400

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

April 2, 1956

224 New Customhouse
Denver 2, Colorado

RECEIVED
APR 4 - 1956

WSM

Memorandum

To: Secretary to the Operating Committee, DMEA

From: Field Team, Region III

Subject: Geologic Report of Examination, DMEA Docket 4098 (Tungsten) Louis Walker (Great Cross Cut claims), Yavapai County, Arizona

Enclosed are the original and three copies of a Geologic Report of Examination on the subject property. The Bureau of Mines did not participate in the field examination and will not submit a report.

The field examiner noted very limited occurrence of tungsten minerals along the vein. The spotty habit of tungsten deposits of this type indicates the absence of a significant amount of tungsten ore, and he recommends that the application be denied. We concur in this recommendation.

DMEA Field Team, Region III

W. M. Traver

By W. M. Traver
Executive Officer

Enclosures

Reviewed by
DMEA OPERATING COMMITTEE

(date)

400

MAY 3 1956

Mr. Louis Walker
595½ Westerner Boulevard
Oakland 5, California

Re: Docket No. DMEA 4098 - Tungsten
Great Cross Cut Mine
Yavapai County, Arizona

Dear Mr. Walker:

Your application for aid for an exploration project and other data available to us in Washington relative to the above named property have been carefully reviewed.

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

Careful study of our information, although noting tungsten mineralization on the Great Cross Cut group of claims, indicates to us that the probability of disclosing minable tungsten ore reserves is not sufficiently promising to justify Government participation. Under these circumstances, we regret to advise you that your application is denied.

We wish to thank you for your interest in the Defense Minerals Exploration Administration program and for bringing this property to our attention.

Sincerely yours,

C. O. Mittendorf

Administrator

SPHolt:fcc
4/20/56
cc to: Docket
Code 400
Admr. Read. File
Operating Comm.
FT. REG. III
R. W. Holliday, USBM
T. H. Kiilsgaard, USGS

April 30, 1956

MEMORANDUM

To: Administrator, DMEA

From: Iron and Ferro-Alloys Division, DMEA

Subject: Denial of request for exploration assistance in unstated amount (Approximately $105,600)
Docket No. DMEA 4498 - Tungsten
Louis Walker
Great Cross Cut Mine
Yavapai County, Arizona

Denial of the subject application is recommended by this Division based on the following information:

(1) The applicant, Louis Walker, 5954 Macarthur Boulevard, Oakland 5, California, requested exploration assistance in unstated amount (approximately $105,600) for drifting on the Great Cross Cut group of claims.

(2) The applicant controls, by lease from the owners, James R. and Gladys Johnston, the Great Cross Cut Nos. 1, 2, and 3 unpatented lode mining claims, situated in the N. ½ sec. 29 and S. ½ sec. 20, T. 8 N., R. 1 E., Tip Top Mining District, Yavapai County, Arizona.

(3) The proposed program is to explore the Great Cross Cut group of claims by drifting along the Great Cross Cut fault.

(4) In the area of the Great Cross Cut group of claims tungsten in the form of wolframite ($FeMnWO_4$) with lesser amounts of scheelite ($CaWO_4$) occurs in discontinuous quartz veins along a northerly-trending fault zone in coarse-grained pegmatitic Pre-Cambrian granite.

(5) The Field Team, noting that the Great Cross Cut mine was previously denied Government aid under Docket DMA-3666X, on the basis of assays submitted by an applicant, and that Government aid had been recently denied, after examination by Field Team examiners, to the Anacoy Mystery mine (Docket No. DMEA 3874), concludes that the Great Cross Cut property contains no appreciable measured, indicated, or inferred reserves of tungsten ore; that its potentialities seem to be poor, as wolframite was probably

produced from less than 3 percent of the prospected length of the fault; and therefore recommends that the application be denied. The Commodity Divisions of the Bureau of Mines and Geological Survey concur in this recommendation.

W. S. Martin

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

SPMalt/fec
4/30/56
cc to: Docket
Code 400
Admr. Read. File
Operating Comm.

400

RECEIVED
APR 24 1956

April 19, 1956

Memorandum

To: W. S. Martin, Chief, Iron and Ferroalloys Division-DMEA
Through: Chief, Branch of Ferrous Metals & Ferroalloys

From: R. W. Holliday, Commodity Specialist, Branch of Ferrous Metals & Ferroalloys

Subject: Review of Field Team Examination Report
Docket No. DMEA-4098
Great Creek Cut - Yavapai County, Arizona
Louis Walker
5954 Mac Arthur Boulevard
Oakland 5, California
$105,600-Tungsten

Subject examination report reveals no new information that would warrant such a large expenditure. The position taken in previous consideration (DMA Docket 1666X) appears to be correct even though minor production from the property has been reported.

I concur in the recommendation of denial.

