UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WASHINGTON, D.C. 20242

APR 18 1968

AIRMAIL

Mr. Hepburn T. Armstrong
c/o Lester, Ryons & Co.,
525 Wilshire Blvd.
Santa Monica, California 90401

Re: DMEA-3174 (Beryl,
Tantalite-Columbium, Mica)
Quien Sabe No. 2
Hepburn T. Armstrong
Fremont County, Wyoming

Dear Mr. Armstrong:

We are returning your check No. 211, dated April 15, 1968, drawn on the Santa Monica Branch, Bank of America, because of the improper amount of Two Hundred Dollars set forth on the second line of the check.

Please forward to this office your corrected check in the amount of $2.00 payable to the U. S. Geological Survey.

Sincerely yours,

Frank E. Johnson
Chief, Office of
Minerals Exploration

Enclosure

Thanks
proper check enclosed
FTC

OFFICE OF MINERALS EXPLORATION
U.S. GEOLOGICAL SURVEY

TO: Budget and Finance

FROM: Office of Minerals Exploration

- ABSTRACT OF REMITTANCES -

Date	Amount	Bank, City and State	Name of Remitter	Docket & Contract Numbers	Purpose
4/21/68	$2.00	Bank of America	Hepburn Armstrong	DMEA-3174	Duplicating

REMARKS: (List smelter or mill lot numbers covered by royalties)

4/24/68
Date Prepared

Person Preparing Abstract

Date Received

Person Receiving Remittance

MME Form 7
(2/63)

OFFICIAL FILE COPY

Date	Surname	Code
4/18/68		110
		220
		110

AIRMAIL

APR 18 1968

Mr. Hepburn T. Armstrong
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525 Wilshire Blvd.
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Sincerely yours,

FRANK E. JOHNSON

Frank E. Johnson
Chief, Office of
Minerals Exploration

Enclosure

cc: Director's Reading File
Division File
Economic Geology File
OME File
OME Reading File

FEJohnson/gla 4-18-68

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WASHINGTON, D.C. 20242

APR 11 1968

Mr. Hepburn T. Armstrong
c/o Lester, Ryons & Co.,
525 Wilshire Blvd.
Santa Monica, California 90401

Re: DMEA-3174 (Beryl,
Tantalite-Columbium, Mica)
Quien Sabe No. 2
Hepburn T. Armstrong
Fremont County, Wyoming

Dear Mr. Armstrong:

In compliance with the request in your letter of March 8, 1968, Mr. W. Blake Fox, of Denver, Colorado, has been furnished a copy of a report prepared by Charles E. Melbye on the subject property.

Please forward to this office your check or money order in the amount of $2.00 payable to the U. S. Geological Survey, to cover the cost of duplicating and mailing Mr. Melbye's report.

Check taken to B&F C.E.

Sincerely yours,

Frank E. Johnson
Chief, Office of
Minerals Exploration

Thank you very much.
Check Enclosed

OFFICIAL COPY
O. M. E.
RECEIVED
APR 17 1968
MINERALS COPY
FJ 110
320

ME Form 7
(2/63)

OFFICIAL FILE COPY

Date	Surname	Code
4/11/68		110
4/11	cal	220

APR 11 1968

Mr. Hepburn T. Armstrong
c/o Lester, Ryons & Co.,
525 Wilshire Blvd.
Santa Monica, California 90401

Re: DMEA-3174 (Beryl,
Tantalite-Columbium, Mica)
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Sincerely yours,

FRANK E. JOHNSON

Frank E. Johnson
Chief, Office of
Minerals Exploration

cc: Director's Reading File
Division File
Economic Geology File
OME docket
OME Reading File
OME Region III

FEJohnson/gla 4-11-68

Office of Minerals Exploration
Building 53 Room 203

April 5, 1968

Mr. W. Blake Fox
7085 Owens Street
Denver, Colorado 80002

Re: DMEA-3174 (Beryl,
Tantalite-Columbium, Mica)
Quien Sabe No. 2
Hepburn T. Armstrong
Fremont County, Wyoming

Dear Mr. Fox:

Enclosed herewith is a copy of a report entitled "Report on Lavella Pegmatite Prospects, Copper Mountain district, Fremont County, Wyoming" prepared for Armstrong Minerals Corporation, 3636 Sixteenth Street, NW, Washington, D. C. by Charles E. Melbye, Consulting Geologist, Colorado School of Mines, Golden, Colorado to accompany the application for financial assistance in minerals exploration on the above-stated subject.

By copy of this letter, and a copy of the report, we are requesting the Chief, Office of Minerals Exploration, Washington, D. C. to bill Mr. H. T. Armstrong in Santa Monica, California in accordance with Mr. Armstrong's letter of March 8, 1968; your letter of March 14, 1968; and the Office of Minerals Exploration's letter of authorization, dated March 25, 1968; for OME Region III to make this report available to you.

Sincerely yours,

J. William Hasler

J. William Hasler,
Field Officer, Region III
Office of Minerals Exploration

Enclosure

cc: Mr. H. T. Armstrong
Chief, Office of Minerals Exploration w/ copy of report
OME chron
Mr. Hasler
DMEA-3174

Report on

LAVELLA PEGMATITE PROSPECTS

Copper Mountain district
Fremont County, Wyoming

Armstrong Minerals Corporation
3636 Sixteenth Street, NW
Washington, D. C.

Charles E. Melbye
Consulting Geologist
Colorado School of Mines
Golden, Colorado

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I. Location and History

The Lavella pegmatite prospects are located along the southern flank of the Bridger or Owl Creek Mountains in the Copper Mountain mining district, about 16 miles north-northeast of Shoshoni. They are in Secs. 22, 27, and 28, T40N, R93W, sixth principal meridian.

The district was first organized because of gold and copper discoveries as early as 1906. Since then, beryl-tantalite and tungsten claims have been located. The period of greatest activity in beryl-tantalite mining took place between 1928 and 1940 when small quantities of beryl and tantalite were sold. Open-cut prospecting and assessment work has been carried on for many years.

The topography in the region is rugged, with elevations ranging from 6,400 to 7,250 feet above sea level. Hoodoo and Cottonwood Creeks with their tributaries flow southward and are the main drainage systems. Access to the area is by a graded county road as far as the Quien Sabe ranch, and the last two miles through the ranch property is over unimproved trails.

II. Geology

A. General description

The Lavella pegmatites are part of a series of granite and pegmatite dikes which have intruded the basic metamorphic schists and gneisses, which make up the core of the Bridger or Owl Creek Mountains. The general trend of these pegmatites is northeast, but there are a number of local deviations. The dip of the dikes is extremely irregular, from 0° to 50°, but they seem to have followed zones of weakness caused by previous folding in the rocks. The centers of some of the dikes have a flat dip and are apparently on the crests of folds, while the ends are dipping more steeply.

All of the pegmatites examined show a definite zoning, which is very important to recognize in an exploration program. The details of this zoning will be described under the detailed descriptions but it should be emphasized that the columbite-tantalite usually occurs in a zone not more than 2 feet wide in the center of the dikes. The beryl may be found in the same zone as the columbite-tantalite or in a zone about 4 feet wide on the footwall of the dikes. The beryl and columbite-tantalite usually are found in zones of smoky quartz and albite and rarely in zones of milky quartz and bluish potash feldspar. However, the presence of beryl and columbite-tantalite is extremely spotty. The zone of abundant mica is always in the hanging wall, but considerable mica is found throughout the dikes. Albite and potash feldspar are each found in greatest abundance in certain zones, but they comprise the largest percent of the entire dikes, with the exception of milky quartz in certain places.

There are a number of granitic dikes with the same general strike as the pegmatite dikes. They are much finer grained than the pegmatites and apparently do not contain any commercial minerals.

B. Detailed descriptions

Quien Sabe #2 prospects

The large dike in the E end of the Quien Sabe #2 claim has the greatest potential of any dike examined, largely because of its previous production of tantalite. It is exposed for a length of 380 feet and a maximum width of 30 feet. For general purposes there are three zones, although on a more detailed scale there would be more. The hanging wall zone is 5'-11" wide and is made up largely of muscovite mica, albite feldspar, and quartz. A number of visual measured samples of this zone were made for the mica content, which are as follows:

Percent of Mica in Hanging Wall Zone

	Width of Mica	Total Width	Percent of Mica
Cut "A"	20 1/2"	82"	25.0%
	25"	64"	39.1%
Cut "B"	13 1/4"	115"	11.5%
	29 3/4"	82"	36.3%
	16 3/4"	84"	20.0%
Cut "C"	18 3/4"	84"	22.3%
			154.2% / 6 = 25.7% Mica

The central zone is about 4 - 5 feet wide and is largely massive albite feldspar. The tantalite is found in this zone, and where observed, it was disseminated in small grains throughout a width of 2 feet. The Ta_2O_5 content of the tantalite was found to be about 82.5%, which puts it in the tantalite end of the series. A little tantalite was observed in the large cuts, "A" and "B", but the greatest concentration was observed in the small cut "C".

The footwall zone is about 7 feet wide and contains potash feldspar, mica, smoky quartz, and considerable beryl in places. Concentrations of beryl were noted at the extreme east end of the dike and in the area from cut "C" nearly to the west end of the dike. The average BeO content of the beryl from two index of refraction determinations was found to be 12.9%.

The next dike to the west on the Quien Sabe #2 claim has an entirely different trend than the average, as it strikes almost north. There is a possibility that this dike connects below the surface with the large dike to the east. No prospecting has been done on this dike so a fresh face could not be examined, but two large crystals

of beryl, 5 inches in diameter, and a few small grains of tantalite were observed. The next dike to the south of this one was not mapped, but it too contained a little beryl and tantalite.

Lavella #2 prospects

There are two dikes on the Lavella #2 claim. The one exposed furthest to the southeast is only about 8.5 feet wide at the widest place and contains largely feldspar, quartz, mica, and black tourmaline. Inasmuch as black tourmaline is of no commercial value, this dike is not of too much importance at present. The large dike just to the northwest of the tourmaline dike is partially exposed for a length of 325 feet and a maximum outcrop width of 60 feet. The dip varies from 19° - 60° N. In this dike the beryl and columbite-tantalite occur together in the central zone, which varies in width from six inches to one foot. Only a few small crystals of beryl and columbite-tantalite were observed. Most of the dike is milky quartz, which appears to be completely barren. Therefore, only the exposed east end of the dike merits any further consideration. The columbite-tantalite has a Ta_2O_5 content of 34.0%, which throws it on the columbite end. The BeO content of the beryl is 13.4%.

Lavella #1 prospects

All of the prospects at the west end of the claim are on the same dike, and they were all examined but not mapped. The main excavation is known as the Mica Cut. A 3 foot zone near the hanging wall contains large books of mica, with sheets as large as 10 - 12 inches in diameter. Many of the books are wedge-shaped and the mica is extremely weathered, but the quality may improve below the weathered zone. Only a few small crystals of beryl and columbite-tantalite were observed.

