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

224 New Customhouse
Denver 2, Colorado

January 15, 1952

Memorandum

To: Administrator, DMEA, Attention: 210

From: Field Team, DMEA, Region IV

Subject: Final Report, DMA Denial 2088, Tungsten No. 1 Mine, (L. W. Rennie) Gila County, Arizona

Enclosed herewith are the original and one copy of Form DMA 3b, a copy of the letter of denial and a copy of the Final Report pertaining to the subject application.

for W. H. King
J. H. East, Jr.

A. H. Koschmann
A. H. Koschmann

Enclosures

JWT:oc
cc: WRStorms w/copy of final report
CAAnderson " " " "
Mining Div. " " " "
AHKoschmann " " " "
DMA Final Report

OFFICE OF THE ADMINISTRATOR

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

200 New Customhouse
Denver 2, Colorado

January 7, 1951

Memorandum

To: DMA Field Team, Region IV

From: A. H. Koschmann

Subject: DMA Docket 2084, Tungsten No. 1 Mine (L. W. Racine), Gila County, Arizona -- Tungsten-Lead

Enclosed are the original and 7 copies of the final geologic report by J. N. Faick and J. A. MacKallor of the U. S. Geological Survey covering the above docket.

It has been recommended that the loan be denied.

A. H. Koschmann
A. H. Koschmann
Supervising Geologist
Colorado-Wyoming

Enclosures (9)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
P.O.Box 4126, University Station
Tucson, Arizona

December 28, 1951

Memorandum

To: Mr. A. H. Koschmann, Denver, Colorado

From: Mr. A. F. Shride, Tucson, Arizona

Subject: Final Report, DMA 2084, Tungsten No. 1 Mine (L. W. Racine), Gila County, Arizona -- Tungsten-Lead

Enclosed are the original and 7 copies of the above report by J. N. Faick and J. A. MacKallor of the Geological Survey. This report and the recommendation that an exploration loan be denied have my approval. This application should be denied for lack of geologic probability of discovering sufficient tungsten ore that can be concentrated to a suitable product for marketing.

The Bureau of Mines will not submit a separate report. The brochure is enclosed.

A. F. Shride

A. F. Shride
Acting District Supervisor
Arizona-New Mexico

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TUNGSTEN NO. 1 MINE (L. W. RACINE)
TUNGSTEN-LEAD
GILA COUNTY, ARIZONA
DMA 2064

Geology

By
John M. Faick
and
Jules A. MacKallor
Geologists, U. S. Geological Survey

TUNGSTEN NO. 1 MINE (L. W. RACINE)
TUNGSTEN-LEAD
GILA COUNTY, ARIZONA
DMA 2084

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LOCATION AND TOPOGRAPHY

The Tungsten No. 1 prospect is located in the extreme northern portion of Sec. 14, T. 1 N., R. 14 E., Gila County, Arizona, on the southwest side of Lost Gulch. The property is approximately 1½ miles northwest of the Inspiration Smelter at Miami and about 1¼ miles southwest of the new Copper Cities' porphyry copper deposit being developed by Miami Copper Company at Sleeping Beauty Peak. From Miami, Arizona, the prospect is reached by four miles of graded road, and two miles of unimproved road, which ends about one-half mile from the property.

The prospect is located at an altitude of approximately 4000 feet on a steep, debris-covered hillside that rises 400 feet to the northwest. An arroyo lies 100 feet southeast and 35 feet below the prospect and drains northeasterly into Lost Gulch.

HISTORY AND OWNERSHIP

About 15 years ago Mr. L. W. Racine discovered some old mine workings consisting of a hundred foot adit and a short raise to the surface. From these workings he obtained samples which contained gold, silver, lead and tungsten. The original work was probably done prior to the turn of the century when Lost Gulch was prospected for lode and placer gold. Gold has been produced intermittently from the area since about 1880, but little has been produced from the old workings. These were relocated and recorded as the Tungsten No. 1 claim in June, 1951 by Mr. Racine and Mr. A. R. Brockway. Mr. C. F. Smith, Chief Chemist and Ore Buyer for Anaconda's Inspiration Smelter, has been doing the assaying for Racine and Brockway and acts in an advisory capacity on the possible treatment and sale of the complex ore.

GEOLOGIC SETTING

Four types of rock crop out on the Tungsten No. 1 claim; quartz monzonite, schist, diabase, and dacite. The Lost Gulch quartz monzonite is shown on Ransome's areal geologic map in the Globe Folio No. 111 as being Precambrian and is intrusive into the Pinal schist. Within the immediate vicinity of the Tungsten No. 1 prospect, a few patches of Pinal schist, only a few feet square in area, are exposed as xenoliths in the quartz monzonite. Ransome's map shows the Lost Gulch monzonite almost completely bounded by faults, and on the western side there is a prominent north-south fault that lies only a few hundred feet beyond the prospect. The diabase, of Mesozoic age, forms an irregular intrusion into the Lost Gulch monzonite, and is the country rock in which the tungsten deposit occurs.

Dacite crops out several hundred feet northwest of the prospect and caps the hill on which the prospect is located. The dacite capping is part of an extensive Tertiary flow that is later than the mineralization of the area. Somewhat rounded boulders of talus from this dacite effectively cover much of the area around the prospect and conceal some of the pertinent geological features.

