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DMEA ~~DMA~~ Docket No. 2581

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EXPLORATION PROJECT

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To:	Code 600, Rm. 4637	Date	6-13-52
To:	Robertson	Date	6/16/52
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FILE COPY
SURNAME:

Robertson
Houk
Johnson
Kindred
Ellis

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

BL

SEP 29 1952

Mr. J. R. Wemlinger
President, Beryllium Mining Co., Inc.
920 - 2nd Avenue
Seattle 4, Washington

Subject: Docket No. DMEA-2531
Beryl, Mica, Columbium
Tantalum
New Anniversary-Ducky Pegmatite
Willow Creek Mine
Gunnison County, Colorado

Dear Mr. Wemlinger:

Your application for exploration project assistance, Docket No. DMEA-2531, has been carefully considered by this office.

We find that the proposed project does not warrant our participation in it and we regret to inform you that the application for exploration assistance in this case is denied.

Your interest in the Defense Production Program for strategic minerals is much appreciated.

Sincerely yours,

(signed) FRANK E. JOHNSON (fw)

ACTING Administrator

F.W.
9-29-52

JTRobertson:gad 9/24/52

Copy to: Admin. Reading File
Operating Committee (2)
Field Team, Region IV
Docket File
Mr. Norton, G-232 GSA Bldg.
Mr. Kauffman, 1347
Mr. Houk

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

September 24, 1952

Memorandum

To: Chairman, Operating Committee

From: Nonmetallic Minerals Division

Subject: Docket No. DMEA-2581
Beryl, Mica, Columbium-Tantalum
New Anniversay-Bucky Pegmatite
Willow Creek Mine, Beryllium Mining Co., Inc.
Gunnison County, Colorado

Re: A recommendation of denial of application for exploration assistance.

Attached herewith is the Field Team Report in which a very comprehensive review is made of the subject application for exploration - a diamond drilling program.

The Quartz Creek pegmatite district in Gunnison County, Colorado, covers about 29 square miles and contains many pegmatite dikes, 1,800 or more have been noted. One such pegmatite worked in the past by the applicant is known as the New Anniversary - Bucky Pegmatite and as shown in the attached Fig. I of Field Team Report, it is irregular in outline, but roughly 4,000 feet long, 2,500 feet wide. It is within this area that the applicant proposes to explore by drilling.

Beryl is found in sporatic areas of quartz or quartz core segments the largest of which is found on the Bucky Claim and is 100 feet long and 75 feet wide and 40 feet thick; many core segments are much smaller.

Beryl, with sometimes columbite and tantalite, occurs as sporadic clusters in the quartz core contacts.

Investigations by both the Bureau and the Survey plus the mine operation's development havepretty well brought to light the mineralogical characteristics and the overall pattern of ore occurrence. Also numerous vertical cliff-like rock exposures have exposed the formations. The entire study seems to indicate that the ore possibilities are as much proven now as

they ever can be and that additional drilling as proposed would not change the picture. In this regard the information provided on page 4 of Russell R. McLellan's Memorandum Report seems pertinent and confirms the futility of additional drill on any reasonable scale.

The memoranda of Mr. Weis and Mr. Kauffman, Jr., are attached and both specialists concur in the recommendation for denial.

The Nonmetallic Minerals Division, DMEA also concurs in a denial of this application.

Jasper T. Robertson
Nonmetallic Minerals Division

Attachments 3

FILE COPY
SURNAME:

Robertson
Hook

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

September 24, 1952

Memorandum

To: Chairman, Operating Committee

From: Nonmetallic Minerals Division

Subject: Docket No. DMEA-2581
Beryl, Mica, Columbium-Tantalum
New Anniversary-Bucky Pegmatite
Willow Creek Mine, Beryllium Mining Co., Inc.
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The Nonmetallic Minerals Division, DMEA also concurs in a denial of this application.

Jasper T. Robertson
Nonmetallic Minerals Division

Attachments 3

JTRobertson:gad 9/24/52

Copy to: Admin. Reading File
Docket File
Mr. Houk

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

Flax
JJR

September 18, 1952

Memorandum

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

From: A. J. Kauffman, Jr.
Rare and Precious Metals Branch

Subject: DMEA Docket 2581, Beryllium Mining Co., Inc., Gunnison County, Colorado.

This office concurs with the recommendation of the field team, that the application be denied.

A. J. Kauffman, Jr.

Attachments

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
SEP 18 1952

IN REPLY REFER TO:

G-MD-CNM

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

September 11, 1952

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
SEP 11 1952

Memorandum

REVIEW OF FIELD TEAM REPORT ON APPLICATION DMEA-2581 (Beryl, mica, columbite-tantalite)

To: L. G. Houk, Defense Minerals Exploration Administration
From: P. L. Weis, U. S. Geological Survey
Applicant: Beryllium Mining Co., Inc.
Name of property: Willow Creek (Bucky Pegmatite) mine.
Location of property: Gunnison County, Colorado.
Date of field team report: August 25, 1952.
Authorship of field team report: R. R. McLellan and E. N. Harshman.
Field team's recommendation: Denial.
Comments: The field team is to be commended for an unusually thorough and comprehensive investigation and report.

ACTION SUGGESTED:

Follow field team's recommendation.

Paul L. Weis

Paul L. Weis

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

224 New Customhouse
Denver 2, Colorado

September 5, 1952

Memorandum

To: Secretary to the Operating Committee

From: Field Team, Region IV

Subject: Final Report, DMEA Docket 2581, (Beryl-Mica-Columbite-Tantalite) Beryllium Mining Co., Inc., Gunnison County, Colorado

Enclosed are the original and three copies of the report pertaining to the above application.

The applicant had requested exploration aid in the amount of $49,685.09.

The field examiners believe that the project is geologically unsound and that it is not feasible from an engineering or economics standpoint and they recommend that this application be denied.

We concur in this recommendation.

W. H. King
W. H. King

A. H. Koschmann
A. H. Koschmann

Encl.

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
SEP 8 1952

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Mining Division
Region IV

September 4, 1952

Memorandum

To: Field Team, Region IV

From: Acting Chief, Mining Division, Region IV

Subject: Final Report, DMEA Docket 2581, (Beryl-Mica-Columbite-Tantalite) Beryllium Mining Co., Inc., Gunnison County, Colo.

Enclosed are eight copies of the memorandum report on DMEA-2581 by R. L. McLellan of the Bureau of Mines.

This application was referred to U.S.G.S. for preliminary examination and they denied it on geological grounds.

The examining engineer believes this project is not feasible from an engineering or economic standpoint and he recommends denial.

We concur in this recommendation.

W. H. King

W. H. King

Encl.

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
SEP 8 1952

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Region IV

Room 137, Building 20
Denver Federal Center
Denver 14, Colorado
August 25, 1952

Memorandum

To: Executive Officer, Field Team, Region IV

From: Chief, Colorado Branch, Mining Division, Region IV

Subject: DMEA 2581 (Beryl-mica-columbite-tantalite), Beryllium Mining Company, Inc., Gunnison County, Colorado

Please find enclosed the original and eight copies of a memorandum by Russell R. McLellan covering the subject loan application.

Inasmuch as the application was referred to the Survey for preliminary examination and they denied it on geological grounds, we have prepared this memorandum covering mainly the salient points because the examination was made by the same team who were investigating another application on a nearby property.

McLellan concludes that the applicant's operations up to the present have been unprofitable and will continue to be unless a market is found for the main constituents of the pegmatite to support production of the critical minerals, beryl and columbite. This is a condition obtaining in all Colorado pegmatites. In addition to being geologically unsound, a project is not feasible from an engineering or economic standpoint. He recommends denial and I concur.

The possibility of stimulating the applicant's production by means of a price subsidy equivalent to the DMEA loan participation is worthy of consideration.

W. M. Traver, Jr.

W. M. Traver, Jr.

enclosures

WMT/ash

cc 8
DMEA 2581
DMEA Chron.

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

200 New Customhouse
Denver 2, Colorado

August 29, 1952

Memorandum

To: DMEA Field Team, Region IV

From: A. H. Koschmann

Subject: DMEA Docket 2581, Beryllium Mining Company, Inc., New Anniversary Pegmatite, Willow Creek Mine, Gunnison County, Colorado.

Attached are 8 copies of the geological report by E. N. Harshman covering DMEA Docket 2581, Beryllium Mining Company, Willow Creek Mine, Gunnison County, Colorado.

The applicant proposes to explore for beryl, columbite, and tantalite on subject property by 2500 feet of diamond drilling and some trenching as needed to expose favorable near-surface contacts of graphic granite and quartz core.

The present field investigation, together with rather extensive investigations of these pegmatite dikes made after World War II by the U. S. Geological Survey and the U. S. Bureau of Mines, show that the deposits are lenticular and sporadic. Exploration might lead to the discovery of additional deposits. However, such ore zones would lie at greater depth than those presently known and unmined. The known deposits have not been exploited because of operating costs and lack of market for the by-products, as feldspar. This entire case is not a problem of finding ore, but of marketing. Harshman, therefore, recommends that this application be denied.

I concur in this recommendation.

A. H. Koschmann

A. H. Koschmann
Supervising Geologist
Colorado-Wyoming

Enclosures (8)

BERYLLIUM MINING COMPANY, INC.

NEW ANNIVERSARY PEGMATITE

WILLOW CREEK MINE

GUNNISON COUNTY, COLORADO

DMEA DOCKET 2581

Geologic Report

By E. N. Harshman
U. S. Geological Survey

BERYLLIUM MINING COMPANY, INC.
GUNNISON COUNTY, COLORADO

INTRODUCTION

The Beryllium Mining Company, Inc., 920 2nd Avenue, Seattle 4, Washington, has requested government assistance, DMEA Docket 2581, in exploring for beryl, columbite, and tantalite, on 6 claims in section 22, T. 50 N., R. 3 E., N. M. P. M., Gunnison County, Colorado. They have under lease the South Slope No. 1 and No. 2 lode claims, and have a contract to purchase the Bucky, Rhona Marie, Pug, and Sally lode claims (Fig. 1).

The property lies about 1.3 miles northwest of Ohio City, Colorado, and may be reached by car over 1.8 miles of good dirt road which joins State Highway No. 165 at a point about 0.9 of a mile west of Ohio City.

The proposed exploration consists of drilling 2500 feet of Nx size diamond drill holes and excavating trenches or open cuts as needed to expose near-surface contacts of graphic granite and quartz core. The total cost of the exploration, including supervision, repair of equipment now at the mine, rental and purchase of additional equipment, assaying, and various other items, is estimated by the applicant to be $49,685.09 (Government participation 90 percent).

A former request, DMA Docket 493, for assistance in exploring this property, at an estimated cost of $250,000, was denied without being referred to the Field Team.

The claims were examined on August 1, 1952, in company with R. R. McClellan and R. D. Berkenkotter of the U. S. Bureau of Mines. Mr. C. A.

Wemlinger, P. O. Box 276, Gunnison, Colorado, Manager of the property, accompanied the examining team; his assistance is acknowledged.

It is concluded: 1. that exploration assistance will not lead to an increased production of beryl, columbite, or tantalite from this property; 2. that the known bodies of ore have not been exploited to the fullest extent possible; and 3. that at present metal prices, mining operations have not and cannot yield a profit.

GEOLOGY

The geology of the Quartz Creek pegmatite district, including the Beryllium Mining Company's property, has been described in some detail by Staatz and Trites (1952). The following geologic discussion is based, to a considerable extent, upon their findings.

The Quartz Creek pegmatite district includes about 29 square miles in the vicinity of Quartz Creek, Gunnison County, Colorado. The area contains 1803 known pegmatites that have been intruded into pre-Cambrian quartzite, hornblend gneiss, tonalite, granite, and quartz monzonite. The composition of the country rock has little to do with the shape of the pegmatite, provided the rocks being compared are of equal competency; structural control is, however, quite common. Well-zoned pegmatites are not common and in those few that are zoned, the cores are small and discontinuous and the wall zones are large.

The New Anniversary pegmatite (the Bucky or No. 1574 pegmatite in the Staatz and Trites report) is about 4000 feet long, 2500 feet wide, and is intruded into hornblend gneiss. The pegmatite is very irregular in shape and by far the larger part of it is either a fine-grained, discontinuous wall zone or a coarse-grained, graphic granite intermediate zone. Thirty-six

quartz core segments have been found within the pegmatite dike. The core segments have a peripheral arrangement about the dike (fig. 1) and some may be fissure fillings rather than true core segments.

The wall zone is not continuous. It is entirely absent in some places and several hundred feet thick in others. It is composed of 60% albite, 20% perthite, 16% quartz, and 4% muscovite in grains averaging about one-quarter of an inch in diameter.

A thick intermediate zone of graphic granite lies inside the wall zone. In addition to graphic granite, this zone contains 3% to 4% perthite, 3% fine-grained albite, 1% crystaline quartz, and less than 1% biotite.

One to three minor intermediate zones surround most of the core segments. These zones are coarse grained (crystals up to 8 feet in diameter) and contain quartz, albite, perthite, muscovite, and relatively minor amounts of beryl, columbite, tantalite, monazite, and a smarskite-like mineral.

The principal workings are on the Bucky claim, where 4 open cuts have exposed 2 moderate sized core segments and their accompanying ore-bearing intermediate zones. The upper or Bucky core segment is composed of white massive quartz in a body 100 feet long, 75 feet wide, and about 40 feet thick. The quartz core is surrounded by a 1 to 10 foot intermediate zone of quartz, feldspar, and muscovite with an average grain size of about 2 feet. In this zone beryl occurs in crystals up to several feet in diameter; the other ore minerals occur in smaller crystals. At the time of examination, all exposed ore minerals had been removed. Staatz and Trites estimate that the ore bearing zone contained 40% muscovite, 31% feldspar, 20% quartz, 8.9% beryl, and 0.11% columbite-tantalite. Beryl occurs in small, isolated,

pocket like segregations, each separated from the other by almost barren rock. The columbite and tantalite occur similarly, but not mixed with the beryl.

About 600 feet southeast of the Bucky core segment, a second deposit has been exposed by an open cut. Geologically this deposit is similar to the first and beryl, columbite, and tantalite have been mined from it. The workings on this deposit are not extensive.

Two open cuts on the South Slope No. 1 and No. 2 claims have exposed quartz-feldspar-muscovite zones that contain both beryl and columbite (fig. 1). Little work has been done in this area and it is not possible to estimate the extent of the ore zone. There is a possibility that the lower open cut has been excavated on material not in place.

PRODUCTION AND ORE RESERVES

The following production figures, given by the applicant, are believed to be reasonably accurate:

Mineral	Prior to 1949	1949	1950	1951	1952	Total
Beryl (tons)	10	18.5	26.0	3.5	none	58.0
Columbite (lbs.)	--	1034.0	none	620.0	none	1654.0
Monazite (lbs.)	--	28.0	19.0	14.0	none	61.0
Scrap mica (tons)	--	97.5	64.2	42.1	none	203.8

Ore reserve estimates for pockety beryl deposits are at best very approximate, since they are based to a large extent on mineral counts and the judgment of the examiner. Weighting the production to date, the mineral count of prior investigations, and the volume of material yet to

be mined and known to contain beryl, columbite, and tantalite, ore reserves are estimated as follows:

TYPE	BERYL	COLUMBITE-TANTALITE
Measured ore	none	
Indicated ore	50 tons	1500 lbs.
Inferred ore	75 tons	2250 lbs.

PRIOR EXPLORATION

In 1950 the U. S. Bureau of Mines explored, by diamond drill, several of the more promising pegmatites in the Quartz Creek district. Their program included exploration of the New Anniversary pegmatite, particularly in the Bucky core segment area. Two drill holes, one in the core and one just south of it proved that the core extended to a depth of only 40 feet. The exploration program was suspended and the equipment was used to explore other pegmatites in the district.

The fact that the Bucky core segment is the largest yet discovered in the New Anniversary pegmatite, that its depth is only 40 feet, and that all other known core segments are of very short strike length suggests that most of the ore deposits associated with core segments in this pegmatite will be small.

CONCLUSIONS AND RECOMMENDATIONS

1. Beryl, columbite, and tantalite are present in intermediate zones surrounding several of the core segments in the New Anniversary pegmatite.

2. Reserves of between 50 and 125 tons of beryl and 1500 to 3750 pounds of columbite-tantalite are estimated to remain in known ore zones.

3. Exploration by drilling might lead to the discovery of additional intermediate zones containing beryl, columbite, and tantalite. However, such ore zones would lie at greater depths than the presently known and unmined ores, and because of high mining costs their discovery would not increase the beryl, columbite, or tantalite production from the property or the minable reserves.

4. To be successful mining operations on the New Anniversary pegmatite must include the sale of the other pegmatite minerals as well as beryl, columbite, and tantalite. The location of the property precludes such sale at a profit, at least at present prices.

5. A comparison of estimated production costs and gross receipts from the sale of all products mined by the Beryllium Mining Company, Inc., shows a net loss for the 4 year period of operation.

6. Production of beryl, columbite, and tantalite from the New Anniversary pegmatite can be stimulated only be an increase in the price of the products mined, or by non-recoverable financial assistance in the mining operations.

It is recommended, for the reasons outlined above, that the application for exploration assistance, DMEA Docket 2581, be denied.

REFERENCE

Staatz, M. H., and Trites, A. F., Geology of the Quartz Creek pegmatite district, Gunnison County, Colorado: U. S. Geological Survey, Trace Elements Investigations Report 138, April 1952.

The first location was made in 1943, but little or no production resulted until 1949 when the Beryllium Mining Company, Inc., commenced operations. From 1949 through 1951, the company shipped 200.2 tons of scrap mica, 16 pounds of monazite, 48 tons of beryl, and 1,595 pounds of columbite. With this production, the company probably grossed less than $30,000.00 for the 3-year operation, or about $10,000.00 per year. This amount is barely sufficient to cover labor and supervision charges alone. Obviously, the company was no more than meeting expenses at the peak of production.

Six claims controlled by the company cover about half of the pegmatite. Four of the claims, Bucky, Rhona Marie, Pug, and Sally, are being purchased from Rodney W. Fields, of Paonia, Colorado. The remaining two, South Slope Nos. 1 and 2, are leased from F. A. Nichols, of Evergreen, Colorado.

The pegmatite is about 4,000 feet in length and attains a maximum width of about 2,500 feet. Three major zones have been identified by the U. S. Geological Survey: a wall zone of quartz-microcline-muscovite, an intermediate zone of muscovite-plagioclase pegmatite that contains beryl and columbite, and a core of quartz pegmatite. The intermediate zone is the only portion of the dike that contains strategic minerals. Several extremely limited and isolated exposures of this zone were located in the extensive pegmatite outcrop. As nearly as could be determined, none of the exposures had been completely explored or developed. All beryl and columbite production has come from shallow cuts and trenches with no attempt being made to follow the zone at depth.

Without doubt, there is a mineable reserve in most of the principal workings at the south edge of the pegmatite. If the company cannot mine this surface reserve profitably, there is little or no possibility that it can profitably mine any deep-seated reserve established by core drilling. In short, unless large quantities can be marketed of non-essential minerals, such as scrap mica, graphic granite, or feldspar, the dike is comparatively worthless as a source of beryl and columbite. Present freight rates in the area are prohibitive to the production of low value, nonstrategic minerals; consequently, there has been no mining on the property during the 1952 season.

Following is a summary of the estimated costs of a 10-month exploration program of drilling and trenching as submitted by the applicant:

Construct cinder block building	$2,000.00
Operating equipment rented	1,608.44
Diamond drilling, 2,500 feet by contract	20,730.00
Supervision	5,000.00
Labor	8,170.00
Overhaul bulldozer and truck	3,870.00
Supplies	2,674.10
Assaying	1,000.00
Accounting	500.00
Engineering	1,000.00
Miscellaneous	3,132.55
Total	$49,685.09

The estimated cost is excessive by at least $8,800.00 which includes such items as a 22- by 40-foot cinder block building, mobilization and demobilization by drill contractor, and overhaul of bulldozer and truck.

According to the applicant, the ultimate purpose of the diamond drilling is to establish the existence of deep-seated zones which may

prove the feasibility of driving a low level tunnel to tap these zones. It is the writer's opinion that the 10 to 14 holes comprising 2,500 feet of drilling would be only a fraction of the number required to prove sufficient reserves to merit a low level tunnel. The calculated reserves would have to be in tons of mica and feldspar rather than in pounds of beryl and columbite due to the isolated and erratic occurrence of the latter minerals within the intermediate zone.

The cost of an extensive drilling program combined with the cost of a low level tunnel could be offset only by locating a market for a tremendous tonnage of nonstrategic minerals. It is extremely doubtful that any great amount of the intermediate zone exists within the proposed drilling range of 200 to 250 feet from the surface. When it is considered that possibly 5,000,000 square feet of pegmatite are exposed through a vertical range of several hundred feet compared to possibly 3,000 square feet of exposed ore-bearing zone, there is little chance of discovering additional ore even with closely spaced, systematic, pattern drilling, much less with only 10 to 14 holes scattered over the entire pegmatite.

The Colorado Branch, Region IV, Bureau of Mines, in a period from late April to early July 1950, drilled 2 holes in the most favorable exposure of the New Anniversary-Bucky intermediate zone. The results were so unfavorable that drilling was discontinued after completing the second hole. It is estimated that 2,000 to 3,000 tons of this intermediate zone remain to be mined.

Extensive exploration by trenching not only is impractical but is almost impossible due to the cliff-like exposures. Dozens of vertical sections ranging from 5 to 50 feet high can be observed throughout most of the length and breadth of the dike.

It is concluded that the company should further develop the known surface exposures before attempting exploration or development at depth. If the surface exposures cannot be mined profitably, exploration at depth is not justified, as there is little evidence that more extensive or richer zones exist within shallow drilling range.

A direct subsidy, possibly as a price differential for the critical minerals, beryl and columbite, equivalent to the amount of the Government's participation in an exploration loan would, no doubt, result in more immediate production than any other method.

Denial of the application for exploration assistance is recommended.

Russell R. McLellan
Russell R. McLellan
Mining Engineer

RRM/amh

cc 8

BERYLLIUM MINING CO., INC.

920 Second Avenue ◆ MAin 2310

SEATTLE 4, WASH.

June 30, 1952

Mr. C. O. Mittendorf
Acting Adminstrator
Defense Minerals Exploration Administration
Washington 25, D. C. 600

Subject: Docket DMEA-2581
Beryl, Mica,
Columbite-Tantalite,
Willow Creek Mine,
Gunnison County,
Colorado

Dear Mr. Mittendorf:

We have your letter of the 26th, for which we thank you.

Accordingly, we shall get in touch with Mr. W. H. King for further information.

Sincerely yours,

J. R. Wemlinger, President

jr/s

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
JUL 7 - 1952

FILE COPY
SURNAME:

Robertson
Houk
Hedgar
Jr Johnson

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

JUN 26 1952

Beryllium Mining Co., Inc.
920 - 2nd Avenue
Seattle 4, Washington

Subject: Docket No. DMEA-2581
Beryl, Mica, Columbite-Tantalite
Willow Creek Mine
Gunnison County, Colorado

Gentlemen:

Your application is being referred to Mr. W. H. King, Executive Officer, DMEA Field Team, Region IV, Bureau of Mines, 224 New Customhouse Building, Denver 2, Colorado, for further information.

Sincerely yours,

C. O. Mittendorf (for) P.N. 6-26-52

Acting Administrator
Defense Minerals Exploration
Administration

JTRobertson:gad 6/25/52

Copy to: Admin. Reading File
Operating Committee (2)
Field Team, Region IV (2)
Mr. Norton, G-232 GSA Bldg.
Mr. Needleman, 1347
Mr. Houk

FILE COPY
SURNAME:

Robertson
Hunt

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

JUN 26 1952

Mr. W. M. King
Executive Officer, DMEA
Field Team, Region IV
Bureau of Mines
224 New Customhouse Bldg.
Denver 2, Colorado

Subject: Docket No. DMEA-2981
Beryl, Mica, Columbite-Tantalite
Willow Creek Mine
Gunnison County, Colorado

Dear Mr. King:

Please find enclosed copies of memoranda from Geological Survey and Bureau of Mines with respect to a field referral for the subject exploration assistance application.

A field team investigation is requested and an examination of the property may be made if deemed necessary.

As pointed out by Mr. Weis and Mr. Norton the program of work is probably larger than is necessary and, as they suggest, there may be places where reserves are as much proven now as they can ever be by added work.

The estimate of costs will require some checking; items such as cinder-block construction would appear to be out of place in an exploration project. The cost of items involving overhaul of broken-down equipment - a non-salvage outlay - should also be scrutinized.

Our primary interest is in the beryl, columbite and tantalite minerals rather than in the scrap mica, feldspar and other non-strategic products. A better knowledge of the outcrops appears important and the first phase of the project might best be confined to bulldozing so as to have a better geological understanding of the area as a whole. The thought being that after surface bulldozing is complete, a geological map could be made and a program of drilling could then be more intelligently planned.

Upon completion of the report, please send it to this office along with your own recommendation and comments.

Sincerely yours,

(signed) FRANK E. JOHNSON
(JHB)

Chairman, Operating Committee
Defense Minerals Exploration
Administration

J.H.
6-26-52

Approved:

J. H. Hedges (JHB)
Member, Bureau of Mines

S. W. Lemmon
Member, Geological Survey

Enclosures 2

JTRobertson:gad 6/25/52

Copy to: Admin. Reading File
Operating Committee (2)
Mr. Norton, G-232 GSA Bldg.
Mr. Needleman, 1347
Docket File
Mr. Houk

Bucky Mine

DMEA 2581

from J. J. Norton

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

June 20, 1952

Memorandum

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

From: A. J. Kauffman, Jr.
Rare and Precious Metals Branch

Subject: Approval of DMEA #2581, Beryllium Mining Co. Inc., 920 2nd Avenue, Seattle 4, Washington.

Transmitted herewith is subject application, DMEA #2581, which is recommended by this office for certification, to the field team, as an exploration project.

These properties are known to contain potential concentration of beryl, columbite-tantalite, and mica. The Bucky Lode pegmatite is the largest beryl deposit in Colorado and has been mined intermittently in recent years. The other beryl-deposits are smaller and probably contain smaller quantities of strategic materials.

The reserves of the properties in question as estimated recently by the Geological Survey are sufficient to warrant further investigation by means of adequate sampling and trenching.

A. J. Kauffman, Jr.

Attachment

DEPARTMENT OF THE INTERIOR
Bureau of Land Management
Division
JUN 23 1952

Form MF-103
(Revised June 1951)

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION

Budget Bureau No. 42-R1035.1.

MF-103 Should Be Filed With General Technical Data Form MF-100

APPLICATION FOR AID FOR AN EXPLORATION PROJECT PURSUANT TO MINERAL ORDER 5, UNDER DEFENSE PRODUCTION ACT OF 1950

Not To Be Filled in by Applicant

Docket No. DMEA-2581
Metal or Mineral
Date Received 6-12-52
Amount $
Participation (Government %)

BERYLLIUM MINING CO. INC.
920 - 2nd Avenue
Seattle 4, Washington

Name and address of applicant

Date April 1952

If you have already filed MF-100, give date filed ....., type of assistance requested .....,

DMA Docket Number (if available) .....

INSTRUCTIONS

Read Mineral Order 5, Regulations Governing Government Aid in Defense Projects, before completing this application. Submit four copies each, of the signed application form, General Technical Data Form MF-100, and answers to questions as specified, to Defense Minerals Administration, Department of the Interior, Washington 25, D. C., or to the nearest field executive office thereof, with your name and address on each sheet of the application and all accompanying papers. If you have previously filed MF-100, it is not necessary to file it again. However, you should indicate in space provided above the type of assistance previously applied for (loans, procurement contracts, etc.) and DMA Docket Number, if available. *When a question is inapplicable it should be so stated in the form.* Additional sheets should be attached in answering any questions or in supplying additional information. IF YOU CANNOT ANSWER A QUESTION, SO STATE.

1. (*a*) Give a description of the real property that will be in any way involved in the exploration project, including any existing mine or operating property.

   (*b*) If you are not the owner of the property, submit a copy of the lease, purchase option, or other agreements under which you are authorized to operate the property with each copy of your application.

   (*c*) Give the legal description of the exact parcel, plot, or area upon which the exploration is to be conducted.

   NOTE: (1) If both areas are the same, so state. The only obligation to repay the Government is from the net earnings from any commercial discovery made in the area specified in (*c*) above in which the exploration is to be conducted, and the expenditure of funds which may be charged as costs of the project must be limited to that area or to work necessary to perform the exploration in that area.