Another dike is located just over the ridge to the east of the Mica Cut. There are two workings, both of which are known as the Lepidolite Cuts, and they are probably on the same dike. The lower is a tunnel about 20 feet in length. At least half of the dike, as seen in this tunnel, is composed of a smoky quartz - albite zone with small flakes of green muscovite mica, and the true width is 9.5 feet. One small crystal of beryl and no lepidolite were observed. The upper cut shows considerable lepidolite-bearing rock and a little beryl and columbite-tantalite. In this cut the dike is 29.5 feet wide, has a strike of N20°E and a dip of 24° W. The lepidolite-bearing rock seems to be found mostly in the central part of the dike.

II. Conclusions and Recommendations

1. No ore reserve estimates of grade and tonnage are given, because the extreme irregularity of the grade and size of the dikes and the lack of any extensive development work makes any such estimates very misleading.

2. The deposits as a whole certainly warrant further exploration work. The large dike on the Quien Sabe #2 claim has the greatest potential, because of its past production of tantalite from two small cuts and because of the quantities of beryl observed on both the east and west ends of the dike. The smaller dike to the west on the Quien Sabe #2 claim has had no prospecting work done on it, but it warrants some work because of the large crystals of beryl, as well as some tantalite observed. The Lavella #1 claim also has showings of beryl and columbite-tantalite, although the two dikes mapped are not as promising as those on the Quien Sabe claim. One dike is very small and contains only black tourmaline in addition to feldspar, quartz, and a little mica. The other dike is larger in size, but most of the dike is barren milky quartz. Mapping of the float and one small outcrop indicates an extension of the dikes under the soil to the southwest. The Mica Cut does not appear to have any large quantities of beryl or tantalite, but the 2 - 3 foot mica zone near the hanging wall should be explored at depth. The mica is in large sheets which have been highly weathered, but the grade may improve below the weathered zone. The upper Lepidolite Cut contains some lepidolite-bearing rock, but the tonnage appears to be too small to warrant any further exploration work at the present time.

3. Diamond drilling as an exploration tool is not justified, because the concentrations of valuable minerals in the dikes are extremely spotty. Diamond drilling would be useful only in determining the attitude and tonnage of the dikes, in the event a large mining and milling operation were to be started. The best, as well as the cheapest, exploration method would be to dig prospect pits and drive drifts or small prospect shafts, depending on the dip of the dikes.

4. I recommend the following development work:

<u>Quien Sabe #2</u> - East dike: 50 feet of drifting where the dip is flat, a prospect pit at the east end, and a long trench or open cut at the west end of the dike.

West dike: 25 foot drift or inclined shaft, depending on the dip of the dike.

<u>Lavella #2</u> - 25 foot shaft at cut "F" and enlargement of the prospect pit known as cut "E".

<u>Lavella #1</u> - 25 foot shaft on the upper half of the dike exposed in the Mica Cut. The required depth of this shaft is difficult to estimate, as it should be driven far enough to get below the highly weathered zone.

All of the recommended locations are indicated by red arrows on the map.

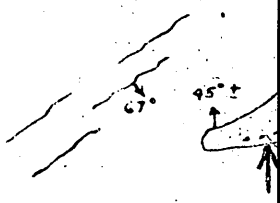
5. In the event that sufficient ore reserves are proved on the Lavella properties, I would recommend that a reconnaissance geological examination be made of the other pegmatite dikes in the Copper Mountain district to determine the possible presence of other economic dikes, which might be included in any proposed mining operation.

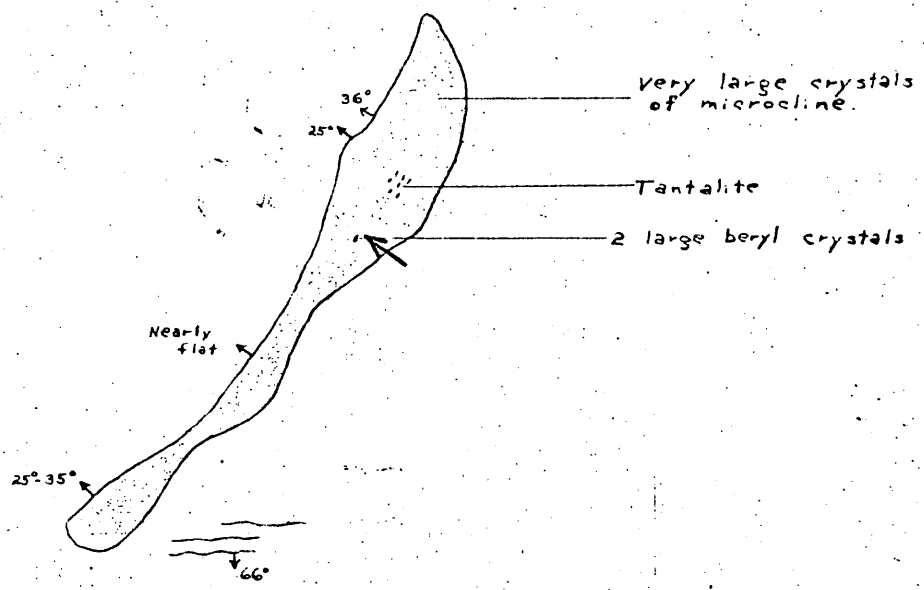
6. A market for beryl and columbite-tantalite is practically assured. However, an investigation should be made as soon as possible into possible markets for the sale of mica and feldspar. The marketing situation of these two products will have an important bearing on any future decision as to whether or not mining operations should be started.

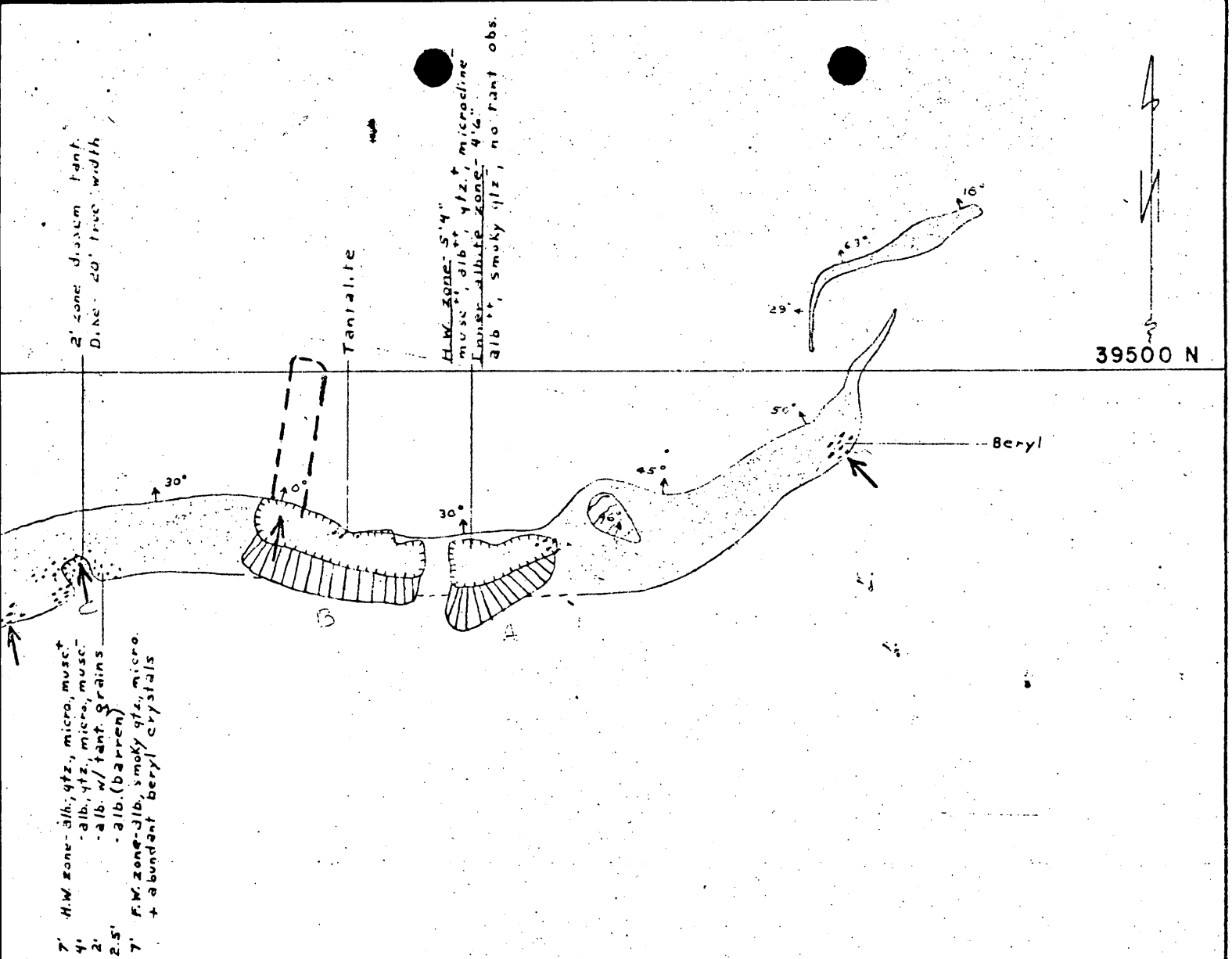
Respectfully submitted,

Charles E. Melbye

Charles E. Melbye
Consulting Geologist
Golden, Colorado
April 23, 1953


67°
45° ±


very large crystals of microcline.
36°
25°
Tantalite
2 large beryl crystals
Nearly flat
25°-35°
66°



ARMSTRONG MINERALS CORP.

GEOLOGIC MAP
QUIEN SABE NO. 2 PROSPECTS

C.E. MELBYE MARCH 1953

SCALE 1" = 50'

CORPORATION

CORPORATION

FANSTEEL METALLURGICAL CORPORATION

NORTH CHICAGO, ILL.

FANSTEEL METALLURGICAL CORPORATION

NORTH CHICAGO, ILL.

Copy of letter from [illegible] Tungsten [illegible] Corp.

[illegible]

[illegible]

Dear [illegible]

Since writing you under date of June 15th we are in receipt of three letters and samples submitted with these letters. [illegible] the results of our analysis of the above samples:

Letter of June 18th - sample from [illegible] of claim number [illegible]. Analysis indicated high grade [illegible]

Letter of June [illegible] - sample from claim [illegible]. Analysis indicated high grade [illegible]

Letter of June 19th - sample from claim [illegible] [illegible]

Thus you will note that all of the locations from which you have sent us samples seem to carry high grade [illegible] with the exception of the [illegible] already written [illegible] under separate cover regarding a proposed conference [illegible] complete discussion of the possibilities of these claims [illegible] undertaken [illegible] the only remaining [illegible] possible [illegible] can be cleared up [illegible] forthcoming conference [illegible]

Very truly yours,

Tungsten [illegible] Corp.

[illegible]

[illegible]

FANSTEEL METALLURGICAL CORPORATION

NORTH CHICAGO, ILL.

