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DEFENSE MINERALS ADMINISTRATION
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DMA Docket No. 2783

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Docket

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

Defense Minerals Administration
RECEIVED
MAY 4 - 1954

1012 Flood Building
870 Market Street
San Francisco, Calif.

April 30, 1954

Memorandum

To: George C. Selfridge, Chairman, Operating Committee, DMEA
Interior Building, Washington 25, D. C.

From: Executive Officer, DMEA Field Team, Region III

Subject: Docket No. DMEA-2783 - Tungsten
Idaho Maryland Mines Corporation
Brunswick Mine, Nevada County, California

Reference is made to your subject memorandum dated April 19, 1954, to which you attached a copy of a letter dated April 12, 1954, from Mr. Granville S. Borden, Vice President and Member of Executive Committee, Idaho Maryland Mines Corporation, and a copy of Mr. Mittendorf's reply to Mr. Borden dated April 19.

The matter under discussion was taken up with Mr. A. C. Johnson, of the Bureau of Mines, and Mr. Roscoe Smith, of the Geological Survey, and I now have replies from each.

A copy of Mr. Johnson's memorandum dated April 27, and Mr. Irwin's memorandum dated April 29, are attached. The memorandums are self-explanatory and though they indicate, as Mr. Borden stated, that neither the engineer or geologist went underground, there was good reason why they didn't. The memorandums also indicate why we cannot agree with Mr. Borden that our conclusions were made primarily upon hear-say evidence.

H. C. Miller
Executive Officer
DMEA Field Team, Region III

Attachments

Copy to: Roscoe Smith, USGS

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
4 Homewood Place
Menlo Park, California

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
MAY 4 - 1954

4/30

April 29, 1954

Memorandum

To: H. C. Miller, Executive Officer, DMEA Field Team, Region III

Through: Roscoe M. Smith

From: William P. Irwin

Subject: DMEA 2783, Idaho Maryland Mines Corporation
Burnswick Mine, Nevada County, California

This is to clarify the method used by W. T. Benson of the Bureau of Mines, and William P. Irwin of the Geological Survey, in examining docket No. DMEA 2783.

The data supporting the applicant's request for an exploration loan was reviewed in San Francisco before visiting the mine office in Grass Valley, California. This supporting data consisted largely of several memorandum reports by the Corporation's consultant, Carlton Hulin. Mr. Hulin's memoranda discussed the occurrence of very small quantities of scheelite in portions of the mine. However, the technical data contained in the docket was insufficient for a proper evaluation of the Corporation's exploration proposal.

Benson and Irwin visited the mine office in Grass Valley in February 1953. After a brief visit with a group of the Corporation's officials, they were turned over to the company's geologist, Mr. Lyden, to obtain additional technical data. Mr. Lyden was very cooperative. He described the geology of the mine, the occurrence of scheelite, and the Corporation's exploration proposal. In addition, the Corporation's unusually complete file of mine maps was made available.

When questioned as to the feasibility of examining the underground workings, Mr. Lyden stated that the Union Hill mine (the area proposed to be explored) was completely inaccessible owing to its being flooded, and to its shaft being largely filled with mill tailings. He stated further that only a part of the adjacent Brunswick mine, presently being worked, was accessible, and that no scheelite was exposed in the accessible workings. In view of these statements made by the Corporation's mine geologist, and in consideration of the data already acquired, Benson and Irwin could see no practical reason for examining the Brunswick mine.

The principal sources of information by which Benson and Irwin arrived at their joint conclusion regarding the feasibility of the Corporation's proposal to explore the Union Hill mine area are (1) memoranda written by Mr. Hulin, the Corporation's consultant geologist, (2) Mr. Lyden, the Corporation's mine geologist, and (3) the large file of mine maps. All three of these sources were furnished by the Corporation, and presumably they were the best sources available.

April 27, 1954

Memorandum

To: H. C. Miller, Executive Officer, DMEA Field Team
Region III

From: Chief, Mining Division, Region III

Subject: Docket No. DMEA-2783 (Tungsten)
Idaho Maryland Mines Corporation
Brunswick Mine, Nevada County, California

This will acknowledge your letter of April 26, 1954 in regard to criticism reported by Mr. Granville S. Borden to Mr. C. O. Mittendorf, relative to a field examination made by William P. Irwin of the Geological Survey and Willmar T. Benson of the Bureau of Mines, of the Idaho Maryland Mines Corporation Brunswick Mine, Nevada County, California, Docket No. DMEA-2783 (Tungsten).

Mr. Borden is correct in stating that the investigators did not inspect underground workings in the vicinity of the proposed work.

According to the corporation's geologist, Mr. Lyden, no useful purpose would have been served by inspecting company workings which were considerably removed from the area proposed by the applicant for exploration. At the time of visit about all that could have been seen was quartz veins in the Brunswick workings, which according to Mr. Lyden did not contain tungsten.

An inspection of the Union Hill workings was impossible since the workings had been filled with mill tailings. Should the Union Hill workings contain tungsten-bearing quartz stringers, they could not be inspected since these workings are considerably removed from the underground openings in the Brunswick mine.

The only information available was from company maps and information supplied by Mr. Lyden, and it was necessary for the examining team to draw their conclusions from these sources. Such information could be considered hear-say, but it was based on company maps and probably the best informed representative of the company.

Since the company was not making an attempt to recover tungsten in connection with their gold operation, it appeared that they were not interested in tungsten, but instead were applying for assistance to prospect the area primarily for gold, and as it was stated, they were not overly optemistic that exploration solely for tungsten would be successful, further consideration of the application was not recommended.

The conclusions arrived at, under the circumstances, were correct and probably are just as valid now.

A. C. Johnson,

IDAHO MARYLAND MINES CORPORATION
Room 2211,
Standard Oil Building,
San Francisco, California

Defense Minerals Administration
RECEIVED
APR 28 1954

April 23, 1954

DMEA Docket No. 2783 - Tungsten,
Brunswick Mine, Nevada County, Cal.

Mr. C.O. Mittendorf, Administrator
U.S. Department of the Interior,
Defense Minerals Exploration Adm.,
Washington, D.C.

No reply needs.
WSM

Dear Mr. Mittendorf:

I am grateful for your kind reply of April 19, 1954 to my letter of April 12, 1954 which I admit did not embrace the courtesy reflected in your reply. I trust that you will consider my letter as a request for reconsideration.

I am forwarding your communication to the Management at Grass Valley and they will supply the information requested in your letter at the earliest possible date.

In the light of recent developments, it is quite possible we will ask for financial support for a different project than that requested in our prior applications.

Sincerely yours,

IDAHO MARYLAND MINES CORPORATION

By- Granville S. Borden
Granville S. Borden,
Vice-President and Member of
Executive Committee

C

400

Docket
Surname
Martin
Rutin
Hoffland
Farrelye
(C.H.) Johnson
Selfridge

APR 19 1954

Mr. Granville S. Burden, Vice President
Idaho Maryland Mines Corporation
Room 2811, Standard Oil Building
San Francisco, California

Re: DMEA Docket No. 2783 - Tungsten
Brunswick Mine
Nevada County, California

Dear Mr. Burden:

This will acknowledge receipt of your unsigned letter of April 12, 1954, concerning the denial of the subject application for exploration assistance.

Your letter questions the adequacy of the examination of the land in question made by this agency in connection with our consideration of the application and expresses doubt as to the accuracy of the statements made in the concluding paragraphs of our letter dated May 25, 1953, disapproving the application. Therefore, we shall review our actions in this case at the Field and Washington levels and reply more fully to you when our review is completed.

In the meantime, if you desire your letter to be considered as a request for reconsideration we will require information as to your tungsten production during the past year. No formal application is necessary at this stage; it would be sufficient for our present purpose if you could give us a short letter stating the number of units of WO_3 recovered in your mill during the last 12 months, and the number of tons of ore treated to obtain that production. Please also describe the new exploration work performed by you and give the results of such work.

Sincerely yours,

C. O. Mittendorf

Administrator

WHMartin/fes
4-15-54
cc to: Docket
Code 400
Adm. Reading File
Oper. Comm.
FT. Reg.3
R. W. Goehen, USBM
T.P. Thayer, USGS

R.C.H.

400
Docket
Surname
Martin
Robins
Hollund
Selfridge

APR 19 1954

Mr. M. C. Miller, Executive Officer
DMEA Field Team, Region III
1012 Flood Building
870 Market Street
San Francisco 2, California

Re: Docket No. DMEA 2783 - Tungsten
Idaho Maryland Mines Corporation
Brunswick Mine
Nevada County, California

Dear Mr. Miller:

Enclosed is a copy of a letter to us of April 12, 1954, from Mr. Granville S. Borden, Vice President and Member of Executive Committee, Idaho Maryland Mines Corporation. Also enclosed is a copy of our self explanatory reply of today's date.

It will be appreciated if you will review with the members of the field team Mr. Borden's criticisms of our field examination, and send us your comments so that we can prepare a suitable reply.

Sincerely yours,

George C. Selfridge

Chairman, Operating Committee (2AB)

Enclosure

WSMartin/fcc 4-15-54
cc to: Docket
Code 400
Adm. Reading File
Operating Comm.
FT. Reg. 3
R. W. Geehan, USBM
T. P. Thayer, USGS

APPROVED:

C. H. JOHNSON
Member, Bureau of Mines (2AB)

D. M. Larrabee
Member, Geological Survey (2AB)

R.C.S.

IDAHO MARYLAND MINES CORPORATION
Room 2211,
Standard Oil Building,
San Francisco, California

Nmea-2783

April 12, 1954

Mr. C.O. Mittendorf, Administrator
U.S. Department of the Interior,
Defense Minerals Exploration Adm.,
Washington, D.C.

WSM

Dear Mr. Mittendorf:

I am elated to inform you that the Idaho Maryland Mines Corporation conducted at its own expense a portion of the exploratory program for which it applied for aid from the Defense Minerals Exploration Administration. You will recall you rejected our application on the grounds that "Although our study confirms the presence of a small amount of tungsten mineralization on your property, it does not indicate that your proposed project has enough probability of disclosing ore reserves with a tungsten content commensurate with the size of the program."

Recently the mine has been reexamined with fluorescent light and it has been disclosed that there are numerous appearances of high grade scheelite throughout the property, particularly in the Brunswick Mine in the vicinity of the Union Hill Mine. Our development of these prospects has been extremely satisfactory.

I have checked with our operating people at Grass Valley and they inform me that your investigators have never been inside of the property; that your conclusions denying our application were made primarily upon hear-say evidence. Twice prior to your rejection letter of May 25, 1953 the Defense Minerals Exploration Administration denied our applications for assistance on the grounds that there was no commercial scheelite in the Grass Valley District. See your rejection letters dated July 3, 1951 and August 15, 1951. One of these rejections related to an application in which the Company merely asked for technical advice. See copies of rejection letters dated July 3, 1951 and August 15, 1951 attached hereto.

In the light of the history of this matter I am inclined to doubt the accuracy of the statements which you made in the concluding paragraphs of your letter to me dated May 25, 1953, a photostat copy of which is enclosed.

Very truly yours,

IDAHO MARYLAND MINES CORPORATION

By -
Granville S. Borden,
Vice-President and Member of
Executive Committee

cc: Hon. Felix Wormser,
Assistant Secretary of the Interior,
Washington, D.C.

cc: Mr. Bert C. Austin, President IMMCorp.,
Mills Tower, San Francisco, Calif.

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

MAY 2 5 1953

Mr. Granville S. Borden, Vice President
Idaho Maryland Mines Corporation
Room 2211, Standard Oil Building
222 Bush Street
San Francisco, California

Re: Docket No. DMEA 2783 - Tungsten
Idaho Maryland Mines Corporation
Brunswick Mine
Nevada County, California

Dear Mr. Borden:

Your application for aid for an exploration project and other reports available to us in Washington concerning the subject property have been carefully reviewed.

We believe you understood from our conversations here that projects approved by the Defense Minerals Exploration Administration must, in its judgment, show definite promise of yielding materials of acceptable grade in quantities that will significantly improve the mineral supply position for the National Defense Program.

Although our study confirms the presence of a small amount of tungsten mineralization on your property, it does not indicate that your proposed project has enough probability of disclosing ore reserves with a tungsten content commensurate with the size of the program. We realize that under certain circumstances, you might find it economically feasible to produce by-product tungsten from an ore assaying very low in tungsten but high in gold, however, the tenor of the ore appears to be such that participation by the Government in an exploratory program for tungsten at the Brunswick mine is not warranted.

We regret to advise you, therefore, that your application for exploration assistance is denied. At the same time we appreciate your interest in the Defense Minerals Program and we wish to thank you for bringing your property to our attention.

Sincerely yours,

C O Mittendorf

Administrator

UNITED STATES
DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
Washington 25 D.C.

August 15, 1951

In reply please refer to
DMA 210 Tungsten

Mr. Granville S. Borden
Vice-President
Idaho Maryland Mines Corporation
Russ Building
San Francisco, California

Dear Mr. Borden:

This is in reply to your letter of July 16, 1951, relative to renewing an application for a loan for exploration work within the Union Hill area of your mining property.

Under date of July 3, 1951, a letter was sent to the Idaho Maryland Corporation denying their application for an exploration loan (DMA 210).

The information that we have about the occurrence of scheelite in the Grass Valley district does not lead us to believe that exploration for workable bodies of scheelite ore is warranted. Our opinion is based on various examinations made of the scheelite occurrences during the past 35 years, both by Government and private engineers and geologists. Unless you can demonstrate new information from new work in the Brunswick mine, we do not consider a field examination warranted, and could not approve an exploration proposal.

Very truly yours,

(Sgd) Tom Lyon
Director, Supply Division

COPY

COPY

United States
Department of the Interior
Defense Minerals Administration
Washington 25, D.C.

July 3, 1951

In reply please refer to
DMA-210 Tungsten

Idaho Maryland Mines Corporation
Russ Building
San Francisco, California

Gentlemen:

The Defense Minerals Administration has carefully reviewed your application for an exploration loan to reopen the Union Hill shaft and to examine and sample for tungsten the Greek tungsten vein.

Although scheelite occurs in many places in the Grass Valley district, no workable tungsten deposits have been found. The chance of finding an appreciable amount of tungsten ore as a result of the proposed reopening and examination appears to be remote. Therefore, we must deny your application.

Very truly yours,

(Sgd) Tom Lyon
Director, Supply Division

FILE COPY
SURNAME:

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

F E Johnson

Mr. Granville S. Borden, Vice President MAY 2 5 1953
Idaho Maryland Mines Corporation
Room 2211, Standard Oil Building
222 Bush Street
San Francisco, California

Re: Docket No. DMEA 2783 - Tungsten
Idaho Maryland Mines Corporation
Brunswick Mine
Nevada County, California

Dear Mr. Borden:

Your application for aid for an exploration project and other reports available to us in Washington concerning the subject property have been carefully reviewed.

We believe you understood from our conversations here that projects approved by the Defense Minerals Exploration Administration must, in its judgment, show definite promise of yielding materials of acceptable grade in quantities that will significantly improve the mineral supply position for the National Defense Program.

Although our study confirms the presence of a small amount of tungsten mineralization on your property, it does not indicate that your proposed project has enough probability of disclosing ore reserves with a tungsten content commensurate with the size of the program. We realize that under certain circumstances, you might find it economically feasible to produce by-product tungsten from an ore assaying very low in tungsten but high in gold, however, the tenor of the ore appears to be such that participation by the Government in an exploratory program for tungsten at the Brunswick mine is not warranted.

We regret to advise you, therefore, that your application for exploration assistance is denied. At the same time we appreciate your interest in the Defense Minerals Program and we wish to thank you for bringing your property to our attention.

Sincerely yours,

C. O. Mittendorf
Administrator

FARutledge/WSMartin/FEJohnson/foc/bih
5/25/53
cc to: Docket
Adm. Reading File
Region III (2)
Operating Committee
Messrs. D. M. Lemmon - USGS
R. W. Geehan - USBM
F. E. Johnson
Code 400

FILE COPY
SURNAME:

400

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

Rutledge
Hopkins
Geehan
Thayer
Martin
Kendall
Hedges

Mr. Granville S. Borden, Vice President
Idaho Maryland Mines Corporation
Room 2211, Standard Oil Building
222 Bush Street
San Francisco, California

Re: Docket No. DMEA 2783 - Tungsten
Idaho Maryland Mines Corporation
Brunswick mine
Nevada County, California

Dear Mr. Borden:

Your application for aid for an exploration project and other reports available to us in Washington concerning the subject property have been reviewed.

We believe you understood from our conversations here that projects approved by the Defense Minerals Exploration Administration must, in its judgment, show definite promise of yielding materials of acceptable grade in quantities that will significantly improve the mineral supply position for the National Defense Program.

It is true that careful study of all our data confirms the presence of a small amount of tungsten mineralization on your property. Our information, however, does not indicate to us that your proposed project has enough probability of disclosing ore reserves with a tungsten content commensurate with the size of the program. Although, under certain circumstances, you might find it economically feasible to produce by-product tungsten from an ore assaying very low in tungsten but high in gold, nevertheless the tenor of the ore appears to be such that participation by the Government in an exploratory program for tungsten at the Brunswick mine is not warranted.

We regret to advise you, under these circumstances, that your application for exploration assistance is denied. At the same time we appreciate your interest in the Defense Minerals Program and we wish to thank you for bringing your property to our attention.

Sincerely yours,

Administrator

FARutledge/Martin/foc
5/22/53
cc: Docket
Code 400
Oper. Comm. (2) cc: D. M. Lemmon, USGS
Adm. Read. File R. W. Geehan, USBM

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

May 19, 1953

MEMORANDUM

To: Administrator, DMEA

From: Iron and Ferro-Alloys Division, DMEA

Subject: Denial of exploration project in the amount of $74,205.00
Docket No. DMEA 2783 - Tungsten
Idaho Maryland Mines Corporation
Brunswick mine
Nevada County, California

The denial of the subject application by this Division is based on the following information:

1. The Idaho Maryland Mines Corporation is interested primarily in the production of gold. The Corporation has made no attempt to recover the extremely small amount of scheelite occurring in its ore.

2. Tungsten, occurring as small, isolated lenses of scheelite, has been reported in the Cambridge, Greek-tungsten, "45", "44", and "19" veins. Lamping by the applicant's engineers to date has indicated the presence of scheelite in only two ("19" and "45") of the 12 or more veins examined.

3. No accurate data are available regarding the ratio between scheelite-bearing quartz and quartz that contains no scheelite, but it appears likely that the ratio is extremely low. Mr. Lyden, geologist for Idaho Maryland Mines Corporation, stated that no ore shoots are exposed at present in the mine. According to Hulin's report of February 6, 1951, 600 tons of some of the best tungsten ore in the mine contained about 0.03 percent WO_3. This ore apparently was mined from an area of quartz veinlets in black slate, rather than from one of the small, high-grade lenses of scheelite in a unit vein.

4. The Field Team recommends denial of the application.

5. The Commodity Divisions of the Geological Survey and the Bureau of Mines concur with denial of the subject application.

W S Martin
W. S. Martin, Acting Chief
Iron and Ferro-Alloys Division

400

FILE COPY
SURNAME:

Rutledge
Hopkins
Martin
Thayer
Gahan
Hedges

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

May 19, 1953

MEMORANDUM

To: Administrator, DMRA

From: Iron and Ferro-Alloys Division, DMRA

Subject: Denial of exploration project in the amount of $74,205.00
Docket No. DMRA 2783 - Tungsten
Idaho Maryland Mines Corporation
Brunswick mine
Nevada County, California

The denial of the subject application by this Division is based on the following information:

1. The Idaho Maryland Mines Corporation is interested primarily in the production of gold. The Corporation has made no attempt to recover the extremely small amount of scheelite occurring in its ore.

2. Tungsten, occurring as small, isolated lenses of scheelite, has been reported in the Cambridge, Greek-tungsten, "45", "44", and "19" veins. Lamping by the applicant's engineers to date has indicated the presence of scheelite in only two ("19" and "45") of the 12 or more veins examined.

3. No accurate data are available regarding the ratio between scheelite-bearing quartz and quartz that contains no scheelite, but it appears likely that the ratio is extremely low. Mr. Lyden, geologist for Idaho Maryland Mines Corporation, stated that no ore shoots are exposed at present in the mine. According to Malin's report of February 6, 1951, 600 tons of some of the best tungsten ore in the mine contained about 0.03 percent WO_3. This ore apparently was mined from an area of quartz veinlets in black slate, rather than from one of the small, high-grade lenses of scheelite in a unit vein.

4. The Field Team recommends denial of the application.

5. The Commodity Divisions of the Geological Survey and the Bureau of Mines concur with denial of the subject application.

W. S. Martin, Acting Chief
Iron and Ferro-Alloys Division

cc: Docket
Code 400
Adm. Read. File
Oper. Committee

5/19/53 FARutledge/ls

Idaho Maryland Mines Corp.