   (2) If applicant is not the owner of the property or if there are any liens or encumbrances against the property, copy of agreements of claimants, lienors, encumbrances, and lessors subordinating their interests in the property to the interest of the Government under the Exploration Project Contract will be required for attachment to the Contract.

2. (*a*) What metals or minerals do you expect to find?

   (*b*) Furnish statement of the geologic features of your property, giving type of ore deposit and reasons for expecting to find commercial ore bodies. Illustrate with maps or sketches. If you have a geologic or engineering report, or assay maps showing width and grade, please send them with application, stating whether or not you wish to have them returned.

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
JUN 12 1952

The information requested in questions 3, 4, 5, 6, 7, 8, and 9 below should be answered specifically and in detail, as this information will be attached to and incorporated as part of the Exploration Project Contract, if such contract is entered into with you by the Government.

ANSWER EACH QUESTION ON SEPARATE SHEETS OF PAPER AND SUBMIT A COPY OF EACH ANSWER FOR EACH COPY OF YOUR APPLICATION.

3. (*a*) Describe fully the proposed work and give the total cost of the project.

   (*b*) State the time required to start the project and to complete it.

4. Submit a map or sketch of the property involved showing a plan (and cross section, if needed) of the present mine workings and the *location of the proposed exploration work* as related to geologic features, such as contacts, veins, ore-bearing beds, etc.

5. Furnish an itemized list of existing facilities, buildings, installations, and fixtures with a statement of the cost of any necessary rehabilitation or repairs to put into useful and operable condition.

6. Furnish a detailed list of additional facilities, buildings, and fixtures to be purchased, installed, or erected by you, with the estimated cost of each item.

7. Furnish a detailed list of operating equipment, separated into items to be—

   (*a*) Rented

   (*b*) Purchased

   (*c*) Furnished by you

   with the rental, purchase price, or depreciation of each item, as the case may be, to be charged as a cost of the project.

8. Furnish an itemized schedule of labor, by numbers and classes (miners, muckers, etc.) and of supervisors by numbers and positions, with the maximum wages or salaries to be paid to each.

9. Furnish a detailed list with estimated cost of each item for materials, supplies, engineering, assaying, accounting, power, water, utilities, and any other items not provided for above.

10. (*a*) How much are you prepared to invest in the proposed project?

    (*b*) Is this amount sufficient to pay your part of the cost of the project, in accordance with the regulations on Government participation (Sec. 9 of MO–5)?

11. State any conditions or circumstances regarding the property not sufficiently brought out by the foregoing questions.

CERTIFICATION

The undersigned company, and the official executing this certification on its behalf, hereby certify that the information contained in this form and accompanying papers is correct and complete to the best of their knowledge and belief.

BERYLLIUM MINING CO. INC.
(Name of company)

By J. R. Wernbinger
(Signature of authorized official)

April 1952
(Date)

President
(Title)

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—64067-2

Form MF - 103 - DEFENSE MINERALS ADMINISTRATION
APPLICATION FOR AID FOR AN EXPLORATION PROJECT

BERYLLIUM MINING CO. INC., 920 - 2nd Avenue, Seattle 4, Washington

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1. (a) The real property involved in this exploration project consists of the four claims held by the Beryllium Mining Co., Inc. under Contract of Sale, copy of which is attached hereto, said claims referred to hereinafter as the Bucky Lode, Rhona Marie Lode, Sally Lode, and Pug Lode; and the two claims held by the Beryllium Mining Co., Inc. under a Mining Lease, copy of which is attached hereto, said claims referred to hereinafter as the South Slope No. 1 Lode, and the South Slope No. 2 Lode.

   (b) See attached copies of Contract of Sale, and Mining Lease.

   (c) The area upon which the exploration is to be conducted, consists of the same six lode claims referred to in (a) above, said area being situate in the Gold Brick Mining District, Section 22, Township 50N., Range 3E N.M.P.M., Gunnison County, Colorado, and recorded in the books at the Gunnison County Courthouse, Gunnison, Colorado, as follows:

Bucky Lode	Book 255, Page 340
Rhona Marie Lode	Book 255, Page 375
Pug Lode	Book 255, Page 375
Sally Lode	Book 260, Page 102
South Slope No. 1 Lode	Book 260, Page 104
South Slope No. 2 Lode	Book 260, Page 104

   This property is also referred to as "New Anniversary Pegmatite". See U.S. Bureau of Mines map No. 2500-4-C, Location Map, Quartz Creek District, Gunnison County, Colorado. (Not available for inclusion with this application)

2. (a) The exploration project, including core drilling, sampling, assaying, and trenching, is expected to prove the existence of deep seated and shallow sub-surface mineralized zones carrying substantial beryl, columbite-tantalite, and mica. Since the completion of the areal mapping by the U.S.G.S., and the core-drilling by the U.S.B.M., one zone was discovered, from which 20 tons of beryl and 73 tons of mica was mined, and another zone from which 635 lbs. of columbite-tantalite was mined. Mining in the latter zone was discontinued in late December, due to the unusually heavy snow and high winds which made the open cut mining almost impossible, but additional columbite-tantalite is showing, and appears to be dipping down deeper into this zone. The core drilling will also be used to determine the depth and continuity of the clean "graphic granite" zones, as well as to provide means for systematically sampling and assaying the drilled areas for gold which was first discovered in this deposit almost two years ago.

   Though neither the graphic granite nor the gold could be considered strategic minerals, it is a well known fact that in order to mine profitably for Beryl, Columbite-Tantalite, etc., the operator must be able to dispose of large volumes of lower grade materials, at either

a small profit, or even at cost. However, based on prospective sales of graphic granite at a price that would allow a profit, plus the encouraging gold values found in earlier assays (See General Technicolor Data, Item 18) the disposal of the large tonnages of otherwise waste material, at a profit, seems likely. The recently reactivated mill of the Carter Mine, a few miles from these operations, would probably be able to handle any of the gold separation necessary. Therefore the production of a commercial quantity of gold from the pegmatite, would be a means toward an end, in greatly increasing the production of the scarce and critical minerals.

(b) The property involved in this exploration project lies in the northern and western portion of a large pegmatite dike, approx. 4,000 feet long and 2,500 feet wide, running northwest-southeast. This property covers the area in which most of the major exposed quartz cores lie. Based on findings during the past three years of operation, it is believed that additional commercial ore bodies containing beryl, columbite-tantalite, and mica will be discovered through this diamond drill exploration. Open cut mining during this time has shown definite evidence of a lateral displacement in a southerly direction, indicating that the apparently shallow surface zones are but a sheared portion of the true zone continuing on to greater depths to the north and northeast. On other portions of the dike, large areas are void of any sagebrush or other vegetation, indicating the possible existence of acid rock quartz formations beneath the surface, inhibiting the growth of such vegetation.

Finding the deep seated zones that are believed to exist, may prove the feasibility of driving a low level tunnel in the valley, to tap these zones, and mining along the entire contact to remove the minerals sought after, in the event that the gold values do not prove to be disseminated throughout the dike, and of sufficient value to warrant open pit mining of the entire mass. Though a pegmatite is not ordinarily considered a carrier of commercial gold values, the fact that this property is located in and adjacent to rich gold country (See General Technical Data, Item 7b) coupled with the fact that encouraging gold values have been found on the surface and at depth, suggests interesting possibilities. For additional details refer to General Technical Data, Item 18. See also, attached maps. For other references see U.S. Bureau of Mines maps No. 2500-5-B, Topographic and Geologic Map, New Anniversary Pegmatite, and No. 2500-6-F, Geologic Sections A-A and B-B, New Anniversary Pegmatite. (Not available for inclusion with this application)

3. (a) Proposed work under the exploration project consists of drilling approx. 2,500 lineal feet of core holes, systematically placed to provide a true cross-section of the sub-surface zone structures, and to include also, such exploration trenches and cuts as are deemed necessary to further explore and delineate the contacts near the surface.

Approx. 2,000 feet of core holes would be placed mainly in those areas showing surface indications favorable to the carrying of beryl and columbite-tantalite, and approx. 500 feet of core holes would be placed in other areas of the property to determine depth and quality of the graphic granite, and to explore the value of the gold bearing materials. Unless the general plan is altered by findings from any of the core holes, making it advisable to group additional core holes close by, a total of ten (10) to fourteen (14) holes is planned, divided over the claims as follows:

Bucky Lode	5	Sally Lode	1 to 2
Pug Lode	1	So. Slope #1 Lode. . . .	1 to 2
Rhona Marie Lode .	1 to 2	So. Slope #2 Lode. . . .	1 to 2

(See Exhibit "A" in General Technical Data, Item 2.)

In addition to the foregoing drilling, trenching, sampling, and assaying, the storage building and repair shop destroyed by heavy snow will be rebuilt, and some of the operating equipment repaired or replaced. The existing Caterpiller D4 Tractor and bulldozer will be overhauled, and put into a more useful condition to handle the jobs of trenching, hauling compressor and drilling rig into the more inaccessible areas without the cost of building access roads, maintain existing roads, etc. A new compressor will be purchased, to replace the existing old style, steel wheel unit. The new compressor (Ingersoll-Rand GR105) is chosen for its economy of operation and lighter weight, making it possible to tow this two wheel, rubber tired unit behind the tractor, to places that would otherwise require the laying of costly airline for distances of several hundred yards, and the continual shifting of this airline from place to place, as trenching was completed. A used Jeep will also be purchased, and fitted with fuel and servicing tanks, so that the operating equipment such as compressor, drill rig, bulldozer, etc. can be readily fueled each day, and serviced as necessary without undue delay. Total cost of the project, as planned, will be approx. $50,000.00

(b) As soon as the exploration funds are made available, and the project approved, the drilling contractor (Boyles Brothers or Minerals Exploration) will be so advised, and preparations made to start the drilling. Reconstruction of the collapsed building can be started at the same time, as well as the overhaul of the Caterpillar tractor. Priorities will be required to obtain the new air compressor immediately, as well as repair and replacement parts for the tractor, so that no unnecessary delay will ensue in getting this phase of operations under way. Barring any major mishaps or unforseen contingencies, the time required for the entire project would be approx. 10 months from date active operations are started, though every effort will be made to complete the work in even less time, to take advantage of the better weather.

4. See Exhibits "A" and "B", General Technical Data, Item 2; and Exhibit "C", General Technical Data, Item 18.

5. Existing buildings with cost of necessary rehabilitation and repairs, are as follows:

Shop and Storage Building: - Present building smashed by heavy snow cover, on February 2, 1952. To be rebuilt on same site, of cinder block construction, using any of the undamaged timbers from collapsed structure. Building to be enlarged from present 22x30 feet, to 22x40 feet, to provide separate room for storage of supplies, and to allow sufficient room to overhaul and repair any of the bulky equipment. $ 2,000.00

6. No additional facilities, buildings, or fixtures to be purchased.

7. (a) Operating equipment to be rented: -

Air Compressor: Ingersoll-Rand, Model 105 Gyro-flow compressor to be rented from Colorado Builders Supply Co. of Denver, for an estimated 10 months @ $150.00 per month, plus transportation charges of $54.22 each way, from lessors place of business to mine, and return.

Total rent	$ 1,500.00	
Transportation	108.44	$ 1,608.44

(b) No operating equipment to be purchased.

Diamond drill contract to be let: -

Proposed drilling of 2,500 feet of core hole to be done by Boyles Brothers Drilling Company of Salt Lake City, Utah, low bidder, as per attached photostats of bids. Inasmuch as the Bureau of Mines has recommended that NX rod (2 1/8 inch core) be used in this type of formation, due to the difficulty in obtaining satisfactory core in the smaller sizes, all figures herein are based on the NX rod.

Drilling: 2,200 feet of NX core hole @ $7.50	$16,500.00	
Drilling: 300 feet of NC casing hole @ $8.10	2,430.00	
Cementing: Estimated time and materials	500.00	
Reaming: NX to NC - 250 feet @ $2.00	500.00	
Mobilization and demobilization	800.00	$20,730.00

(c) Operating equipment to be furnished: -

Tractor-Bulldozer: The applicant's Caterpillar D4 tractor, Serial No. 7J4618W, to be overhauled and

fitted as outlined in Item 9, and devoted to the project without cost.

Fuel and Service Truck: The applicant's 1942 Dodge 4x4 weapons carrier to be overhauled and fitted as outlined in Item 9, and devoted to the project without cost.

Dump Truck: The applicant's 1948 Chevrolet 2 ton truck to be used where and as deemed necessary by the company manager, without cost to the project.

All other equipment and facilities, including cabins, jackhammers, air hoses, light plant, etc., will also be devoted to the project without cost.

8. Inasmuch as tunnels are deemed unnecessary to carry out the exploration work proposed, labor will consist of a miner-bulldozer operator, acting also in the capacity of a working group-leader; a machine man for drilling and blasting, and a miner-caretaker, whose main function will be to guard against theft of materials and supplies, especially during the non-working hours, but who is thoroughly experienced in mining, and will be available to jump in and fill any gaps that might be created through absenteeism. The miner-caretaker will live in one of the cabins at the mine camp. All the proposed men have been with the applicant, for 1 to 3-1/2 years. Due to the comparatively small scope of the project, employees are chosen, as in the past, for their versatility rather than specific skills, in order to reduce the overall number of employees to be carried on the payroll.

Company manager's time to be devoted fully to project in supervision, bookkeeping, and operational capacity, and to be charged for, as a cost of the project, at the rate of $500.00 per month.	$ 5,000.00
Miner-bulldozer operator to be paid a maximum wage of $2.00 per hour, for approx. 43 weeks, 40 hours per week.	$ 3,440.00
Machine man to be paid a maximum wage of $1.50 per hour, for approx. 43 weeks, 40 hours per week	$ 2,580.00
Miner-caretaker to be paid a maximum salary of $50.00 per week, for approx. 43 weeks	$ 2,150.00

9. Other project costs: -

Overhaul: D4 tractor to have Diesel motor overhauled, grouser pads built up, new radiator core and starter

motor installed, and existing cable controlled bulldozer replaced with a hydraulic angledozer, to provide for more trouble free operation, greater climbing ability, and better penetration power in blasted rock.		$ 3,445.00
Overhaul: The Dodge 4x4 weapons carrier to have front wheel drive axle replaced, transfer case replaced, carburetor replaced, motor tuned, brakes relined and repaired, chassis fitted with diesel fuel and gasoline tanks for fueling isolated equipment, and racks for holding necessary greases, grease guns, wrenches, etc., for servicing and repairing equipment in the field.		$ 425.00
Supplies:		
2,150 gallons of Diesel fuel @ $.162	$ 348.30	
4,300 gallons of gasoline @ $.254	1,092.20	
2,000 pounds of 45% dynamite @ $21.93/C	438.60	
1,000 blasting caps @ $2.30/C	23.00	
3,000 feet of Black Monarch Fuse @ $1.30/C	39.00	
100 Timken starter bits @ $.62	62.00	
100 feet of 7/8 inch hex drill steel @ $.95	95.00	
500 quarts of lube oils @ $.28	140.00	
200 lbs. of greases @ $.18	36.00	
Miscellaneous small tools	250.00	
Office Supplies	150.00	$ 2,674.10
Assaying:		$ 1,000.00
Accounting: Outside accounting and auditing, other than accounting and bookkeeping done by company manager.		$ 500.00
Engineering: Any such engineering as may be required from time to time, to assist in evaluating drilling and trenching results, estimating reserves, and compiling final geological report at end of project.		$ 1,000.00
Miscellaneous:		
Payroll taxes	$ 197.55	
State Compensation Insurance	685.00	
Freight and authorized travel	750.00	
Maintenance and repair	500.00	
Unforeseen contingencies	1,000.00	$ 3,132.55
TOTAL		$49,685.09

BERYLLIUM MINING CO. INC., 920 - 2nd Avenue, Seattle 4, Washington

10. (a) Applicant is prepared to invest at least $4,968.51 in the proposed project.

(b) This amount is sufficient to pay the applicant's 10% share of the cost of the project, in accordance with the regulations on Government participation. (Section 9 of M. O. -5).

11. Referring to Exhibit "C" (General Technical Data, Item 18), attention is called to the fact that the cross-sections shown are only approximate. The very accurate maps and drawings made by the U.S.G.S. and the Bureau of Mines - not yet available to applicant - will show the essential details in their correct relationship.

But it is thought that they, too, will prove, as shown in Exhibit "C", that it would have been premature to base final conclusions on the basis of the findings secured from only two core-holes. At any rate, it seems obvious that a greater number of holes, more widely distributed, are needed to determine the areas favorable to the production of quantities of beryl and its associated critical minerals. It will be noted that Pit No. 1 produced 26 tons of beryl, while Pit No. 2 produced 20 tons and, incidentally, within an excavation of less than one-quarter that of Pit 1.

The location of the holes, as indicated in Exhibit "A" (General Technical Data, Item 2) was roughly determined by examination of surface showings compared with previously exposed areas, cuts, and pits that gave evidences of beryl. In this case, there could be no geometrical pattern of drilling holes but, rather, a sort of "feel your way" program. At any rate, in combination with the drilling program there should be carried on a systematic exploration as outlined in Item 2(b) including some investigation of geochemical, geobotanical, and biochemical guides. To the extent that the evidence thus gathered may serve to reduce the amount of drilling, the cost of making these special determinations might well be absorbed within the maximum indicated cost of drilling given in Item 7(b).

Within that general classification, it may also be advisable to include comparatively shallow geophysical examinations by means of the M-scope or similar apparatus.

All of which may well contribute to the solution of the puzzle of pegmatites. As stated by Cameron, et al, in "Internal Structure of Granite Pegmatites", p. 106: "Most of the data and observations available apply only to limited portions of pegmatite bodies, and information regarding the more completely exposed pegmatites is mostly qualitative, not quantitative."

BERYLLIUM MINING CO. INC., 920 - 2nd Avenue, Seattle 4, Washington

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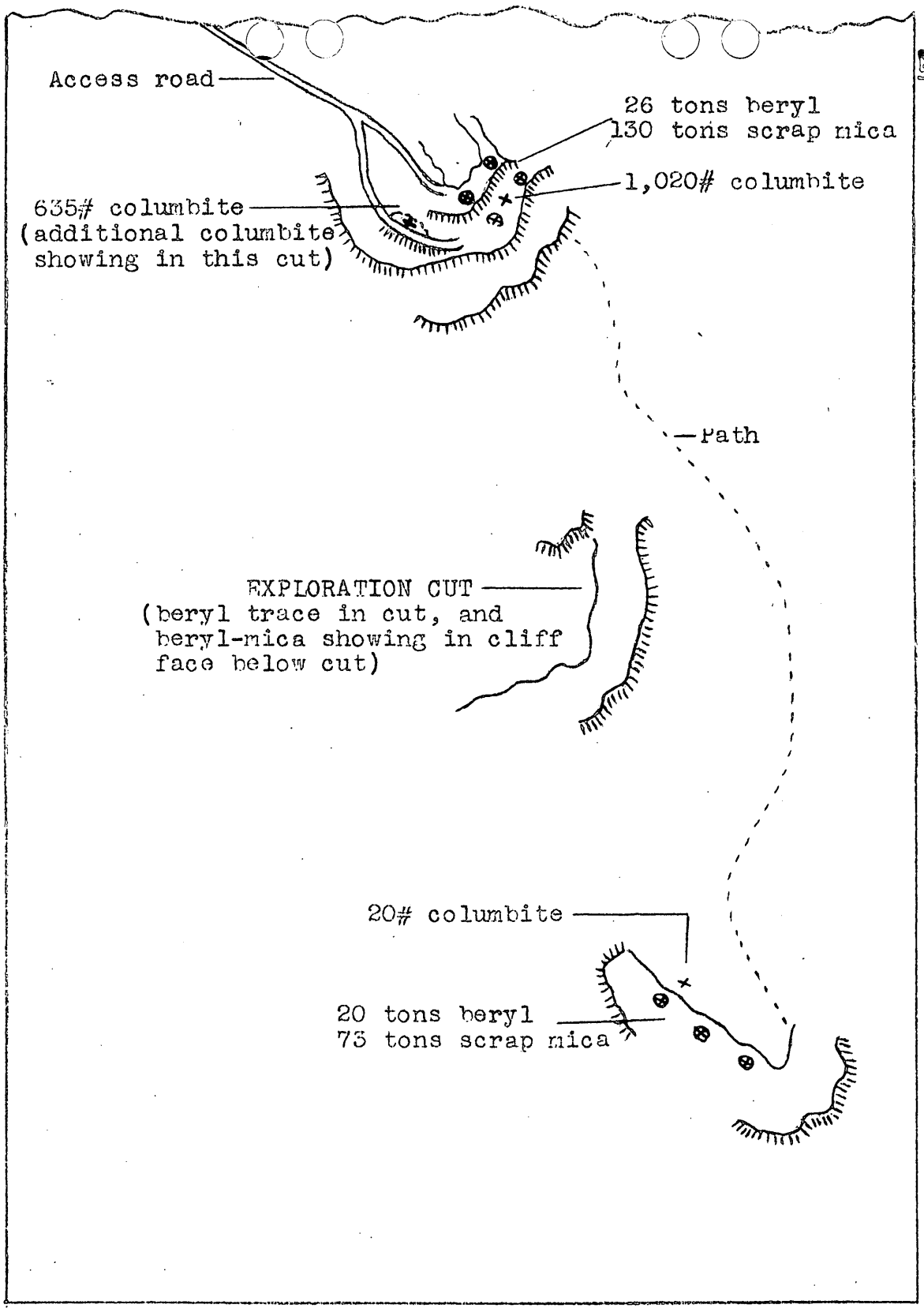
"In summary, investigations of pegmatites in various parts of the world have suggested several sources for the solutions which cause the formation of fracture fillings and replacement bodies, but information at hand is so limited that at present it is impossible to evaluate the importance of the sources. Several possibilities appear plausible at the present stage of pegmatite study, and there is little to be gained by advocating one as a general explanation. Replacement bodies and fracture fillings are a varied assemblage and it seems unlikely that a single explanation will account for all the members."

EXHIBIT "B"

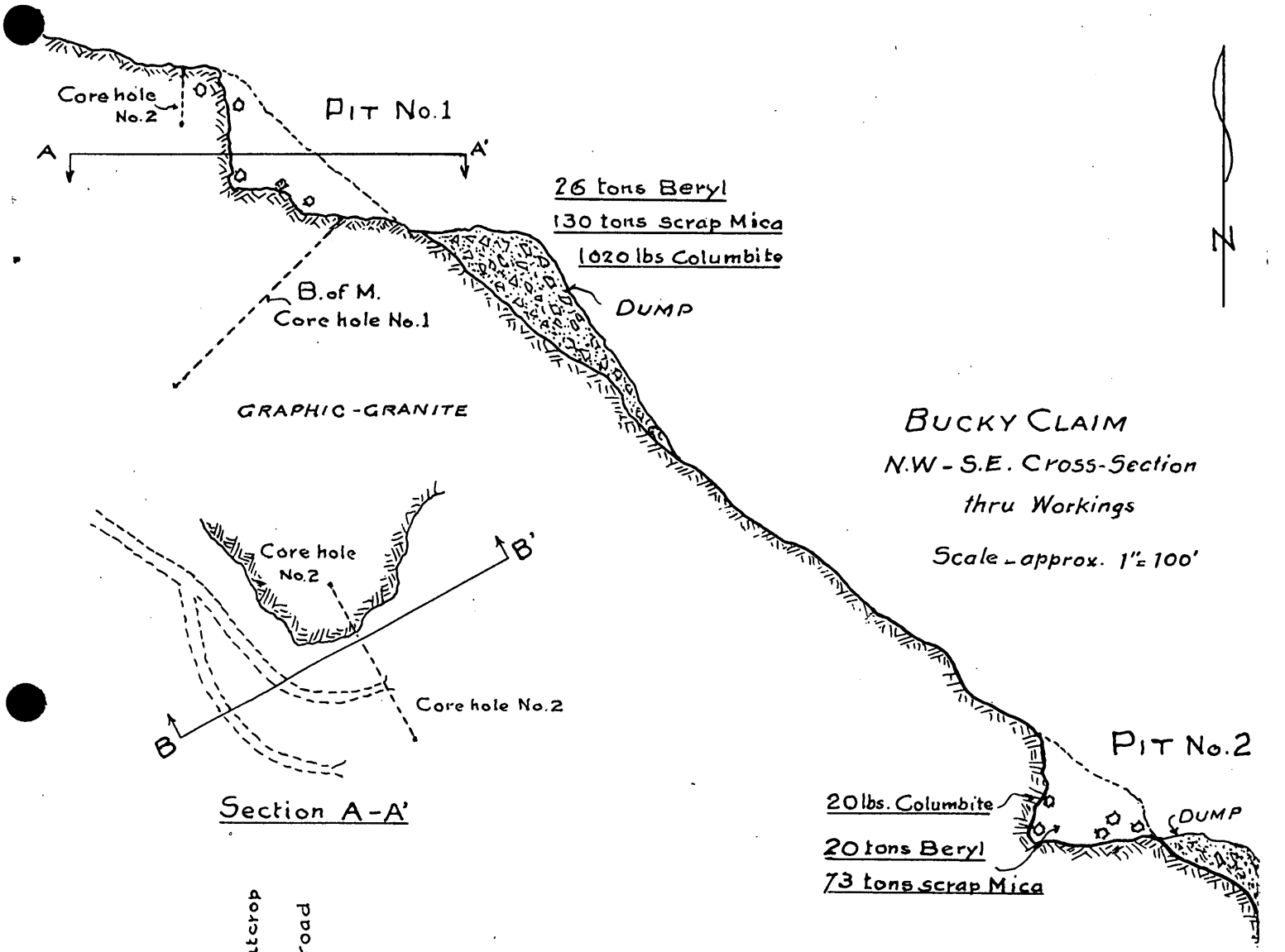


South portion of Bucky Claim showing principal workings as of December 31, 1951

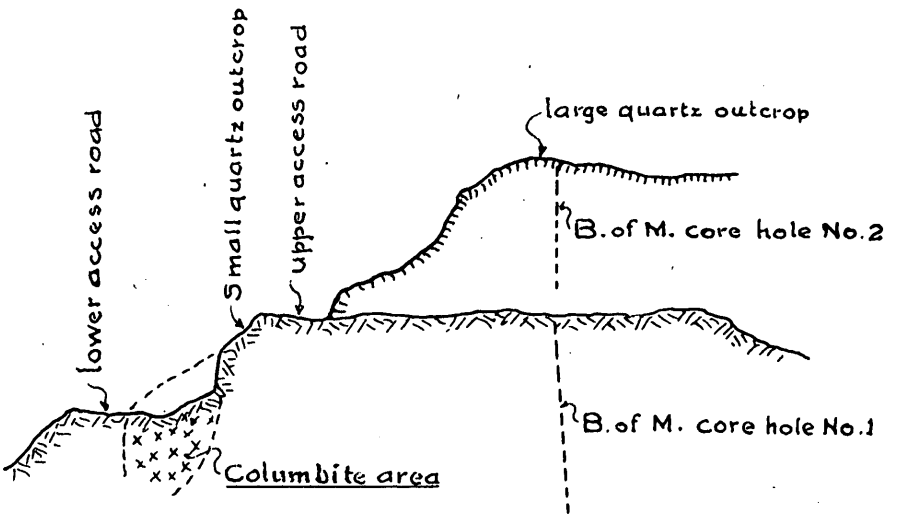
Scale: 1" to 100'

Beryllium Mining Co. Inc.
920 - 2nd Avenue
Seattle, Washington

EXHIBIT "C"



