	14.88	"	14.88	
2 rock drills	33.00	"	33.00	
1 loader	51.62	"	51.62	422.42

5. Rehabilitation and Repairs.
   None.

6. New Buildings & Improvements.
   None.

7. Miscellaneous.
   None.

Total cost of installation $5,183.41

Shaft sinking.

Sink 240 feet of vertical 4'x8' inside timber shaft, including 40-foot sump. Assuming 2 feet advance per shift, 2 shifts per day, it will take 60 days (2.3 mo.) to complete the work.

1. Independent contracts.

   None

2. Labor and Supervision.

4 shaftmen @ $15.82 x 1.083 O.T.	$4,111.20	
2 hoistmen @ 15.82 x 1.083 O.T.	2,055.60	
1 compressorman @ 15.42 x 1.083 O.T.	1,002.00	
1 timberman @ 15.82 x 1.083 O.T.	1,027.80	
1 timberman helper @ 14.55 x 1.083 O.T.	945.60	
Engineer-supt. @ $600/mo.	1,380.00	
FICA, etc. - 11%	1,157.44	$11,679.64
Cost per foot		$ 48.67

3. Operating Materials & Supplies

Explosives, 12,000# @ $21/cwt.	$ 2,520.00	
Fuse, 11,500 ft. @ .02/ft.	230.00	
Caps, 1,500 @ .02/ea.	30.00	
Timber, 31,500 bd. ft. @ $70/M	2,205.00	
Wedges	75.00	
Ladders	150.00	
Skip guides	475.00	
Steel and bits	487.50	
Small tools	119.00	
Pipe		
3" airline, 200' @ .891/ft. - 50%	89.10	
2" waterline, 200' @ .34/ft. - 50%	34.00	
4" pump column, 240' @ 1.36/ft.	326.40	
Fittings and access. - 20%	89.90	
Hoses		
1" airhose & fittings - 100' @ $1.04/ft.	104.00	
3/4" waterhose & fittings, 100' @ $1/ft.	100.00	
4" hose and pump accessories	200.00	
Vent tube, 16" - 200' @ $1.20/ft. - 75%	180.00	
Fittings, hangers, etc.	100.00	
Hoist rope, 3/4" - 800' @ .311/ft.	248.80	
Power (diesel & gas)	1,700.00	
Lubricants	112.50	
Repair parts & maint.	205.00	$ 9,781.20
Cost per foot		$ 40.755

4. Operating Equipment
To be furnished:

Item	Use Allow.	Use Period	Total	
1 500 cfm compressor	$206.41	2.3 mo.	$ 474.74	
1 vent fan	18.60	"	42.78	
1 Coeur d'Alene Jr. hoist	95.83	"	220.41	
2 sinking buckets	4.50	"	10.35	
1 diesel locomotive	81.66	"	187.82	
5 ore cars	16.25	"	37.38	
2 air receivers	14.88	"	34.22	
2 rock drills	33.00	"	75. 90	
2 sinker pumps	17.50	"	40.25	
1 motor pump	16.92	"	38.92	
2 pneumatic columns	7.33	"	16.86	
1 diesel generator plant	146.67	"	337.34	
1 diesel power plant	77.53	"	178.32	
Switches, cable & access.	48.92	"	112.51	$1,807.80

Cost per foot $ 7.53

5. Rehabilitation & Repairs.
None

6. New Buildings and Improvements.
None

7. Miscellaneous.
None

Total cost of shaft $23,268.64

" " per foot $ 96.95

Shaft station on 1300 level
9'x12'x30' or at least 3,200 cu. ft. @ $1.07/ft.

Total cost $ 3,425.89

Shaft pocket on 1300 level
Equivalent to 40 feet of raise at $40.696/ft. 1/

Total cost $ 1,627.84

1/ Cost per foot taken from original cost analysis.

RECAPITULATION OF COSTS

Preparatory Work

Shaft station on 1100 level

1.	Independent contracts	none
2.	Labor and supervision	$ 2,323.94
3.	Operating materials and supplies	806.25
4.	Operating equipment	295.70
5.	Rehabilitation and repairs	none
6.	New buildings & improvements	none
7.	Miscellaneous	none
	Total cost	$ 3,425.89
	Cost per foot^3	$ 1.07

Shaft installation, etc. on 1100 level

1.	Independent contracts	none
2.	Labor and supervision	$ 3,349.40
3.	Operating materials and supplies	1,411.59
4.	Operating equipment	422.42
5.	Rehabilitation and repairs	none
6.	New buildings & improvements	none
7.	Miscellaneous	none
	Total cost	$ 5,183.41

Shaft Sinking

1½-compartment vertical shaft.

1.	Independent contracts	none
2.	Labor and supervision	$11,679.64
3.	Operating materials and supplies	9,781.20
4.	Operating equipment	1,807.80
5.	Rehabilitation and repairs	none
6.	New buildings and improvements	none
7.	Miscellaneous	none
	Total cost of shaft sinking	$23,268.64
	Cost per foot	$ 96.95

Shaft station on 1300 level	$ 3,425.89
Shaft pocket on 1300 level	$ 1,627.84

Total Cost of Program

Preparatory Work	
Shaft station on 1100 level	$ 3,425.89
Shaft installation on 1100 level	5,183.41
Shaft sinking from 1100 to 1300 level	
Shaft sinking	23,268.64
Shaft station at 1300 level	3,425.89
Shaft pocket at 1300 level	1,627.84
Total cost	$36,931.67
Govt. participation - 50%	$18,465.84

File Copy
Surname

500

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.

Mr. A. E. Weissenborn
Executive Officer
DMEA Field Team, Region I
Northwest District
South 157 Howard Street
Spokane 4, Washington

SEP 29 1955

Re: Docket No. DMEA-3864 (Copper)
Idaho Alta Metals Corporation
Empire Mine
Custer County, Idaho

Dear Mr. Weissenborn:

We have the letter from your office of September 7, with enclosures, recommending a project for the cited application. On September 22, Mr. R. G. Bowen called to discuss the project with us.

We explained to him that we were not overly enthusiastic about a 600-foot raise, for obvious reasons. He then advised us that his company is presently driving a new adit level (1100 level) with its own funds, and that this new level will have a total length of some 1,200 feet. He stated that a high rate of advance was being made and they expected this new level to be complete within three months. We therefore suggested to Mr. Bowen that it would be more logical to plan on sinking an interior shaft from this new level to the proposed 1300 level (plus sump), to be followed by the drifting and diamond drilling.

He was likewise of the opinion that this would be the more practical procedure and stated that he would submit a revised proposal and a revised estimate to you. We shall therefore hold the application pending until you advise us further.

Sincerely yours,

George C. Selfridge

Chairman, Operating Committee (GHB)

APPROVED:

P. F. Yopes (GHB)
Member, Bureau of Mines

N. E. Nelson (GHB)
Member, Geological Survey

WRGriswold/bjl (9/26/55)
Copy to: Docket
Admr. R. File
Op. Committee
Base Metals
Mr. Pennington (USBM)
Mr. Kiilsgaard (USGS)
Chron.

R. C. H.

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WASHINGTON 25, D. C.

RECEIVED
SEP 26 1955

September 23, 1955

Re: DMEA 3864
Idaho Alta Metals Corp.
Empire Mine
Custer County, Idaho
$131,734.87 - Copper

Memorandum

To: W. R. Griswold, Defense Minerals Exploration Administration

From: N. E. Nelson, U. S. Geological Survey

Subject: Review of Field Team report.

The proposed work program differs materially from that outlined in the application. Obviously the program is designed to satisfy the applicant who wants access work done, but the work will tend to meet the exploration requirements of DMEA.

The comprehensive report of F. W. Farwell and R. P. Full (U. S. Geol. Survey Open File Report, 1944) is used in making the compromise plan.

A study of the production record and the plans and sections indicates the larger part of the recorded 765,087-ton production of the Empire mine came from the upper levels. To what extent the fall-off was due to changing proportions and relationships of the rock units comprising the ore zone can only be inferred, since varying prices for copper no doubt affected the rate of prospecting for and in the tactite bodies, but a decrease in the number and volume of the tactite masses with depth, is indicated. The choice of the 1300 level for renewed level exploration is accepted as well taken. Perhaps the proportion of tactite will be shown to be greater than that shown on the relatively barren 1000 and 1600-foot levels. The authors say "it is highly probable that more tactite bodies exist than the maps or sections indicate and that those shown may be more extensive."

The small backlog of indicated and inferred sulfide ore, 23,370 tons, contained in one ore body on the 1000 level portends limited production until new ore bodies are found or heretofore low-grade material and oxidized ore are shown to be commercial.

The work program is burdened with the disproportionate amount of dead work needed to reach an indefinite target, but appears to be as good as can be devised, physical conditions considered.

The applicant is proceeding with the driving of a 1100 level adit essentially as proposed in the original application. The work is being done to make available indicated ore at and below the 1000 level.

In view of the work being done by the applicant, Mr. Griswold has recommended a revised proposal which is acceptable to the applicant. From a point to be selected on the inner 1100 level a winze is to be sunk to the 1300 level and drifting done at that horizon. The details are to be worked out by the applicant and a revised application will be submitted to the Field Team for detailing.

I concur with the above decision.

N. E. Nelson

N. E. Nelson

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WASHINGTON 25, D. C.

RECEIVED
SEP 26 1955

September 23, 1955

Re: DMEA 3364
Idaho Alta Metals Corp.
Empire Mine
Custer County, Idaho
$131,734.87 - Copper

Memorandum

To: W. E. Griswold, Defense Minerals Exploration Administration

From: N. E. Nelson, U. S. Geological Survey

Subject: Review of Field Team report.

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The comprehensive report of F. W. Farwell and R. P. Full (U. S. Geol. Survey Open File Report, 1944) is used in making the compromise plan.

A study of the production record and the plans and sections indicates the larger part of the recorded 705,087-ton production of the Empire mine came from the upper levels. To what extent the fall-off was due to changing proportions and relationships of the rock units comprising the ore zone can only be inferred, since varying prices for copper no doubt affected the rate of prospecting for and in the tactite bodies, but a decrease in the number and volume of the tactite masses with depth, is indicated. The choice of the 1300 level for renewed level exploration is accepted as well taken. Perhaps the proportion of tactite will be shown to be greater than that shown on the relatively barren 1000 and 1600-foot levels. The authors say "it is highly probable that more tactite bodies exist than the maps or sections indicate and that those shown may be more extensive."

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The work program is burdened with the disproportionate amount of dead work needed to reach an indefinite target, but appears to be as good as can be devised, physical conditions considered.

The applicant is proceeding with the driving of a 1100 level adit essentially as proposed in the original application. The work is being done to make available indicated ore at and below the 1000 level.

In view of the work being done by the applicant, Mr. Griswold has recommended a revised proposal which is acceptable to the applicant. From a point to be selected on the inner 1100 level a winze is to be sunk to the 1300 level and drifting done at that horizon. The details are to be worked out by the applicant and a revised application will be submitted to the Field Team for detailing.

I concur with the above decision.

N. E. Nelson

N. E. Nelson

NENelson:iml
G-9/23/55

cc: Director's reading, 4212
Branch reading, 4212
DMEA (3)✓
Docket file
H. M. Meyer, 3623

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WASHINGTON 25, D. C.

RECEIVED
SEP 26 1955

September 23, 1955

Re: DMEA 3[illegible]4
Idaho Alta Metals Corp.
Empire Mine
Custer County, Idaho
$131,734.07 - Copper

Memorandum

To: W. E. Griswold, Defense Minerals Exploration Administration

From: E. E. Nelson, U. S. Geological Survey

Subject: Review of Field Team report.

The proposed work program differs materially from that outlined in the application. Obviously the program is designed to satisfy the applicant who wants access work done, but the work will tend to meet the exploration requirements of DMEA.

The comprehensive report of F. W. Parwell and R. F. Full (U. S. Geol. Survey Open File Report, 1944) is used in making the compromise plan.

A study of the production record and the plans and sections indicates the larger part of the recorded 785,087-ton production of the Empire mine came from the upper levels. To what extent the fall-off was due to changing proportions and relationships of the rock units comprising the ore zone can only be inferred, since varying prices for copper no doubt affected the rate of prospecting for and in the tactite bodies, but a decrease in the number and volume of the tactite masses with depth, is indicated. The choice of the 1300 level for renewed level exploration is accepted as well taken. Perhaps the proportion of tactite will be shown to be greater than that shown on the relatively barren 1000 and 1600-foot levels. The authors say "it is highly probable that more tactite bodies exist than the maps or sections indicate and that those shown may be more extensive."

The small backing of indicated and inferred sulfide ore, 23,370 tons, contained in one ore body on the 1000 level portends limited production until new ore bodies are found or heretofore low-grade material and oxidized ore are shown to be commercial.

The work program is burdened with the disproportionate amount of dead work needed to reach an indefinite target, but appears to be as good as can be devised, physical conditions considered.

The applicant is proceeding with the driving of a 1100 level adit essentially as proposed in the original application. The work is being done to make available indicated ore at and below the 1000 level.

In view of the work being done by the applicant, Mr. Grimwald has recommended a revised proposal which is acceptable to the applicant. From a point to be selected on the inner 1100 level a winze is to be sunk to the 1300 level and drifting done at that horizon. The details are to be worked out by the applicant and a revised application will be submitted to the Field Team for detailing.

I concur with the above decision.

W. E. Nelson

E. E. Nelson

EENelson:iml
G-9/23/55

cc: Director's reading, 4212
Branch reading, 4212
DMEA (3)
Docket file
H. M. Meyer, 3623

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WASHINGTON 25, D. C.

RECEIVED
SEP 26 1955

September 23, 1955

Re: DMEA 3[illegible]4
Idaho Alloys Metals Corp.
Empire Mine
Custer County, Idaho
[illegible],734.[illegible]7 - Copper

Memorandum

To: W. R. Griswold, Defense Minerals Exploration Administration

From: H. E. Nelson, U. S. Geological Survey

Subject: Review of Field Team report.

The proposed work program differs materially from that outlined in the application. Obviously the program is designed to satisfy the applicant who wants access work done, but the work will tend to meet the exploration requirements of DMEA.

The comprehensive report of F. W. Parwell and R. P. Full (U. S. Geol. Survey Open File Report, 1944) is used in making the compromise plan.

A study of the production record and the plans and sections indicates the larger part of the recorded 75,000-ton production of the Empire mine came from the upper levels. To what extent the fall-off was due to changing proportions and relationships of the rock units comprising the ore zone can only be inferred, since varying prices for copper no doubt affected the rate of prospecting for and in the tactite bodies, but a decrease in the number and volume of the tactite masses with depth, is indicated. The choice of the 1300 level for renewed level exploration is accepted as well taken. Perhaps the proportion of tactite will be shown to be greater than that shown on the relatively barren 1100 and 1000-foot levels. The authors say "it is highly probable that more tactite bodies exist than the maps or sections indicate and that those shown may be more extensive."

The small backlog of indicated and inferred sulfide ore, 23,370 tons, contained in one ore body on the 1000 level portends limited production until new ore bodies are found or heretofore low-grade material and oxidized ore are shown to be commercial.

The work program is burdened with the disproportionate amount of dead work needed to reach an indefinite target, but appears to be as good as can be devised, physical conditions considered.

The applicant is proceeding with the driving of a 1100 level adit essentially as proposed in the original application. The work is being done to make available indicated ore at and below the 1000 level.

In view of the work being done by the applicant, Mr. Griswold has recommended a revised proposal which is acceptable to the applicant. From a point to be selected on the inner 1100 level a winze is to be sunk to the 1300 level and drifting done at that horizon. The details are to be worked out by the applicant and a revised application will be submitted to the Field Team for detailing.

I concur with the above decision.

N. E. Nelson

N. E. Nelson

NENelson:iml
G-9/23/55

cc: Director's reading, 4212
Branch reading, 4212
DMEA (3)
Docket file
H. M. Mayer, 3623

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

~~WASHINGTON 25, D.C.~~
So. 157 Howard Street
Spokane 4, Washington

RECEIVED
SEP 12 1955

September 7, 1955

Mr. George C. Selfridge, Chairman
DMEA Operating Committee
Department of the Interior
Washington 25, D. C.

Re: Docket No. DMEA 3864 (copper)
Idaho Alta Metals Corporation
Empire Mine
Custer County, Idaho

Dear Mr. Selfridge:

Enclosed are four copies of memoranda by J. S. Vhay, Geological Survey, and A. L. Service, Bureau of Mines, discussing a proposed exploration project at the Empire mine.

The property was the subject of considerable investigation by both the Bureau of Mines and the Geological Survey during the war, and it appears that further exploration at the property is warranted. The applicant's proposal was not desirable, and the exploration recommended was worked out at the property with the applicant's representative. We concur in recommending an exploration project.

By Field Team, Region I, NW District

Wing G. Agnew, Acting Exec. Officer
U. S. Bureau of Mines

Verne C. Fryklund, Jr., Acting Member
U. S. Geological Survey

Enclosures

cc: USBM (2)
USGS (SRO)
Vhay
Nickelson

Reviewed by
DMEA OPERATING COMMITTEE
9-16-55
(date)

DMEA

RECEIVED
SEP 12 1955

UNITED STATES
DEPARTMENT OF THE INTERIOR
Defense Minerals Exploration Administration
So. 157 Howard Street
Spokane 4, Washington

August 8, 1955

MEMORANDUM

To: Field Team, Region I, Northwest District

From: J. S. Vhay, Geologist, U. S. Geological Survey

Subject: Examination Report, Docket No. DMEA-3864 (copper), Idaho Alta Metals Corporation, Empire Mine, Custer County, Idaho.