Technology
Control Division

FANSTEEL METALLURGICAL CORPORATION

NORTH CHICAGO, ILL.

July 15, 1956

Mr. Val De Tagtec
Tender
Wyoming

Dear Val:

I am enclosing check for $100.00 as first payment on the 100 pounds of tantalite concentrates we received today.

Balance of the payment will be made as soon as separation of analysis has been made.

Yours very truly,

FANSTEEL METALLURGICAL CORPORATION

A. F. Dove
Vice President

AFD:
jc
enc.

FANSTEEL METALLURGICAL CORPORATION, North Chicago, Ill.

DATE	NO.	MEMO	AMOUNT	DEDUCTIONS	REMITTANCE
1966 11/14			100 00		100 00

THIS CHECK IS GIVEN IN PAYMENT OF WORK DONE [illegible]
DETACH AND RETAIN THIS STATEMENT [illegible] NO RECEIPT IS NECESSARY

FANSTEEL METALLURGICAL CORPORATION

NORTH CHICAGO, ILL.

TELEPHONE
NORTH CHICAGO 1400

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

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[illegible]

[illegible]

MME Form 7
(2/63)

OFFICIAL FILE COPY

Date	Surname	Code
3/25/68		110
		220

Mr. W. Blake Fox
7085 Owens Street
Denver, Colorado 80002

Re: DMEA-3174 (Beryl,
Tantalite-Columbium, Mica)
Quien Sabe No. 2
Hepburn T. Armstrong
Fremont County, Wyoming

Dear Mr. Fox:

This is in reply to your letter of March 14, 1968, enclosing a letter dated March 8, 1968, to the Defense Minerals Exploration Administration from Mr. Hepburn T. Armstrong, authorizing that a report prepared by Mr. Charles E. Melbye and submitted with the subject application be made available to you.

Although Mr. Melbye's report is mentioned in the application for assistance to explore the Quien Sabe No. 2 mine, we do not have a copy of the report in our files. By a copy of this letter we are requesting Mr. J. W. Hasler, Field Officer, OME Region III, Room 203, Building 53, Federal Center, Denver, Colorado 80225, to send you a copy of Mr. Melbye's report if one is available in the Denver office files.

With respect to Mr. Armstrong's inquiry regarding the possibility of qualifying for assistance to explore for feldspar, we wish to advise that feldspar is not eligible for exploration assistance. As to a possible loan for mining or the purchase of equipment, the Small Business Administration makes such loans under certain conditions. Information regarding these loans may be obtained from the Small Business Administration:

1961 Stout Street
Denver, Colorado 80202

or

450 Golden Gate Avenue
San Francisco, California 94102

Sincerely yours,

FRANK E. JOHNSON

Frank E. Johnson
Chief, Office of
Minerals Exploration

cc: Director's Reading File
Division File
Economic Geology File
OME docket
OME Reading File
OME Region III

FEJohnson/gla 3/25/68

Copy to:
Mr. Hepburn T. Armstrong

W. BLAKE FOX AND ASSOCIATES
OIL AND MINING CONSULTANTS

PETROLEUM GEOLOGY
ECONOMIC GEOLOGY
EXPLORATION DRILLING
EXPLORATION GEOPHYSICS
GEOCHEMICAL SURVEYS

7085 OWENS STREET
DENVER, COLORADO 80002
PHONE 421-6146

3/14/68

Dear Sirs:

The enclosed authorization is pretty much self-explanatory.

Please forward Mr. Melbye's report to me at the above address as soon as possible.

Would you please bill Mr. H. T. Armstrong in Santa Monica, California.

Thank you for your attention.

Sincerely,

W. Blake Fox

3174

Filed under cc.

OFFICIAL COPY
O. M. E.
RECEIVED
MAR 18
INITIALS CODE
120

HEPBURN T. ARMSTRONG
INVESTMENTS IN WYOMING INDUSTRIES

March 8, 1968
c/o Lester, Ryons & Co.
525 Wilshire Blvd.
Santa Monica, Calif. 90401

Defense Minerals Exploration Administration
Denver, Colorado

GENTLEMEN:

Reference is made to a DMEA application filed by me on behalf of the ARMSTRONG MINERALS CORPORATION in about 1952 covering a beryl and tantalite-columbite prospect in the Copper Mountain unorganized mining district, Fremont County, Wyoming. Geology report made by Charles E. Melbye, at that time asst. professor or instructor at the Colorado School of Mines. Subject company was wholly owned by my wife Beatrice Herda Armstrong and myself.

This letter will introduce Mr. Blake Fox, geologist, of Arvada, Colorado. Please make available to him any and all information available in your files on this property.

At the present time, we are more interested in feldspar on subject property (the core of subject Dyke) than on the by-products beryl and tantalite. Previously (1952) such feldspar had little commercial value, but it now has as you know. Also it is my understanding that there are highly classified uses for our high grade feldspar. Is it possible the property might qualify for a DMEA feldspar exploration loan or for mill machinery? We intend to raise public funds but need prompt short-term financing. Or SBA loan?

Very Truly Yours,

Hepburn T. Armstrong

Hepburn T. Armstrong

AMOS C. SUDLER & CO.
INVESTMENT BANKERS
P. O. Box 2405
124 W. 16TH STREET
CHEYENNE, WYOMING
TELEPHONE
4-4102
2-7101

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C. 600

Com

December 30, 1953

Memorandum

To: Mr. C. O. Mittendorf

From: Lawrence G. Houk

Subject: Concurrence in Region IV denial - Docket No. DMEA-3174 - Beryl, Tantalite-columbite, Mica
Quien Sabe No. 2
Hepburn T. Armstrong
Fremont County, Wyoming

The subject application for $13,333.00 to explore the Quien Sabe No. 2 claim in Fremont County, Wyoming, for beryl, tantalite-columbite and mica has been denied by Region IV under their delegation of authority.

The Nonmetallic Minerals Division concurs in the denial because of the limited size of the geologic target.

SURNAME COPY

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C. 600

December 30, 1953

Memorandum

To: Mr. C. C. Mittendorf

From: Lawrence G. Houk

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LGHouk:gad 12/30/53

Copy to: Admr. R. File
Docket File
Mr. Houk

R.C.L. Jan 4-54

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

DEC 18 1953

December 17, 1953

Memorandum

To: L. G. Houk, Chief, Nonmetallics Division, DMEA

From: R. F. Griffith, Rare and Precious Metals Branch

Subject: DMEA Docket 3174 (Mica-Beryl-Columbite-Tantalite), H. T. Armstrong, Quien Sabe No. 2 claim, Fremont County, Wyoming.

This office concurs with the recommendation that the subject application be denied.

The field team recommendation has been sent to the Chief, Minerals Division, in accordance with the routing slip attached thereto.

R. F. Griffith

R. F. Griffith

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

DEPARTMENT OF THE INTERIOR
RECEIVED
1953

December 17, 1953

Memorandum

To: L. G. Houk, Chief, Nonmetallics Division, DMEA

From: R. F. Griffith, Rare and Precious Metals Branch

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Signed

R. F. Griffith

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

December 17, 1953

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The field team recommendation has been sent to the Chief, Minerals Division, in accordance with the routing slip attached thereto.

Signed

R. F. Griffith

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

December 17, 1953

Memorandum

To: L. G. Houk, Chief, Nonmetallics Division, DMEA

From: R. F. Griffith, Rare and Precious Metals Branch

Subject: DMEA Docket 3174 (Mica-Beryl-Columbite-Tantalite), H. T. Armstrong, Quien Sabe No. 2 claim, Fremont County, Wyoming.

This office concurs with the recommendation that the subject application be denied.

The field team recommendation has been sent to the Chief, Minerals Division, in accordance with the routing slip attached thereto.

Signed

R. F. Griffith

IN REPLY REFER TO:

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
DEC 17 1953

G-MD-CNM

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

December 17, 1953

Memorandum

REVIEW OF FIELD TEAM REPORT ON APPLICATION DMEA-3174 (beryl)

To: L. G. Houk, Defense Minerals Exploration Administration
From: D. M. Larrabee, U. S. Geological Survey
Applicant: H. T. Armstrong.
Name of property: Quien Sabe No. 2 claim.
Location of property: Fremont County, Wyoming.
Date of field team report: November 19, 1953.
Authorship of field team report: C. M. Harrer and D. R. MacLaren.
Field team's recommendation: Denial.
Comments: Little if any chance of significant production of beryl, tantalite, etc.
ACTION RECOMMENDED: Follow field team's recommendation.

D. M. Larrabee

D. M. Larrabee

IN REPLY REFER TO:

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

G-230
Defense Minerals Administration
DEC 17 1953

December 17, 1953

Memorandum

[illegible] DMEA-3174 (beryl)

To: A. G. Houk, Defense Minerals Exploration Administration
From: D. F. Larrabee, U.S. Geological Survey
Applicant: H. F. Armstrong.
Name of property: Julien Babe No. 2 claim.
Location of property: Fremont County, Wyoming.
Date of field team report: November 19, 1953.
Authorship of field team report: C. F. Harrer and D. J. Maclaren.
Field team's recommendation: Denial.
Comments: Little if any chance of significant production of beryl, tantalite, etc.
[illegible]: Follow field team's recommendation.

D. F. Larrabee

Larrabee:jeh
12/17/53
cc: Director's reading 4212
Branch reading 4212
DMEA [illegible] ✓
Larrabee G-230

IN REPLY REFER TO:

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

Defense Minerals Administration
RECEIVED
DEC 17 1953

December 17, 1953

Memorandum

[illegible] -3174 (beryl)

To: [illegible] L. [illegible], Defense Minerals Exploration Administration
From: [illegible] L. Larrabee, U. S. Geological Survey
Applicant: [illegible] Armstrong.
Name of property: [illegible] No. 2 claim.
Location of property: [illegible] County, [illegible].
Date of field team report: November 19, 1953.
Author(s) of field team report: [illegible] Barrer and [illegible] Scharen.
Field team's recommendation: Denial.
Comments: Little if any chance of significant production of beryl, tantalite, etc.
[illegible]: Follow field team's recommendation.

[illegible] L. Larrabee

Larrabee:jeh
12/17/53
cc: Director's reading 4212
Branch reading 4212
DMA 9
Larrabee G-230

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

224 New Customhouse
Denver 2, Colorado

December 4, 1953.

Memorandum

To: Field Team, Region IV

From: Chief, Mining Division, Region IV

Subject: Report of Examination - DMEA Docket 3174 (Beryl-Columbite-Tantalite-Mica), H. T. Armstrong, Quien Sabe No. 2 claim, Fremont County, Wyoming.

Enclosed are eight copies of the engineering report on the subject property.

The applicant requested $13,333.00 to explore two pegmatite dikes. Beryl crystals are small and only occasionally are they large enough to be recovered by hand sorting. The amount of tantalite is not significant and the proposed exploration would add little to the present knowledge of mineable reserves.