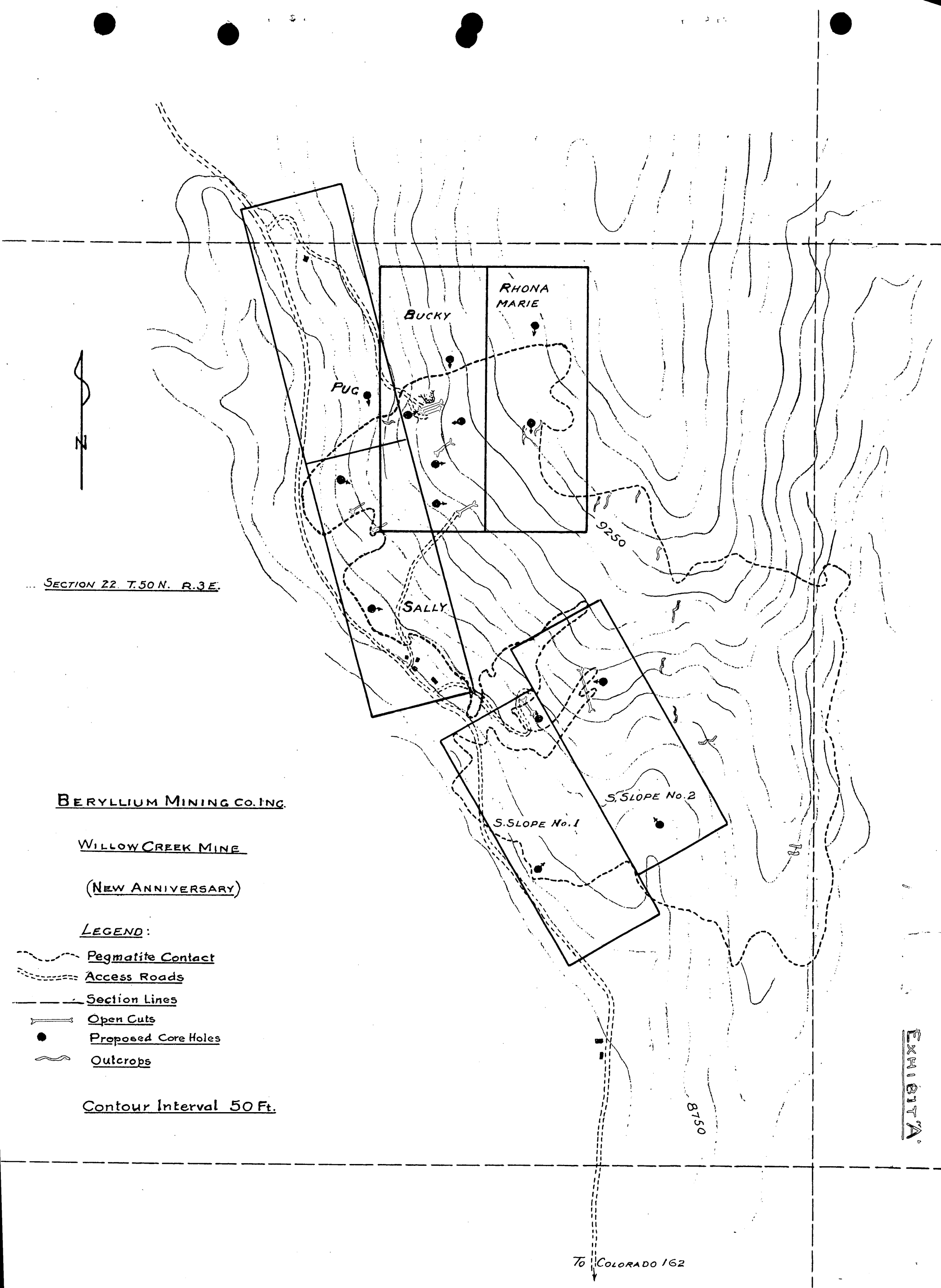
Section A-A'



Section B-B'

Note: Sections A-A' & B-B', not to scale; designed only to show relative locations of core-holes and exposed mineral areas

Beryllium Mining Co. Inc.
920 - 2nd Avenue
Seattle, Washington


SECTION 22 T.50 N. R.3 E.
BERYLLIUM MINING CO. INC.
WILLOW CREEK MINE
(NEW ANNIVERSARY)
LEGEND:
Pegmatite Contact
Access Roads
Section Lines
Open Cuts
Proposed Core Holes
Outcrops
Contour Interval 50 Ft.
N
BUCKY
RHONA MARIE
PUG
SALLY
S. SLOPE No. 1
S. SLOPE No. 2
9250
8750
TO COLORADO 162
EXHIBIT "A"

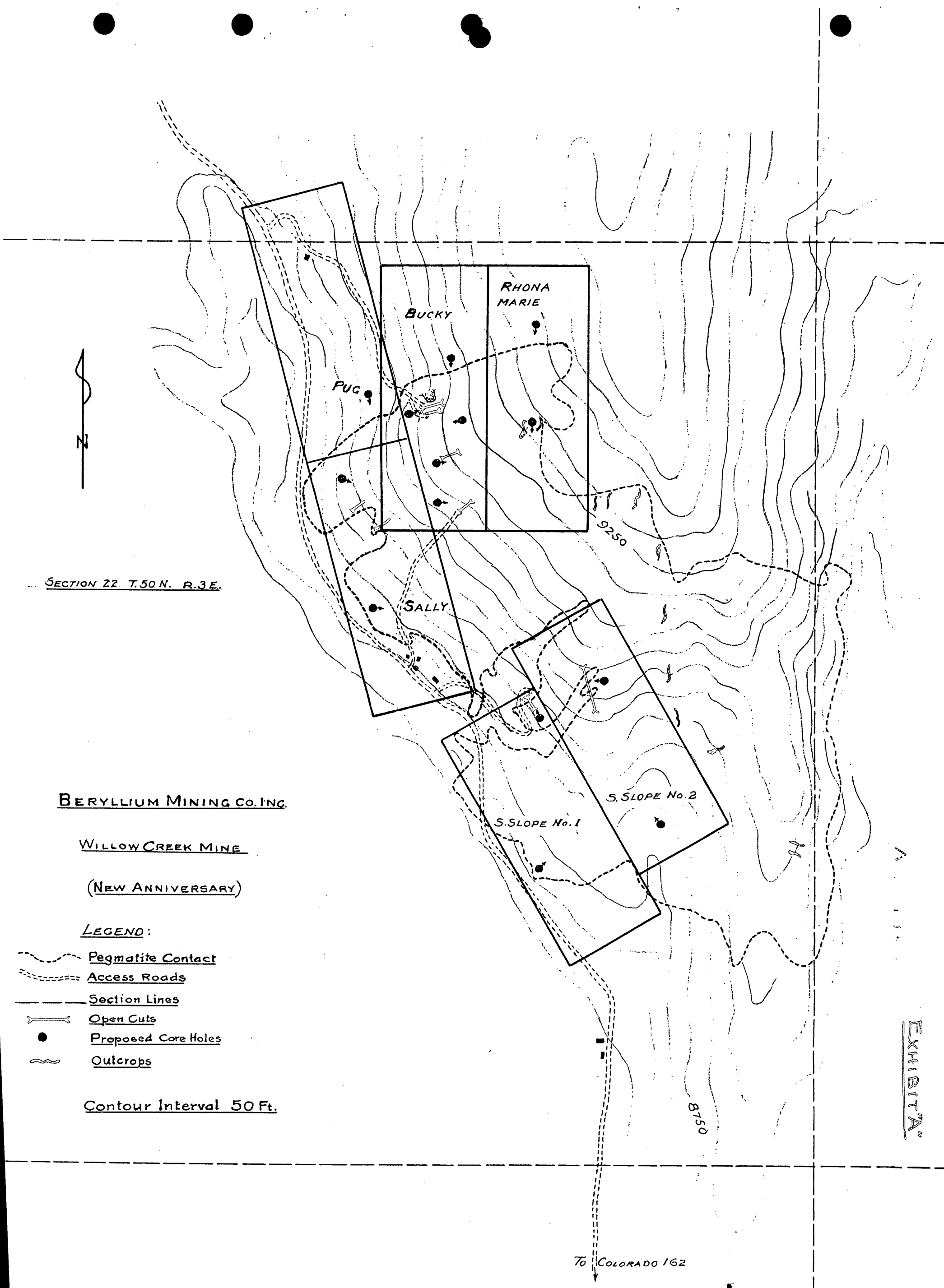
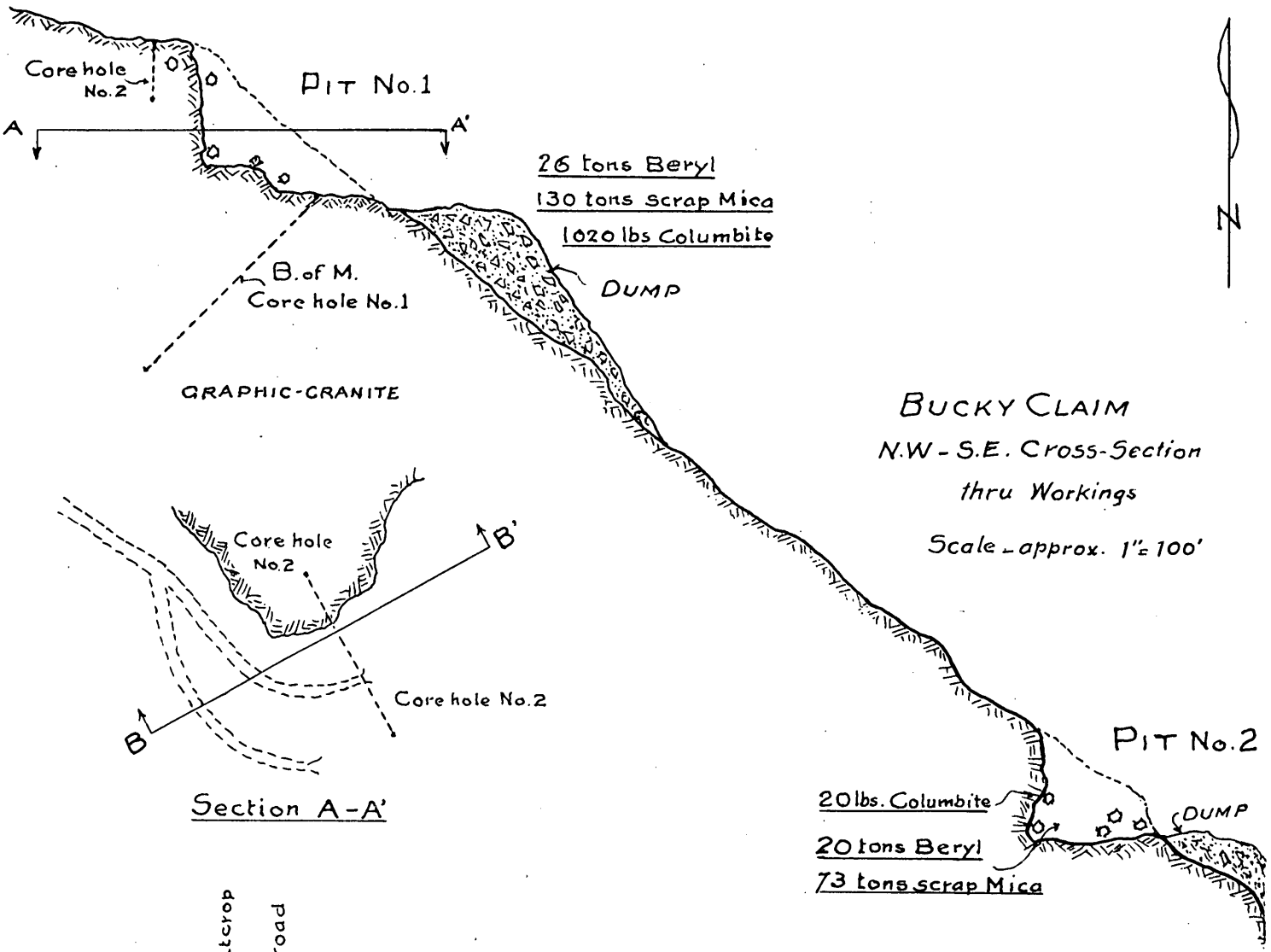
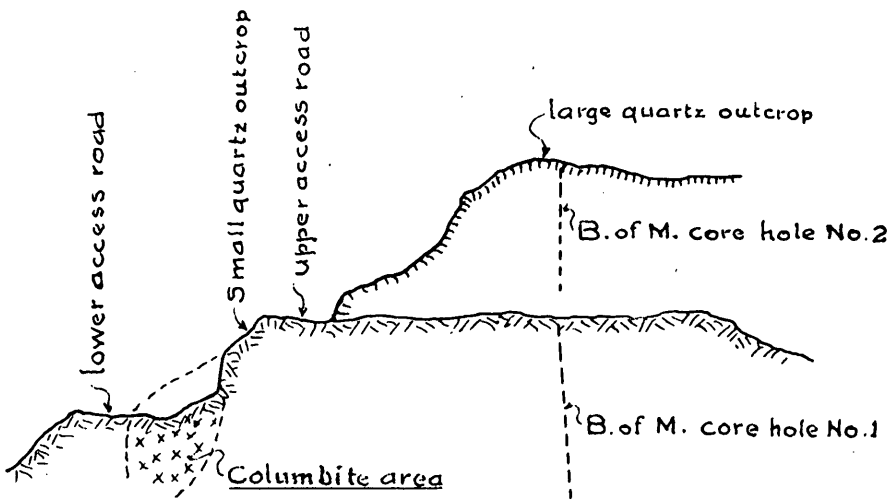

SECTION 22. T.50 N. R.3 E.
BERYLLIUM MINING CO. INC.
WILLOW CREEK MINE
(NEW ANNIVERSARY)
LEGEND:
Pegmatite Contact
Access Roads
Section Lines
Open Cuts
Proposed Core Holes
Outcrops
Contour Interval 50 Ft.
N
BUCKY
RHONA MARIE
PUG
SALLY
S. SLOPE No. 1
S. SLOPE No. 2
9250
8750
TO COLORADO 162
EXHIBIT "A"

EXHIBIT "C"



Section A-A'

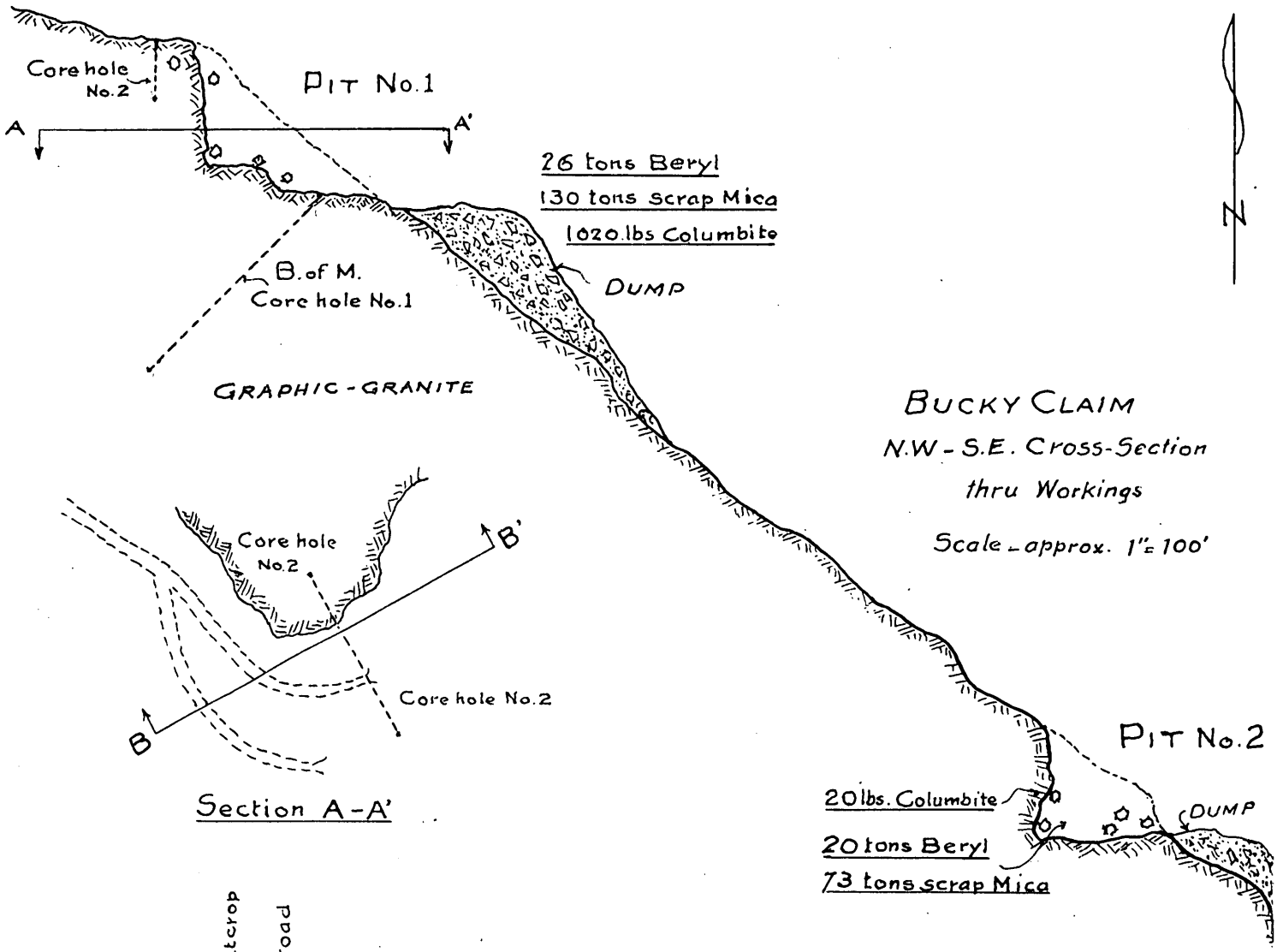


Section B-B'

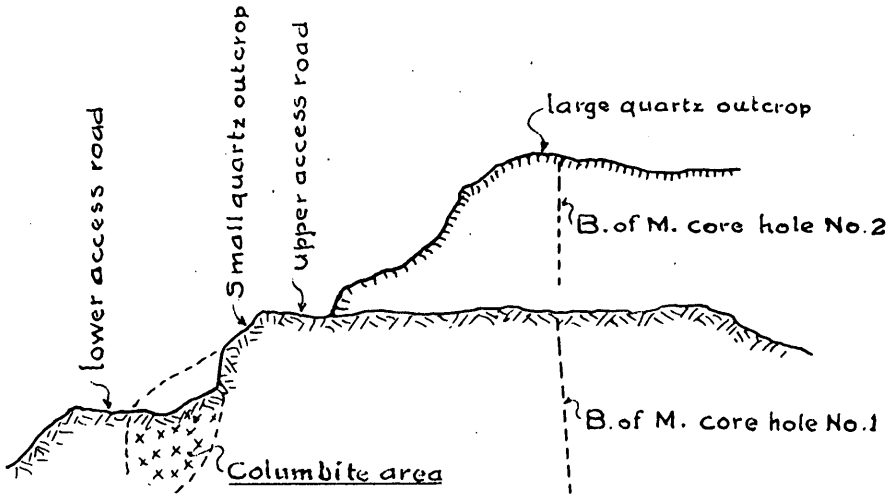
Note: Sections A-A' & B-B', not to scale; designed only to show relative locations of core-holes and exposed mineral areas

Beryllium Mining Co. Inc.
920 - 2nd Avenue
Seattle, Washington

EXHIBIT "C"



Section A-A'



Section B-B'

Note: Sections A-A' & B-B', not to scale; designed only to show relative locations of core-holes and exposed mineral areas

Beryllium Mining Co. Inc.
920 - 2nd Avenue
Seattle, Washington

IN REPLY REFER TO:

G-MD-PLW

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

June 19, 1952

Memorandum

REVIEW OF APPLICATION DMEA-2581 (Beryl, Columbite-Tantalite)

To: L. G. Houk, Non-Metallic Minerals Division, DMEA
From: P. L. Weis and J. J. Norton, U. S. Geological Survey
Applicant: Beryllium Mining Company, 920 2nd Avenue, Seattle 4, Washington.
Name of property: Willow Creek Mine (also known as New Anniversary and Bucky).
Location of property: Quartz Creek District, Gunnison County, Colorado.
Applicant's estimate of cost of project: $49,685.09.
Summary of applicant's proposal:

1. Repair buildings and equipment, and purchase additional equipment.
2. Drill 10 to 14 diamond drill holes totaling about 2500 feet in length.
3. Surface trenching.

Sources of information on applicant's property:

Staatz, M. H., and Trites, A. F., Geology of the Quartz Creek pegmatite district, Gunnison County, Colorado: Trace Elements Investigations Report 138, April 1952.

Comments:

1. Beryl has been found adjacent to large pods of quartz in a very large pegmatite on claims owned by the applicant. The richest and most productive deposit is the one that the applicant proposes to explore most thoroughly. This deposit has been mined extensively, and some drilling has already been done. M. H. Staatz made a thorough geologic study of this deposit, and he estimated reserves of 158 tons of beryl in 1770 tons of rock containing 8.9 per cent beryl. Some of these reserves have already been mined. Additional exploration of this deposit is not warranted because it has already been so well explored. that it should now be mined if it is profitable to do so. Further exploration is not going to make any difference in determining whether or not the deposit is mineable.
2. Exploration by trenching or adit work may be warranted in the vicinity of other quartz pods, which are not as well known as the one where most of the mining has been done. A suitable program, however, would be very much smaller than the extravagant proposal set forth by the applicant. Diamond drilling is not warranted.

3. The applicant is unduly optimistic if he expects to find deposits that are any richer than what he already has. It is surprising that he is not mining the deposit that is already known.

RECOMMENDATION:

Negotiate with applicant to determine whether it will be possible to come to agreement with him on a suitable exploration program. If so, refer the docket to the field team to work out a plan of exploration.

Paul L. Weis

P. L. Weis

J. J. Norton

J. J. Norton

BERYLLIUM MINING CO., INC.

920 Second Avenue ◆ MAin 2310

SEATTLE 4, WASH.

June 17, 1952

Mr. Robert E. Adams
Administrative Officer
Defense Minerals Exploration Administration
Washington 25, D. C.

Subject: DMEA-2581
Re: Exploration Loan
Willow Creek Mine

My dear Mr. Adams:

I wish to thank you for your notification dated the 13th concerning the filing of our loan application.

Am wondering whether the assignment thereof to the "Non-Metallic Minerals Division" can be correct.

Our principal production consists of Beryl and Columbite-Tantalite - all ores that are converted to a metal, respectively, Beryllium, Columbium, and Tantalum, or their oxides. The same are listed under the heading "Minor Metals", in the Bureau of Mines Mineral Yearbook.

Sincerely yours,

J. R. Wemlinger

J. R. Wemlinger, President

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
JUN 19 1952

DEFENSE MATERIALS PROCUREMENT AGENCY
WASHINGTON 25, D. C.

JUN 16 1952

DMEA -2581

Mr. C. O. Mittendorf
Administrator
Defense Minerals Exploration Administration
New Interior Building
Washington 25, D. C.

Dear Mr. Mittendorf:

For your information, there is attached a letter received from the Beryllium Mining Company, Inc., together with a copy of our reply. These letters are self explanatory.

Sincerely yours,

Howard I. Young
Deputy Administrator

Enclosures

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
JUN 18 1952

DEFENSE MATERIALS PROCUREMENT AGENCY
WASHINGTON 25, D. C.

JUN 16 1952

Mr. Charles A. Wemlinger
Vice President
Beryllium Mining Co., Inc.
Postoffice Box 276
Gunnison, Colorado

Dear Mr. Wemlinger:

Your letter of June 7 requesting that this office expedite processing of your application for exploration project aid has been referred to the Defense Minerals Exploration Administration, New Interior Building, Washington 25, D. C.

The Defense Materials Procurement Agency has nothing to do with the processing of contracts for exploration aid, but we feel sure that the DMEA will give full attention to your request for assistance.

Sincerely yours,

/Signed/ HOWARD I. YOUNG

Howard I. Young
Deputy Administrator

Mr. C. O. Mittendorf, DMEA

410

Young

BERYLLIUM MINING CO., INC.

Postoffice Box 276

Gunnison, Colorado

June 7, 1952

Mr. Howard I. Young, Deputy Administrator,
D. M. P. A.
General Services Building,
Washington 25, D.C.

Dear Mr. Young:

While discussing the small miner's problems, with Mr. Robert S. Palmer of the Colorado Mining Association, at a recent meeting of the newly formed Gunnison Area Mining Association, I mentioned that we had submitted an application for exploration project aid, Forms MF-100 and MF-103. This application was submitted within the past two weeks, through Mr. W. C. Broadgate, by the Seattle office of this company. However, Mr. Palmer suggested that I contact you directly, in regard to this application, in order to stress the importance of the project, and perhaps prevent an inadvertent sidetracking of the submitted data.

Our production of beryl, and particularly columbite, would seem to indicate a body of strategic minerals, of major importance, worthy of a much more thorough exploration program than we have heretofore been able to carry on. Complete production figures are given on Page 5, Form MF-100, and reference is made to our production of 1,034 lbs of columbite, in the Bureau of Mines Minerals Yearbook for 1949, Minor Metals Section, Page 13. In December 1951, we were forced to shut down our operations, due to the severity of the snowfall, after recovering an additional 620 lbs of columbite from a small pit. Full scale operations have not yet been resumed this year, but some digging in this same small pit, last week, has produced additional columbite, with favorable indications still showing.

As a result of the proposed exploration, we hope to prove the existence of deep-seated mineralized zones, that will warrant a larger mining operation than we have been able to carry on, to date, with a resultant increase in the production of the strategic and critical minerals. It is of the utmost importance that we get started on this project, if approved, as soon as possible, to take advantage of the weather.

Trusting that you may be able to assist us in getting an early decision on our application, and thanking you for your kind cooperation, I am,

Yours very truly,

Charles A. Wemlinger

Charles A. Wemlinger
Vice President in Charge of Operations

cc Mr. Robert S. Palmer, Executive Director, Colorado Mining Association.
Mr. J. R. Wemlinger, President, Beryllium Mining Co.,Inc.
920 Second Avenue, Seattle 4, Washington.

A3805 June 10, 1952

RECEIVED

RECEIVED

JUN 10 1 47 PM '52

G.S.A.
OFFICE OF ADMINISTRATOR

JUN 10 4 53 PM '52

DEFENSE MATERIALS
PROCUREMENT AGENCY

GENERAL SERVICES ADM
COMM. & RECORDS BR.

JUN 10 12 47 PM '52

Form MF-103
(Revised June 1951)

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION

Budget Bureau No. 42-R1035.1.

MF-103 Should Be Filed With General Technical Data Form MF-100

APPLICATION FOR AID FOR AN EXPLORATION PROJECT PURSUANT TO MINERAL ORDER 5, UNDER DEFENSE PRODUCTION ACT OF 1950

Not To Be Filled in by Applicant

Docket No. DMEA-2581
Metal or Mineral
Date Received 6-12-52
Amount $
Participation (Government %)

BERYLLIUM MINING CO. INC.
920 - 2nd Avenue
Seattle 4, Washington

Name and address of applicant

Date April 1952

If you have already filed MF-100, give date filed _____, type of assistance requested _____,

DMA Docket Number (if available) _____

INSTRUCTIONS

Read Mineral Order 5, Regulations Governing Government Aid in Defense Projects, before completing this application. Submit four copies each, of the signed application form, General Technical Data Form MF-100, and answers to questions as specified, to Defense Minerals Administration, Department of the Interior, Washington 25, D. C., or to the nearest field executive office thereof, with your name and address on each sheet of the application and all accompanying papers. If you have previously filed MF-100, it is not necessary to file it again. However, you should indicate in space provided above the type of assistance previously applied for (loans, procurement contracts, etc.) and DMA Docket Number, if available. *When a question is inapplicable it should be so stated in the form.* Additional sheets should be attached in answering any questions or in supplying additional information. IF YOU CANNOT ANSWER A QUESTION, SO STATE.

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
JUN 12 1952

1. (*a*) Give a description of the real property that will be in any way involved in the exploration project, including any existing mine or operating property.

   (*b*) If you are not the owner of the property, submit a copy of the lease, purchase option, or other agreements under which you are authorized to operate the property with each copy of your application.

   (*c*) Give the legal description of the exact parcel, plot, or area upon which the exploration is to be conducted.

   NOTE: (1) If both areas are the same, so state. The only obligation to repay the Government is from the net earnings from any commercial discovery made in the area specified in (*c*) above in which the exploration is to be conducted, and the expenditure of funds which may be charged as costs of the project must be limited to that area or to work necessary to perform the exploration in that area.

   (2) If applicant is not the owner of the property or if there are any liens or encumbrances against the property, copy of agreements of claimants, lienors, encumbrances, and lessors subordinating their interests in the property to the interest of the Government under the Exploration Project Contract will be required for attachment to the Contract.

2. (*a*) What metals or minerals do you expect to find?

   (*b*) Furnish statement of the geologic features of your property, giving type of ore deposit and reasons for expecting to find commercial ore bodies. Illustrate with maps or sketches. If you have a geologic or engineering report, or assay maps showing width and grade, please send them with application, stating whether or not you wish to have them returned.