Data from C. D. Hulin's report dated 10-30-50

Brunswick-type veins in general carry no scheelite.

"Flats" show small but sporadically distributed amount of scheelite. The "flats" represent zones of thrust faulting. They are displaced and broken into segments by fault displacement on the Brunswick vein fissures. Ores have been found between 800 and 2300 foot levels.

Most important zones of "flats" on 1950 and 1600 levels.

Mill tests indicate mill heads contain 0.0023 % WO_3.

Union Hill dump contains about 0.01 percent WO_3 as indicated by sampling. Definitely uneconomic.

Lucky shaft dump much less scheelite than Union Hill dump.

Cambridge dump 1/3 to 1/2 of dump estimated to contain 0.2 - 0.4 percent WO_3. Cambridge work on Black Tungsten vein. [illegible] Scheelite on 100 [illegible] 200 level of workings.

Union Hill workings work Black Tungsten vein on 200, 300, 600, 800, 1000 levels.

Shipment of 54.59 tons averaging 60% WO_3 3,275 units.

Union Hill shaft shut down and dismantled in 1919. Now full of water. Shaft partially full of timbers. Unwatering and reopening of the Union Hill workings would therefore represent a major undertaking, and would probably cost $100,000.

In reflection and reviewing the Union Hill workings solely on the possibility that workable tungsten ore in quantity and economic in grade would be found in the Greek-Dragoon area represents a gamble ... should not be seriously considered.....

An additional argument ..... the presence of the mine-filled stopes in the workings of the Union Hill **Constitutes** an ever-present menace to the Brunswick mine and private development to the westward of certain of the Brunswick veins which are known to contain ore.

We should have all mine maps to check and see if it is true.

DMA has written two (2) denials of Idaho-Maryland application.

Docket

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

Office of
Executive Officer
DMEA Field Team
Region III

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
MAY 12 1953

1012 Flood Building
870 Market Street
San Francisco 2, Calif.

May 8, 1953

Memorandum

To: Defense Minerals Exploration Administration, Interior Building, Washington 25, D. C.

WSM

From: Executive Officer, DMEA Field Team, Region III

Subject: Docket DMEA-2783 (Tungsten)
Idaho Maryland Mines Corporation
Brunswick Mine, Nevada County, California

Reference is made to the letter, dated December 10, 1952, from Ernest Wm. Ellis, Acting Chairman, Operating Committee, DMEA, requesting a field study and possibly an examination of the Brunswick Mine.

Attached are four copies of a report entitled "DMEA-2783, Idaho Maryland Mines Corporation, Brunswick Mine, Nevada County, California, Tungsten," by William P. Irwin, Geologist, U. S. Geological Survey, and Willmar T. Benson, Mining Engineer, U. S. Bureau of Mines, dated April 30, 1953.

According to the report by the examining engineer and geologist, the applicant's intent for the exploration of tungsten on this property is questionable, since no attempt has ever been made to recover scheelite which is known to occur with gold ores in variable small quantities.

The applicant proposed to explore the downward extent of the veins previously worked in the Union Hill mine, presumably with the Greek-tungsten vein as the principal target from the 1880-foot level of the Brunswick mine. The work was to consist of 2900 feet of drifting and crosscutting, 400 feet of raising and 900 feet of diamond drilling at a cost of $74,205.

Under the heading of ORE RESERVES, there is a statement made to the effect that: "Insofar as company lamping, using an ultra-violet light, has progressed, scheelite was found only in the 19 and 45 veins of the 12 or more veins that were examined. In

Thru O.C. 5-18-53

Reviewed by
DMEA OPERATING COMMITTEE

5-18-53
(date)

these two veins, the occurrence of scheelite is erratic and spotty." According to the engineers report, the possibility of recovering scheelite as a by-product from the milling of gold ore is a problem for the corporation. They have not been interested in the recovery of tungsten and as it appears they are not overly optimistic that exploration solely for tungsten will be successful, further consideration of the application is not recommended.

Mr. Bailey and I concur with the conclusions of the examining geologist and engineer.

H. C. Miller
Executive Officer
DMEA Field Team, Region III

Attachments

Copy to: E. H. Bailey, USGS

UNITED STATES
DEPARTMENT OF THE INTERIOR
DOUGLAS McKAY, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION III

DMEA-2783, Idaho Maryland Mines Corporation

Brunswick Mine, Nevada County, Calif.

-Tungsten-

William P. Irwin, Geologist
U. S. Geological Survey

Willmar T. Benson, Mining Engineer
U. S. Bureau of Mines

April 30, 1953

Reviewed by
DMEA OPERATING COMMITTEE

5-20-53
(date)

Docket No.: DMEA-2783 (Tungsten)

Name and address of applicant: Idaho Maryland Mines Corporation
Granville S. Borden, Vice-President
P. O. Box 1028
Grass Valley, Calif.

Name and location of property: Brunswick Mine
Nevada County, Calif.

SUMMARY

The Idaho Maryland Mines Corporation property is situated about 2 miles east of Grass Valley, Nevada County, Calif., the supply center and about 12 miles north of Colfax, the shipping point on the Southern Pacific Railroad.

Appreciable quantites of gold and silver have been mined from the properties controlled by the Corporation, and during the period 1915 to 1919 it is reported that 54.59 tons of ore averaging 60 percent WO_3 was mined from the Union Hill workings. The part of the mine from which this production came is unknown, but it is assumed the tungsten-bearing material came from small pockets which were being mined for gold.

Rocks exposed in the properties in which the proposed work is contemplated include greenstone, metamorphosed pyroclastics, and carbonaceous schists, which are cut by a nearly parallel system of quartz veins that strike northwest and dip steeply southwest. In thickness these veins average less than a foot, but in places they may swell to 5 feet. Associated with the quartz is calcite, pyrite,

native gold and scheelite which occurs disseminated and as honey-colored small masses as large as 2 inches across.

The applicant proposes to explore the downward extensions of the veins previously worked in the Union Hill mine, presumably with the Greek-tungsten vein as the principal target from the 1880 foot level of the Brunswick mine. The work is to consist of 2900 feet of drifts and crosscuts, 400 feet of raising, and 900 feet of diamond drilling at a total cost of $74,205.

The intent of the applicant is questionable, since no attempt has been made to recover scheelite which is known to occur with the gold ores in variable small quantities.

The possibility of recovering scheelite as a by-product from the milling of gold ore is primarily a problem for the Corporation. Apparently, they are not interested in the recovery of tungsten, and since it appears they are not overly optimistic that exploration, solely for tungsten, will be successful, further consideration of the application is not recommended.

INTRODUCTION

At the request of the DMEA Operating Committee, the property of the Idaho Maryland Mines Corporation was visited by a geologist[1] of the U. S. Geological Survey and an engineer[2] of the Bureau of Mines during the period February 12 and 13, 1953.

1/ W. P. Irwin.
2/ W. T. Benson.

The purpose of the visit was to determine if the company's proposal to spend $74,205 for 2,900 feet of drifts and crosscuts, 400 feet of raises, and 900 feet of diamond drilling was justified in order to explore possible tungsten-bearing area below the old Union Hill workings.

Property holdings in part comprise the Halphine, Lot No. 202; Union Hill, Lot No. 59; Lucky, Lot No. 129; Cambridge, Lot No. 128; Gold Blossom, Survey No. 3697, which are patented mineral claims, and Agricultural patents, the mineral rights of which are owned by the company include lots 1, 2, 3, 4, 5 and fractional W½ of sec. 36, T. 16 N., R. 8 E., Nevada County, Calif.

The property is about two miles east of Grass Valley, the supply center, and is reached by traveling Highway 20 and a hard surfaced county road. The nearest shipping point on the Southern Pacific Railroad is at Colfax, 12 miles south.

HISTORY

According to W. D. Johnston (USGS pp.194), the properties comprising the Union Hill group of claims were worked between 1854 and 1918 as three separate mines: the Lucky, Cambridge, and Union Hill. Later all claims were worked from the Union Hill shaft through a connecting crosscut on the 300 level of the Union Hill.

During the period of operation the Union Hill mine produced from $500,000 to $750,000 in gold. In addition, incomplete records in the Idaho Maryland Mines Corporation office show that during 1916

and 1917, approximately 111,000 pounds of scheelite concentrates were sold. This material was both hand cobbed ore and mill concentrates having a WO_3 content varying from 4.4 to 73.14 percent.

The Union Hill mine has not been in operation since 1918, and no tungsten ore reserves are being carried in the Union Hill properties.

Except for a shut down during the World War II period, the Idaho Maryland Mines Corporation has been in operation since 1926.

PHYSICAL FEATURES

The Idaho Maryland Mines Corporation's holdings are located in the low foothills on the west side of the Sierra Nevada mountains at an altitude of about 2,500 feet. Climate in the area is typical of the Sacramento Valley immediately to the west with long, hot summers and moderate winters. Precipitation, usually as rain, occurs during the winter and spring months, with some snow at the higher altitudes. Water for domestic and mine use is supplied by the Nevada Irrigation District. Small shrubs, oak and pine constitute the vegetation near the property.

Transmitted electric power is supplied by the Pacific Gas and Electric Co.

HOUSING FACILITIES

The properties are located about two miles east of the center of the town of Grass Valley, and about three miles south of Nevada City, the county seat of Nevada County. In both of these towns, housing facilities are available for rent or sale.

EQUIPMENT

The Union Hill mine was abandoned in 1918 and all equipment salvaged. For any proposed work, the Idaho Maryland mine is fully equipped for underground operation, and a 600-ton mill for the concentration and extraction of gold and silver from the ores that are presently being mined is available on the property.

GEOLOGY

The workings of the Union Hill and Brunswick mines expose a series of roughly parallel quartz veins in metamorphic rocks. The workings shown on plate 1 are in greenstone and metamorphosed pyroclastics, but in parts of the Union Hill mine carbonaceous schist has been encountered (see plate 2).

The quartz veins strike northwest and, in general, dip steeply southwest. They average in thickness probably less than a foot; in a few places they are as thick as 5 feet, and in some places they pinch out entirely. Calcite, pyrite, native gold and scheelite are present. Specimens of quartz seen in the mine office contain light honey-colored masses of scheelite as large as 2 inches across.

In the Union Hill and Brunswick mines, two systems have been used to identify the veins (see plate 1). The important veins encountered in the Union Hill mine are the Cambridge, Greek-tungsten, Union Hill, Georgia, and Back. In the Brunswick mine the important veins listed from southwest to northeast are the "27", "45", "19", and "16" veins. The "45" and "19" veins have been worked only above

the 1300 level, and their presence at the 1300 level has not been established by diamond drilling. Short sections of quartz encountered by diamond drilling on the 1300 level may represent a downward continuation of the "45" vein or Greek-tungsten vein. Correlation of veins worked by the two mines is highly conjectural, but it is probable that the mines are on extensions of the same veins.

SCHEELITE OCCURRENCES

The presence of scheelite has been reported in the Cambridge, Greek-tungsten, "45", "44", and "19" veins. According to the Corporation's geologist, Mr. Lyden, gold is sparse where scheelite is most abundant. He states that the scheelite occurs in small shoots that are sparsely distributed along veins, and that these shoots range from a few tons to 100 tons in size. The best shoot seen was 30 feet long and 1/3-foot thick, which appeared to contain about 50 percent scheelite. Most of the shoots are considered as being low grade. According to Hulin (see report of Oct. 20, 1950, accompanying docket) the most that could be expected from such small shoots would be the sorting out of a few hundred pounds of high-grade scheelite.

Scheelite also occurs in stringers a small fraction of an inch thick where the veins intersect carbonaceous schist. According to Lyden, "bodies of black slate have been encountered in the Union Hill and Brunswick mines. In general, where the black slate bodies are traversed by major veins, stringer zones, as in the case of the Georgia vein, were formed that resulted in large, low-grade ore bodies, with scheelite frequently occurring in the quartz stringers. In the

Brunswick mine, bodies of this type are found in the 1, 16, 19 and 44 veins, and in the Union Hill on the Cambridge, Greek-tungsten and Union Hill veins. According to Grant's map, no black or gray slate was found below the 1000 level of the Union Hill, the 1200 level all being in porphyrite. In the Brunswick mine no bodies of black slate have been found below the 1300 level."

No accurate data are available regarding the ratio between scheelite-bearing quartz and quartz that contains no scheelite, but it appears likely that the ratio is extremely low. Mr. Lyden stated that no ore shoots are exposed at present in the mine. According to Hulin's report of February 6, 1951, 600 tons of some of the best tungsten ore in the mine contained about 0.03 percent WO_3. This ore apparently was mined from an area of quartz veinlets in black slate, rather than from an ore shoot in a unit vein.

The best tungsten ore reportedly was mined from the Greek-tungsten vein, from which 54.59 tons of ore averaging 60 percent WO_3 was shipped between 1915 and 1919. The part of the Union Hill workings from which the ore was mined is not known, but it is likely that the ore was mined from several small, widely-spaced shoots rather than from one large deposit. The Greek-tungsten vein probably became known as a tungsten deposit simply because the tungsten-bearing material was recovered while the vein was being mined for gold, rather than its containing more tungsten than other veins that were being worked. According to Lyden, several rich shoots of tungsten ore have been encountered in the Brunswick mine, but the management was "mining

gold" and would not allow the miners to recover high-grade tungsten. The southeasterly extension of the Greek-tungsten vein has not been encountered in the Brunswick mine. Several holes drilled from the Brunswick 1300 level have cut thin sections of quartz that probably represent the extension of the vein (see plate 1), but the quartz contained only low values in gold and no scheelite.

SAMPLING

According to Mr. Lyden, no tungsten-bearing areas are presently exposed in the mine that would warrant sampling.

Lamping of the Union Hill dump, by the company, indicated a fairly uniform distribution of scheelite throughout, in amounts estimated at about 0.01 percent WO_3. This dump is too low-grade to be considered economic.

The Lucky shaft dump shows much less scheelite than the Union Hill dump and is regarded as having no further interest.

About a third to a half of the Cambridge dump, totaling about 3000 tons, contained scheelite in amounts estimated at 0.2 to 0.4 percent WO_3. The amounts are marginal and the dump probably could not be profitably worked for tungsten alone.

ORE RESERVES

In so far as company lamping, using an ultra-violet light, has progressed according to Hulin[3/], scheelite was found only in the 19 and 45 veins of the 12 or more veins that were examined. In these two veins, the occurrences of scheelite is erratic and spotty. In

3/ Carlton D. Hulin, Consultant Geologist.

each vein, pockets of tungsten ore were present which were of good grade but small in size, amounting to only a few tons in each case. From these pockets, it is possible that only a few hundred pounds of high grade tungsten ore could be sorted. With the exception of these occasional pockets from which small amounts of tungsten can be sorted, no ore occurrence in the New Brunswick mine is now known which could be mined solely for its contained tungsten.

PROPOSED COMPANY EXPLORATION

The applicant proposes to explore the downward extensions of the veins previously worked in the Union Hill mine, presumably with the Greek-tungsten vein as the principal target. The work is to consist of 2,900 feet of drifts and crosscuts, 400 feet of raises, and 900 feet of diamond drilling, at a total cost of $74,205.00 (see plate 1). The Brunswick 1880 level was chosen from which to do the work rather than the Brunswick 1300 level for three reasons: (1) the Corporation maintains a 200-foot "isolation" zone around the Union Hill workings to avoid flooding the Brunswick mine; (2) workings on the 1300 level below the Union Hill mine would give little minable "backs", whereas there would be about 600 feet of backs above the 1880 level; and (3) the Brunswick 1880 level is in condition to commerce mining, but work on the Brunswick 1300 level would necessitate laying about 2400 feet of track, pipe for water and air, and ventilation to the present face.

CONCLUSIONS AND RECOMMENDATIONS

The applicant's intent in requesting an assistance loan is questionable. Scheelite mineralization has been known to exist in the veins worked in the Brunswick mine for many years, but no attempt has been made to recover it. Mr. Lyden states that attempts to extract small bodies of high grade tungsten during gold mining operations have been discouraged by the Corporation. In Mr. Fulin's letter of October 30, 1951 he states that the present mill could be modified with minor additions to recover small quantites of scheelite from the gold ore, and that such additions would pay for themselves in six months. Mr. G. S. Borden in his letter dated July 16, 1951, stated that necessary equipment was being installed. According to Mr. Lyden, no such equipment has been installed to date. It, therefore, seems reasonable to assume the applicant is more interested in the mining and extraction of gold from its ores than it is in the recovery of tungsten.

There appears to be no valid reason for believing that portions of the veins in the area of the Union Hill mine contain richer concentrations of scheelite than do those portions in the area of the Brunswick mine. If the recovery of the scheelite from the Brunswick mine is not profitable or does not interest the corporation, there is no reason to believe that the Corporation would be interested in recovering similar material below the Union Hill workings. The completion of the proposed exploratory program would not necessitate the mill be revamped for the purpose of recovering small quantities of

scheelite that might be present in the veins explored.

Considering the sparse and erratic distribution of the small high-grade tungsten ore shoots, and the meager quantity of scheelite in other portions of the veins, the cost of the proposed exploration is not commensurate with the quantity of scheelite that might be expectantly recovered.

The possibility of recovering scheelite as a by-product from the milling of gold ore is primarily a problem for the Corporation. Apparently, they are not particularly interested in the recovery of tungsten, and since it appears they are not overly optimistic that exploration solely for tungsten will be successful, any further consideration of the application is not recommended by engineers of the U. S. Geological Survey and the Bureau of Mines.

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

Office of
Executive Officer
DMEA Field Team
Region III

1012 Flood Building
870 Market Street
San Francisco 2, Calif.

January 6, 1953

Mr. Granville S. Borden
Vice-President
Idaho Maryland Mines Corp.
Room 2211
Standard Oil Building
San Francisco, California

Re: Docket No. DMEA-2783 (Tungsten)
Idaho Maryland Mines Corp.
Brunswick Mine
Nevada County, California

Dear Mr. Borden:

As you know, the above named docket has been referred to this office for study and possible field examination to evaluate the application.

The present application does not contain sufficient geologic or sample data to substantiate the occurrence of tungsten mineralization in appreciable quantities at either the Brunswick or Union Hill mines. It may, therefore, be advisable that our engineers and geologists examine your property but before doing so, and before calling your geologists in for a conference, we would like the following for study:

1. Claim map of Idaho Maryland Mines Corporation's holdings.

2. Mine maps of Brunswick Mine.

3. Mine maps of Union Hill Mine.

4. Geologic and sample maps and sections of Brunswick Mine.

5. Maps accompanying Rollin Farmin's report of January 16, 1942.

6. Hulin's report of October 20, 1948.

7. Sufficient samples to determine the quantity of tungsten mineralization.

In a review of the docket, we were unable to determine if the 1300 level of the Brunswick Mine, shown on the map attached to the

application, is now open and accessible from the Brunswick shaft. Also what vein does the 27 drift west represent? It is possible that this may be a better location for an exploration project where the same information may be secured at less cost. Is there any production of tungsten now being made at the Brunswick Mine?

Sincerely yours,

H. C. MILLER

H. C. Miller
Executive Officer
DMEA Field Team, Region III

Copy to: DMEA, Washington
E. H. Bailey, USGS
A. C. Johnson, Reno

HCMiller:mpp
Files
Chron.

IDAHO MARYLAND MINES CORPORATION

SAN FRANCISCO
[MINES AT GRASS VALLEY
NEVADA CO., CALIFORNIA]

- Room 2211 -
Standard Oil Building,
San Francisco, Calif.

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
DEC 18 1952

GSS
12/22/52

December 17, 1952

Mr. C.O. Mittendorf, Administrator
United States Department of Interior,
Defense Minerals Exploration Adm.,
Washington 25, D.C.

Docket No. DMEA 2783 - Tungsten.
Idaho Maryland Mines Corporation, Brunswick
Mine, Nevada County, California

Dear Mr. Mittendorf:

I acknowledge your communication stating that the above named docket has been transferred for further consideration, possibly a field examination, to Mr. H.C. Miller, Executive Officer, DMEA Field Team, San Francisco.

This Company, of course, will assist Mr. Miller and his staff in every possible manner in connection with this matter. We appreciate your prompt consideration of our application.

Sincerely yours,

Granville S. Borden

- Granville S. Borden -
Vice President

cc: Mr. H.C. Miller, SF

FILE COPY
SURNAME:

Rutledge
Selfridge
Nelson
Ellis

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

DEC 1 0 1952

Mr. Granville S. Borden, Vice President
Idaho Maryland Mines Corporation
Room 2211 Standard Oil Building
222 Bush Street
San Francisco, California

Re: Docket No. DMEA 2763 - Tungsten
Idaho Maryland Mines Corporation
Brunswick Mine
Nevada County, California

Dear Mr. Borden:

Your application for assistance in exploring tungsten occurrences at the Brunswick Mine of the Idaho Maryland Mines Corporation has been reviewed by the Iron and Ferro-Alloy Division of the Defense Minerals Exploration Administration and has been referred to Mr. H. G. Miller, Executive Officer, DMEA Field Team, Region III, 1012 Flood Building, 870 Market Street, San Francisco 2, California, for further consideration and possibly a field examination.

