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ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES AZMILS DATA

PRIMARY NAME: BRONX COPPER PROPERTY

ALTERNATE NAMES:

GILA COUNTY MILS NUMBER: 75B

LOCATION: TOWNSHIP 1 S RANGE 14 E SECTION 6 QUARTER NW
LATITUDE: N 33DEG 21MIN 55SEC LONGITUDE: W 110DEG 59MIN 00SEC
TOPO MAP NAME: PINAL RANCH - 7.5 MIN

CURRENT STATUS: PAST PRODUCER

COMMODITY:

COPPER OXIDE
COPPER SULFIDE
SILVER
GOLD
MOLYBDENUM

BIBLIOGRAPHY:

USGS PINAL RANCH QUAD, CLAIMS EXT INTO SEC 7
ADMMR BRONX COPPER MINE FILE
AZBM BULL 180 MINERAL & WATER RESOURCES OF AZ
1969 P 234
HICKS C J MOLYBDENUM OCCURANCES IN AZ 1979
ADMMR PUBLICATION P 15
PETERSON N P GEOL. & ORE DEPOSITSOFTHE GLOBE
-MIAMI DISTRICT USGS PP 342 1962 P 133

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

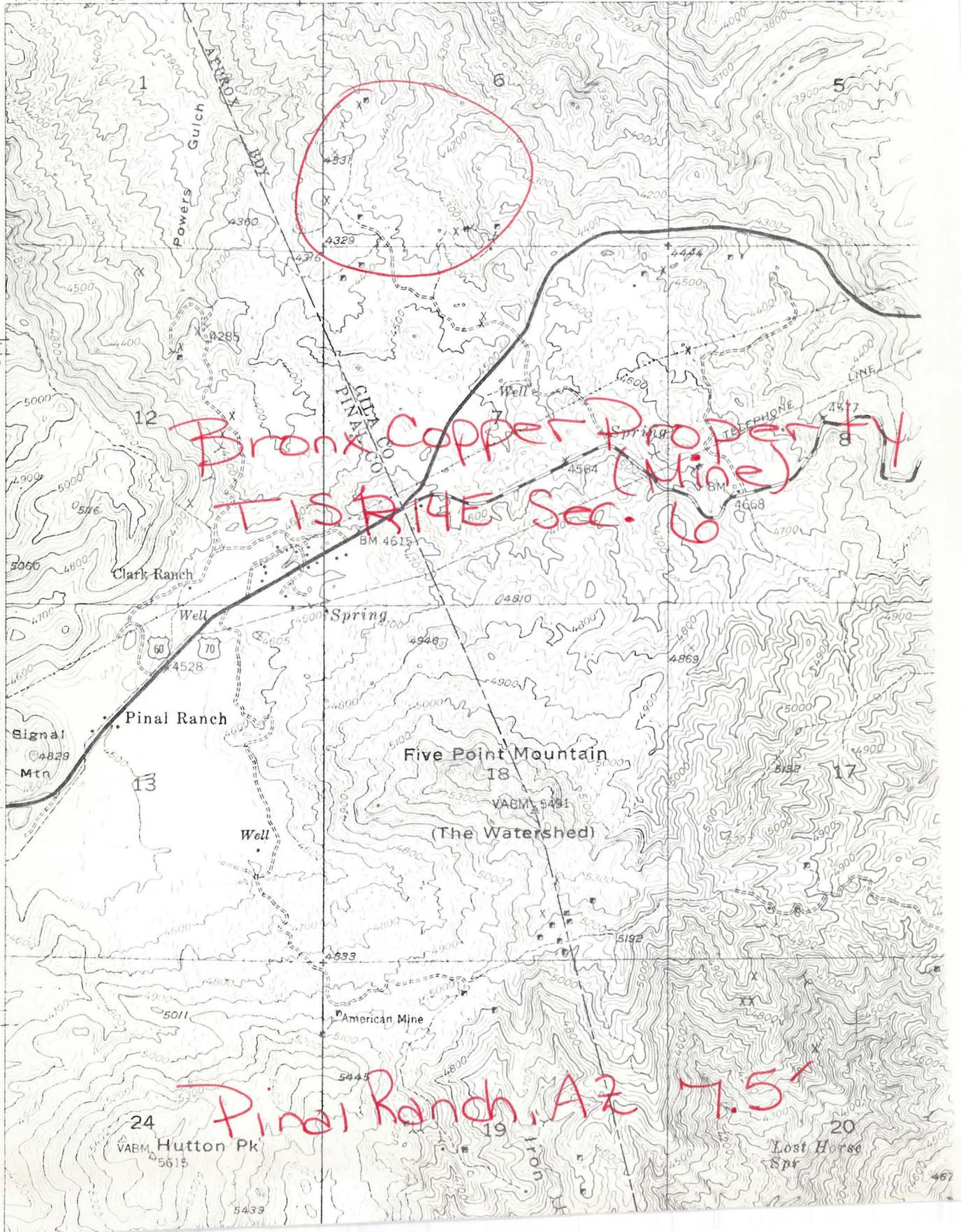
TED CANYON

111°00' 33°22'30" 780000 FEET (CENTRAL) R. 13 E. R. 14 E. 5730'

860000 FEET
(CENTRAL)

21 MI. TO U.S. 80 AND 89
SUPERIOR 8 MI.

20'



Bronx Copper Property
(Mine)
T1S R14E Sec. 6

Pinal Ranch, AZ 7.5'

28 January 1941

Mr. F. Hoekstra,
Bronx Copper Mines,
Miami, Arizona.

My dear Mr. Hoekstra:

I thank you for your letter of January 27
regarding your work on the Bronx Copper Mine.