The information requested in questions 3, 4, 5, 6, 7, 8, and 9 below should be answered specifically and in detail, as this information will be attached to and incorporated as part of the Exploration Project Contract, if such contract is entered into with you by the Government.

ANSWER EACH QUESTION ON SEPARATE SHEETS OF PAPER AND SUBMIT A COPY OF EACH ANSWER FOR EACH COPY OF YOUR APPLICATION.

3. (*a*) Describe fully the proposed work and give the total cost of the project.

   (*b*) State the time required to start the project and to complete it.

4. Submit a map or sketch of the property involved showing a plan (and cross section, if needed) of the present mine workings and the *location of the proposed exploration work* as related to geologic features, such as contacts, veins, ore-bearing beds, etc.

5. Furnish an itemized list of existing facilities, buildings, installations, and fixtures with a statement of the cost of any necessary rehabilitation or repairs to put into useful and operable condition.

6. Furnish a detailed list of additional facilities, buildings, and fixtures to be purchased, installed, or erected by you, with the estimated cost of each item.

7. Furnish a detailed list of operating equipment, separated into items to be—

   (*a*) Rented

   (*b*) Purchased

   (*c*) Furnished by you

   with the rental, purchase price, or depreciation of each item, as the case may be, to be charged as a cost of the project.

8. Furnish an itemized schedule of labor, by numbers and classes (miners, muckers, etc.) and of supervisors by numbers and positions, with the maximum wages or salaries to be paid to each.

9. Furnish a detailed list with estimated cost of each item for materials, supplies, engineering, assaying, accounting, power, water, utilities, and any other items not provided for above.

10. (*a*) How much are you prepared to invest in the proposed project?

    (*b*) Is this amount sufficient to pay your part of the cost of the project, in accordance with the regulations on Government participation (Sec. 9 of MO–5)?

11. State any conditions or circumstances regarding the property not sufficiently brought out by the foregoing questions.

CERTIFICATION

The undersigned company, and the official executing this certification on its behalf, hereby certify that the information contained in this form and accompanying papers is correct and complete to the best of their knowledge and belief.

BERYLLIUM MINING CO. INC.
(Name of company)

By J. R. Wernlinger
(Signature of authorized official)

April 1952
(Date)

President
(Title)

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—64067-2

Form MF - 103 - DEFENSE MINERALS ADMINISTRATION
APPLICATION FOR AID FOR AN EXPLORATION PROJECT

BERYLLIUM MINING CO. INC., 920 - 2nd Avenue, Seattle 4, Washington

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1. (a) The real property involved in this exploration project consists of the four claims held by the Beryllium Mining Co., Inc. under Contract of Sale, copy of which is attached hereto, said claims referred to hereinafter as the Bucky Lode, Rhona Marie Lode, Sally Lode, and Pug Lode; and the two claims held by the Beryllium Mining Co., Inc. under a Mining Lease, copy of which is attached hereto, said claims referred to hereinafter as the South Slope No. 1 Lode, and the South Slope No. 2 Lode.

(b) See attached copies of Contract of Sale, and Mining Lease.

(c) The area upon which the exploration is to be conducted, consists of the same six lode claims referred to in (a) above, said area being situate in the Gold Brick Mining District, Section 22, Township 50N., Range 3E N.M.P.M., Gunnison County, Colorado, and recorded in the books at the Gunnison County Courthouse, Gunnison, Colorado, as follows:

Bucky Lode	Book 255, Page 340
Rhona Marie Lode	Book 255, Page 375
Pug Lode	Book 255, Page 375
Sally Lode	Book 260, Page 102
South Slope No. 1 Lode	Book 260, Page 104
South Slope No. 2 Lode	Book 260, Page 104

This property is also referred to as "New Anniversary Pegmatite". See U.S. Bureau of Mines map No. 2500-4-C, Location Map, Quartz Creek District, Gunnison County, Colorado. (Not available for inclusion with this application)

2. (a) The exploration project, including core drilling, sampling, assaying, and trenching, is expected to prove the existence of deep seated and shallow sub-surface mineralized zones carrying substantial beryl, columbite-tantalite, and mica. Since the completion of the areal mapping by the U.S.G.S., and the core drilling by the U.S.B.M., one zone was discovered, from which 20 tons of beryl and 73 tons of mica was mined, and another zone from which 635 lbs. of columbite-tantalite was mined. Mining in the latter zone was discontinued in late December, due to the unusually heavy snow and high winds which made the open cut mining almost impossible, but additional columbite-tantalite is showing, and appears to be dipping down deeper into this zone. The core drilling will also be used to determine the depth and continuity of the clean "graphic granite" zones, as well as to provide means for systematically sampling and assaying the drilled areas for gold which was first discovered in this deposit almost two years ago.

Though neither the graphic granite nor the gold could be considered strategic minerals, it is a well known fact that in order to mine profitably for Beryl, Columbite-Tantalite, etc., the operator must be able to dispose of large volumes of lower grade materials, at either

a small profit, or even at cost. However, based on prospective sales of graphic granite at a price that would allow a profit, plus the encouraging gold values found in earlier assays (See General Technicolor Data, Item 18) the disposal of the large tonnages of otherwise waste material, at a profit, seems likely. The recently reactivated mill of the Carter Mine, a few miles from these operations, would probably be able to handle any of the gold separation necessary. Therefore the production of a commercial quantity of gold from the pegmatite, would be a means toward an end, in greatly increasing the production of the scarce and critical minerals.

(b) The property involved in this exploration project lies in the northern and western portion of a large pegmatite dike, approx. 4,000 feet long and 2,500 feet wide, running northwest-southeast. This property covers the area in which most of the major exposed quartz cores lie. Based on findings during the past three years of operation, it is believed that additional commercial ore bodies containing beryl, columbite-tantalite, and mica will be discovered through this diamond drill exploration. Open cut mining during this time has shown definite evidence of a lateral displacement in a southerly direction, indicating that the apparently shallow surface zones are but a sheared portion of the true zone continuing on to greater depths to the north and northeast. On other portions of the dike, large areas are void of any sagebrush or other vegetation, indicating the possible existence of acid rock quartz formations beneath the surface, inhibiting the growth of such vegetation.

Finding the deep seated zones that are believed to exist, may prove the feasibility of driving a low level tunnel in the valley, to tap these zones, and mining along the entire contact to remove the minerals sought after, in the event that the gold values do not prove to be disseminated throughout the dike, and of sufficient value to warrant open pit mining of the entire mass. Though a pegmatite is not ordinarily considered a carrier of commercial gold values, the fact that this property is located in and adjacent to rich gold country (See General Technical Data, Item 7b) coupled with the fact that encouraging gold values have been found on the surface and at depth, suggests interesting possibilities. For additional details refer to General Technical Data, Item 18. See also, attached maps. For other references see U.S. Bureau of Mines maps No. 2500-5-B, Topographic and Geologic Map, New Anniversary Pegmatite, and No. 2500-6-F, Geologic Sections A-A and B-B, New Anniversary Pegmatite. (Not available for inclusion with this application)

3. (a) Proposed work under the exploration project consists of drilling approx. 2,500 lineal feet of core holes, systematically placed to provide a true cross-section of the sub-surface zone structures, and to include also, such exploration trenches and cuts as are deemed necessary to further explore and delineate the contacts near the surface.

Approx. 2,000 feet of core holes would be placed mainly in those areas showing surface indications favorable to the carrying of beryl and columbite-tantalite, and approx. 500 feet of core holes would be placed in other areas of the property to determine depth and quality of the graphic granite, and to explore the value of the gold bearing materials. Unless the general plan is altered by findings from any of the core holes, making it advisable to group additional core holes close by, a total of ten (10) to fourteen (14) holes is planned, divided over the claims as follows:

Bucky Lode	5	Sally Lode	1 to 2
Pug Lode	1	So. Slope #1 Lode. . . .	1 to 2
Rhona Marie Lode .	1 to 2	So. Slope #2 Lode. . . .	1 to 2

(See Exhibit "A" in General Technical Data, Item 2.)

In addition to the foregoing drilling, trenching, sampling, and assaying, the storage building and repair shop destroyed by heavy snow will be rebuilt, and some of the operating equipment repaired or replaced. The existing Caterpiller D4 Tractor and bulldozer will be overhauled, and put into a more useful condition to handle the jobs of trenching, hauling compressor and drilling rig into the more inaccessible areas without the cost of building access roads, maintain existing roads, etc. A new compressor will be purchased, to replace the existing old style, steel wheel unit. The new compressor (Ingersoll-Rand GR105) is chosen for its economy of operation and lighter weight, making it possible to tow this two wheel, rubber tired,unit behind the tractor, to places that would otherwise require the laying of costly airline for distances of several hundred yards, and the continual shifting of this airline from place to place, as trenching was completed. A used Jeep will also be purchased, and fitted with fuel and servicing tanks, so that the operating equipment such as compressor, drill rig, bulldozer, etc. can be readily fuelled each day, and serviced as necessary without undue delay. Total cost of the project, as planned, will be approx. $50,000.00

(b) As soon as the exploration funds are made available, and the project approved, the drilling contractor (Boyles Brothers or Minerals Exploration) will be so advised, and preparations made to start the drilling. Reconstruction of the collapsed building can be started at the same time, as well as the overhaul of the Caterpillar tractor. Priorities will be required to obtain the new air compressor immediately, as well as repair and replacement parts for the tractor, so that no unnecessary delay will ensue in getting this phase of operations under way. Barring any major mishaps or unforseen contingencies, the time required for the entire project would be approx. 10 months from date active operations are started, though every effort will be made to complete the work in even less time, to take advantage of the better weather.

4. See Exhibits "A" and "B", General Technical Data, Item 2; and Exhibit "C", General Technical Data, Item 18.

5. Existing buildings with cost of necessary rehabilitation and repairs, are as follows:

Shop and Storage Building: - Present building smashed by heavy snow cover, on February 2, 1952. To be rebuilt on same site, of cinder block construction, using any of the undamaged timbers from collapsed structure. Building to be enlarged from present 22x30 feet, to 22x40 feet, to provide separate room for storage of supplies, and to allow sufficient room to overhaul and repair any of the bulky equipment. $ 2,000.00

6. No additional facilities, buildings, or fixtures to be purchased.

7. (a) Operating equipment to be rented: -

Air Compressor: Ingersoll-Rand, Model 105 Gyroflow compressor to be rented from Colorado Builders Supply Co. of Denver, for an estimated 10 months @ $150.00 per month, plus transportation charges of $54.22 each way, from lessors place of business to mine, and return.

Total rent	$ 1,500.00	
Transportation	108.44	$ 1,608.44

(b) No operating equipment to be purchased.

Diamond drill contract to be let: -

Proposed drilling of 2,500 feet of core hole to be done by Boyles Brothers Drilling Company of Salt Lake City, Utah, low bidder, as per attached photostats of bids. Inasmuch as the Bureau of Mines has recommended that NX rod (2 1/8 inch core) be used in this type of formation, due to the difficulty in obtaining satisfactory core in the smaller sizes, all figures herein are based on the NX rod.

Drilling: 2,200 feet of NX core hole @ $7.50	$16,500.00	
Drilling: 300 feet of NC casing hole @ $8.10	2,430.00	
Cementing: Estimated time and materials	500.00	
Reaming: NX to NC - 250 feet @ $2.00	500.00	
Mobilization and demobilization	800.00	$20,730.00

(c) Operating equipment to be furnished: -

Tractor-Bulldozer: The applicant's Caterpillar D4 tractor, Serial No. 7J4618W, to be overhauled and

fitted as outlined in Item 9, and devoted to the project without cost.

Fuel and Service Truck: The applicant's 1942 Dodge 4x4 weapons carrier to be overhauled and fitted as outlined in Item 9, and devoted to the project without cost.

Dump Truck: The applicant's 1948 Chevrolet 2 ton truck to be used where and as deemed necessary by the company manager, without cost to the project.

All other equipment and facilities, including cabins, jackhammers, air hoses, light plant, etc., will also be devoted to the project without cost.

8. Inasmuch as tunnels are deemed unnecessary to carry out the exploration work proposed, labor will consist of a miner-bulldozer operator, acting also in the capacity of a working group-leader; a machine man for drilling and blasting, and a miner-caretaker, whose main function will be to guard against theft of materials and supplies, especially during the non-working hours, but who is thoroughly experienced in mining, and will be available to jump in and fill any gaps that might be created through absenteeism. The miner-caretaker will live in one of the cabins at the mine camp. All the proposed men have been with the applicant, for 1 to 3-1/2 years. Due to the comparatively small scope of the project, employees are chosen, as in the past, for their versatility rather than specific skills, in order to reduce the overall number of employees to be carried on the payroll.

Company manager's time to be devoted fully to project in supervision, bookkeeping, and operational capacity, and to be charged for, as a cost of the project, at the rate of $500.00 per month.	$ 5,000.00
Miner-bulldozer operator to be paid a maximum wage of $2.00 per hour, for approx. 43 weeks, 40 hours per week.	$ 3,440.00
Machine man to be paid a maximum wage of $1.50 per hour, for approx. 43 weeks, 40 hours per week	$ 2,580.00
Miner-caretaker to be paid a maximum salary of $50.00 per week, for approx. 43 weeks	$ 2,150.00

9. Other project costs: -

Overhaul: D4 tractor to have Diesel motor overhauled, grouser pads built up, new radiator core and starter

motor installed, and existing cable controlled bulldozer replaced with a hydraulic angledozer, to provide for more trouble free operation, greater climbing ability, and better penetration power in blasted rock.		$ 3,445.00
Overhaul: The Dodge 4x4 weapons carrier to have front wheel drive axle replaced, transfer case replaced, carburetor replaced, motor tuned, brakes relined and repaired, chassis fitted with diesel fuel and gasoline tanks for fueling isolated equipment, and racks for holding necessary greases, grease guns, wrenches, etc., for servicing and repairing equipment in the field.		$ 425.00
Supplies:		
2,150 gallons of Diesel fuel @ $.162	$ 348.30	
4,300 gallons of gasoline @ $.254	1,092.20	
2,000 pounds of 45% dynamite @ $21.93/C	438.60	
1,000 blasting caps @ $2.30/C	23.00	
3,000 feet of Black Monarch Fuse @ $1.30/C	39.00	
100 Timken starter bits @ $.62	62.00	
100 feet of 7/8 inch hex drill steel @ $.95	95.00	
500 quarts of lube oils @ $.28	140.00	
200 lbs. of greases @ $.18	36.00	
Miscellaneous small tools	250.00	
Office Supplies	150.00	$ 2,674.10
Assaying:		$ 1,000.00
Accounting: Outside accounting and auditing, other than accounting and bookkeeping done by company manager.		$ 500.00
Engineering: Any such engineering as may be required from time to time, to assist in evaluating drilling and trenching results, estimating reserves, and compiling final geological report at end of project.		$ 1,000.00
Miscellaneous:		
Payroll taxes	$ 197.55	
State Compensation Insurance	685.00	
Freight and authorized travel	750.00	
Maintenance and repair	500.00	
Unforeseen contingencies	1,000.00	$ 3,132.55
TOTAL		$49,685.09

BERYLLIUM MINING CO. INC., 920 - 2nd Avenue, Seattle 4, Washington

10. (a) Applicant is prepared to invest at least $4,968.51 in the proposed project.

(b) This amount is sufficient to pay the applicant's 10% share of the cost of the project, in accordance with the regulations on Government participation. (Section 9 of M. O. -5).

11. Referring to Exhibit "C" (General Technical Data, Item 18), attention is called to the fact that the cross-sections shown are only approximate. The very accurate maps and drawings made by the U.S.G.S. and the Bureau of Mines - not yet available to applicant - will show the essential details in their correct relationship.

But it is thought that they, too, will prove, as shown in Exhibit "C", that it would have been premature to base final conclusions on the basis of the findings secured from only two core-holes. At any rate, it seems obvious that a greater number of holes, more widely distributed, are needed to determine the areas favorable to the production of quantities of beryl and its associated critical minerals. It will be noted that Pit No. 1 produced 26 tons of beryl, while Pit No. 2 produced 20 tons and, incidentally, within an excavation of less than one-quarter that of Pit 1.

The location of the holes, as indicated in Exhibit "A" (General Technical Data, Item 2) was roughly determined by examination of surface showings compared with previously exposed areas, cuts, and pits that gave evidences of beryl. In this case, there could be no geometrical pattern of drilling holes but, rather, a sort of "feel your way" program. At any rate, in combination with the drilling program there should be carried on a systematic exploration as outlined in Item 2(b) including some investigation of geochemical, geobotanical, and biochemical guides. To the extent that the evidence thus gathered may serve to reduce the amount of drilling, the cost of making these special determinations might well be absorbed within the maximum indicated cost of drilling given in Item 7(b).

Within that general classification, it may also be advisable to include comparatively shallow geophysical examinations by means of the M-scope or similar apparatus.

All of which may well contribute to the solution of the puzzle of pegmatites. As stated by Cameron, et al, in "Internal Structure of Granite Pegmatites", p. 106: "Most of the data and observations available apply only to limited portions of pegmatite bodies, and information regarding the more completely exposed pegmatites is mostly qualitative, not quantitative."

BERYLLIUM MINING CO. INC., 920 - 2nd Avenue, Seattle 4, Washington

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"In summary, investigations of pegmatites in various parts of the world have suggested several sources for the solutions which cause the formation of fracture fillings and replacement bodies, but information at hand is so limited that at present it is impossible to evaluate the importance of the sources. Several possibilities appear plausible at the present stage of pegmatite study, and there is little to be gained by advocating one as a general explanation. Replacement bodies and fracture fillings are a varied assemblage and it seems unlikely that a single explanation will account for all the members."

---

material moves on to a second set of rolls where it is further reduced to ⅜-in. The final roll reduces the material to minus 6-mesh. All of the mica recovered from the screens is fed into a storage bin, and minus 6-mesh fines are stockpiled. Probably 90 to 95% of the mica is recovered as scrap mica by this method, the balance going through the fine screens. The mica mill shown above is being rebuilt to handle larger capacity and to improve recovery.

Marketing of Minerals

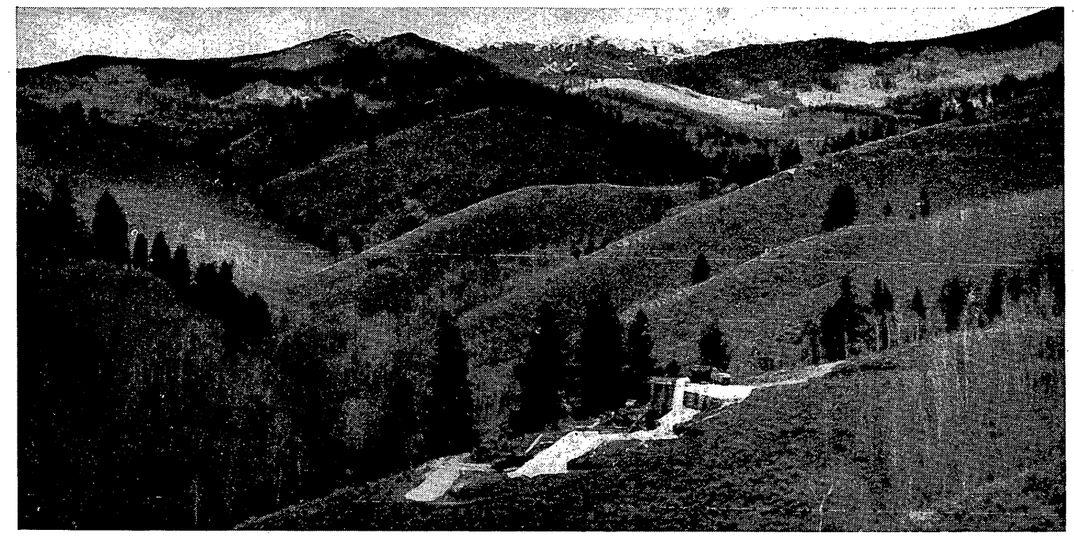
In the past, pegmatite dikes were often mined for just one mineral and then abandoned after that mineral became exhausted. Sometimes dikes like these were shut down and reopened several years later to be mined for an entirely different mineral. In recent years, the trend has been toward the recovery of as many commercial minerals at one time as possible. Much of the value of pegmatite minerals depends on the location of the operation with respect to a standard-gage railroad loading point. Consequently many pegmatite operations have been abandoned because low-value minerals such as feldspar could not be mined and shipped profitably.

In order to get at the rarer and more profitable minerals, considerable tonnages of dike material have to be moved, and the more of this tonnage which can be sold, the more profitable the operation. If a small pegmatite mine operator can mine enough mica and feldspar to carry the costs of operation, he can usually store his beryl and rare earths until he accumulated a good tonnage. However, most operators have to sell the beryl as fast as it is mined to stay in business. Consequently they do not get the higher prices that carload lots of beryl command.

Feldspar in a crude state does not bring a very high price, and unless it can be shipped to a nearby market at a low cost, it certainly cannot be counted on as a revenue producer. Even stockpiling of feldspar is costly and of questionable value despite the excellent quality of the mineral available.

A recent development at this property has been the opening of a new beryl deposit lower on the mountainside than that shown on p. 92. Here the beryl is much cleaner and harder than that found in the upper dike, where weathering has apparently taken its toll. Thus far, the new deposit has yielded about 15 tons of beryl.

Printed in U.S.A.



WIDE PEGMATITE DIKES, several thousand feet long cut across this part of Gunnison County, Colo., near Ohio City. Mica mill for recovery of scrap mica is shown in foreground. See detail of mill on next page.

Colorado Pegmatite Deposit Yields Beryl and Mica

White gashes on the mountainsides bordering Willow Creek in Gunnison County, Colo., mark the workings of pegmatite miners. The author presents a firsthand account of what goes on at these interesting mineral deposits bearing beryl, mica, feldspar, columbite, samarskite and other rare earth minerals.

CHARLES A. WEMLINGER
Vice-president in Charge of Operations
Beryllium Mining Co., Inc.
Gunnison, Colo.

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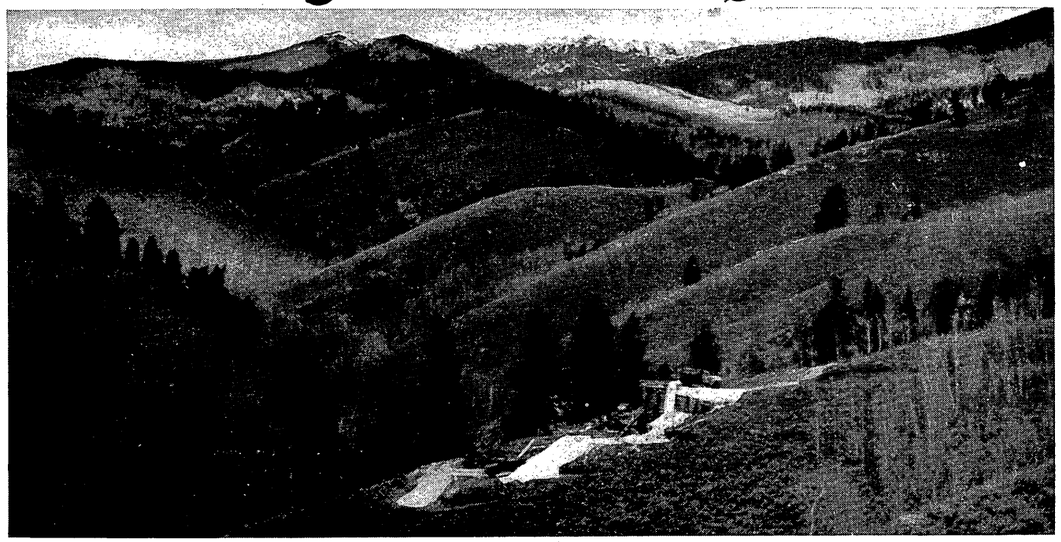

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CHARLES A. WEMLINGER
Vice-president in Charge of Operations
Beryllium Mining Co., Inc.
Gunnison, Colo.

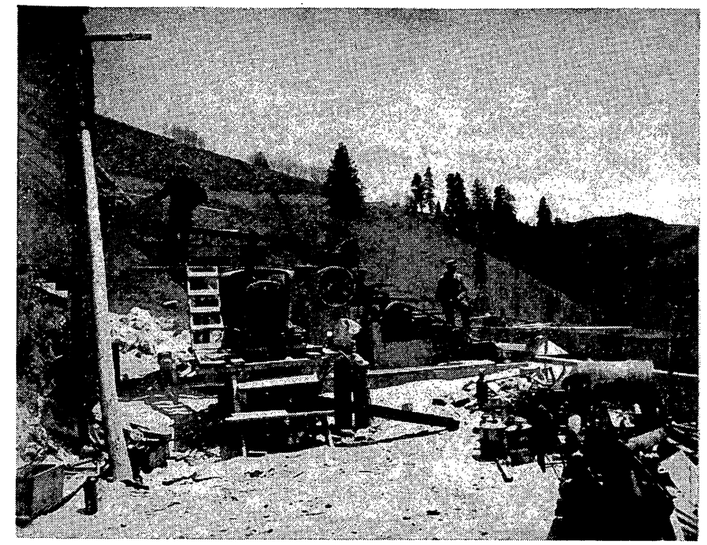
OPEN-PIT OPERATIONS of the Beryllium Mining Co., Inc., are situated on Willow Creek in the Gold Brick mining district of Gunnison County, 21 miles east of Gunnison, and approximately 1 mile from Ohio City.

Ore is extracted from a pegmatite formation approximately 4,000 ft. long and 2,500 ft. wide, which is composed mainly of graphic granite and quartz albite. At present neither of these minerals is being mined except where necessary to gain access to the pods or cores of more important minerals. These minerals, listed in order of importance, are: potash feldspar, scrap mica, beryl, columbite-tantalite, monazite, and samarskite. Minor amounts of other minerals have also been found. The upper part of the dike rises to an elevation of almost 9,700 ft.

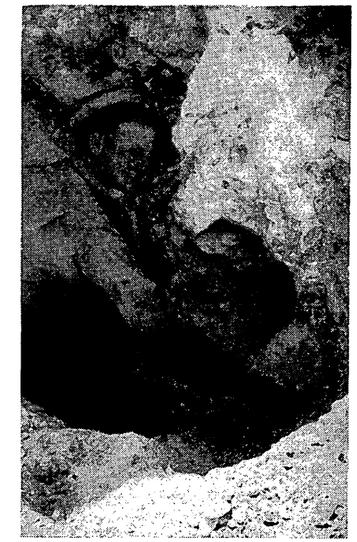
All mining is done by open-pit methods. After each blast, the loose material is examined for any of the important minerals such as large books of mica, beryl, etc. Wherever possible these minerals are mined directly from the working face before blasting is done to prevent shattering by blasting. Mining from the face is done almost entirely by hand. However, sometimes a shallow hole is drilled close to a beryl crystal and ¼ to ½ stick of dynamite used to dislodge the crystal from the surrounding quartz.

While drilling is being done, the chips from the drill are examined closely for any signs of beryl to prevent shooting a charge too close to a crystal or within a crystal. After loose material has been sorted, it is bulldozed to the stockpile, from where it will be run through the mill for additional mica recovery. Any loose material that is barren of mica is bulldozed to one side into a dump.

Beryl crystals, probably due to their order of crystallization from solutions, appear to be full of minute cracks, and are readily broken into many small pieces if roughly handled. The bull quartz will withstand severe abuse, but beryl will break into pieces if caught by the bulldozer blade. The same is true of rare earth minerals, and consequently their recovery is rather slow. Although some of the mica crumbles when touched, most of it is very flexible. Those pieces which are too small to be recovered by hand sorting can be recovered for the most part by the mill.

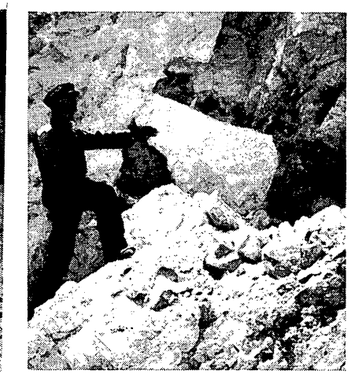


MICA-BEARING ORE is cascaded over crusher rolls and screens in series. 90 to 95% of mica is recovered as scrap mica.

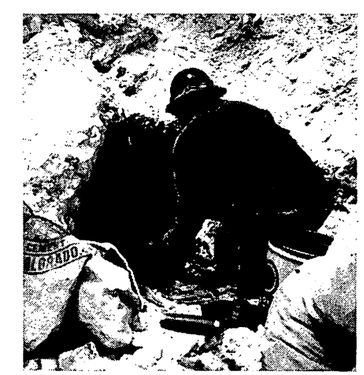


BERYL CRYSTAL pointed out by R. Riddle of the operating staff.

