UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

OFFICE OF
REGIONAL DIRECTOR

REGION IV

Air Mail

224 NEW CUSTOMHOUSE
DENVER 2, COLORADO

August 28, 1951

Memorandum

To: Executive Secretary, Defense Minerals Administration

From: DMA Field Team, Region IV

Subject: DMA Docket 1703X, Final Report, W. C. Kinnon, H. S. Tungsten Mine, Black Canyon Mining District, Yavapai County, Arizona

Enclosed herewith are original and two copies of the above report.

The report indicates the tungsten to be of extremely low grade. The field men recommend that Dwight Lemmon examine the reports regarding the leaching of outcrop scheelite ores.

We recommend that the project be denied, unless Mr. Lemmon, with his experience on Arizona ores, recommends approval.

J. H. East, Jr.

for Ogden Tevis
A. E. Zaschmann

enclosures

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Mining Division
Region IV

224 NEW CUSTOMHOUSE
DENVER 2, COLORADO

August 27, 1951

Memorandum

To: DMA Field Team, Region IV

From: Chief, Mining Division, Region IV

Subject: Final Report, DMA Docket 1703X, W. C. Kinnon, H. S. Tungsten Mine, Black Canyon Mining District, Yavapai County, Arizona

Enclosed herewith is the final report on the subject docket.

The applicant proposed to explore for extensions of surface zones of tungsten mineralization by drifting and cross-cutting, at an estimated cost of $7,974.74. Although no samples were taken by the examining team, they estimated inferred reserves of from 50,000 to 200,000 tons of ore with a minimum of 0.10 percent tungsten trioxide. It is possible, although not probable that much of the primary scheelite in the surface exposures was converted to tungstite through oxidation of pyrite, and removed by erosion, and that the ore below the zone of oxidation will be of higher grade.

The examining team is indefinite in their final recommendations, but I propose denial of the application unless a review by Dwight Lemon of the Geological Survey gives some credence of the possibility mentioned above.

W. H. King

W. H. King
for P. T. Allsman

Mining Division
Date Rec'd.

AUG 13 1951

BUREAU OF MINES
Denver, Colorado

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
MINING DIVISION
REGION IV

Arizona-New Mexico Branch
[redacted]
Box 4097
UNIVERSITY STATION

TUCSON, ARIZONA

August 9, 1951

Memorandum

To : Paul T. Allsman, Denver, Colorado

From : Chief, Arizona-New Mexico Br., Mining Div., Region IV

Subject: Final Report, DMA Docket 1703X, W. C. Kinnon's H. S. Tungsten Mine, Black Canyon Mining District, Yavapai County, Ariz.

Enclosed are original and 7 copies of the section on Summary, Conclusions and Recommendations by C. A. Anderson of the Geological Survey and T. M. Romslo of the Bureau of Mines for the above report; also the section on Engineering by Romslo.

The report has my approval.

Brochure is attached.

Walter R. Storms

Walter R. Storms

CC P.T. Allsman (7)
C. A. Anderson
DMA-1703X
DF

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Defense Minerals Administration
200 New Customhouse
Denver 2, Colorado

August 21, 1951

Memorandum

To: DMA Field Team, Region IV

From: A. H. Koschmann

Subject: DMA Docket 1703X, H. S. Tungsten Mine, Yavapai County, Arizona

Enclosed are the original and 7 copies of the report by C. A. Anderson of the U. S. Geological Survey covering the above docket.

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

Enclosures (8)

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

AUG 14 1951

Memorandum

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

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

Subject: Geologic Report, DMA 1703X, H. S. Tungsten Mine, Yavapai County, Arizona

Enclosed are the original and 7 copies of the above geologic report by C. A. Anderson of the Geological Survey. The examiners recommend that the report be reviewed by Dwight Lemmon to see whether or not the applicant's contention that scheelite has been leached from the outcrop is valid. If, in the reviewer's opinion, the contention is valid, there may be some possibility that an exploration loan can be recommended, otherwise the loan should be denied. The report and recommendations have our approval.

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

Enclosures 8

H. S. TUNGSTEN MINE
YAVAPAI COUNTY, ARIZONA
DMA 170X

Geology and Ore Reserves

By Charles A. Anderson
Geologist, U. S. Geological Survey

UNITED STATES
DEPARTMENT OF THE INTERIOR
OSCAR L. CHAPMAN, SECRETARY

DEFENSE MINERALS ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION IV

DMA-1703X, W. C. Kinnon's H. S. Tungsten Mine

Black Canyon Mining District

Yavapai County, Arizona

C. A. Andersen, Geologist
U. S. Geological Survey

T. M. Romalo, Mining Engineer
U. S. Bureau of Mines

August 1951

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

By C.A. Anderson[1] and T.M. Romslo[2]

The H. S. Tungsten mine, Yavapai County, Ariz., was examined in connection with an application for Governmental aid by W. C. Kinnon, 28 Catilina Ave., Phoenix, Ariz. The applicant proposed to carry out exploratory work designed to determine the potential ore reserves of the mine at an estimated cost of $7,974.74. The examination was made by a Defense Minerals Administration team under docket DMA 1703X.

The deposit was discovered by the applicant in 1942 and has been explored by a short adit and two small open cuts. No tungsten ore has been produced.

The deposit occurs in a large mass of brecciated and silicified granite, pegmatite, aplite and quartz veins, and extends into schist. Scheelite occurs mainly along fractures and in quartz as scattered grains, 1/32 inch to ½ inch in size, and as narrow veinlets that attain a length of several inches.