R. W. Holliday

400

RECEIVED
APR 24 1956

April 19, 1956

Memorandum

To: W. S. Martin, Chief, Iron and Ferroalloys Division-DMEA
Through: Chief, Branch of Ferrous Metals & Ferroalloys

From: R. W. Holliday, Commodity Specialist, Branch of Ferrous Metals & Ferroalloys

Subject: Review of Field Team Examination Report
Docket No. DMEA-4098
Great Cross Cut - Yavapai County, Arizona
Louis Walker
5954 Mac Arthur Boulevard
Oakland 5, California
$105,600-Tungsten

Subject examination report reveals no new information that would warrant such a large expenditure. The position taken in previous consideration (DMA Docket 1666X) appears to be correct even though minor production from the property has been reported.

I concur in the recommendation of denial.

R. W. Holliday

IN REPLY REFER TO:

400

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

RECEIVED
APR 12 1956

April 11, 1956

Re: DMEA 4098
Louis Walker
Great Crosscut claims
Yavapai Co., Arizona
$105,600.00 - Tungsten

Memorandum

To: W. S. Martin, Defense Minerals Exploration Administration

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

Subject: Review of Field Team report.

The applicant requested assistance in exploring a long crosscutting fault zone by 2400 feet of drifting. At two widely separated points tungsten-bearing quartz, some of it high grade, has been mined and the applicant's long project drift would explore the fault between the two places.

An application, DMA 1666X, was filed in 1951 requesting assistance in exploring portions of the same fault. The application was denied as was one concerned with the Mystery mine in the same general area, DMEA 3874, in 1955.

The crosscut fault with an average trend of N. 8° E. and westerly dip of from 55° to 80° cuts the country rock, a coarse-grained, pegmatitic, Precambrian granite. The granite is partly foliated and contains a few thin schist inclusions. The foliation as well as the inclusions and schistosity strike about N. 65° E. and dip 50° to 60° NW.

Workings, including the 250-foot Pearl adit and the glory hole where mining was done, are scattered along the fault. The fault in most places contains up to about 2 feet of clayey brown gouge and less often quartz vein material up to 2 feet in thickness. In the Pearl adit, quartz, fairly continuous and of even width, was seen for about 75 feet. The wolframite and scheelite appear to have been concentrated where the vein is regular in the Pearl adit. No apparent reason for localization at the glory hole is now discernible.

Because only two short ore shoots totalling about 100 feet have been found in perhaps 2700 feet of the fault, the examiner concludes the percentage of the fault mineralized by tungsten-bearing quartz is small and unlikely to be better along a 2400-foot adit as proposed by the applicant.

The consideration is well taken and the recommendation of the examiner and the geologist member of the Field Team that the application be denied is justified.

I concur with that recommendation.

H. E. Nelson

H. E. Nelson

HENelson:iml
G-4/11/56

cc: Director's reading, 4212
Branch reading, 4212
DMEA (3)
Docket file
R. Holliday, 3513

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

400

RECEIVED
JAN 20 1956

January 23, 1956

224 New Customhouse
Denver 2, Colorado

Memorandum

Copy retained 400

To: W. R. Storms
J. N. Faick

From: Executive Officer, DMEA Field Team, Region III

Subject: Docket DMEA 4098 (Tungsten), Louis Walker, Great Cross Cut Mine, Yavapai County, Arizona

Enclosed is a copy of a letter from the Chairman of the Operating Committee dated January 20, 1956 on the subject docket.

Since your weekly report shows that you have not as yet scheduled this property for a field examination, it is entirely possible that Mr. Stewart might have enough knowledge of the property to make a recommendation without a further examination. However, it is the opinion of the Field Team that an examination is necessary to definitely determine if additional work has been done since the time of Stewart's examination.

W. M. TRAVER,

W. M. Traver

Enclosure

HMC:ab

cc: Sec. Op. Comm. (2)
Harshman
Docket 4098
Chron.

JAN 20 1956

Mr. W. H. Traver, Executive Officer
DMEA Field Team, Region III
224 New Custom House Building
Denver 2, Colorado

Re: Docket No. DMEA 4098 - Tungsten
Louis Walker
Great Cross Cut Mine
Yavapai County, Arizona

Dear Mr. Traver:

Our letter of January 3, 1956, requested a review and a possible field examination for the subject application.

The application and data available here do not indicate that any work has been done since the examination and report by Mr. Lincoln A. Stewart in 1949. Consequently, we had considered the possibility that Mr. Stewart might have enough knowledge of the property to make a recommendation without a further examination.

We note, however, that your memorandum of January 6, 1956, to Mr. J. F. Shaw and Mr. J. H. Faick, and Mr. Shaw's memorandum of January 10 to Mr. W. R. Storms, advise that a field examination and suitable report are required. Accordingly we assume a field examination is needed to give you sufficient information for making a report and recommendation.