OPEN-CUT MINE in pegmatite yields mica, beryl, feldspar and other minerals. Bulldozer in foreground loads trucks with ore.



FELDSPAR CRYSTAL BOUNDARY shows up clearly in exposed wall of open-cut operations.



BOOK OF MICA is being carefully removed by worker. Much of the mining is hand work.

How the Mica Mill Works

Material from the stockpile is hauled by truck to an ore bin above the mill. Here a grizzly removes all of the oversize before it enters the bin. From the bin the material goes into a jaw crusher where larger pieces are broken down, and the imbedded mica freed from the quartz or feldspar. Crushed ore moves over a shaker screen which removes all of the minus 6-mesh fines. Plus 6-mesh material goes on to a roll crusher.

Before this product enters the rolls, however, any plus 3-in. slabs of mica are removed. The rolls reduce all other material to minus ⅝-in. Then the cycle is repeated, and minus 6-mesh fines are removed, and the plus ⅝-in. mica is recovered. Minus ⅝-in. plus 6-mesh

CONTRACT OF SALE

WHEREAS, ROD FIELDS, of Ohio, Colorado, hereinafter called the Party of the First Part, is the locator and owner of the following described unpatented mining claims, to-wit:

C

> The Rhona, Bucky, Sally and Pug Mining Claims, located in Section Twenty-two (22), Township Fifty (50) North, Range Three (3) East of the N.M.P.M. in the Gold Brick Mining District of Gunnison County, State of Colorado.

O

P

and desires to sell the same; and

WHEREAS, THE BERYLLIUM MINING CO. Inc., a State of Washington Corporation, hereinafter called the Party of the Second Part, desires to purchase the same;

Y

THEREFORE, in consideration of the premises, the mutual promises and agreements herein contained, Thirty thousand ($30,000.00) Dollars in lawful money of the United States to be paid as hereinafter set forth and twenty-five thousand shares of common stock in the Beryllium Mining Co. Inc. to be delivered as hereinafter set forth to the Party of the First Part, the Party of the First Part hereby agrees to sell, assign, convey and quit-claim all of his right, title and interest in and to the said mining claims to the Party of the Second Part, and the Party of the Second Part hereby agrees to purchase the same. The said consideration in the sum of Thirty thousand ($30,000.00) Dollars shall be paid by the Party of the Second Part to the Party of the First Part as follows: $2500.00 heretofore paid, receipt whereof is hereby acknowledged by the Party of the First Part; $2500.00 to be paid with the signing and ensealing hereof, receipt whereof is hereby acknowledged by the Party of the First Part; $4000.00 on or before January 10, 1949; $2500.00 on or before July 10, 1949; $2500.00 on or before January 10, 1950; $2500.00 on or before July 10, 1950; $2500.00 on or before January 10, 1951; $2500.00 on or before July 10, 1951; $2500.00 on or before January 10, 1952; $2500.00 on or before July 10, 1952; $2500.00 on or before January 10, 1953; and $1000.00 on or before July 10, 1953.

The said Twenty-five thousand (25,000) shares of common stock in the Beryllium Mining Co. Inc., a State of Washington Corporation, shall be issued and delivered to the Party of the First Part by the Party of the Second Part between January 1, 1949 and January 15, 1949. It is understood and agreed that said stock has only a nominal value at this time, but that it is hoped that as the mining property is developed and a market found for its products, that it will become valuable. The said stock shall be considered as fully paid and non-assessable.

IT IS MUTUALLY AGREED AND UNDERSTOOD by and between the parties that the Party of the Second Part shall not become in default on any of the payments above set forth for a period of more than thirty (30) days, and should the Party of the Second Part default on any payment above set forth for a period of more than thirty (30) days, then and in that event, this agreement shall be rescinded and shall become null, void and of no effect, and the Parties of the First Part shall be entitled to keep and retain any and all payments theretofore made as liquidated damages, and in addition thereto he shall be entitled to reclaim from the escrow agent hereinafter named a

copy of this contract and the Mining Deed placed in escrow with said agent, as hereinafter provided.

IT IS FURTHER MUTUALLY AGREED AND UNDERSTOOD by and between the parties that the Party of the Second Part shall at all times during the life of this contract keep up and perform all assessment work required by law to be done on said mining claims, or in lieu thereof, as permitted by law, the Party of the Second Part, in apt time, file the affidavits in lieu of annual labor; and should the Party of the Second Part fail to perform said annual labor and file the affidavits therefor, or file the affidavits in lieu of annual labor, as the case may be, then and in that event the Party of the Second Part shall be fully answerable in damages to the Party of the First Part.

ESCROW AGREEMENT

IT IS MUTUALLY AGREED AND UNDERSTOOD by and between the parties that the First National Bank of Gunnison, Colorado shall be, and it hereby is, appointed as escrow agent to receive a copy of this contract and a Mining Deed, herein provided for, and the said agent shall also receive of the Party of the Second Part for the use and benefit of the Party of the First Part all payments herein mentioned to be made, with the exception of the down payment of Five thousand ($5000.00) Dollars, and the said escrow agent shall account for any sums so received to the Party of the First Part, and upon the payment by the Party of the Second Part of all of the sums herein mentioned to be paid by it, the said escrow agent shall thereupon deliver the said Mining Deed to the Party of the Second Part, one of its officers or its duly authorized attorney or agent.

The Party of the First and Second Part hereby agree with the said escrow agent that they will hold the said escrow agent free and harmless from all expense and liability on account of acting as such agent, and that said escrow agent shall not be held liable for the interpretation of any question of law or fact which may arise between the parties on account of this contract or the subject matter thereof.

IN WITNESS WHEREOF, the parties hereto have set their hands and seals this 26th day of November, A. D. 1948, in triplicate, each copy considered an original.

/s/ ROD FIELDS
Party of the First Part

BERYLLIUM MINING CO. INC.,
a State of Washington Corporation,

By /s/ J. R. WEMLINGER
President

STATE OF COLORADO)
) SS.
County of Gunnison)

I, Robert G. Porter, a Notary Public, in and for said County, in the State aforesaid, do hereby certify that ROD FIELDS personally known to me as the person whose name is subscribed to the above and foregoing Contract of Sale, appeared before me this day in person and acknowledged that he signed, sealed and delivered the said instrument of writing as his free and voluntary act, for the uses and purposes therein set forth.

Given under my hand and Notarial Seal this 26th day of November, A. D. 1948.

My Commission expires October 7, 1952.

(SEAL)

/s/ ROBT. G. PORTER
Notary Public

STATE OF COLORADO)
) SS.
County of Gunnison)

I, Robert G. Porter, a Notary Public in and for said County, in the State aforesaid, do hereby certify that J. R. WEMLINGER, personally appeared before me this day and acknowledged before me that he signed the above and foregoing Contract for Sale as the President and on behalf of, the Beryllium Mining Co. Inc., a State of Washington Corporation, as the free and voluntary act of said Corporation for the use and purposes therein set forth.

Given under my hand and Notarial Seal this 26th day of November, A. D. 1948.

My Commission expires October 7, 1952.

/s/ ROBT. G. PORTER
Notary Public

(SEAL)

MINING LEASE--

C O P Y

THIS AGREEMENT OF LEASE, Made and entered into this First day of March, A.D. 1952, by and between FRED A. NICHOLS, Evergreen, Colorado, party of the first part, and THE BERYLLIUM MINING CO., INC., Seattle, Washington, party of the second part, WITNESSETH, That the said party of the first part, for and in consideration of the rents, covenants and agreements hereinafter expressed to be paid, kept and performed by the said party of the said second part, has leased, let and demised, and by these presents does lease, let and demise unto the said party of the second part, the following described premises, to-wit:

> South Slope No. 1, Lode Mining Claim, described in Amended Location Certificate No. 201639, and recorded in Book 260, Page 104, County of Gunnison, Colorado, this being the same lode originally located on the second day of April, 1948, and recorded on the second day of June, 1948, in Book 255, Page 346, County of Gunnison, Colorado.
>
> South Slope No. 2, Lode Mining Claim, described in Amended Location Certificate No. 201640, and recorded in Book 260, Page 104, County of Gunnison, Colorado, this being the same lode originally located on the 12th day of April 1948, and recorded on the second day of June, 1948, in Book 255, Page 347, County of Gunnison, Colorado.
>
> These further and amended certificates of location are made without waiver of any previously acquired rights, but for the purpose of correcting any errors in the original location, description, or record.

TO HAVE AND TO HOLD, For the purpose of mining, for the term of Ten(10) Years from the date hereof. Said party of the second part, for and in consideration of the premises aforesaid, has covenanted, contracted and agreed, and by these presents does covenant, contract and agree with said party of the first part his heirs, executors, administrators, successors or assigns, to commence work on said premises on or before August 1, 1952 and to work the same continuously and with reasonable diligence, in thorough and workmanlike manner; performing thereon at least (20) Twenty shifts of work, of Two (2) men each, during every calendar month of the life of said lease; keeping the same securely timbered in all parts during the term of this lease; to keep accurate accounts, and to render Monthly statements, accompanied by vouchers, to the said party of the first part, his agent or attorney, showing the amount of all ore taken from said premises, and the yield of the same, and the cost of hauling and milling the same, and to pay by the 20th of each month succeeding, to said party of the first part, his agent or attorney, as rental for said premises, as follows, to-wit:

> Twelve per cent (12%) of the proceeds from sale of all extracted ores and materials, net selling price of which is $400.00 or over, per short ton. Ten per cent (10%) of the proceeds from sale of all extracted ores and materials, net selling price of which is $100.00 to $399.99 inclusive, per short ton. Five per cent of the proceeds from sale of all extracted ores and materials, net selling price of which is less than $100.00 per short ton. Net selling price, upon which all royalties are figured, shall be the

gross selling price, less transportation charges (hauling, freight, or other transport charges, including Federal tax), assay and sampling charges, where applicable, and mill or smelter treatment charges.

It is hereby agreed, as follows, to-wit:

That the payment of royalties from the sale of all extracted ores and materials, "by the 20th of each month succeeding", shall be subject to the receipt by the Party of the Second Part, of settlement from the ore buyer, for such extracted ores and materials sold to him.

That the above requirement as to the number of shifts per month shall be determined and be subject to weather conditions and other conditions referred to as "Acts of God".

That the above requirement as to the number of shifts per month shall be eliminated, and of no consequence, for a period of one year from date of lease, if the Party of the Second Part puts into full force and effect, a program of exploration, to include core drilling and trenching, prior to August 1, 1952.

Said party of the second part furthermore agrees that the said party of the first part, his agent or attorney, shall have the right at any and all times to enter upon and descend into any and all parts of said premises, and that the said party of the second part will render to him all the assistance in his power in so doing.

Said party of the second part furthermore agrees that in case he fails to commence work on said premises as aforesaid, or to work the same continuously and with reasonable diligence and in workmanlike manner, or to keep the same securely timbered, or render said statements, or to pay said rental as aforesaid, or in any respect to keep and fulfill any and all agreements herein expressed or implied, then, and in that case, it shall be lawful for the said party of the first part, his agent or attorney, to declare this lease void and of no effect thereafter, and without process of law to enter upon and take possession of said premises; and also at the expiration of this lease by limitation, said party of the second part agrees to surrender, yield and deliver to said party of the first part, his heirs, administrators, executors, successors and assigns, quiet and peaceable possession of said premises in good condition, unless extended or renewed by mutual agreement.

It is further provided and agreed that any entry upon said property, by the Party of the First Part, for the purpose of inspecting, sampling, or surveying, or for any other reason, excepting repossession as herein agreed to, shall in no wise be done at such time or in such a way as to interfere with the operation of the said property as covered by the terms of this lease.

It is also further provided and agreed that the Party of the First Part shall notify the Party of the Second Part in writing, by registered mail sent to the address of said Party of the Second Part, of any violations of any covenants hereinabove reserved, stating specifically such violations, and Party of the Second Part shall thereafter have 60 days in which to cure

and correct or remedy the matter concerning which any violation or default of the terms as set forth herein. It is further agreed that any delays or interruptions that may occur by any Acts of God, strikes or violence or acts of war not within the control of the Party of the Second Part, shall not be deemed violations of this lease.

It is further mutually agreed that the foregoing covenants and agreements herein contained shall be covenants running with this said lease and leasehold estate, and shall be binding upon all subsequent assignees and grantees, and parties hereafter acquiring any interest in said premises.

IN WITNESS WHEREOF, The parties hereto have executed these presents the day and year first above written.

/s/ Fred A. Nichols
Lessor - Fred A. Nichols

Lessee - Beryllium Mining Co., Inc.
By: /s/ Charles A. Wemlinger
Charles A. Wemlinger, Vice President

Form MF-100
(March 1951)

U. DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION

Form approved.
Budget Bureau No. 42-R1026.

GENERAL TECHNICAL DATA FOR USE UNDER THE DEFENSE PRODUCTION ACT OF 1950

NOT TO BE FILLED IN BY APPLICANT

Docket No. DMEA-2581

Date received 6-12-52

BERYLLIUM MINING CO. INC.
920 - 2nd Avenue
Seattle 4, Washington

Name and address of applicant

Date

INSTRUCTIONS

This form is to be filed with Defense Minerals Administration, Department of the Interior, Washington 25, D. C. It should be accompanied by appropriate application form when a specific type of Government assistance is requested, in the form of (1) loan, (2) purchase contract, (3) Government guarantee of a private loan, (4) Necessity Certificate pursuant to the provisions of Sec. 124-A (Amortization Deduction) of Internal Revenue Code, 1950, (5) priorities or allocation of mining equipment, and maintenance, repair and operating supplies, and (6) other forms of Government assistance that might arise under the Act. Submit four (4) signed copies of the form and accompanying papers. Name and address should be stamped or typed on each sheet of this form and all accompanying papers. *When a question is inapplicable it should be so stated on the form.* Additional sheets may be attached in answering any questions or in supplying additional information. (IF YOU CANNOT ANSWER A QUESTION, SO STATE.) If a question is answered elsewhere indicate where answered. It is not necessary to answer it again.

GENERAL TECHNICAL DATA

Supply the following information on separate sheets, arranged, numbered, and lettered as indicated:

1. Materials produced:
   (*a*) What are the chief mine, mill, or smelter products?
   (*b*) What are the byproducts, if any?
2. Name(s) and type(s) of mine(s), mill(s), smelter(s), refinery(ies), pit(s), quarry (ies), drilling operation(s). Include old names of property, if any. Show extent of workings, including the following:
   (*a*) Linear feet of shafts.
   (*b*) Linear feet of drifts and crosscuts.
   (*c*) Linear feet of tunnels or adits.
   (*d*) Linear feet of other mine openings (explain briefly).

   Indicate whether mine is flooded or not. Describe any pumping problems. Give size or productive capacity.
3. For each operation listed above supply the following:
   (*a*) Distance and direction from nearest town and shipping point.
   (*b*) Mining district.
   (*c*) Township, Section, Range.
   (*d*) County, State.
4. (*a*) State whether or not property is now in operation, and if in operation, by whom operated.
   (*b*) Are you operating this property as:
   - ☐ Owner.
   - ☐ Lessee.
   - ☐ Contractor.

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
JUN 12 1952

5. Number of years in production
   If not in production or operation, estimated date when production will begin
6. Experience of operators:
   Describe the mining and general business experience of (*a*) the applicant, and (*b*) the person or persons who manage the project.
7. History:
   (*a*) Give a statement, as complete as possible, of previous exploration, development, operation, and production of property, with reasons for suspension of operation.
   (*b*) State briefly the known history and production of adjoining and neighboring properties.
   (*c*) Furnish any available (private) reports that may apply to this application, including results of mine examinations, recommended exploration and development, and metallurgical investigations.

8. Names and addresses of Officers, Directors, or Partners, and in addition thereto, the five largest stockholders if applicant is a corporation.

Name and Address (a)	Official Title (If officer is also director indicate by "D") (b)	Total of Annual Salary, Commissions, Bonuses, Etc., Received From Applicant and Affiliates During Last Fiscal Year (c)	Estimated Net Worth Outside of Interest in Applicant (d)	Number of Shares Held in Applicant Corporation		Life Insurance Carried for Benefit of Applicant	
				Common (e)	Preferred (f)	Amount (g)	Net Cash Surrender Value After Loans (h)
	Total		x x x x x			x x x x x	x x x x x

If more lines are needed continue on separate sheet.

9. Capital Stock Issues:

For Corporate Applicants

Item	Authorized (a)	Outstanding (b)	Par Value (c)	Number of Shares Outstanding (d)	Dividend Rate Last Paid* (e)
Common stock	$	$	$		
Preferred stock	$	$	$		

*Indicate period covered.

10. Production:

Item	Kind of Product (a)	1948 Total (b)	1949 Total (c)	1950 Total (d)	Present Average Monthly (e)
1. Quantity of product mined or quarried (Short, long, metric tons; barrels; pounds; etc.)					
2. Quantity of product processed (specify unit of measure and type of process)					
3. Quantity and grade of product sold or shipped (specify units of measure)					

11. Do you contemplate a change in the present average monthly rate of production? If so, state estimated maximum monthly production and basis of change.

12. Ore or Mineral Reserves:

(*a*) Describe the ore or mineral deposit briefly. Accompany the application by any available report on the geology and ore reserves.

Form MF-100 - DEFENSE MINERALS ADMINISTRATION - GENERAL
Supplement TECHNICAL DATA

BERYLLIUM MINING CO. INC., 920 - 2nd Avenue, Seattle 4, Washington.

1. Materials produced:

   (a) Chief products are Beryl, Columbite-Tantalite, and scrap Mica.
   (b) By-products: Feldspar, Graphic Granite, Cement aggregates, miscellaneous Rare Earths, and Gold.

2. Name and type of mine, and mill: The property is known as the Willow Creek Mine - the presently used name. It is located on the so-called New Anniversary Pegmatite Dike. It consists of three large open cuts on the Bucky claim (See Exhibits "A" and "B", and reprint of article in Engineering & Mining Journal, herewith) from which the major portion of past mineral production was recovered. Also several small cuts on the South Slope Nos. 1 and 2 claims, from which small amounts of the chief minerals were recovered, and scattered exploration cuts on the three other claims. The mill, which has been chiefly experimental until now, is a dry concentrator type. It consists of a series of crushers, rolls, and successively finer screens for reducing and screening the matrix, while allowing the more flexible mica to pass through the crushers and rolls, and over the tops of the screens, unbroken, to suitable storage bins for shipment to consumers. The fine material passing through the screens, consists of small particles of Beryl, more largely of feldspar and alterations thereof which, according to preliminary tests, contain some recoverable Rare Earths minerals. There is no smelter or refinery on the property. No drilling operations other than such as are needed to open access to the sources of beryl, columbite, tantalite, and associated minerals. Due to the fact that beryl crystals, as well as amorphous columbite-tantalite pieces, are irregularly scattered through the matrix of feldspar, quartz, mica, and other minerals, hand-sorting was the only method thus far used to recover the required minerals. Therefore, too, the formation does not lend itself to a systematic drilling program.

   (a) There are no shafts.
   (b) No drifts or cross-cuts in the mine.
   (c) No tunnels or adits needed.
   (d) There is, approximately, 600 linear feet of open quarry faces.

   Hillside drainage is provided in all open pits, and no flooding or pumping problems are encountered.

   The excavated pits and quarry work, extend over an area, roughly, about 600 ft. long by an average of 200 ft. wide. The productive capacity can only be surmised until considerably more exploration, core-drilling, etc., can be done.

3. (a) The mine is located 9 miles North of Parlin, Colorado, rail shipping point for carload lots, and 21 miles Northeast of Gunnison, Colorado, County seat and rail shipping point for l. c. l. lots.

BERYLLIUM MINING CO. INC., 920 - 2nd Avenue, Seattle 4, Washington.

(b) Gold Brick Mining District.

(c) Township 50 N., Range 3E., N.M.P.M., Section 22.

(d) Gunnison County, State of Colorado

4. (a) The property is not now in operation, due to the unusual severity of the winter, coupled with the lack of sufficiently powerful equipment to overcome the obstacles raised by deep snow drifts and impassable roads on the property. Year around operations can be carried on, with little difficulty if suitable equipment can be made available to keep the cuts and roads free from heavy drifts during the winter, as well as to expedite the search for more ore. The mine was operated during the winters of 1948, 1949, and 1950, with some difficulty but, still, with comparatively short interruptions.

(b) We are operating this property as registered owners, in accordance with a purchase contract of sale from the legal owner, Rodney W. Fields, based on semi-annual payments of $2,500, all of which have been met, to a total of $24,000. Only two more payments remain to be made - one on August 10, 1952, the other on February 10, 1953.

5. The mine has been in production for three years under the control of this Company; approximately one year previously under the legal owner; and, spasmodically under previous prospectors who are reported to have produced some scrap mica tonnage. It is expected that operations, stopped temporarily by severe winter weather, can be resumed in late March or early April, if the roads to the mine and to the pits will have been cleared by then - or earlier if additional suitable equipment can be acquired.

6. Experience of operators:

J. R. Wemlinger; President, Beryllium Mining Co. Inc.
1923-34 - President, J. R. Wemlinger & Co. Inc., New York, N. Y. Engaged in study and exploration of mineral resources of British Columbia and the Yukon, Canada, to be developed by construction of a railroad from Vancouver, B. C. to Fairbanks, Alaska.....1933-36 - President, Montana Mines & Power Co. Inc., Livingston, Montana. Planning reopening of an abandoned mine, near Cooke City, Montana, and development of high-grade copper ore, with gold and silver values. Commercial production proved possible by test shipments. Property closed by Depression.....1936 - Operating tungsten mine, near Alden, Washington. 1937-41 - Resumed exploration work in British Columbia. Mapping mineral resources particularly important alloy metals minerals..... 1941-43 - Adviser to Mr. Frederic A. Delano, Chairman Natural Resources Planning Board, Washington, D.C., in connection with studies covering

mineral resources in British Columbia, Yukon, and Alaska, tributary to the proposed railroad line from Prince George, B.C. and Fairbanks, Alaska. Later surveyed by the U.S. Engineer Corps.....1942-47 - President Canadian-American Railroad & Development Co. Inc., New York, N. Y. Planning financing and construction of above mentioned railroad, including mining exploration, development of industries, colonization, etc. Still under consideration for private financing..... 1948 to date - President, Beryllium Mining Co., Inc., Seattle, Wash.

Aubrey L. Schuler; Vice President, Beryllium Mining Co. Placer and underground mining, 15 years, in Grass Valley and Happy Camp districts, California.

C. A. Wemlinger; Vice-President in Charge of Operations; Assistant to J. R. Wemlinger, since 1936, mining, assaying, sampling, etc., excepting during the years 1942-46, while General Foreman of Inspection Department, Curtiss-Wright Airplane Co., Propeller Division, Caldwell, New Jersey. Located at Gunnison, Colorado since January 5, 1949.

7. History:

(a) This Company was formed in October, 1948, to acquire and develop four claims originally owned by Arthur Pearson and Bert Tucker, respectively of Pitkin and Ohio City, Colorado. These four claims, now recorded as Bucky, Rhona Marie, Pug, and Sally (see Exhibit "A" herewith) were restaked and claimed by Rodney W. Fields of Paonia, Colorado, in 1947 and 1948. This property is located in the so-called New Anniversary Pegmatite, surveyed by the U. S. Geological Survey. The Company also holds a lease on two additional claims - South Slope Nos. 1 and 2, owned by Fred A. Nichols, Evergreen, Colorado.

Complete records of past production from this mine, are not available. But it is generally admitted that the following constitues most, if not all, of its production: Prior to Field's acquisition of the four claims above mentioned, a group mined probably one carload of scrap mica, and then pulled out without doing any further work. Fields mined both the scrap mica and the beryl, and small amounts of columbite and monazite. The exact amount of beryl he shipped is not proved, but it is believed to have been between 10 and 15 tons.

(b) Other than miscellaneous prospect holes, no operations have been carried on, on any of the lands immediately adjoining this Company's claims. The fact that the pegmatite dike on which present operations are going on, is located in the midst of rich gold country, may account for the rather high gold values found in various places and depths, particularly in the albite-quartz and graphic-granite zone in the Bucky

BERYLLIUM MINING CO. INC., 920 - 2nd Avenue, Seattle 4, Washington

claim. A few miles to the North, up Gold Creek, several mines including the Carter Mine, the Raymond Mine, the Gold Links Mine, and the Sandy Hook Mine, have produced very substantial amounts of gold and silver. The Brown Derby Mine, approximately 3 miles South of our mine, had produced beryl, lepidolite, microlite, and feldspar during World War II, and was reopened in 1950. The White Spar Mine of the Consolidated Feldspar Co., 2 miles Southeast of us, has produced high grade feldspar, together with beryl and scrap mica.

(c) No private reports covering this property are available, or known to exist. The U.S.G.S. and the U.S. Bureau of Mines instituted a program of areal mapping, core-drilling, and incidental investigations in 1949 and 1950. But the core-drilling was discontinued after two holes had been put in. Reasons for that discontinuance were not given, though additional holes were scheduled for various parts of the dike, as well as a program of experimental mining methods to be carried on by the Bureau of Mines, to determine the best method of mining the dike. The core-drilling equipment was later removed to the Brown Derby Mine.

8. Names and addresses of Officers, Directors, and the five largest stockholders of the corporation:

(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
J. R. Wemlinger 920 - 2nd Avenue Seattle, Wash.	President & D.	None	XX	60,000	XX	None	XX
A. L. Schuler 1302 Queen Anne Ave. Seattle, Wash.	Vice-Pres. & D.	None	$75,000	12,500	XX	None	XX
C. A. Wemlinger Box 276 Gunnison, Colo.	Manager	$4200	XX	25,000	XX	None	XX
P. M. Anderson 2392 Magnolia Blvd. Seattle, Wash.	Sec'y-Treas.	None	XX	500	XX	None	XX
L. V. Houck (Mrs.) 2416 N. 75th St. Seattle, Wash.	Director	None	$52,000	20,000	XX	None	XX
Geo. K. Edwards 1214 East Pine St. Seattle, Wash.	Director	None	$50,000	11,000	XX	None	XX
Jas. E. Sheets 1918 - 3rd Ave. Seattle, Wash.	Director	None	$175,000	32,500	XX	None	XX
	Total	$4200	XXXX	161,500	XX	XXX	XX

BERYLLIUM MINING CO. INC., 920 - 2nd Avenue, Seattle 4, Washington

Five largest stockholders:	(e)	(f)	(g)	(h)
J. R. Wemlinger	60,000			
Jas. E. Sheets	32,500			
Ethel K. Edmunds (Mrs.) 214 No. 46th St. Seattle, Wash.	27,500	XX	None	XX
A. L. Lewis 1022 S. E. Hawthorne Portland, Oregon	25,500	XX	None	XX
C. A. Wemlinger	25,000	XX	None	XX
Total	170,500			

9. Capital Stock Issues

Item	(a)	(b)	(c)	(d)	(e)
Common stock	$100,000.	$87,500.	$0.10	875,000	No Dividends paid as yet.
Preferred stock	None	XXX	XX	XXX	

10. Production:

Item	Kind	1949	1950	1951	Present *
1. Quantity mined (short tons)	beryl	18.5	26.0	3.5	None mined
2. " processed		None	None	None	this year
3. " shipped (short tons)		18.0	26.0	4.0	thus far
1. Quantity mined (pounds)	columbite	1,034	None	620	do.
2. " processed		None	None	None	"
3. " shipped (pounds)		1,000	None	595	"
1. Quantity mined (pounds)	monazite	28	19	14	do.
2. " processed		None	None	None	"
3. " shipped (pounds)		15	None	1	
1. Quantity mined (short tons)	feldspar	73	26	None	do.
2. " processed		None	None	None	"
3. " shipped (short tons)		None	None	None	"
1. Quantity mined (short tons)	scrap mica	97.5	64.2	42.1	do.
2. " processed		None	None	None	"
3. " shipped (short tons)		97.5	60.7	42.0	"

* No work could be done this year as yet, due to weather conditions, as explained in answer to Section 4.