A visual estimate of mineralized schist in the adit and outcrops at the surface indicates that these zones contain about 0.1 percent WO_3. The degree and extent of mineralization of these zones at depth cannot be predicated on the basis of available data. Therefore, it is impossible to make a reasonably close estimate of the ore reserves. However, in order to present some idea of the magnitude of the deposit, it is estimated that the inferred reserves range from 50,000 to 200,000 tons of material containing a minimum of 0.1 percent WO_3.

1/ Geologist, Geological Survey
2/ Mining Engineer, Bureau of Mines

The mine is inactive at present and most of the equipment and supplies have been removed from the property.

The applicant has proposed to explore the property by driving 252 feet of crosscuts and drifts at an estimated cost of $7,974.74. He has proposed to finance his share of the cost by furnishing equipment and by personally supervising the work.

A visual examination of the deposit revealed no minable tungsten ore and indicated that the inferred reserves range from 50,000 to200,000 tons of material containing about 0.1 percent WO_3.

The applicant believes the surface indications in the strongly silicified zones in the brecciated granite are sufficiently encouraging to warrant additional exploration at depth. He is convinced that sufficient pyrite was present in the surface outcrops to form weak sulfuric acid upon oxidation in sufficient quantity to convert much of the scheelite along fractures to tungstite (WO_3). The latter now has been largely removed by rain wash. The applicant is convinced that only a quarter of the original scheelite remains, and that at depth a grade of 0.4 to 0.6 WO_3 in minable widths is to be expected. Neither of the examining engineers has had sufficient professional experience with scheelite deposits to present a competent opinion on the merits of the applicant's belief in the loss of tungsten from the surface outcrops.

The project is designed to determine the potential ore reserves of the deposit. It is technically feasible and the applicant is believed to capable of supervising the work in an efficient manner.

The proposed method of financing the project fails to meet Governmental regulations in that the applicant's share is less than 25 percent of the cost, and because the rental values for the applicant's equipment probably are excessive. However, it is possible the applicant can finance his share of the cost on a proper basis.

It is recommended that Anderson's Geological report be reviewed by Dwight Lemon of the Geological Survey, who has had many years of experience in the study of tungsten deposits. If Lemon believes the applicant is correct in his intrepretation on the appreciable loss of scheelite from the surface outcrops, it is recommended the applicant be granted a loan to carry out the proposed exploratory work. This work also is recommended in event the tungsten situation is sufficiently critical to warrant the Government to gamble on the possibility of finding reserves that may amount to several times the inferred 200,000 tons of protore containing approximately 0.1 percent WO_3.

However, if Lemon is not favorably impressed with possibilities of an appreciable loss of scheelite from the surface outcrops, or if the tungsten situation is not sufficiently critical to justify Governmental participation in a program designed to develop very low grade tungsten ore deposits it is recommended that the application be denied.

H. S. TUNGSTEN MINE
YAVAPAI COUNTY, ARIZONA

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GENERAL GEOLOGIC SETTING

The H. S. Tungsten Mine is located on the northeast flank of the Bradshaw Mountains, adjacent to a large mass of Bradshaw granite that is intrusive into the pre-Cambrian Yavapai Schist. The Yavapai schist contains a number of mineral deposits, chiefly of copper, lead, and zinc, with some associated gold and silver. Mining activity for the base metals in the vicinity of the H. S. Tungsten Mine has been intermittent, depending largely on the price of the base metals. Early mining was limited largely to extracting gold and silver from the oxidized portions of the deposits. The H. S. Tungsten Mine is the only known deposit of scheelite in the Bradshaw Mountains, although some wolframite has been mined from the Tip Top mining district within the main mass of Bradshaw granite, 12 miles to the south of the H. S. Tungsten Mine.

ORE DEPOSIT

The H. S. Tungsten Mine is located in a tongue of brecciated granite, pegmatite, and aplite, cut by numerous quartz veins. The brecciated rock has a trend of N. 10° E. and extends into the Yavapai schist, essentially parallel to the schistosity. The north end of the brecciated mass is composed of silicified schist. The tongue of granite widens southward (Fig. 2) and is about 200 feet wide at the southernmost scheelite-bearing zone. The schist to the east and west of the granite tongue does not appear to be brecciated or silicified.

The quartz veins in the brecciated granite range from tiny veinlets to veins several feet in width. Some of the wider veins are white massive bull quartz. Although many of the veins have a random orientation, two preferred orientations were noted; one set is essentially