The engineer believes this property is not sufficiently attractive to justify further exploration and recommends that the application be denied.

We concur in this recommendation.

W. H. King

W. H. King

Enclosures

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

224 New Customhouse
Denver 2, Colorado

December 4, 1953.

Memorandum

To: Administrator, Defense Minerals Exploration Administration
Attention: 200

From: Field Team, Region IV

Subject: Report of Examination - DMEA Docket 3174 (Mica-Beryl-Columbite-Tantalite), H. T. Armstrong, Quien Sabe No. 2 claim, Fremont County, Wyoming.

Enclosed are four copies of the report of examination on the subject property, a copy of the letter of denial to the applicant and two copies of Form 3b.

W. H. King

W. H. King

A. H. Koschmann

A. H. Koschmann

Enclosures

DENIED

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

December 4, 1953

224 New Customhouse
Denver 2, Colorado

Mr. Hepburn T. Armstrong
3636 Sixteenth Streets, N.W.
Washington, D. C.

Re: Docket No. DMEA-3174

Dear Mr. Armstrong:

Reference is made to your application for Government aid on the Quien Sabe No. 2 claim.

Projects approved by the Defense Minerals Exploration Administration must, in its judgment, show definite promise of yielding material of acceptable grade, and in quantities that will significantly improve the mineral supply position for the National Defense Program.

A careful study of your property and data available to this agency reveals that the probability of disclosing mineable reserves of Beryl, Columbite, Tantalite and Mica is not considered sufficiently promising to justify Government participation. Under these circumstance , we regret to advise that your application for exploration aid is denied.

Very truly yours,

W. H. King
Field Team, Region IV

A. H. Koschmann
Field Team, Region IV

HMC:cwm

CC: Docket
Administrator, DMEA
WMTraver
AHKoschmann (2)
Chron.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Region IV

Building 20, Room 137
Denver Federal Center
Denver 14, Colorado
November 19, 1953

Memorandum

To: Executive Officer, Field Team, Region IV

From: Chief, Mineral Resources Branch, Mining Division, Region IV

Subject: DMEA 3174 (Beryl-columbite-tantalite-mica), H. T. Armstrong, Quien Sabe No. 2 claim, Fremont County, Wyoming

Enclosed are the original and ten copies of the "Summary, Conclusions, and Recommendations," by C. M. Harrer and D. R. MacLaren, and the engineering report by C. M. Harrer.

The applicant requested $13,333.00 to explore two pegmatite dikes. On the basis of past production, Harrer concludes that by hand cobbing the larger dike might produce 1/3 pound of tantalite (65.5 percent Ta_2O_5) per ton of dike rock. This amounts to approximately $1.00 per ton. Some beryl is present but in such small crystals that little will be recovered. Mica and feldspar do not meet specifications for marketing. The application is recommended for denial.

I concur with the conclusions and recommendations.

W. M. Traver

W. M. Traver

enclosures

cc 10
DMEA 3174
DMEA Chron.

WMT/pam

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.
Denver Federal Center
Denver 2, Colorado

November 18, 1953

To: Field Team, Region IV

From: A. H. Koschmann

Subject: DMEA Docket 3174, Armstrong Metals Corporation, Quien Sabe No. 2 Claim, Fremont County, Wyoming

Attached are 8 copies of the geologic report by D. R. MacLaren on the subject property.

Two pegmatite bodies are exposed on the Quien Sabe No. 2 claim. The larger body is 400 feet long and has a maximum exposed width of about 20 feet. It has been emplaced in pre-Cambrian amphibolite. Tantalite, in small crystals, is concentrated in, but not limited to, a zone in the core some 200 feet long and 2 feet thick. Although a few large beryl crystals are found near the hangingwall of the pegmatite, most of the beryl is in small crystals in a footwall zone.

A second pegmatite body, southwest of the principal deposit, contains considerable beryl in small crystals along the hangingwall. Scattered crystals of tantalite were noted in this pegmatite body.

Mr. MacLaren concludes that the size of the beryl crystals precludes significant production by hand-cobbing methods, and that the reserves of tantalite are small, in the order of a few thousand pounds. He therefore recommends denial of the application for exploration assistance.

I concur in this recommendation.

E. M. Shoemaker
for A. H. Koschmann
Supervising Geologist
Colorado-Wyoming

Enclosures (8)

UNITED STATES
DEPARTMENT OF THE INTERIOR
DOUGLAS McKAY, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION IV

DMEA 3174, H. T. Armstrong

Quien Sabe No. 2 claim

Fremont County, Wyoming

Beryl-columbite-tantalite-mica

C. M. Harrer, Mining Engineer
Bureau of Mines

D. R. MacLaren, Geologist
Geological Survey

November 19, 1953

DMEA 3174

H. T. ARMSTRONG
QUIEN SABE NO. 2 CLAIM
FREMONT COUNTY, WYOMING

Summary, Conclusions, and Recommendations

By C. M. Harrer
Mining Engineer
Bureau of Mines

D. R. MacLaren
Geologist
Geological Survey

DMEA 3174

QUIEN SABE NO. 2 CLAIM
HEPBURN T. ARMSTRONG
FREMONT COUNTY, WYOMING

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DMEA 3174

QUIEN SABE NO. 2 CLAIM
HEPBURN T. ARMSTRONG
FREMONT COUNTY, WYOMING

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

By C. M. Harrer and D. R. MacLaren

Hepburn T. Armstrong, 3636 Sixteenth Street, N. W., Washington, D. C., has applied for a Defense Minerals Exploration Administration loan of $13,333.00 to explore two pegmatite dikes occurring on the Quien Sabe No. 2 claim for beryl, tantalite-columbite, strategic mica, and lepidolite.

The property was examined for the Defense Minerals Exploration Administration on October 20, 1953.

Hepburn T. Armstrong has a 5-year lease on the Quien Sabe No. 2 claim, effective on August 26, 1953, from the owner, Peter Bruce Mining Company of Cheyenne, Wyo.

The Quien Sabe No. 2 claim is in Secs. 21, 22, 27, and 28, T. 40 N., R. 93 W., sixth principal meridian, Copper Mountain Mining District, Fremont County, Wyo., between 6,500 and 7,000 feet altitude.

Past production is reported as 300 pounds of tantalum assaying 65.5 percent Ta_2O_5, which was concentrated to about 80 percent Ta_2O_5.

On the Quien Sabe No. 2 claim, two pegmatites separated by an alluvium-filled valley have intruded amphibolite. They are essentially composed of quartz, albite, and muscovite with hanging wall and footwall margins of coarse white quartz associated with a white to blue-gray feldspar and fine-grained aggregates of muscovite. In the larger dike there is a zone near the center that contains many small tantalite crystals and another zone near the footwall at the west end that contains an abundance of small beryl crystals. In the smaller dike, which is of

similar composition, a very few widely scattered crystals of tantalite were seen and there is a short narrow zone with abundant small beryl crystals.

Due to the sporadic distribution of minerals within the deposit, it is difficult to arrive at a reasonably accurate estimate of reserves; however, an evaluation was attempted.

It is concluded that gross reserves of tantalite to a depth of 50 feet are approximately 2,100 pounds (1 pound per ton) of which one-third could be recovered by cobbing to a grade of about 65.5 percent Ta_2O_5 with an estimated value of $2,100.00. This value might conceivably be raised to $4,500.00, by gravity concentration through grade increase to 72 percent and increasing recovery to 1,500 pounds.

Production of beryl would probably not exceed a few hundred pounds from occasional pockets of crystals, large enough to be recovered by hand sorting.

Feldspar and mica are not of strategic quality and lepidolite or other lithium minerals are insignificant.

It is recommended that Hepburn T. Armstrong's request for a Defense Minerals Exploration Administration loan of $13,333.00 be denied.

ARMSTRONG METALS CORPORATION
FREMONT COUNTY, WYOMING

DMEA DOCKET 3174

Geologic Report

By D. R. MacLaren
U. S. Geological Survey

ARMSTRONG METALS CORPORATION
FREMONT COUNTY, WYOMING

INTRODUCTION

The Armstrong Metals Corporation has applied for Defense Minerals Exploration assistance to explore a pegmatite deposit on the Quien Sabe No. 2 claim near Shoshoni, Wyoming. The applicant proposes to drive a flat inclined shaft for 50 feet on one pegmatite, and a second shaft for 25 feet on another; to do an unspecified amount of trenching at five locations across the first dike; and to do sufficient work on an access road, estimated by the examiners to be between one-quarter and one-half mile long, to permit transportation of equipment and supplies to the property. The applicant estimates that the cost of the project will be $13,333 (Government's share 90% or $11,999.70).

An examination was made October 20, 1953, accompanied by C. M. Harrer of the U. S. Bureau of Mines, and Lou Jay, agent for the applicant. The Quien Sabe No. 2 claim is in secs. 21, 22, 27, and 28, T. 40 N., R. 93 W., 6th principal meridian, on the southern edge of the Owl Creek or Bridger Mountains, Fremont County, Wyoming. It is reached from Shoshoni by 14 miles of good graded ranch road and 2 miles of fair ungraded ranch road, thence by foot over one-quarter to one-half mile of ill-defined trail. The property is inaccessible during periods of deep snow.

It is concluded that the mica and feldspar are of inferior grade; that the beryl is for the most part in small crystals difficult to hand-cob; and that no significant amount of tantalite, probably not more than 2,000 to 4,000 pounds, can be found on this property. It is therefore recommended that this application be denied. Under critical

conditions a few thousand pounds of tantalite might be recovered from this deposit.

GEOLOGY

The geology of the Owl Creek (Bridger)Mountains pegmatities is described in volume 25 of the American Mineralogist by T. G. McLaughlin (1940), and in U. S. Geological Survey Professional Paper by John B. Hanley, E. William Heinrich, and Lincoln R. Page (1950). The deposit on the Quien Sabe No. 2 claim is described in more detail in a Bureau of Mines War Minerals Memorandum by N. L. Wimmler (1943).

The rocks of the area in which the Quien Sabe No. 2 claim is located are a complex sequence of pre-Cambrian basic schists, amphibolites, gneisses, and basic igneous dikes that have been intruded by granite dikes and pegmatite. The bedding and foliation of the schists are essentially parallel, striking N. 78° E. to due east, and dipping 60° to 70° S. Granite and pegmatite bodies, usually not more than 20 to 30 feet thick, as a rule strike parallel to the foliation but dip 5° to 55° N., the degree of dip changing rapidly within short distances.