BERYLLIUM MINING CO. INC., 920 - 2nd Avenue, Seattle 4, Washington

11. Any changes in the past monthly rate of production will depend, substantially, on the amount and type of help, granted or loaned, by the U. S. Government through the Defense Minerals Administration or other appointed agency. Additional, more powerful equipment, will enable the company to mine at a much lower cost, thereby making available markets for the by-products that can't be sold profitably under present high mining costs. Simultaneously, that result will, also, substantially increase the production of the more critical and strategic minerals.

12. Ore or Mineral Reserves:

(a) The mineral deposit consists essentially of a granitic pegmatite of pre-Cambrian age, made up of zones having the form of shells and lenses that reflect the shapes of the pegmatite walls. The structure is generally made up of (1) a border zone directly in contact with the quartz mass, usually decomposed granitic material, occasionally containing some beryl crystals; (2) an intermediate zone comprising altered feldspar, or albite, which contains most of the beryl, columbite-tantalite, monazite, mica, and other commercially valuable minerals; and (3) a wall zone consisting almost entirely of potash feldspar (orthoclase), contiguous with the mica schist country rock. This zone too has produced occasional beryl crystals in fairly good sizes up to 10 inches. According to E. N. Cameron, et al., the lateral and downward extension of these zones are to a large extent predictable. (Ref: Internal Structures of Pegmatites, Econ. Geol., Mon. 2, 1949)

The grade of beryl, within these units, has remained essentially constant - averaging 12.6% BeO - and, now, can be predicted with reasonable accuracy.

(b) (1) This type of deposit with its greatly disseminated minerals does not lend itself to the mapping of a standard assay plan, or sections showing size of proved or even probable ore or mineral reserves.

(2) This question can not be answered with any degree of dependability. An estimate of mineral reserves could be made only after a thorough core-drilling program had been carried out. Based on past production from the comparatively shallow pits, plus present indications of ore-bearing material on the surface, it is felt that such a program is warranted; it would determine the strike and depth of the various ore-bearing zones, and thus a fairly dependable measure of proved and probable ore.

It might be justifiable in this connection to adopt some assumptions whereby to guess at a "possible" production: It is known that a total of about 60 tons of beryl was recovered since this mine has been in operation. This was obtained from only two pits, neither of which seems to have been mined out. Judging from present appearances, it seems possible that eight to ten additional pods may be opened up, with production in

approximately the sum ratio of beryl to rock excavation, viz.: 1 ton beryl to 100 tons rock, and thus a recovery of 500 to 750 tons of beryl from the entire deposit does not seem out of reason.

On the same basis, as regards columbite - up to now in the ratio of one ton of columbite to 80 tons of beryl - the possible recovery of columbite should be 6 tons. To which should be added a total of 2,500 to 4,000 tons of recoverable mica. It may be added, here, that the two holes drilled by the Bureau of Mines in the summer of 1950 were not sufficient to give an indication of what ore bodies may exist below, or in other parts of the dike which, roughly, measures 2,500 ft. wide and 4,000 ft. long.

13. Access Roads:

The mine is easily accessible through a good County road from Parlin to Ohio City, which road branches off a paved Arterial Highway, 12 miles northeast of Gunnison, all said locations being in Colorado. Distances to shipping are: From the mine to Parlin the rail loading point for carloads, is 9 miles; for less than carload shipments, the loading point is at Gunnison, 21 miles from the mine. Supplies are usually purchased in Gunnison, or are shipped from Denver to Gunnison, where they are picked up. Denver is 200 miles by road, northeast of the mine. From the upper mine opening, over a rock and dirt road to the campsite, is 0.9 mile, and from the campsite to nearby Ohio City, where most of the miners live, is approx. 2 miles, half of it over Company road; the balance over graded and maintained gravel County road. Additional residence points are available at Parlin, 9 miles from the mine, and at Gunnison, 21 miles from the mine.

14. Water Supply:

Willow Creek runs adjacent to the mine road, through the valley and past the campsite. No water is required in any of the present operations, other than for cooling the internal combustion engines used. The drill crew employed by the U. S. Bureau of Mines, while drilling two core holes on the property, used the water from this creek for their operations. In late summer and fall, the volume of flow falls away to a trickle on the surface; but a shallow pit dug in the creek bed will produce ample water for the mine's operations and for drinking purposes.

15. Power:

No electrical power is used at the mine, as available R.E.A. power, one mile from the campsite, would be insufficient to operate any heavy motors. By the end of 1952, a new high-tension line from Salida, Colorado, should be completed, and thereby ample power for all mining and milling operations would be made available. The rate that will then apply, remains to be determined.

BERYLLIUM MINING CO. INC., 920 - 2nd Avenue, Seattle 4, Washington

16. Labor:

The labor employed by this Company has varied from two to six men; not classified as to muckers, machinemen, millers, etc., but rated as to their capabilities as all-around men who can handle any of the jobs - from sorting the ore to operating the bulldozer. Any of the more hazardous jobs, such as blasting, are handled only by those of the men who are fully experienced in that type of mining.

17. Equipment and Facilities:

Presently available at the mine are:

1 Caterpillar D4 Tractor with Woolridge Bulldozer;
1 Athey Overshot Loader attachment for the Tractor;
1 Ingersoll-Rand Air Compressor, of 125 cfm capacity;
2 Jackhammers, complete, with approx. 150 ft. of air hose;
1 Chevrolet Dump Truck - 2-ton Rated capacity;
1 Converted Dodge Army Truck 4x4, with boom and cable hoist;
1 Mica Concentrating Mill of approx. 50 tons per day capacity;
3 Cabins, 1 Blacksmith Shed, and 1 Powder Magazine.

18. Particular conditions or circumstances affecting our operations:

In Section 7 (b) it was mentioned that the pegmatite in which this property is located, is in the midst of gold rich country. It was actually found that gold ore exists in commercial values within, at least, the Bucky claim.

When the U. S. Bureau of Mines was drilling hole No. 1 (approximate location shown in sketch - Exhibit "C" herewith), two chip samples were taken from the core at the 86'-94.5' section. These assayed 1.29 oz. and 0.32 oz. gold per ton. Other samples taken from the surface and in freshly blasted portions of the dike, showed values of 4.06 oz. gold and 0.66 oz. silver, and 3.20 oz. gold and 0.28 silver. Besides these determinations, 22 samples from the same core hole, were assayed by the Bureau of Mines. Excepting 7 of these, that showed no gold or only a trace, all the others showed from 0.01 to 0.06 oz. gold. Most of these lower values were found in the sludge from the deeper portions of the core-hole.

It is, therefore, reasonable to expect that further development might well expose a new rich field of operations - operations which, indirectly perhaps, could justify mining on a scale that, otherwise, could not be profitable. And it follows that the greater the amount of excavated material, the better also the chances for recovering the critical Beryl and Columbite, that might escape detection in hidden zones. Incidentally, the mining of

that gold ore could well produce some substantial revenue whereby still greater production of the critical minerals could be carried on, independently of exploration such as that provided by government financing.

In the same general area, it was found that there is available an extensive deposit of graphic-granite, adjoining the beryl-columbite-tantalite zone, as indicated in the attached sketch (Exhibit "C"). One geologist who examined the property, estimated that at least one million tons of this mineral could be mined here. Based on a minimum output of 100 tons per day, the corporation could operate this phase of mining the graphic granite, at an estimated cost of $2. per ton. Inquiries were made as to the possible market for this mineral. At least one buyer, the Ferro-Enamel Corp. of Cleveland, Ohio, after having tested a sample, indicated a definite interest in purchasing it at a previously quoted price of $5.00 per ton fob cars Parlin, Colorado (9 miles from the property).

They further advised that they could use at least one carload a day after the present military emergency ceases to curtail their production of enamel frit, used for stoves, refrigerators, etc. Therefore, although this possible development could not be depended upon to provide any immediate revenue, it should produce a considerable return in later years.

Reference has been made herein, to the recovery of gold-silver ore, and that of a large tonnage of the graphic-granite. The object was only to point that out as a means whereby it would be possible to more quickly refund any loan that may be granted by the U.S. Government to the Beryllium Mining Co. Inc. At any rate, for the present, emphasis will be placed entirely on the production of the critical materials.

(*b*) If deposit is other than placer:

(1) Submit assay plans and/or sections showing location and size of proved (measured) and probable (indicated) ore or mineral reserve.

(2) State the tonnage (indicate type of ton) and grade of each class of ore reserve, as above, and show how computed. Tabulated total ore reserve as follows:

TOTAL ORE OR MINERAL RESERVES

Ore or Mineral Reserve	Estimated Tons (a)	Metal or Mineral Content Per Ton (Grade) (b)	Gross Value Per Ton (c)	Recoverable Unit Value Per Ton (d)	Estimated Cost of Production Per Ton (e)
Measured (proved)					
Indicated (probable)					

(*c*) If placer:

(1) Give estimated total yardage and average marketable mineral content of each deposit.

(2) Submit map showing location of placer deposit and surrounding area, with all test holes or pits. Submit logs of each hole and test pit with depth and average value of each.

(3) Describe gravel, stating whether fine, medium or coarse; loose, tight, cemented, or frozen, and whether it contains stumps or boulders more than 1 foot in diameter; if so, how large, and in what proportion.

(4) Describe bedrock, giving type (granite, sandstone, shale, etc.) and state whether it is hard or soft, smooth, uneven or rough.

(5) Describe overburden, stating whether loose, tight, or cemented; fine or coarse textured; furnish estimate of average thickness and total amount.

(6) Tabulate the reserves using the form outlined above for ore or mineral reserves.

13. Access Roads:

Give road distances to shipping, supply and residence points, stating kind and condition of roads.

14. Water Supply:

State source and quantity of water available for operations and whether sufficient for all seasons of year.

15. Power:

State amount of power used, rate per hour, and source thereof.

16. Labor:

State number and classes (miners, muckers, millmen, etc.) of men employed during a recent representative payroll period.

17. Equipment and Facilities:

Describe present equipment on the property, including buildings. (State condition.) List major pieces of equipment now owned or controlled and in serviceable condition available for this operation.

18. Are there any particular conditions or circumstances affecting your operations that are not described above? If so, explain.

CERTIFICATION

The undersigned company, and the official executing this certification on its behalf, hereby certify that the information contained in this form and accompanying papers is correct and complete to the best of their knowledge and belief.

BERYLLIUM MINING CO. INC.
(Name of company)

By J. R. Wemlinger
(Signature of authorized official)

April 1952
(Date)

President
(Title)

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—63792-1

EXPLORATION

Subject: DMEA-2581
Re: Exploration Loan
Willow Creek Mine
June 13, 1952

Mr. J. R. Wemlinger
Beryllium Mining Co. Inc.
920 - 2nd Avenue
Seattle 4, Washington

My dear Mr. Wemlinger:

This will acknowledge receipt of your application dated April, 1952, for a loan under the Defense Production Act of 1950.

Your application was assigned Docket Number DMEA-2581 and referred to the Non-Metallic Minerals Division.

Kindly refer to DMEA-2581 in any future correspondence relating to your application.

Sincerely yours,

ROBERT E. ADAMS

Robert E. Adams
Administrative Officer

7862

MF-103
(Revised June 1951)

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION

Budget Bureau No. 42-R1035.1.

MF-103 Should Be Filed With General Technical Data Form MF-100

APPLICATION FOR AID FOR AN EXPLORATION PROJECT PURSUANT TO MINERAL ORDER 5, UNDER DEFENSE PRODUCTION ACT OF 1950

Not To Be Filled in by Applicant

Docket No. DMEA-2581
Metal or Mineral
Date Received 6-12-52
Amount $
Participation (Government %)

BERYLLIUM MINING CO. INC
920 - 2nd Avenue
Seattle 4, Washington

Name and address of applicant

Date April 1952

If you have already filed MF-100, give date filed _____, type of assistance requested _____;

DMA Docket Number (if available) _____

INSTRUCTIONS

Read Mineral Order 5, Regulations Governing Government Aid in Defense Projects, before completing this application. Submit four copies each, of the signed application form, General Technical Data Form MF-100, and answers to questions as specified, to Defense Minerals Administration, Department of the Interior, Washington 25, D. C., or to the nearest field executive office thereof, with your name and address on each sheet of the application and all accompanying papers. If you have previously filed MF-100, it is not necessary to file it again. However, you should indicate in space provided above the type of assistance previously applied for (loans, procurement contracts, etc.) and DMA Docket Number, if available. *When a question is inapplicable it should be so stated in the form.* Additional sheets should be attached in answering any questions or in supplying additional information. IF YOU CANNOT ANSWER A QUESTION, SO STATE.

1. (*a*) Give a description of the real property that will be in any way involved in the exploration project, including any existing mine or operating property.

   (*b*) If you are not the owner of the property, submit a copy of the lease, purchase option, or other agreements under which you are authorized to operate the property with each copy of your application.

   (*c*) Give the legal description of the exact parcel, plot, or area upon which the exploration is to be conducted.

   NOTE: (1) If both areas are the same, so state. The only obligation to repay the Government is from the net earnings from any commercial discovery made in the area specified in (*c*) above in which the exploration is to be conducted, and the expenditure of funds which may be charged as costs of the project must be limited to that area or to work necessary to perform the exploration in that area.

   (2) If applicant is not the owner of the property or if there are any liens or encumbrances against the property, copy of agreements of claimants, lienors, encumbrances, and lessors subordinating their interests in the property to the interest of the Government under the Exploration Project Contract will be required for attachment to the Contract.

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
JUN 12 1952

2. (*a*) What metals or minerals do you expect to find?

   (*b*) Furnish statement of the geologic features of your property, giving type of ore deposit and reasons for expecting to find commercial ore bodies. Illustrate with maps or sketches. If you have a geologic or engineering report, or assay maps showing width and grade, please send them with application, stating whether or not you wish to have them returned.

The information requested in questions 3, 4, 5, 6, 7, 8, and 9 below should be answered specifically and in detail, as this information will be attached to and incorporated as part of the Exploration Project Contract, if such contract is entered into with you by the Government.

ANSWER EACH QUESTION ON SEPARATE SHEETS OF PAPER AND SUBMIT A COPY OF EACH ANSWER FOR EACH COPY OF YOUR APPLICATION.

3. (*a*) Describe fully the proposed work and give the total cost of the project.

   (*b*) State the time required to start the project and to complete it.

4. Submit a map or sketch of the property involved showing a plan (and cross section, if needed) of the present mine workings and the *location of the proposed exploration work* as related to geologic features, such as contacts, veins, ore-bearing beds, etc.

5. Furnish an itemized list of existing facilities, buildings, installations, and fixtures with a statement of the cost of any necessary rehabilitation or repairs to put into useful and operable condition.

6. Furnish a detailed list of additional facilities, buildings, and fixtures to be purchased, installed, or erected by you, with the estimated cost of each item.

7. Furnish a detailed list of operating equipment, separated into items to be—

   (*a*) Rented

   (*b*) Purchased

   (*c*) Furnished by you

   with the rental, purchase price, or depreciation of each item, as the case may be, to be charged as a cost of the project.

8. Furnish an itemized schedule of labor, by numbers and classes (miners, muckers, etc.) and of supervisors by numbers and positions, with the maximum wages or salaries to be paid to each.

9. Furnish a detailed list with estimated cost of each item for materials, supplies, engineering, assaying, accounting, power, water, utilities, and any other items not provided for above.

10. (*a*) How much are you prepared to invest in the proposed project?

    (*b*) Is this amount sufficient to pay your part of the cost of the project, in accordance with the regulations on Government participation (Sec. 9 of MO–5)?

11. State any conditions or circumstances regarding the property not sufficiently brought out by the foregoing questions.

CERTIFICATION

The undersigned company, and the official executing this certification on its behalf, hereby certify that the information contained in this form and accompanying papers is correct and complete to the best of their knowledge and belief.

BERYLLIUM MINING CO. INC.
(Name of company)

By J. R. Wemlinger
(Signature of authorized official)

April 1952
(Date)

President
(Title)

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—64067-2

Form MF - 103 - DEFENSE MINERALS ADMINISTRATION
APPLICATION FOR AID FOR AN EXPLORATION PROJECT

BERYLLIUM MINING CO. INC., 920 - 2nd Avenue, Seattle 4, Washington

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1. (a) The real property involved in this exploration project consists of the four claims held by the Beryllium Mining Co., Inc. under Contract of Sale, copy of which is attached hereto, said claims referred to hereinafter as the Bucky Lode, Rhona Marie Lode, Sally Lode, and Pug Lode; and the two claims held by the Beryllium Mining Co., Inc. under a Mining Lease, copy of which is attached hereto, said claims referred to hereinafter as the South Slope No. 1 Lode, and the South Slope No. 2 Lode.

(b) See attached copies of Contract of Sale, and Mining Lease.

(c) The area upon which the exploration is to be conducted, consists of the same six lode claims referred to in (a) above, said area being situate in the Gold Brick Mining District, Section 22, Township 50N., Range 3E N.M.P.M., Gunnison County, Colorado, and recorded in the books at the Gunnison County Courthouse, Gunnison, Colorado, as follows:

Bucky Lode	Book 255, Page 340
Rhona Marie Lode	Book 255, Page 375
Pug Lode	Book 255, Page 375
Sally Lode	Book 260, Page 102
South Slope No. 1 Lode	Book 260, Page 104
South Slope No. 2 Lode	Book 260, Page 104

This property is also referred to as "New Anniversary Pegmatite". See U.S. Bureau of Mines map No. 2500-4-C, Location Map, Quartz Creek District, Gunnison County, Colorado. (Not available for inclusion with this application)

2. (a) The exploration project, including core drilling, sampling, assaying, and trenching, is expected to prove the existence of deep seated and shallow sub-surface mineralized zones carrying substantial beryl, columbite-tantalite, and mica. Since the completion of the areal mapping by the U.S.G.S., and the core drilling by the U.S.B.M., one zone was discovered, from which 20 tons of beryl and 73 tons of mica was mined, and another zone from which 635 lbs. of columbite-tantalite was mined. Mining in the latter zone was discontinued in late December, due to the unusually heavy snow and high winds which made the open cut mining almost impossible, but additional columbite-tantalite is showing, and appears to be dipping down deeper into this zone. The core drilling will also be used to determine the depth and continuity of the clean "graphic granite" zones, as well as to provide means for systematically sampling and assaying the drilled areas for gold which was first discovered in this deposit almost two years ago.

Though neither the graphic granite nor the gold could be considered strategic minerals, it is a well known fact that in order to mine profitably for Beryl, Columbite-Tantalite, etc., the operator must be able to dispose of large volumes of lower grade materials, at either

a small profit, or even at cost. However, based on prospective sales of graphic granite at a price that would allow a profit, plus the encouraging gold values found in earlier assays (See General Technicolor Data, Item 18) the disposal of the large tonnages of otherwise waste material, at a profit, seems likely. The recently reactivated mill of the Carter Mine, a few miles from these operations, would probably be able to handle any of the gold separation necessary. Therefore the production of a commercial quantity of gold from the pegmatite, would be a means toward an end, in greatly increasing the production of the scarce and critical minerals.

(b) The property involved in this exploration project lies in the northern and western portion of a large pegmatite dike, approx. 4,000 feet long and 2,500 feet wide, running northwest-southeast. This property covers the area in which most of the major exposed quartz cores lie. Based on findings during the past three years of operation, it is believed that additional commercial ore bodies containing beryl, columbite-tantalite, and mica will be discovered through this diamond drill exploration. Open cut mining during this time has shown definite evidence of a lateral displacement in a southerly direction, indicating that the apparently shallow surface zones are but a sheared portion of the true zone continuing on to greater depths to the north and northeast. On other portions of the dike, large areas are void of any sagebrush or other vegetation, indicating the possible existence of acid rock quartz formations beneath the surface, inhibiting the growth of such vegetation.

Finding the deep seated zones that are believed to exist, may prove the feasibility of driving a low level tunnel in the valley, to tap these zones, and mining along the entire contact to remove the minerals sought after, in the event that the gold values do not prove to be disseminated throughout the dike, and of sufficient value to warrant open pit mining of the entire mass. Though a pegmatite is not ordinarily considered a carrier of commercial gold values, the fact that this property is located in and adjacent to rich gold country (See General Technical Data, Item 7b) coupled with the fact that encouraging gold values have been found on the surface and at depth, suggests interesting possibilities. For additional details refer to General Technical Data, Item 18. See also, attached maps. For other references see U.S. Bureau of Mines maps No. 2500-5-B, Topographic and Geologic Map, New Anniversary Pegmatite, and No. 2500-6-F, Geologic Sections A-A and B-B, New Anniversary Pegmatite. (Not available for inclusion with this application)

3. (a) Proposed work under the exploration project consists of drilling approx. 2,500 lineal feet of core holes, systematically placed to provide a true cross-section of the sub-surface zone structures, and to include also, such exploration trenches and cuts as are deemed necessary to further explore and delineate the contacts near the surface.

Approx. 2,000 feet of core holes would be placed mainly in those areas showing surface indications favorable to the carrying of beryl and columbite-tantalite, and approx. 500 feet of core holes would be placed in other areas of the property to determine depth and quality of the graphic granite, and to explore the value of the gold bearing materials. Unless the general plan is altered by findings from any of the core holes, making it advisable to group additional core holes close by, a total of ten (10) to fourteen (14) holes is planned, divided over the claims as follows:

Bucky Lode	5	Sally Lode	1 to 2
Pug Lode	1	So. Slope #1 Lode. . . .	1 to 2
Rhona Marie Lode .	1 to 2	So. Slope #2 Lode. . . .	1 to 2

(See Exhibit "A" in General Technical Data, Item 2.)

In addition to the foregoing drilling, trenching, sampling, and assaying, the storage building and repair shop destroyed by heavy snow will be rebuilt, and some of the operating equipment repaired or replaced. The existing Caterpiller D4 Tractor and bulldozer will be overhauled, and put into a more useful condition to handle the jobs of trenching, hauling compressor and drilling rig into the more inaccessible areas without the cost of building access roads, maintain existing roads, etc. A new compressor will be purchased, to replace the existing old style, steel wheel unit. The new compressor (Ingersoll-Rand GR105) is chosen for its economy of operation and lighter weight, making it possible to tow this two wheel, rubber tired unit behind the tractor, to places that would otherwise require the laying of costly airline for distances of several hundred yards, and the continual shifting of this airline from place to place, as trenching was completed. A used Jeep will also be purchased, and fitted with fuel and servicing tanks, so that the operating equipment such as compressor, drill rig, bulldozer, etc. can be readily fueled each day, and serviced as necessary without undue delay. Total cost of the project, as planned, will be approx. $50,000.00

(b) As soon as the exploration funds are made available, and the project approved, the drilling contractor (Boyles Brothers or Minerals Exploration) will be so advised, and preparations made to start the drilling. Reconstruction of the collapsed building can be started at the same time, as well as the overhaul of the Caterpillar tractor. Priorities will be required to obtain the new air compressor immediately, as well as repair and replacement parts for the tractor, so that no unnecessary delay will ensue in getting this phase of operations under way. Barring any major mishaps or unforseen contingencies, the time required for the entire project would be approx. 10 months from date active operations are started, though every effort will be made to complete the work in even less time, to take advantage of the better weather.

4. See Exhibits "A" and "B", General Technical Data, Item 2; and Exhibit "C", General Technical Data, Item 18.

5. Existing buildings with cost of necessary rehabilitation and repairs, are as follows:

Shop and Storage Building: - Present building smashed by heavy snow cover, on February 2, 1952. To be rebuilt on same site, of cinder block construction, using any of the undamaged timbers from collapsed structure. Building to be enlarged from present 22x30 feet, to 22x40 feet, to provide separate room for storage of supplies, and to allow sufficient room to overhaul and repair any of the bulky equipment. $ 2,000.00

6. No additional facilities, buildings, or fixtures to be purchased.

7. (a) Operating equipment to be rented: -

Air Compressor: Ingersoll-Rand, Model 105 Gyroflow compressor to be rented from Colorado Builders Supply Co. of Denver, for an estimated 10 months @ $150.00 per month, plus transportation charges of $54.22 each way, from lessors place of business to mine, and return.

Total rent	$ 1,500.00	
Transportation	108.44	$ 1,608.44

(b) No operating equipment to be purchased.

Diamond drill contract to be let: -

Proposed drilling of 2,500 feet of core hole to be done by Boyles Brothers Drilling Company of Salt Lake City, Utah, low bidder, as per attached photostats of bids. Inasmuch as the Bureau of Mines has recommended that NX rod (2 1/8 inch core) be used in this type of formation, due to the difficulty in obtaining satisfactory core in the smaller sizes, all figures herein are based on the NX rod.

Drilling: 2,200 feet of NX core hole @ $7.50	$16,500.00	
Drilling: 300 feet of NC casing hole @ $8.10	2,430.00	
Cementing: Estimated time and materials	500.00	
Reaming: NX to NC - 250 feet @ $2.00	500.00	
Mobilization and demobilization	800.00	$20,730.00

(c) Operating equipment to be furnished: -

Tractor-Bulldozer: The applicant's Caterpillar D4 tractor, Serial No. 7J4618W, to be overhauled and

fitted as outlined in Item 9, and devoted to the project without cost.

Fuel and Service Truck: The applicant's 1942 Dodge 4x4 weapons carrier to be overhauled and fitted as outlined in Item 9, and devoted to the project without cost.

Dump Truck: The applicant's 1948 Chevrolet 2 ton truck to be used where and as deemed necessary by the company manager, without cost to the project.

All other equipment and facilities, including cabins, jackhammers, air hoses, light plant, etc., will also be devoted to the project without cost.

8. Inasmuch as tunnels are deemed unnecessary to carry out the exploration work proposed, labor will consist of a miner-bulldozer operator, acting also in the capacity of a working group-leader; a machine man for drilling and blasting, and a miner-caretaker, whose main function will be to guard against theft of materials and supplies, especially during the non-working hours, but who is thoroughly experienced in mining, and will be available to jump in and fill any gaps that might be created through absenteeism. The miner-caretaker will live in one of the cabins at the mine camp. All the proposed men have been with the applicant, for 1 to 3-1/2 years. Due to the comparatively small scope of the project, employees are chosen, as in the past, for their versatility rather than specific skills, in order to reduce the overall number of employees to be carried on the payroll.

Company manager's time to be devoted fully to project in supervision, bookkeeping, and operational capacity, and to be charged for, as a cost of the project, at the rate of $500.00 per month.	$ 5,000.00
Miner-bulldozer operator to be paid a maximum wage of $2.00 per hour, for approx. 43 weeks, 40 hours per week.	$ 3,440.00
Machine man to be paid a maximum wage of $1.50 per hour, for approx. 43 weeks, 40 hours per week	$ 2,580.00
Miner-caretaker to be paid a maximum salary of $50.00 per week, for approx. 43 weeks	$ 2,150.00

9. Other project costs: -

Overhaul: D4 tractor to have Diesel motor overhauled, grouser pads built up, new radiator core and starter

motor installed, and existing cable controlled bulldozer replaced with a hydraulic angledozer, to provide for more trouble free operation, greater climbing ability, and better penetration power in blasted rock.		$ 3,445.00
Overhaul: The Dodge 4x4 weapons carrier to have front wheel drive axle replaced, transfer case replaced, carburetor replaced, motor tuned, brakes relined and repaired, chassis fitted with diesel fuel and gasoline tanks for fueling isolated equipment, and racks for holding necessary greases, grease guns, wrenches, etc., for servicing and repairing equipment in the field.		$ 425.00
Supplies:		
2,150 gallons of Diesel fuel @ $.162	$ 348.30	
4,300 gallons of gasoline @ $.254	1,092.20	
2,000 pounds of 45% dynamite @ $21.93/C	438.60	
1,000 blasting caps @ $2.30/C	23.00	
3,000 feet of Black Monarch Fuse @ $1.30/C	39.00	
100 Timken starter bits @ $.62	62.00	
100 feet of 7/8 inch hex drill steel @ $.95	95.00	
500 quarts of lube oils @ $.28	140.00	
200 lbs. of greases @ $.18	36.00	
Miscellaneous small tools	250.00	
Office Supplies	150.00	$ 2,674.10
Assaying:		$ 1,000.00
Accounting: Outside accounting and auditing, other than accounting and bookkeeping done by company manager.		$ 500.00
Engineering: Any such engineering as may be required from time to time, to assist in evaluating drilling and trenching results, estimating reserves, and compiling final geological report at end of project.		$ 1,000.00
Miscellaneous:		
Payroll taxes	$ 197.55	
State Compensation Insurance	685.00	
Freight and authorized travel	750.00	
Maintenance and repair	500.00	
Unforeseen contingencies	1,000.00	$ 3,132.55
TOTAL		$49,685.09

BERYLLIUM MINING CO. INC., 920 - 2nd Avenue, Seattle 4, Washington

10. (a) Applicant is prepared to invest at least $4,968.51 in the proposed project.