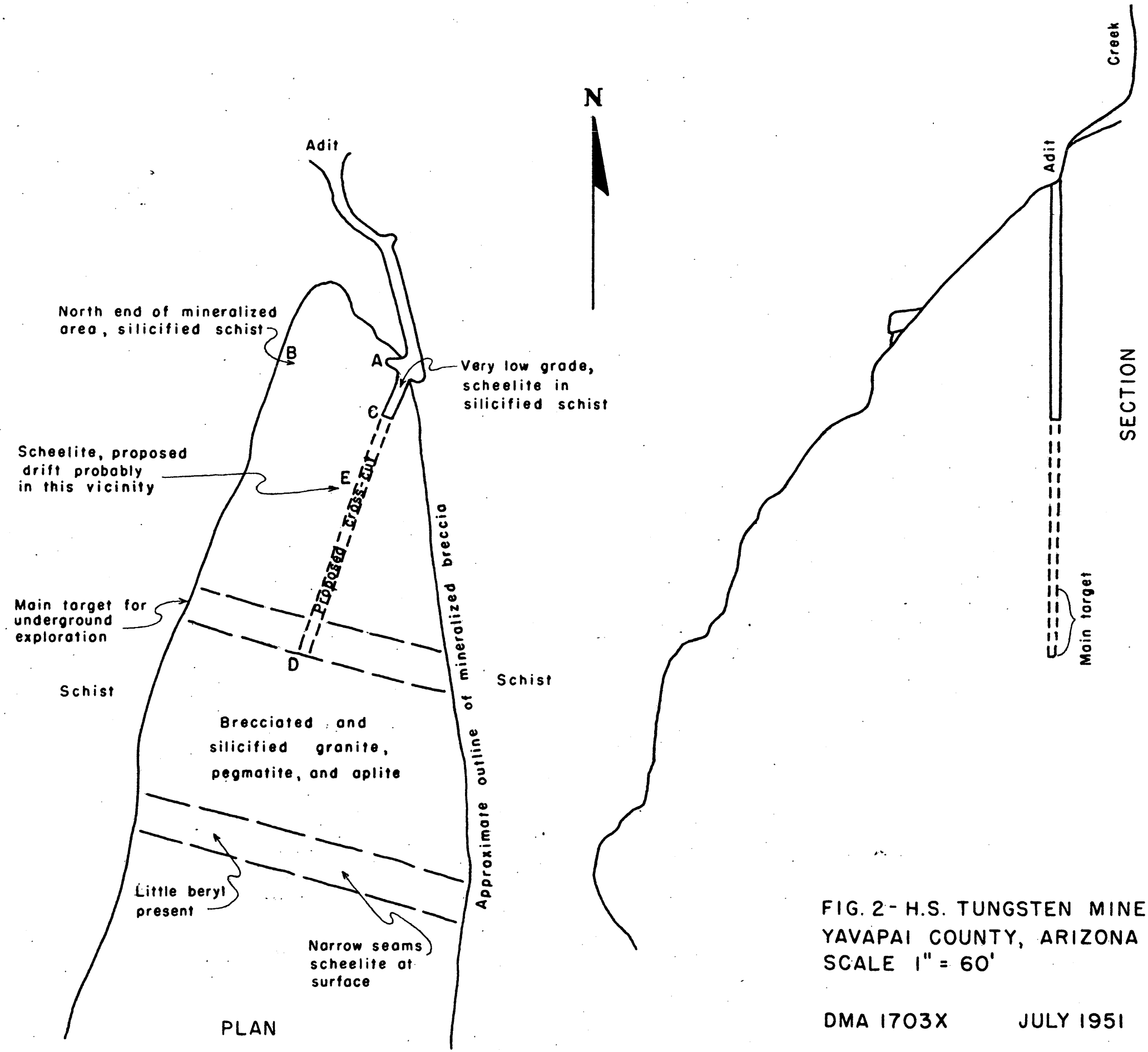

FIG. 2 - H.S. TUNGSTEN MINE
YAVAPAI COUNTY, ARIZONA
SCALE 1" = 60'

DMA 1703X JULY 1951

parallel to the tongue of granite (N. 10° E.), and the other set is transverse. Concentrations of quartz veins have resulted in the formation of two bold outcrops transverse to the tongue of granite.

The adit (Fig. 2) was driven in schist and silicified schist and much of the exposed schist in the adit is barren of scheelite. Where the schist has been silicified in the adit, pyrite is common, particularly in the schist fragments between quartz veins. Scheelite is sporadically present in scattered grains, 1/16 plus 1/4 of an inch in size. In a few places, chain-like veinlets of disconnected grains of scheelite have an orientation parallel to the transverse (N. 75° W.) quartz veins. The higher grade scheelite veins, which are only several inches in length, are in small quartz veinlets that crosscut older and wider barren quartz veins.

Exposures are lacking at the surface over the area explored by the adit owing to a talus cover. The main outcrops at the surface are where quartz veins in the brecciated granite are more numerous, resulting in the formation of two east-trending bold outcrops transverse to the tongue of granite. The granite and quartz veins are stained with limonite, particularly along fractures, and some cubic cavities, partially filled with limonite indicate that pyrite was present.

The bold outcrop 140 feet south of the face of the adit (Fig. 2) was examined at night with an ultra-violet lamp, and scheelite was observed at a number of scattered places on the outcrops. Much of the scheelite was concentrated along N. 70° - 80° W. fractures, forming narrow veinlets in quartz or adjacent to the granite fragments. Some scattered grains of scheelite were observed in quartz. The size of

the scheelite grains ranged from 1/32 of an inch to over 1/4 of an inch. Trains of scheelite grains in places plunged steeply down the dip of the mineralized fractures that dip steeply north and south.

The most southerly bold outcrop contains narrow veinlets of scheelite trending N. 70° - 80° W. in which scheelite grains attain a size of 1/2 inch. These veinlets appear to be limited to a very narrow zone with a maximum observed width of 4 feet, but extend over much of the outcrop length. A little beryl was noted in the western exposures of this zone.

It is apparent the N. 70° - 80° W. fractures were more favorable for tungsten deposition, although some scheelite extended along north-trending fractures where adjacent west-trending fractures are mineralized. Apparently the scheelite is late in the sequence of mineralization, and the transverse fractures and the margins of the granite, aplite, or schist fragments were more favorable for scheelite deposition.