Reviewed by
DMEA OPERATING COMMITTEE
9-16-55
(date)

INTRODUCTION

On June 27, 1955, this office received an Application for Aid in an Exploration Project from Idaho Alta Metals Corporation. The application proposes to explore the Empire mine in Custer County, Idaho, a mine that has been an important copper producer in the past. No extended field examination was thought necessary, as reports by J. F. Kemp and C. G. Gunther (Am. Inst. Min. Eng. Trans., vol. 38, p. 269-296, 1908), J. B. Umpleby (U. S. Geol. Survey Prof. Paper 97, 1917), C. P. Ross (Idaho Bur. of Mines and Geol., Pamphlet 33, p. 7-18, 1930) and F. W. Farwell and R. P. Full (U. S. Geol. Survey Open File Report, Oct. 1944), were available. A visit was made to Mackay by A. L. Service, Bureau of Mines, and H. B. Nickelson and J. S. Vhay, Geological Survey, to discuss the application with a representative of the company on July 19, 1955. Mr. E. G. Bowen, vice president of the company, with whom this office had been corresponding, could not be there, but he had appointed J. Ray Weber as his representative, and Mr. Weber was contacted; after a thorough discussion, the proposal outlined below was agreed upon. Mr. Weber is well acquainted with the mine, having worked there for more than 40 years, and he apparently will be in charge of the project.

RECOMMENDATIONS

It is recommended that a contract be granted for a project which will consist of putting in a 600-foot, 2 1/2-compartment raise between the 1600 level and the 1000 level, drifting 600 feet on a new 1300 level, and doing 5,000 feet of diamond drilling on that level and the 1000 level. Depending upon what is found by this work, a second stage could consist of a further 400 feet of drifting and 2,000 feet of diamond drilling, all on the 1300 level.

PROPERTY AND OWNERSHIP

The property consists of a group of patented claims, known as the Empire Mine Group plus certain unpatented claims; the property is describ as follows (Mining Lease and Option Agreement submitted with application):

"Tract No. 855, Section 28; Tract No. 853 described as South 7 acres of Southeast quarter of the Southwest quarter (SE¼SW¼) Section 28, and the North one half of the Northwest quarter (N½NW¼) Section 33, all in Township 7 North, Range 24 E.B.M. The following patented Lode Mining Claims: ATLANTIC, Survey 1272A * * * ; ATLANTIC MILLSITE, Survey 1272B, * * * ; BUENA VISTA, Survey 1887, * * * ; COPPER BULLION, Survey 1272, * * * ; CONTINENTAL, Survey 1887, * * * ; EASTER, Survey 1272A, * * * ; HANNIBAL, Survey No. 1887, * * * ; KHEDIVE, Survey 1887, * * * ; LESLIE W., Survey 1887, * * * ; MIDWINTER, Survey 1272A, * * * ; OCCIDENTAL, Survey 1887, * * * ; PACIFIC, Survey 1272A, * * * ; PACIFIC MILLSITE, Survey 1272B, * * * ; PASHA, Survey 1887, * * * ; RIO VISTA, Survey 1887, * * * ; REMONITIZATION, Survey 1887, * * * ; SULTAN, Survey 1887, * * * ; SULTANA, Survey 1887, * * * ; WESTERN, Survey 1272A, * * * ; WELLINGTON, Survey 1887, * * * ; all of the foregoing lands being situated in the County of Custer, State of Idaho;

"Together with all improvements and appurtenances.

"ALSO, the following unpatented Lode Mining Claims:

"NAME	DATE LOCATED	DATE RECORDED
Washington	Feb. 22, 1902	April 30, 1902
Hamilcar	Sept. 28, 1903	Jan., 1904
Cushing	Sept. 28, 1903	Jan. 2, 1904
Catherine	Jan. 10, 1922	Jan. 14, 1922
Artic	July 1, 1954	July 13, 1954
Triangle	July 1, 1954	July 13, 1954"

According to the application, this property is owned by the Mackay Exploration Company and W. P. Barton and Margaret S. Barton of Boise, Idaho. The above parties entered into a Mining Lease and Option Agreement with E. G. Bowen of Hailey, Idaho, who, in turn, assigned it to the Wood River Syndicate (E. G. Bowen, its attorney in fact) which, in turn, assigned the property to Idaho Alta Metals Corporation, the applicant. According to the Lease Agreement, apparently a company called Mackay Metals, of which J. Ray Weber is receiver, also has retained some interest in the property. The Legal Division of the Defense Minerals Exploration Administration will have

to determine which of the above-named parties will have to sign Consent to Lien forms, none of which were submitted with the application. The Reconstruction Finance Corporation has a lien for $30,000.00 against the property, so a Subordination Agreement will have to be signed by that corporation, also, before a DMEA contract can be granted.

LOCATION, ACCESSIBILITY, MINE WORKINGS

The property is in the Alder Creek Mining District in the White Knob Range about 6 miles by road southeast of Mackay, Custer County, Idaho. Most of the property lies within sec. 31, T. 7 N., R. 24° E., sec. 36, T. 7 N., R. 23° E., and sec. 1, T. 6 N., R. 23° E.

The portal of the 1600 (Cossack) level is accessible by good road from Mackay; other higher portals, especially those of the important 700 and 800 levels, are also reached by roads. The mine has access through rights to sufficient water for all purposes, and electrical power is available within 2 miles of the property; the applicant states that he plans to bring this power to the portal of the 1600 level.

In addition to a number of small levels near the surface and sublevels throughout the mine, the numbered levels of the mine (from the top down) are the 300, 500, 600, 700, 800, 900, 1000, and 1600; the 700, 800, 900, and 1000 are connected by an internal shaft. The 900 and 1000 levels do not have portals, being served by the internal shaft. A complete picture of the mine workings is shown in plan on plate 6 and in longitudinal section on plate 45 of the Open File Report by Farwell and Full (U. S. Geol. Survey, Open File Report, Oct. 1944).

GEOLOGY

The Open File Report by Farwell and Full is the result of the latest study of the mining district and has the locations and assays of all the diamond drill holes drilled in the Empire mine by the Bureau of Mines in 1942 and 1943, as well as geologic maps of all accessible workings and 15 geologic sections through the mine. No mapping was done during the present examination because of this available material, and most of the following is quoted from this report, to which the reader is referred for more detailed information.

On page 1 of their summary, Farwell and Full state:

"The copper * * * deposits are located along the margin of a granite stock * * * intruded into the Brazer limestone, of Mississippian age. Near the Empire Mine the stock has a marginal facies of granite porphyry, and an extensive zone of contact metamorphism has been developed in the adjacent limestone. Tongues and dikes of granite prophyry transect the

limestone, and several large blocks of limestone are wholly included within the granite porphyry. Irregular masses of garnet-diopside rock, or tactite, lie within the granite porphyry and along the contacts of granite porphyry with tongues and blocks of limestone. The tactite was produced by contact metamorphism, after the granite porphyry had crystallized. Most of it formed from limestone or marble, although some tactite replaced granite porphyry. * * * "

On page 7 of the same report, the following statement appears:

" * * * The limestone is intruded also by kides and small bodies of diorite, quartz monzonite, aplite, andesite porphyry, quartz diabase porphyry, and porphyritic granodiorite. * * * "

Regarding the last rock type, on page 8 they state:

" * * * Chilled margins of slightly porphyritic obsidian are common along the (granodiorite) dikes, and have been observed against garnet-chalcopyrite ore, granite, granite porphyry, and some of the earlier rocks. The porphyritic granodiorite slakes rapidly where exposed underground, requiring timbering in most places."

Discussing the metamorphic rocks in more detail, on page 9 Farwell and Full state:

"Zones of marble have been developed throughout the area at the contacts of diorite, quartz monzonite, granite, and granite porphyry intrusions into the limestone. The marble is composed almost entirely of calcite with scattered crystals of lime silicates. Near its contacts with igneous rock or tactite, marble is coarse-grained and white or blue in color, and becomes finer-grained and bluer away from the contacts. In places the marble zone is more than 100 feet wide.

"Irregular bodies of tactite occur along a part of the border of the stock in the vicinity of the Empire mine. The tactite bodies have sharp contacts with the marble and commonly with the igneous rocks, although in places tactite passes gradually into granite porphyry. Stringers of garnet commonly extend 100 feet or more into the igneous rock but have not been observed cutting the calcareous rocks. Evidently some tactite has been formed by replacement of the igneous rocks as well as by replacement of marble. Garnet and diopside in varying proportions make up at least 90 percent of the tactite. The garnets are grossularite to andradite in composition and range in color from brown through amber to pale honey-yellow. Diopside is greenish white to bottle-green in color. Epidote, actinolite, scapolite, wollastonite, and orthoclase are present in smaller amounts."

Regarding the ore deposits, the following is stated on pages 10 and 11 of the same report:

"The ore deposits of the Mackay district lie in the contact metamorphic zone of a granite stock and associated igneous intrusions. Ore bodies are known to occur in an arc-shaped belt that is at least 3 miles long and about 1,000 feet wide. * * *

" * * * The copper-bearing ore bodies, whose nature is known almost exclusively from developments in the Empire mine, are typically irregular pipe-like bodies associated with masses of tactite. The ore bodies commonly occur along the margins of the tactite masses in contact with marble, although some of them lie entirely within tactite. The pipes usually have an elliptical shape in horizontal plan, and the direction of their longer dimension may change from level to level. The strike length of the ore bodies ranges from 15 to 200 feet and their width from 3 to 35 feet. * * * Most of the pipes pitch to the northeast, east, or southeast in a direction nearly at right angles to the strike of the pipe. * * * A few flat ore bodies occur, particularly beneath marble hanging walls.

"The hypogene copper ores are composed of garnet, diopside, and other lime silicates that carry disseminations and sponge-like aggregates of metallic minerals. Chalcopyrite is the principal sulphide and is accompanied by pyrite, pyrrhotite, calcite, and quartz. * * * Scheelite is present in the copper ores in minable amounts at only a few places."

Discussing the occurrence of the ore further, Farwell and Full (p. 13) state:

"Sulphide-bearing tactite usually is composed of rather coarse-grained garnet and carries considerable calcite in contrast to much of the barren tactite, which is commonly fine-grained and has only small amounts of sulphides and calcite. The sulphide mineralization ends abruptly along the marble walls of the ore bodies, but diminishes gradually toward the tactite sides. Coarse tactite with interstitial calcite appears to have been more permeable and susceptible to replacement by metallic minerals than either marble or fine-grained tactite. The amount of coarse, calcite-bearing tactite which is free of metallic minerals seems to be small. It is believed that most of the chalcopyrite has replaced calcite, or in some cases pyrrhotite which had previously replaced calcite.

"Thus, the present positions and forms of the ore bodies seem to have been largely caused by two factors: the location of the tactite masses, and the presence and structure of coarse, calcite-bearing portions of the individual tactite bodies. Where the tactite bodies were in contact with marble, the susceptible, calcite-rich portion of the tactite usually lay on the marble side of the tactite. On the other hand, the calcite-bearing portion of tactite bodies wholly within granite porphyry has commonly been in the interior of the tactite mass."

ORE RESERVES

Under "Ore Reserves," Farvell and Full (p. 15) state:

"It is exceedingly difficult to make an estimation of the reserves of the Empire mine because of the irregularities of the ore bodies and because much of the mineralized ground has never been systematically sampled. Only a portion of the mine was sampled by the Bureau of Mines, whose assays have been used in the present estimate. Known reserves are small because very little development has been done in advance of mining.

"All the estimated reserves of sulphide ore are contained in one ore body at the north end of the 1000 level (plate 28). Its extension on the 900 level is not known. On the northwest and probably down the dip this body is truncated by a post-mineral dike. The possibility of a continuation of the ore body on the farther side of the dike is promising. Using a cutoff of 2 percent copper, the reserves of indicated and inferred sulphide ore in this ore body are 23,370 tons averaging 2.67 percent copper, 0.066 ounces gold and 0.95 ounces silver per ton; no measured reserves have been estimated. * * *"

"This small tonnage of reserves of sulphide ore is hardly an adequate measure of the immediate prospects for the mine. In the authors' opinion the unknown ore will probably exceed the known ore for some time to come, regardless of exploration technique. Ore bodies now known on and below the 1000 level will continue for some distance in depth, at least to the proposed 1100 level, but the authors do not feel that they have sufficient geologic or statistical information to include them in the ore reserves. The chances of discovering extensions of known ore bodies in the opposite sides of transecting porphyritic granodiorite dikes are good, but not certain enough to be included in the ore reserves. * * * "

GEOLOGIC JUSTIFICATION FOR PROPOSED EXPLORATION

Under "Recommendations for Exploration," Farwell and Full (p. 16) state:

"Although the deposits of the Empire mine have been extensively explored and mined and the developed reserves are small, the authors believe that the chances of finding additional ore are very good. Probably the continued life of the mine will depend on the discovery of new ore bodies rather than extensions of known ore bodies. The full width of the contact zone has not been systematically determined or explored, nor has the full length of the copper-bearing zone. It is thought that the possibilities for exploration on the 1600 level have not been exhausted.

"Since the ore deposits are associated with tactite, the discovery of new ore bodies is chiefly dependent upon the thorough exploration of known tactite bodies and the discovery and exploration of new tactite masses. All tactite bodies should be well explored, for an ore body may be completely enclosed within barren tactite, or weakly mineralized tactite may lie on the margins of a good ore body. A sulphide-bearing stringer, no matter how narrow, may lead to an ore body, particularly if the stringer is cutting tactite.

"Situations considered to be favorable for exploration are presented below:

1. Projections of known ore bodies.

2. Where an ore body is cut by a post-mineral dike of porphyritic granodiorite, the separated and unexplored portion of the ore body may be along the farther wall of the dike.

3. Known tactite masses which carry lean sulphides, to determine whether low-grade material is peripheral to ore.

4. Known tactite masses which locally appear to be barren, to determine whether ore lies within.

5. Projections of known tactite bodies.

6. Limestone-granite porphyry contacts, particularly where limestone might form the hanging wall above a mass of granite porphyry, in search for tactite bodies along the contact."

It is felt that the above statement by Farwell and Full is ample justification for an exploration program. The numerous drill holes on the upper levels as recommended in their report are felt, however, to be more in the nature of development, whereas the exploration project proposed in this memorandum, viz., driving a 600-foot raise and exploring by drifting and drilling on the 1300 level is strictly exploration of the block of virgin ground between the 1600 and 1000 levels.

APPLICANT'S PROPOSAL

The applicant's proposal, though rather indefinite, is stated to be "to drive a 1000 ft. adit tunnel to be known as the 1100 Level. This adit will open the large ore reserves exposed from the 1050 Sub-Level up to the 700 ft. Level." According to J. Ray Weber, such an adit would probably be between 1,200 and 1,500 feet long, mostly dead work in the limestone. Also, it would be only 50 to 100 feet below the 1000 level, on which mining has already been carried on and would be developing ore on the 1100 level which has been proved up partly by the Bureau of Mines drilling program carried on in 1942 and 1943. Therefore, this proposed 1100 level adit is definitely development work rather than exploration and so cannot be done under a DMEA contract, and Mr. Bowen was so told by Thor H. Killsgaard, Staff Assistant for DMEA, when they discussed the application in Washington. At that time, however, Mr. Bowen expressed willingness to consider other proposed exploration work, hence the program outlined below is proposed as a reasonable exploration project.

It should be pointed out at this time that under item 5 (d) of the application it is stated that E. G. Bowen will personally supervise the project, for several reasons given, one of which is that he "has an intimate knowledge dating back 35 years of this Mineral Hill Mining District." Inasmuch as the Mineral Hill Mining District lies around Hailey, Idaho, and the Empire mine, near Mackay, is in the Alder Creek Mining District, this hardly qualifies Mr. Bowen as a supervisor for the proposed project. As a matter of fact, J. Ray Weber, who has been around the Empire mine for about 40 years and was superintendent of the mine in 1940 (Farwell and Full, 1944) and represents part of the ownership of the mine, is the logical person to be in charge of this work.