(b) This amount is sufficient to pay the applicant's 10% share of the cost of the project, in accordance with the regulations on Government participation. (Section 9 of M. O. -5).

11. Referring to Exhibit "C" (General Technical Data, Item 18), attention is called to the fact that the cross-sections shown are only approximate. The very accurate maps and drawings made by the U.S.G.S. and the Bureau of Mines - not yet available to applicant - will show the essential details in their correct relationship.

But it is thought that they, too, will prove, as shown in Exhibit "C", that it would have been premature to base final conclusions on the basis of the findings secured from only two core-holes. At any rate, it seems obvious that a greater number of holes, more widely distributed, are needed to determine the areas favorable to the production of quantities of beryl and its associated critical minerals. It will be noted that Pit No. 1 produced 26 tons of beryl, while Pit No. 2 produced 20 tons and, incidentally, within an excavation of less than one-quarter that of Pit 1.

The location of the holes, as indicated in Exhibit "A" (General Technical Data, Item 2) was roughly determined by examination of surface showings compared with previously exposed areas, cuts, and pits that gave evidences of beryl. In this case, there could be no geometrical pattern of drilling holes but, rather, a sort of "feel your way" program. At any rate, in combination with the drilling program there should be carried on a systematic exploration as outlined in Item 2(b) including some investigation of geochemical, geobotanical, and biochemical guides. To the extent that the evidence thus gathered may serve to reduce the amount of drilling, the cost of making these special determinations might well be absorbed within the maximum indicated cost of drilling given in Item 7(b).

Within that general classification, it may also be advisable to include comparatively shallow geophysical examinations by means of the M-scope or similar apparatus.

All of which may well contribute to the solution of the puzzle of pegmatites. As stated by Cameron, et al, in "Internal Structure of Granite Pegmatites", p. 106: "Most of the data and observations available apply only to limited portions of pegmatite bodies, and information regarding the more completely exposed pegmatites is mostly qualitative, not quantitative."

BERYLLIUM MINING CO. INC., 920 - 2nd Avenue, Seattle 4, Washington

"In summary, investigations of pegmatites in various parts of the world have suggested several sources for the solutions which cause the formation of fracture fillings and replacement bodies, but information at hand is so limited that at present it is impossible to evaluate the importance of the sources. Several possibilities appear plausible at the present stage of pegmatite study, and there is little to be gained by advocating one as a general explanation. Replacement bodies and fracture fillings are a varied assemblage and it seems unlikely that a single explanation will account for all the members."

Form MF-100
(March 1951)

U. S. DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION

Form approved.
Budget Bureau No. 42-R1026.

GENERAL TECHNICAL DATA FOR USE UNDER THE DEFENSE PRODUCTION ACT OF 1950

NOT TO BE FILLED IN BY APPLICANT

Docket No. DMEA-2581

Date received 6-12-52

BERYLLIUM MINING CO. INC.
920 - 2nd Avenue
Seattle 4, Washington

Name and address of applicant

Date April 1952

INSTRUCTIONS

This form is to be filed with Defense Minerals Administration, Department of the Interior, Washington 25, D. C. It should be accompanied by appropriate application form when a specific type of Government assistance is requested, in the form of (1) loan, (2) purchase contract, (3) Government guarantee of a private loan, (4) Necessity Certificate pursuant to the provisions of Sec. 124-A (Amortization Deduction) of Internal Revenue Code, 1950, (5) priorities or allocation of mining equipment, and maintenance, repair and operating supplies, and (6) other forms of Government assistance that might arise under the Act. Submit four (4) signed copies of the form and accompanying papers. Name and address should be stamped or typed on each sheet of this form and all accompanying papers. *When a question is inapplicable it should be so stated on the form.* Additional sheets may be attached in answering any questions or in supplying additional information. (IF YOU CANNOT ANSWER A QUESTION, SO STATE.) If a question is answered elsewhere indicate where answered. It is not necessary to answer it again.

GENERAL TECHNICAL DATA

Supply the following information on separate sheets, arranged, numbered, and lettered as indicated:

1. Materials produced:
   (*a*) What are the chief mine, mill, or smelter products?
   (*b*) What are the byproducts, if any?
2. Name(s) and type(s) of mine(s), mill(s), smelter(s), refinery(ies), pit(s), quarry (ies), drilling operation(s). Include old names of property, if any. Show extent of workings, including the following:
   (*a*) Linear feet of shafts.
   (*b*) Linear feet of drifts and crosscuts.
   (*c*) Linear feet of tunnels or adits.
   (*d*) Linear feet of other mine openings (explain briefly).

   Indicate whether mine is flooded or not. Describe any pumping problems. Give size or productive capacity.
3. For each operation listed above supply the following:
   (*a*) Distance and direction from nearest town and shipping point.
   (*b*) Mining district.
   (*c*) Township, Section, Range.
   (*d*) County, State.

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
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4. (*a*) State whether or not property is now in operation, and if in operation, by whom operated.
   (*b*) Are you operating this property as:
   ☐ Owner.
   ☐ Lessee.
   ☐ Contractor.
5. Number of years in production _____

   If not in production or operation, estimated date when production will begin _____
6. Experience of operators:
   Describe the mining and general business experience of (*a*) the applicant, and (*b*) the person or persons who manage the project.
7. History:
   (*a*) Give a statement, as complete as possible, of previous exploration, development, operation, and production of property, with reasons for suspension of operation.
   (*b*) State briefly the known history and production of adjoining and neighboring properties.
   (*c*) Furnish any available (private) reports that may apply to this application, including results of mine examinations, recommended exploration and development, and metallurgical investigations.

8. Names and addresses of Officers, Directors, or Partners, and in addition thereto, the five largest stockholders if applicant is a corporation.

Name and Address (a)	Official Title (If officer is also director indicate by "D") (b)	Total of Annual Salary, Commissions, Bonuses, Etc., Received From Applicant and Affiliates During Last Fiscal Year (c)	Estimated Net Worth Outside of Interest in Applicant (d)	Number of Shares Held in Applicant Corporation		Life Insurance Carried for Benefit of Applicant	
				Common (e)	Preferred (f)	Amount (g)	Net Cash Surrender Value After Loans (h)
	Total		x x x x x			x x x x x	x x x x x

If more lines are needed continue on separate sheet.

9. Capital Stock Issues:

For Corporate Applicants

Item	Authorized (a)	Outstanding (b)	Par Value (c)	Number of Shares Outstanding (d)	Dividend Rate Last Paid* (e)
Common stock	$	$	$		
Preferred stock	$	$	$		

*Indicate period covered.

10. Production:

Item	Kind of Product (a)	1948 Total (b)	1949 Total (c)	1950 Total (d)	Present Average Monthly (e)
1. Quantity of product mined or quarried (Short, long, metric tons; barrels; pounds; etc.)					
2. Quantity of product processed (specify unit of measure and type of process)					
3. Quantity and grade of product sold or shipped (specify units of measure)					

11. Do you contemplate a change in the present average monthly rate of production? If so, state estimated maximum monthly production and basis of change.

12. Ore or Mineral Reserves:

(a) Describe the ore or mine[illegible]eposit briefly. Accompany the application b[illegible]y available report on the geology and ore reserves.

Form MF-100 - DEFENSE MINERALS ADMINISTRATION - GENERAL
Supplement TECHNICAL DATA

BERYLLIUM MINING CO. INC., 920 - 2nd Avenue, Seattle 4, Washington.

1. Materials produced:

   (a) Chief products are Beryl, Columbite-Tantalite, and scrap Mica.
   (b) By-products: Feldspar, Graphic Granite, Cement aggregates, miscellaneous Rare Earths, and Gold.

2. Name and type of mine, and mill: The property is known as the Willow Creek Mine - the presently used name. It is located on the so-called New Anniversary Pegmatite Dike. It consists of three large open cuts on the Bucky claim (See Exhibits "A" and "B", and reprint of article in Engineering & Mining Journal, herewith) from which the major portion of past mineral production was recovered. Also several small cuts on the South Slope Nos. 1 and 2 claims, from which small amounts of the chief minerals were recovered, and scattered exploration cuts on the three other claims. The mill, which has been chiefly experimental until now, is a dry concentrator type. It consists of a series of crushers, rolls, and successively finer screens for reducing and screening the matrix, while allowing the more flexible mica to pass through the crushers and rolls, and over the tops of the screens, unbroken, to suitable storage bins for shipment to consumers. The fine material passing through the screens, consists of small particles of Beryl, more largely of feldspar and alterations thereof which, according to preliminary tests, contain some recoverable Rare Earths minerals. There is no smelter or refinery on the property. No drilling operations other than such as are needed to open access to the sources of beryl, columbite, tantalite, and associated minerals. Due to the fact that beryl crystals, as well as amorphous columbite-tantalite pieces, are irregularly scattered through the matrix of feldspar, quartz, mica, and other minerals, hand-sorting was the only method thus far used to recover the required minerals. Therefore, too, the formation does not lend itself to a systematic drilling program.

   (a) There are no shafts.
   (b) No drifts or cross-cuts in the mine.
   (c) No tunnels or adits needed.
   (d) There is, approximately, 600 linear feet of open quarry faces.

   Hillside drainage is provided in all open pits, and no flooding or pumping problems are encountered.

   The excavated pits and quarry work, extend over an area, roughly, about 600 ft. long by an average of 200 ft. wide. The productive capacity can only be surmised until considerably more exploration, core-drilling, etc., can be done.

3. (a) The mine is located 9 miles North of Parlin, Colorado, rail shipping point for carload lots, and 21 miles Northeast of Gunnison, Colorado, County seat and rail shipping point for l. c. l. lots.

BERYLLIUM MINING CO. INC., 920 - 2nd Avenue, Seattle 4, Washington.

(b) Gold Brick Mining District.

(c) Township 50 N., Range 3E., N.M.P.M., Section 22.

(d) Gunnison County, State of Colorado

4. (a) The property is not now in operation, due to the unusual severity of the winter, coupled with the lack of sufficiently powerful equipment to overcome the obstacles raised by deep snow drifts and impassable roads on the property. Year around operations can be carried on, with little difficulty if suitable equipment can be made available to keep the cuts and roads free from heavy drifts during the winter, as well as to expedite the search for more ore. The mine was operated during the winters of 1948, 1949, and 1950, with some difficulty but, still, with comparatively short interruptions.

   (b) We are operating this property as registered owners, in accordance with a purchase contract of sale from the legal owner, Rodney W. Fields, based on semi-annual payments of $2,500, all of which have been met, to a total of $24,000. Only two more payments remain to be made - one on August 10, 1952, the other on February 10, 1953.

5. The mine has been in production for three years under the control of this Company; approximately one year previously under the legal owner; and, spasmodically under previous prospectors who are reported to have produced some scrap mica tonnage. It is expected that operations, stopped temporarily by severe winter weather, can be resumed in late March or early April, if the roads to the mine and to the pits will have been cleared by then - or earlier if additional suitable equipment can be acquired.

6. Experience of operators:

   J. R. Wemlinger; President, Beryllium Mining Co. Inc.
   1923-34 - President, J. R. Wemlinger & Co. Inc., New York, N. Y. Engaged in study and exploration of mineral resources of British Columbia and the Yukon, Canada, to be developed by construction of a railroad from Vancouver, B. C. to Fairbanks, Alaska.....1933-36 - President, Montana Mines & Power Co. Inc., Livingston, Montana. Planning reopening of an abandoned mine, near Cooke City, Montana, and development of high-grade copper ore, with gold and silver values. Commercial production proved possible by test shipments. Property closed by Depression.....1936 - Operating tungsten mine, near Alden, Washington. 1937-41 - Resumed exploration work in British Columbia. Mapping mineral resources particularly important alloy metals minerals..... 1941-43 - Adviser to Mr. Frederic A. Delano, Chairman Natural Resources Planning Board, Washington, D.C., in connection with studies covering

mineral resources in British Columbia, Yukon, and Alaska, tributary to the proposed railroad line from Prince George, B.C. and Fairbanks, Alaska. Later surveyed by the U.S. Engineer Corps.....1942-47 - President Canadian-American Railroad & Development Co. Inc., New York, N. Y. Planning financing and construction of above mentioned railroad, including mining exploration, development of industries, colonization, etc. Still under consideration for private financing..... 1948 to date - President, Beryllium Mining Co., Inc., Seattle, Wash.

Aubrey L. Schuler; Vice President, Beryllium Mining Co. Placer and underground mining, 15 years, in Grass Valley and Happy Camp districts, California.

C. A. Wemlinger; Vice-President in Charge of Operations; Assistant to J. R. Wemlinger, since 1936, mining, assaying, sampling, etc., excepting during the years 1942-46, while General Foreman of Inspection Department, Curtiss-Wright Airplane Co., Propeller Division, Caldwell, New Jersey. Located at Gunnison, Colorado since January 5, 1949.

7. History:

(a) This Company was formed in October, 1948, to acquire and develop four claims originally owned by Arthur Pearson and Bert Tucker, respectively of Pitkin and Ohio City, Colorado. These four claims, now recorded as Bucky, Rhona Marie, Pug, and Sally (see Exhibit "A" herewith) were restaked and claimed by Rodney W. Fields of Paonia, Colorado, in 1947 and 1948. This property is located in the so-called New Anniversary Pegmatite, surveyed by the U. S. Geological Survey. The Company also holds a lease on two additional claims - South Slope Nos. 1 and 2, owned by Fred A. Nichols, Evergreen, Colorado.

Complete records of past production from this mine, are not available. But it is generally admitted that the following constitues most, if not all, of its production: Prior to Field's acquisition of the four claims above mentioned, a group mined probably one carload of scrap mica, and then pulled out without doing any further work. Fields mined both the scrap mica and the beryl, and small amounts of columbite and monazite. The exact amount of beryl he shipped is not proved, but it is believed to have been between 10 and 15 tons.

(b) Other than miscellaneous prospect holes, no operations have been carried on, on any of the lands immediately adjoining this Company's claims. The fact that the pegmatite dike on which present operations are going on, is located in the midst of rich gold country, may account for the rather high gold values found in various places and depths, particularly in the albite-quartz and graphic-granite zone in the Bucky

BERYLLIUM MINING CO. INC., 920 - 2nd Avenue, Seattle 4, Washington

claim. A few miles to the North, up Gold Creek, several mines including the Carter Mine, the Raymond Mine, the Gold Links Mine, and the Sandy Hook Mine, have produced very substantial amounts of gold and silver. The Brown Derby Mine, approximately 3 miles South of our mine, had produced beryl, lepidolite, microlite, and feldspar during World War II, and was reopened in 1950. The White Spar Mine of the Consolidated Feldspar Co., 2 miles Southeast of us, has produced high grade feldspar, together with beryl and scrap mica.

(c) No private reports covering this property are available, or known to exist. The U.S.G.S. and the U.S. Bureau of Mines instituted a program of areal mapping, core-drilling, and incidental investigations in 1949 and 1950. But the core-drilling was discontinued after two holes had been put in. Reasons for that discontinuance were not given, though additional holes were scheduled for various parts of the dike, as well as a program of experimental mining methods to be carried on by the Bureau of Mines, to determine the best method of mining the dike. The core-drilling equipment was later removed to the Brown Derby Mine.

8. Names and addresses of Officers, Directors, and the five largest stockholders of the corporation:

(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
J. R. Wemlinger 920 - 2nd Avenue Seattle, Wash.	President & D.	None	XX	60,000	XX	None	XX
A. L. Schuler 1302 Queen Anne Ave. Seattle, Wash.	Vice-Pres. & D.	None	$75,000	12,500	XX	None	XX
C. A. Wemlinger Box 276 Gunnison, Colo.	Manager	$4200	XX	25,000	XX	None	XX
P. M. Anderson 2392 Magnolia Blvd. Seattle, Wash.	Sec'y-Treas.	None	XX	500	XX	None	XX
L. V. Houck (Mrs.) 2416 N. 75th St. Seattle, Wash.	Director	None	$52,000	20,000	XX	None	XX
Geo. K. Edwards 1214 East Pine St. Seattle, Wash.	Director	None	$50,000	11,000	XX	None	XX
Jas. E. Sheets 1918 - 3rd Ave. Seattle, Wash.	Director	None	$175,000	32,500	XX	None	XX
	Total	$4200	XXXX	161,500	XX	XXX	XX

BERYLLIUM MINING CO. INC., 920 - 2nd Avenue, Seattle 4, Washington

Five largest stockholders:	(e)	(f)	(g)	(h)
J. R. Wemlinger	60,000			
Jas. E. Sheets	32,500			
Ethel K. Edmunds (Mrs.) 214 No. 46th St. Seattle, Wash.	27,500	XX	None	XX
A. L. Lewis 1022 S. E. Hawthorne Portland, Oregon	25,500	XX	None	XX
C. A. Wemlinger	25,000	XX	None	XX
Total	170,500			

9. Capital Stock Issues

Item	(a)	(b)	(c)	(d)	(e)
Common stock	$100,000.	$87,500.	$0.10	875,000	No Dividends paid as yet.
Preferred stock	None	XXX	XX	XXX	

10. Production:

Item	Kind	1949	1950	1951	Present *
1. Quantity mined (short tons)	beryl	18.5	26.0	3.5	None mined
2. " processed		None	None	None	this year
3. " shipped (short tons)		18.0	26.0	4.0	thus far
1. Quantity mined (pounds)	colum-	1,034	None	620	do.
2. " processed	bite	None	None	None	"
3. " shipped (pounds)		1,000	None	595	"
1. Quantity mined (pounds)	mona-	28	19	14	do.
2. " processed	zite	None	None	None	"
3. " shipped (pounds)		15	None	1	
1. Quantity mined (short tons)	feldspar	73	26	None	do.
2. " processed		None	None	None	"
3. " shipped (short tons)		None	None	None	"
1. Quantity mined (short tons)	scrap	97.5	64.2	42.1	do.
2. " processed	mica	None	None	None	"
3. " shipped (short tons)		97.5	60.7	42.0	"

* No work could be done this year as yet, due to weather conditions, as explained in answer to Section 4.

BERYLLIUM MINING CO. INC., 920 - 2nd Avenue, Seattle 4, Washington

11. Any changes in the past monthly rate of production will depend, substantially, on the amount and type of help, granted or loaned, by the U. S. Government through the Defense Minerals Administration or other appointed agency. Additional, more powerful equipment, will enable the company to mine at a much lower cost, thereby making available markets for the by-products that can't be sold profitably under present high mining costs. Simultaneously, that result will, also, substantially increase the production of the more critical and strategic minerals.

12. Ore or Mineral Reserves:

(a) The mineral deposit consists essentially of a granitic pegmatite of pre-Cambrian age, made up of zones having the form of shells and lenses that reflect the shapes of the pegmatite walls. The structure is generally made up of (1) a border zone directly in contact with the quartz mass, usually decomposed granitic material, occasionally containing some beryl crystals; (2) an intermediate zone comprising altered feldspar, or albite, which contains most of the beryl, columbite-tantalite, monazite, mica, and other commercially valuable minerals; and (3) a wall zone consisting almost entirely of potash feldspar (orthoclase), contiguous with the mica schist country rock. This zone too has produced occasional beryl crystals in fairly good sizes up to 10 inches. According to E. N. Cameron, et al., the lateral and downward extension of these zones are to a large extent predictable. (Ref: Internal Structures of Pegmatites, Econ. Geol., Mon. 2, 1949)

The grade of beryl, within these units, has remained essentially constant - averaging 12.6% BeO - and, now, can be predicted with reasonable accuracy.

(b) (1) This type of deposit with its greatly disseminated minerals does not lend itself to the mapping of a standard assay plan, or sections showing size of proved or even probable ore or mineral reserves.

(2) This question can not be answered with any degree of dependability. An estimate of mineral reserves could be made only after a thorough core-drilling program had been carried out. Based on past production from the comparatively shallow pits, plus present indications of ore-bearing material on the surface, it is felt that such a program is warranted; it would determine the strike and depth of the various ore-bearing zones, and thus a fairly dependable measure of proved and probable ore.

It might be justifiable in this connection to adopt some assumptions whereby to guess at a "possible" production: It is known that a total of about 60 tons of beryl was recovered since this mine has been in operation. This was obtained from only two pits, neither of which seems to have been mined out. Judging from present appearances, it seems possible that eight to ten additional pods may be opened up, with production in

approximately the sum ratio of beryl to rock excavation, viz.: 1 ton beryl to 100 tons rock, and thus a recovery of 500 to 750 tons of beryl from the entire deposit does not seem out of reason.

On the same basis, as regards columbite - up to now in the ratio of one ton of columbite to 80 tons of beryl - the possible recovery of columbite should be 6 tons. To which should be added a total of 2,500 to 4,000 tons of recoverable mica. It may be added, here, that the two holes drilled by the Bureau of Mines in the summer of 1950 were not sufficient to give an indication of what ore bodies may exist below, or in other parts of the dike which, roughly, measures 2,500 ft. wide and 4,000 ft. long.

13. Access Roads:

The mine is easily accessible through a good County road from Parlin to Ohio City, which road branches off a paved Arterial Highway, 12 miles northeast of Gunnison, all said locations being in Colorado. Distances to shipping are: From the mine to Parlin the rail loading point for carloads, is 9 miles; for less than carload shipments, the loading point is at Gunnison, 21 miles from the mine. Supplies are usually purchased in Gunnison, or are shipped from Denver to Gunnison, where they are picked up. Denver is 200 miles by road, northeast of the mine. From the upper mine opening, over a rock and dirt road to the campsite, is 0.9 mile, and from the campsite to nearby Ohio City, where most of the miners live, is approx. 2 miles, half of it over Company road; the balance over graded and maintained gravel County road. Additional residence points are available at Parlin, 9 miles from the mine, and at Gunnison, 21 miles from the mine.

14. Water Supply:

Willow Creek runs adjacent to the mine road, through the valley and past the campsite. No water is required in any of the present operations, other than for cooling the internal combustion engines used. The drill crew employed by the U. S. Bureau of Mines, while drilling two core holes on the property, used the water from this creek for their operations. In late summer and fall, the volume of flow falls away to a trickle on the surface; but a shallow pit dug in the creek bed will produce ample water for the mine's operations and for drinking purposes.

15. Power:

No electrical power is used at the mine, as available R.E.A. power, one mile from the campsite, would be insufficient to operate any heavy motors. By the end of 1952, a new high-tension line from Salida, Colorado, should be completed, and thereby ample power for all mining and milling operations would be made available. The rate that will then apply, remains to be determined.

BERYLLIUM MINING CO. INC., 920 - 2nd Avenue, Seattle 4, Washington

16. Labor:

The labor employed by this Company has varied from two to six men; not classified as to muckers, machinemen, millers, etc., but rated as to their capabilities as all-around men who can handle any of the jobs - from sorting the ore to operating the bulldozer. Any of the more hazardous jobs, such as blasting, are handled only by those of the men who are fully experienced in that type of mining.

17. Equipment and Facilities:

Presently available at the mine are:

1 Caterpillar D4 Tractor with Woolridge Bulldozer;
1 Athey Overshot Loader attachment for the Tractor;
1 Ingersoll-Rand Air Compressor, of 125 cfm capacity;
2 Jackhammers, complete, with approx. 150 ft. of air hose;
1 Chevrolet Dump Truck - 2-ton Rated capacity;
1 Converted Dodge Army Truck 4x4, with boom and cable hoist;
1 Mica Concentrating Mill of approx. 50 tons per day capacity;
3 Cabins, 1 Blacksmith Shed, and 1 Powder Magazine.

18. Particular conditions or circumstances affecting our operations:

In Section 7 (b) it was mentioned that the pegmatite in which this property is located, is in the midst of gold rich country. It was actually found that gold ore exists in commercial values within, at least, the Bucky claim.

When the U. S. Bureau of Mines was drilling hole No. 1 (approximate location shown in sketch - Exhibit "C" herewith), two chip samples were taken from the core at the 86'-94.5' section. These assayed 1.29 oz. and 0.32 oz. gold per ton. Other samples taken from the surface and in freshly blasted portions of the dike, showed values of 4.06 oz. gold and 0.66 oz. silver, and 3.20 oz. gold and 0.28 silver. Besides these determinations, 22 samples from the same core hole, were assayed by the Bureau of Mines. Excepting 7 of these, that showed no gold or only a trace, all the others showed from 0.01 to 0.06 oz. gold. Most of these lower values were found in the sludge from the deeper portions of the core-hole.

It is, therefore, reasonable to expect that further development might well expose a new rich field of operations - operations which, indirectly perhaps, could justify mining on a scale that, otherwise, could not be profitable. And it follows that the greater the amount of excavated material, the better also the chances for recovering the critical Beryl and Columbite, that might escape detection in hidden zones. Incidentally, the mining of

that gold ore could well produce some substantial revenue whereby still greater production of the critical minerals could be carried on, independently of exploration such as that provided by government financing.

In the same general area, it was found that there is available an extensive deposit of graphic-granite, adjoining the beryl-columbite-tantalite zone, as indicated in the attached sketch (Exhibit "C"). One geologist who examined the property, estimated that at least one million tons of this mineral could be mined here. Based on a minimum output of 100 tons per day, the corporation could operate this phase of mining the graphic granite, at an estimated cost of $2. per ton. Inquiries were made as to the possible market for this mineral. At least one buyer, the Ferro-Enamel Corp. of Cleveland, Ohio, after having tested a sample, indicated a definite interest in purchasing it at a previously quoted price of $5.00 per ton fob cars Parlin, Colorado (9 miles from the property).

They further advised that they could use at least one carload a day after the present military emergency ceases to curtail their production of enamel frit, used for stoves, refrigerators, etc. Therefore, although this possible development could not be depended upon to provide any immediate revenue, it should produce a considerable return in later years.

Reference has been made herein, to the recovery of gold-silver ore, and that of a large tonnage of the graphic-granite. The object was only to point that out as a means whereby it would be possible to more quickly refund any loan that may be granted by the U.S. Government to the Beryllium Mining Co. Inc. At any rate, for the present, emphasis will be placed entirely on the production of the critical materials.

(*b*) If deposit is other than placer:

(1) Submit assay plans and/or sections showing location and size of proved (measured) and probable (indicated) ore or mineral reserve.

(2) State the tonnage (indicate type of ton) and grade of each class of ore reserve, as above, and show how computed. Tabulated total ore reserve as follows:

TOTAL ORE OR MINERAL RESERVES

Ore or Mineral Reserve	Estimated Tons (a)	Metal or Mineral Content Per Ton (Grade) (b)	Gross Value Per Ton (c)	Recoverable Unit Value Per Ton (d)	Estimated Cost of Production Per Ton (e)
Measured (proved)					
Indicated (probable)					

(*c*) If placer:

(1) Give estimated total yardage and average marketable mineral content of each deposit.

(2) Submit map showing location of placer deposit and surrounding area, with all test holes or pits. Submit logs of each hole and test pit with depth and average value of each.

(3) Describe gravel, stating whether fine, medium or coarse; loose, tight, cemented, or frozen, and whether it contains stumps or boulders more than 1 foot in diameter; if so, how large, and in what proportion.

(4) Describe bedrock, giving type (granite, sandstone, shale, etc.) and state whether it is hard or soft, smooth, uneven or rough.

(5) Describe overburden, stating whether loose, tight, or cemented; fine or coarse textured; furnish estimate of average thickness and total amount.

(6) Tabulate the reserves using the form outlined above for ore or mineral reserves.

13. Access Roads:

Give road distances to shipping, supply and residence points, stating kind and condition of roads.

14. Water Supply:

State source and quantity of water available for operations and whether sufficient for all seasons of year.

15. Power:

State amount of power used, rate per hour, and source thereof.

16. Labor:

State number and classes (miners, muckers, millmen, etc.) of men employed during a recent representative payroll period.

17. Equipment and Facilities:

Describe present equipment on the property, including buildings. (State condition.) List major pieces of equipment now owned or controlled and in serviceable condition available for this operation.

18. Are there any particular conditions or circumstances affecting your operations that are not described above? If so, explain.

CERTIFICATION

The undersigned company, and the official executing this certification on its behalf, hereby certify that the information contained in this form and accompanying papers is correct and complete to the best of their knowledge and belief.