ORE RESERVES

No sampling was done either underground or at the surface because theexamination with the ultra-violet lamp showed that the present exposures are very low grade. The applicant stated in his application that samples from the scheelite-bearing zones assayed from 0.2 percent to 5 percent WO_3, and one 8-foot sample assayed 0.28 percent WO_3. Another sample cut across a width of 4½ feet assayed 0.56 percent WO_3. The location of these samples is not known except for the 4½-foot sample which was taken from a cut on the bold outcrop 140 feet south of the adit, (Fig. 2). Examination of this cut with the ultra-violet lamp

revealed that at the present time, scheelite is exposed in only a small part of the cut; a visual estimation of the highest grade for a square foot was 0.2 - 0.4 percent WO_3. The remainder of the cut was practically barren. Apparently the sample was taken from a higher-grade zone, and most of the scheelite was removed in sampling, or by later prospecting.

It was estimated visually that the exposed mineralized schist in the adit contains less than 0.1 percent WO_3, an estimate agreed to by the applicant. The surface exposures of the bold outcrop 120 feet south of the face of the adit was estimated by visual examination to contain approximately 0.1 percent WO_3, an estimate concurred with by the applicant.

An estimate of the potential tonnage of scheelite-bearing rock is difficult to make from the available information. An east-west length of 140 to 200 feet is indicated and presumably several zones 10 to 20 feet wide may contain more than a trace of scheelite. Presumably inferred ore ranging from 50,000 to 200,000 tons is present, containing a minimum of 0.1 percent WO_3. Admittedly, more information is needed as to grade in depth and as to width and number of higher grade zones.

CONCLUSIONS

The examination revealed no tungsten ore of minable grade, either in the underground adit or on the surface. The applicant believes that the surface indications in the quartz-rich zones in the brecciated granite are sufficiently encouraging to warrant additional exploration at depth. The applicant is convinced that sufficient pyrite was present in the surface outcrops to form weak sulfuric acid

upon oxidation in sufficient quantity to convert much of the scheelite along fractures to tungstite (WO_3) which has been largely removed by rain wash. The applicant is convinced that only a quarter of the original scheelite remains and that at depth, a grade of 0.4 to 0.6 WO_3 in minable widths is to be expected.

Anderson has had insufficient professional experience with scheelite deposits to present a competent opinion on the merits of the applicant's belief in the loss of tungsten from the surface outcrops. From a geological point of view, the brecciated granite is of interest because it would have been a potential reservoir for the deposition of scheelite. The important unanswered question is an estimate of the expected grade of tungsten in depth.

RECOMMENDATIONS

It is recommended that this report be reviewed by Dwight Lemmon of the Geological Survey, who has had many years of experience in the study of tungsten deposits. If Lemmon believes that the applicant is correct in his interpretation on the appreciable loss of scheelite from the surface outcrops, a favorable recommendation is in order to grant the applicant an exploration loan. The zone of quartz-rich granite, 140 feet south of the adit is the best target and should be explored by continuing the adit from point C to point B (Fig. 2). Any favorable mineralized zones cut by this adit extension should be followed by east or west drifts.

If the tungsten situation is critical, it may be worthwhile for the Government to gamble on the possibility that a tonnage several times the inferred 200,000 tons might be found by exploration, and the anticipated grade might be of the order of magnitude as the visual estimation of the surface outcrops, approximately 0.1 percent WO_3.

The first step in an exploration program for this objective would be to extend the adit from point C to point D (Fig. 2), and the results obtained could be used as a guide for the expansion of the program.

However, if Lemmon is not favorably impressed with possibilities of appreciable loss of scheelite from the surface exposures, or if the tungsten situation is not sufficiently critical for the Government to be interested in a long-shot gamble to develop very low grade tungsten ore, it is recommended that the application be denied.

W. C. KINNON'S H. S. TUNGSTEN MINE
BLACK CANYON MINING DISTRICT
YAVAPAI COUNTY, ARIZONA
DMA DOCKET 1703M

Engineering Report

By T. M. Komslo,
Mining Engineer
U. S. Bureau of Mines

August 1951

W. C. KINNON'S H. S. TUNGSTEN MINE
BLACK CANYON MINING DISTRICT
YAVAPAI COUNTY, ARIZONA
DMA DOCKET 1703X

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2	H. S. Tungsten mine (See Geological Report)	

August 1951

INTRODUCTION

This report presents information obtained during the course of an examination of the H. S. Tungsten mine, Yavapai County, Ariz. The examination was made in response to an application for Governmental aid by W. C. Kinnon, 28 E. Catalina Ave., Phoenix, Ariz. The application carries docket number RMA-1703X.

The applicant submitted a plan for exploration of the mine by underground workings at an estimated cost of $7,974.74, and proposed that the work be financed in accordance with regulations governing Governmental aid to exploratory projects.

The mine was examined July 25 and 26, by C. A. Anderson, Geological Survey, and T. M. Romalo, Bureau of Mines.

LOCATION, TOPOGRAPHY AND CLIMATE

The H. S. Tungsten mine is southeasterly about 4½ miles from the village of Cleator, Ariz. It may be reached from Cleator over a winding, dirt road that contains short sections of steep grades, and that crosses Poland and Turkey creeks. These creeks are dry except for short periods during the spring and summer. During those periods the creeks may carry a heavy flow of water from rainstorms or snow, and may become impassable.

The nearest railroad shipping point is at Mayer, about 20 miles to the northwest by a graded road. Phoenix, Ariz., about 75 miles south of the mine, may be reached from Cleator by traveling about 15 miles northwesterly over a graded road and thence south for 60 miles over state highway 69.