RECOMMENDED WORK UNDER A DMEA CONTRACT

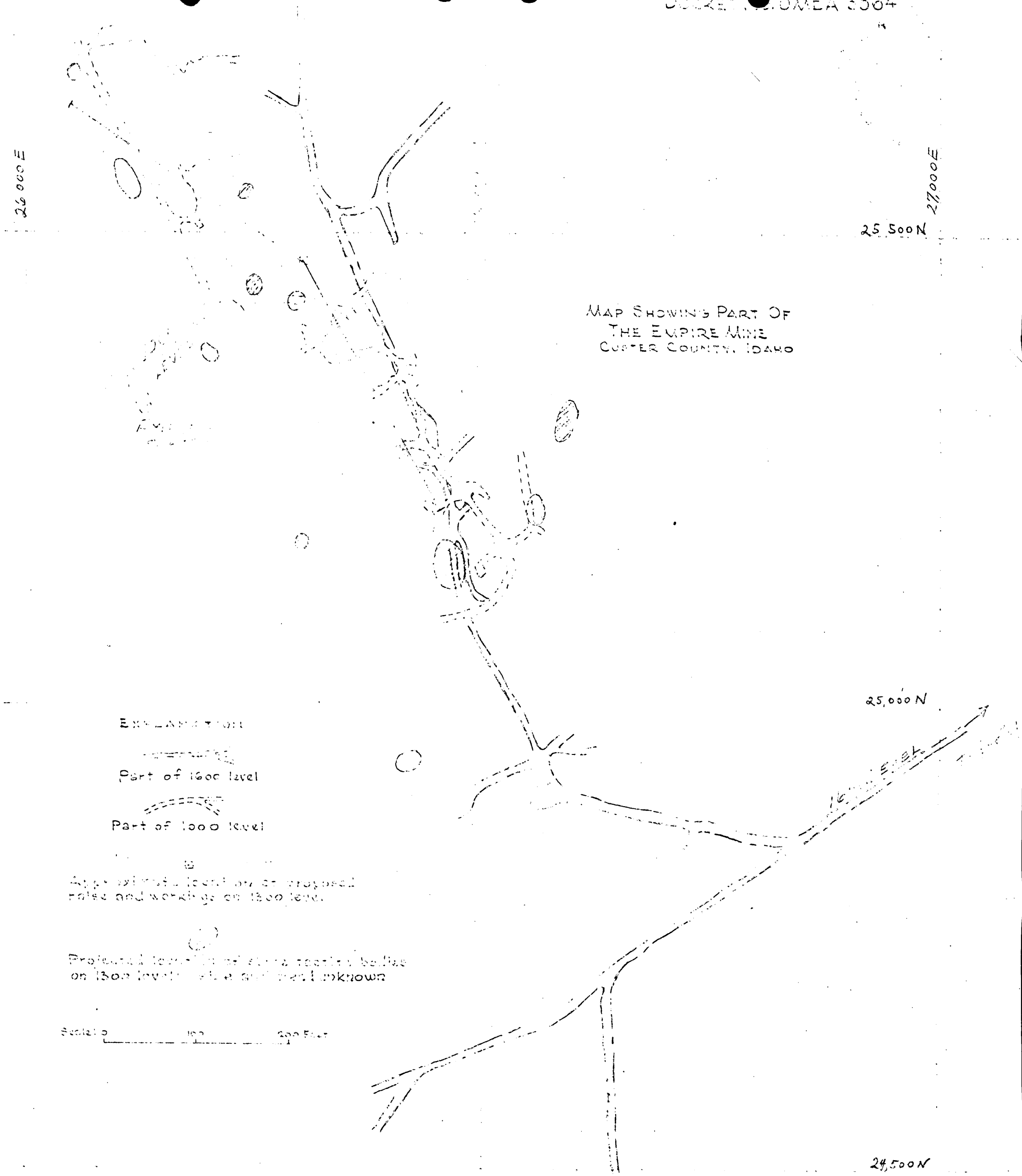
The proposed exploration, as a first stage, consists in raising 600 feet from the 1600 level, joining with the old 1000 level to improve ventilation, establishing a 1300 level, drifting 600 feet on this level, and doing 5,000 feet of diamond drilling, mostly on the 1300 level, but some on the 1000 level (similar or the same as

that recommended by Farwell and Full, p. 20, Open File Report, U. S. Geol. Survey, Oct. 1944). A second stage, dependent upon what is found in the first stage, would consist of an additional 400 feet of drifting and 2,000 feet of diamond drilling, all on the 1300 level.

The reason for connecting the raise from the 1600 level with the 1000 level, which is presumably still connected with the higher levels and the surface through the interal shaft is that as the 1600 level is in over 5,500 feet from its portal, a through-connecting raise will improve ventilation a great deal and do away with the large problem and extensive costs of ventilation should any other sort of exploration be tried above the 1600 level. Such a raise would also give much easier access for drilling on the 1000 and higher levels; moreover, at a later date much more exploration and development could be done on higher levels, and all ore found would come down through the raise, and the royalty on this ore as well as any ore found by the immediate DMEA exploration would probably assure repayment of the Government for its share of the cost of the project.

Careful study of the plans and sections in Farwell and Full's Open File Report indicates that the best place for a raise would be at approximately 26,300 E. and 25,470 N. This is about 40 feet west of the 1600 level, giving room for a slusher sublevel at the bottom of the raise, and about 40 feet from the nearest workings on the 1000 level. Allowance should thus be made for about 80 feet of drifting aside from that planned on the 1300 level. This location was picked because it appears that a raise here would be almost entirely in granite porphyry; it would avoid the quartz monzonite and the granodiorite porphyry rock, the latter of which is reported by Mr. Weber and others to be difficult to hold because of air slaking; there is a possibility that a little tactite will be passed through about 450 feet above the 1600 level, but it is believed that no large ore body will be cut there. Such a location for the raise is also approximatly midway between two general areas which should be explored by the drifting and drilling on the 1300 level. (See accompanying sketch map).

Enclosure (1 map)
Distribution:
DMEA (4)
USBM (2)
USGS (SRO)
Docket
Vhay
Nickelson


26,000 E
27,000 E
25,500 N
25,000 N
24,500 N
Map Showing Part Of
The Empire Mine
Custer County, Idaho
Explanation
Part of 1600 level
Part of 1000 level
Approximate location of proposed raise and workings on 1300 level.
Projected location of strong footwall bedded on 1300 level, size and extent unknown
Scale: 0 100 200 Feet

RECEIVED
SEP 12 1955

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
~~WASHINGTON 25, D.C.~~

RECEIVED
SEP 12 1955

1201 N. Division St.
Spokane 2, Washington
September 6, 1955

MEMORANDUM

To: DMEA Field Team, Region I, Northwest District

From: A. L. Service, Mining Engineer, Bureau of Mines

Subject: Cost analysis, Docket No. DMEA-3864 (copper), Idaho Alta Metals Corporation, Empire Mine, Custer County, Idaho

The exploration program originally proposed by the applicant was considered infeasible and the costs were excessive. An examination was scheduled and the property was visited on July 19, 1955, with John S. Vhay and H. B. Nickelson, geologists, U. S. Geological Survey. Mr. Vhay will submit his report on the geology, etc. to support the proposed work.

It was decided to set up the project in two stages to explore the area from the 1300 and 1000 levels. Stage I will consist of rehabilitating the 1600 level, 600 feet of 2½-compartment raise from the 1600 level to the 1000 level, 80 feet of drift on the 1000 and 1600 levels to connect to raise, 600 feet of sublevel drifting on the 1300 level, 2000 feet of longhole drilling, four diamond drill stations, and 5000 feet of diamond drilling from the 1000 and 1300 levels.

Stage II will consist of an additional 400 feet of drifting and three diamond drill stations on the 1300 level, and 2000 feet of diamond drilling on the 1300 level. The footages in the second stage shall be determined by the Field Team but shall not exceed those provided in the contract.

If the Government should decide to participate in the proposed work, the following costs are recommended for consideration. These costs have been computed from labor and material costs that prevail in the area.

Reviewed by
DMEA OPERATIONS [illegible]

(date)

Stage I

Rehabilitate 1600 level - 1500 feet - 6 days

1. Independent contracts - none

2. Labor and supervision
   Labor
   2 men @ $14.55 x 1.083 OT + FICA, etc. - 11% $209.88

3. Operating materials and supplies
   Pipe - 4 " airline - 1500 ft. @
   $1.20/ft. - 50% $900.00
   2" waterline - 500 ft. @
   $0.34/ft. - 50% 85.00 985.00

4. Operating equipment
   To be furnished:
   1 diesel locomotive @ $81.66/mo. 20.41

5. Rehabilitation and repairs - none

6. New buildings and improvements - none

7. Miscellaneous - none

Total cost of rehabilitation	$1,215.29
Cost per foot	$ 0.81

Raise - 2½-compartment - 600 feet - 5'x12'

Assuming an advance per shift of 3.0 feet for the first 300 feet and 2.0 feet for the last 300 feet, 2 shifts per day, it will take 125 days or 5 months to complete the raise.

1. Independent contracts - none

2. Labor and supervision
   Labor
   4 miners and 1 hoistman @
   $14.55 x 1.083 OT $9,848.75
   1 mechanic-compressorman
   @ $14.55 x 1.083 OT 1,969.75

   Supervision
   Supt. @ $600/mo. 3,000.00

   FICA, etc. - 11% 1,630.04 $16,448.54

Raise - 2½-compartment - 600 feet (cont.)

3. Operating materials and supplies

Explosives - 15,000 lbs. @ $21.00/cwt.	$3,150.00	
Fuse - 20,000 ft. @ .02/ft.	400.00	
Caps - 3,000 @ .02/ea.	60.00	
Power (diesel fuel & gas)	1,350.00	
Pipe - 4" airline - 300 ft. @ $1.20/ft. - 50%	180.00	
2" airline - 300 ft. @ $0.75/ft. - 50%	112.50	
2" waterline - 300 ft. @ $0.34/ft. - 50%	51.00	
1" waterline - 300 ft. @ $0.20/ft. - 50%	30.00	
12" venttube - 600 ft. @ $85.05/100' - 75%	382.72	
Accessories - 20%	151.24	
Steel and bits	1,050.00	
1/ Timber - 320 M bd. ft. @ $50.00/M	16,000.00	
Equipment maintenance & repairs	1,500.00	$24,417.46
Cost per foot		40.696

1/ Timber calculated to include ladders, bulkheads, etc.

4. Operating equipment
To be furnished:

	Monthly Use Allow.	Use Period	Total	
1 vent fan	$18.60	5 mo.	$ 93.00	
2 single drum air hoists	19.74	"	98.70	
1 500 cfm compressor	206.41	"	1032.05	
2 air receivers	6.10	"	30.50	
5 ore cars	16.25	"	81.25	
2 rock drills w/pusher	27.50	"	137.50	
1 diesel locomotive	81.66	"	408.30	
1 motor pump w/eng.	16.92	"	84.60	$1,965.90
Cost per foot				3.277/ft.

5. Rehabilitation and repairs - none
6. New buildings and improvements - none
7. Miscellaneous
Assays for Cu, Ag, Au - 50 @ $2.50/ea. 125.00

Total cost of 600 feet of raise $42,956.90

Cost per foot 71.595/ft.

Drifting 80 feet to connect to raise from 1600 and 1000 levels @ $34.143/ft. $2,731.44

Sublevel drifting - 600 feet - 3.5 months

Assuming an advance of 3.5 feet per shift, 2 shifts per day, it will take 86 days or 3.5 months to complete the drifting.

1. Independent contracts - none

2. Labor and supervision

Labor		
4 miners and 1 hoistman @ $14.55 x 1.083 OT	$6,775.94	
Mechanic-compressorman @ $14.55 x 1.083 OT	1,355.19	
Supervision		
Supt. @ $600/mo.	2,100.00	
FICA, etc. - 11%	1,125.42	
Consulting geologist @ $50/day - 40 days	2,000.00	$13,356.55
Cost per foot		22.261

3. Operating Materials & Supplies

Explosives - 5000 # @ $21.00/cwt.	1,050.00	
Fuse - 9600 ft. @ .02/ft.	192.00	
Caps - 1500 @ .02/ea.	30.00	
Steel & bits	1,050.00	
Pipe - 2" airline, 600 ft. @ 0.75/ft. - 50%	225.00	
3/4" waterline - 600 ft. @ 0.16/ft. - 50%	48.00	
Remove venttube from 300 feet of raise and install in drift	75.00	
Accessories - 20% of above	69.60	
Rail - 16# - 6400 # @ $9.50/cwt. - 50%	304.00	
Ties - 400 @ $0.30/ea.	120.00	
Accessories - 20% of above	84.80	
Equipment repair	810.00	
Power (diesel fuel & gas)	1,350.00	5,408.40
Cost per foot		9.014

4. Operating equipment
   To be furnished:

	Monthly Use Allow.	Use Period	Total	
1 vent fan	$18.60	3.5 mo.	$65.10	
2 single drum air hoists	19.74	"	69.09	
1 500 cfm compressor	206.11	"	722.44	
2 air receivers	6.10	"	21.35	
1 Eimco loader	58.58	"	205.03	
2 Rock drills w/pusher	27.50	"	96.25	
1 diesel locomotive	81.66	"	285.81	
1 motor pump w/engine	19.62	"	68.67	1533.74
Cost per foot				2.556

5. Rehabilitation and repairs - none

6. New buildings and improvements - none

7. Miscellaneous
   Assays for Cu, Ag, Au - 75 @ $2.50 — 187.50

Total Cost of 600 feet of drift — $20,486.19

Cost per foot — 34.143

Timber 5'x7' in the clear shall be used where necessary
300 feet timber @ $5.00/ft. — 1,500.00

Diamond drill stations - 20 days
4 stations equivalent to 40 feet of drift or
10 feet per station

Drift 40 feet @ $34.143/ft. — 1,365.72

Cost per station — 341.43

Diamond drilling - 5000 feet - 4 months

1. Independent contracts
   5000 feet @ $4.75/ft. — $23,750.00

2. Labor and supervision

Supt. @ $600/mo. + 11% FICA	2,664.00	
Consulting geologist - 20 days @ $50/day	1,000.00	3,664.00

Diamond drilling - 5000 feet (cont.)

3. Operating materials and supplies - none

4. Operating equipment
   To be furnished:

	Monthly Use Allow.	Use Period	Total	
1 500 cfm compressor	$206.41	4 mo.	$825.64	
2 air receivers	6.10	"	24.40	
1 diesel locomotive	81.66	"	326.64	
1 air hoist	9.87	"	39.48	
1 motor pump w/engine	16.92	"	67.68	$1,283.84

5. Miscellaneous
   Assays for Cu, Ag, Au
   200 @ $2.50 $500.00

Total cost of 5000 feet of diamond drilling $29,197.84

Cost per foot 5.840

Longhole drilling for short exploratory holes and probing
2000 feet @ $1.00/ft. 2,000.00

Recapitulation of Costs

Stage I

Rehabilitate 1600 level - 1500 feet

1.	Independent contracts	none
2.	Labor and supervision	$ 209.88
3.	Operating materials and supplies	985.00
4.	Operating equipment	20.41
5.	Rehabilitation and repairs	none
6.	New buildings and improvements	none
7.	Miscellaneous	none
	Total	$1215.29
	Cost per foot	0.81

Raise 600 feet

1.	Independent contracts	none
2.	Labor and supervision	$16,448.54
3.	Operating materials and supplies	24,417.46
4.	Operating equipment	1,965.90
5.	Rehabilitation and repairs	none
6.	New buildings and repairs	none
7.	Miscellaneous	125.00
	Total	$42,956.90
	Cost per foot	71.595

Drift 80 feet to connect through to raise	$2,731.44
Sublevel drifting - 600 feet	
1. Independent contracts	none
2. Labor and supervision	$13,356.55
3. Operating materials and supplies	5,408.40
4. Operating equipment	1,533.74
5. Rehabilitation and repairs	none
6. New buildings and improvements	none
7. Miscellaneous	187.50
Total	$20,486.19
Cost per foot	34.143
Timber 300 feet where necessary	$ 1,500.00
4 diamond drill stations - equivalent to 40 feet of drift	$1,365.72
Cost per station	341.43
Diamond drilling 5000 feet	
1. Independent contracts	$23,750.00
2. Labor and supervision	3,664.00
3. Operating materials and supplies	1,283.84
4. Miscellaneous	500.00
Total	$29,197.84
Cost per foot	5.840
Longhole drilling - 2000 feet	$ 2,000.00

Total Cost of Contract Work

Stage I

Rehabilitate 1600 level	$ 1,215.29
Raise 2½-compartment, 600 feet @ $71.595/ft.	42,956.90
Drift 80 feet @ $34.143/ft.	2,731.44
Sublevel drift 600 feet @ $34.143/ft.	20,486.19
Timber - 300 feet @ $5.00/ft.	1,500.00
Diamond drill stations - 4 @ $341.43	1,365.72
Diamond drilling - 5000 feet @ $5.840/ft.	29,197.84
Longhole drilling - 2000 feet @ $1.00/ft.	2,000.00
Total - Stage I	$101,453.38

Stage II

Drifting - 400 feet @ $34.143/ft.	$ 13,657.20
Timber - 200 feet @ $5.00/ft.	1,000.00
Diamond drilling - 2500 feet @ $5.840/ft.	14,600.00
Diamond drill stations - 3 @ $341.43	1,024.29
Total - Stage II	$ 30,281.49
Total cost of project	$131,734.87
Government participation - 50%	$ 65,867.44

Distribution:
DMEA, Wash. (origl & 3)
USGS (2)
DMEA
Engr

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

~~WASHINGTON 25, D.C.~~
Co. 157 Howard Street
Spokane 4, Washington

September 20, 1955
Air Mail

Docket

Approved
Reply

Mr. T. G. Bowen
Idaho Alta Metals Corporation
Room 2701, 52 Wall Street
New York, New York

Re: Docket No. DMA-3064 (copper)
Empire Mine
Custer County, Idaho

Dear Mr. Bowen:

After you left the office last Thursday we discovered that the officers of the Mackay Exploration Company had signed the wrong form. We need a "Consent to Lien" but they signed a "Subordination Agreement," which is similar in appearance to the "Consent to Lien" form.

We are therefore returning the five signed copies of the "Subordination Agreement" that you left with us along with a complete set (seven copies) of "Consent to Lien" forms. You should have officers of the Mackay Exploration Company sign the "Consent to Lien" forms and return six signed copies to this office at your earliest convenience.

We are sending a copy of this letter along with a set of "Consent to Lien" forms to you in care of Mr. J. Ray Weber at Mackay, Idaho. This might speed things up should you be at the mine or care to have Mr. Weber handle this matter from Mackay.

Sincerely yours,

Verne G. Fryklund, Jr.
Acting Executive Officer, DMEA
Field Team, Region I, MM Dist.

Enclosures
cc: T. G. Bowen
c/o J. Ray Weber
Mackay, Idaho

DMEA (2)
UMDM (2)
Vhay
Quinlan

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.
~~[illegible]~~
No. 157 Howard Street
Spokane 4, Washington

RECEIVED
SEP 12 1955

September 7, 1955

Mr. George C. Selfridge, Chairman
MEA Operating Committee
Department of the Interior
Washington 25, D. C.

Docket
Answered
Betty

Re: Docket No. MEA 664 (copper)
Idaho Alta Metals Corporation
Empire Mine
Custer County, Idaho

Dear Mr. Selfridge:

Enclosed are four copies of memoranda by J. S. Vhay, Geological Survey, and A. L. Service, Bureau of Mines, discussing a proposed exploration project at the Empire mine.