Should a field examination be made of the property, any assistance that you can render the examining engineers will be appreciated.

Sincerely yours,

C. C. Mittendorf (fw)

Administrator

F.H.
12.10.52

FARutledge'lm
12/8/52

cc: Admn. Reading File
Docket
R. W. Geehan, USBM
D. M. Lemmon, USGS
Field Team Reg. III
G. C. Selfridge
F. A. Rutledge

FILE COPY
SURNAME:

Butledge
Selfridge

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

DEC 1 0 1952

Mr. H. G. Miller
Executive Officer, Region III
1612 Flood Building
570 Market Street
San Francisco 2, California

Re: Docket No. DMEA 2783 - Tungsten
Idaho Maryland Mines Corporation
Brunswick Mine
Nevada County, California

Dear Mr. Miller:

Reference is made to the above docket. It seems desirable that a field team study and possibly an examination be made of this property to determine if a Government contract for exploration is warranted.

The Idaho Maryland Mines Corporation had filed a prior application to explore the Greek-Tungsten vein through the old Union Hill shaft - Docket No. DMA 210X, Tungsten. This was denied.

A field examination to evaluate the subject application will enable the Government to secure data on the property which previously have not been available.

The present application does not contain sufficient geologic or sample data to substantiate the occurrence of tungsten mineralization in appreciable quantities at either the Brunswick or Union Hill mines.

It is suggested that the examining engineers procure, if possible, the following data if an examination is made:

1. Claim map of Idaho Maryland Mines Corporation's holdings.

2. Mine maps of Brunswick Mine.

3. Mine maps of Union Hill Mine.

4. Geologic and sample maps and sections of Brunswick Mine.

5. Maps accompanying Rollin Farmin's report of January 16, 1942.

6. Hulin's report of October 20, 1948.

7. Sufficient samples to determine the quantity of tungsten mineralization.

In a review of the docket, we were unable to determine if the 1300 level of the Brunswick Mine, shown on the map attached to the application, is now open and accessible from the Brunswick shaft. Also what vein does the 27 drift west represent? It is possible that this may be a better location for an exploration project where the same information may be secured at less cost. Is there any production of tungsten now being made at the Brunswick Mine?

For your information we are enclosing the following:

2 Copies - Memo from R. W. Geehan, USBM, December 2, 1952.
2 Copies - Memo from T. P. Thayer, USGS, December 1, 1952.
2 Copies - Letter from G. S. Borden to James Boyd, July 16, 1951.
2 Copies - Letter from C. D. Hulin to C. L. Allen, October 30, 1950.
2 Copies - Letter from C. D. Hulin to E. L. Oliver, February 6, 1951.

Sincerely yours,

Ernest Wm. Ellis
ACTING Chairman, Operating Committee

Enclosures

Approved:

J. H. Hedges
Member, Bureau of Mines

A. R. Kinkel, Jr.
Member, Geological Survey

FARutledge'lm
12/8/52

cc: Admn. Reading File
Docket
R. W. Geehan, USBM
D. M. Lemmon, USGS
Field Team Reg. III
Operating Committee
G. C. Selfridge
F. A. Rutledge

12-10-52

GCS
Dec 4, 1952

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

December 2, 1952

Memorandum

To: George C. Selfridge, DMEA

From: Robert W. Geehan

Subject: DMEA 2783 - (DMA 210)
Idaho Maryland Mines Corporation
Grass Valley, California

Proposal: 2,900 feet of drifts and crosscuts.
400 feet of raises.
900 feet of diamond drilling.
$74,205 estimated total cost.

General: This is a gold mine with some rather meager information regarding tungsten that may be present in the veins. It seems rather probable that the gold is the target of greatest value and that the company would not propose this exploration for tungsten alone. The chief problem of DMEA in considering this application will be the proper weight to give the reports of tungsten mineralization in these veins. As this is the case, it seems desirable to insist on more information regarding this factor from the applicant before burdening the Field Team with such a study.

Recommendation: The applicant should be requested to furnish as complete a documentation of the tungsten mineralization as possible. Why, for example, is no tungsten produced from the extensive workings that are open in the Brunswick mine?

Borden says Company does not have money for extra equipment. GCS

Robert W. Geehan

Robert W. Geehan

Copy retained 400

IN REPLY REFER TO:

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

12/9/52

December 1, 1952

Memorandum

To: G. C. Selfridge

From: T. P. Thayer

Subject: DMEA 2783, Tungsten
Idaho Maryland Mines Company
Grass Valley, California

The company proposes to spend $74,205 in exploration aimed at finding the Greek Tungsten vein at a depth of 500 to 600 feet below the level from which two carloads of tungsten ore was shipped in 1915-1919. Hulin's reports accompanying the application frankly state that very few of the gold-quartz veins in the Grass Valley district carry tungsten, and in those few it is so scattered and bunchy as to be uneconomic. Hulin emphasizes the importance of "flats" as controlling the main tungsten mineralization. Nothing is known about the ore body from which the tungsten ore was mined, or whether it was in the Greek Tungsten or Cambridge vein, but the possibility it came from a flat rather than the main vein should not be overlooked.

1300 feet or 1600 feet

As Mr. Lemmon said in his memorandum regarding D. M. A. 210, which proposed reopening of the Union Hill mine, "Scheelite is known at many different places in the Grass Valley district, down to a mile in depth. Despite exposures in many hundred miles of workings, no commercial tungsten ore is known to exist in the district. Therefore, it seems unlikely that exploration solely for tungsten will be successful".

This application discusses possibility of recovering scheelite as a by-product from gold milling. This appears to be a problem primarily for the company, as Hulin indicates it would involve only a small capital outlay which should be returned in a year at most.

Although the prospects for this proposal do not seem bright, it might be well to refer the application to the Field Team. Mr. Bateman might wish to discuss the problems with Mr. Hulin, and examine the tungsten bearing veins in the Brunswick workings.

Copy retained 400

Even if the project were undertaken, the diamond drilling would seem to be of questionable value, because of the low grade of the veins and spotty distribution of scheelite.

T. P. Thayer

T. P. Thayer

November 20, 1952

Mr. Max Bechhold, Vice President
Idaho Maryland Mines Corporation
P. O. Box 1028
Grass Valley, California

Subject: DMEA-2783
Re: Exploration Assistance
Union Hill & Brunswick Mines

My dear Mr. Bechhold:

The receipt of your application dated November 18, 1952 for exploration assistance under the Defense Production Act of 1950, as amended, is hereby acknowledged.

Your application has been assigned Docket Number DMEA-2783 and referred to the Iron and Ferro-Alloy Division.

Kindly refer to DMEA-2783 in any future correspondence relating to your application.

Sincerely yours,

R. E. ADAMS

Robert E. Adams
Chief, Operation Control
and Statistics Division

25451

MF-103
(Revised April 1952)

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
NOV 18 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 2783

Docket No. dmea #783
Metal or Mineral
Date Received 11-18-52
Estimated Cost
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 Maryland Mines Corporation
P. O. Box 1028,
Grass Valley, California

(*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.

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

(*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

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

(*c*) State your interest in the land, whether owner, lessee, purchaser under contract, or otherwise

(*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.

(*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.

5. *The exploration project.*—(*a*) St[illegible]he mineral or minerals for which you wish [illegible]xplore .....

.....

(*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.

(*c*) The work will start within ....10.... days and be completed within ....24.... 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:

(*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)?

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

[illegible] Money [illegible] 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 ....., 195...

[illegible]
(Applicant)

By [illegible]
Vice President

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

IDAHO MARYLAND MINES CORPORATION
Grass Valley, California

November 14, 1952

Question 1
MF-103

(a) Refer to application form.

(b) This is a corporation, incorporated in the state of Nevada.

(c) Corporation officers are as follows:

George Herrington 405 Montgomery St. San Francisco, Calif.	Chairman of the Board of Directors.
Albert Crase Idaho Maryland Mines Corp. Grass Valley, California.	President and General Manager of Mining Operations.
Max Bechhold Idaho Maryland Mines Corp. Grass Valley, California.	Vice-President and Assistant to the President
Granville S. Borden 222 Bush St. Rm. 2211 Standard Oil Bldg. San Francisco, Calif.	Vice-President
Charles L. Allan Idaho Maryland Mines Corp. Grass Valley, California.	Secretary-Treasurer and Comptroller.

IDAHO MARYLAND MINES CORPORATION
Grass Valley, California

November 14, 1952

Question 3
MF-103

(a) Patented mineral claims: Halphene, Lot No. 202; Union Hill, Lot No. 59; Lucky, Lot No. 129; Cambridge, Lot No. 128; Gold Blossom, Survey No. 3697.

Agricultural patents, the mineral rights of which are owned by this company: Lots 1, 2, 3, 4, 5 and fractional W½ of Section 36, T16N, R8E.

(b) These claims were most recently worked as the Union Hill and Brunswick Mines and portions are still being worked as part of the Brunswick Mine. The Lucky and Cambridge claims were at one time worked as mines of the same name.

(c) All land concerned is owned by Idaho Maryland Mines Corporation.

(d) Not applicable.

(e) None.

(f) Not applicable.

IDAHO MARYLAND MINES CORPORATION
Grass Valley, California

November 14, 1952

Question 4
MF-103

(a) The properties comprising the Union Hill group of claims were worked during the mid-nineteenth century as three separate mines: the Lucky, Cambridge and Union Hill. Later all claims were worked from the Union Hill shaft thru a connecting crosscut on the 300 level of the Union Hill.

Of the three shafts the Cambridge was the shallowest of all, the bottom level being the 150 foot level which connected with the 150 foot level of the Lucky. The lowest level from the Lucky shaft was the 300 foot level which was connected with the 300 foot level of the Union Hill. The bottom working level from the Union Hill shaft was the 1200 level.

The Union Hill shaft was an inclined shaft about 1210 feet long. From it, seven principal levels were driven. In all there were about 19,280 feet of drifts and crosscuts driven on the various levels.

The Union Hill workings are flooded and the shaft has been filled, almost to the collar, with mill tailings. The Lucky and Cambridge shafts are caved and there are no surface indications as to the exact location of their collars.

Some current operations between the 900 and 1100 levels of the Brunswick Mine are being conducted on veins, some of which correlate with various of the Union Hill veins.

Current operations are being conducted on the 1880 level of the Brunswick Mine on 16 Vein which, in part, should apex on some of the land listed in answer to question 3 (a).

Almost all drifts and stopes of the Brunswick Mine which lie within the properties under discussion, or whose structures may correlate with Union Hill structures, are readily accessible.

(b) According to W. D. Johnston (USGS PP 194) between 1854 and 1918, the Union Hill Mine produced from $500,000 to $750,000 in gold. In addition, incomplete records in this office show that during 1916 and 1917 approximately 111,000 pounds of scheelite concentrate were sold. This material was both hand cobbed ore and mill concentrates and WO_3 content varied from 4.4% to 73.14%.

No ore reserves are being carried in the Union Hill properties.

(c) The mineral deposits of these properties are gold-scheelite bearing, fissure filling, quartz veins in black and gray slates and other metamorphosed pyroclastics and sediments generally called porphyrite or greenstone locally.

The Union Hill veins are generally north-west, south-east striking and dip steeply to the south-west.

IDAHO MARYLAND MINES CORPORATION
Grass Valley, California.

November 14, 1952

Question 4
MF-103

(c) cont'd. No written technical reports have been found concerning the veins of the Union Hill but it has been possible to partly reconstruct their character from old maps, discussions with persons who were working in this area while the mine was in production, examination of the dump material, and comprehensive studies of adjacent Brunswick workings:

While in porphyrite (greenstone) the Union Hill, Greek-Tungsten, Georgia and Cambridge Veins undoubtedly are true fissure veins with well defined walls. There are sporadic occurrences of scheelite in the veins, sometimes in pods of pure scheelite comprising many hundreds of pounds. This is true of the Brunswick 19, 44 and 45 Veins which are continuations of Union Hill veins and it is known that considerable of the scheelite production from the Union Hill was hand cobbed material. It is assumed that the Cambridge Vein contained appreciable quantities of scheelite for both the Lucky and Cambridge dumps show scheelite and the workings were confined to that single vein.

When any of these veins intersect a body of black slate they form large stringer zones that invariably have some scheelite in the gold-quartz stringers.

The reason for picking the Brunswick 1880 level to do this work from, was to establish a working level far enough under the Union Hill workings toavoid any possibility of being flooded out by them and still have a good length of vein up dip that can be stoped if the veins prove to be mineable.

A map accompanies which shows the present workings of the Union Hill 1200 level, and the Brunswick 1300 and 1880 levels with the proposed exploration work shown in dotted lines and shaded green.

(d) These properties are located about two miles east of the center of the town of Grass Valley, California, and about three miles south of Nevada City, the county seat of Nevada County. In both of these towns there is housing available for rent or for sale.

Well maintained county roads pass thru the property and connect it with Nevada City, Grass Valley and the Grass Valley-Colfax highway.

Pacific Mountain Transport, a motor truck subsidiary of the Southern Pacific Railroad Co. maintains a freight depot at Grass Valley. At Colfax, twelve miles from Grass Valley, there is a passenger station and freight yards on the main line of the Southern Pacific.

(e) Materials, supplies, equipment, water and power are all in plentiful supply in the district. Water is supplied by the Nevada Irrigation Dist. and power by Pacific Gas and Electric Co.

IDAHO MARYLAND MINES CORPORATION
Grass Valley, California.

November 14, 1952

Question 4
MF-103

(e) cont'd. The local manpower situation, similar to that of other mining districts, leaves much to be desired. The area is fortunate in having a fairly large group of miners that are permanent residents of the area. The permanent nucleus supplemented by transient miners and, during fall and winter months, by men from the logging camps, enables at least a satisfactory minimum level of continuous operation to be maintained.

IDAHO MARYLAND MINES CORPORATION
Grass Valley, California.

November 14, 1952

Question 5
MF-103

(a) The exploration project is to develop known quartz - gold - scheelite veins in depth.

(b) The plan of operation is to continue drifting on 16 Vein on the 1880 level of the Brunswick Mine to its junction with the Back Vein, a distance of about 600 feet. If the Back Vein is not found, or if 16 Vein continues thru it, the drift will be continued for a total distance of 800 feet. From the end of 16 DW a crosscut will be driven at S40°W thru the Morehouse Fault, a distance of approximately 700 feet. About 1100 feet of drift will be driven on the Union Hill and Greek Tungsten Veins, following each about 250 feet in a northwesterly direction and to their junction and thier junction with the Morehouse Fault in a southeasterly direction. The Back Vein, if found, will be drifted at least 150 feet north and south of 16 drift. From the face of the crosscut two 450 foot diamond drill holes will be drilled to prospect for the possible continuation of the Cambridge Vein thru the Morehouse Fault.

At least one 100 foot raise will be driven on the Back and Greek-Tungsten Veins and two on the Union Hill Vein, one to the east of its junction with the Greek-Tungsten Vein.

(c) Refer to application form.

(d) The Idaho Maryland Mines Corporation has existed as an active Corporation in this district since 1926.

The present General Manager, Mr. Albert Crase, was manager of the company from January 1926 to June 1941 and from February 1951 to the present. Prior to his affiliation with this company he managed other mining properties in the district.

Mr. Kirk Whitmore, Mine Superintendent, was first employed by this company in 1938 and worked first as miner and then as shift boss until October 1941. He was also employed in these capacities from March 1947 to June 1948. In October 1950 he was hired as Mine Foreman and in February 1951 was promoted to Mine Superintendent, which position he still holds.

Mr. Daniel Henry, Mine Foreman, worked as Mine Foreman for the Bradley Mining Company for twelve years before coming to work for Idaho Maryland. From June 1949 to April 1950 he was a shift boss in the companies Brunswick Mine. From April 1950 to September 1952 Mr. Henry was an independent leaser in the Brunswick Mine, having about thirty men working the lease under his supervision. In September

IDAHO MARYLAND MINES CORPORATION
Grass Valley, California.

November 14, 1952

Question 5
MF-103

(d) cont'd. 1952, Mr. Henry was employed as Mine Foreman of this company, which job he still holds.

Mr. Charles Lyden, Geologist for the corporation has held that job since January, 1950. Prior to that time he was employed by Anaconda Copper Mining Company at Butte, Montana, first as sampler and then as mine geologist.

IDAHO MARYLAND MINES CORPORATION

GRASS VALLEY, CALIFORNIA

QUESTION NO. 6

MF 103

	A	B			C			D		E	F	G					H	
PROJECT	INDEPENDENT CONTRACTS	LABOR	SUPERVISION	CONSULTANTS	MATERIALS AND SUPPLIES	COST	POWER AIR AND WATER	EQUIPMENT OWNED & TO BE RENTED	RENTAL	REHABILITATION AND REPAIRS	NEW BUILDINGS ETC.	REPAIRS AND MAINTENANCE	ASSAYING AU & WO_3	ACCOUNTING	COMPENSATION & INSURANCE	PAYROLL TAXES	CONTINGENCIES	TOTAL COST
2900 feet of drifts and crosscuts	None	Miners 725 shifts $11,963.00	General charge, 1/4 of shift losses time for two years at full time rate of $385.00 per month.	None	580' rails @ $184.00 per ton	$2,944.00	General charge at a rate of $150.00 per month for 24 months	Haulage motor & mine cars	Project charge @ $1.20/foot $3480.00	None	None	General charge at a rate of $150.00 per month for two years	$1500.00	One additional accountant for period of contract. $350.00 per month for 24 months	8.3% of payroll	3.8% of payroll	10% allowance for increase in prices and wages over those used in calculations.	
		Truck drivers 45 shifts 488.00			1160 4"x6" ties @ 25¢ each	290.00		Mucking machines										
					Track spikes, fish plates, switch frogs	250.00		Drills										
					2900 feet 4" pipe @ $123.00/c. ft.	3586.00		Blowers (ventilation) @ $30.00/month	720.00									
					2900 feet 2" pipe @ $37.00/c. ft.	1075.00		Hoisting charge, 10,500 tons @ 35¢/ton	3675.00									
					Pipe fittings	1,000.00		Motor trucks (surface) for supplies & waste disposal	1125.00									
					2900 feet of metal fan pipe @ 29¢/foot	2610.00												
					Powder & bits @ $2.65/foot	7685.00												
400 feet of raises		Miners 240 shifts 3960.00			800' 2" pipe @ 37.00/c. ft.	297.00		Haulage motor & mine cars	Project charge @ $1.20 per foot $480.00				$685.00					
		Truck drivers 8 shifts 89.00			Pipe fittings	150.00		Tuggers										
					Raise timber @ $46.83/m	2000.00		Drills										
					Powder & bits @ $2.00/foot	800.00		Hoisting charge 2,500 tons @ 35¢/ton	875.00									
								Motor trucks (surface) for supplies and waste disposal	200.00									
900' Diamond Drilling		Diamond driller and helper, 45 days 1305.00			Diamond drill bits	120.00		Drill rig and rods	225.00									
Total		$17,815.00	$2310.00			$22,807.00	$3600.00		$10,780.00			$3,600.00	$2,185.00	$8,400.00	$1,479.00	$499.00	$730.00	$74,205.00

IDAHO MARYLAND MINES CORPORATION
Grass Valley, California.

November 14, 1952

Question 7
MF-103

(a) Yes.

(b) Applicants share of the costs will be supplied thru rental charges for equipment used and additional cash outlay as necessary. Money required will be supplied from corporation funds.

July 16, 1951

IDAHO MARYLAND MINES CORPORATION
Russ Building, San Francisco, Cal.
Application for Exploration Loans
for the Development of Tungsten Reserves.

Hon. James Boyd, Director
Defense Minerals Administration,
United States Department of Interior,
Washington 25, D. C.

Dear Sir:

In connection with the above named subject, we submit the following:

PRELIMINARY STATEMENT

The Idaho Maryland Mines Corporation is a going concern engaged in exploring and producing gold and silver ores and processing them into gold and silver bullion at their mines in Grass Valley, Nevada County, California. Except for the period when the mines were shut-down under War Production Order L-208 during World War II, this corporation has continuously produced gold and silver bullion in substantial amounts since 1926, and it is currently producing bullion at the rate of approximately $2,000,000 annually.