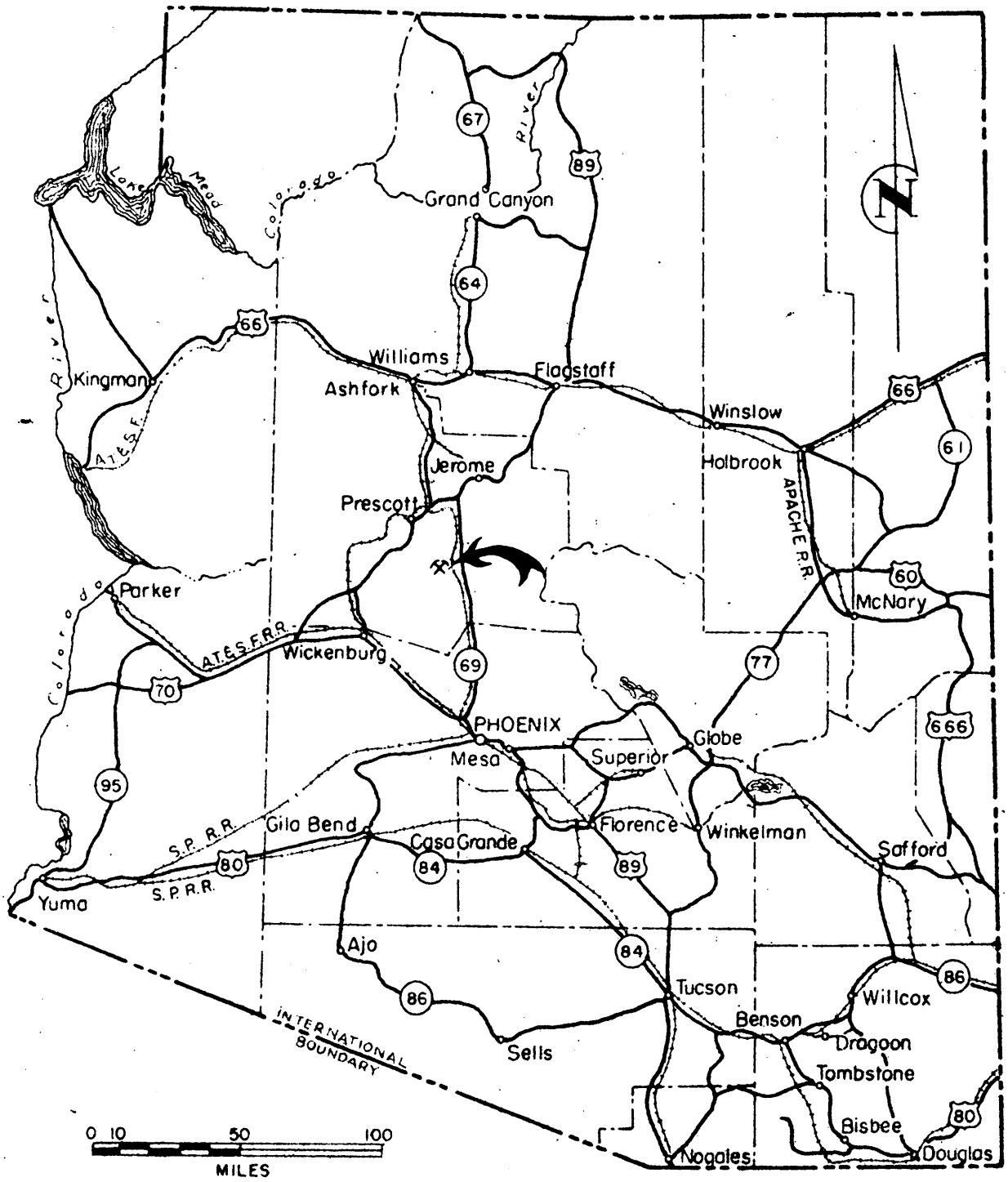

Fig. I Location Map, H.S. Tungsten Mine, Yavapai County, Ariz.

DMA I703X July I95I

The mine is on the eastern slope of the Bradshaw Mountains at an altitude of about 3,000 feet. It is in an area of rugged topography. On the property the relief is approximately 500 feet.

The summers are hot and the winters are mild. Annual precipatation, probably about 15 inches, consists mainly of heavy rainfalls in the summer and light rain and snowfalls in the winter. There are no permanent streams in the district.

Vegetation is confined to brush and small trees.

HISTORY AND PRODUCTION

The applicant stated that the property was operated by the Howard Silver Co. from 1901 to 1926 for the production of silver-bearing lead-zinc ores and that a small amount of wolframite ore was shipped from the silver workings during World War I. There are no available production records.

The scheelite deposit, located several hundred feet from the silver workings, was discovered by the applicant in 1942. He acquired the property, containing both the silver and scheelite deposits, during 1942 and has carried out intermittent exploratory work at the scheelite property. No ore has been produced from these operations.

PROPERTY AND OWNERSHIP

The property of the H. S. Tungsten mine consists of 6 patented lode mining claims in secs. 1 and 12, T. 10 N., R. 1 E. (unsurveyed), Black Canyon mining district, Yavapai County, Ariz. The group of claims may be located by the U. S. Mineral Survey No. 3882, Arizona Land District.

W. C. Kinnon, the applicant, 28 E. Catilina Ave., Phoenix, Ariz., is the owner of the property.

DESCRIPTION OF THE DEPOSIT

The H. S. Tungsten deposit occurs in a zone of brecciated and silicated granite, pegmatite, aplite and quartz veins, and extends into schist (Fig. 2). The zone trends N. 10° E. and essentially parallels the foliation of the schist. It widens southward and is about 200 feet wide at its south end. Schist, that does not appear to be brecciated or silicified, surrounds the zone except to the south where the deposit probably merges into a large mass of granite.