The property was the subject of considerable investigation by both the Bureau of Mines and the Geological Survey during the war, and it appears that further exploration at the property is warranted. The applicant's proposal was not desirable, and the exploration recommended was worked out at the property with the applicant's representative. We concur in recommending an exploration project.

By Field Team, Region I, Eastern District -

King G. Agnew, Acting Exec. Officer
U. S. Bureau of Mines

Verne C. Fryklund, Jr., Acting Member
U. S. Geological Survey

Enclosures

cc: USBM (2)
USGS (SMD)
Vhay
Nicholson

RECEIVED

SEP 12 1955

UNITED STATES
DEPARTMENT OF THE INTERIOR
Defense Minerals Exploration Administration
So. 157 Howard Street
Spokane 4, Washington

August 8, 1955

MEMORANDUM

To: Field Team, Region I, Northwest District

From: J. S. Vhay, Geologist, U. S. Geological Survey

Subject: Examination Report, Docket No. DMEA-3864 (copper), Idaho Alta Metals Corporation, Empire Mine, Custer County, Idaho.

INTRODUCTION

On June 27, 1955, this office received an Application for Aid in an Exploration Project from Idaho Alta Metals Corporation. The application proposes to explore the Empire mine in Custer County, Idaho, a mine that has been an important copper producer in the past. No extended field examination was thought necessary, as reports by J. F. Kemp and C. G. Gunther (Am. Inst. Min. Eng. Trans., vol. 38, p. 269-296, 1908), J. B. Umpleby (U. S. Geol. Survey Prof. Paper 97, 1917), C. P. Ross (Idaho Bur. of Mines and Geol., Pamphlet 33, p. 7-18, 1930) and F. W. Farwell and R. P. Full (U. S. Geol. Survey Open File Report, Oct. 1944), were available. A visit was made to Mackay by A. L. Service, Bureau of Mines, and H. B. Nickelson and J. S. Vhay, Geological Survey, to discuss the application with a representative of the company on July 19, 1955. Mr. E. G. Bowen, vice president of the company, with whom this office had been corresponding, could not be there, but he had appointed J. Ray Weber as his representative, and Mr. Weber was contacted; after a thorough discussion, the proposal outlined below was agreed upon. Mr. Weber is well acquainted with the mine, having worked there for more than 40 years, and he apparently will be in charge of the project.

RECOMMENDATIONS

It is recommended that a contract be granted for a project which will consist of putting in a 600-foot, 2 1/2-compartment raise between the 1600 level and the 1000 level, drifting 600 feet on a new 1300 level, and doing 5,000 feet of diamond drilling on that level and the 1000 level. Depending upon what is found by this work, a second stage could consist of a further 400 feet of drifting and 2,000 feet of diamond drilling, all on the 1300 level.

PROPERTY AND OWNERSHIP

The property consists of a group of patented claims, known as the Empire Mine Group plus certain unpatented claims; the property is described as follows (Mining Lease and Option Agreement submitted with application):

"Tract No. 855, Section 28; Tract No. 853 described as South 7 acres of Southeast quarter of the Southwest quarter (SE¼SW¼) Section 28, and the North one half of the Northwest quarter (N½NW¼) Section 33, all in Township 7 North, Range 24 E.B.M. The following patented Lode Mining Claims: ATLANTIC, Survey 1272A * * * ; ATLANTIC MILLSITE, Survey 1272B, * * * ; BUENA VISTA, Survey 1887, * * * ; COPPER BULLION, Survey 1272, * * * ; CONTINENTAL, Survey 1887, * * * ; EASTER, Survey 1272A, * * * ; HANNIBAL, Survey No. 1887, * * * ; KHEDIVE, Survey 1887, * * * ; LESLIE W., Survey 1887, * * * ; MIDWINTER, Survey 1272A, * * * ; OCCIDENTAL, Survey 1887, * * * ; PACIFIC, Survey 1272A, * * * ; PACIFIC MILLSITE, Survey 1272B, * * * ; PASHA, Survey 1887, * * * ; RIO VISTA, Survey 1887, * * * ; REMONITIZATION, Survey 1887, * * * ; SULTAN, Survey 1887, * * * ; SULTANA, Survey 1887, * * * ; WESTERN, Survey 1272A, * * * ; WELLINGTON, Survey 1887, * * * ; all of the foregoing lands being situated in the County of Custer, State of Idaho;

"Together with all improvements and appurtenances.

"ALSO, the following unpatented Lode Mining Claims:

"NAME	DATE LOCATED	DATE RECORDED
Washington	Feb. 22, 1902	April 30, 1902
Hamilcar	Sept. 28, 1903	Jan., 1904
Cushing	Sept. 28, 1903	Jan. 2, 1904
Catherine	Jan. 10, 1922	Jan. 14, 1922
Artic	July 1, 1934	July 13, 1934
Triangle	July 1, 1934	July 13, 1934"

According to the application, this property is owned by the Mackay Exploration Company and W. P. Barton and Margaret S. Barton of Boise, Idaho. The above parties entered into a Mining Lease and Option Agreement with E. G. Bowen of Hailey, Idaho, who, in turn, assigned it to the Wood River Syndicate (E. G. Bowen, its attorney in fact) which, in turn, assigned the property to Idaho Alta Metals Corporation, the applicant. According to the Lease Agreement, apparently a company called Mackay Metals, of which J. Ray Weber is receiver, also has retained some interest in the property. The Legal Division of the Defense Minerals Exploration Administration will have

to determine which of the above-named parties will have to sign Consent to Lien form, none of which were submitted with the application. The Reconstruction Finance Corporation has a lien for $30,000.00 against the property, so a Subordination Agreement will have to be signed by that corporation, also, before a DMEA contract can be granted.

LOCATION, ACCESSIBILITY, MINE WORKINGS

The property is in the Alder Creek Mining District in the White Knob Range about 6 miles by road southeast of Mackay, Custer County, Idaho. Most of the property lies within sec. 31, T. 7 N., R. 24° E., sec. 36, T. 7 N., R. 23° E., and sec. 1, T. 6 N., R. 23° E.

The portal of the 1600 (Cossack) level is accessible by good road from Mackay; other higher portals, especially those of the important 700 and 800 levels, are also reached by roads. The mine has access through rights to sufficient water for all purposes, and electrical power is available within 2 miles of the property; the applicant states that he plans to bring this power to the portal of the 1600 level.

In addition to a number of small levels near the surface and sublevels throughout the mine, the numbered levels of the mine (from the top down) are the 300, 500, 600, 700, 800, 900, 1000, and 1600; the 700, 800, 900, and 1000 are connected by an internal shaft. The 900 and 1000 levels do not have portals, being served by the internal shaft. A complete picture of the mine workings is shown in plan on plate 6 and in longitudinal section on plate 45 of the Open File Report by Farwell and Full (U. S. Geol. Survey, Open File Report, Oct. 1944).

GEOLOGY

The Open File Report by Farwell and Full is the result of the latest study of the mining district and has the locations and assays of all the diamond drill holes drilled in the Empire mine by the Bureau of Mines in 1942 and 1943, as well as geologic maps of all accessible workings and 15 geologic sections through the mine. No mapping was done during the present examination because of this available material, and most of the following is quoted from this report, to which the reader is referred for more detailed information.

On page 1 of their summary, Farwell and Full state:

"The copper * * * deposits are located along the margin of a granite stock * * * intruded into the Brazer limestone, of Mississippian age. Near the Empire Mine the stock has a marginal facies of granite porphyry, and an extensive zone of contact metamorphism has been developed in the adjacent limestone. Tongues and dikes of granite prophyry transect the

limestone, and several large blocks of limestone are wholly included within the granite porphyry. Irregular masses of garnet-diopside rock, or tactite, lie within the granite porphyry and along the contacts of granite porphyry with tongues and blocks of limestone. The tactite was produced by contact metamorphism, after the granite porphyry had crystallized. Most of it formed from limestone or marble, although some tactite replaced granite porphyry. * * * "

On page 7 of the same report, the following statement appears:

" * * * The limestone is intruded also by kides and small bodies of diorite, quartz monzonite, aplite, andesite porphyry, quartz diabase porphyry, and porphyritic granodiorite. * * * "

Regarding the last rock type, on page 8 they state:

" * * * Chilled margins of slightly porphyritic obsidian are common along the (granodiorite) dikes, and have been observed against garnet-chalcopyrite ore, granite, granite porphyry, and some of the earlier rocks. The porphyritic granodiorite slakes rapidly where exposed underground, requiring timbering in most places."

Discussing the metamorphic rocks in more detail, on page 9 Farwell and Full state:

"Zones of marble have been developed throughout the area at the contacts of diorite, quartz monzonite, granite, and granite porphyry intrusions into the limestone. The marble is composed almost entirely of calcite with scattered crystals of lime silicates. Near its contacts with igneous rock or tactite, marble is coarse-grained and white or blue in color, and becomes finer-grained and bluer away from the contacts. In places the marble zone is more than 100 feet wide.

"Irregular bodies of tactite occur along a part of the border of the stock in the vicinity of the Empire mine. The tactite bodies have sharp contacts with the marble and commonly with the igneous rocks, although in places tactite passes gradually into granite porphyry. Stringers of garnet commonly extend 100 feet or more into the igneous rock but have not been observed cutting the calcareous rocks. Evidently some tactite has been formed by replacement of the igneous rocks as well as by replacement of marble. Garnet and diopside in varying proportions make up at lease 90 percent of the tactite. The garnets are grossularite to andradite in composition and range in color from brown through amber to pale honey-yellow. Diopside is greenish white to bottle-green in color. Epidote, actinolite, scapolite, wollastonite, and orthoclase are present in smaller amounts."

Regarding the ore deposits, the following is stated on pages 10 and 11 of the same report:

"The ore deposits of the Mackay district lie in the contact metamorphic zone of a granite stock and associated igneous intrusions. Ore bodies are known to occur in an arc-shaped belt that is at least 3 miles long and about 1,000 feet wide. * * *

" * * * The copper-bearing ore bodies, whose nature is known almost exclusively from developments in the Empire mine, are typically irregular pipe-like bodies associated with masses of tactite. The ore bodies commonly occur along the margins of the tactite masses in contact with marble, although some of them lie entirely within tactite. The pipes usually have an elliptical shape in horizontal plan, and the direction of their longer dimension may change from level to level. The strike length of the ore bodies ranges from 15 to 200 feet and their width from 5 to 55 feet. * * * Most of the pipes pitch to the northeast, east, or southeast in a direction nearly at right angles to the strike of the pipe. * * * A few flat ore bodies occur, particularly beneath marble hanging walls.

"The hypogene copper ores are composed of garnet, diopside, and other lime silicates that carry disseminations and sponge-like aggregates of metallic minerals. Chalcopyrite is the principal sulphide and is accompanied by pyrite, pyrrhotite, calcite, and quartz. * * * Scheelite is present in the copper ores in minable amounts at only a few places."

Discussing the occurrence of the ore further, Farwell and Full (p. 13) state:

"Sulphide-bearing tactite usually is composed of rather coarse-grained garnet and carries considerable calcite in contrast to much of the barren tactite, which is commonly fine-grained and has only small amounts of sulphides and calcite. The sulphide mineralization ends abruptly along the marble walls of the ore bodies, but diminishes gradually toward the tactite sides. Coarse tactite with interstitial calcite appears to have been more permeable and susceptible to replacement by metallic minerals than either marble or fine-grained tactite. The amount of coarse, calcite-bearing tactite which is free of metallic minerals seems to be small. It is believed that most of the chalcopyrite has replaced calcite, or in some cases pyrrhotite which had previously replaced calcite.

"Thus, the present positions and forms of the ore bodies seem to have been largely caused by two factors: the location of the tactite masses, and the presence and structure of coarse, calcite-bearing portions of the individual tactite bodies. Where the tactite bodies were in contact with marble, the susceptible, calcite-rich portion of the tactite usually lay on the marble side of the tactite. On the other hand, the calcite-bearing portion of tactite bodies wholly within granite porphyry has commonly been in the interior of the tactite mass."

ORE RESERVES

Under "Ore Reserves," Farwell and Full (p. 15) state:

"It is exceedingly difficult to make an estimation of the reserves of the Empire mine because of the irregularities of the ore bodies and because much of the mineralized ground has never been systematically sampled. Only a portion of the mine was sampled by the Bureau of Mines, whose assays have been used in the present estimate. Known reserves are small because very little development has been done in advance of mining.

"All the estimated reserves of sulphide ore are contained in one ore body at the north end of the 1000 level (plate 28). Its extension on the 900 level is not known. On the northwest and probably down the dip this body is truncated by a post-mineral dike. The possibility of a continuation of the ore body on the farther side of the dike is promising. Using a cutoff of 2 percent copper, the reserves of indicated and inferred sulphide ore in this ore body are 23,370 tons averaging 2.67 percent copper, 0.066 ounces gold and 0.95 ounces silver per ton; no measured reserves have been estimated. * * *"

"This small tonnage of reserves of sulphide ore is hardly an adequate measure of the immediate prospects for the mine. In the authors' opinion the unknown ore will probably exceed the known ore for some time to come, regardless of exploration technique. Ore bodies now known on and below the 1000 level will continue for some distance in depth, at least to the proposed 1100 level, but the authors do not feel that they have sufficient geologic or statistical information to include them in the ore reserves. The chances of discovering extensions of known ore bodies in the opposite sides of transecting porphyritic granodiorite dikes are good, but not certain enough to be included in the ore reserves. * * * "

GEOLOGIC JUSTIFICATION FOR PROPOSED EXPLORATION

Under "Recommendations for Exploration," Farwell and Full (p. 16) state:

"Although the deposits of the Empire mine have been extensively explored and mined and the developed reserves are small, the authors believe that the chances of finding additional ore are very good. Probably the continued life of the mine will depend on the discovery of new ore bodies rather than extensions of known ore bodies. The full width of the contact zone has not been systematically determined or explored, nor has the full length of the copper-bearing zone. It is thought that the possibilities for exploration on the 1600 level have not been exhausted.

"Since the ore deposits are associated with tactite, the discovery of new ore bodies is chiefly dependent upon the thorough exploration of known tactite bodies and the discovery and exploration of new tactite masses. All tactite bodies should be well explored, for an ore body may be completely enclosed within barren tactite, or weakly mineralized tactite may lie on the margins of a good ore body. A sulphide-bearing stringer, no matter how narrow, may lead to an ore body, particularly if the stringer is cutting tactite.

"Situations considered to be favorable for exploration are presented below:

1. Projections of known ore bodies.

2. Where an ore body is cut by a post-mineral dike of porphyritic granodiorite, the separated and unexplored portion of the ore body may be along the farther wall of the dike.

3. Known tactite masses which carry lean sulphides, to determine whether low-grade material is peripheral to ore.

4. Known tactite masses which locally appear to be barren, to determine whether ore lies within.

5. Projections of known tactite bodies.

6. Limestone-granite porphyry contacts, particularly where limestone might form the hanging wall above a mass of granite porphyry, in search for tactite bodies along the contact."

It is felt that the above statement by Farwell and Full is ample justification for an exploration program. The numerous drill holes on the upper levels as recommended in their report are felt, however, to be more in the nature of development, whereas the exploration project proposed in this memorandum, viz., driving a 600-foot raise and exploring by drifting and drilling on the 1300 level is strictly exploration of the block of virgin ground between the 1600 and 1000 levels.

APPLICANT'S PROPOSAL

The applicant's proposal, though rather indefinite, is stated to be "to drive a 1000 ft. adit tunnel to be known as the 1100 Level. This adit will open the large ore reserves exposed from the 1050 Sub-Level up to the 700 ft. Level." According to J. Ray Weber, such an adit would probably be between 1,200 and 1,500 feet long, mostly dead work in the limestone. Also, it would be only 50 to 100 feet below the 1000 level, on which mining has already been carried on and would be developing ore on the 1100 level which has been proved up partly by the Bureau of Mines drilling program carried on in 1942 and 1943. Therefore, this proposed 1100 level adit is definitely development work rather than exploration and so cannot be done under a DMEA contract, and Mr. Bowen was so told by Thor H. Kiilsgaard, Staff Assistant for DMEA, when they discussed the application in Washington. At that time, however, Mr. Bowen expressed willingness to consider other proposed exploration work, hence the program outlined below is proposed as a reasonable exploration project.

It should be pointed out at this time that under item 5 (d) of the application it is stated that E. G. Bowen will personally supervise the project, for several reasons given, one of which is that he "has an intimate knowledge dating back 35 years of this Mineral Hill Mining District." Inasmuch as the Mineral Hill Mining District lies around Bailey, Idaho, and the Empire mine, near Mackay, is in the Alder Creek Mining District, this hardly qualifies Mr. Bowen as a supervisor for the proposed project. As a matter of fact, J. Ray Weber, who has been around the Empire mine for about 40 years and was superintendent of the mine in 1940 (Farwell and Full, 1944) and represents part of the ownership of the mine, is the logical person to be in charge of this work.