On the Quien Sabe No. 2 claim (figure 3) two pegmatities, separated by an alluvium covered valley, have intruded amphibolite. The larger and more promising pegmatite is about 400 feet long and has an outcrop width ranging from 15 to 30 feet. Because of the rapidly changing dips along the hanging and foot-walls, it is difficult to determine the true thickness, but it is probably between 15 and 20 feet. The pegmatite, striking N. 60° - 80° E. and dipping 30° to 50° N., has a central core of fine-grained albite and quartz in which there is a considerable abundance of small tantalite crystals. The tantalite

is somewhat concentrated in, though not limited to, a zone about 200 feet long and 2 feet thick which contains some crystals up to one-half inch in size. Near the margins of the pegmatite coarse white quartz is commonly associated with a white to blue-grey feldspar and fine grained aggregates of muscovite. Small pockets of fairly large beryl crystals are found near the hangingwall contact. Not far from the west end of the pegmatite along the footwall, is a zone about 100 feet long and 3 feet thick that contains abundant small to fine grained crystals of beryl.

Southwest of the main dike, and separated from it by an alluvium-filled valley, is another pegmatite 180 feet long, having an outcrop width of 15 to 25 feet. The true thickness is probably not more than 10 or 15 feet. This pegmatite strikes about N. 30° E. and dips from 5° NW to 23° NW. In the northeastern portion along the hangingwall, is a zone of quartz-albite-muscovite pegmatite up to 2 feet thick that contains many small crystals of beryl. The rest of the dike is essentially quartz and albite with very little mica. Only four or five small crystals of tantalite were seen just below the quartz-ablite-muscovite zone.

The northeast dike has been partially explored by five trenches from which it is said that about 300 pounds of hand-cobbed tantalite, assaying 75% to 80% Ta_2O_5 has been shipped.

RESERVES

Due to the nature of the deposit it is most difficult to arrive at any accurate estimate of ore reserves. However, the following is an attempt to make some sort of an evaluation. The reported 300 pound

shipment of tantalite was hand-cobbed from an estimated 900 tons of rock taken from five open-cuts at selected portions of pegmatite. This indicates a potential recovery of one-third pound of tantalite per ton of rock taken from the zone of most prolific tantalite mineralization. This zone, about 200 feet long and 2 feet thick, is estimated to contain about 40 tons of ore per foot of depth. Should the tantalite content of this zone remain constant to a depth of 50 feet, the richest zone of the pegmatite would contain only 2,000 tons of rock or about 650 pounds of tantalite available by hand-cobbing. Should mechanical methods of concentration be used, and assuming that the recovery would be as much as a pound to the ton, this zone would only contain 2,000 pounds of tantalite worth about $6,000. Further, assuming mechanical concentration of tantalite from the entire pegmatite it is doubtful that the recovered mineral would be more than doubled, or 4,000 pounds.

No attempt has been made by former operators to hand-cob beryl from the portions of the dike where it is most abundant because of the small size of most of the crystals. It is doubtful that more than 150 to 200 pounds could be hand-cobbed from the few scattered pockets along the hangingwall that contain some medium sized and a few large sized beryl crystals. Although a fairly large tonnage of small beryl crystals might be indicated, hand-cobbing would be extremely difficult and recovery low because of the small size of the crystals.

According to N. L. Wimmler (1943), the mica and feldspar are of inferior grade and therefore cannot be considered as possible ores.

CONCLUSIONS AND RECOMMENDATIONS

It is concluded that the two pegmatities on this claim contain

a small tonnage of recoverable tantalite, and beryl in insignificant amounts, and that the contained mica and feldspar is of inferior grade. Therefore, it is recommended that this application be denied. Under critical conditions a few thousand pounds of tantalite might be recovered from this deposit.

REFERENCES

McLaughlin, T. G. (1940) Pegmatite dikes of the Bridger Mountains, Wyo.: Am. Mineralogist, vol. 25, pp. 46-68, 1940

Wimmler, N. L. (1943) Bridger Mountain pegmatite dikes, Fremont County, Wyoming. U. S. Bureau of Mines War Minerals Memorandum, 1943.

Hanley, John B., E. Wm. Heinrich, and Page, Lincoln R. (1950) Pegmatite Investigations in Colorado, Wyoming, and Utah: U. S. Geol. Survey Prof. Paper 227, pp. 109-112, 1940.

DMEA 3174

H. T. ARMSTRONG
QUIEN SABE NO. 2 CLAIM
FREMONT COUNTY, WYOMING

Engineering Report

By C. M. Harrer
Mining Engineer
Bureau of Mines

DMEA 3174

QUIEN SABE NO. 2 CLAIM
HEPBURN T. ARMSTRONG
FREMONT COUNTY, WYOMING

ENGINEERING REPORT

BY

C. M. Harrer

INTRODUCTION

Hepburn T. Armstrong, 3636 Sixteenth Street, N. W., Washington, D. C., has applied for a Defense Minerals Exploration Administration loan of $13,333.00 to explore pegmatite exposures on the Quien Sabe No. 2 claim for beryl, tantalite-columbite, mica, and lepidolite.

Hepburn T. Armstrong is president of the Armstrong Minerals Corporation, incorporated under the laws of Delaware. The company address is the same as above.

The property was examined for the Defense Minerals Exploration Administration on October 20, 1953.

ACKNOWLEDGMENTS

Mr. Lou Jay of Riverton, Wyo., conducted the examining team over the property. Reports by the Bureau of Mines and Geological Survey mentioned in the text, were freely consulted and pertinent data incorporated in this report.

LOCATION, TOPOGRAPHY, AND PHYSICAL FEATURES

The Quien Sabe No. 2 claim lies on the southern flank of the Bridger or Owl Creek Mountains in Secs. 21, 22, 27, and 28, T. 40 N., R. 93 W., sixth principal meridian, Copper Mountain Mining District, Fremont County, Wyo., between 6,500 and 7,000 feet altitude (fig. 1).

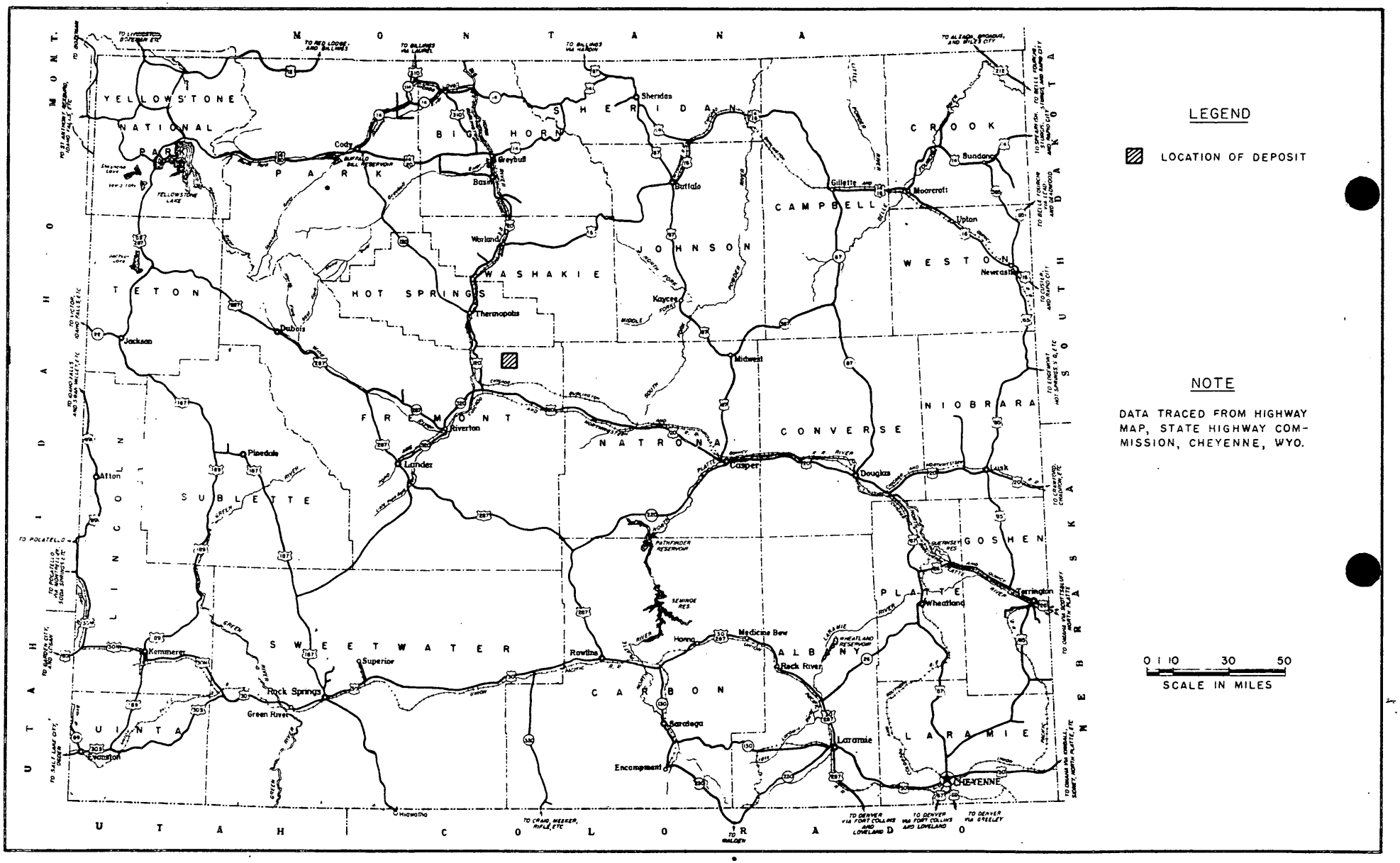


FIGURE 1. - LOCATION MAP, QUIEN SABE NO. 2 CLAIM, HEPBURN T. ARMSTRONG, FREMONT COUNTY, WYO. (DMEA 3174)

The property is reached by driving 3.3 miles northerly from Shoshoni, Wyo., on U. S. Highway 20 to the Bonneville cutoff; thence 16.7 miles northeasterly to within 1/2 mile of the property which is reached by crossing a rugged ridge on foot. The nearest water is available from Hoodoo Creek about 3,500 feet southeast of the claim. The Chicago, Burlington, and Quincy Railroad depot at Bonneville is about 16 miles southwest of the property. Terrain is steep and rugged in the vicinity of the claim. The nearest source of power is at Bonneville, Wyo.

HISTORY AND PRODUCTION

The Quien Sabe No. 2 claim was first worked by Mike Crowley during 1906 when it was prospected for mica. There was no production.

During 1910, J. Stephenson, F. E. McIntyre, A. E. Maxwell, and associates of Lander, Wyo., located the Whippet No. 8 claim (Quien Sabe No. 2) in the search for feldspar, beryl, and mica. There was no production.

During 1937, V. B. Maghee of Lander acquired a lease on the claim and produced about 300 pounds of tantalite assaying 65.5 percent Ta_2O_5, which was later concentrated by the Fanstell Corporation of Chicago, Ill., to about 80 percent Ta_2O_5. According to J. Stephenson, the tantalite averaged about 82 percent Ta_2O_5. A 1/2-ton lot of selected ore was reported to have produced 13 pounds of cobbed tantalite.

During 1939, Morris Kline and associates, known as the Quien Sabe Mining Syndicate and later as the Peter Bruce Mining Company of Cheyenne, Wyo., relocated the Whippet No. 8 claim under its present designation of Quien Sabe No. 2 claim.