Sincerely yours,

George C. Selfridge
Chairman, Operating Committee

APPROVED:

/s/ Robert W. Gooch
Member, Bureau of Mines

Thor H. Kiilsgaard
Member, Geological Survey

TLChapman:foc
1-18-56
cc to: Docket
Code 400
Adm. Read. File
Operating Comm.
FT. REG. III
Messrs. Holliday, USBM
Kiilsgaard, USGS

400

RECEIVED
JAN 16 1956

400

January 13, 1956

Memorandum

To: W. R. Storms

From: Superintendent, Denver Experiment Station, Reg. III

Subject: Docket DMEA 4098 (Tungsten), Louis Walker, Great Cross Cut mine, Yavapai County, Arizona

The subject application, in which the applicant has given no estimate of costs, is enclosed.

A field examination and suitable report are required. The completed report should be forwarded directly to the Executive Officer with a copy of the memorandum of transmittal to this office.

JOHN F. SHAW

John F. Shaw

Enclosures

cc: W. M. Traver (3)
J. H. Faick
J. F. Shaw
E. N. Marshman
Sec. Op. Com (2)

402

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

January 6, 1956

224 New Customhouse
Denver 2, Colorado

Copy

Memorandum

To: J. F. Shaw (With brochure)
J. N. Faick

From: Executive Officer, DMEA Field Team, Region III

Subject: Docket DMEA 4098 (Tungsten), Louis Walker, Great Cross Cut Mine, Yavapai County, Arizona

Enclosed is the subject application in which the applicant has given no estimate of costs. Also enclosed is a copy of a letter from the Chairman of the Operating Committee dated January 3, 1956 and attached memoranda of review of the application by N. E. Nelson and R. W. Holliday.

A field examination and suitable report are requested.

W. M. Traver

Enclosures

HMC:ab

cc: Chair. Op. Comm. (2)
Harshman
Docket 4098
Chron.

RECEIVED
JAN 9 1956

400

Mr. W. M. Traver, Executive Officer JAN 3 1956
DMEA Field Team, Region III
224 New Custom House
Denver 2, Colorado

Re: Docket No. DMEA-4098, Tungsten
Louis Walker
Great Cross Cut Mine
Yavapai County, Arizona

Dear Mr. Traver:

The above-docketed application for exploration assistance is being referred to your office for review and a possible field examination of the property.

Copies of memoranda dated December 19, 1955, and December 20, 1955, by N. E. Nelson, Geological Survey, and R. W. Holliday, Bureau of Mines, respectively, relating to the project, are enclosed for your information.

In Mr. Holliday's memorandum, he mentions that in 1949 the property was examined and reported on by Lincoln A. Stewart. We obtained a copy of this report from College Park, and you probably have a copy in your files. So far as we can determine, no work has been done since that time.

Sincerely yours,

George C. Selfridge
Chairman, Operating Committee

Enclosures

cc: Docket
Code 400
Oper. Comm.
Adm. Read. File
T. Killsgaard, USGS
R. W. Holliday, USBM
FT, Reg. 3

APPROVED:

/s/ Robert W. Geehan
Member, Bureau of Mines

Thor H. Killsgaard
Member, Geological Survey

TLChapman/ls
12.28.55

400

JAN 3 1956

Mr. Louis Walker
5954 MacArthur Boulevard
Oakland 5, California

Re: Docket No. DMEA-4098, Tungsten
Great Cross Cut Mine
Yavapai County, Arizona

Dear Mr. Walker:

The above-docketed application for exploration assistance for tungsten ores has been reviewed by the Iron and Ferro-Alloys Division of the Defense Minerals Exploration Administration and is being referred to Mr. W. M. Traver, Executive Officer, DMEA Field Team, Region III, 224 New Custom House, Denver 2, Colorado, for review and a possible field examination of the property.

If a field examination is considered necessary, any assistance that you may give the members of the field team will be appreciated.

Sincerely yours,

C. O. Mitchell

Administrator

cc: Docket
Code 400
Oper. Comm.
Adm. Read. File
T. Killsgaard, USGS
R. W. Holliday, USBM
FT, Reg. 3

TLChapman/ls
12/28/55

400

December 20, 1955

Memorandum

To: Chief, Iron & Ferroalloys Division-DMEA
Through: Acting Chief, Branch of
Ferrous Metal & Ferroalloys

From: Commodity Specialist-Tungsten

Subject: New Application for exploration aid
Docket No. DMEA-4098-Tungsten
Great Cross Cut-Yavapai County, Arizona
Louis Walker
5954 MacArthur Blvd.
Oakland 5, California
(No cost given but approximately $100,000)

A previous examination of this area (by Lincoln A. Stewart in March 1949) is on file at College Park, Maryland. Reference No. 80.9852. There has been some past production in gold and silver. Wolframite and scheelite were also observed.

On the basis of known mineralization the 2400 feet of drifting proposed would appear to be unwarrented. However, a field examination is recommended to determine whether a new exploration is justified and if so what method of exploration would be most suitable.