RECOMMENDED WORK UNDER A DMEA CONTRACT

The proposed exploration, as a first stage, consists in raising 600 feet from the 1600 level, joining with the old 1000 level to improve ventilation, establishing a 1300 level, drifting 600 feet on this level, and doing 3,000 feet of diamond drilling, mostly on the 1300 level, but some on the 1000 level (similar or the same as

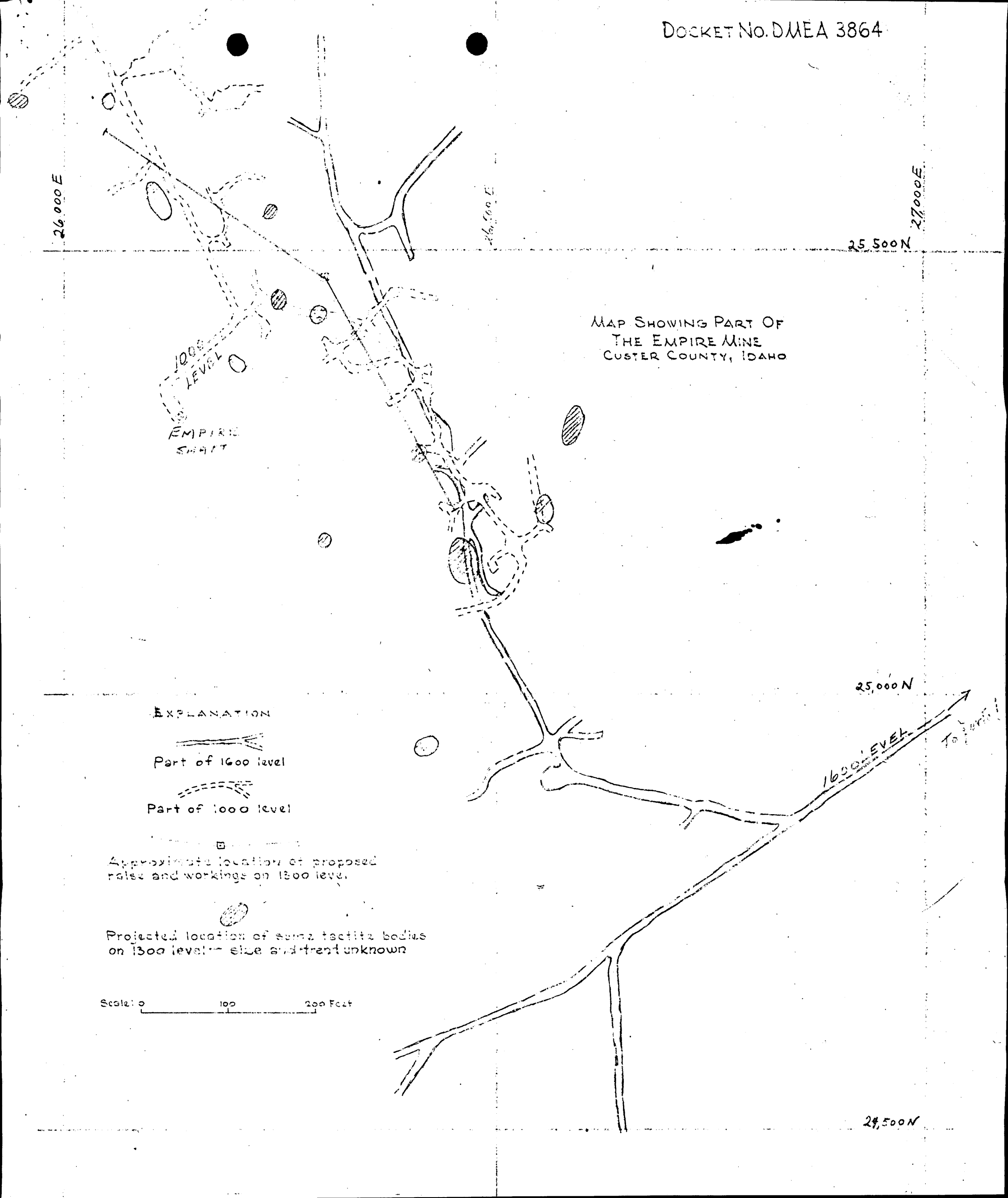
that recommended by Farwell and Full, p. 20, Open File Report, U. S. Geol. Survey, Oct. 1944). A second stage, dependent upon what is found in the first stage, would consist of an additional 400 feet of drifting and 2,000 feet of diamond drilling, all on the 1300 level.

The reason for connecting the raise from the 1600 level with the 1000 level, which is presumably still connected with the higher levels and the surface through the interal shaft is that as the 1600 level is in over 5,500 feet from its portal, a through-connecting raise will improve ventilation a great deal and do away with the large problem and extensive costs of ventilation should any other sort of exploration be tried above the 1600 level. Such a raise would also give much easier access for drilling on the 1000 and higher levels; moreover, at a later date much more exploration and development could be done on higher levels, and all ore found would come down through the raise, and the royalty on this ore as well as any ore found by the immediate DMEA exploration would probably assure repayment of the Government for its share of the cost of the project.

Careful study of the plans and sections in Farwell and Full's Open File Report indicates that the best place for a raise would be at approximately 26,300 E. and 25,470 N. This is about 40 feet west of the 1600 level, giving room for a slusher sublevel at the bottom of the raise, and about 40 feet from the nearest workings on the 1000 level. Allowance should thus be made for about 80 feet of drifting aside from that planned on the 1300 level. This location was picked because it appears that a raise here would be almost entirely in granite porphyry; it would avoid the quartz monzonite and the granodiorite porphyry rock, the latter of which is reported by Mr. Weber and others to be difficult to hold because of air slaking; there is a possibility that a little tactite will be passed through about 450 feet above the 1600 level, but it is believed that no large ore body will be cut there. Such a location for the raise is also approximatly midway between two general areas which should be explored by the drifting and drilling on the 1300 level. (See accompanying sketch map).

Enclosure (1 map)
Distribution:
DMEA (4)
USBM (2)
USGS (SRO)
Docket
Vhay
Nickelson

DOCKET NO. DMEA 3864



MAP SHOWING PART OF
THE EMPIRE MINE
CUSTER COUNTY, IDAHO

RECEIVED
SEP 12 1955

xxxxxxxxxxxxxxxx

1201 N. Division St.
Spokane 2, Washington
September 6, 1955

MEMORANDUM

To: DMEA Field Team, Region I, Northwest District

From: A. L. Service, Mining Engineer, Bureau of Mines

Subject: Cost analysis, Docket No. DMEA-3644 (copper), Idaho Alta Metals Corporation, Empire Mine, Custer County, Idaho

The exploration program originally proposed by the applicant was considered infeasible and the costs were excessive. An examination was scheduled and the property was visited on July 19, 1955, with John S. Vhay and H. B. Mickelsen, geologists, U. S. Geological Survey. Mr. Vhay will submit his report on the geology, etc. to support the proposed work.

It was decided to set up the project in two stages to explore the area from the 1300 and 1000 levels. Stage I will consist of rehabilitating the 1600 level, 600 feet of 2-compartment raise from the 1600 level to the 1000 level, 80 feet of drift on the 1000 and 1600 levels to connect to raise, 600 feet of sublevel drifting on the 1300 level, 2000 feet of longhole drilling, four diamond drill stations, and 5000 feet of diamond drilling from the 1000 and 1300 levels.

Stage II will consist of an additional 400 feet of drifting and three diamond drill stations on the 1300 level, and 2000 feet of diamond drilling on the 1300 level. The footages in the second stage shall be determined by the Field Team but shall not exceed those provided in the contract.

If the Government should decide to participate in the proposed work, the following costs are recommended for consideration. These costs have been computed from labor and material costs that prevail in the area.

Stage I

Rehabilitate 1600 level - 1500 feet - 6 days

1. Independent contracts - none

2. Labor and supervision
   Labor
   2 men @ $14.55 x 1.083 OT + FICA, etc. - 11% $209.88

3. Operating materials and supplies
   Pipe - 4" airline - 1500 ft. @
   $1.20/ft. - 50% $900.00
   2" waterline - 500 ft. @
   $0.34/ft. - 50% 85.00 985.00

4. Operating equipment
   To be furnished:
   1 diesel locomotive @ $81.66/mo. 20.41

5. Rehabilitation and repairs - none

6. New buildings and improvements - none

7. Miscellaneous - none

Total cost of rehabilitation	$1,215.29
Cost per foot	$ 0.81

Raise - 2½-compartment - 600 feet - 5'x12'

Assuming an advance per shift of 3.0 feet for the first 300 feet and 2.0 feet for the last 300 feet, 2 shifts per day, it will take 125 days or 5 months to complete the raise.

1. Independent contracts - none

2. Labor and supervision
   Labor
   4 miners and 1 hoistman @
   $14.55 x 1.083 OT $9,248.75
   1 mechanic-compressorman
   @ $14.55 x 1.083 OT 1,969.75

   Supervision
   Supt. @ $600/mo. 3,000.00

   FICA, etc. - 11% 1,630.04 $16,448.54

Raise - 2½-compartment - 600 feet (cont.)

3. Operating materials and supplies

Explosives - 15,000 lbs. @ $21.00/cwt.	$3,150.00	
Fuse - 20,000 ft. @ .02/ft.	400.00	
Caps - 3,000 @ .02/ea.	60.00	
Power (diesel fuel & gas)	1,350.00	
Pipe - 4" airline - 300 ft. @ $1.20/ft. - 50%	180.00	
2" airline - 300 ft. @ $0.75/ft. - 50%	112.50	
2" waterline - 300 ft. @ $0.34/ft. - 50%	51.00	
1" waterline - 300 ft. @ $0.20/ft. - 50%	30.00	
12" venttube - 600 ft. @ $85.05/100' - 75%	382.72	
Accessories - 20%	151.24	
Steel and bits	1,050.00	
1/ Timber - 320 M bd. ft. @ $50.00/M	16,000.00	
Equipment maintenance & repairs	1,500.00	$24,417.46
Cost per foot		40.696

1/ Timber calculated to include ladders, bulkheads, etc.

4. Operating equipment
   To be furnished:

	Monthly Use Allow.	Use Period	Total	
1 vent fan	$18.60	5 mo.	$ 93.00	
2 single drum air hoists	19.74	"	98.70	
1 500 cfm compressor	206.41	"	1032.05	
2 air receivers	6.10	"	30.50	
5 ore cars	16.25	"	81.25	
2 rock drills w/pusher	27.50	"	137.50	
1 diesel locomotive	81.66	"	408.30	
1 motor pump w/eng.	16.92	"	84.60	$1,965.90
Cost per foot				3.277/ft.

5. Rehabilitation and repairs - none
6. New buildings and improvements - none
7. Miscellaneous
   Assays for Cu, Ag, Au - 50 @ $2.50/ea. 125.00

Total cost of 600 feet of raise $42,956.90

Cost per foot 71.595/ft.

Drifting 80 feet to connect to raise from 1600 and 1000 levels @ $34.143/ft. $2,731.44

Sublevel drifting - 600 feet - 3.5 months

Assuming an advance of 3.5 feet per shift, 2 shifts per day, it will take 86 days or 3.5 months to complete the drifting.

1. Independent contracts - none

2. Labor and supervision

Labor		
4 miners and 1 hoistman @ $14.55 x 1.083 OT	$6,775.94	
Mechanic-compressorman @ $14.55 x 1.083 OT	1,355.19	
Supervision		
Supt. @ $600/mo.	2,100.00	
FICA, etc. - 11%	1,125.42	
Consulting geologist @ $50/day - 40 days	2,000.00	$13,356.55
Cost per foot		22.261

3. Operating Materials & Supplies

Explosives - 5000 # @ $21.00/cwt.	1,050.00	
Fuse - 9600 ft. @ .02/ft.	192.00	
Caps - 1500 @ .02/ea.	30.00	
Steel & bits	1,050.00	
Pipe - 2" airline, 600 ft. @ 0.75/ft. - 50%	225.00	
3/4" waterline - 600 ft. @ 0.16/ft. - 50%	48.00	
Remove venttube from 300 feet of raise and install in drift	75.00	
Accessories - 20% of above	69.60	
Rail - 16# - 6400 # @ $9.50/cwt. - 50%	304.00	
Ties - 400 @ $0.30/ea.	120.00	
Accessories - 20% of above	84.80	
Equipment repair	810.00	
Power (diesel fuel & gas)	1,350.00	5,408.40
Cost per foot		9.014

4. Operating equipment
To be furnished:

	Monthly Use Allow.	Use Period	Total	
1 vent fan	$18.60	3.5 mo.	$65.10	
2 single drum air hoists	19.74	"	69.09	
1 500 cfm compressor	206.11	"	722.44	
2 air receivers	6.10	"	21.35	
1 Eimco loader	58.58	"	205.03	
2 Rock drills w/pusher	27.50	"	96.25	
1 diesel locomotive	81.66	"	285.81	
1 motor pump w/engine	19.62	"	68.67	1533.74
Cost per foot				2.556

5. Rehabilitation and repairs - none

6. New buildings and improvements - none

7. Miscellaneous
Assays for Cu, Ag, Au - 75 @ $2.50 187.50

Total Cost of 600 feet of drift $20,486.19

Cost per foot 34.143

Timber 5'x7' in the clear shall be used where necessary
300 feet timber @ $5.00/ft. 1,500.00

Diamond drill stations - 20 days
4 stations equivalent to 40 feet of drift or
10 feet per station

Drift 40 feet @ $34.143/ft. 1,365.72

Cost per station 341.43

Diamond drilling - 5000 feet - 4 months

1. Independent contracts
5000 feet @ $4.75/ft. $23,750.00

2. Labor and supervision
Supt. @ $600/mo. + 11% FICA 2,664.00
Consulting geologist - 20 days @
$50/day 1,000.00 3,664.00

Diamond drilling - 5000 feet (cont.)

3. Operating materials and supplies - none

4. Operating equipment
   To be furnished:

	Monthly Use Allow.	Use Period	Total	
1 500 cfm compressor	$206.41	4 mo.	$825.64	
2 air receivers	6.10	"	24.40	
1 diesel locomotive	81.66	"	326.64	
1 air hoist	9.87	"	39.48	
1 motor pump w/engine	16.92	"	67.68	$1,283.84

5. Miscellaneous
   Assays for Cu, Ag, Au
   200 @ $2.50 $500.00

Total cost of 5000 feet of diamond drilling $29,197.84

Cost per foot 5.840

Longhole drilling for short exploratory holes and probing
2000 feet @ $1.00/ft. 2,000.00

Recapitulation of Costs

Stage I

Rehabilitate 1600 level - 1500 feet

1. Independent contracts	none
2. Labor and supervision	$ 209.88
3. Operating materials and supplies	985.00
4. Operating equipment	20.41
5. Rehabilitation and repairs	none
6. New buildings and improvements	none
7. Miscellaneous	none
Total	$1215.29
Cost per foot	0.81

Raise 600 feet

1. Independent contracts	none
2. Labor and supervision	$16,448.54
3. Operating materials and supplies	24,417.46
4. Operating equipment	1,965.90
5. Rehabilitation and repairs	none
6. New buildings and repairs	none
7. Miscellaneous	125.00
Total	$42,956.90
Cost per foot	71.595

Drift 80 feet to connect through to raise	$2,731.44
Sublevel drifting - 600 feet	
1. Independent contracts	none
2. Labor and supervision	$13,356.55
3. Operating materials and supplies	5,408.40
4. Operating equipment	1,533.74
5. Rehabilitation and repairs	none
6. New buildings and improvements	none
7. Miscellaneous	187.50
Total	$20,486.19
Cost per foot	34.143
Timber 300 feet where necessary	$ 1,500.00
4 diamond drill stations - equivalent to 40 feet of drift	$1,365.72
Cost per station	341.43
Diamond drilling 5000 feet	
1. Independent contracts	$23,750.00
2. Labor and supervision	3,664.00
3. Operating materials and supplies	1,283.84
4. Miscellaneous	500.00
Total	$29,197.84
Cost per foot	5.840
Longhole drilling - 2000 feet	$ 2,000.00

Total Ge[redacted]ork

Stage I

Rehabilitate 1600 level	$ 1,215.29
Raise 2½-compartment, 600 feet @ $71.595/ft.	42,956.90
Drift 80 feet @ $34.143/ft.	2,731.44
Sublevel drift 600 feet @ $34.143/ft.	20,486.19
Timber - 300 feet @ $5.00/ft.	1,500.00
Diamond drill stations - 4 @ $341.43	1,365.72
Diamond drilling - 5000 feet @ $5.840/ft.	29,197.84
Longhole drilling - 2000 feet @ $1.00/ft.	2,000.00
Total - Stage I	$101,453.38

Stage II

Drifting - 400 feet @ $34.143/ft.	$ 13,657.20
Timber - 200 feet @ $5.00/ft.	1,000.00
Diamond drilling - 2500 feet @ $5.840/ft.	14,600.00
Diamond drill stations - 3 @ $341.43	1,024.29
Total - Stage II	$ 30,281.49

Total cost of project	$131,734.87
Government participation - 50%	$ 65,867.44

Distribution:
- DMEA, Wash. (orig1 & 3) ✓
- USGS (2)
- DMEA
- Engr

E. G. BOWEN

SALT LAKE CITY

August 28, 1955

NEW YORK

Mr. A.E. Weissenborn, Director
Northwest District No. 1 DMEA
South 157 Howard Street
Spokane, Washington

Dmea - 3864
Idaho Alto Metals Corp

RECEIVED
SEP - 6 1955

Dear Mr. Weissenborn:

I have been in Hailey and Mackay for the past week going over the work accomplished since last November. In a few days more I should be ready to come on up to Spokane for our interview.

Mr. Weber told me this morning that he had a copy of a letter addressed to me from one of your assistants regarding the proposed work at the Empire Mine. I assume this letter was addressed to me at my New York Office. I just talked to my New York Office and up to yesterday the letter had not been received as yet. No doubt it will be along in a few days.

I am looking forward to seeing you in Spokane toward the latter part of this week.