Hepburn T. Armstrong leased the Quien Sabe No. 2 claim from the Peter Bruce Mining Company during 1953 and has applied for a Defense Minerals Exploration Administration loan to explore the claim for beryl, tantalite-columbite, mica, and lepidolite.

The property and surrounding area are described by T. G. McLaughlin.[1/]

The Quien Sabe claim was examined by engineers of the Bureau of Mines in 1942[2/] and 1943.[3/]

The Geological Survey mapped and examined the property during 1942.[4/] [5/]

The property is described by the Geological Survey of Wyoming.[6/]

1/ McLaughlin, American Mineralogist, volume 25, pages 46-68, 1940.

2/ Snedden, H. D., Unpublished report. Field Trip to the Tantalum Property of the Quien Sabe Mining Syndicate, Fremont County, Wyo., July 25, 1942.

3/ Wimmler, W. L., War Minerals Memorandum, Bridger Mountain Pegmatite Dikes, Fremont County, Wyo., October 1943.

4/ Love, J. D., and Hanley, J. B., Confidential Geologic Report, U. S. Geological Survey, 1942, "Beryl and Tantalite Deposits in the Copper Mountain District, Owl Creek Mountains, Fremont County, Wyo.

5/ Hanley, J. B., and Heinrich, E. W., and Page, Lincoln, Pegmatite Investigations in Colorado, Wyoming, and Utah, 1942-1944. U. S. Geological Survey Professional Paper 227, pages 111-112.

6/ Geological Survey of Wyoming, Bulletin 45, Wyoming Mineral Resources, page 57.

OWNERSHIP AND EXTENT

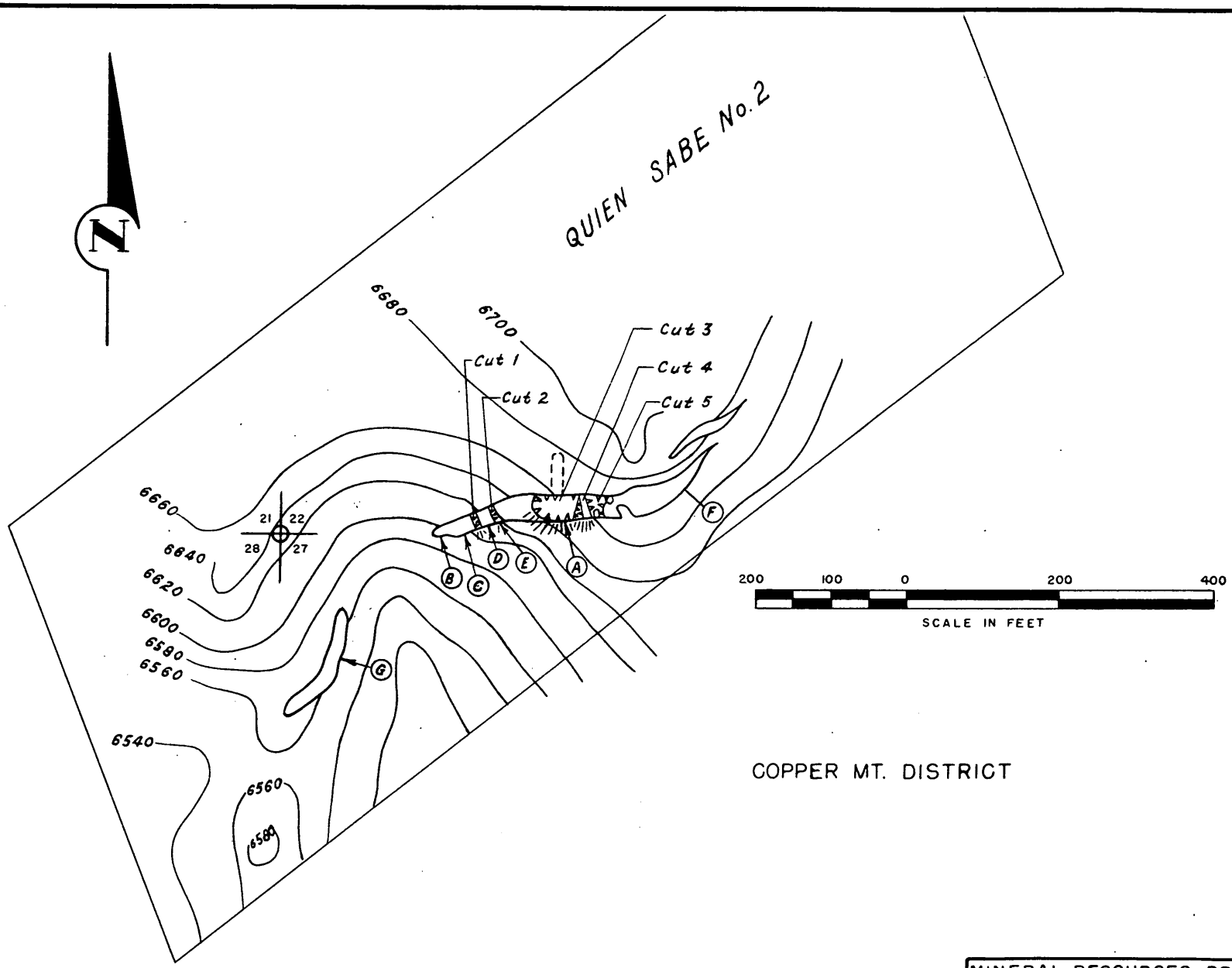
The Quien Sabe No. 2 claim is the property of the Peter Bruce Mining Company, 225 Majestic Building, Cheyenne, Wyo., by right of location. It is a standard lode location, 600 feet by 1,500 feet (fig. 2) recorded in the office of the County Clerk of Fremont County, Wyo., in Mineral Claim Book No. 50 on pages 466, 467, and 565.

Hepburn T. Armstrong, 3636 Sixteenth Street, N. W., Washington, D. C., has a lease of the Quien Sabe No. 2 claim dated August 26, 1953. The lease is in force for a period of 2 years after termination of a proposed Defense Minerals Exploration Administration exploration program or extension thereof. The total length of the lease is stipulated to not exceed 5 years from the signing unless renewed by mutual consent.

Hepburn T. Armstrong is president and treasurer of Armstrong Minerals Corporation, 3636 Sixteenth Street, N. W., Washington, D. C. Beatrice P. Herda, 1578 Colonial Terrace, Arlington, Va., is vice-president and secretary. Val Maghee of 305 Treasure State Building, Billings, Mont., is a vice-president. T. S. Armstrong, 3323 Vista Street, Long Beach, Calif., is a vice-president. H. S. Weidberg of 17-A Ridge Road, Greenbelt, Md., is associated with the company.

DESCRIPTION OF THE DEPOSITS

Two pegmatite dikes occur on the Quien Sabe No. 2 claim (fig. 2) in pre-Cambrian amphibolite and are separated by a valley partly filled with erosion debris. They exhibit somewhat similar characteristics. The northeast pegmatite is exposed over a length of 400 feet and a maximum



MINERAL RESOURCES BRANCH
MINING DIV. - REGION IV
BUREAU OF MINES

FIGURE 2 - PROPERTY AND DEVELOPMENT MAP, QUIEN SABE NO. 2 CLAIM, HEPBURN T. ARMSTRONG
FREMONT COUNTY, WYO. (DMEA 3174)

width of 30 feet. Coarse white quartz, aggregates of muscovite, and white to bluish-gray feldspar are abundant near the margins of the pegmatite. Small beryl crystals occur in spots near the hanging wall contact, with finer beryl crystals near the footwall. Tantalite is abundant as very small to coarse crystals in a fine-grained albite. No tantalite was observed in the northeast end of the pegmatite. Tantalite was observed in trenches 1 through 5, figure 2, over a length of about 200 feet and a width of about 2 feet, as scattered crystals up to 1 inch diameter. A specimen in the possession of Lou Jay showed tantalite crystals imbedded in a large beryl crystal. The dike trends N. 80° E. and dips between 30° and 60° to the northwest.

The southwest pegmatite is about 180 feet long with an average width of 20 feet. It contains considerably less beryl, with tantalum evident as a few tiny scattered crystals. The pegmatite consists mainly of white quartz, potash feldspar, and small books of muscovite mica. The contacts are poorly exposed and appear very irregular. It is reported[7/] to contain small crystals of tantalite chiefly in fine-grained aggregates of muscovite near the center of the pegmatite.

No lithium minerals were identified; however, some petalite was reported[8/] by the Geological Survey. The Bureau of Mines reported[9/] the presence of small amounts of lithium, titanium, and tin.

7/ Reference cited in footnote 5.

8/ Reference cited in footnote 5.

9/ Reference cited in footnotes 2 and 3.

SAMPLING DATA

There has been no appreciable change in development work on the property since 1942 and sampling by the Bureau of Mines during 1942 and 1943 is still pertinent. During 1942,[10/] the large pegmatite on the Quien Sabe No. 2 claim was sampled. Tantalite and beryl are sporadically developed as tiny to coarse crystals and aggregates in the pegmatite.

A sample of tantalite bearing rock, exposed in a pocket, assayed 4.09 percent $(Ta+Cb)_2O_5$, 61.8 percent SiO_2, 0.5 percent BeO, and 0.3 percent Li.

Another hand-sorted sample from a dump assayed 2.04 percent $(Ta+Cb)_2O_5$, 66.2 percent SiO_2, 2.1 percent BeO, and 0.1 percent Li.

A dump sample believed representative of the ore assayed 0.28 percent $(Ta+Cb)_2O_5$, 55.9 percent SiO_2, and 11.0 percent BeO, and no Li.

Beryl crystals assayed 0.06 percent $(Ta+Cb)_2O_5$, 48.7 percent SiO_2, and 12.6 percent BeO.

A sample designated as No. 2 was concentrated by tabling with the following results:

Results of Tabling Sample-2 from the Quien Sabe No. 2 Claim

Products	Percent weight	Percent-assay			Distribution
		Ta_2O_5	Cb_2O_3	$(Ta-Cb)_2O_5$	$(Ta-Cb)_2O_5$
Tantalite concentrate	1.1	75.80	0.90	76.70	43.7
middling	2.4	2.40	0.55	2.95	3.5
tailing	96.5	---	--	1.10	52.8
Calculated Heads	100.0	---	--	2.04	100.0

10/ Reference cited in footnote 2.

Physical and electrical properties of the associated muscovite mica were inferior and are probably not saleable.

Microscopic and visual examinations of the feldspar showed it to be of inferior quality with considerable quartz occluded in the feldspar.