R. W. Holliday

RWHolliday/tra

Copy to: Mr. Geehan
Mr. Holliday
DMEA file-4098
F I L E S

IN REPLY REFER TO:

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

RECEIVED
DEC 20 1955

December 19, 1955

Re: DMEA 4098
Louis Walker
Great Cross Cut mine
Yavapai Co., Arizona
$105,600.00 - Tungsten

Memorandum

To: W. S. Martin, Defense Minerals Exploration Administration

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

Subject: Review of application.

The applicant requests aid in exploring by a long drift (2,400 feet) a vein reported to carry gold, silver, and tungsten values. No values are given, although the applicant claims the vein has been traced for 3 miles and a drift 257 feet long is open for sampling.

The applicant claims high-grade tungsten ore was mined from a glory hole which would be reached by the 2400-foot drift. Supporting evidence should be supplied by the applicant.

If the Field Team has information on the property, appraisal of the application without examination may be possible. At any rate, referral is recommended. A less ambitious work program may possibly be warranted.

N. E. Nelson

N. E. Nelson

NENelson:iml
G-12/19/55
cc: Director's reading, 4212
Branch reading, 4212
DMEA (3)
Docket file
R. Holliday, 3513

DMEA
Date Rec'd.
APR 2 1956
BUREAU OF MINES
Denver, Colorado

RECEIVED
APR 4 - 1956

Box 4125 University Station
Tucson, Arizona

March 27, 1956

TRANSMITTE
APR 2 1956

MEMORANDUM

To: Executive Officer, DMEA Field Team, Region III

From: J. N. Faick
W. R. Storms

Through: E. N. Harshman

Subject: Examination report of the Great Cross Cut Claims (tungsten)
Yavapai County, Arizona; DMEA-4098.

Enclosed are the original and 8 copies of an examination report on the above subject property by Leonid Bryner of the U. S. Geological Survey. Bryner recommends denial of the application because only very small amounts of tungsten are believed to exist in the deposit. The Great Cross Cut mine previously was denied Government aid under DMA-1666X, on the basis of assays submitted by an applicant. This property is near the Mystery Mine for which Government aid was recently denied under docket DMEA-3874. Both properties are owned by Jim Johnston. The Great Cross Cut property previously was examined for radioactivity by L. A. Stewart, U. S. Bureau of Mines, in May 1949, at which time he noted the presence of tungsten but found no radioactivity.

As denial of the application is being recommended by the Survey, and, as a Bureau engineer has previously visited the property, we assume it is unnecessary for the Bureau to re-examine it at this time. The accompanying report represents the results of the Survey examination, and those are essentially in agreement with the conclusions expressed in the report on DMA-1666X. Both of the undersigned have examined and approved this report.

J. N. Faick
J. N. Faick

Walter R. Storms
W. R. Storms

JNF:rmm

cc.: Harshman (8)
J.F.Shaw
W.R.Storms

Reviewed by
DMEA OPERATING COMMITTEE

(date)

UNITED STATES
DEPARTMENT OF THE INTERIOR
DOUGLAS McKAY, SECRETARY

RECEIVED
APR 4 - 1956

DEFENSE MINERALS EXPLORATION ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION III

TRANSMITTED
APR 2 1956

DMEA-4098, Louis Walker

Great Cross Cut Claims (Tungsten)

Yavapai County, Arizona

Leonid Bryner, Geologist
U. S. Geological Survey

March 1956

Reviewed by
DMEA OPERATING COMMITTEE

(date)

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

By Leonid Bryner[1]

In an application dated December 9, 1955, and docketed as DMEA-4098, Louis Walker applied for aid in a $105,600 program to explore for tungsten on the Great Cross Cut claims, situated in Yavapai County, Arizona. The property had received previous consideration under DMA docket 1666X, but the application was denied on the basis of samples submitted by the applicant, E. Tatalovich.

The Great Cross Cut claims are in an area of Precambrian, pegmatitic granite. The granite is cut by a north-northeasterly-trending fault, known as the Great Cross Cut, along which are discontinuous quartz veins that contain small sporadic showings of wolframite, and, to a lesser extent, scheelite. About 100 tons of ore probably represents the total tungsten production of this property. Some of this ore was probably very high grade, but most of it probably contained less than 1 percent WO_3. A large portion of it may have come from a residual concentration along the vein outcrop.

The property contains no appreciable measured, indicated, or inferred reserves. Its potentialities seem to be poor, as wolframite ore probably was produced from less than 3 percent of the prospected length of the fault. Consequently, this report recommends denial of the loan application.

---

[1] Geologist, U. S. Geological Survey, Tucson, Arizona.

RECEIVED
APR 4 - 1956

DMEA-4098, LOUIS WALKER

GREAT CROSS CUT CLAIMS (Tungsten)

YAVAPAI COUNTY, ARIZONA

RECEIVED
APR 4 - 1956

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INTRODUCTION

On December 9, 1955 Louis Walker applied for DMEA aid in a $105,600 program to explore for tungsten on the Great Cross Cut claims.