DESCRIPTION OF THE DEPOSIT

The Tungsten No. 1 prospect is in a diabase intrusion and is located on a mineralized fault striking east-west and dipping 87 degrees to the north. About 200 feet east of the prospect on what might be the extension of the fault are scattered outcrops, and float containing traces of material similar to that at the main prospect.

The ores of the Tungsten No. 1 claim are localized in a brecciated and fractured zone which ranges in width from about 6 inches

to 5 feet and averages about 4 feet where exposed in the 100 foot adit. The ore is thoroughly oxidized and consists largely of limonite and fills interstices in the fractured diabase. Scheelite was observed only in a single small stringer about 1 inch wide and 4 inches long, and in a few isolated grains, all of which fluoresce pale blue under the ultraviolet light. Traces of galena and molybdenite have been reported by the applicant, Mr. Racine, but could not be found by the examining field geologists.

Disseminated in the limonite and lining vugs along the fracture zones are thin, tabular, honey-yellow crystals, usually less than one-quarter inch in diameter, and containing lead, molybdenum and tungsten. These crystals have been tentatively identified as chillagite ($3PbWO_4 . PbMoO_4$) by Mr. C. F. Smith who assayed some panned concentrate with the following results:

WO_3	21.74 percent	PbO	49.3 percent
MoO_3	11.2 percent	V_2O_5	0.01 percent

This mineral identification was confirmed by LaMar G. Evans, Petrographer of the U. S. Bureau of Mines, Tucson, Arizona. To verify optical and spectrographic data Mr. Evans prepared a high grade gravity concentrate of the mineral which yielded the following analysis:

WO_3	23.9 percent	CaO	0.8 percent
MoO_3	9.3 "	P_2O_3	1.4 "
PbO	56.3 "	SiO_2	0.4 "
As_2O_5	3.6 "	P_2O_5	.73 "

Assays on hand specimens containing a fair amount of the mineral have yielded from 2 to 6 percent tungsten. Four regularly spaced samples were taken by the writers at the prospect to determine the grade of the run-of mine ore and the assays are as follows:

No.	Location	Grade in Percent		
		WO_3	MoO_3	Pb
11479	At portal	Trace	Trace	1.85
11480	35 ft. from portal	0.03	Trace	0.12
11481	75 ft. from portal	0.04	0.16	1.15
11482	At face	0.04	0.11	1.75

Although chillagite is a rare and unusual mineral, preliminary examination indicated that there was some hope for a small production from this deposit. In its favor are the obvious ease with which a high grade gravity concentrate could be made, the size and continuity of the deposit, and what at first appeared to be possible commercial amounts of the mineral. The writers assume the mineral is of supergene origin, in which case primary ores might exist at depth. The question of grade, size, and depth of the primary ore then becomes pre-eminent, but there is no satisfactory answer to the question. The writers are tentatively of the opinion that the chillagite is confined to the zone of oxidation and that it probably represents secondary enrichment. However, if the mineral is of hypogene origin, then the lead-tungsten ratio of the ore should remain constant for increased depths, and the grade of the ore will be directly proportional to the amount of chillagite. The data available is insufficient to indicate that a change of grade is to be expected with increased depths, but it should be noted

that a great increase in the amount of tungsten is necessary to make the deposit commercial. The deposit is small, containing only 15 to 20 tons per foot of depth; however, this might be increased by a possible westward extension of the deposit under the debris of an arroyo. Exploration to determine this potential extension might at best result in doubling the 15-20 tons per foot of depth estimate.

Sampling reveals that the average tenor of the ore is too low grade to justify additional exploration as shown by the assays on page 4, and that the total amount of recoverable concentrate would amount to only a few tons. The concentrated mineral will not meet purchase specifications concerning tungsten, consequently there is no known market for it. To prepare this material for market will require chemical treatment to separate the tungsten from the lead, molybdenum and impurities. There is insufficient chillagite to justify the expense of exploration, development, mining and processing for tungsten, and the lead content is too low to operate as a lead mine.

PROPOSED PROJECT

The application requested $10,400 for the purpose of sinking a 4 ft. by 8 ft. timbered shaft and driving about 200 feet of drifts through the ore on 50 and 100 foot levels. Accessory head frame, ore bin and road construction were also requested. The proposed exploration project is quite feasible, but inadvisable because the character and the very low grade of the deposit preclude possible production.

CONCLUSIONS AND RECOMMENDATIONS

As a result of this examination it is concluded that:

1. The deposit is too small and too low grade to be worked at a profit for lead, tungsten, or any other metal.

2. The ore mineral, chillagite, will probably not extend below the zone of oxidation and the deeper primary or hypogene ore is probably also low grade.

3. A concentrate containing 20 to 25 percent WO_3, 8 to 12 percent MoO_3, and 45 to 55 percent lead can be produced but cannot be marketed for tungsten. It could be rendered marketable by chemical processes but the cost would be prohibitive for the small amount of concentrate that might be obtained.

Therefore, the writers recommend denial of the application for an exploration loan of $10,400 for the Tungsten No. 1 claim.