Sincerely yours,

E. G. Bowen

E. G. Bowen

EGB:men

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

XXXXXXXXXXXXXXXC.
So. 157 Howard Street
Spokane 4, Washington

RECEIVED
AUG 29 1955

Griswold
Betty

August 24, 1955

Docket

Mr. J. Ray Weber

Mackay, Idaho

Re: Docket No. DMEA 3864 (copper)
Idaho Alta Metals Corporation
Empire Mine
Custer County, Idaho

Dear Mr. Weber:

The proposed program which the DMEA Field Team is presenting to R. G. Bowen, Vice President of the referenced company, and our Washington office consists of the following:

(1) 600 feet of 2½ compartment raise from the 1600 to 1000 level at approximately 26,300 E. and 25,470 N. (coordinates as shown on Farwell-Full maps). This is about 40 feet west of the 1600 level giving room for a slusher sublevel at the bottom of the raise, and about 40 feet from the nearest workings on the 1000 level; allowance should thus be made for about 80 feet of drifting aside from that planned on the 1300 level, and

(2) Establish a station at 1300 level, drift 300 feet approximately N. 55° W. and 300 feet S. 30° E., and doing 5,000 feet of diamond drilling mostly on the 1300 level, but some on the 1000 level (Similar or the same as that recommended by Farwell and Full on page 20 of their Open File Report.)

Does this program meet with your approval, or do you have any suggested changes?

I enclose a sketch map which will accompany our report.

Sincerely yours,

John E. Vhay
For: A. E. Weissenborn
Executive Office, DMEA
Field Team, Region I
Northwest District

Enclosure
cc: DMEA (2) USBM (2) Vhay Nickelson

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
~~WASHINGTON 25, D. C.~~
So. 157 Howard Street
Spokane 4, Washington

RECEIVED
JUL 14 1955

July 11, 1955

Mr. E. G. Bowen
Idaho Alta Metals Corp.
Hailey, Idaho

Docket

Re: Docket No. DMEA-3864 (copper)
Idaho Alta Metals Corp.
Empire Mine
Custer County, Idaho

Dear Mr. Bowen:

Mr. Nickelson and I plan to be in Mackay on July 19 and 20 to examine the Empire Mine in connection with the cited application. We would therefore appreciate it if you or your representative could be at the mine to discuss your application.

Yours sincerely,

John S. Vhay
Geologist

cc: E. G. Bowen
Empire Mine
Mackay, Idaho

DMEA (2)
USBM (2)
Nickelson

File Copy
Surname
Signed Selfridge

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.

500

JUL 14 1955

Mr. A. E. Weissenborn
Executive Officer
DMEA Field Team, Region I
Northwest District
South 157 Howard Street
Spokane 4, Washington

Re: Docket No. DMEA-3864 (Copper)
Idaho Alta Metals Corp.
Empire Mine
Custer County, Idaho

Dear Mr. Weissenborn:

Referring to the cited application, we are enclosing copies of a memorandum by Mr. O. M. Bishop, USBM, dated July 6, and additional copies of Mr. Thor H. Kiilsgaard's letter to you, dated June 22. We are in accord with the reviewers that a field examination appears to be in order.

Sincerely yours,

George C. Selfridge

Chairman, Operating Committee (HB)

Enclosures

APPROVED:

/s/ Robert W. Geehan (HB)
Member, Bureau of Mines

Thor H. Kiilsgaard (HB)
Member, Geological Survey

WRGriswold/er 7/11/55
Copy to: Docket
Base Metals
Admr R File
Op. Committee
Mr. Bishop, USBM
Mr. Kiilsgaard, USGS
Chron.

File Copy
Surname
Gresnell
Gechon
Kilsgaard
Selfridge
Hyman

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.

JUL 14 1955

Mr. E. G. Bowen, Vice President
Idaho Alta Metals Corporation
Room 2701, 52 Wall Street
New York, New York

Re: Docket No. DMEA-3864 (Copper)
Idaho Alta Metals Corp.
Empire Mine
Custer County, Idaho

Dear Mr. Bowen:

Your application for Government assistance to explore your property has been reviewed by the Base Metals Division of the Defense Minerals Exploration Administration, and has been referred for a field examination to:

Mr. A. E. Weissenborn
Executive Officer
DMEA Field Team, Region I
Northwest District
South 157 Howard Street
Spokane 4, Washington

The Regional Office will contact you at an early date as to when an examination is to be made. Any assistance that you may give the members of the Field Team during the examination will be appreciated.

Sincerely yours,

C. O. Mittendorf

Administrator

WRGriswold/er 7/11/55
Copy to: Docket
Admr R File
Op. Committee
Base Metals
Mr. Bishop, USBM
Mr. Kiilsgaard, USGS
Region I (2), NW Dist.
Chron.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
WASHINGTON 25, D. C.

RECEIVED
JUL - 8 1955

July 6, 1955

Re: DMEA-3864
Idaho Alta Metals Corp.
Empire Mine
Adler Creek Mining District
Custer County, Idaho

Griswold

Memorandum

To: W. R. Griswold, DMEA

From: O. M. Bishop,
Branch of Base Metals

Subject: Review of application for DMEA participation in a $100,000 exploration program

I have reviewed the application for exploration assistance on the Empire Mine Group in the Adler Creek Mining District.

The Empire Mine has produced in excess of 3/4 million tons of ore from which 28,000 tons of copper, 37,000 ounces of gold and 1,200,000 ounces of silver have been recovered. Although tungsten is reported it apparently has not been produced in marketable form. Exhibit C item 4b states that the present management believes only 30 percent of the Empire ore zone has been explored.

The applicant proposes to drive a 1,000-foot adit tunnel on the 1,100-foot level to open "large ore reserves exposed from the 1050 Sub-Level up to the 700 ft. Level."

Not knowing where this adit is to be located with reference to existing exploratory and development workings, reserves, and geologic elements, I am unable to evaluate the proposal as exploration. On the basis of the applicant's statement quoted above it is thoroughly possible that the work is primarily development of ore which is already discovered.

I recommend that the application be referred to the Region I Field Team for appraisal and possible revision with the applicant if the property warrants. Among elements that need particular attention are the justification of the proposed work and a careful review of the cost which seems unconscionably high for an exploration opening.

O. M. Bishop

O. M. Bishop

Copy to - Div. of Minerals
Mr. Kiilsgaard, Rm. 5224
O. M. Bishop
Files

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Copy to - Div. of Minerals
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Files

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WASHINGTON 25, D. C.

RECEIVED
JUN 24 1955

June 22, 1955

Dmek - 3864

Mr. A. E. Weissenborn
Executive Officer, DMEA, Region I
South 157 Howard Street
Spokane 4, Washington

Dear Al:

On June 21 Mr. R. G. Bowen, of the Idaho Alta Metals Corporation, accompanied by an attorney of that corporation, visited this office and presented a DMEA application to explore the Empire copper mine, Mackay, Idaho. I discussed the application with these gentlemen and informed them that one copy of the application would be sent to you and that any further correspondence they might have concerning the application should be directed to your office.

The Empire mine is well known and was for many years the leading copper producer in Idaho. The mine may still have the largest copper production of any mine in the state. It is described in detail in U.S.G.S. Prof. Paper 97 and by a number of other reports. I am sure you are aware of the Open File report at your office and also of the diamond drilling done on the property by the Bureau of Mines during the recent war. Warren Hobbs did much of the work for the Survey in the Open File report and he is, I'm sure, far better acquainted with the mine than I am.

Mr. Bowen has obtained control of the property by a lease and option agreement; the lease to run 10 years, the purchase price at $800,000.00. A 10 percent royalty payment is to be made to the lessor on all ore produced, such payment to apply to the purchase price. The lease also refers to a R.F.C. loan of $30,000.00 which is unpaid. I have discussed this loan with DMEA officials and have been advised that if a contract is recommended negotiations concerning subordination of the R.F.C. loan will be handled here in Washington. Mr. Bowen was given Consent to Lien agreements to have signed by the lessor.

Mr. Bowen had with him 3 maps of the Empire mine, 1) a claim map, 2) a composite level map, and 3) a cross section showing mine workings. These were all Geological Survey maps, from the Open File report, which Bowen said were borrowed from Mr. Ray Webber, caretaker of the mine. None of the maps were left with the application. In discussing the proposed work Bowen was quite indefinite. He is essentially interested in opening the mine for production. In the application it will be noted that he proposes to drive an adit on the 1100 level, this adit to portal somewhere between the Cossack tunnel portal

and the portal of the 700-level adit. The proposed adit will be about 50 feet below the 1000 level, under the northeastern workings, but its location was not marked on the maps. I explained to Mr. Bowen that such an adit would not do too much in the way of exploration as it would be in an area previously drilled by the Bureau of Mines and as it would have but limited "backs" to the overlying 1000 level. I suggested instead that if Mr. Bowen was interested in opening the mine for production he rehabilitate the 800 level and the winze therefrom to the lower 1000 level. Mr. Bowen informed me however that he was not interested in such work but instead preferred to drive a new haulage adit. He stated that he would favor drifting or crosscutting from that level. We also discussed doing exploration on or from the Cossack level since the area between the Cossack level and the overlying 1000 level is relatively unexplored and could contain a substantial tonnage of ore, assuming the ore extends into this area. Mr. Bowen was highly in favor of such work stating that his concern had been active at the mine during the past winter and that they had rehabilitated the Cossack level so that it could be examined. At the conclusion of our discussion I advised Mr. Bowen that the work he proposed might not be acceptable to the Government but that a revised program might be. He was agreeable to this and stated that he would be at the property when the RMRA field examiners were present and that he would at that time be glad to discuss any proposals they might care to make. I gathered that he would welcome any suggestions on exploration that anyone cared to make. He probably can be reached at his Bailey address.

From my knowledge of the Empire mine I would say that certain parts of it definitely warrant exploration and I should think that it would be possible to work out an acceptable program with Bowen. This may not be an easy task, however, as Bowen is primarily interested in getting into production and may not be too enthused about exploration, at least as we define it.

I suggest that when field examiners visit the property they take with them the Survey Open File report and also the available maps of the Bureau of Mines. It will be easier to show any proposed work or geologic setting on these maps than on maps that might be obtained from Bowen. As Warren Hobbs is familiar with the property I'd suggest that he be consulted on the proposed work, and, if possible, that he be present during the examination. The Empire mine is a big property with complex geology and Warren should be able to save some time in appraising it with his background. Mr. Bowen discussed the property as a possible tungsten producer. Mr. Dave Bell made one shipment of tungsten from some stope near the 1000 level during the last war. I would imagine, however, that since copper is the principal metal it should be treated as a copper contract.

You will note the application proposes to buy an extensive amount of machinery. Bowen informed me that most of this machinery

would be used in actual mining operations and not particularly in work to be done by DMEA contract. I discussed the way the DMEA worked in participation and in use of machinery and advised that he thoroughly discuss this matter with field examiners, as DMEA obviously would not buy all machinery requested in the application.

I am distributing the other 3 copies of this application to DMEA and have informed Mr. Griswold that this letter is to serve as the Survey commodity review of the application. I recommend that you schedule a field examination for the property and examine it the next time the Field Team has a party in that vicinity. The Operating Committee may also request you to make a field examination although it is hoped this letter will suffice for that purpose.

Sincerely,

Thor N. Kiilsgaard

THKiilsgaard:hlm
G-6/22/55

Copy to: Director's reading, 4212
Branch reading, 4212
DMEA (4)
Docket file
H. M. Meyer, 2623 Interior
Wing Agnew

P.S. Since writing this letter I have learned that DMEA insists on sending applications to the field through regular channels so you may expect your copy of the Commodore and also of the Empire application by that route.

Bowen was instructed to obtain book and page numbers on the two unpatented claims contiguous to the Commodore, and also unpatented claims at the Empire mine.

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WASHINGTON 25, D. C.

RECEIVED
JUN 3 1955

June 22, 1955

DMEA-3869

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Executive Officer, DMEA, Region I
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Dear Al:

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Thor N. Kiilsgaard

TNKiilsgaard:hlm
G-6/22/55

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June 22, 1955

Subject: DMEA-3864
Re: Exploration Assistance
The Empire

Idaho Alta Metals Corporation
Room 2701 - 52 Wall Street
New York, New York

Gentlemen:

The receipt of your application dated June 21, 1955 for exploration assistance under the Defense Production Act of 1950, as amended, is hereby acknowledged.

Your application has been assigned Docket Number DMEA 3864 and referred to the Base Metals Division.

Kindly identify all future correspondence relating to your application by this docket number.

Sincerely yours,

Robert E. Adams, Chief
Operations Control and
Statistics Division

60932

LEHIGH UNIVERSITY
BETHLEHEM, PENNSYLVANIA

DEPARTMENT OF
MINING ENGINEERING

May 12, 1955

Dr. Harry Miller
1119 Hamilton Street
Allentown, Pennsylvania

Dear Dr. Miller:

At your request I have had Mr. William W. Virgin, Jr. of our Geology Department make a mineralogical analysis of the samples you submitted. The samples contained in the paper bag, which I believe you stated were from the Empire Mine, were numbered one to four, and those in the cloth bag, from the Commodore Mine, numbered five and six.

From each of these samples a polished specimen was prepared and examined and an estimate made of the percentage of ore-bearing minerals is noted.

Sample No. 1.- Chalcopyrite - a copper iron sulphide.
Chalcocite - a copper sulphide.

These two minerals comprise + or - 60% of the sample.

Sample No. 2.- Cuprite - a copper oxide.
Malachite - a hydrous copper carbonate.
Azurite - is also a hydrous copper carbonate.
Bornite - a copper iron sulphide.

These ore-bearing minerals comprise + or - 80% of the sample.

Sample No. 3.- Chacocite - a copper sulphide.
Malachite - a hydrous copper carbonate.

These two minerals make up the whole sample + or - 100%.

Sample No. 4.- Chalcopyrite - a copper iron sulphide.
Bornite - a copper iron sulphide.
Chalcocite - a copper sulphide.
Galena - a lead sulphide.

The galena is present in only a very small percentage. The ore-bearing minerals being about + or - 75% of the sample. In relation to the above four ~~minerals~~ SAMPLES, the gangue, if any, is a silicate.

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JUN 22 1955

Sample No. 5.- Galena - a lead sulphide.
Pyrite - an iron sulphide.

The pyrite is present only in a very limited quanity and the galena forms + or - 95% of the sample.

Sample No. 6.- Galena - a lead sulphide.
Pyrite - an iron sulphide.
Sphalerite - a zinc sulphide.
Stibnite - an antimony sulphide.
Magnetite - an iron oxide.

In this sample the galena represents + or - 30%
Pyrite less than 5%
Sphalerite less than 5%
The stibnite is disseminated throughout the entire sample and no attempt has been made to estimate the quanity. The magnetite is present only in a very small percentage. The gangue in this sample is quartz and calcite. The ore minerals make up approximately 40%, and the gangue 60%.

As I explained to you over the telephone, it is impossible for us to specify whether the mine has commercial ore or not. The samples that you submitted certainly are very rich ore-bearing samples.

Enclosed you will find a statement covering our fee for this work.

Very truly yours,

R. T. Gallagher
Consulting Mining Engineer

RTG/MEF

Enclosure

MF-103
(Revised April 1952)

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

Form Approved.
Budget Bureau No. 42-R1035.2.

APPLICATION FOR AID IN AN EXPLORATION PROJECT, PURSUANT TO DMEA ORDER 1, UNDER THE DEFENSE PRODUCTION ACT OF 1950, AS AMENDED

Not to be filled in by applicant

Docket No. DMEA - 3864
Metal or Mineral Copper, Tungsten, Gold, Silver
Date Received 6-22-55
Estimated Cost $100,000.
Participation (Government %)

INSTRUCTIONS

1. *Name of applicant.*—(*a*) State here your full legal name, in the form in which you will wish to contract, and your mailing address: Idaho Alta Metals Corporation
Room 2701 - 52 Wall Street
New York, New York

(*b*) If other than an individual, add to your name above whether a corporation, partnership, etc., and the name of the State in which incorporated or otherwise organized. Delaware corporation

(*c*) If a corporation, add to above statement, titles, names and addresses of officers. Exhibit A, attached

(*d*) If a partnership, add to the above statement the names and addresses of all partners.

2. *General.*—Read DMEA Order 1, "Government Aid in Defense Exploration Projects," before completing this application. Submit this application and all accompanying papers in quadruplicate (four copies), with your name and address on each sheet of the application and on all accompanying papers. Where sufficient space is not provided on the form for all required information, state it on an accompanying paper, with a reference in each case to the instruction to which it refers by number. Comply with all applicable instructions; or, if not applicable, so state. File the application with Defense Minerals Exploration Administration, Department of the Interior, Washington 25, D. C., or with the nearest field executive officer thereof.

3. *Applicant's property rights.*—(*a*) State the legal description of the land upon which you wish to explore, including all land which you possess or control that may be benefited by the exploration, and excluding any land or interest in land which is not to be included in the exploration project contract See description in Exhibit B, attached

(*b*) State any mine name by which the property is known. The Empire

(*c*) State your interest in the land, whether owner, lessee, purchaser under contract, or otherwise Lessee with option to purchase.

(*d*) If you are not the owner, submit with this application a copy of the lease, contract, or other document under which you control the property. Exhibit B, attached

(*e*) If you own the land, describe any liens or encumbrances on it

(*f*) If the land consists of unpatented claims, add to the description above, the book and page numbers for each recorded location notice.

4. *Physical description.*—(*a*) Describe in detail any mining or exploration operations which have been or now are being conducted upon the land, including existing mine workings and production facilities. State your interest, if any, in such operations. Also describe accessibility of mine workings for examination purposes.

(*b*) State past and current production, and ore reserves, if any, giving quantities and grades.

(*c*) Describe the geologic features of the property, including mineralization, type of deposit (vein, bedded, etc.), and your reasons for wishing to explore. Illustrate with maps or sketches. Send with your application (but not necessarily as a part of it) any geologic or engineering report, assay maps, or other technologic information you may have, indicating on each whether you require its return to you.

(*d*) State the facts with respect to the accessibility of the project: Access roads, distances to shipping, supply and residence points.