The claims are located in the N½ of Sec. 29 and the S½ of Sec. 20, T. 8 N., R. 1 E., Tiptop Mining District, Yavapai County, Arizona. On the USGS Bradshaw Mountains quadrangle the Pearl adit is S 60°E, 7500 feet, and the Glory hole is S 82°E, 7000 feet from the 2948-foot bench mark on Black Hill.

To reach the property turn left from State highway 69, 5.4 miles north of New River. From this turnoff the property is 18 miles in a westerly direction via dirt roads that lead down the canyon of the Agua Fria river and then up the divide between Tule and Humbug creeks (fig. 1). The route is presently negotiable in a passenger car but is subject to severe erosion by summer rains. The last mile from "the cabin" to the Glory hole is a bad jeep road in any weather, but the Pearl adit may be reached in a passenger car.

Elevations on the property range from about 2200 to about 2700 feet. The climate is very hot in the summer and mild in the winter. Occasional heavy summer rains interrupt car travel.

The claims, as described by the owner of the property, are shown in figure 2. From south to north they are the Great Cross Cut Nos. 1, 2, and 3. They are ungpatented, and belong to Jim Johnston of Hayward, California. Louis Walker, 5954 MacArthur Blvd., Oakland 5, California leases the claims from Johnston.

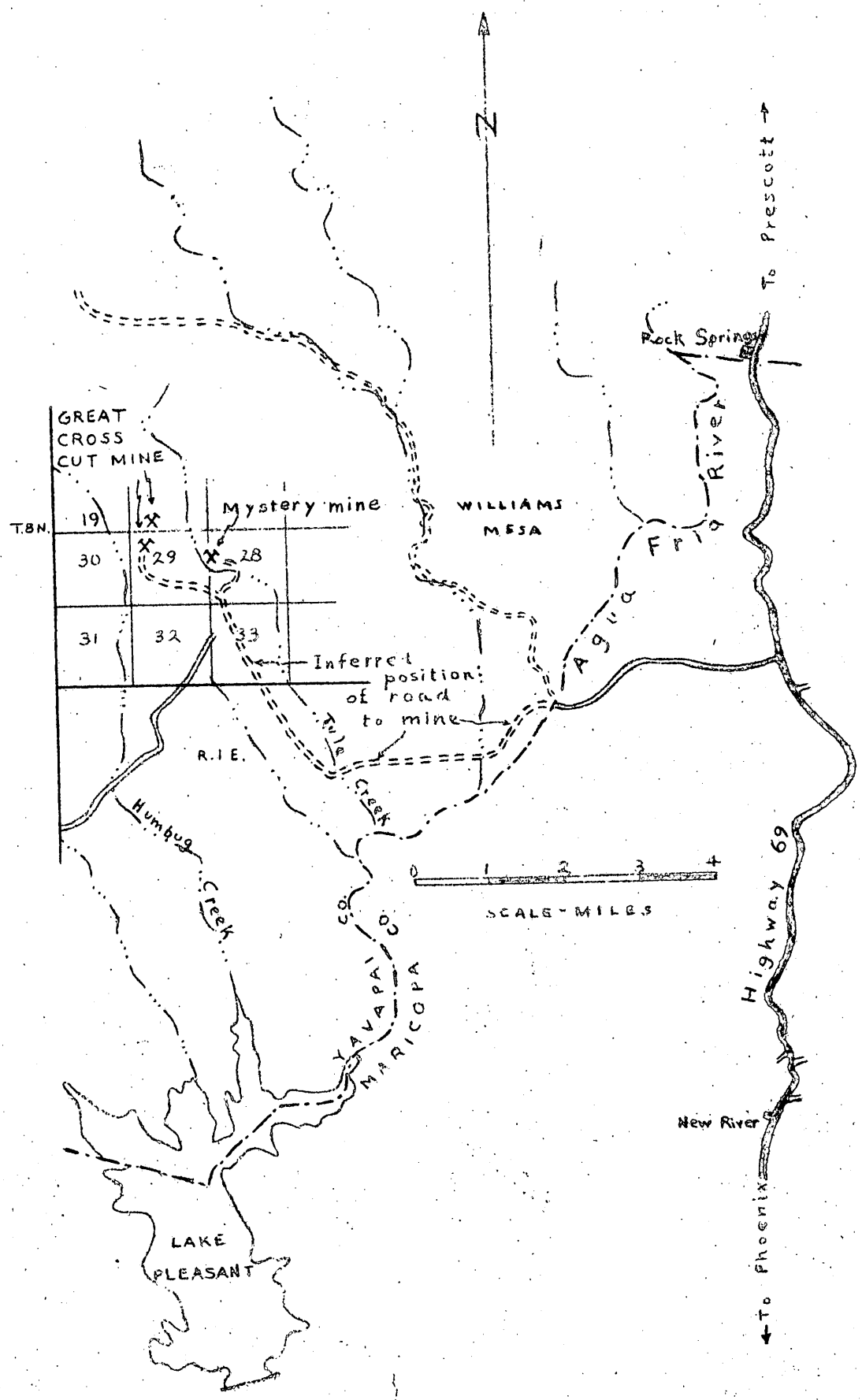

FIG. 1 - LOCATION MAP - Great Cross Cut Mine, ARIZ.