The Company is currently producing from the Idaho Maryland group of claims and the Brunswick Consolidated group of claims, which are contiguous and connected by underground development. The Union Hill group of claims are also contiguous but no producing activities have been conducted within this group of claims since 1919 and the mine shaft and workings therein are filled with water. During World War I, before the phenomena of florescence of scheelite was known, the occurrence of scheelite was recognized within the Union Hill system of veins and several shipments of crude ore produced from this property were made in 1918. During World War II reconnaissance surveys were made within all of the properties owned by this corporation and the occurrence of scheelite was recognized throughout all their properties, but all of the evidence indicated a gradual concentration in the vicinity of the Union Hill system. In other words, the survey revealed that the higher grade of scheelite occurred in those workings which were closer to the Union Hill system. Exploration on the dumps which came from the Union Hill area evidenced the higher concentration of scheelite than on any of the other dumps in the district.

Scheelite occurs primarily within the quartz vein from which gold and silver are produced so that it may be said that any tungsten which should be recovered could be considered a bi-product of the yield of gold and silver. The ores of gold and silver would be mined, and commingled with these ores would be the tungsten minerals, and it is quite possible that the recovery of the gold and silver would be sufficient to pay for all the explorations and the production costs leaving the tungsten value as a bi-product profit.

For the past three years this corporation has retained the services of Dr. Carleton D. Hulin, one of the outstanding consulting geologists of America. Dr. Hulin is especially qualified as an expert in the specialized field of geology as it relates to the occurrence and deposition of tungsten minerals because he has for a number of years served the Bradley Mining Company in connection with their exploration and development of tungsten ore deposits at Stibnite, Idaho and at Patterson, Idaho. He also serves as consulting geologist for the Tungsten Mining Company at their mines in North Carolina. He serves also the Homestake Mining Company and a number of other large mining corporations. The corporation has also employed the services of Mr. H.B. Menardi of Western Machinery Company, as a metallurgical consultant to work out problems relating to the recovery of the tungsten minerals which are being produced currently from the mines being operated by Idaho Maryland. Upon the recommendations of Dr. Hulin and Mr. Menardi the company is now engaged in installing within the metallurgical plants of the company such equipment as they deem necessary to recovering a portion of the tungsten minerals which are components of the gold and silver ores now being treated.

never dig back to money

From the foregoing it should seem clear to you that the application of Idaho Maryland Mines Corporation is in the nature of an application for a development loan as distinguished from a purely exploratory loan. In other words the company desires to explore within the confines of the Union Hill system where the chances of finding richer tungsten bi-products are higher than they are in other areas within the properties owned by the company.

We desire to emphasize these facts:

1. That the Company is a going concern ready immediately with its mine, its metallurgical plant, its employees and its staff to produce any tungsten minerals which may be associated with these gold and silver ores. Thus there would be no delay should the exploratory activities within the Union Hill system (which can be connected underground with only a small amount of drifting) start the flow of the discovered minerals into the channels of defense.

2. That the tungsten is a bi-product of the gold and silver ores so that a much lower grade of tungsten concentrate per ton of rock mined can be taken than in the ordinary case where no gold and silver values are recoverable. Furthermore the yield of tungsten would not have to pay any part of the amortization costs of the current underground and surface mine and metallurgical plant.

The Management of this corporation feels confident that explorations within the Union Hill area will result in the discovery of ore bodies of gold, silver and scheelite which can be mined and milled at a profit and yield a substantial contribution of the scheelite concentrates to the defense effort. We are mindful of the possible accusation that this application is made for a selfish purpose in order to insure the company against another foreclosure either by its creditors or by another War Production Order, similar to L-208, but the answer by this corporation to any such allegations would be a clear denial that selfishness dominates this application. We are congizant of the deplorable dearth of tungsten. We believe this problem of securing an adequate supply transcends all other current problems of our defense effort, the draft, price regulations, amortization of war facilities, the war in Korea, the war in Europe, the British-Iranian controversy, etc., etc. Furthermore, we believe that we are immune from any war production order which may close the gold and silver mines because within the very near future we will be a producer of tungsten which will be produced as a bi-product from gold and silver ores being mined currently from veins in the vicinity of the Union Hill system.

Finally, although it is true that the mining operations are at the present time, due to inflation and the fixed price of gold, unable to reflect any substantial profits to support any substantial exploratory program, the company is not operating at a loss and it will not be forced to close down by creditors even though this application is denied.

The application of this corporation made herein is for a delegation by you of experts to consider with our experts the merits of our request for an exploratory loan and should they be convinced there is merit in our petition that an exploratory program be designed and a program of financing such a project with company funds and your loans be drafted, that such a design and draft be incorporated in a formal application to your office for approval. Our experts who would collaborate with your experts in such an investigation would be Dr. Carleton Hulin, Mr. H.B. Menardi and the President of this company, Mr. Albert H. Crase.

From the standpoint of procedure we are considering your ruling dated July 3, 1951 signed by Mr. Tom Lyon (DMA-210) denying our application for an exploration loan to reopen the Union Hill shaft and to examine and sample for tungsten the Greek Tunnel Vein --- as final.

We trust you will consider this communication as a new and separate application and we respectfully request you to give it a careful review and pray that you may grant our application.

Very truly yours,

IDAHO MARYLAND MINES CORPORATION

By - (Sgd) Granville S. Borden

Vice-President and Member
of Executive Committee

cc: Defense Minerals Administration,
Attention: Mr. Tom Lyon, Director Supply Div.

Mr. H.C. Miller, 1012 Flood Bldg.

Mr. Albert H. Crase
Mr. C.L. Allan
Mr. E.L. Oliver
Mr. Bert C. Austin
Mr. H.B. Menardi
Dr. Carlton D. Hulin
Mr. George Herrington
Mr. Herbert H. Salinger
Mr. Sigfried Bechhold

CARLTON D. HULIN
26th Floor, Shell Building,
San Francisco 4, California

COPY

February 6, 1951

Mr. E.L. Oliver,
Idaho Maryland Mines Corporation,
San Francisco, Calif.

Supplementary Report on Tungsten at the

Idaho Maryland Mine

Only a little additional information on tungsten has become available since my report to Mr. Allen dated October 30, 1950, as follows:

The dump of the Cambridge shaft has been sampled, 13 samples taken averaging 0.087 or approximately $3.00 per ton in gold. These samples unfortunately were not assayed for tungsten, but my previous estimate of 0.2% to 0.4% WO_3 still stands. It is quite apparent, therefore, that it will pay to mill the tungsten-bearing material of the Cambridge dump, the gold present being sufficient to pay all costs of moving and treating this dump material.

The chief interest in the Cambridge, however, is found in the fact that this early day shaft was sunk on the Greek Tungsten Vein to a depth of only 300 feet, and the tungsten-bearing dump material must therefore have come from veins on the 300 level or above. Stoping on and above the 300 level was very limited, and it is quite certain that existing portions of the veins, if at all comparable to the material on the dump, would pay to mine for the contained tungsten. The Cambridge is connected with the Union Hill by cross-cuts on the 200 and on the 300 levels.

It is recommended, therefore, that the Union Hill be unwatered and rehabilitated down to the 300 level for purposes of examination and sampling, - this at an estimated cost of $25,000. Tailings dumped into the Union Hill shaft during past years should be largely below the 300 level and no great difficulty is anticipated in reopening the shaft to this level.

I remain convinced that flotation of the mill tails amounting to 600 tons per day for the recovery of scheelite would be unprofitable for any but the best ore now known in the Brunswick Mine. Flotation reagents which would be required are estimated at 28¢ per ton of tailings treated and no more than a 50% recovery of the contained scheelite could be anticipated.

Table assays are now available for a run of black slate ore from the flats adjacent to 16 Vein, this representing some of the best scheelite-bearing ore present in the mine. Tonnage estimates for the jig concentrate passing over the table per 24 hour period are likewise available as follows:

	Tons	% WO_3	Total units WO_3
Table tails	65.	0.17	11.05
Table sulphide conc.	6.	0.36	2.16
Total jig concentrate	71.	0.186	13.21

On the basis of 600 tons per day mill feed and an estimated 70% scheelite recovery in the jig concentrate, a heads value of 0.031% WO_3 is estimated for this ore, with a total content of 18.87 units WO_3 in the 600 tons of mill feed.

Flotation recovery of the scheelite contained in the sulphide concentrate and jig recovery of the scheelite in the table tails should be efficient and cheap, both as regards operation and initial capital investment. Combining these recovered products should give a scheelite concentrate, which while possibly not of commercial grade, should be marketable through some up-grading plant, such as the Pine Creek plant of the Mining Division of Union Carbide and Carbon Corporation near Bishop.

My recommendation, therefore, in so far as Brunswick ore is concerned, is to recover whatever scheelite can be recovered from the jig concentrate and this at the lowest possible capital outlay in an effort to produce a marketable concentrate, but not a concentrate which will necessarily meet commercial specifications. Attempts to recover scheelite by flotation of the full mill tails will in general not be economic. These conclusions do not necessarily apply to tungsten-bearing material which may be present in the Union Hill Mine.

Very truly yours,

(s) CARLTON D. HULIN

cc C.L. Allen

COPY

cc-WLO
GSB
Extra

CARLTON D. HULIN
Mining Geology
26th Floor, Shell Bldg.
San Francisco 4, Cal.

October 30, 1950

Mr. Charles L. Allen,
Idaho Maryland Mines Corp.
Grass Valley, Cal.

Tungsten

Underground "lamping" for scheelite in the Idaho Maryland and New Brunswick mines, using ultra-violet light, is still vastly incomplete, but certain facts are becoming apparent.

In the Idaho Maryland only the 2 Vein system on the 2700 level and portions of 1 Vein and 3 Vein on the 2000 level have so far been lamped, the results being negative.

In the Brunswick, lamping has so far been confined to the southern portions of the mine with interesting and somewhat unexpected results as regards the scheelite distribution.

Insofar as the work of lamping has progressed, results indicate that the Brunswick-type veins in general carry no scheelite. In twelve or more Brunswick-type veins which have in part been examined, only two veins were found which carried scheelite - namely 19 Vein and 45 Vein. In the remaining veins, including portions of 1 Vein and 16 Vein, no scheelite is visibly present.

In 19 Vein and 45 Vein the occurrence of scheelite is extremely erratic and spotty. In two observed cases, one in each vein, pockets of tungsten ore were present which were of relatively good grade but quite small, amounting to only a few tons in each case. The best that could be hoped from such small pockets would be the sorting out of a few hundred pounds of high grade scheelite. With the exception of such small pockets, no ore mineable for its contained tungsten can be recognized, though it is certain that the gold ore mined from these two veins will normally carry a small but variable amount of scheelite.

In marked contrast to the general absence of scheelite from all but two of the Brunswick-type veins, the "flats" wherever exposed in the portion of the mine lamped consistently show a small but erratically distributed content of scheelite. This holds true throughout the lamped area from the 800 to the 2300 level. In no observed case could the observed amount of scheelite be regarded as economic in itself. Where the "flats" are being mined for gold, however, as in the case of the "flats" in the black slates adjacent to 16 Vein, such ore should consistently carry a small content of scheelite, some portion of which should be recoverable as a by-product in the milling of the gold ore.

The "Flats" as previously reported (Report of Oct. 20, 1948) represent zones of thrust faulting which were older than the Brunswick veins and which were disjointed and broken into segments by fault displacements on the Brunswick vein fissures. The tungsten mineralization apparently occurred quite early and at a time when only the flat thrust zones and (on the basis of present lamping) only two of the Brunswick type vein fissures were in existence. The remaining Brunswick veins formed later after the termination of the tungsten phase of the mineralization, and hence these veins contain no scheelite.

The most important zones of "flats" in the Brunswick mine have not as yet been lamped. It would appear important to carry this lamping to completion, and Charlie Lyden has been requested to do this as time permits, with particular emphasis on the important flat stopes which have been worked on the 1450 and 1600 levels.

Economic Possibilities of the Scheelite.

With the exception of occasional pockets from which small amounts of high grade scheelite can be obtained by hand sorting, no ore occurrence in the New Brunswick is as yet known which can be mined solely for its contained tungsten.

The run of New Brunswick ore reaching the mill, however, should always carry a small but variable amount of tungsten, the amount varying with the particular source of the ore being milled. Some portion of this tungsten should be recoverable as a by-product in the milling of the gold ore.

Factual information which will serve to indicate the exact amount of scheelite carried by the ore passing through the Brunswick mill is not available, and until such time as tungsten assays of weighted mill products are obtained reliance must be placed upon rough visual estimates of the scheelite present.

Panning tests on cyanide tails made by one of the mill men indicate a tungsten content of o.046 lbs. WO_3 (tungsten oxide) or 0.0023% WO_3 per ton, or a value of about 9¢ per ton. Visual estimates of the content of scheelite in the material passing over the mill table are of the same order of magnitude.

Based upon such meager estimates, it would appear that a daily recovery of by-product scheelite containing approximately 20 lbs. of WO_3 should be possible. This recovery of scheelite would have a market value of roughly $40. per day or $1,000. per month. To achieve these results would require very minor additions to the present mill equipment - additions which would probably pay for themselves within a six months period. It should be repeated for emphasis that the foregoing figures, while representing the best "guess" that can be offered at the present time, are based upon estimates of doubtful accuracy.

In the flow sheet of the Brunswick mill, the discharge from the ball mill passes to a jig, the tailings from which go to a classifier operating in closed circuit with the ball mill. Undersize from the classifier goes to flotation, the flotation tails going to cyanide treatment.

The jig concentrate consists largely of metallic sulphides but in addition contains a major portion of the scheelite present in the mill feed. This jig concentrate goes to a concentrating table where a gold cut is obtained which passes to an amalgamator. Tails from the amalgamator are added to the concentrate obtained by flotation, while the table tails are returned to the classifier operating in closed circuit with the ball mill. The scheelite in the table feed passes in part to the amalgamator tails, but probably the major portion goes into the table tails and thence to the classifier, and then either entering the flotation circuit and ultimately being lost in the cyanide tails, or else being returned to the ball mill where some portion of the returned scheelite would be slimed.

The low content of scheelite in the Brunswick ore would make any attempt at flotation of the entire mill feed for the recovery of scheelite completely uneconomic. Recovery of much of the scheelite trapped in the jig and passing over the concentrating table, however, does appear to be economically feasible.

Recovery of scheelite contained in the jig concentrate would require combining the amalgamator tails and table tails and flotation of this combined product for scheelite, the tails from this operation being returned to the classifier in the ball mill circuit. Two stages of flotation would be required: the first stage involving flotation of the scheelite, the second stage involving cleaning of the scheelite concentrate by floating out sulphide impurities. A small regrind mill operating in closed circuit with a small classifier may or may not be necessary, dependent upon the size distribution of the scheelite in the table product. Such a regrind mill, if needed would offer the advantage that high grade scheelite ore obtained by hand sorting could be fed to it direct. In any case the necessary equipment as outlined would be almost of laboratory size, since only about two tons per day, the average amount of material passing over the table would have to be treated. Flotation of scheelite is a relatively efficient operation, and due to the small amount of material being treated, the treatment cost should be exceedingly low.

Obviously, before any final decision is made, both the economic and the metallurgical possibilities of scheelite recovery must be confirmed by adequate assays of weighted samples of table tails and amalgamator tails, and by flotation tests. The necessary metallurgical tests may possibly be conducted by the present mill crew, though presumably outside talent will be needed, in which case Mr. L.H. Lange, research metallurgist for the Galigher Company of Salt Lake City, is recommended as being thoroughly familiar with scheelite flotation.

The Union Hill, Lucky and Cambridge.

Lamping of the Union Hill dump, indicated a fairly uniform distribution of scheelite throughout, in amount estimated at about 0.01% or 60¢ per ton in WO_3. This dump is definitely uneconomic and therefore possesses no interest.

The dump of the Lucky shaft shows much less scheelite than the Union Hill dump and must likewise be regarded as of no further interest.

From one-third to one-half of the Cambridge dump, totaling on the order of 3000 tons, contains scheelite in amount estimated at 0.2% to 0.4% WO_3, or a gross value of from $8 to $16. per ton, of which only about one-half or an average value of possibly $6. per ton in scheelite would presumably be recoverable.

This dump material must be regarded as marginal in terms of its content of scheelite, but if several dollars in gold were present in addition to the scheelite, the dump material would definitely be economic. This of course presumes facilities for recovery of scheelite in the Brunswick mill. The portion of the Cambridge dump which carries scheelite should therefore be adequately sampled, the samples being assayed for both gold and tungsten.

The Cambridge shaft, as well as the Lucky, is quite old and completely caved beyond possibility of re-opening. It is known, however, that the Cambridge shaft was sunk on the Greek Tungsten vein, and the scheelite shown on the Cambridge dump undoubtedly came from that vein, either on the 200 or 300 level.

The Union Hill workings reach the Greek Tungsten vein on the 200, 300, 600, 800 and 1000 levels. It is known that two carloads of high grade tungsten ore (presumably hand sorted) were mined and shipped from the Greek Tungsten vein in the Union Hill between 1915 and 1919. The shipment amounted to 54.59 tons averaging 60% WO_3, and possessed a value at the time of shipment amounting to $68,918. The present day value of this same shipment would be in excess of $125,000.

Unfortunately no record exists as to the amount and distribution of scheelite present in the Greek Tungsten vein, or as to the extent of stoping of the tungsten ore in that vein.

The Union Hill was shut down and dismantled in 1919 and is now full of water. Even worse, tailings from the Brunswick mill were run into the Union Hill shaft over a period of nine months during past years. Unwatering and re-opening of the Union Hill workings would therefore represent a major undertaking, and would probably cost in the neighborhood of $100,000.

To reopen and reclaim the Union Hill workings solely on the possibility that workable tungsten ore in quantity and economic in grade would be found in the Greek Tungsten vein represents such a gamble that it should not be seriously considered at this time, although any material future increase in the price of tungsten would make this gamble appear more attractive. An additional argument exists for reopening the Union Hill,

however. Namely, that the presence of the water-filled workings of the Union Hill constitutes an ever present menace to the Brunswick mine and prevents development to the westward of certain of the Brunswick veins which are known to carry ore. At some future date the problem of unwatering and reopening the Union Hill must be seriously considered, but that is a problem for the future and not for the present.

Recommendations.

1. Continue lamping in the Brunswick mine as time permits, with emphasis on the "flats" and the flat stopes which have been worked in the past.

2. Weighted samples of the table tails and amalgamator tails to be taken in the Brunswick mill, the samples to be taken over a sufficient time interval as to give an accurate representation of the tungsten values passing through the mill.

3. Dependent upon the tungsten assay results on the table product, necessary metallurgical test work designed to show the efficiency of scheelite recovery from the combined table and amalgamator tails by flotation; the reagents necessary; the costs of such treatment; and the nature of and capital investment required for the additional equipment needed for such flotation recovery of scheelite from the table product.

4. That portion of the Cambridge dump carrying visible scheelite to be sampled, the samples to be assayed for both gold and scheelite. The samples taken should be at least 100 pounds each if they are to be accurately representative of the dump material. Along with the sampling, measurements to be taken which will give a reasonably accurate figure for the tonnage available on the Cambridge dump.

Sincerely yours,

Carlton D. Hulin

cc/E. L. Oliver

11-6-50, Note by E.L.O:
Hulin's recommendations for operation in Idaho Maryland & Brunswick will be mailed 11-7-50.

MF-103
(Revised April 1952)

Defense Minerals Administration
RECEIVED
NOV 18 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 2783
Metal or Mineral
Date Received 11-18-52
Estimated Cost
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 Maryland Mines Corporation
P. O. Box 1028,
Grass Valley, California

(*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.

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

(*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

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

(*c*) State your interest in the land, whether owner, lessee, purchaser under contract, or otherwise

(*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.

(*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.

5. *The exploration project.*—(*a*) Sta[redacted]e mineral or minerals for which you wish t[redacted]plore .....

(*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.

(*c*) The work will start within ....10.... days and be completed within ....24.... 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:

(*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)?

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

☒ Money ☒ 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 ....., 195...

[redacted]
(Applicant)

By ....Vice President....

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

IDAHO MARYLAND MINES CORPORATION
Grass Valley, California

November 14, 1952

Question 1
MF-103

(a) Refer to application form.

(b) This is a corporation, incorporated in the state of Nevada.

(c) Corporation officers are as follows:

George Herrington 405 Montgomery St. San Francisco, Calif.	Chairman of the Board of Directors.
Albert Crase Idaho Maryland Mines Corp. Grass Valley, California.	President and General Manager of Mining Operations.
Max Bechhold Idaho Maryland Mines Corp. Grass Valley, California.	Vice-President and Assistant to the President
Granville S. Borden 222 Bush St. Rm. 2211 Standard Oil Bldg. San Francisco, Calif.	Vice-President
Charles L. Allan Idaho Maryland Mines Corp. Grass Valley, California.	Secretary-Treasurer and Comptroller.

IDAHO MARYLAND MINES CORPORATION
Grass Valley, California

November 14, 1952

Question 3
MF-103

(a) Patented mineral claims: Halphene, Lot No. 202; Union Hill, Lot No. 59; Lucky, Lot No. 129; Cambridge, Lot No. 128; Gold Blossom, Survey No. 3697.