The Quien Sabe No. 2 claim was again sampled by the Bureau of Mines during 1943.[11/]

Sample No.	Percent Ta_2O_5	Percent Cb_2O_5	Remarks
1	12.65	0.15	East end of Cut 5. Tantalite crystals in quartz, feldspar, mica gangue. About one-third of material taken from small pocket blasted out 8 feet below hanging wall.
2	1.7	0.015	Cut 2. Small scattered crystals of tantalite in sugary quartz and feldspar in a 1- by 5-foot area in central part of dike. Sample was about one-eighth of material broken.
3	0.64	Trace	Cut 1. Small, black crystals scattered in 4- by 4-foot area in hard quartz, feldspar, and fine mica. Sample was about one-tenth of material broken.

Sample No.	Percent $(Ta+Cb)_2O_5$	Percent BeO	
4	0.025	0.20	Dump sample from Cuts 3 and 5.
5	0.27	0.27	Dump sample from Cut 1.

Sample 1 was crushed through 10 mesh and was readily concentrated by panning with the following results:

Product	Weight: Grams	Weight: Percent	Assay - percent: Ta_2O_5	Assay - percent: Cb_2O_5	Assay - percent: SnO	Assay - percent: TiO_2	Percentage distribution of $(Ta+Cb)_2O_5$
Concentrates	457	13.7	84.3	0.36	1.05	Trace	94.66
Tailings	2,874	86.3	--	--	0.035	Trace	5.34

11/ Reference cited in footnote 3.

ORE RESERVES

Large (northeast) Pegmatite: The pegmatite is developed by five trenches and pits (fig. 2) and extension to a depth of 50 feet appears reasonably assured. Tantalite as very small to large crystals up to 1-inch diameter is inferred over a length of 250 feet and an average width of 2 feet. With a tonnage factor of 12 cubic feet, about 2,100 tons of tantalum-bearing rock are estimated to exist in the pegmatite. Past production of 300 pounds of tantalum assaying 65.5 percent Ta_2O_5 was reported[12/] as recovered from about 900 tons of pegmatite rock which indicates that tantalum-bearing rock that could be cobbed was about 1 pound to 3 tons of the rock removed. Using this ratio, the 2,100 tons of tantalum-bearing rock should yield about 700 pounds of tantalum by cobbing and hand sorting. At present prices of $3.00 per pound, gross value of cobbed tantalum is estimated at $2,100.00. Gravity concentration could probably raise the total of recoverable tantalum to 72 percent or about 1,500 pounds, principally as crystals too small to cob, with a gross value of about $4,500.00.

Beryl occurs chiefly as very small crystals with occasional pockets of crystals sufficiently large to cob out. Total beryl is estimated at about 12.5 tons $\left(\frac{100 \times 3 \times 50}{12} \times 0.01\right)$ much of which will be too small and shattered by blasting to recover by hand sorting. Only a few hundred pounds are believed recoverable as a saleable product.

Muscovite mica exposed in the pegmatite is essentially scrap, in clusters, and a sample was reported[13/] inferior in electrical and physical properties. The pegmatite is estimated to contain about 10

12/ Reference cited in footnote 3.
13/ Reference cited in footnote 2.

percent mica by volume as small books up to 2 inches in rough diameter. Because of its inferior quality and lack of market, no further evaluation was attempted.

Feldspar occurs principally as albite with some perthite and is intimately associated with quartz which cannot be cobbed to a commercial product. Because of its inferior quality and lack of market, no further evaluation was attempted.

Small (southwest) Pegmatite: This pegmatite (fig. 2) has not been prospected, and the outcrop indicates that the greater part is intergrown white quartz, albite, and small books of muscovite mica. Its content of beryl, tantalite, and albite are less than exhibited in the larger pegmatite. Tantalite is evidenced as extremely small and scattered crystals and future production will probably be insignificant.

Similarly, beryl exposed indicates a very small quantity could be produced as occasional crystals.

Muscovite mica and albite feldspar are even more inferior in quality than that exposed in the larger pegmatite and cannot be prepared as profitably saleable products.

PRESENT STATUS

Exploration and Development

The large pegmatite has been developed by five trenches and cuts as shown on figure 2. The work remains essentially the same as when mapped by the Geological Survey in 1942.[14/]

14/ Reference cited in footnotes 4 and 5.

Mining and Milling Equipment

There are no mining or milling equipment or other facilities on the property.

APPLICANT'S PROJECT PROPOSALS, WITH COSTS

Hepburn T. Armstrong proposes to construct a rough access road to the Quien Sabe No. 2 claim and explore the large pegmatite with 50 feet of crosscut under the area from which past production came; location A, figure 2. Test pits would also be blasted out at locations B-C-D-E-F, figure 2.

In addition, the small pegmatite would be explored with 25 feet of adit or incline at location G, figure 2.

Costs are distributed as follows:

Labor, Supervision, and Consultants - 3 months, 6 days per week:		
Road building - bulldozer 40 hours at $15.00 per hour	$ 600.00	
Two miners at $12.00 per day	1,872.00	
One helper at $10.00 per day	780.00	
One utility man to sort, haul water, and repair equipment at $11.00 per day	858.00	
Saturday overtime	216.00	
One superintendent at $22.00 per day plus $6.00 per diem; transportation round-trip Los Angeles	2,454.00	
One consulting engineer and geologist at $50.00 per day; (12 days) transportation and expenses, six round-trips to Denver at $75.00 each	1,050.00	
		$7,830.00
Operating Materials and Supplies		
One set drill steel (2 feet - 2 feet - 6 feet)	20.00	
300 drill bits (throwaway type) at $0.15 each)	45.00	
100 feet of 1-inch air hose	50.00	
One oiler	15.00	
500 feet 1-1/2-inch plastic air pipe at $0.50 per foot	250.00	

200 feet 1-inch water pipe	$ 50.00	
1,200 pounds dynamite	300.00	
100 feet 20-pound mine rail	200.00	
Blasting caps	20.00	
Fuel (gasoline-oil)	180.00	
Shovels, picks, spikes, and miscellaneous tools	200.00	
		$ 1,330.00
Operating Equipment		
One jack-leg drill (rental)	246.00	
One wheelbarrow (new)	27.00	
One compressor (125-cfm - rental)	477.00	
One tugger hoist (rental)	213.00	
Two 1-1/2-ton used mine cars (purchase)	200.00	
One 1-ton truck (rental)	400.00	
One gasoline-driven pump (rental)	132.00	
One water pressure tank (rental)	16.00	
		1,711.00
Rehabilitation and repairs		None
New Buildings, Improvements, and Installations		
One utility shed for tools and equipment		250.00
Miscellaneous		
Workman's Compensation and Employer's Liability Insurance	400.00	
Payroll and sales taxes	100.00	
Analytical work	200.00	
Accounting	200.00	
Freight charges ($2.50 per cwt - 4,000 pounds equipment Denver to mine)	100.00	
		1,000.00
Contingencies 10 percent		1,212.00
Total estimated costs		$13,333.00

CONCLUSIONS

The large pegmatite (fig. 2) is the only one of interest on the Quien Sabe No. 2 claim. Its gross reserves of tantalite to a depth of 50 feet are estimated at 2,100 pounds of which about 700 pounds assaying about 65.5 percent Ta_2O_5 and valued at $2,100.00 could be recovered by hand cobbing and a maximum of 1,500 pounds valued at $4,500.00 may conceivably be recovered by jigging and tabling. The property could not support a profitable mining venture and is not sufficiently attractive to justify further exploration. Production from the property would only be profitable at greatly increased prices.

Beryl, with the exception of a few clusters of crystals large enough to cob, occurs mainly as very small crystals which would be lost in mining.

Muscovite mica and albite feldspar are inferior and would not make profitably saleable products.

The proposed exploration program would add little to the present knowledge of mineable reserves.

RECOMMENDATIONS

It is recommended that Hepburn T. Armstrong's request for a Defense Minerals Exploration Administration loan of $13,333.00 to explore the pegmatites on the Quien Sabe No. 2 claim be denied.

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

OCT 16 1953

Mr. W. H. King
Executive Officer
Region IV
224 New Customhouse Building
Denver 2, Colorado

Re: Docket No. DMEA-3173 (Tungsten
Johnson Brothers and Prime
Boulder County, Colorado
Docket No. DMEA-3174 (Beryl-
Columbite-Tantalite-Mica)
Hepburn T. Armstrong
Fremont County, Wyoming
Docket No. DMEA-3175 (Uranium)
Dante Exploration Company
San Miguel County, Colorado

Dear Mr. King:

This will acknowledge your memorandum dated October 7, 1953, in which you request that we make a further check of our records concerning the return of the above-mentioned applications.

A further check of our records indicates that the three applications mentioned in the above subject, identifying the docket numbers assigned, were returned to Region IV on September 21, 1953.

Sincerely yours,

George C. Selfridge

Chairman, Operating Committee

APPROVED:

J. H. Hedges

Member, Bureau of Mines

T. P. Thayer

Member, Geological Survey

R.C.G. 10-16-53

MF-103
(Revised April 1952)

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

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

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

Not to be filled in by applicant

Docket No. DMEA-374
Metal or Mineral
Date Received 9-21-53
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: R. Kirkham S. Armstrong
300 - 17th St., NW
Washington, D.C.

(*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. Armstrong Minerals Corporation - Delaware

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

(*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 Upper Fountain, Fremont County, Wyoming - U.S. Government Property. Claims [redacted] Quien Sabe No. 2
See attachment for detailed description of claims.

(*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 Claim

(*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. See attached copy of memorandum of agreement.

(*e*) If you own the land, describe any liens or encumbrances on it [redacted] Lease will follow

(*f*) If the land consists of unpatented claims, add to the description above, the book and page numbers for each recorded location notice. Fremont County Courthouse: Book [illegible], pages [illegible] to [illegible], incl.
Quien Sabe #2 listed in Book #55, "Miscl Section."

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. see attached sheet

(*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 [illegible] to explore [illegible]

(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. [illegible]

(c) The work will start within 10 days and be completed within 3 mos. 10 days. 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. [illegible]

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: 1,037

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

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

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

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

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

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

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

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

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

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

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

☒ 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__

Hepburn T. Armstrong
(Applicant)

By Hepburn T. Armstrong

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

MF-103

H.T. Armstrong,
857 Munsey Bldg.,
Washington, D.C.

Item 1 (c) Hepburn T. Armstrong, President & Treasurer, 3636-16th St., NW, Washington, D.C.
Beatrice P. Herda, Vice-Pres. & Secretary, 1578 Colonial Terrace, Arlington, Va.
Val Maghee, Vice-Pres., 305 Treasure State Bldg., Billings, Mont.
T.S. Armstrong, Vice-Pres., 3323 Vista St., Long Beach, Calif.
H.N. Weidberg, 17-A Ridge Road, Greenbelt, Md.

Item 4 - Described in detail in following publications attached hereto:

(1) Dept. of Interior publication: Pegmatite Investigations in Colorado, Wyoming and Utah - Geological Survey Professional Paper #227, Washington, 1950. pp.109-113. The following is a direct quotation from page 111 of this publication:

"This pegmatite body (#8 claim, main cut) is estimated to contain 11,500 tons of tantalite bearing rock.....one pound tantalite in each ton of rock. The beryl.....5 to 10 percent ore.....one part beryl in each 700 tons of rock."