DMEA - 4098

The examination was made on March 2, in the company of Johnston, Walker, and George Walters. Last summer Johnston's Mystery mine (DMEA-3874), near the Great Cross Cut (fig. 1), was examined and described for DMEA. The loan request on this property was denied because of its very poor showings in uranium and tungsten.

Previous to this, a property described as the "Johnson property, Yavapai County, Arizona," received consideration for government aid under DMA docket 1666X, but was denied this aid on the basis of assays submitted by the lessee, E. Tatalovich, president, International Mining Corp., P.O. Box 49, Phoenix. A copy of the letter of denial, written July 11, 1951, by George B. Holderer of the U. S. Bureau of Mines, is at the Tucson office of the U. S. Bureau of Mines, but the full report was not available. Johnston admits that the application by Tatalovich was for the Great Cross Cut property.

Prior to Tatalovich's application the property had been examined by L. A. Stewart of the U. S. Bureau of Mines in order to determine the presence or absence of radioactivity and to identify a widely distributed mineral that fluoresces green. Stewart's report, dated May, 1949, states that wolframite and scheelite are present, but that there is no radioactivity, and that the fluorescent mineral is hyalite opal.

GEOLOGY

The Great Cross Cut claims are in an area of coarse-grained, pegmatitic, Precambrian granite. The granite is partly foliated and contains a few thin schist inclusions. The foliation as well as the inclusions and schistosity strike about N 65° E and dip 50° to 60° NW. A prominent structural feature is the so-called Great Cross Cut vein.

This more properly would be described as a fault with some dike and vein material along it. The Great Cross Cut fault strikes N 10° to 25° E and dips 55° to 80° W. From its south end it is traceable for at least 3000 feet to the north by slight topographic depressions, by associated dike or vein material, or by iron oxide staining. No attempt was made to follow it still farther north, although small cuts beyond this point probably represent a continued northerly extension. Lindgren's description[1] of the Tiptop District mentions a vein called "the Big fault" that reputedly extends in a northerly direction for about six miles. It is likely that the Great Cross Cut fault is the south end of "the Big fault". The "Crosscut fault", also mentioned in Lindgren's report[1], trends in a northwesterly direction and so, despite the similarity in names, cannot be the same as the Great Cross Cut fault.

The workings are distributed along the northerly-trending Great Cross Cut fault. From south to north these workings consist of (1) the Pearl adit that was started on the south end of the exposed fault and driven north along it for a distance of 250 feet, and from which a small amount of stoping connected the adit to the surface, (2) several shallow cuts and a 30-foot adit all within a distance of about 700 ft. north of the portal of the Pearl adit, (3) the so-called "Glory hole", about 2600 feet north along the fault from the Pearl adit portal, (4) a stripped zone marked by shallow cuts and several small, caved openings over a distance of about 400 feet north from the Glory hole. The Pearl adit and the Glory hole are shown in figure 2.

---

[1] Lindgren, Waldemar, Ore Deposits of the Jerome and Bradshaw Mountains quadrangle: U. S. Geol. Survey Bull. 782, p. 182, 1926.

The Great Cross Cut fault in most places contains up to about 2 feet of clayey, brown gouge. Quite commonly it also contains highly silicified, altered dike material up to 12 feet in width, that may correspond to Lindgren's post-Cretaceous rhyolite porphyry. Less common along the fault is quartz vein material up to 2 feet in thickness.

The quartz veins are banded and in places exhibit comb structure. In most places along the fault the quartz occurs as discontinuous lenses separated by slivers and horses of country rock. The only place where a fairly continuous vein of even width was seen was for about 75 feet along the Pearl adit.

Lindgren states[1] that in the Tiptop District practically all the veins trending east-northeast contain tungsten. At the Great Cross Cut mine the ore minerals are wolframite and scheelite, with wolframite predominating. The main gangue mineral is quartz with minor coatings of hyalite opal. This is the mineral that gives the green fluorescence that has been mistaken for scheelite. Wolframite seen in the Pearl adit occurs in very thin veinlets parallel to the vein structure, and near the base of quartz crystals that form comb structures within the vein. Scheelite generally occurs in close association with the wolframite, and, in some cases, as rims around wolframite grains.

Only traces of wolframite were seen during the examination and the property has not been described in the literature, so that the habit of occurrence of the ore bodies is not definitely known.

---

[1] Op. cit., p. 182.