(*e*) State the availability of manpower, materials, supplies, equipment, water, and power. Exhibit C, attached.

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JUN 22 1955

16—66551-1

5. *The exploration project.*—(*a*) State the mineral or minerals for which you wish to explore Copper and Tungsten, with smaller amounts of gold and silver.

(*b*) Describe fully the proposed work, including a map or sketch of the property showing a plan (and cross sections if needed) of any present mine workings, and the location of the proposed exploration work as related to such features as contacts, veins, ore-bearing beds, etc. Exhibit D, attached.

(*c*) The work will start within 30 days and be completed within 8 months from the date of an exploration project contract.

(*d*) State the operating experience and background of the applicant with relation to the ability to carry out such exploration project, and also that of the person or persons who will supervise the operations.

6. *Estimate of costs.*—Furnish a detailed estimate of the costs of the proposed work (you will have to use a separate sheet), under the following headings. Add the totals under all headings to give the estimated total cost of the project: Exhibit E.

(*a*) *Independent contracts.*—(Note.—If the applicant does not intend to let any of the work to contractors, write "none" after this item. To the extent that the work is to be contracted, do not repeat the cost of the contract-work in subsequent items.) State the cost of any proposed independent contracts for the performance of all or any part of the work, expressed in terms of units of work (such as per foot of drilling, per foot of drifting, per hour of bulldozer operations, per cubic yard of material moved, etc.).

(*b*) *Labor, supervision, consultants.*—Include an itemized schedule of numbers, classes and rates of wages, salaries or fees for necessary labor, supervision and engineering and geological consultants.

(*c*) *Operating materials and supplies.*—Furnish an itemized list, including items of equipment costing less than $50 each, and power, water and fuel.

(*d*) *Operating equipment.*—Furnish an itemized list of any operating equipment to be rented, purchased, or which is owned and will be furnished by the Operator, with the estimated rental, purchase price, or suggested use-allowance based on present value, as the case may be.

(*e*) *Rehabilitation and repairs.*—Furnish a detailed list showing the cost of any necessary initial rehabilitation or repairs of existing buildings, installations, fixtures, and movable operating equipment, now owned by the Operator and which will be devoted to the exploration project.

(*f*) *New buildings, improvements, installations.*—Furnish a detailed list showing the cost of any necessary buildings, fixed improvements, or installations to be purchased, installed or constructed for the benefit of the exploration project.

(*g*) *Miscellaneous.*—Furnish a detailed list showing the cost of repairs to and maintenance of operating equipment (not including initial rehabilitation or repairs of the Operator's equipment), analytical work, accounting, workmen's compensation and employers' liability insurance, and payroll taxes.

(*h*) *Contingencies.*—Give an estimate of any necessary allowances for contingencies not included in the costs stated above.

NOTE.—No items of general overhead, corporate management, interest, taxes (other than payroll and sales taxes), or any other indirect costs, or work performed or costs incurred before the date of the contract, should be included in the estimate of costs.

7. (*a*) Are you prepared to furnish your share of the cost of the proposed project in accordance with the regulations on Government participation (Sec. 7, DMEA No. 1)? Yes.

(*b*) How do you propose to furnish your share of the costs?

[X] Money [X] Use of equipment owned by you [ ] Other

Explain in detail on acompanying paper.

CERTIFICATION

The undersigned, whether as an individual, corporate officer, partner, or otherwise, both in his own behalf and acting for the applicant, certifies that the information set forth in this form and accompanying papers is correct and complete, to the best of his knowledge and belief.

Dated June 21, 1955

Idaho Alta Mitchcock
(Applicant)

By E. G. Brown

Title 18, U. S. Code (Crimes), Section 1001, makes it a criminal offense to make a willfully false statement or representation to any department or agency of the United States as to any matter within its jurisdiction.

U. S. GOVERNMENT PRINTING OFFICE 16—66551-1

EXHIBIT A

Instruction 1.(c).

IDAHO ALTA METALS CORPORATION

Room 2701, 52 Wall Street, New York, N. Y.

Officers

President	Matthew L. Blair*	305 East 63 Street New York 21, N.Y.
Executive Vice President	E. G. Bowen*	Hailey, Idaho
Vice President	Harry E. Benedict*	52 Wall Street New York, N.Y.
Vice President	E. H. Wardwell	305 East 63 Street New York 21, N.Y.
Secretary & Treasurer	Herbert B. Jones*	120 Broadway New York, N.Y.
Assistant Secretary	Arthur Ensign, Jr.	Hailey, Idaho

* Also Directors.

MINING LEASE AND OPTION AGREEMENT

THIS AGREEMENT, Made and entered into this 13th day of November, 1954, by and between the MACKAY EXPLORATION COMPANY, an Idaho corporation, and W. P. BARTON and MARGARET S. BARTON, wife of W. P. Barton, of Boise, Idaho, First Parties, and E. G. BOWEN of Hailey, Idaho, Second Party,

WHEREAS, Said First Parties are the owners of these certain patented mining claims and patented parcels of ground known as the Empire Mine Group and these certain unpatented mining claims (subject to the Paramount Title of the United States of America), together with all water rights appurtenant thereto or used in connection therewith, situated in the Alder Creek Mining District, Custer County, near Mackay, Idaho, and more particularly described as follows:

Tract No. 855, Section 28; Tract No. 853 described as South 7 acres of Southeast quarter of the Southwest quarter (SE¼SW¼) Section 28, and the North one half of the Northwest quarter (N½NW¼) Section 33, all in Township 7 North, Range 24 E.B.M. The following patented Lode Mining Claims; ATLANTIC, Survey 1272A containing 20.4 acres; ATLANTIC MILLSITE, Survey 1272B, containing 5 acres; BUENA VISTA, Survey 1887, containing 20.66 acres; COPPER BULLION, Survey 1272, containing 14.44 acres; CONTINENTAL, Survey 1887, containg 20.66 acres; EASTER, Survey 1272A, containing 13.31 acres; HANNIBAL, Survey No. 1887, containing 20.65 acres; KEEHIVE, Survey 1887, containg 20.66 acres; LESLIE W., Survey 1887, containing 2.54 acres; MIDWINTER, Survey 1272A, containing 18.15 acres; OCCIDENTAL, Survey 1887, containing 20.6 acres; PACIFIC, Survey 1272A, containing 20.3 acres; PACIFIC MILLSITE, Survey 1272B, containing 3.57 acres; PASHA, Survey 1887, containing 14.32 acres; RIO VISTA, Survey 1887, containing 20.56 acres; REMONITIZATION, Survey 1887, containing 20.36 acres; SULTAN, Survey 1887, containing 11.8 acres; SULTANA, Survey 1887, containing 17.89 acres; WESTERN, Survey 1272A, containing 19.36 acres; WELLINGTON, Survey 1887, containing 20.66 acres; all of the foregoing lands being situated in the County of Custer, State of Idaho;

Together with all improvements and appurtenances.

ALSO, the following unpatented Lode Mining Claims:

NAME	DATE LOCATED	DATE RECORDED
Washington	Feb. 22, 1902	April 30, 1902
Hamilcar	Sept. 28, 1903	Jan., 1904
Cushing	Sept. 28, 1903	Jan. 2, 1904
Catherine	Jan. 10, 1922	Jan. 14, 1922
Artie	July 1, 1954	July 13, 1954
Triangle	July 1, 1954	July 13, 1954

together with any and all other unpatented claims formerly held by First Parties in which they now hold any rights or interests.

All of the waters of White Knob Creek or Cliff Creek mentioned and described in that certain deed dated February 17, 1902, recorded June 12, 1902, in Book 1, Page 221, records of the Recorder of Custer County, State of Idaho, together with the pipe line and conduit and appurtenances for the conveyance of said water, and as described in that certain decree in the U. S. District Court, in and for the District of Idaho, Eastern Division, in the case entitled, The Utah Construction Company, a corporation, plaintiff, vs. John F. Abbott, et al, as decreed to Idaho Metals Company, a corporation, as Right No. 224, in said decree with date of priority of June 1, 1884, said decree being as follows, to wit:

"All of the waters of White Knob Creek or Cliff Creek and tributaries above the pipe line of the Idaho Metals Company, formerly the White Knob Copper Company;

"To be diverted from Cliff Creek, or White Knob Creek through a private ditch, having the point of diversion on the North Fork of said Creek at the location of the present pipe line of the Idaho Metals Company for mining and domestic purposes on the following described land, to wit:

"In and about the mining property and the mining claims owned and operated by the Idaho Metals Company, a corporation, at or near White Knob, Custer County, Idaho."

1. Whereas, for valuable consideration paid to the First Parties, the receipt of which is hereby acknowledged, and in further consideration of the terms and conditions hereinafter set forth, the First Parties do hereby grant to Second Party the exclusive right and option to purchase at the price, within the time, and upon the other terms and conditions hereinafter set forth, all the right, title and interest of the First Parties in and to the above described property and water rights. The term of this lease and option shall be for a period of ten years, commencing with the date on which this agreement is duly executed by First Parties. Second Party shall have the exclusive right to the possession of the property hereby optioned from the time of the execution and delivery of this agreement for a period of ten years, or so long within that time as he shall keep, observe and perform the terms and conditions hereof on his part; and shall have the right to explore, develop and/or mine the same, and extract ores therefrom and ship the same,

and any ore upon the dumps or broken and in the workings thereon, to market in crude form, or may mill any of such ores and market the concentrates therefrom, and retain the proceeds thereof, subject to the payment of royalties as hereinafter provided; and shall have the right to construct upon said property, such mills, buildings, power lines, road-ways and other facilities and to install such machinery, equipment and other personal property thereon as he may elect, and use the same in his operations hereunder.

2. Second Party shall pay to the First Parties a royalty of ten percent (10%) of the net smelter returns on all ores, concentrates, bullion or other products produced and shipped from said property. The term "net smelter returns" means the settlement values of such ores, concentrates and other products at the smelter or at the plant of any other purchaser after the deduction of smelting or other treatment charges, and railroad freight or other transportation charges from shipping point at Mackay, Idaho, to said smelter or treatment plant.

3. Second Party agrees that he will instruct any smelter to which ore, concentrates or other products are shipped, or any other purchaser of said products, to make payments on each shipment direct to the parties stipulated in this paragraph, in the following proportions: based on the 10% net royalty on net returns, one percent (1%) to J. Ray Weber, Receiver for Mackay Metals, Mackay, Idaho, and nine percent (9%) to W. P. Barton, President, Mackay Exploration Company, 4212 Franklin Road, Boise, Idaho, together with settlement sheet to each party. Such payments shall continue on the aforesaid basis until such time as the sum of $15,000 to J. Ray Weber shall have been paid, or until such time as such obligation has been released, and then and thereafter all royalty and other payments shall be made to Mackay Exploration Company.

4. Second Party agrees that as a condition for the continuance of this agreement, the following cash payments will be made and distributed as herein stipulated: Twenty Thousand Dollars ($20,000) on or before the end of the first year hereof; and thereafter, Twenty Thousand Dollars ($20,000) is to be paid on or before the end of each succeeding nine (9) years until a total of Two Hundred Thousand Dollars ($200,000), lawful money of the United States of America shall have been paid to First Parties by Second Party. All royalties paid shall be credited on the current payments, and in case royalties are greater than the payment next due, then Second Party may apply such overage on any future payment designated by him. First Parties hereby give Second Party the exclusive right and option to purchase the entire property, with all improvements and appurtenances and water rights for the sum of Two Hundred Thousand Dollars ($200,000), lawful money of the United States of America, together with the amounts owed by First Parties to Reconstruction Finance Corporation, which shall be assumed by Second Party, payable on or before the end of ten years from the date hereof, provided such payment shall be agreed upon by both parties hereto. The effective dates of all payments hereinbefore referred to start from the date of execution and delivery of this agreement, with the understanding that all payments in the form of royalties or cash payments during the life of this agreement, shall be credited on the purchase price as well as on current stipulated payments. Whereas the Reconstruction Finance Corporation has a lien against ore production and not against the property, in the amount of approximately Thirty Thousand Dollars ($30,000), and the payment of such amount is a consideration for the purchase of said property, Second Party agrees to satisfy said lien to Reconstruction Finance Corporation in the amount above stated, and payment of such obligation shall be considered as a part of the purchase price of said mining property and shall not be deducted from the stated price of Two Hundred Thousand Dollars ($200,000).

5. Second Party shall be entitled during the term of this lease to use all equipment and machinery now on the premises, together with all buildings belonging to First Parties. Second Party shall have the rights of right of way and all rights of egress and ingress, and First Parties agree that upon the exercise of the option as herein provided and upon full payment of all sums of money to be paid upon the exercise of said option as herein provided, to execute all necessary deeds and bills of sale required to vest title in Second Party to the real and personal property described in this lease, free and clear of all liens and encumbrances, except as herein set forth.

6. This lease and the terms hereof are subject to fire, flood, strike, Acts of God, riots, civil commotion, war and imposition of prohibitions and restrictions of the Government, and in the event the performance of any act or things required to be performed by Second Party pursuant to this lease shall be prevented by fire, flood, strike, Acts of God, riots, civil commotions, the time during which performance of the same shall have been so prevented, shall be added to the term of this lease and performance during such time shall be excused and waived by First Parties.

7. Second Party prior to commencement of mining operations upon said premises will post a notice of non-liability of First Parties upon the same premises in a conspicuous place and shall see that said notice is maintained thereon and properly recorded in accordance with the annotated code of the State of Idaho, Section 44-501. Second Party will not suffer or permit any labor and/or mechanic and/or material liens or attachments or other liens to be filed against said premises, and should any be so filed, Second Party agrees to cause said lien to be released within thirty (30) days of such filing, unless the Second Party elects to contest such attachment, claiming it to be unjust, unlawful or unfair; in the event of any such

contest, Second Party agrees that within thirty (30) days after final determination of such contest that such lien shall be removed and released of record.

8. It is understood by both parties hereto that Second Party is contemplating an assignment of this lease, and the First Parties hereby consent to such assignment in totality, provided, however, that no portion of this lease can be sold, bartered, transferred or assigned, unless the whole is assigned, without written consent of the First Parties.

9. Second Party shall have the sole and exclusive use of all water appurtenant or upon said premises or developed thereon, including the use of all existing pipelines, ditches, and water rights on or off the leased premises which have been or could be used in the working of the premises herein leased, insofar as it is within the legal power of the First Parties to grant.

10. Second Party may locate any vacant areas within or contiguous to the above described property, but said locations shall be in the name of First Parties, and shall become the property of First Parties and be fully subject to all the provisions and conditions of this lease and agreement contained herein.

11. Second Party shall occupy and hold all cross and parallel lodes, spurs, fissures and mineral deposits of any kind which may be discovered by the Second Party by working within or from the demised ground, and by so doing, the property shall be and become the property of the First Parties, but subject to the terms and provisions of this lease, with the same effect as if it had been originally described as a part of the described premises, and said First Parties agree to transfer title by deed to said property together with deeds to property heretofore listed in the event the option to purchase is exercised.

12. First Parties shall defend their title to the property herein demised at their own cost and expense, and in the event the option provided for herein is exercised and all payments made, shall furnish good and marketable title concurrently with performance under said option by Second Party. The Second Party, however, shall have the right, should the First Parties fail to properly defend or seek legal determination of any adverse claim upon the demised property, to defend said claim himself and to deduct from the amounts to be paid hereunder all costs and expenses of reasonable character, necessarily expended by the Second Party, save and except as herein provided otherwise in connection with the lien now held by the Reconstruction Finance Corporation and otherwise provided herein by this section, shall in no wise be construed as requiring the Second Party to take any action whatsoever except as otherwise provided; however, should the right, title and interest of First Parties become subject to litigation, such litigation shall not thereupon be the grounds for cancellation and termination of this lease, but First Parties may have a reasonable time after the final determination of such litigation to perform the terms of this lease, and should the Second Party be prevented from operating during such time, such period of time shall be added to the term of this lease, and performance during such time by the Second Party, should he be excluded from said demised premises by such litigation, shall be excused and waived by First Parties.

13. During the period of this lease, beginning at the date of signatures of both parties hereto, the Second Party shall immediately take possession of all of said demised premises and shall thereafter be the caretaker and custodian for the First Parties so far as accounting for removal of chattels or any property without permission. It is further agreed by both parties hereto that for the first three months of the life of

this contract, engineering and like work shall be carried on, but with no specified working requirements except for working seventy-five (75) shifts per month on the property. Beginning with the fourth effective month of this contract, two hundred fifty (250) shifts of eight hours each, or their equivalent shall be performed on or for the benefit of the property.

14. All work performed upon said mining claims by Second Party shall be performed in a good, miner-like manner, timbering to be done where necessary to preserve access to tunnels, drifts and other access workings, all consistent with good mining practice, and with due regard to the future operation of said claims as a mine. Second Party further agrees to employ proper safety practices for the protection of his employees and to comply with all state and federal statutes in regard to safety and insurance of employees at all times.

15. First Parties or their agents shall have the right, at all reasonable hours, to enter upon said mining claims and into the workings and mills thereon for the purpose of inspection and the taking of samples, and for such purposes, may use ladderways and similar facilities, at their own risk and without interference with the operation of Second Party, and it is agreed by both parties hereto that First Parties or their agents shall have access to the books and records of Second Party as pertain to shipment and sale of ores and concentrates, provided, however, that such access shall not be an undue inconvenience to Second Party. It is further stipulated and agreed by both parties hereto that Second Party shall make monthly reports to W. P. Barton or his designate of progress made during the preceeding month, and it is further agreed that First Parties shall have access to and be allowed to copy or photostat any and all maps and records pertaining to the operation of said demised property during the life of this agreement.

16. Second Party may cut and use in his operations hereunder any timber standing upon the said property hereby optioned, and may make similar use of any down timber.