Quartz veins in the brecciated granite range from tiny veinlets to veins several feet in width. Many of these veins have a random orientation, but two preferred orientations were noted. One set is parallel to the trend of the silicified zone, and the other set is transverse. Concentrations of these veins have formed two bold outcrops. The granite, and quartz veins are stained with limonite, particularly along fractures, and cubic cavities partially filled with limonte indicate that pyrite was present. Talus covers the area explored by the adit.

The adit was driven in schist and silicified schist. Pyrite is common to the silicified schist particularly in schist fragments between quartz veins. Scheelite is sporadically present in scattered grains, 1/16 to plus ¼ inch in size. In a few places it occurs as chain-like veinlets of disconnected grains. The higher grade scheelite

veinlets are only several inches in length and occur in small quartz veins.

The surface was examined at night with an ultra-violet lamp. Scheelite was observed at scattered places in the areas of the two bold outcrops. At the most northerly of these outcrops much of the scheelite is concentrated along N. 70° - 80° W. fractures as narrow veinlets in quartz or adjacent to granite fragments. The scheelite grains range in size from 1/32 of an inch to over ¼ of an inch. The other bold outcrop contains veinlets of scheelite, treading N. 70° - 80° W., in which the scheelite grains have a maximum size of ½ inch. The veinlets appear to be confined to a zone, 3 to 4 feet wide, that extends over much of the outcrop length. A little beryl is present in the western part of the zone.

ORE RESERVES

Much additional information is necessary as to the degree and extent of mineralization with depth before a reasonably close estimate can be made of the deposit's ore reserves. However, in order to present some idea as to the magnitude of the deposit, it has been estimated that the reserves range from 50,000 to 200,000 tons and contain about 0.1 percent WO_3. The grade of the ore is based on a visual estimate in which the applicant concurred.

PRESENT STATUS

The property is inactive at present.

The scheelite deposit has been explored by 2 small open cuts, and the adit shown on figure 2.

Equipment in the adit consists of track, an ore car, air pipe line and a pressure tank for drilling water.

Structures on the property consist of 2 cabins, one of which is owned by the applicant.

The mine makes sufficient water for the operation of one drifter. Additional water is available from 3 nearby shafts that are reported to make a total of 290 gallons per minute.

PROPOSED EXPLORATION

The applicant proposed to explore for extensions of zones that contain tungsten mineralization at the surface by drifting and crosscutting from the adit (figure 2). Specifically the proposed work consisted of drifting from points A to B and for crosscutting from points C to D, for a estimated total of 252 feet. During the investigations the examining team and the applicant agreed to a few changes in the proposed plan of work. As modified, the project would consist of driving a crosscut from C to B, and then drifting east or west on any favorable zone developed by the crosscut. The same total footage, 252 feet, is believed to be adequate.

COST OF THE PROJECT

Time Schedule

The applicant has estimated that the work will proceed on the following schedule and will be completed in 4 months.

First 2 weeks	- Organizing, obtaining supplies, laborers, etc.
3rd week	- Cleaning out tunnel and preparing for mining operations
15th week	- Complete drifts and crosscuts.
17th week	- Complete sampling and project work.

Costs

The following are the applicant's estimated costs of the project.

Labor:

1 - Miner (Foreman)	$14.00 a day	
1 - Mucker	11.50 a day	
Total daily labor cost	$25.50	
Cleaning out tunnel, laying track to face, installing air pipe and ventilation tubing, 6 days @ $25.50		$ 153.00
Drifting and crosscutting, total of 252 ft., 84 days @ $25.50		2,142.00
Sampling drifts and crosscuts and misc. work, 8 days @ $25.50		204.00
		$2,499.00
Add approximately 10 percent for labor compensation & industrial disease insurance		245.00
Total for labor		$2,744.00

Supervision:

Mining Engineer, $60 a week, part time basis, 16 weeks	$ 960.00

Installations:

Install and connect compressor, ventilation fan engine and drive, grinder for bits and build small tool room	250.00

Equipment, $50 or more:

1 -	2½ H.P. gasoline-driven 8-inch blower with drive	195.00
100 ft. -	8-inch vent tube	80.00
1 -	15-cubic foot B.B. mine car	105.00
240 ft. -	Track (480 ft., 12-pound rail), 1950 pounds @ $8.90 per CWT	173.50
25 -	1-5/8 inch Tungsten carbide bits, 25 @ $13.65	341.25
25 -	50-pound boxes, 40 percent special dynamite, @ 23.50 per CWT	293.75
162 -	6- x 6- inch wooden track ties	64.80
1168 -	Gallons gasoline @ 25 cents a gallon	292.00
Total new equipment		$1,545.35

Applicant's equipment:	Est. Cost	Rental per month
1 - Portable new Smith air compressor, 75 cu. ft. a minute	$1,550.00	$ 145.00
1 - Column bar with arm & clamp, one cradle	125.00	25.00
1 - Jackhammer for drifting	175.00	35.00
1 - Water pressure tank, complete with hoses.....	100.00	15.00
1 - Set of tools including shovels, picks, single & double jacks, pipe wrenches, saws, carbide lights, wrenches, & 2 sets drill steel....	100.00	15.00
Totals	$2,100.00	$ 235.00

New material and supplies, under $50:

1 -	Jim Crow	$ 23.25
1 -	Pipe threader, ½ to 2 inches	35.10
1 -	Pipe vice	9.46
1 -	Grinding wheel for tungsten-carbide bits	35.00
30 pr -	Splice plates with bolts	14.40
1 -	Line oiler	16.00
100 lbs -	Track spikes 2½ inch	13.00
1 set -	1 inch Hex. drill steel, shanked & threaded	16.05
60 Ft -	1½ inch black pipe @ $25.64 per 100 ft.	15.38
140 Ft -	1 inch blakk pipe @ 16 cents per ft.	22.40
	Pipe fittings	6.80
25 gals -	Jackhammer oil @ 34 cents	8.50
2 sets -	1 inch Hex, drill steel, reshanked only @ $1.15 x 6	6.90
8 sets -	1 inch Hex, drill steel, rethreaded only @ $1.15 x 24	27.60
1000 -	Blasting caps, #6	21.75
4 rolls -	Fuse, XXX	14.55
20 qts -	Compressor oil @ .30 cents	6.00
2 @	Steel muck plates, 385 lbs.	36.00
6 -	25 lb cans carbide	77.25
	Total new material and supplies	$ 405.39

Water, trucking & miscellaneous:

Water supply for domestic & mine use, including 1 gasoline-driven pump, foot valve, pipe & tank	$ 485.00
Trucking equipment & supplies from Phoenix to mine	325.00

Repairs & parts for equipment.....	$ 170.00
Miscellaneous	180.00
	$1,130.00

The following is a summary of the applicant's estimated cost of the project.

Labor	$2,744.00
Supervision	960.00
Installations	250.00
Equipment, $50 or more	1,545.35
Rental value of applicant's equipment, 4 months @ $235.00	940.00
Materials and supplies, under $50	405.39
Water, trucking and misc.	1,130.00
Total	$7,974.74

PROPOSED FINANCING

The proposed method of financing the project's estimated cost of $7,974.74 calls for $6,074.74 of Government funds, and for the applicant's personal service and equipment, valued at $960 and $940, respectively. Personal service, as part time supervision, would be for 16 weeks at a rate of $60 weekly. Use of the applicant's equipment would be charged to costs for 4 months at a monthly rental rate of $235.00.

The applicant told the writer that the rental values of his equipment, shown under 'Costs' of this report, were supplied by an equipment company in Phoenix, Ariz. It will be noted that the total monthly rental amounts to approximately 11.2 percent of the cost of the equipment. It also should be noted that a rental allowance is requested for tools that individually cost less than $50.

CONCLUSIONS

A visual examination of the deposit revealed no minable tungsten ore and indicated the inferred reserves range from 50,000 to 200,000 tons of material containing about 0.1 percent WO_3.

The applicant believes the surface indications in the strongly silicified zones in the brecciated granite are sufficiently encouraging to warrant additional exploration at depth. He is convinced that sufficient pyrite was present in the surface outcrops to form weak sulfuric acid upon oxidation in sufficient quantity to convert much of the scheelite along fractures to tungstite (WO_3). This largely has been removed by rain wash. The applicant is convinced that only a quarter of the original scheelite remains and that at depth a grade of 0.4 to 0.6 WO_3, in minable widths, is to be expected. Neither of the examining engineers have had sufficient professional experience with scheelite deposits to present a competent opinion on the merits of the applicant's belief in the loss of tungsten from the surface outcrops.

The project is designed to determine the potential ore reserves of the deposit. It is technically feasible and the applicant is believed to be capable of supervising the work in an efficient manner.

The proposed method of financing the project fails to meet Governmental regulations in that the applicant's share is less than 25 percent of the cost, and because the rental values for the applicant's equipment probably are excessive. However, it is possible the applicant can finance his share of the cost on a proper 25-75 basis.

RECOMMENDATIONS

It is recommended that Anderson's Geological report be reviewed by Dwight Lemon of the Geological Survey, who has had many years of experience in the study of tungsten deposits. If Lemon believes the applicant is correct in his intrepretation on the appreciable loss of scheelite from the surface outcrops, it is recommended the applicant be granted a loan to carry out the proposed exploratory work.

The proposed work also is recommended in event the tungsten situation is sufficiently critical to warrant the Government to gamble on the possibility of finding reserves that may amount to several times the inferred 200,000 tons of protore which contains approximately 0.1 percent WO_3.

However, if Lemon is not favorable impressed with possibilities of an appreciable loss of scheelite from the surface outcrops, or if the tungsten situation is not sufficiently critical to justify Governmental participation in a program designed to develop very low-grade tungsten ore deposits, it is recommended that the application be denied.

W.H.K.
Show Journal

JAN 21 1952

Mr. V. G. Kinnan
28 N. Catalina Avenue
Phoenix, Arizona

Re: Docket No. DMA 1703X - Tungsten
N. S. Tungsten Mine
Yavapai County, Arizona

Dear Mr. Kinnan:

Your request for reconsideration of the denial has been considered in conjunction with the complete file of your application, DMA 1703X.

The interpretation of "Exploration Project" is, as you note, given in MO-5, as amended, Sec. 7(a). In this connection, your attention is called to the criteria (MO-5, Sec. 6(a) to (g)) upon which your application was considered and weighed, particularly noting (b) "the geologic probability of making a significant discovery".

In your instance, the examination of the property, your own application, and the non-conformance with your theory as to the loss of scheelite from the outcrop, resulted in the considered opinion of this office that there was little probability of making a significant discovery. Since there has been no additional data presented, our opinion, we believe, must stand as heretofore expressed.

We wish to thank you for your interest in the Defense Minerals Program and your patience and effort in this respect.

Sincerely yours,

C. O. Mittendorf

Acting Administrator
Defense Minerals Exploration
Administration

CHBrewer'lm
1/17/52

cc: Admn. Reading File
Docket
R. W. Gochna, USGS
D. M. Lemmon, USGS
Field Team Reg. IV
G. C. Selfridge
C. L. Brewer

DMA

RECEIVED
OFFICE
REGION IV
OCT 5 1951
OCT 2 1951

Mr. W. C. Kinnon
23 E. Catalina Avenue
Phoenix, Arizona

In reply please refer to
DMA-1703X

Dear Mr. Kinnon:

Your application has been reviewed by the Tungsten Branch of the Defense Minerals Administration.