Agricultural patents, the mineral rights of which are owned by this company: Lots 1, 2, 3, 4, 5 and fractional W½ of Section 36, T16N, R8E.

(b) These claims were most recently worked as the Union Hill and Brunswick Mines and portions are still being worked as part of the Brunswick Mine. The Lucky and Cambridge claims were at one time worked as mines of the same name.

(c) All land concerned is owned by Idaho Maryland Mines Corporation.

(d) Not applicable.

(e) None.

(f) Not applicable.

IDAHO MARYLAND MINES CORPORATION
Grass Valley, California

November 14, 1952

Question 4
MF-103

(a) The properties comprising the Union Hill group of claims were worked during the mid-nineteenth century as three separate mines: the Lucky, Cambridge and Union Hill. Later all claims were worked from the Union Hill shaft thru a connecting crosscut on the 300 level of the Union Hill.

Of the three shafts the Cambridge was the shallowest of all, the bottom level being the 150 foot level which connected with the 150 foot level of the Lucky. The lowest level from the Lucky shaft was the 300 foot level which was connected with the 300 foot level of the Union Hill. The bottom working level from the Union Hill shaft was the 1200 level.

The Union Hill shaft was an inclined shaft about 1210 feet long. From it, seven principal levels were driven. In all there were about 19,280 feet of drifts and crosscuts driven on the various levels.

The Union Hill workings are flooded and the shaft has been filled, almost to the collar, with mill tailings. The Lucky and Cambridge shafts are caved and there are no surface indications as to the exact location of their collars.

Some current operations between the 900 and 1100 levels of the Brunswick Mine are being conducted on veins, some of which correlate with various of the Union Hill veins.

Current operations are being conducted on the 1880 level of the Brunswick Mine on 16 Vein which, in part, should apex on some of the land listed in answer to question 3 (a).

Almost all drifts and stopes of the Brunswick Mine which lie within the properties under discussion, or whose structures may correlate with Union Hill structures, are readily accessible.

(b) According to W. D. Johnston (USGS PP 194) between 1854 and 1918, the Union Hill Mine produced from $500,000 to $750,000 in gold. In addition, incomplete records in this office show that during 1916 and 1917 approximately 111,000 pounds of scheelite concentrate were sold. This material was both hand cobbed ore and mill concentrates and WO_3 content varied from 4.4% to 73.14%.

No ore reserves are being carried in the Union Hill properties.

(c) The mineral deposits of these properties are gold-scheelite bearing, fissure filling, quartz veins in black and gray slates and other metamorphosed pyroclastics and sediments generally called porphyrite or greenstone locally.

The Union Hill veins are generally north-west, south-east striking and dip steeply to the south-west.

IDAHO MARYLAND MINES CORPORATION
Grass Valley, California.

November 14, 1952

Question 4
MF-103

(c) cont'd. No written technical reports have been found concerning the veins of the Union Hill but it has been possible to partly reconstruct their character from old maps, discussions with persons who were working in this area while the mine was in production, examination of the dump material, and comprehensive studies of adjacent Brunswick workings:

While in porphyrite (greenstone) the Union Hill, Greek-Tungsten, Georgia and Cambridge Veins undoubtedly are true fissure veins with well defined walls. There are sporadic occurrences of scheelite in the veins, sometimes in pods of pure scheelite comprising many hundreds of pounds. This is true of the Brunswick 19, 44 and 45 Veins which are continuations of Union Hill veins and it is known that considerable of the scheelite production from the Union Hill was hand cobbed material. It is assumed that the Cambridge Vein contained appreciable quantities of scheelite for both the Lucky and Cambridge dumps show scheelite and the workings were confined to that single vein.

See p. 4 of 1st Hulin report. It says Greek-Tungsten

When any of these veins intersect a body of black slate they form large stringer zones that invariably have some scheelite in the gold-quartz stringers.

The reason for picking the Brunswick 1880 level to do this work from, was to establish a working level far enough under the Union Hill workings toavoid any possibility of being flooded out by them and still have a good length of vein up dip that can be stoped if the veins prove to be mineable.

A map accompanies which shows the present workings of the Union Hill 1200 level, and the Brunswick 1300 and 1880 levels with the proposed exploration work shown in dotted lines and shaded green.

(d) These properties are located about two miles east of the center of the town of Grass Valley, California, and about three miles south of Nevada City, the county seat of Nevada County. In both of these towns there is housing available for rent or for sale.

Well maintained county roads pass thru the property and connect it with Nevada City, Grass Valley and the Grass Valley-Colfax highway.

Pacific Mountain Transport, a motor truck subsidiary of the Southern Pacific Railroad Co. maintains a freight depot at Grass Valley. At Colfax, twelve miles from Grass Valley, there is a passenger station and freight yards on the main line of the Southern Pacific.

(e) Materials, supplies, equipment, water and power are all in plentiful supply in the district. Water is supplied by the Nevada Irrigation Dist. and power by Pacific Gas and Electric Co.

IDAHO MARYLAND MINES CORPORATION
Grass Valley, California.

November 14, 1952

Question 4
MF-103

(e) cont'd. The local manpower situation, similar to that of other mining districts, leaves much to be desired. The area is fortunate in having a fairly large group of miners that are permanent residents of the area. The permanent nucleus supplemented by transient miners and, during fall and winter months, by men from the logging camps, enables at least a satisfactory minimum level of continuous operation to be maintained.

IDAHO MARYLAND MINES CORPORATION
Grass Valley, California.

November 14, 1952

Question 5
MF-103

(a) The exploration project is to develop known quartz - gold - scheelite veins in depth.

(b) The plan of operation is to continue drifting on 16 Vein on the 1880 level of the Brunswick Mine to its junction with the Back Vein, a distance of about 600 feet. If the Back Vein is not found, or if 16 Vein continues thru it, the drift will be continued for a total distance of 800 feet. From the end of 16 DW a crosscut will be driven at S40°W thru the Morehouse Fault, a distance of approximately 700 feet. About 1100 feet of drift will be driven on the Union Hill and Greek Tungsten Veins, following each about 250 feet in a northwesterly direction and to their junction and thier junction with the Morehouse Fault in a southeasterly direction. The Back Vein, if found, will be drifted at least 150 feet north and south of 16 drift. From the face of the crosscut two 450 foot diamond drill holes will be drilled to prospect for the possible continuation of the Cambridge Vein thru the Morehouse Fault.

At least one 100 foot raise will be driven on the Back and Greek-Tungsten Veins and two on the Union Hill Vein, one to the east of its junction with the Greek-Tungsten Vein.

(c) Refer to application form.

(d) The Idaho Maryland Mines Corporation has existed as an active Corporation in this district since 1926.

The present General Manager, Mr. Albert Crase, was manager of the company from January 1926 to June 1941 and from February 1951 to the present. Prior to his affiliation with this company he managed other mining properties in the district.

Mr. Kirk Whitmore, Mine Superintendent, was first employed by this company in 1938 and worked first as miner and then as shift boss until October 1941. He was also employed in these capacities from March 1947 to June 1948. In October 1950 he was hired as Mine Foreman and in February 1951 was promoted to Mine Superintendent, which position he still holds.

Mr. Daniel Henry, Mine Foreman, worked as Mine Foreman for the Bradley Mining Company for twelve years before coming to work for Idaho Maryland. From June 1949 to April 1950 he was a shift boss in the companies Brunswick Mine. From April 1950 to September 1952 Mr. Henry was an independent leaser in the Brunswick Mine, having about thirty men working the lease under his supervision. In September

IDAHO MARYLAND MINES CORPORATION
Grass Valley, California.

November 14, 1952

Question 5
MF-103

(d) cont'd. 1952, Mr. Henry was employed as Mine Foreman of this company, which job he still holds.

Mr. Charles Lyden, Geologist for the corporation has held that job since January, 1950. Prior to that time he was employed by Anaconda Copper Mining Company at Butte, Montana, first as sampler and then as mine geologist.

IDAHO MARYLAND MINES CORPORATION
Grass Valley, California.

November 14, 1952

Question 7
MF-103

(a) Yes.

(b) Applicants share of the costs will be supplied thru rental charges for equipment used and additional cash outlay as necessary. Money required will be supplied from corporation funds.

IDAHO MARYLAND MINES CORPORATION

GRASS VALLEY, CALIFORNIA

QUESTION NO. 6

MF 103

	A	B			G			D		E	F	G					H	
PROJECT	INDEPENDENT CONTRACTS	LABOR	SUPERVISION	CONSULTANTS	MATERIALS AND SUPPLIES	COST	POWER AIR AND WATER	EQUIPMENT OWNED & TO BE RENTED	RENTAL	REHABILITATION AND REPAIRS	NEW BUILDINGS ETC.	REPAIRS AND MAINTENANCE	ASSAYING AU & WO_3	ACCOUNTING	COMPENSATION & INSURANCE	PAYROLL TAXES	CONTINGENCIES	TOTAL COST
2900 feet of drifts and crosscuts	None	Miners 725 shifts $11,963.00 Truck drivers 45 shifts 488.00	General charge, 1% of shiftbosses time for two years at full time rate of $385.00 per month.	None	880' rails @ $184.00 per ton 1160 4"x6" ties @ 25¢ each Track spikes, fish plates, switch frogs 2900 feet 4" pipe @ $123.66/c. ft. 2900 feet 2" pipe @ $37.07/c. ft. Pipe fittings 2900 feet of metal fan pipe @ 29¢/foot Powder & bits @ $2.65/foot	$2,944.00 290.00 250.00 3586.00 1075.00 1,000.00 2610.00 7685.00	General charge at a rate of $150.00 per month for 24 months	Haulage motor & mine cars Mucking machines Drills Blowers (ventilation) @ $30.00/month Hoisting charge, 10,500 tons @ 35¢/ton Motor trucks (surface) for supplies & waste disposal	Project charge @ $1.20/foot $3480.00 720.00 3675.00 1125.00	None	None	General charge at a rate of $150.00 per month for two years	$1500.00	One additional accountant for period of contract, $350.00 per month for 24 months.	8.3% of payroll	3.8% of payroll	10% allowance for increase in prices and wages over those used in calculations.	
400 feet of raises		Miners 240 shifts 3960.00 Truck drivers 8 shifts 89.00			800' 2" pipe @ 37.07/c. ft. Pipe fittings Raise timber @ $46.23/M Powder & bits @ $2.00/foot	297.00 150.00 2000.00 800.00		Haulage motor & mine cars Tuggers Drills Hoisting charge 2,500 tons @ 35¢/ton Motor trucks (surface) for supplies & waste disposal	Project charge @ $1.20 per foot $480.00 875.00 200.00				$685.00					
900' Diamond Drilling		Diamond driller and helper, 45 days 1305.00			Diamond drill bits	120.00		Drill rig and rods	225.00									
Total		$17,815.00	$2310.00			$22,807.00	$3600.00		$10,780.00			$3600.00	$2,185.00	$8,400.00	$1,479.00	$499.00	$730.00	$74,205.00

COPY

July 16, 1951

IDAHO MARYLAND MINES CORPORATION
Russ Building, San Francisco, Calif.
Application for Exploration Loans
for the Development of Tungsten Reserves.

Hon. James Boyd, Director
Defense Minerals Administration,
United States Department of Interior
Washington 25, D. C.

Dear Sir:

In connection with the above named subject, we submit the following:

PRELIMINARY STATEMENT

The Idaho Maryland Mines Corporation is a going concern engaged in exploring and producing gold and silver ores and processing them into gold and silver bullion at their mines in Grass Valley, Nevada County, California. Except for the period when the mines were shut-down under War Production Order L-208 during World War II, this corporation has continuously produced gold and silver bullion in substantial amounts since 1926, and it is currently producing bullion at the rate of approximately $2,000,000 annually.

The Company is currently producing from the Idaho Maryland group of claims and the Brunswick Consolidated group of claims, which are contiguous and connected by underground development. The Union Hill group of claims are also contiguous but no producing activities have been conducted within this group of claims since 1919 and the mine shaft and workings therein are filled with water. During World War I, before the phenomena of florescence of scheelite was known, the occurrence of scheelite was recognized within the Union Hill system of veins and several shipments of crude ore produced from this property were made in 1918. During World War II reconnaissance surveys were made within all of the properties owned by this corporation and the occurrence of scheelite was recognized throughout all their properties, but all of the evidence indicated a gradual concentration in the vicinity of the Union Hill system. In other words, the survey revealed that the higher grade of scheelite occurred in those workings which were closer to the Union Hill system. Exploration on the dumps which came from the Union Hill area evidenced the higher concentration of scheelite than on any of the other dumps in the district.

Scheelite occurs primarily within the quartz vein from which gold and silver are produced so that it may be said that any tungsten which should be recovered could be considered a bi-product of the yield

of gold and silver. The ores of gold and silver would be mined and commingled with these ores would be the tungsten minerals, and it is quite possible that the recovery of the gold and silver would be sufficient to pay for all the explorations and the production costs leaving the tungsten value as a bi-product profit.

For the past three years this corporation has retained the services of Dr. Carleton D. Hulin, one of the outstanding consulting geologists of America. Dr. Hulin is especially qualified as an expert in the specialized field of geology as it relates to the occurrence and deposition of tungsten minerals because he has for a number of years served the Bradley Mining Company in connection with their exploration and development of tungsten ore deposits at Stibnite, Idaho, and at Patterson, Idaho. He also serves as consulting geologist for the Tungsten Mining Company at their mines in North Carolina. He serves also the Homestake Mining Company and a number of other large mining corporations. The corporation has also employed the services of Mr. H. B. Menardi of Western Machinery Company, as a metallurgical consultant to work out problems relating to the recovery of the tungsten minerals which are being produced currently from the mines being operated by Idaho Maryland. Upon the recommendations of Dr. Hulin and Mr. Menardi, the company is now engaged in installing within the metallurgical plants of the company such equipment as they deem necessary to recovering a portion of the tungsten minerals which are components of the gold and silver ores now being treated.

From the foregoing it should seem clear to you that the application of Idaho Maryland Mines Corporation is in the nature of an application for a development loan as distinguished from a purely exploratory loan. In other words the company desires to explore within the confines of the Union Hill system where the chances of finding richer tungsten bi-products are higher than they are in other areas within the properties owned by the company.

We desire to emphasize these facts:

1. That the Company is a going concern ready immediately with its mine, its metallurgical plant, its employees and its staff to produce any tungsten minerals which may be associated with these gold and silver ores. Thus there would be no delay should the exploratory activities within the Union Hill system (which can be connected underground with only a small amount of drifting) start the flow of the discovered minerals into the channels of defense.

2. That the tungsten is a bi-product of the gold and silver ores so that a much lower grade of tungsten concentrate per ton of rock mined can be taken than in the ordinary case where no gold and silver values are recoverable. Furthermore the yield of tungsten would not have to pay any part of the amortization costs of the current underground and surface mine and metallurgical plant.

The Management of this corporation feels confident that explorations within the Union Hill area will result in the discovery of ore bodies of gold, silver and scheelite which can be mined and milled at a profit and yield a substantial contribution of the scheelite concentrates to the defense effort. We are mindful of the possible accusation that this application is made for a selfish purpose in order to insure the company against another foreclosure either by its creditors or by another War Production Order, similar to L-208, but the answer by this corporation to any such allegations would be a clear denial that selfishness dominates this application. We are cognizant of the deplorable dearth of tungsten. We believe this problem of securing an adequate supply transcends all other current problems of our defense effort, the draft, price regulations, amortization of war facilities, the war in Korea, the war in Europe, the British-Iranian controversy, etc., etc. Furthermore, we believe that we are immune from any war production order which may close the gold and silver mines because within the very near future we will be a producer of tungsten which will be produced as a bi-product from gold and silver ores being mined currently from veins in the vicinity of the Union Hill system.

Finally, although it is true that the mining operations are at the present time, due to inflation and the fixed price of gold, unable to reflect any substantial profits to support any substantial exploratory program, the company is not operating at a loss and it will not be forced to close down by creditors even though this application is denied.

The application of this corporation made herein is for a delegation by you of experts to consider with our experts the merits of our request for an exploratory loan and should they be convinced there is merit in our petition that an exploratory program be designed and a program of financing such a project with company funds and your loans be drafted, that such a design and draft be incorporated in a formal application to your office for approval. Our experts who would collaborate with your experts in such an investigation would be Dr. Carleton Hulin, Mr. H. B. Menardi and the President of this company, Mr. Albert H. Crase.

From the standpoint of procedure we are considering your ruling dated July 3, 1951, signed by Mr. Tom Lyon (DMA-210) denying our application for an exploration loan to reopen the Union Hill shaft and to examine and sample for tungsten the Greek Tunnel Vein --- as final.

We trust you will consider this communication as a new and separate application and we respectfully request you to give it a careful review and pray that you may grant our application.

Very truly yours,

IDAHO MARYLAND MINES CORPORATION

By - (Sgd) Granville S. Borden

Vice-President and Member
of Executive Committee

cc: Dr. Carlton D. Hulin
Mr. George Herrington
Mr. Herbert H. Salinger
Mr. Sigfried Bechhold

CC: Defense Minerals Administration
Attention: Mr. Tom Lyon, Director Supply Div.
Mr. H.C. Miller, 1012 Flood Bldg.
Mr. Albert H. Crase

cc: Mr. C. L. Allan
Mr. E. L. Oliver
Mr. Bert C. Austin
Mr. H.B. Menardi

COPY

CARLTON D. HULIN
26th Floor, Shell Building,
San Francisco 4, California

February 6, 1951

Mr. E. L. Oliver,
Idaho Maryland Mines Corporation,
San Francisco, Calif.

Supplementary Report on Tungsten at the

Idaho Maryland Mine

Only a little additional information on tungsten has become available since my report to Mr. Allen dated October 30, 1950, as follows:

The dump of the Cambridge shaft has been sampled, 13 samples taken averaging 0.087 or approximately $3.00 per ton in gold. These samples unfortunately were not assayed for tungsten, but my previous estimate of 0.2% to 0.4% WO_3 still stands. It is quite apparent, therefore, that it will pay to mill the tungsten-bearing material of the Cambridge dump, the gold present being sufficient to pay all costs of moving and treating this dump material.

The chief interest in the Cambridge, however, is found in the fact that this early day shaft was sunk on the Greek Tungsten Vein to a depth of only 300 feet, and the tungsten-bearing dump material must therefore have come from veins on the 300 level or above. Stoping on and above the 300 level was very limited, and it is quite certain that existing portions of the veins, if at all comparable to the material on the dump, would pay to mine for the contained tungsten. The Cambridge is connected with the Union Hill by cross-cuts on the 200 and on the 300 levels.

It is recommended, therefore, that the Union Hill be unwatered and rehabilitated down to the 300 level for purposes of examination and sampling, - this at an estimated cost of $25,000. Tailings dumped into the Union Hill shaft during past years should be largely below the 300 level and no great difficulty is anticipated in reopening the shaft to this level.

I remain convinced that flotation of the mill tails amounting to 600 tons per day for the recovery of scheelite would be unprofitable for any but the best ore now known in the Brunswick Mine. Flotation reagents which would be required are estimated at 28¢ per ton of tailings treated and no more than a 50% recovery of the contained scheelite could be anticipated.

Table assays are now available for a run of black slate ore from the flats adjacent to 16 Vein, this representing some of the best scheelite-bearing ore present in the mine. Tonnage estimates for the jig concentrate passing over the table per 24 hour period are likewise available as follows:

	Tons	% WO_3	Total units WO_3
Table tails	65.	0.17	11.05
Table sulphide conc.	6.	0.36	2.16
Total jig concentrate	71.	0.186	13.21

On the basis of 600 tons per day mill feed and an estimated 70% scheelite recovery in the jig concentrate, a heads value of 0.031% WO_3 is estimated for this ore, with a total content of 18.87 units WO_3 in the 600 tons of mill feed.

Flotation recovery of the scheelite contained in the sulphide concentrate and jig recovery of the scheelite in the table tails should be efficient and cheap, both as regards operation and initial capital investment. Combining these recovered products should give a scheelite concentrate, which while possibly not of commercial grade, should be marketable through some up-grading plant, such as the Pine Creek plant of the Mining Division of Union Carbide and Carbon Corporation near Bishop.

My recommendation, therefore, in so far as Brunswick ore is concerned, is to recover whatever scheelite can be recovered from the jig concentrate and this at the lowest possible capital outlay in an effort to produce a marketable concentrate, but not a concentrate which will necessarily meet commercial specifications. Attempts to recover scheelite by flotation of the full mill tails will in general not be economic. These conclusions do not necessarily apply to tungsten-bearing material which may be present in the Union Hill Mine.

Very truly yours,

(s) CARLTON D. HULIN

cc C. L. Allen

COPY

COPY

CARLTON D. HULIN
Mining Geology
26th Floor, Shell Bldg.
San Francisco 4, Cal.

cc-WLO
GSB
Extra

October 30, 1950

Mr. Charles L. Allen,
Idaho Maryland Mines Corp.
Grass Valley, Cal.