So far as is known, production has come mainly from two rather restricted intervals along the Great Cross Cut fault, namely the Pearl adit and the Glory hole. It is not evident why the tungsten has been concentrated at these places or whether other parts of the fault might be similarly mineralized. In the Pearl adit, however, the interval of even, continuous vein, mentioned on page 4, also corresponds more or less to the interval of the vein along the drift that has been stoped. The stope above the drift is caved, so cannot be examined, but the stope length along the vein probably does not exceed about 50 feet. Whether the same condition, that is, localization of ore in the best-developed intervals of the vein, held true at the Glory hole is not known because the Glory hole has been mined out and the opening in its floor is caved. It is obvious, however, that the Glory hole represents a small interval (about 30 feet, strike distance) along a stripped interval (about 400 feet) of the Great Cross Cut fault, and this also suggests that concentration of wolframite along the fault is quite local.

According to George Walters[1], who worked at the Great Cross Cut during the first World War, the wolframite occurred in large bunches or boulders, and much of it was gathered by rake. From this description it appears that the wolframite was at least partly in residual deposits near the vein outcrop. This is an indication that the wolframite occurs in the vein as coarse crystals or bunches. Occurrence of the ore mainly in a residual deposit and its abrupt

---

[1] Personal communication, March 1, 1955.

exhaustion might partly explain the lack of tungsten production from the area after the first World War.

PRODUCTION AND GRADE

Johnston and Walters from their first-hand acquaintance with the district for a period of about 40 years provided the following information.

The Great Cross Cut property was worked primarily for silver in the 70's and 80's. Tungsten production began about 1915 or 1916 with the stimulation provided by the first World War. A small dry-mill, consisting of rolls followed by velvet-topped tables, was erected at the Pearl adit to treat ore from there. Ore from the Glory hole consisted of hand-cobbed wolframite packed out on burros. A shipment of this ore brought $87,000 at the dock in New York during the peak price of about $90 per unit. Assuming that this shipment averaged 60 percent WO_3, it represented about 1,000 units or about 16 to 17 tons of nearly pure wolframite.

In 1937 and 1938 Sam Cugel operated a small mill on Tule creek below the Mystery mine. This mill treated tungsten ore from the surrounding area including about 80 tons from the Pearl adit, and recovered wolframite but not scheelite. Some of the fine tailings from this mill, shown me by Johnston under the mineral light, contain a fairly abundant dissemination of scheelite grains.

Since 1938 tungsten production has been almost nil. At present Walter G. Johnston is doing a little mining for the applicant at the Glory hole and at the surface at the Pearl adit. About 2½ tons recently mined at the Pearl by Walter G. Johnston yielded 62 lbs. of concentrates. This is 25 lbs. of concentrate per ton, or about 15 lbs. WO_3 per ton.

A part of the previously-mentioned letter from Holdsrer to Tutalovich concerning the grade of the deposit is quoted below:

> "You have given us assay certificates for 27 samples analyzed for tungsten during 1950-51. Of these assays 1 contained no tungsten, 9 contained a trace, 13 ranged from 0.03 to 0.34 percent WO_3 and the remaining 4 contained more than 1.0 percent WO_3. The narrowness of the veins suggests that only material containing more than 1.0 percent would be workable for tungsten alone. The 4 samples in this group apparently do not represent any substantial tonnage.
>
> "The evidence you have given us does not indicate that your property is likely to yield much tungsten except as a by-product from your other operations."

Judging from the last sentence, the assays showed values for other minerals besides tungsten; probably silver and gold.

In examining the property the writer saw only trace amounts of wolframite and scheelite. No samples were taken because samples would not be representative of more than a few hundred pounds of rock. It is impossible to judge the grade of the deposit, because all known ore is essentially depleted and because ore that has been produced in the past was concentrated either by hand-sorting or milling and probably also by natural erosion of the vein. Apparently the ore that was recently mined by Walter G. Johnston contained less than 1 percent WO_3 and some of the ore that had been mined in the past has been almost pure wolframite.

RESERVES

No measured, indicated or inferred reserves are present in this deposit. Most likely the Great Cross Cut fault still contains ore, but such ore probably is in small bodies of less than 20 tons each. Assuming that the ore that has been removed from the vein at the Pearl adit

and at the Glory hole occupied a strike length of 100 feet in a total prospected length of 3000 feet, means that about 3 percent of the Great Cross Cut fault has shown commercial tungsten mineralization. Exploration horizontally along the fault might find as much ore as has been already removed, say 100 tons of ore that contain several percent WO_3, and yet this would not offer an attractive target if it had to be sought over a strike distance of 2000 or 3000 feet, as would be the case at the Great Cross Cut property.

EXPLORATION

The applicant proposes drifting 2400 feet along the Great Cross Cut fault for $44 per foot. If exploration were justified this would be a reasonable way in which to explore.