It is our opinion that there is little likelihood that the small amount of leaching, which may have occurred in the vein outcrop, would infer any appreciably higher grade with continued depth. It is also felt that no secondary enrichment has occurred. Therefore, with no tungsten of commercial grade in sight, we are forced to deny your application.

Very truly yours,

Tom Lyon
Tom Lyon, Director
Supply Division

DATE
10/19/51

DMA

OCT 2 1951

Memorandum

To: Reports and Records Unit

Through: Director, Supply Division

From: Chief, Ferro-Alloys Branch

Subject: DMA-1703X-Tungsten
Mr. W. C. Kinnon
2[illegible] E. Catalina Avenue
Phoenix, Arizona

REGIONAL DIRECTOR'S OFFICE REGION IV OCT 5 1951 BUREAU OF MINES DENVER, COLO.

Property: H. S. Tungsten Mine
Black Canyon Mining District
Chester, Yavapai County, Arizona

Conclusions:

The applicant proposes to extend the underground workings to zones where surface indications are, in his opinion, favorable. The proposed explorations consist of 252 feet of drifting and cross cutting. These explorations are based on the applicant's assumption that "Acids generated in the shallow oxidized zone have altered a large part of the scheelite to tungstite which being soft and friable has mostly been removed from the weathered rock;" and "Under these favorable zones the applicant believes there will be found sizeable ore shoots of commercial ore with principle values in scheelite."

Field team examination of the property has resulted in the estimate of 50 to 200,000 tons of .1% WO_3. This was a visual estimate as no samples were taken, but met with the approval of the applicant. It is thereby agreed that no minable tungsten is in sight.

As to the theory of a leached outcrop as expressed by the applicant, Mr. Dwight Lemmon of the U. S. Geological Survey in a letter to Mr. T. P. Thayer, dated September 16, 1951 says, "It is true that scheelite can be dissolved by sulphuric acid solution and removed from an outcrop, but it is not likely that this will happen on a large scale, and I would be dubious of the chances of finding a workable ore body

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WOTM

below the exposure of 1% material that has already been tested to a depth of 100 feet." In view of Lemmon's opinion, there is little likelihood of finding commercial quantities of tungsten in this deposit.

Recommendation:

The application is denied.

George B. Holderer
Chief, Ferro-Alloys Branch

Attachments

Approved:

Tom Lyon

Director, Supply Division

Mining Division
Region IV

August 27, 1951

Memorandum

To: DMA Field Team, Region IV

From: Chief, Mining Division, Region IV

Subject: Final Report, DMA Project 37QX1, W. C. Hinson, M. S. Tungsten Mine, Black Canyon Mining District, Yavapai County, Arizona

Enclosed herewith is the final report on the subject docket.

The applicant proposed to explore for extensions of scattered zones of tungsten mineralization by drifting and cross-cutting, at an estimated cost of $7,750.00. Although no samples were taken by the examining team, they estimated inferred reserves of from 25,000 to 50,000 tons of ore with a minimum of 0.50 percent tungsten trioxide. It is possible, although not probable that much of the primary scheelite in the surface exposures was converted to tungstic trioxide through oxidation of pyrite, and removed by erosion, and that the ore below the zone of oxidation will be of higher grade.

The examining team is indefinite in their final recommendations, but I propose denial of the application taken a review by Dwight Lemon of the Geological Survey gives some evidence of the possibility mentioned above.

W. H. King
For F. T. Allemann

Sub.

Air Mail

August 28, 1951

Memorandum

To: Honorable Secretary, Defense Materials Administration

From: DMA Field Team, Region IV

Subject: DMA Project 17[illegible], Final Report, W. S. Simms, J. S. Tungsten Mine, Black Wagon Mining Materials, Grayson County, Virginia

Enclosed herewith are original and two copies of the above report.

The report indicates the tungsten to be of extremely low grade. The field man recommend that Dwight Lemon examine the reports regarding the handling of similar ores.

We recommend that the project be dropped, unless Mr. Lemon, whilst experiments on Atlanta ores, recommends approval.

J. H. Eck, Jr.

for Ogden Tweto

L. E. Kendall

Enclosures

JHE:oj
cc: DMA files
Subject
Chron.

224 New Customhouse
Denver 2, Colorado

July 6, 1951

Memorandum

To: W. R. Storms (with brochure)

(Through Chief, Mining Division)

Charles Anderson

From: DMA Field Team, Region IV

Subject: DMA 17013, W. C. Kinnan, 28 E. Catalina Avenue, Phoenix, Arizona

Herewith is transmitted application for aid for exploration in the amount of $7,974.74, to cover costs of exploration for tungsten on the M. S. Tungsten Mine, Black Canyon Mining District, Gila County, Navajo County, Arizona. The proposed work comprises exploration of underground workings in the tunnel beneath areas where surface indications are favorable to the existence of ore shoots.

It is requested that you make an examination to determine whether the project is geologically favorable and the exploration is technically feasible. If so, all of the information required to complete the contract, including exhibits, should be submitted with the report.

Your attention is directed to the statement of the Coordinating Committee regarding funds.

11-0111

J. H. Eastf

J. H. East, Jr.

A. H. Koschmann

A. H. Koschmann

Enclosure

cc: DMA, Allison, Koschmann