Tungsten

Underground "lamping" for scheelite in the Idaho Maryland and New Brunswick mines, using ultra-violet light, is still vastly incomplete, but certain facts are becoming apparent.

In the Idaho Maryland only the 2 Vein system on the 2700 level and portions of 1 Vein and 3 Vein on the 2000 level have so far been lamped, the results being negative.

In the Brunswick, lamping has so far been confined to the southern portions of the mine with interesting and somewhat unexpected results as regards the scheelite distribution.

Insofar as the work of lamping has progressed, results indicate that the Brunswick-type veins in general carry no scheelite. In twelve or more Brunswick-type veins which have in part been examined, only two veins were found which carried scheelite - namely 19 Vein and 45 Vein. In the remaining veins, including portions of 1 Vein and 16 Vein, no scheelite is visibly present.

In 19 Vein and 45 Vein the occurrence of scheelite is extremely erratic and spotty. In two observed cases, one in each vein, pockets of tungsten ore were present which were of relatively good grade but quite small, amounting to only a few tons in each case. The best that could be hoped from such small pockets would be the sorting out of a few hundred pounds of high grade scheelite. With the exception of such small pockets, no ore mineable for its contained tungsten can be recognized, though it is certain that the gold ore mined from these two veins will normally carry a small but variable amount of scheelite.

In marked contrast to the general absence of scheelite from all but two of the Brunswick-type veins, the "flats" wherever exposed in the portion of the mine lamped consistently show a small but erratically distributed content of scheelite. This holds true throughout the lamped area from the 800 to the 2300 level. In no observed case could the observed amount of scheelite be regarded as economic in itself. Where the "flats" are being mined for gold, however, as in the case of the "flats" in the black slates adjacent to 16 Vein, such ore should consistently carry a small content of scheelite, some portion of which should be recoverable as a by-product in the milling of the gold ore.

The "Flats" as previously reported (Report of Oct. 20, 1948) represent zones of thrust faulting which were older than the Brunswick veins and which were disjointed and broken into segments by fault displacements on the Brunswick vein fissures. The tungsten mineralization apparently occurred quite early and at a time when only the flat thrust zones and (on the basis of present lamping) only two of the Brunswick type vein fissures were in existence. The remaining Brunswick veins formed later after the termination of the tungsten phase of the mineralization, and hence these veins contain no scheelite.

The most important zones of "flats" in the Brunswick mine have not as yet been lamped. It would appear important to carry this lamping to completion, and Charlie Lyden has been requested to do this as time permits, with particular emphasis on the important flat stopes which have been worked on the 1450 and 1600 levels.

Economic Possibilities of the Scheelite.

With the exception of occasional pockets from which small amounts of high grade scheelite can be obtained by hand sorting, no ore occurrence in the New Brunswick is as yet known which can be mined solely for its contained tungsten.

The run of New Brunswick ore reaching the mill, however, should always carry a small but variable amount of tungsten, the amount varying with the particular source of the ore being milled. Some portion of this tungsten should be recoverable as a by-product in the milling of the gold ore.

Factual information which will serve to indicate the exact amount of scheelite carried by the ore passing through the Brunswick mill is not available, and until such time as tungsten assays of weighted mill products are obtained reliance must be placed upon rough visual estimates of the scheelite present.

Panning tests on cyanide tails made by one of the mill men indicate a tungsten content of 0.046 lbs. WO_3 (tungsten oxide) or 0.0023% WO_3 per ton, or a value of about 9¢ per ton. Visual estimates of the content of scheelite in the material passing over the mill table are of the same order of magnitude.

Based upon such meager estimates, it would appear that a daily recovery of by-product scheelite containing approximately 20 lbs. of WO_3 should be possible. This recovery of scheelite would have a market value of roughly $40. per day or $1,000. per month. To achieve these results would require very minor additions to the present mill equipment - additions which would probably pay for themselves within a six months period. It should be repeated for emphasis that the foregoing figures, while representing the best "guess" that can be offered at the present time, are based upon estimates of doubtful accuracy.

In the flow sheet of the Brunswick mill, the discharge from the ball mill passes to a jig, the tailings from which go to a classifier operating in closed circuit with the ball mill. Undersize from the classifier goes to flotation, the flotation tails going to cyanide treatment.

The jig concentrate consists largely of metallic sulphides but in addition contains a major portion of the scheelite present in the mill feed. This jig concentrate goes to a concentrating table where a gold cut is obtained which passes to an amalgamator. Tails from the amalgamator are added to the concentrate obtained by flotation, while the table tails are returned to the classifier operating in closed circuit with the ball mill. The scheelite in the table feed passes in part to the amalgamator tails, but probably the major portion goes into the table tails and thence to the classifier, and then either entering the flotation circuit and ultimately being lost in the cyanide tails, or else being returned to the ball mill where some portion of the returned scheelite would be slimed.

The low content of scheelite in the Brunswick ore would make any attempt at flotation of the entire mill feed for the recovery of scheelite completely uneconomic. Recovery of much of the scheelite trapped in the jig and passing over the concentrating table, however, does appear to be economically feasible.

Recovery of scheelite contained in the jig concentrate would require combining the amalgamator tails and table tails and flotation of this combined product for scheelite, the tails from this operation being returned to the classifier in the ball mill circuit. Two stages of flotation would be required: the first stage involving flotation of the scheelite, the second stage involving cleaning of the scheelite concentrate by floating out sulphide impurities. A small regrind mill operating in closed circuit with a small classifier may or may not be necessary, dependent upon the size distribution of the scheelite in the table product. Such a regrind mill, if needed would offer the advantage that high grade scheelite ore obtained by hand sorting could be fed to it direct. In any case the necessary equipment as outlined would be almost of laboratory size, since only about two tons per day, the average amount of material passing over the table would have to be treated. Flotation of scheelite is a relatively efficient operation, and due to the small amount of material being treated, the treatment cost should be exceedingly low.

Obviously, before any final decision is made, both the economic and the metallurgical possibilities of scheelite recovery must be confirmed by adequate assays of weighted samples of table tails and amalgamator tails, and by flotation tests. The necessary metallurgical tests may possibly be conducted by the present mill crew, though presumably outside talent will be needed, in which case Mr. L.H. Lange, research metallurgist for the Galigher Company of Salt Lake City, is recommended as being thoroughly familiar with scheelite flotation.

The Union Hill, Lucky and Cambridge.

Lamping of the Union Hill dump, indicated a fairly uniform distribution of scheelite throughout, in amount estimated at about 0.01% or 60¢ per ton in WO_3. This dump is definitely uneconomic and therefore possesses no interest.

The dump of the Lucky shaft shows much less scheelite than the Union Hill dump and must likewise be regarded as of no further interest.

From one-third to one-half of the Cambridge dump, totaling on the order of 3000 tons, contains scheelite in amount estimated at 0.2% to 0.4% WO_3, or a gross value of from $8 to $16. per ton, of which only about one-half or an average value of possibly $6. per ton in scheelite would presumably be recoverable.

This dump material must be regarded as marginal in terms of its content of scheelite, but if several dollars in gold were present in addition to the scheelite, the dump material would definitely be economic. This of course presumes facilities for recovery of scheelite in the Brunswick mill. The portion of the Cambridge dump which carries scheelite should therefore be adequately sampled, the samples being assayed for both gold and tungsten.

The Cambridge shaft, as well as the Lucky, is quite old and completely caved beyond possibility of re-opening. It is known, however, that the Cambridge shaft was sunk on the Greek Tungsten vein, and the scheelite shown on the Cambridge dump undoubtedly came from that vein, either on the 200 or 300 level.

The Union Hill workings reach the Greek Tungsten vein on the 200, 300, 600, 800 and 1000 levels. It is known that two carloads of high grade tungsten ore (presumably hand sorted) were mined and shipped from the Greek Tungsten vein in the Union Hill between 1915 and 1919. The shipment amounted to 54.59 tons averaging 60% WO_3, and possessed a value at the time of shipment amounting to $68,918. The present day value of this same shipment would be in excess of $125,000.

Unfortunately no record exists as to the amount and distribution of scheelite present in the Greek Tungsten vein, or as to the extent of stoping of the tungsten ore in that vein.

The Union Hill was shut down and dismantled in 1919 and is now full of water. Even worse, tailings from the Brunswick mill were run into the Union Hill shaft over a period of nine months during past years. Unwatering and re-opening of the Union Hill workings would therefore represent a major undertaking, and would probably cost in the neighborhood of $100,000.

To reopen and reclaim the Union Hill workings solely on the possibility that workable tungsten ore in quantity and economic in grade would be found in the Greek Tungsten vein represents such a gamble that it should not be seriously considered at this time, although any material future increase in the price of tungsten would make this gamble appear more attractive. An additional argument exists for reopening the Union Hill, however. Namely, that the presence of the water-filled workings of the Union Hill constitutes an ever present menace to the Brunswick mine and prevents development to the westward of certain of the Brunswick veins which are known to carry ore. At some future date the problem of unwatering and reopening the Union Hill must be seriously considered, but that is a problem for the future and not for the present.

Recommendations.

1. Continue lamping in the Brunswick mine as time permits, with emphasis on the "flats" and the flat stopes which have been worked in the past.

2. Weighted samples of the table tails and amalgamator tails to be taken in the Brunswick mill, the samples to be taken over a sufficient time interval as to give an accurate representation of the tungsten values passing through the mill.

3. Dependent upon the tungsten assay results on the table product, necessary metallurgical test work designed to show the efficiency of scheelite recovery from the combined table and amalgamator tails by flotation; the reagents necessary; the costs of such treatment; and the nature of and capital investment required for the additional equipment needed for such flotation recovery of scheelite from the table product.

4. That portion of the Cambridge dump carrying visible scheelite to be sampled, the samples to be assayed for both gold and scheelite. The samples taken should be at least 100 pounds each if they are to be accurately representative of the dump material. Along with the sampling, measurements to be taken which will give a reasonably accurate figure for the tonnage available on the Cambridge dump.

Sincerely yours,

Carlton D. Hulin

cc/E. L. Oliver

11-6-50, Note by E.L.O:
Hulin's recommendations for operation in Idaho Maryland & Brunswick will be mailed 11-7-50.

MF-103
(Revised April 1952)

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
NOV 18 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 2783

Docket No. dmea 2783
Metal or Mineral
Date Received 11-18-52
Estimated Cost
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: Echo Maryland Mines Corporation
P. O. Box 1028,
Grass Valley, California

(*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.

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

(*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

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

(*c*) State your interest in the land, whether owner, lessee, purchaser under contract, or otherwise

(*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.

(*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.

5. *The exploration project.*—(*a*) State the mineral or minerals for which you wish to explore .....

(*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.

(*c*) The work will start within ....10.... days and be completed within ....24.... 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:

(*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)?

(*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 ....., 195...

IDAHO MARYLAND MINES CORPORATION
(Applicant)

By Vice President

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

IDAHO MARYLAND MINES CORPORATION
Grass Valley, California

November 14, 1952

Question 1
MF-103

(a) Refer to application form.

(b) This is a corporation, incorporated in the state of Nevada.

(c) Corporation officers are as follows:

George Herrington 405 Montgomery St. San Francisco, Calif.	Chairman of the Board of Directors.
Albert Crase Idaho Maryland Mines Corp. Grass Valley, California.	President and General Manager of Mining Operations.
Max Bechhold Idaho Maryland Mines Corp. Grass Valley, California.	Vice-President and Assistant to the President
Granville S. Bordon 222 Bush St. Rm. 2211 Standard Oil Bldg. San Francisco, Calif.	Vice-President
Charles L. Allan Idaho Maryland Mines Corp. Grass Valley, California.	Secretary-Treasurer and Comptroller.

IDAHO MARYLAND MINES CORPORATION
Grass Valley, California

November 14, 1952

Question 3
MF-103

(a) Patented mineral claims: Halphene, Lot No. 202; Union Hill, Lot No. 59; Lucky, Lot No. 129; Cambridge, Lot No. 128; Gold Blossom, Survey No. 3697.

Agricultural patents, the mineral rights of which are owned by this company: Lots 1, 2, 3, 4, 5 and fractional W½ of Section 36, T16N, R8E.

(b) These claims were most recently worked as the Union Hill and Brunswick Mines and portions are still being worked as part of the Brunswick Mine. The Lucky and Cambridge claims were at one time worked as mines of the same name.

(c) All land concerned is owned by Idaho Maryland Mines Corporation.

(d) Not applicable.

(e) None.

(f) Not applicable.

IDAHO MARYLAND MINES CORPORATION
Grass Valley, California

November 14, 1952

Question 4
MF-103

(a) The properties comprising the Union Hill group of claims were worked during the mid-nineteenth century as three separate mines: the Lucky, Cambridge and Union Hill. Later all claims were worked from the Union Hill shaft thru a connecting crosscut on the 300 level of the Union Hill.

Of the three shafts the Cambridge was the shallowest of all, the bottom level being the 150 foot level which connected with the 150 foot level of the Lucky. The lowest level from the Lucky shaft was the 300 foot level which was connected with the 300 foot level of the Union Hill. The bottom working level from the Union Hill shaft was the 1200 level.

The Union Hill shaft was an inclined shaft about 1210 feet long. From it, seven principal levels were driven. In all there were about 19,280 feet of drifts and crosscuts driven on the various levels.

The Union Hill workings are flooded and the shaft has been filled, almost to the collar, with mill tailings. The Lucky and Cambridge shafts are caved and there are no surface indications as to the exact location of their collars.

Some current operations between the 900 and 1100 levels of the Brunswick Mine are being conducted on veins, some of which correlate with various of the Union Hill veins.

Current operations are being conducted on the 1880 level of the Brunswick Mine on 16 Vein which, in part, should apex on some of the land listed in answer to question 3 (a).

Almost all drifts and stopes of the Brunswick Mine which lie within the properties under discussion, or whose structures may correlate with Union Hill structures, are readily accessible.

(b) According to W. D. Johnston (USGS PP 194) between 1854 and 1918, the Union Hill Mine produced from $500,000 to $750,000 in gold. In addition, incomplete records in this office show that during 1916 and 1917 approximately 111,000 pounds of scheelite concentrate were sold. This material was both hand cobbed ore and mill concentrates and WO_3 content varied from 4.4% to 73.14%.

No ore reserves are being carried in the Union Hill properties.

(c) The mineral deposits of these properties are gold-scheelite bearing, fissure filling, quartz veins in black and gray slates and other metamorphosed pyroclastics and sediments generally called porphyrite or greenstone locally.

The Union Hill veins are generally north-west, south-east striking and dip steeply to the south-west.

IDAHO MARYLAND MINES CORPORATION
Grass Valley, California.

November 14, 1952

Question 4
MF-103

(c) cont'd. No written technical reports have been found concerning the veins of the Union Hill but it has been possible to partly reconstruct their character from old maps, discussions with persons who were working in this area while the mine was in production, examination of the dump material, and comprehensive studies of adjacent Brunswick workings:

While in porphyrite (greenstone) the Union Hill, Greek-Tungsten, Georgia and Cambridge Veins undoubtedly are true fissure veins with well defined walls. There are sporadic occurrences of scheelite in the veins, sometimes in pods of pure scheelite comprising many hundreds of pounds. This is true of the Brunswick 19, 44 and 45 Veins which are continuations of Union Hill veins and it is known that considerable of the scheelite production from the Union Hill was hand cobbed material. It is assumed that the Cambridge Vein contained appreciable quantities of scheelite for both the Lucky and Cambridge dumps show scheelite and the workings were confined to that single vein.

When any of these veins intersect a body of black slate they form large stringer zones that invariably have some scheelite in the gold-quartz stringers.

The reason for picking the Brunswick 1880 level to do this work from, was to establish a working level far enough under the Union Hill workings toavoid any possibility of being flooded out by them and still have a good length of vein up dip that can be stoped if the veins prove to be mineable.

A map accompanies which shows the present workings of the Union Hill 1200 level, and the Brunswick 1300 and 1880 levels with the proposed exploration work shown in dotted lines and shaded green.

(d) These properties are located about two miles east of the center of the town of Grass Valley, California, and about three miles south of Nevada City, the county seat of Nevada County. In both of these towns there is housing available for rent or for sale.

Well maintained county roads pass thru the property and connect it with Nevada City, Grass Valley and the Grass Valley-Colfax highway.

Pacific Mountain Transport, a motor truck subsidiary of the Southern Pacific Railroad Co. maintains a freight depot at Grass Valley. At Colfax, twelve miles from Grass Valley, there is a passenger station and freight yards on the main line of the Southern Pacific.

(e) Materials, supplies, equipment, water and power are all in plentiful supply in the district. Water is supplied by the Nevada Irrigation Dist. and power by Pacific Gas and Electric Co.

IDAHO MARYLAND MINES CORPORATION
Grass Valley, California.

November 14, 1952

Question 4
MF-103

(e) cont'd. The local manpower situation, similar to that of other mining districts, leaves much to be desired. The area is fortunate in having a fairly large group of miners that are permanent residents of the area. The permanent nucleus supplemented by transient miners and, during fall and winter months, by men from the logging camps, enables at least a satisfactory minimum level of continuous operation to be maintained.

IDAHO MARYLAND MINES CORPORATION
Grass Valley, California.

November 14, 1952

Question 5
MF-103

(a) The exploration project is to develop known quartz - gold - scheelite veins in depth.

(b) The plan of operation is to continue drifting on 16 Vein on the 1880 level of the Brunswick Mine to its junction with the Back Vein, a distance of about 600 feet. If the Back Vein is not found, or if 16 Vein continues thru it, the drift will be continued for a total distance of 800 feet. From the end of 16 DW a crosscut will be driven at S40°W thru the Morehouse Fault, a distance of approximately 700 feet. About 1100 feet of drift will be driven on the Union Hill and Greek Tungsten Veins, following each about 250 feet in a northwesterly direction and to their junction and their junction with the Morehouse Fault in a southeasterly direction. The Back Vein, if found, will be drifted at least 150 feet north and south of 16 drift. From the face of the crosscut two 450 foot diamond drill holes will be drilled to prospect for the possible continuation of the Cambridge Vein thru the Morehouse Fault.

At least one 100 foot raise will be driven on the Back and Greek-Tungsten Veins and two on the Union Hill Vein, one to the east of its junction with the Greek-Tungsten Vein.

(c) Refer to application form.

(d) The Idaho Maryland Mines Corporation has existed as an active Corporation in this district since 1926.

The present General Manager, Mr. Albert Crase, was manager of the company from January 1926 to June 1941 and from February 1951 to the present. Prior to his affiliation with this company he managed other mining properties in the district.

Mr. Kirk Whitmore, Mine Superintendent, was first employed by this company in 1938 and worked first as miner and then as shift boss until October 1941. He was also employed in these capacities from March 1947 to June 1948. In October 1950 he was hired as Mine Foreman and in February 1951 was promoted to Mine Superintendent, which position he still holds.

Mr. Daniel Henry, Mine Foreman, worked as Mine Foreman for the Bradley Mining Company for twelve years before coming to work for Idaho Maryland. From June 1949 to April 1950 he was a shift boss in the companies Brunswick Mine. From April 1950 to September 1952 Mr. Henry was an independent leaser in the Brunswick Mine, having about thirty men working the lease under his supervision. In September

IDAHO MARYLAND MINES CORPORATION
Grass Valley, California.

November 14, 1952

Question 5
MF-103

(d) cont'd. 1952, Mr. Henry was employed as Mine Foreman of this company, which job he still holds.

Mr. Charles Lyden, Geologist for the corporation has held that job since January, 1950. Prior to that time he was employed by Anaconda Copper Mining Company at Butte, Montana, first as sampler and then as mine geologist.