BERYLLIUM MINING CO. INC.
(Name of company)

By J. R. Wemlinger
(Signature of authorized official)

April 1952
(Date)

President
(Title)

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—63792-1

CONTRACT OF SALE

WHEREAS, ROD FIELDS, of Ohio, Colorado, hereinafter called the Party of the First Part, is the locator and owner of the following described unpatented mining claims, to-wit:

C

> The Rhona, Bucky, Sally and Pug Mining Claims, located in Section Twenty-two (22), Township Fifty (50) North, Range Three (3) East of the N.M.P.M. in the Gold Brick Mining District of Gunnison County, State of Colorado.

O

P

and desires to sell the same; and

WHEREAS, THE BERYLLIUM MINING CO. Inc., a State of Washington Corporation, hereinafter called the Party of the Second Part, desires to purchase the same;

Y

THEREFORE, in consideration of the premises, the mutual promises and agreements herein contained, Thirty thousand ($30,000.00) Dollars in lawful money of the United States to be paid as hereinafter set forth and twenty-five thousand shares of common stock in the Beryllium Mining Co. Inc. to be delivered as hereinafter set forth to the Party of the First Part, the Party of the First Part hereby agrees to sell, assign, convey and quit-claim all of his right, title and interest in and to the said mining claims to the Party of the Second Part, and the Party of the Second Part hereby agrees to purchase the same. The said consideration in the sum of Thirty thousand ($30,000.00) Dollars shall be paid by the Party of the Second Part to the Party of the First Part as follows: $2500.00 heretofore paid, receipt whereof is hereby acknowledged by the Party of the First Part; $2500.00 to be paid with the signing and ensealing hereof, receipt whereof is hereby acknowledged by the Party of the First Part; $4000.00 on or before January 10, 1949; $2500.00 on or before July 10, 1949; $2500.00 on or before January 10, 1950; $2500.00 on or before July 10, 1950; $2500.00 on or before January 10, 1951; $2500.00 on or before July 10, 1951; $2500.00 on or before January 10, 1952; $2500.00 on or before July 10, 1952; $2500.00 on or before January 10, 1953; and $1000.00 on or before July 10, 1953.

The said Twenty-five thousand (25,000) shares of common stock in the Beryllium Mining Co. Inc., a State of Washington Corporation, shall be issued and delivered to the Party of the First Part by the Party of the Second Part between January 1, 1949 and January 15, 1949. It is understood and agreed that said stock has only a nominal value at this time, but that it is hoped that as the mining property is developed and a market found for its products, that it will become valuable. The said stock shall be considered as fully paid and non-assessable.

IT IS MUTUALLY AGREED AND UNDERSTOOD by and between the parties that the Party of the Second Part shall not become in default on any of the payments above set forth for a period of more than thirty (30) days, and should the Party of the Second Part default on any payment above set forth for a period of more than thirty (30) days, then and in that event, this agreement shall be rescinded and shall become null, void and of no effect, and the Parties of the First Part shall be entitled to keep and retain any and all payments theretofore made as liquidated damages, and in addition thereto he shall be entitled to reclaim from the escrow agent hereinafter named a

copy of this contract and the Mining Deed placed in escrow with said agent, as hereinafter provided.

IT IS FURTHER MUTUALLY AGREED AND UNDERSTOOD by and between the parties that the Party of the Second Part shall at all times during the life of this contract keep up and perform all assessment work required by law to be done on said mining claims, or in lieu thereof, as permitted by law, the Party of the Second Part, in apt time, file the affidavits in lieu of annual labor; and should the Party of the Second Part fail to perform said annual labor and file the affidavits therefor, or file the affidavits in lieu of annual labor, as the case may be, then and in that event the Party of the Second Part shall be fully answerable in damages to the Party of the First Part.

ESCROW AGREEMENT

IT IS MUTUALLY AGREED AND UNDERSTOOD by and between the parties that the First National Bank of Gunnison, Colorado shall be, and it hereby is, appointed as escrow agent to receive a copy of this contract and a Mining Deed, herein provided for, and the said agent shall also receive of the Party of the Second Part for the use and benefit of the Party of the First Part all payments herein mentioned to be made, with the exception of the down payment of Five thousand ($5000.00) Dollars, and the said escrow agent shall account for any sums so received to the Party of the First Part, and upon the payment by the Party of the Second Part of all of the sums herein mentioned to be paid by it, the said escrow agent shall thereupon deliver the said Mining Deed to the Party of the Second Part, one of its officers or its duly authorized attorney or agent.

The Party of the First and Second Part hereby agree with the said escrow agent that they will hold the said escrow agent free and harmless from all expense and liability on account of acting as such agent, and that said escrow agent shall not be held liable for the interpretation of any question of law or fact which may arise between the parties on account of this contract or the subject matter thereof.

IN WITNESS WHEREOF, the parties hereto have set their hands and seals this 26th day of November, A. D. 1948, in triplicate, each copy considered an original.

/s/ ROD FIELDS
Party of the First Part

BERYLLIUM MINING CO. INC.,
a State of Washington Corporation,

By /s/ J. R. WEMLINGER
President

STATE OF COLORADO)
) SS.
County of Gunnison)

I, Robert G. Porter, a Notary Public, in and for said County, in the State aforesaid, do hereby certify that ROD FIELDS personally known to me as the person whose name is subscribed to the above and foregoing Contract of Sale, appeared before me this day in person and acknowledged that he signed, sealed and delivered the said instrument of writing as his free and voluntary act, for the uses and purposes therein set forth.

Given under my hand and Notarial Seal this 26th day of November, A. D. 1948.

My Commission expires October 7, 1952.

(SEAL)

/s/ ROBT. G. PORTER
Notary Public

STATE OF COLORADO)
) SS.
County of Gunnison)

I, Robert G. Porter, a Notary Public in and for said County, in the State aforesaid, do hereby certify that J. R. WEMLINGER, personally appeared before me this day and acknowledged before me that he signed the above and foregoing Contract for Sale as the President and on behalf of, the Beryllium Mining Co. Inc., a State of Washington Corporation, as the free and voluntary act of said Corporation for the use and purposes therein set forth.

Given under my hand and Notarial Seal this 26th day of November, A. D. 1948.

My Commission expires October 7, 1952.

/s/ ROBT. G. PORTER
Notary Public

(SEAL)

MINING LEASE

C O P Y

THIS AGREEMENT OF LEASE, Made and entered into this First day of March, A.D. 1952, by and between FRED A. NICHOLS, Evergreen, Colorado, party of the first part, and THE BERYLLIUM MINING CO., INC., Seattle, Washington, party of the second part, WITNESSETH, That the said party of the first part, for and in consideration of the rents, covenants and agreements hereinafter expressed to be paid, kept and performed by the said party of the said second part, has leased, let and demised, and by these presents does lease, let and demise unto the said party of the second part, the following described premises, to-wit:

South Slope No. 1, Lode Mining Claim, described in Amended Location Certificate No. 201639, and recorded in Book 260, Page 104, County of Gunnison, Colorado, this being the same lode originally located on the second day of April, 1948, and recorded on the second day of June, 1948, in Book 255, Page 346, County of Gunnison, Colorado.

South Slope No. 2, Lode Mining Claim, described in Amended Location Certificate No. 201640, and recorded in Book 260, Page 104, County of Gunnison, Colorado, this being the same lode originally located on the 12th day of April 1948, and recorded on the second day of June, 1948, in Book 255, Page 347, County of Gunnison, Colorado.

These further and amended certificates of location are made without waiver of any previously acquired rights, but for the purpose of correcting any errors in the original location, description, or record.

TO HAVE AND TO HOLD, For the purpose of mining, for the term of Ten(10) Years from the date hereof. Said party of the second part, for and in consideration of the premises aforesaid, has covenanted, contracted and agreed, and by these presents does covenant, contract and agree with said party of the first part his heirs, executors, administrators, successors or assigns, to commence work on said premises on or before August 1, 1952 and to work the same continuously and with reasonable diligence, in thorough and workmanlike manner; performing thereon at least (20) Twenty shifts of work, of Two (2) men each, during every calendar month of the life of said lease; keeping the same securely timbered in all parts during the term of this lease; to keep accurate accounts, and to render Monthly statements, accompanied by vouchers, to the said party of the first part, his agent or attorney, showing the amount of all ore taken from said premises, and the yield of the same, and the cost of hauling and milling the same, and to pay by the 20th of each month succeeding, to said party of the first part, his agent or attorney, as rental for said premises, as follows, to-wit:

Twelve per cent (12%) of the proceeds from sale of all extracted ores and materials, net selling price of which is $400.00 or over, per short ton. Ten per cent (10%) of the proceeds from sale of all extracted ores and materials, net selling price of which is $100.00 to $399.99 inclusive, per short ton. Five per cent of the proceeds from sale of all extracted ores and materials, net selling price of which is less than $100.00 per short ton. Net selling price, upon which all royalties are figured, shall be the

gross selling price, less transportation charges (hauling, freight, or other transport charges, including Federal tax), assay and sampling charges, where applicable, and mill or smelter treatment charges.

It is hereby agreed, as follows, to-wit:

That the payment of royalties from the sale of all extracted ores and materials, "by the 20th of each month succeeding", shall be subject to the receipt by the Party of the Second Part, of settlement from the ore buyer, for such extracted ores and materials sold to him.

That the above requirement as to the number of shifts per month shall be determined and be subject to weather conditions and other conditions referred to as "Acts of God".

That the above requirement as to the number of shifts per month shall be eliminated, and of no consequence, for a period of one year from date of lease, if the Party of the Second Part puts into full force and effect, a program of exploration, to include core drilling and trenching, prior to August 1, 1952.

Said party of the second part furthermore agrees that the said party of the first part, his agent or attorney, shall have the right at any and all times to enter upon and descend into any and all parts of said premises, and that the said party of the second part will render to him all the assistance in his power in so doing.

Said party of the second part furthermore agrees that in case he fails to commence work on said premises as aforesaid, or to work the same continuously and with reasonable diligence and in workmanlike manner, or to keep the same securely timbered, or render said statements, or to pay said rental as aforesaid, or in any respect to keep and fulfill any and all agreements herein expressed or implied, then, and in that case, it shall be lawful for the said party of the first part, his agent or attorney, to declare this lease void and of no effect thereafter, and without process of law to enter upon and take possession of said premises; and also at the expiration of this lease by limitation, said party of the second part agrees to surrender, yield and deliver to said party of the first part, his heirs, administrators, executors, successors and assigns, quiet and peaceable possession of said premises in good condition, unless extended or renewed by mutual agreement.

It is further provided and agreed that any entry upon said property, by the Party of the First Part, for the purpose of inspecting, sampling, or surveying, or for any other reason, excepting repossession as herein agreed to, shall in no wise be done at such time or in such a way as to interfere with the operation of the said property as covered by the terms of this lease.

It is also further provided and agreed that the Party of the First Part shall notify the Party of the Second Part in writing, by registered mail sent to the address of said Party of the Second Part, of any violations of any covenants hereinabove reserved, stating specifically such violations, and Party of the Second Part shall thereafter have 60 days in which to cure

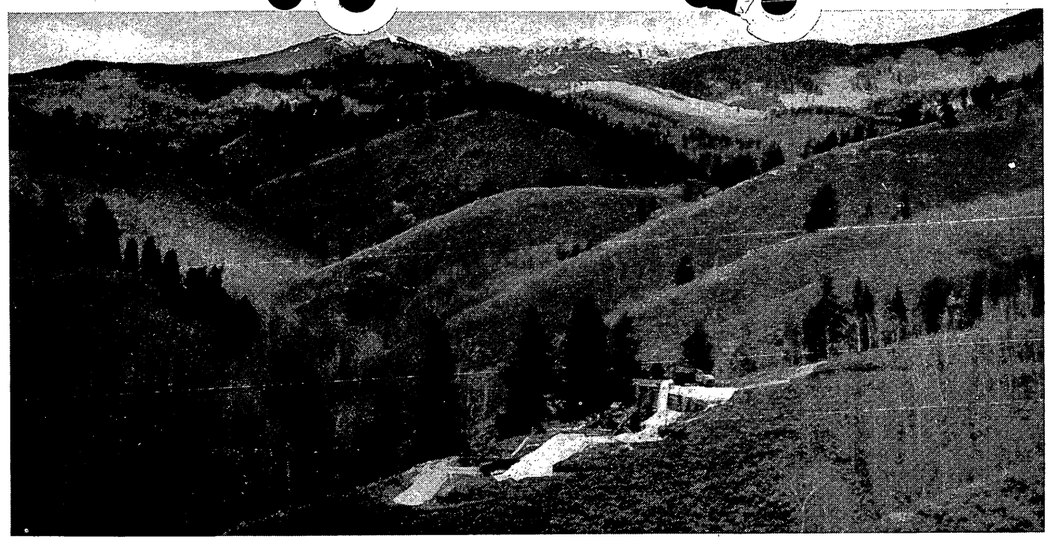
and correct or remedy the matter concerning which any violation or default of the terms as set forth herein. It is further agreed that any delays or interruptions that may occur by any Acts of God, strikes or violence or acts of war not within the control of the Party of the Second Part, shall not be deemed violations of this lease.

It is further mutually agreed that the foregoing covenants and agreements herein contained shall be covenants running with this said lease and leasehold estate, and shall be binding upon all subsequent assignees and grantees, and parties hereafter acquiring any interest in said premises.

IN WITNESS WHEREOF, The parties hereto have executed these presents the day and year first above written.

/s/ Fred A. Nichols
Lessor - Fred A. Nichols

Lessee - Beryllium Mining Co., Inc.
By: /s/ Charles A. Wemlinger
Charles A. Wemlinger, Vice President



WIDE PEGMATITE DIKES, several thousand feet long cut across this part of Gunnison County, Colo., near Ohio City. Mica mill for recovery of scrap mica is shown in foreground. See detail of mill on next page.

Colorado Pegmatite Deposit Yields Beryl and Mica

White gashes on the mountainsides bordering Willow Creek in Gunnison County, Colo., mark the workings of pegmatite miners. The author presents a firsthand account of what goes on at these interesting mineral deposits bearing beryl, mica, feldspar, columbite, samarskite and other rare earth minerals.

CHARLES A. WEMLINGER
Vice-president in Charge of Operations
Beryllium Mining Co., Inc.
Gunnison, Colo.

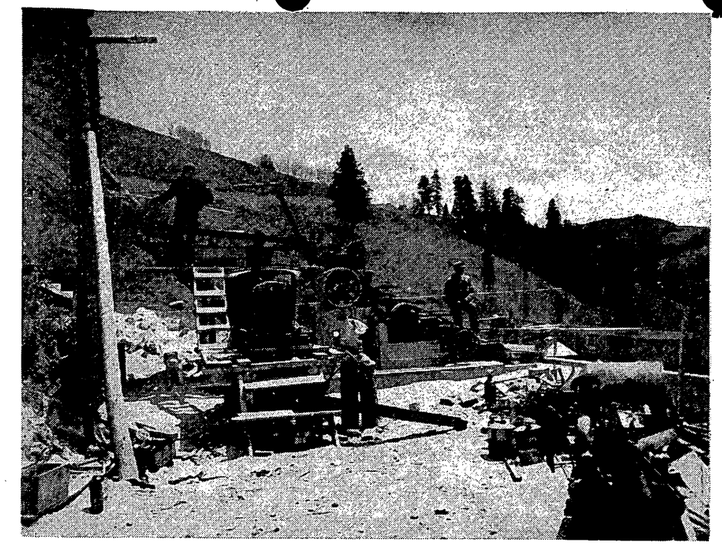
OPEN-PIT OPERATIONS of the Beryllium Mining Co., Inc., are situated on Willow Creek in the Gold Brick mining district of Gunnison County, 21 miles east of Gunnison, and approximately 1 mile from Ohio City.

Ore is extracted from a pegmatite formation approximately 4,000 ft. long and 2,500 ft. wide, which is composed mainly of graphic granite and quartz albite. At present neither of these minerals is being mined except where necessary to gain access to the pods or cores of more important minerals. These minerals, listed in order of importance, are: potash feldspar, scrap mica, beryl, columbite-tantalite, monazite, and samarskite. Minor amounts of other minerals have also been found. The upper part of the dike rises to an elevation of almost 9,700 ft.

All mining is done by open-pit methods. After each blast, the loose material is examined for any of the important minerals such as large books of mica, beryl, etc. Wherever possible these minerals are mined directly from the working face before blasting is done to prevent shattering by blasting. Mining from the face is done almost entirely by hand. However, sometimes a shallow hole is drilled close to a beryl crystal and ¼ to ½ stick of dynamite used to dislodge the crystal from the surrounding quartz.

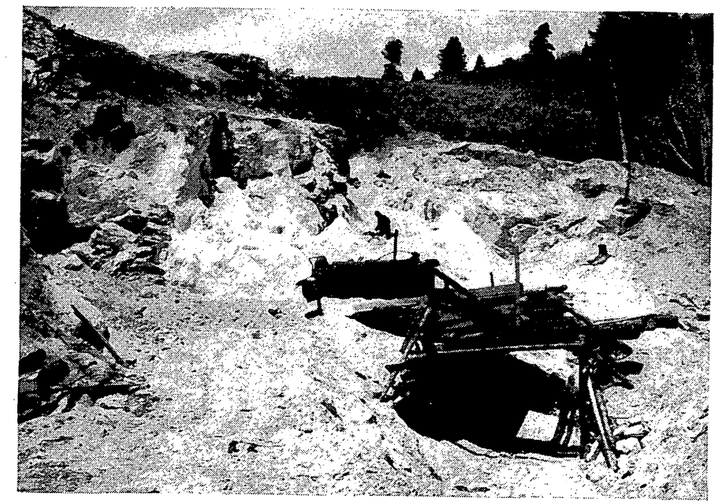
While drilling is being done, the chips from the drill are examined closely for any signs of beryl to prevent shooting a charge too close to a crystal or within a crystal. After loose material has been sorted, it is bulldozed to the stockpile, from where it will be run through the mill for additional mica recovery. Any loose material that is barren of mica is bulldozed to one side into a dump.

Beryl crystals, probably due to their order of crystallization from solutions, appear to be full of minute cracks, and are readily broken into many small pieces if roughly handled. The bull quartz will withstand severe abuse, but beryl will break into pieces if caught by the bulldozer blade. The same is true of rare earth minerals, and consequently their recovery is rather slow. Although some of the mica crumbles when touched, most of it is very flexible. Those pieces which are too small to be recovered by hand sorting can be recovered for the most part by the mill.

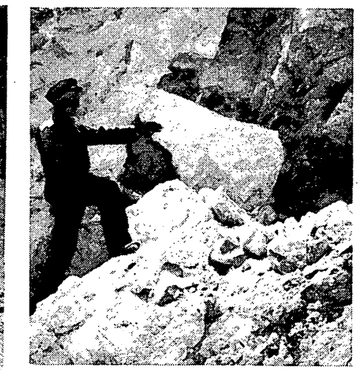


MICA-BEARING ORE is cascaded over crusher rolls and screens in series. 90 to 95% of mica is recovered as scrap mica.

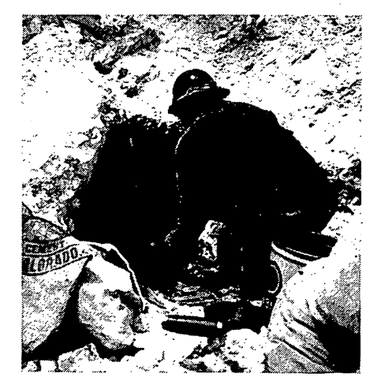
BERYL CRYSTAL pointed out by R. Riddle of the operating staff.



OPEN-CUT MINE in pegmatite yields mica, beryl, feldspar and other minerals. Bulldozer in foreground loads trucks with ore.



FELDSPAR CRYSTAL BOUNDARY shows up clearly in exposed wall of open-cut operations.



BOOK OF MICA is being carefully removed by worker. Much of the mining is hand work.

How the Mica Mill Works

Material from the stockpile is hauled by truck to an ore bin above the mill. Here a grizzly removes all of the oversize before it enters the bin. From the bin the material goes into a jaw crusher where larger pieces are broken down, and the imbedded mica freed from the quartz or feldspar. Crushed ore moves over a shaker screen which removes all of the minus 6-mesh fines. Plus 6-mesh material goes on to a roll crusher.

Before this product enters the rolls, however, any plus 3-in. slabs of mica are removed. The rolls reduce all other material to minus ⅝-in. Then the cycle is repeated, and minus 6-mesh fines are removed, and the plus ⅝-in. mica is recovered. Minus ⅝-in. plus 6-mesh

material moves on to a second set of rolls where it is further reduced to ⅜-in. The final roll reduces the material to minus 6-mesh. All of the mica recovered from the screens is fed into a storage bin, and minus 6-mesh fines are stockpiled. Probably 90 to 95% of the mica is recovered as scrap mica by this method, the balance going through the fine screens. The mica mill shown above is being rebuilt to handle larger capacity and to improve recovery.

Marketing of Minerals

In the past, pegmatite dikes were often mined for just one mineral and then abandoned after that mineral became exhausted. Sometimes dikes like these were shut down and reopened several years later to be mined for an entirely different mineral. In recent years, the trend has been toward the recovery of as many commercial minerals at one time as possible. Much of the value of pegmatite minerals depends on the location of the operation with respect to a standard-gage railroad loading point. Consequently many pegmatite operations have been abandoned because low-value minerals such as feldspar could not be mined and shipped profitably.

In order to get at the rarer and more profitable minerals, considerable tonnages of dike material have to be moved, and the more of this tonnage which can be sold, the more profitable the operation. If a small pegmatite mine operator can mine enough mica and feldspar to carry the costs of operation, he can usually store his beryl and rare earths until he accumulated a good tonnage. However, most operators have to sell the beryl as fast as it is mined to stay in business. Consequently they do not get the higher prices that carload lots of beryl command.

Feldspar in a crude state does not bring a very high price, and unless it can be shipped to a nearby market at a low cost, it certainly cannot be counted on as a revenue producer. Even stockpiling of feldspar is costly and of questionable value despite the excellent quality of the mineral available.

A recent development at this property has been the opening of a new beryl deposit lower on the mountainside than that shown on p. 92. Here the beryl is much cleaner and harder than that found in the upper dike, where weathering has apparently taken its toll. Thus far, the new deposit has yielded about 15 tons of beryl.

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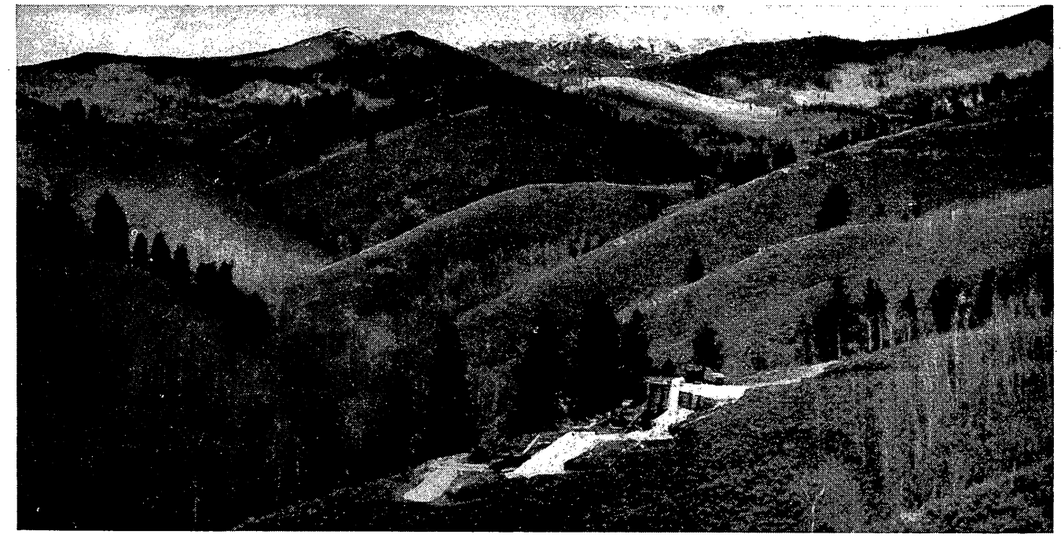

WIDE PEGMATITE DIKES, several thousand feet long cut across this part of Gunnison County, Colo., near Ohio City. Mica mill for recovery of scrap mica is shown in foreground. See detail of mill on next page.

Colorado Pegmatite Deposit Yields Beryl and Mica

White gashes on the mountainsides bordering Willow Creek in Gunnison County, Colo., mark the workings of pegmatite miners. The author presents a firsthand account of what goes on at these interesting mineral deposits bearing beryl, mica, feldspar, columbite, samarskite and other rare earth minerals.

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Reprinted from ENGINEERING AND MINING JOURNAL November 1950

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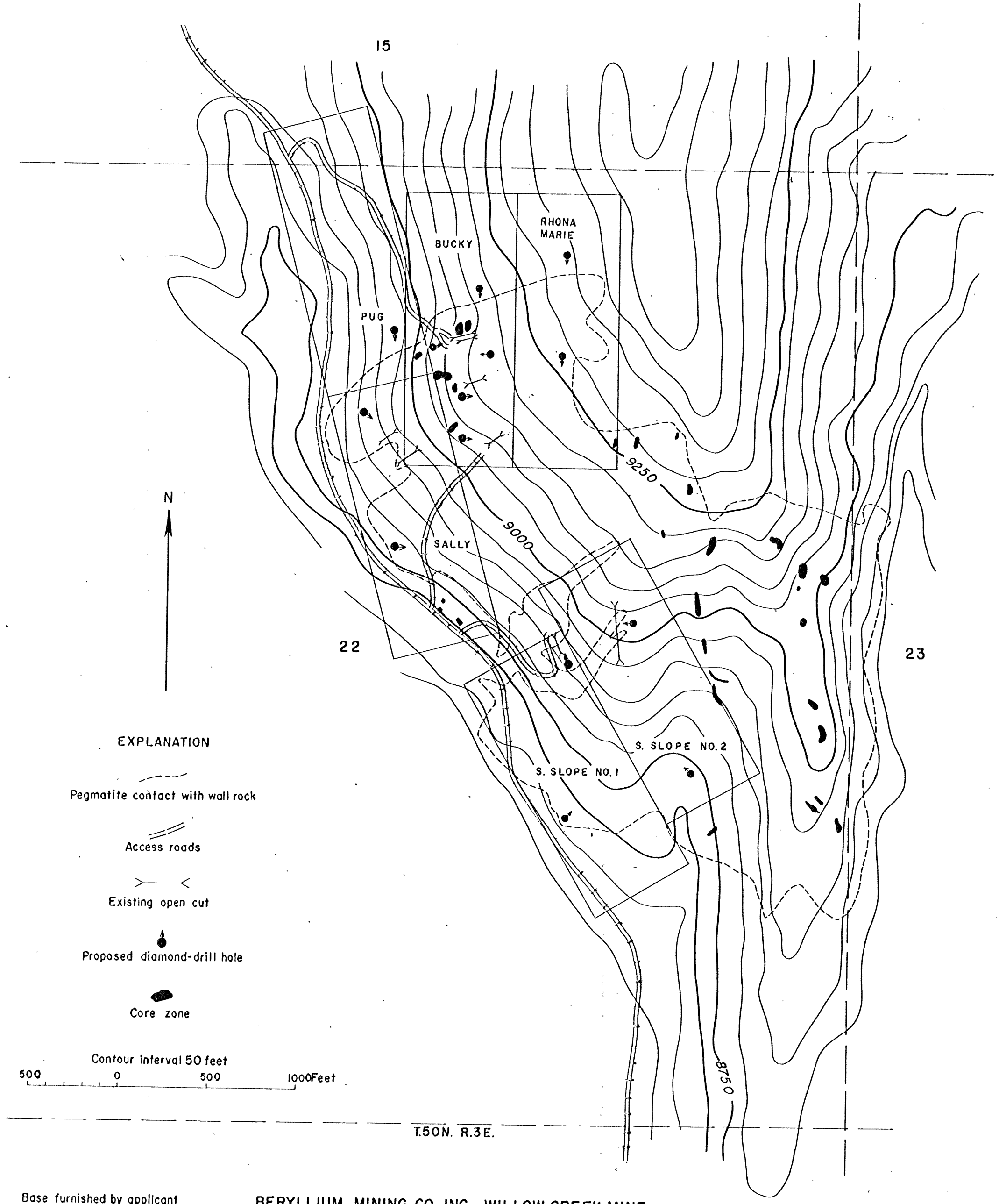

Base furnished by applicant
Modified after Staatz and Trites

BERYLLIUM MINING CO. INC., WILLOW CREEK MINE
GUNNISON COUNTY, COLORADO
FIG. 1

E.N. Harshman, August 1952