CONCLUSIONS AND RECOMMENDATIONS

The Great Cross Cut property has produced a small amount of high grade wolframite concentrates. Some of this came from two small workings along 3,000 feet of the zone that locally contains vein material. The writer suspects, but has no proof, that most of the tungsten ore produced from this property was an elavial concentrate due to the weathering of relatively low grade vein material. Judging by the very small production, very limited occurrence of tungsten minerals along the vein, and spotty habit of tungsten deposits of this type, it appears unlikely that the property contains a significant amount of tungsten ore. My recommendation, therefore, is that the request for DMEA aid be denied.

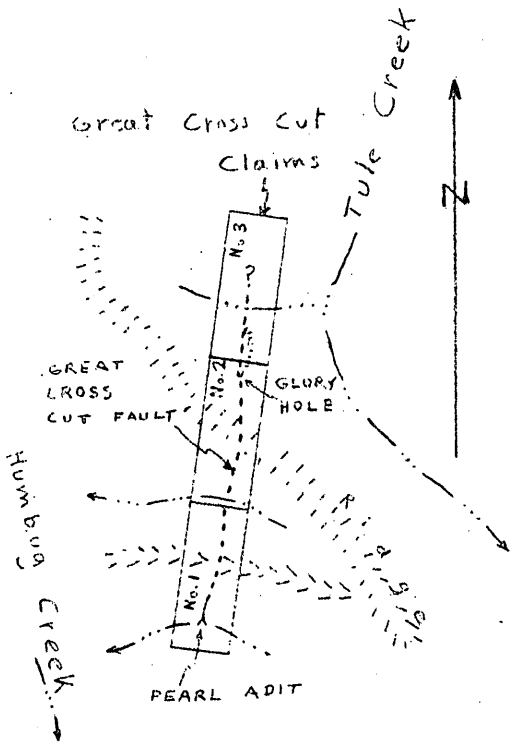

FIGURE 2

GREAT CROSS CUT AREA SHOWING FAULT, CLAIMS, AND PRINCIPAL WORKINGS

1000 0 2000

SCALE - FEET

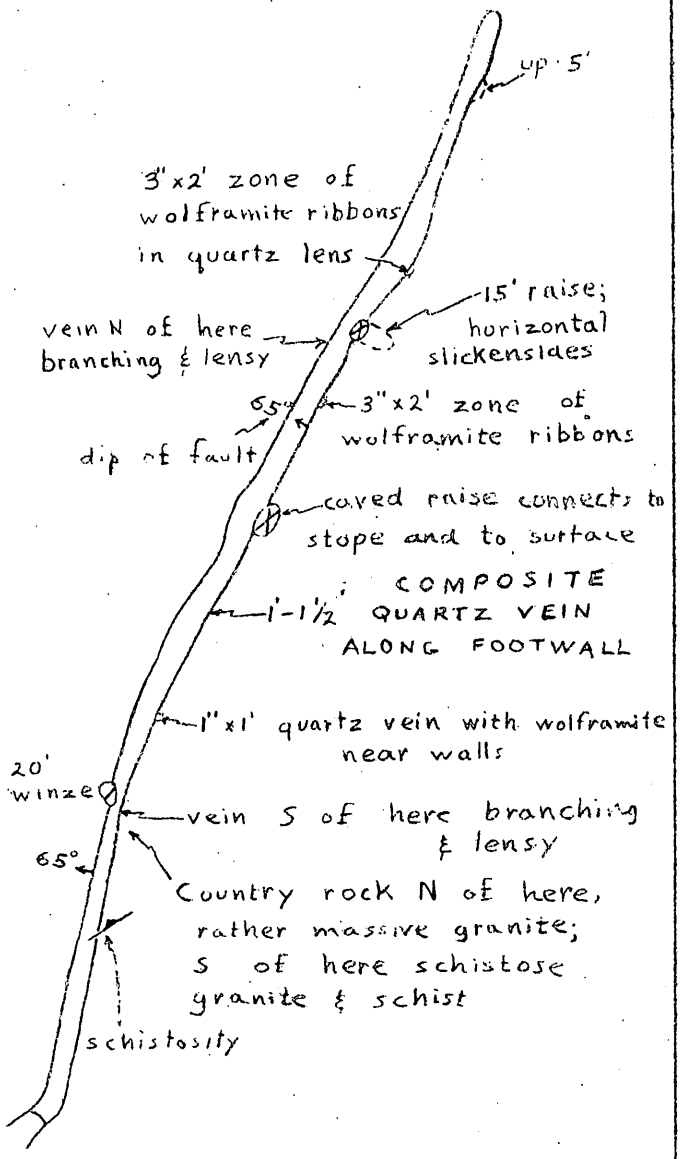

FIGURE 3

GEOLOGY OF THE PEARL ADIT

Brunton - tape survey; L. Bryner 3/2/56

0 40 80

SCALE - FEET

GEOLOGY OF GREAT CROSS CUT MINE

YAVAPAI COUNTY

ARIZONA

DMEA-4098