IDAHO MARYLAND MINES CORPORATION

GRASS VALLEY, CALIFORNIA

QUESTION NO. 6

MF 103

	A	B			C			D		E	F	G					H	
PROJECT	INDEPENDENT CONTRACTS	LABOR	SUPERVISION	CONSULTANTS	MATERIALS AND SUPPLIES	COST	POWER AIR AND WATER	EQUIPMENT OWNED & TO BE RENTED	RENTAL	REHABILITATION AND REPAIRS	NEW BUILDINGS ETC.	REPAIRS AND MAINTENANCE	ASSAYING AU & WO_3	ACCOUNTING	COMPENSATION & INSURANCE	PAYROLL TAXES	CONTINGENCIES	TOTAL COST
2900 feet of drifts and crosscuts	None	Miners 725 shifts $11,963.00	General charge, 1/4 of shiftbosses time for two years at full time rate of $385.00 per month	None	5800' rails @ $184.00 per ton	$2,944.00	General charge at a rate of $150.00 per month for 24 months	Haulage motor & mine cars	Project charge @ $1.20/foot $3480.00	None	None	General charge at a rate of $150.00 per month for two years	$1500.00	One additional accountant for period of contract. $330.00 per month for 24 months	8.3% of payroll	3.8% of payroll	10% allowance for increase in prices and wages over those used in calculations.	
		Truck drivers 45 shifts 498.00			1160 4"x6" ties @ 25¢ each	290.00		Mucking machines										
					Track spikes, fish plates, switch frogs	250.00		Drills										
					2900 feet 4" pipe @ $23.00/c. ft.	3586.00		Blowers (ventilation) @ $30.00/month	720.00									
					2900 feet 2" pipe @ $37.07/c. ft.	1075.00		Hoisting charge, 10,500 tons @ 35¢/ton	3675.00									
					Pipe fittings	1,000.00		Motor trucks (surface) for supplies & waste disposal	1125.00									
					2900 feet of metal fan pipe @ 29¢/foot	2610.00												
					Powder & bits @ $2.65/foot	7685.00												
400 feet of raises		Miners 240 shifts 3960.00			800' 2" pipe @ 37.07/c. ft.	297.00		Haulage motor & mine cars	Project charge @ $1.20 per foot $480.00				$685.00					
		Truck drivers 8 shifts 89.00			Pipe fittings	150.00		Tuggers										
					Raise timber @ $46.22/mf	2000.00		Drills										
					Powder & bits @ $2.00/foot	800.00		Hoisting charge 2,500 tons @ 35¢/ton	875.00									
								Motor trucks (surface) for supplies and waste disposal	200.00									
900' Diamond Drilling		Diamond driller and helper, 45 days 1305.00			Diamond drill bits	120.00		Drill rig and rods	225.00									
Total		$17,815.00	$2310.00			$22,807.00	$3600.00		$10,780.00			$3600.00	$2,185.00	$8,400.00	$1,479.00	$499.00	$730.00	$74,205.00

IDAHO MARYLAND MINES CORPORATION
Grass Valley, California.

November 14, 1952

Question 7
MF-103

(a) Yes.

(b) Applicants share of the costs will be supplied thru rental charges for equipment used and additional cash outlay as necessary. Money required will be supplied from corporation funds.

COPY

July 16, 1951

IDAHO MARYLAND MINES CORPORATION
Russ Building, San Francisco, Calif.
Application for Exploration Loans
for the Development of Tungsten Reserves.

Hon. James Boyd, Director
Defense Minerals Administration,
United States Department of Interior
Washington 25, D. C.

Dear Sir:

In connection with the above named subject, we submit the following:

PRELIMINARY STATEMENT

The Idaho Maryland Mines Corporation is a going concern engaged in exploring and producing gold and silver ores and processing them into gold and silver bullion at their mines in Grass Valley, Nevada County, California. Except for the period when the mines were shut-down under War Production Order L-208 during World War II, this corporation has continuously produced gold and silver bullion in substantial amounts since 1926, and it is currently producing bullion at the rate of approximately $2,000,000 annually.

The Company is currently producing from the Idaho Maryland group of claims and the Brunswick Consolidated group of claims, which are contiguous and connected by underground development. The Union Hill group of claims are also contiguous but no producing activities have been conducted within this group of claims since 1919 and the mine shaft and workings therein are filled with water. During World War I, before the phenomena of floresecence of scheelite was known, the occurrence of scheelite was recognized within the Union Hill system of veins and several shipments of crude ore produced from this property were made in 1918. During World War II reconnaissance surveys were made within all of the properties owned by this corporation and the occurrence of scheelite was recognized throughout all their properties, but all of the evidence indicated a gradual concentration in the vicinity of the Union Hill system. In other words, the survey revealed that the higher grade of scheelite occurred in those workings which were closer to the Union Hill system. Exploration on the dumps which came from the Union Hill area evidenced the higher concentration of scheelite than on any of the other dumps in the district.

Scheelite occurs primarily within the quartz vein from which gold and silver are produced so that it may be said that any tungsten which should be recovered could be considered a bi-product of the yield

of gold and silver. The ores of gold and silver would be mined and commingled with these ores would be the tungsten minerals, and it is quite possible that the recovery of the gold and silver would be sufficient to pay for all the explorations and the production costs leaving the tungsten value as a bi-product profit.

For the past three years this corporation has retained the services of Dr. Carleton D. Hulin, one of the outstanding consulting geologists of America. Dr. Hulin is especially qualified as an expert in the specialized field of geology as it relates to the occurrence and deposition of tungsten minerals because he has for a number of years served the Bradley Mining Company in connection with their exploration and development of tungsten ore deposits at Stibnite, Idaho, and at Patterson, Idaho. He also serves as consulting geologist for the Tungsten Mining Company at their mines in North Carolina. He serves also the Homestake Mining Company and a number of other large mining corporations. The corporation has also employed the services of Mr. H. B. Menardi of Western Machinery Company, as a metallurgical consultant to work out problems relating to the recovery of the tungsten minerals which are being produced currently from the mines being operated by Idaho Maryland. Upon the recommendations of Dr. Hulin and Mr. Menardi, the company is now engaged in installing within the metallurgical plants of the company such equipment as they deem necessary to recovering a portion of the tungsten minerals which are components of the gold and silver ores now being treated.

From the foregoing it should seem clear to you that the application of Idaho Maryland Mines Corporation is in the nature of an application for a development loan as distinguished from a purely exploratory loan. In other words the company desires to explore within the confines of the Union Hill system where the chances of finding richer tungsten bi-products are higher than they are in other areas within the properties owned by the company.

We desire to emphasize these facts:

1. That the Company is a going concern ready immediately with its mine, its metallurgical plant, its employees and its staff to produce any tungsten minerals which may be associated with these gold and silver ores. Thus there would be no delay should the exploratory activities within the Union Hill system (which can be connected underground with only a small amount of drifting) start the flow of the discovered minerals into the channels of defense.

2. That the tungsten is a bi-product of the gold and silver ores so that a much lower grade of tungsten concentrate per ton of rock mined can be taken than in the ordinary case where no gold and silver values are recoverable. Furthermore the yield of tungsten would not have to pay any part of the amortization costs of the current underground and surface mine and metallurgical plant.

The Management of this corporation feels confident that explorations within the Union Hill area will result in the discovery of ore bodies of gold, silver and scheelite which can be mined and milled at a profit and yield a substantial contribution of the scheelite concentrates to the defense effort. We are mindful of the possible accusation that this application is made for a selfish purpose in order to insure the company against another foreclosure either by its creditors or by another War Production Order, similar to L-208, but the answer by this corporation to any such allegations would be a clear denial that selfishness dominates this application. We are cognizant of the deplorable dearth of tungsten. We believe this problem of securing an adequate supply transcends all other current problems of our defense effort, the draft, price regulations, amortization of war facilities, the war in Korea, the war in Europe, the British-Iranian controversy, etc., etc. Furthermore, we believe that we are immune from any war production order which may close the gold and silver mines because within the very near future we will be a producer of tungsten which will be produced as a bi-product from gold and silver ores being mined currently from veins in the vicinity of the Union Hill system.

Finally, although it is true that the mining operations are at the present time, due to inflation and the fixed price of gold, unable to reflect any substantial profits to support any substantial exploratory program, the company is not operating at a loss and it will not be forced to close down by creditors even though this application is denied.

The application of this corporation made herein is for a delegation by you of experts to consider with our experts the merits of our request for an exploratory loan and should they be convinced there is merit in our petition that an exploratory program be designed and a program of financing such a project with company funds and your loans be drafted, that such a design and draft be incorporated in a formal application to your office for approval. Our experts who would collaborate with your experts in such an investigation would be Dr. Carleton Hulin, Mr. H. B. Menardi and the President of this company, Mr. Albert H. Crase.

From the standpoint of procedure we are considering your ruling dated July 3, 1951, signed by Mr. Tom Lyon (DMA-210) denying our application for an exploration loan to reopen the Union Hill shaft and to examine and sample for tungsten the Greek Tunnel Vein --- as final.

We trust you will consider this communication as a new and separate application and we respectfully request you to give it a careful review and pray that you may grant our application.

Very truly yours,

IDAHO MARYLAND MINES CORPORATION

By - (Sgd) Granville S. Borden

Vice-President and Member
of Executive Committee

cc: Dr. Carlton D. Hulin
Mr. George Herrington
Mr. Herbert H. Salinger
Mr. Sigfried Bechhold

CC: Defense Minerals Administration
Attention: Mr. Tom Lyon, Director Supply Div.
Mr. E.C. Miller, 1012 Flood Bldg.
Mr. Albert H. Crase

cc: Mr. C. L. Allan
Mr. J. L. Oliver
Mr. Bert C. Austin
Mr. H.B. Menardi

COPY

CARLTON D. HULIN
26th Floor, Shell Building,
San Francisco 4, California

February 6, 1951

Mr. E. L. Oliver,
Idaho Maryland Mines Corporation,
San Francisco, Calif.

Supplementary Report on Tungsten at the

Idaho Maryland Mine

Only a little additional information on tungsten has become available since my report to Mr. Allen dated October 30, 1950, as follows:

The dump of the Cambridge shaft has been sampled, 13 samples taken averaging 0.087 or approximately $3.00 per ton in gold. These samples unfortunately were not assayed for tungsten, but my previous estimate of 0.2% to 0.4% WO_3 still stands. It is quite apparent, therefore, that it will pay to mill the tungsten-bearing material of the Cambridge dump, the gold present being sufficient to pay all costs of moving and treating this dump material.

The chief interest in the Cambridge, however, is found in the fact that this early day shaft was sunk on the Greek Tungsten Vein to a depth of only 300 feet, and the tungsten-bearing dump material must therefore have come from veins on the 300 level or above. Stoping on and above the 300 level was very limited, and it is quite certain that existing portions of the veins, if at all comparable to the material on the dump, would pay to mine for the contained tungsten. The Cambridge is connected with the Union Hill by cross-cuts on the 200 and on the 300 levels.

It is recommended, therefore, that the Union Hill be unwatered and rehabilitated down to the 300 level for purposes of examination and sampling, - this at an estimated cost of $25,000. Tailings dumped into the Union Hill shaft during past years should be largely below the 300 level and no great difficulty is anticipated in reopening the shaft to this level.

I remain convinced that flotation of the mill tails amounting to 600 tons per day for the recovery of scheelite would be unprofitable for any but the best ore now known in the Brunswick Mine. Flotation reagents which would be required are estimated at 28¢ per ton of tailings treated and no more than a 50% recovery of the contained scheelite could be anticipated.

Table assays are now available for a run of black slate ore from the flats adjacent to 16 Vein, this representing some of the best scheelite-bearing ore present in the mine. Tonnage estimates for the jig concentrate passing over the table per 24 hour period are likewise available as follows:

	Tons	% WO_3	Total units WO_3
Table tails	65.	0.17	11.05
Table sulphide conc.	6.	0.36	2.16
Total jig concentrate	71.	0.186	13.21

On the basis of 600 tons per day mill feed and an estimated 70% scheelite recovery in the jig concentrate, a heads value of 0.0[illegible] WO_3 is estimated for this ore, with a total content of 18.87 units WO_3 in the 600 tons of mill feed.

Flotation recovery of the scheelite contained in the sulphide concentrate and jig recovery of the scheelite in the table tails should be efficient and cheap, both as regards operation and initial capital investment. Combining these recovered products should give a scheelite concentrate, which while possibly not of commercial grade, should be marketable through some up-grading plant, such as the Pine Creek plant of the Mining Division of Union Carbide and Carbon Corporation near Bishop.

My recommendation, therefore, in so far as Brunswick ore is concerned, is to recover whatever scheelite can be recovered from the jig concentrate and this at the lowest possible capital outlay in an effort to produce a marketable concentrate, but not a concentrate which will necessarily meet commercial specifications. Attempts to recover scheelite by flotation of the full mill tails will in general not be economic. These conclusions do not necessarily apply to tungsten-bearing material which may be present in the Union Hill Mine.

Very truly yours,

(s) CARLTON D. HULIN

cc C. L. Allen

COPY

COPY

CARLTON D. HULIN
Mining Geology
26th Floor, Shell Bldg.
San Francisco 4, Cal.

cc-WLO
GSB
Extra

October 30, 1950

Mr. Charles L. Allen,
Idaho Maryland Mines Corp.
Grass Valley, Cal.

Tungsten

Underground "lamping" for scheelite in the Idaho Maryland and New Brunswick mines, using ultra-violet light, is still vastly incomplete, but certain facts are becoming apparent.

In the Idaho Maryland only the 2 Vein system on the 2700 level and portions of 1 Vein and 3 Vein on the 2000 level have so far been lamped, the results being negative.

In the Brunswick, lamping has so far been confined to the southern portions of the mine with interesting and somewhat unexpected results as regards the scheelite distribution.

Insofar as the work of lamping has progressed, results indicate that the Brunswick-type veins in general carry no scheelite. In twelve or more Brunswick-type veins which have in part been examined, only two veins were found which carried scheelite - namely 19 Vein and 45 Vein. In the remaining veins, including portions of 1 Vein and 16 Vein, no scheelite is visibly present.

In 19 Vein and 45 Vein the occurrence of scheelite is extremely erratic and spotty. In two observed cases, one in each vein, pockets of tungsten ore were present which were of relatively good grade but quite small, amounting to only a few tons in each case. The best that could be hoped from such small pockets would be the sorting out of a few hundred pounds of high grade scheelite. With the exception of such small pockets, no ore mineable for its contained tungsten can be recognized, though it is certain that the gold ore mined from these two veins will normally carry a small but variable amount of scheelite.

In marked contrast to the general absence of scheelite from all but two of the Brunswick-type veins, the "flats" wherever exposed in the portion of the mine lamped consistently show a small but erratically distributed content of scheelite. This holds true throughout the lamped area from the 800 to the 2300 level. In no observed case could the observed amount of scheelite be regarded as economic in itself. Where the "flats" are being mined for gold, however, as in the case of the "flats" in the black slates adjacent to 16 Vein, such ore should consistently carry a small content of scheelite, some portion of which should be recoverable as a by-product in the milling of the gold ore.

The "Flats" as previously reported (Report of Oct. 20, 1948) represent zones of thrust faulting which were older than the Brunswick veins and which were disjointed and broken into segments by fault displacements on the Brunswick vein fissures. The tungsten mineralization apparently occurred quite early and at a time when only the flat thrust zones and (on the basis of present lamping) only two of the Brunswick type vein fissures were in existence. The remaining Brunswick veins formed later after the termination of the tungsten phase of the mineralization, and hence these veins contain no scheelite.

The most important zones of "flats" in the Brunswick mine have not as yet been lamped. It would appear important to carry this lamping to completion, and Charlie Lyden has been requested to do this as time permits, with particular emphasis on the important flat stopes which have been worked on the 1450 and 1600 levels.

Economic Possibilities of the Scheelite.

With the exception of occasional pockets from which small amounts of high grade scheelite can be obtained by hand sorting, no ore occurrence in the New Brunswick is as yet known which can be mined solely for its contained tungsten.

The run of New Brunswick ore reaching the mill, however, should always carry a small but variable amount of tungsten, the amount varying with the particular source of the ore being milled. Some portion of this tungsten should be recoverable as a by-product in the milling of the gold ore.

Factual information which will serve to indicate the exact amount of scheelite carried by the ore passing through the Brunswick mill is not available, and until such time as tungsten assays of weighted mill products are obtained reliance must be placed upon rough visual estimates of the scheelite present.

Panning tests on cyanide tails made by one of the mill men indicate a tungsten content of 0.046 lbs. WO_3 (tungsten oxide) or 0.0023% WO_3 per ton, or a value of about 9¢ per ton. Visual estimates of the content of scheelite in the material passing over the mill table are of the same order of magnitude.

Based upon such meager estimates, it would appear that a daily recovery of by-product scheelite containing approximately 20 lbs. of WO_3 should be possible. This recovery of scheelite would have a market value of roughly $40. per day or $1,000. per month. To achieve these results would require very minor additions to the present mill equipment - additions which would probably pay for themselves within a six months period. It should be repeated for emphasis that the foregoing figures, while representing the best "guess" that can be offered at the present time, are based upon estimates of doubtful accuracy.

In the flow sheet of the Brunswick mill, the discharge from the ball mill passes to a jig, the tailings from which go to a classifier operating in closed circuit with the ball mill. Undersize from the classifier goes to flotation, the flotation tails going to cyanide treatment.

The jig concentrate consists largely of metallic sulphides but in addition contains a major portion of the scheelite present in the mill feed. This jig concentrate goes to a concentrating table where a gold cut is obtained which passes to an amalgamator. Tails from the amalgamator are added to the concentrate obtained by flotation, while the table tails are returned to the classifier operating in closed circuit with the ball mill. The scheelite in the table feed passes in part to the amalgamator tails, but probably the major portion goes into the table tails and thence to the classifier, and then either entering the flotation circuit and ultimately being lost in the cyanide tails, or else being returned to the ball mill where some portion of the returned scheelite would be slimed.

The low content of scheelite in the Brunswick ore would make any attempt at flotation of the entire mill feed for the recovery of scheelite completely uneconomic. Recovery of much of the scheelite trapped in the jig and passing over the concentrating table, however, does appear to be economically feasible.

Recovery of scheelite contained in the jig concentrate would require combining the amalgamator tails and table tails and flotation of this combined product for scheelite, the tails from this operation being returned to the classifier in the ball mill circuit. Two stages of flotation would be required: the first stage involving flotation of the scheelite, the second stage involving cleaning of the scheelite concentrate by floating out sulphide impurities. A small regrind mill operating in closed circuit with a small classifier may or may not be necessary, dependent upon the size distribution of the scheelite in the table product. Such a regrind mill, if needed would offer the advantage that high grade scheelite ore obtained by hand sorting could be fed to it direct. In any case the necessary equipment as outlined would be almost of laboratory size, since only about two tons per day, the average amount of material passing over the table would have to be treated. Flotation of scheelite is a relatively efficient operation, and due to the small amount of material being treated, the treatment cost should be exceedingly low.

Obviously, before any final decision is made, both the economic and the metallurgical possibilities of scheelite recovery must be confirmed by adequate assays of weighted samples of table tails and amalgamator tails, and by flotation tests. The necessary metallurgical tests may possibly be conducted by the present mill crew, though presumably outside talent will be needed, in which case Mr. L.H. Lange, research metallurgist for the Galigher Company of Salt Lake City, is recommended as being thoroughly familiar with scheelite flotation.

The Union Hill, Lucky and Cambridge.

Lamping of the Union Hill dump, indicated a fairly uniform distribution of scheelite throughout, in amount estimated at about 0.01% or 60¢ per ton in WO_3. This dump is definitely uneconomic and therefore possesses no interest.

The dump of the Lucky shaft shows much less scheelite than the Union Hill dump and must likewise be regarded as of no further interest.

From one-third to one-half of the Cambridge dump, totaling on the order of 3000 tons, contains scheelite in amount estimated at 0.2% to 0.4% WO_3, or a gross value of from $8 to $16. per ton, of which only about one-half or an average value of possibly $6. per ton in scheelite would presumably be recoverable.

This dump material must be regarded as marginal in terms of its content of scheelite, but if several dollars in gold were present in addition to the scheelite, the dump material would definitely be economic. This of course presumes facilities for recovery of scheelite in the Brunswick mill. The portion of the Cambridge dump which carries scheelite should therefore be adequately sampled, the samples being assayed for both gold and tungsten.

The Cambridge shaft, as well as the Lucky, is quite old and completely caved beyond possibility of re-opening. It is known, however, that the Cambridge shaft was sunk on the Greek Tungsten vein, and the scheelite shown on the Cambridge dump undoubtedly came from that vein, either on the 200 or 300 level.

The Union Hill workings reach the Greek Tungsten vein on the 200, 300, 600, 800 and 1000 levels. It is known that two carloads of high grade tungsten ore (presumably hand sorted) were mined and shipped from the Greek Tungsten vein in the Union Hill between 1915 and 1919. The shipment amounted to 54.59 tons averaging 60% WO_3, and possessed a value at the time of shipment amounting to $68,918. The present day value of this same shipment would be in excess of $125,000.

Unfortunately no record exists as to the amount and distribution of scheelite present in the Greek Tungsten vein, or as to the extent of stoping of the tungsten ore in that vein.

The Union Hill was shut down and dismantled in 1919 and is now full of water. Even worse, tailings from the Brunswick mill were run into the Union Hill shaft over a period of nine months during past years. Unwatering and re-opening of the Union Hill workings would therefore represent a major undertaking, and would probably cost in the neighborhood of $100,000.

To reopen and reclaim the Union Hill workings solely on the possibility that workable tungsten ore in quantity and economic in grade would be found in the Greek Tungsten vein represents such a gamble that it should not be seriously considered at this time, although any material future increase in the price of tungsten would make this gamble appear more attractive. An additional argument exists for reopening the Union Hill, however. Namely, that the presence of the water-filled workings of the Union Hill constitutes an ever present menace to the Brunswick mine and prevents development to the westward of certain of the Brunswick veins which are known to carry ore. At some future date the problem of unwatering and reopening the Union Hill must be seriously considered, but that is a problem for the future and not for the present.