17. First Parties declare that all taxes of every nature whatever are paid up to date on said demised property, and Second Party agrees to pay the advalorum taxes for 1954 when due and before they shall become delinquent, and commencing with the year 1954 to pay all Gross Metals Mines taxes and net proceed taxes upon production hereunder, and to pay all taxes levied upon the patented mining claims and real estate and improvements thereon, also on improvements, machinery, equipment and facilities and personal property placed upon said mining claims by him, and shall suffer no taxes to become delinquent. Second Party further agrees to fulfill all requirements for annual assessment work on all unpatented claims for the account of First Parties, and to make the necessary filings each year before same shall become delinquent.

18. Time is of the essence of this agreement. If Second Party shall fail to keep, observe and perform each and all of the terms and conditions hereof on his part, First Parties may, at their election terminate this agreement, but in such event, they shall give Second Party written notice of their intention to do so, specifying therein the default or defaults of which they allege Second Party is guilty; and if Second Party shall, within thirty (30) days after service of such notice, cure and correct any default of which he shall then be guilty, then this option and lease shall continue in force as though such default or defaults had not occurred and as though such notice had not been given; but if Second Party shall fail to so cure and correct such default or defaults within said period, then this agreement shall become null and void at the end of such period. Any written notice addressed to last known address of Second

Party and deposited in a regular Post Office shall constitute notification as used in this paragraph. Failure of First Parties to take advantage of one or more defaults shall not be construed as a waiver of any other default.

19. In the event of a forfeiture or the surrender of this option and lease by the Second Party, First Parties shall retain all payments heretofore made to them under the provisions hereof, as liquidated damages and as rental.

20. In the event of the termination of this option and lease in any manner without full payment of the purchase price as stipulated herein, Second Party shall peaceably surrender the possession of said optioned property upon demand by First Parties or any of them; but Second Party may, within three (3) months after such termination, remove from said optioned property all machinery, equipment and personal property placed thereon by him, except all buildings, trestles, bridges, mine timbering, tracks and airlines, which shall remain and become a part of the property.

21. This lease and option agreement is made subject to the terms and conditions of the following Block Leases made by the First Parties with parties hereinafter enumerated:

A. That certain mining lease entered into on October 28, 1954 by First Parties and Arthur Anderson and Ira Lambert of Mackay, Idaho, for the period of one year. All royalty and other payments derived from this lease shall be for the benefit of the First Parties and shall be paid direct to them. Upon expiration of this lease on October 28, 1955, the block of ground covered by it is automatically released and reverts to the group of mining claims herein described and is under the jurisdiction of the Second Party under the terms hereof.

B. That certain mining lease entered into on the 11th day of June, 1954, by and between the First Parties and Grover F. Crocker, of Hailey, Idaho, for the period of one year; and also

that certain mining lease entered into on June 11, 1954, by and between the First Parties and J. Ray Weber of Mackay, Idaho, for the period of one year; all royalties and other payments derived from these leases shall be for the benefit of the First Parties and shall be paid direct to them. Upon expiration of these leases on June 11, 1955, the blocks of ground covered by them are automatically released and revert to the group of mining claims herein described and are under the jurisdiction of the Second Party under the terms of this agreement.

22. Subject to the foregoing, this agreement shall be binding upon, and inure to the benefit of the heirs, personal representatives and assigns of the respective parties hereto.

23. The First Parties shall attach hereto and make a part hereof a certified copy of the resolution adopted at the Special Meeting of the Stockholders of the Mackay Exploration Company held on November 20, 1954, said copy to be certified by the Secretary of said company.

IN WITNESS WHEREOF, The Mackay Exploration Company, pursuant to a resolution ot its Board of Directors, and each of the parties hereto have executed these presents the day and year first above written.

ATTEST:

Margaret S Barton
Secretary

MACKAY EXPLORATION COMPANY

By W. P. Barton
President

W. P. Barton
W. P. Barton

Margaret S Barton
Margaret S. Barton

FIRST PARTIES

E. G. Bowen
E. G. Bowen

SECOND PARTY

STATE OF IDAHO)
) ss.
County of Ada)

On this 13th day of November, 1954, before me, the undersigned, a Notary Public in and for said State, personally appeared W. P. BARTON, President of the Mackay Exploration Company, an Idaho corporation, known to me to be the person whose name is subscribed to the within instrument and acknowledged to me that he executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year in this certificate first above written.

Wayne Birch
Notary Public for Idaho
Residence: Boise, Idaho

STATE OF IDAHO)
) ss.
County of Ada)

On this 13th day of November, 1954, before me, the undersigned, a Notary Public in and for said State, personally appeared W. P. BARTON and MARGARET S. BARTON, husband and wife, known to me to be the persons whose names are subscribed to the within instrument and acknowledged to me that they executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year in this certificate first above written.

Wayne Birch
Notary Public for Idaho
Residence: Boise, Idaho

STATE OF IDAHO)
) ss.
County of Ada)

On this 13th day of November, 1954, before me, the undersigned, a Notary Public in and for said State, personally appeared H. G. BOWEN, known to me to be the person whose name is subscribed to the within instrument and acknowledged to me that he executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year in this certificate first above written.

Wayne Birch
Notary Public for Idaho
Residence: Boise, Idaho

RATIFICATION OF THE ACTION OF THE

PRESIDENT, SECRETARY AND THE DIRECTORS

OF MACKAY EXPLORATION COMPANY.

The action taken by the President, the Secretary and the Board of Directors of the Mackay Exploration Company in entering into a Lease and Option Agreement with E. G. Bowen for the sale and lease of all the real and personal property of Mackay Exploration Company, is hereby ratified by the following resolution adopted by the stockholders of Mackay Exploration Company at a special Stockholders Meeting called by the President, after due notice, and held at Mackay, Idaho, on November 20, 1954.

"Resolved, that the Stockholders of the Mackay Exploration Company, in a meeting duly called and noticed, do authorize and empower, by a legal majority vote, the Board of Directors, and the duly elected President and Secretary of said Corporation, to enter into a Lease and Option Agreement with E. G. Bowen, for the sale and lease of all the real and personal property of said Mackay Exploration Company, upon such terms and conditions as may appear to said Board of Directors and Officers, to be to the best interests of said Corporation and its Stockholders. All of said real and personal property of the Mackay Exploration Company is located in the Alder Creek Mining District, Custer County, State of Idaho, and is known as the Empire Mine.

"Be it further resolved by said Stockholders, representing at least seventy percent (70%) of the outstanding and issued stock as of this date, that a true and correct copy of the resolutions so passed at the aforesaid meeting be spread upon the minute book of said corporation, duly signed by the Secretary or duly appointed Secretary, as being the legal act of said Stockholders."

I hereby certify that the foregoing resolution is a true and correct copy of the resolution passed by the Stockholders of Mackay Exploration Company at the special Stockholders meeting held at Mackay, Idaho, on November 20, 1954, and I further certify that more than seventy percent of the outstanding stock was represented at such meeting and voted in favor of said resolution and that such resolution is a portion of the minutes of said Stockholders meeting.

Margaret S. Barton

Margaret S. Barton, Secretary,
Mackay Exploration.

KNOW ALL MEN BY THESE PRESENTS, that I, E. G. Bowen of Hailey, Idaho, in consideration of the sum of Ten Dollars ($10.00), lawful money of the United States, and other good and valuable consideration, to me paid, the receipt and adequacy whereof is hereby acknowledged, do hereby sell, assign, transfer and quit claim to the Wood River Syndicate a contract for the lease and option of certain patented mining claims and patented parcels of ground known as the Empire Mine Group and those certain unpatented mining claims (subject to the Paramount Title of the United States of America), together with all water rights appurtenant thereto or used in connection therewith, situated in the Alder Creek Mining District, Custer County, near Mackay, Idaho, which contract was made and executed by the Mackay Exploration Company, an Idaho Corporation, and W. P. Barton and Margaret S. Barton, wife of W. P. Barton, of Boise, Idaho, First Parties, and E. G. Bowen of Hailey, Idaho, Second Party, and bears the date of November 13, 1954, to have and to hold the same unto the said Wood River Syndicate, its successors and assigns, for its and their use and benefit forever, subject, nevertheless, to the covenants and conditions therein mentioned.

And I hereby authorize and empower the said Wood River Syndicate, its successors and assigns, upon its and their performance of the said covenants and conditions to demand and receive all the rights and privileges given in said contract in the same manner to all intents and purposes as I myself might or could do were these presents not executed.

IN WITNESS WHEREOF, I have hereunto set my hand and seal this 22nd day of November, 1954.

E. G. Booth

SUBSCRIBED AND SWORN TO before me this 22nd day of November, 1954.

R. R. Kneeland
Notary Public for Idaho
Residing at Sun Valley, Idaho

KNOW ALL MEN BY THESE PRESENTS, that Wood River Syndicate, acting by E. G. Bowen, its attorney in fact, of Hailey, Idaho, in consideration of the sum of Ten Dollars ($10.000), lawful money of the United States, and other good and valuable consideration, to it paid, the receipt and adequacy whereof is hereby acknowledged, does hereby sell, assign, transfer and quit claim to Idaho Alta Metals Corporation, a Delaware corporation, a contract for the lease and option of certain patented mining claims and patented parcels of ground known as the Empire Mine Group and those certain unpatented mining claims (subject to the Paramount Title of the United States of America), together with all water rights appurtenant thereto or used in connection therewith, situated in the Alder Creek Mining District, Custer County, near Mackay, Idaho, which contract was made and executed by the Mackay Exploration Company, an Idaho corporation, and W. P. Barton and Margaret S. Barton, wife of W. P. Barton, of Boise, Idaho, First Parties, and E. G. Bowen of Hailey, Idaho, Second Party, and bears the date of November 13, 1954, and was assigned to said Wood River Syndicate on November 22, 1954, to have and to hold the same unto the said Idaho Alta Metals Corporation, its successors and assigns, for its and their use and benefit forever, subject, nevertheless, to the covenants and conditions therein mentioned.

And the assignor hereby authorizes and empowers the said Idaho Alta Metals Corporation, its successors and assigns, upon its and their performance of the said covenants and conditions to demand and receive all the

rights and privileges given in said contract in the same manner to all intents and purposes as the assignor might or could do were these presents not executed.

IN WITNESS WHEREOF, the assignor has caused these presents to be executed this 18th day of February, 1955.

WOOD RIVER SYNDICATE

By E. G. Bowen
E. G. Bowen
Attorney in Fact

STATE OF NEW YORK)
: ss.:
COUNTY OF NEW YORK)

On this 18 day of February, 1955, before me, the undersigned, a Notary Public in and for said State, personally appeared E. G. Bowen, attorney in fact for the Wood River Syndicate, known to me to be the person whose name is subscribed to the within instrument and acknowledged to me that he executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year in this certificate first above written.

Elizabeth M. Jordan

ELIZABETH M. JORDAN
Notary Public, State of New York
No. [illegible]
Qualified in [illegible] County
Certificate filed with N. Y. Co. Clk.
Commission expires March 30, 1956

Accepted by:

IDAHO ALTA METALS CORPORATION

By Herbert B. Jones
Pres.

EXHIBIT C

Instruction 4.

IDAHO ALTA METALS CORPORATION

Room 2701, 52 Wall Street, New York, N. Y.

4(a) The Empire Mine has been explored for several miles of underground mine workings. These workings extend from the highest outcrop some 8000 ft. above sea level down to a depth of 1600 ft. on the ore zone. From 765,087 tons of ore (crude) and 17,766 tons of concentrates there have been produced 36,925.59 oz. of gold, 1,202,459 oz. of silver and 55,630,493 lbs. of copper, according to the records of the U. S. Bureau of Mines. Tungsten in the form of WO3 has been known to exist in commercial amounts in the Empire Mine for many years, but has never been given proper attention. For example: one carload of ore from the 1050 level assayed as follows, per ton

Au	Ag	Cu	WO3
.105 oz.	1.35 oz.	2.45%	2.08%

A sample by the Bureau of Mines assayed as follows over a 10 ft. width, per ton:

Au	Ag	Cu	WO3
0.24 oz.	1.75 oz.	3.28%	4.28%

(b) The present management considers that probably 30% of the total of the productive area of the Mine has been explored. It is the applicant's belief that 70% of the total potential remains to be explored. For the last 26 years this property has been handicapped by lack of adequate modern equipment, poor management and the low price of copper which prevailed until recent years.

(c) In a broad general sense the Empire ore zone is from 200 to 400 ft. in width and extends continuously for 3600 ft. This ore zone consists of a magnetic garnet. Within this garnet zone occurs a large series of ore pipes. These ore bodies are from 20 to 80 ft. in width with a maximum length of 200 ft. and a vertical extent from 300 to 600 ft. These ore pipes have commercial walls. At 15 ¢ copper, the walls are limited by the cost of mining. With 36¢ copper the walls are expanded

from 30 to 50 ft. additional width. The ore is hard and requires no timbering in the stopes. Shrinkage method of mining is ideal. With modern drilling machines and drill bits, a miner can break 60 tons of ore per shift.

The applicant has plans for mining this ore at a cost of approximately $1.60 per ton. The average value of the ore known as crude ore varies from 5.2% Cu to 20% plus Cu., with some gold and silver values amounting to approximately $3.00 per ton.

An interesting feature of this mine is that at the 1600 ft. level, the ground water level has not been reached. It is the applicant's opinion that the ground water level is somewhere around 700 ft. deeper than the present 1600 ft. level. From the 1600 ft. level is a virgin area extending upward for 600 ft. The U. S. Bureau of Mines has drilled some 10,000 ft. of diamond drill holes from the 1000 ft. level downward proving the downward extension of the ore. Commercial ore is exposed also at the 1600 ft. level, extending both upward and downward from that level. The garnet ore zone is confined between a foot wall of porphyritic-granite and a limestone hanging wall.

The U. S. G. S. has mapped, correlated and projected downward a series of transverse fractures extending from the hanging wall to the foot wall of this garnet ore zone. Along these transverse fractures occurs a large series of commercial oxidized copper ores. The sulphide ore occurs between these transverse fractures. It is believed that these transverse fractures have had a very important influence in the ascending ore solutions.

(d) Good roads extend over the entire property. The Mackay Branch of the Union Pacific Railroad extends into the Empire property. The town of Mackay is 2 miles distant from the property. A good supply of labor is available in and around the property. The miners prefer to live in town. For the first time in history, an ample supply of electric power is available. A 69,000 k.v., a.c. power line is within 2 miles of the property. The applicant plans to extend a power line to the Cossack Level with a sub-station, transformer, and master-meter. From the railroad direct service is available to the Garfield, Utah, copper smelter of the American Smelting and Refining Company.

(e) Mine supplies and equipment are available at Mackay and at Salt Lake City. The applicant has adequate water for mining, milling, and domestic purposes. Electric power is covered above.

EXHIBIT D

Instruction 5(b) and (d).

5(b). Applicant proposes to drive a 1000 ft. adit tunnel to be known as the 1100 Level. This adit will open the large ore reserves exposed from the 1050 Sub-Level up to the 700 ft. Level. This is largely a virgin area.

The applicant attaches hereto a copy of a report from the Dept. of Mining Engineering of Lehigh University of four samples taken from the Empire Mine together with the assays of said samples made by the Perth Amboy plant of the A.S. & R. It must be stated that the samples were polished by Lehigh to make the mineralogical analysis which accounts for the notation of the A.S. & R. These samples appeared to be metalurgical specimans. The applicant, being a mine operator of some 45 years experience, has made a critical study of the types of ore found in the Empire Mine. It is noteworthy that while the primary copper iron sulphide ore in the Empire is Chalcopyrite, as depth on this ore is obtained, an important change is taking place in the type of copper ore, viz. more and more Bornite and Chalcocite is replacing the Chalcopyrite. The Bornite in the Empire ore usually varies from 20 to 40% Cu. The Chalcocite varies from 40 to 74% Cu.

(d). E. G. Bowen, Executive Vice President and Manager of the applicant, will personally supervise the project. He has been mining for 47 years, during the last 35 years of which he has been in complete charge of various mines over the greater part of western America. He has successfully developed seven mines from the prospect stage to the profitable stage. He has an intimate knowledge dating back 35 years of this Mineral Hill Mining District.

EXHIBIT E

Instruction 6.

IDAHO ALTA METALS CORPORATION

Room 2701, 52 Wall Street, New York, N. Y.

6(a) through (g) - Empire Mine Budget

Equipment		
Air Compressor	$ 11,739.08	
200 HP Squirrel cage	2,599.47	
Starter-reduced voltage (electric)	563.50	$14,902.05
Hydraulic Drill (air powered)		4,870.00
Drifter Drills (3 units)		4,035.00
Feed Leg Machine		665.00
Timken Inserts		60.00
Mine Car Loader (10% discount)		3,425.00
Drill Steel for D & H bits (2)		81.45
Eimco Shovel Loaders (2)		5,914.00
Total Equipment		$33,952.50
Transportation and Installation of said equipment		7,000.00
1 Truck and 1 automobile		3,200.00
Electric power installation		7,500.00
Deposit on power installation		3,000.00
1100 foot adit tunnel		12,500.00
Ore Bin at portal		6,000.00
Labor and supplies		7,500.00
Hand Tools		100.00
Total		80,752.50

IDAHO ALTA METALS CORPORATION

Room 2701, 52 Wall Street, New York, N.Y.

Total Brought Forward	$ 80,752.50
Reserve (contingencies)	19,247.50
Grand Total	$100,000.00

Notes:

1) The applicant will furnish engineering, geological, and accounting at its own expense.

2) Bulldozer work to the proposed 1100 ft. level sight will be born by the applicant.

3) The estimated cost of the 1000 ft. adit tunnel at the 1100 ft. level includes labor, steel rails, air and water lines, and ventilating equipment.