(2) Geologic report prepared by Charles E. Melbye, Geologist, Colorado School of Mines, in 1953.

(3) McLaughlin, T.G., Pegmatite Dikes of the Bridger Mountains, American Mineralogist, vol. 25, pp. 46-48, 1940.

(4) The Geological Survey of Wyoming, Bulletin No. 45, June 1952, p.57.

(a) At various times prospect pits have been dug on most of the pegmatite outcrops. However, the only significant mining was done on ~~Lavalle #8 (generally known as~~ Quien Sabe #2 ~~and Whippet #8)~~. Mining was done by the open pit method and the principal mineral recovered was tantalite-columbite. Small amounts of beryl were also mined. This work was done by Val Maghee, Sr. and Val Maghee, Jr. Val Maghee, Jr. is now vice-president of the Corporation. In March 1953 an examination of the property for the Corporation was conducted by Charles E. Melbye, a consulting geologist from the Colorado School of Mines. All workings are accessible for examination purposes.

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Washington 5, D.C.

Item 4 (b) Past production was 300 pounds of tantalite, containing 80% Ta_2O_5. Attached are shipping receipts for tantalite ore shipped to Fansteel Corp., Chicago, in 1939. A reliable ore reserve estimate is practically impossible to make because of the lack of any extensive development work and the spotty nature of the valuable minerals.

(c) (For geologic features, see report on Lavella prospects and the accompanying maps.) The reason for wishing to explore the property is to determine whether there are sufficient commercial concentrations of beryl, tantalite-columbite, and strategic mica to justify starting a mining operation.

(d) Access roads - There is a graded county road from Shoshoni to the Quien Sabe ranch, a distance of 14 miles. The last two miles to the property are over ungraded ranch roads, but which are in good condition. Distance to shipping - 15 miles to the C.B.&Q. rail point at Bonneville.
Supply point - Shoshoni 16 miles to the S.W.
Resident points - Single men in bunkhouse at Quien Sabe ranch and the married men will live at Shoshoni.

(e) Manpower, materials, supplies and equipment are all available at Shoshoni, Riverton, or Lander, Wyoming. Water is available most of the year from Hoodoo Creek and if there is a shortage late in the summer, some water could be obtained from a well at the Quien Sabe ranch. For the present, power would be generated at the mine.

Item 5 (a) Beryl, tantalite-columbite, strategic mica, and lepidolite.

(b) The proposed work is indicated by red arrows on the accompanying maps of the property and is as follows:

~~Lavella #0~~ (Quien Sabe #2) - 50 ft. of drifting should be done on the large dike where the dip is flat. The location of this drift also coincides with the part of the dike where all the previous production of tantalite has come from and therefore it should be the best place to explore the dike at depth. Prospect pits should be dug on other favorable indicated places, the largest and most extensive to be at cut "C". In the west dike, a 25 ft. drift or inclined shaft, depending on the dip, should be driven at the place indicated on the map.

~~Lavella #2 - A 25 ft. prospect shaft should be driven at cut "L" to explore the dike at depth, and an extension of cut "E" should be made.~~

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Item 6 - Estimate of Costs

(a) Independent contracts: None

(b) Labor, supervision, consultants - 3 months operation, 6-day week

Road building - $15 per hr. of bulldozing operations; 40 hrs. equals total of	$ 600
2 miners @ $12 per day	1872
1 helper @ $10 per day	780
1 utility man for hand sorting, repairing equipment, hauling water, etc. $11 per day	858
Saturday overtime for laborers	216
1 superintendent - salary $22 per day; per diem $6; transportation, round trip Los Angeles to mine, $270	2454
1 consulting engineer & geologist - salary $50 per day (12 days); transportation & expenses, 6 round trips Denver to mine, $75 each.	1050
Total	$7830

(c) Operating materials and supplies

1 set	Drill steel (2', 4', 6')	$ 20
300	Drill bits (throw-away type) @ .15	45
100'	1" Air hose @ $25/50'	50
1	Oiler	15
500'	1½" Plastic air pipe @ .50	250
200'	1" Water pipe @ $25/100'	50
1200 lb.	Dynamite @ .25	300
100'	20# mine rail @ 10¢/lb.	200
	Blasting caps	20
	Fuel (gas & oil) @ $60 per month	180
	Shovels, picks, track spikes, etc. and other miscellaneous tools	200
	Total	$1330

(d) Operating equipment

1 Jack-leg drill (rental)	$ 246
1 Wheelbarrow (new)	27
1 Compressor - 125 cfm w/engine (rental)	477
1 Tugger hoist (air-powered) (rental)	213
2 1½ ton used mine cars @ $100)purchase)	200
1 1-ton truck (rental)	400
1 Gasoline pump w/engine (rental)	132
1 Water pressure tank (rental)	16
	$1711

H. T. Armstrong
857 Munsey Bldg.
Washington 5, D. C.

Item 6 - Estimate of Costs

(e) Rehabilitation and Repairs: None

(f) New buildings, improvements, installations

1 Utility shed for tools, etc.	$ 250

(g) Miscellaneous:

Workmen's compensation & employer's liability insurance	400
Payroll and sales taxes	100
Analytical work	200
Accounting	200
Freight charges - $2.50 per cwt (4,000 lbs.) (equipment, Denver to mine)	100
Total	$1000

(h) Contingencies: 10% of above $1212

Item 6 - Total of Estimated Costs:

(a)	—		
(b)	7,830		
(c)	1,330		
(d)	1,711		
(e)	—		
(f)	250		
(g)	1,000		
(h)	1,212		
	$13,333	Grand Total	$13,333

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H.T. Armstrong
857 Munsey Bldg.
Washington 5, D.C.

Item 5 (b) ~~Lavella #1 (Mica Cut)~~ - Further stripping of the surface rock and soil and a 25 ft. prospect shaft or drift, depending on the dip, to explore the grade and size of the hanging wall mica zone as it gets out of the highly weathered zone. Slight changes in all proposed work may have to be made as work progresses because of the extremely irregular nature of the pegmatite dikes.

(d) Charles E. Melbye - Geologist and Engineer

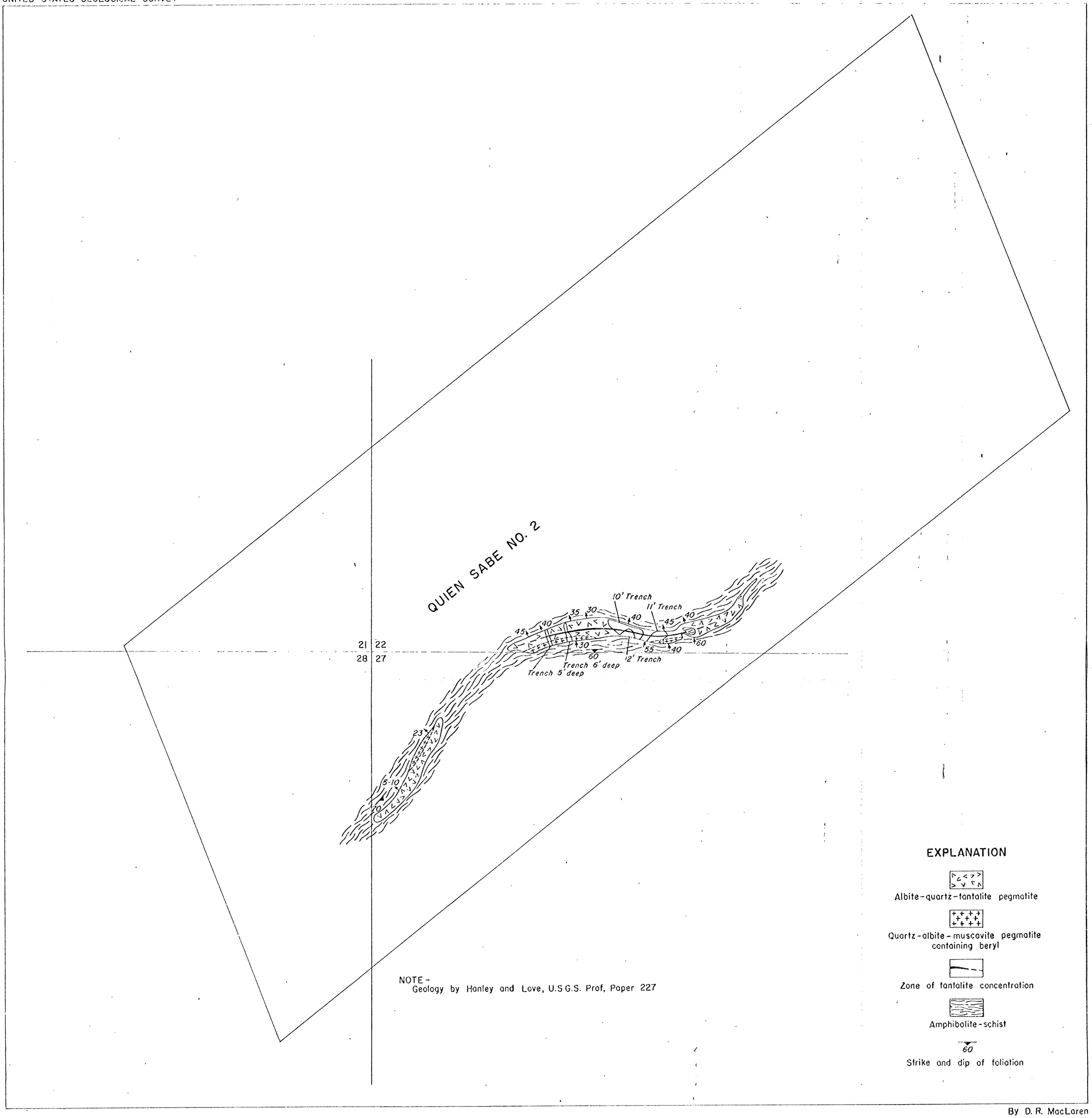
Geologist and engineer, Anaconda Copper Mining Co., Tecopa, Calif.
Mine engineer, Telluride Mines, Inc., Telluride, Colorado.
Consulting geologist and engineer - Companies in Calif. & Colorado.
Geologist, Kennecott Copper Corp.
Instructor in Geology, Colorado School of Mines, Golden, Colorado.

T. S. Armstrong - Superintendent

Fifteen years Superintendent and Chief Engineer, Wyoming Gas Co.
Mining experience - 5 years Wyoming, 3 years California.

H. T. Armstrong - (Applicant)

Occasionally worked on gold mine property of T.S. Armstrong, Calif.
Owner of four tungsten mines in Wyoming.
Economist, U.S. Department of Commerce.



By D. R. MacLaren

FIGURE 3.-PLAN SHOWING GEOLOGY AND RELATION OF TWO PEGMATITES ON QUIEN SABE NO. 2 CLAIM, FREMONT COUNTY, WYOMING

100 50 0 100 Feet