Recommendations.

1. Continue lamping in the Brunswick mine as time permits, with emphasis on the "flats" and the flat stopes which have been worked in the past.

2. Weighted samples of the table tails and amalgamator tails to be taken in the Brunswick mill, the samples to be taken over a sufficient time interval as to give an accurate representation of the tungsten values passing through the mill.

3. Dependent upon the tungsten assay results on the table product, necessary metallurgical test work designed to show the efficiency of scheelite recovery from the combined table and amalgamator tails by flotation; the reagents necessary; the costs of such treatment; and the nature of and capital investment required for the additional equipment needed for such flotation recovery of scheelite from the table product.

4. That portion of the Cambridge dump carrying visible scheelite to be sampled, the samples to be assayed for both gold and scheelite. The samples taken should be at least 100 pounds each if they are to be accurately representative of the dump material. Along with the sampling, measurements to be taken which will give a reasonably accurate figure for the tonnage available on the Cambridge dump.

Sincerely yours,

Carlton D. Hulin

cc/E. L. Oliver

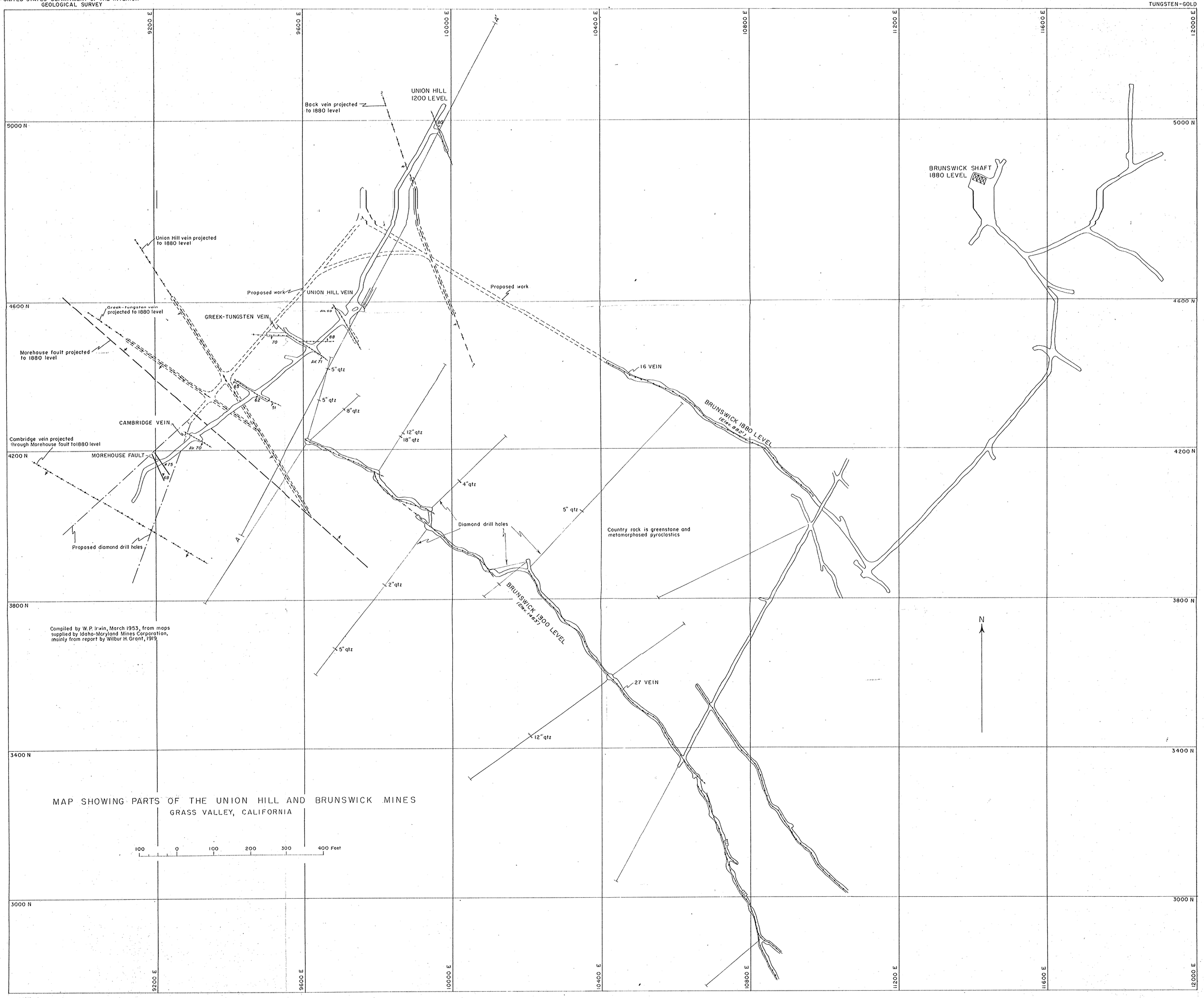
11-6-50, Note by E.L.O:
Hulin's recommendations for operation in Idaho Maryland & Brunswick will be mailed 11-7-50.

BUREAU OF MINES
1201 N. DIVISION STREET
SPOKANE 2, WASHINGTON

OFFICIAL BUSINESS

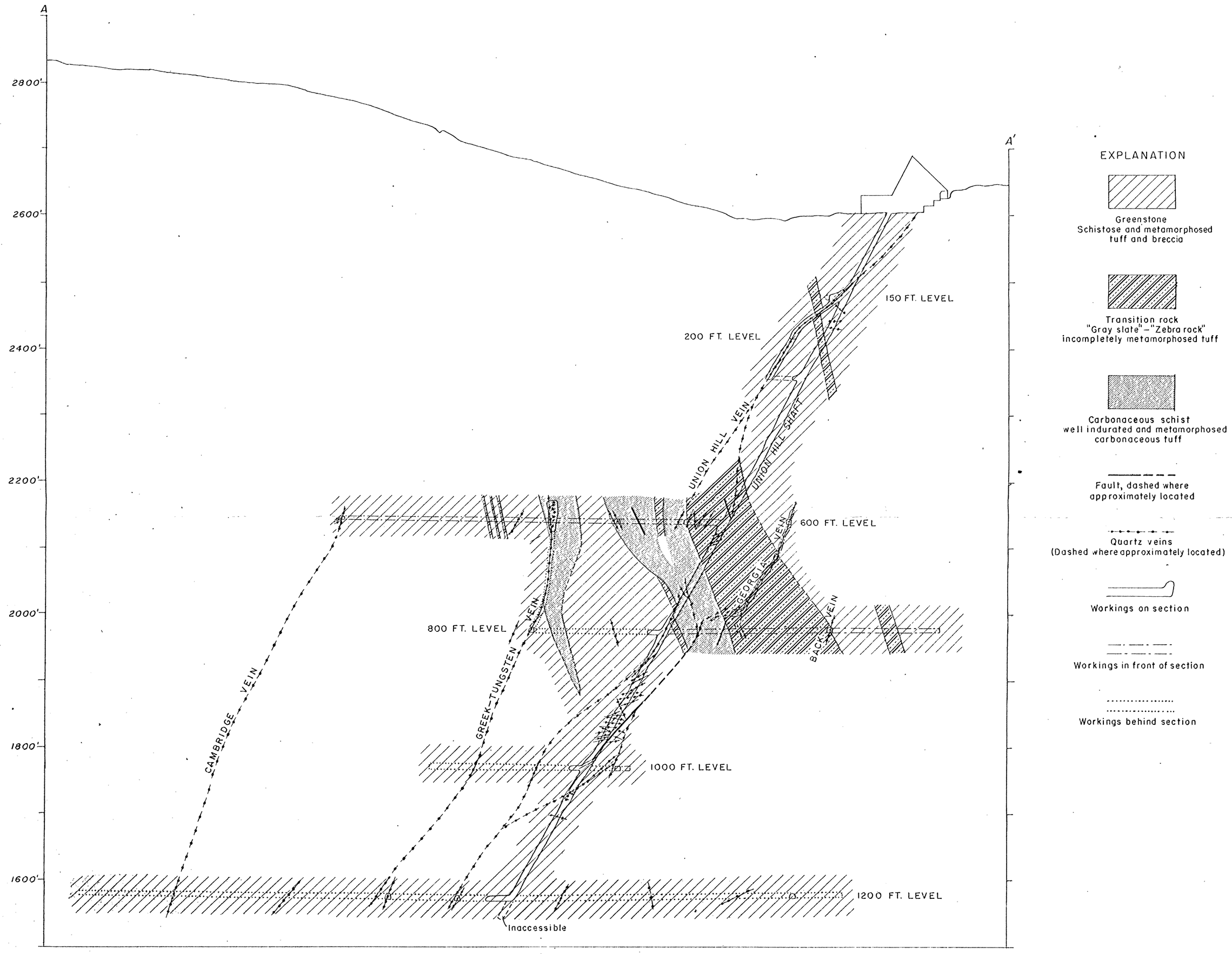
PENALTY FOR PRIVATE USE TO AVOID
PAYMENT OF POSTAGE, $300
(PMGC)

Mr. Frank E. Johnson
Chairman, Operating Committee
Defense Minerals Exploration Admin.
Department of the Interior
Washington 25, D. C.



Compiled by W. P. Irwin, March 1953, from maps supplied by Idaho-Maryland Mines Corporation, mainly from report by Wilbur H. Grant, 1919

MAP SHOWING PARTS OF THE UNION HILL AND BRUNSWICK MINES
GRASS VALLEY, CALIFORNIA



Section supplied by Idaho-Maryland Mines Corporation
from report by Wilbur H. Grant, 1919

GEOLOGIC SECTION THROUGH UNION HILL MINE SHAFT, GRASS VALLEY, NEVADA COUNTY, CALIFORNIA

100 0 100 200 300 Feet

PLATE 2.

IDAHO MARYLAND MINES CORPORATION

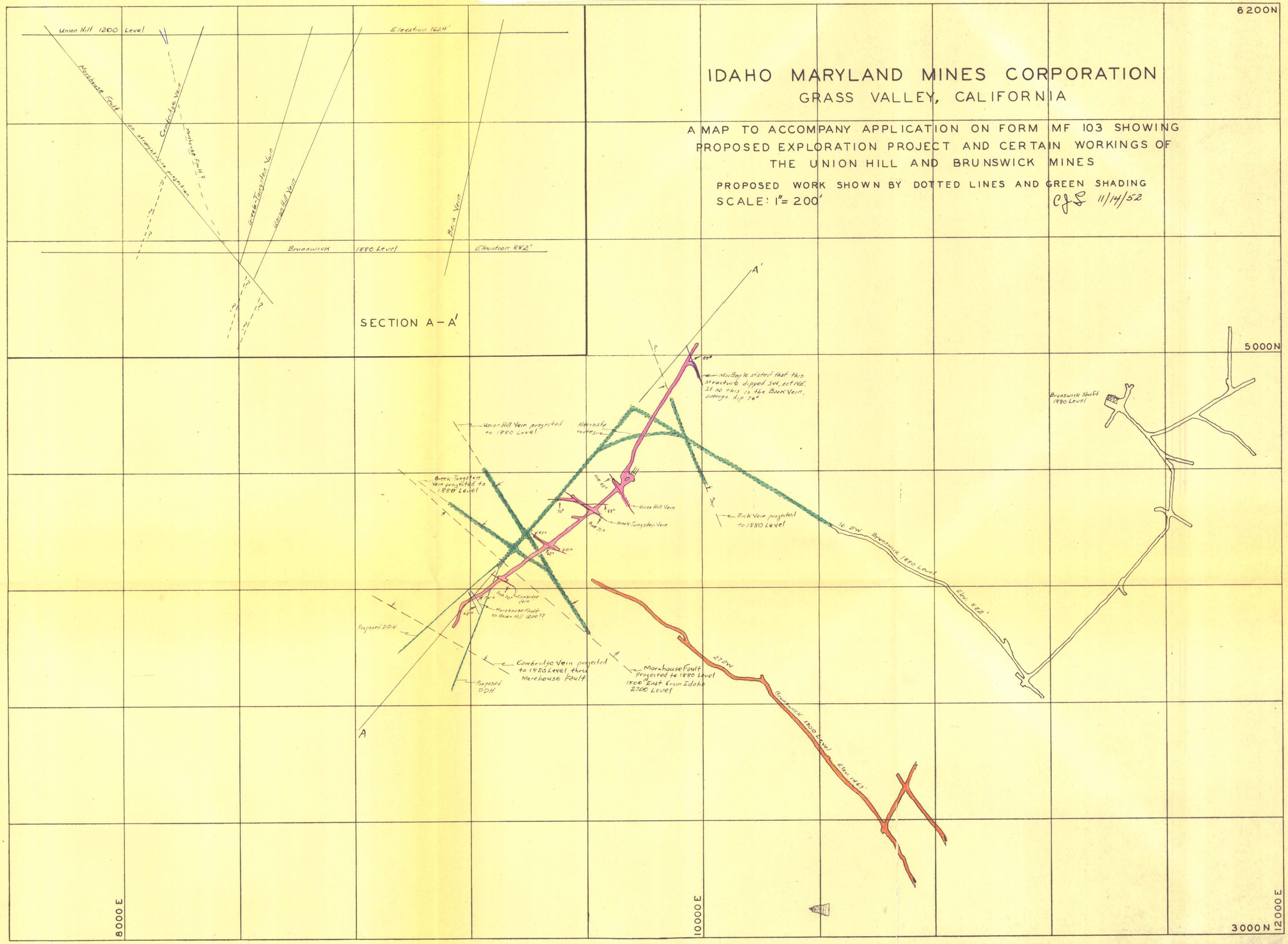
GRASS VALLEY, CALIFORNIA

A MAP TO ACCOMPANY APPLICATION ON FORM MF 103 SHOWING PROPOSED EXPLORATION PROJECT AND CERTAIN WORKINGS OF THE UNION HILL AND BRUNSWICK MINES

PROPOSED WORK SHOWN BY DOTTED LINES AND GREEN SHADING

SCALE: 1" = 200'

CJS 11/14/52



"ALBANENE" NO. 1951 K&E CO., N.Y.
44801

IDAHO MARYLAND MINES CORPORATION

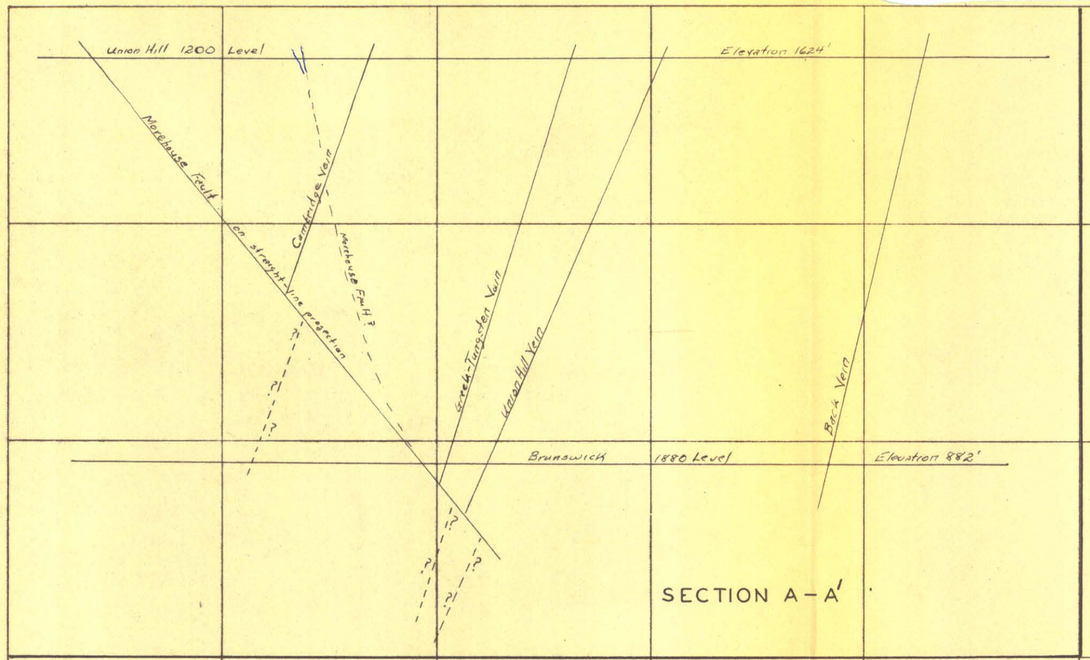
GRASS VALLEY, CALIFORNIA

A MAP TO ACCOMPANY APPLICATION ON FORM MF 103 SHOWING PROPOSED EXPLORATION PROJECT AND CERTAIN WORKINGS OF THE UNION HILL AND BRUNSWICK MINES

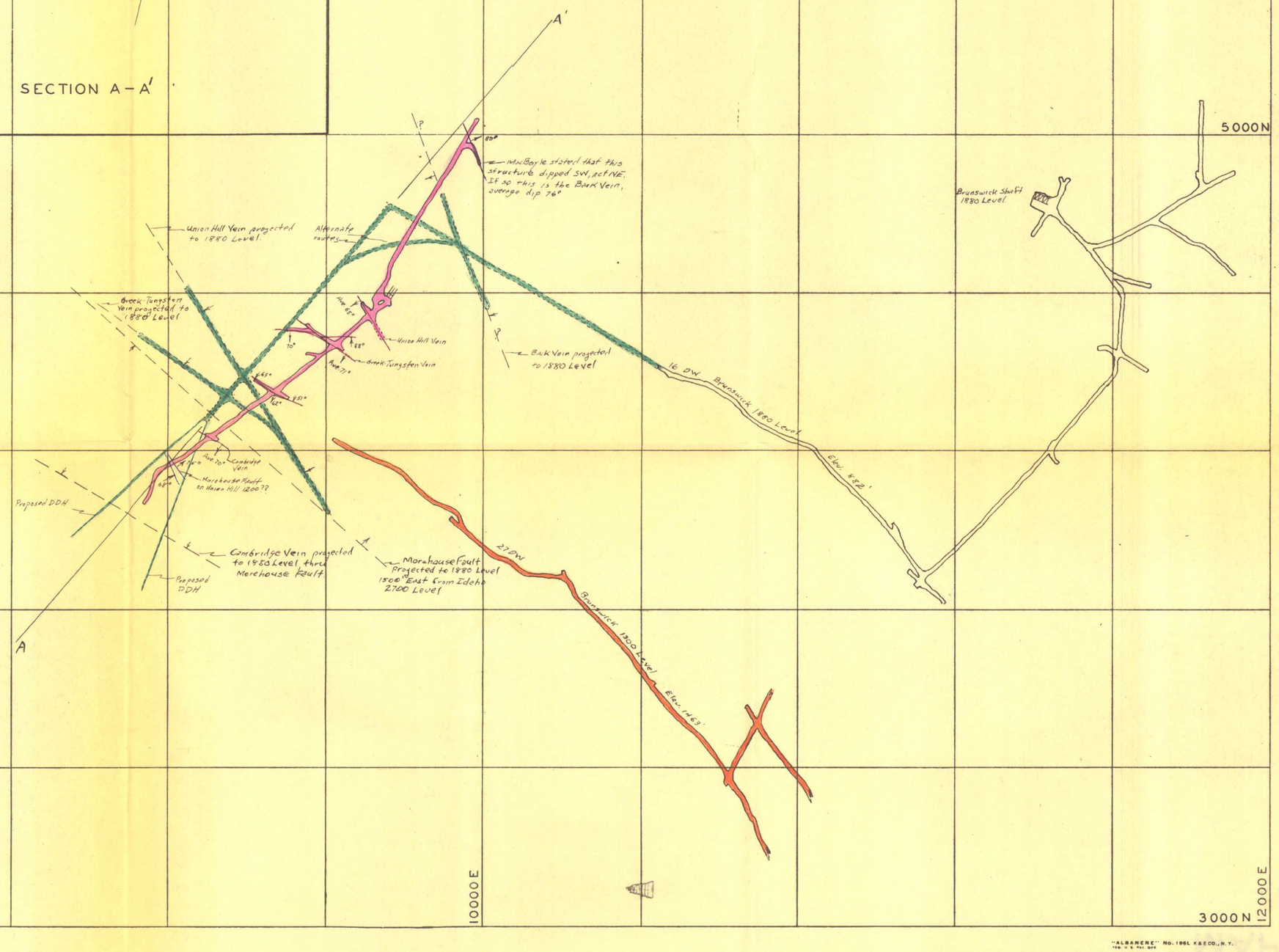
PROPOSED WORK SHOWN BY DOTTED LINES AND GREEN SHADING

SCALE: 1" = 200'

CJS 11/14/52



SECTION A–A'



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