I am today forwarding your letter to Mr.
Newton Wolcott, our field engineer in the Globe District,
with the request that he visit your property at the
earliest possible date and make a report on the same.
As soon as I hear from Mr. Wolcott, I shall again
write you.

Assuring you of my desire to be helpful,
I am

Yours very truly,

J. S. Coupal
Director

JSC-jrf

cc-Newton Wolcott

20 December 1940

Mr. H. A. Norvill,
805 South Central Avenue,
Phoenix, Arizona.

My dear Mr. Norvill:

I have recently had advice from the people making the inquiry for molybdenum products that they expect to have their engineers in the field some time in January. I shall be pleased to present your report on the BRONX MINE to them at that time.

With best wishes, I am

Yours very truly,

J. S. Coupal
Director

JSC-jrf

24 February 1942

Mrs. Rosalia Weiss,
106 E. Country Club Drive,
Phoenix, Arizona.

My dear Mrs. Weiss:

I am enclosing herewith a copy of mine owner's report covering the BRONX COPPER MINE located in the Globe Mining District, Gila County, Arizona, which has been filed with this department.

I shall be glad to submit a copy of this report to anyone making inquiry for a property such as yours.

Assuring you of my desire to be helpful, and with best wishes, I am

Yours very truly,

Charles F. Willis
Chairman, Board of Governors

CFW-jrf
encl.

Phoenix Ariz the 2nd of January 1942
Ariz Dep. of Mineral Resources

Capital Bldg Phoenix Ariz

Dear Sir!
the main workings are, on

Claim Bronx Copper n: 5

tunnel n: 5 - 200 feet long there is a Brest
the showing is Quartz ledge 4 to 5 feet wide
carrying part Quartz with contained
Gold and Silver on the left side, the
right side has the sulfite Molybdenum
in Quartz the Ledge goes down and
widening out 7-9 feet at the bottom in
the shaft 40 feet deep. the shaft is
timbered and has a 70 feet long tunnel
in these lower workings, here a Brest
on the North east ^{side} as I have mentioned
where the ledge is 7-9 feet wide and a
Brest on the other End also. here is
mica and Molybdenite, also a
sump in the bottom carries Metal
Copper and indication of Gold
these workings is suitable for a mill
turn over

the Main Entrance tunnel n: 5 is 35 feet
below the surface also the road goes
till in front of the tunnel. and water
can be avoided by Improvements on
the Mine or build dams in the Creek
the Bronx has been under lease and Bond
4 Years but as the lessee did not
comply with his Agreement and all
in all was against the Rule of the Mining
law I was compelled to forfeit the Lease
a 50 ton mill was planned on to set up.
I still have a letter to show from New
York the party would have furnished the
Money but I thing the best is cut out
all the connection of the lessee and keep
my Business clear. the shaft is $1\frac{1}{2}$ Compartment
in tunnel n: 5.
there has been an Electrical Survey
by an Engineer in Claim Bronx Copper
there is main Entrance or 280 feet Drift
above is a 40 feet tunnel ^{one} ~~where~~ has been
taken from the Party my Husband
Frederick K. Weiss deceased has bought
the Bronx; then from the main
Entrance

Craig Dep. of M. R. N:3 Phoenix 2-2. 1942

Fisher Vaine and some Feeders
beside are 4 Santa Rosa Claims. entering
the Copper Bronx all Claims are in
on Group the seven Bronx Copper
and 4 Sta Rosa Claims are
eleven Claims and two more on the
Highway 60 Sta Rosa Exp. station
N:1-2 are separated. the Bronx Mines
are located on High-way 60
Gila County - Miami District
half way Miami and Superior
close to the Five Point.

there is some workings and showings on
the Santa Rosa n:2 - and also on the
Sta Rosa Exp. station N:1-2.

there is a Private road from the Miami
superior Highway $1\frac{1}{4}$ mile to the
Bronx Mine Camp. Mining can
be done all year around.
over

I was the sole owner and
have a clear title to my
Property and now debt on the
Property the Print mines
are due for sale as I am
a Widowed Woman since 1956.
and can not be workt very easy
by Women it is a Mens Work.

Sincerely yours
respercfull

Mrs Rosalia Weiss
106 E. Country Club Drive
Phoenix

Ariz. Div. of M. R. Phoenix 2-2-1942

In front of tunnel n: 2 on Bronx Copper³ is a new shaft 20 feet deep has a ledge in ore $2\frac{1}{4}$ feet wide has a Galloway frame and can easily be connected with the wing which goes down 60 feet deep and a sump 8 feet and a drift 280 feet long and a stule 90 feet wide. The Electrical Survey ^{Engineer} Report there is a large Ore body to be taken out of the bottom from the new shaft sunk in November 1939 these work could be done by sinking 25-50 feet deeper in the wing and crosscut north east to the Ore Body very close by probably 12 feet or less underneath there is chalcocite and ^{intermixed with gold and silver} Copper. These Hillside where is built for a Hillside and water will be gotten by Improvements on the line.

turn over

Ch. D. of Mr. R. Capital of Phoenix Ariz

4 Bronx Copper Claims n: 1-2-3-4-5-6-7

4 Santa Rosa n: 1-2-3-4

all in one group eleven Claims

and 2 Santa Rosa Extension

2. Claims, Santa Rosa Extension

n: 1-2. close by on the road

The purchase Price 100,000.00 Dollars
Term 10 years 10% royalty from the net Smelter return
150.00 Dollars down cash when the Agreement

Papers are signed

100.00 Dollars ^{minimum} paid on or before
the first day every month in advance

at least 5 shift or day must be worked,
must start to work as soon papers are
signed. must post and keep posted the
workability. In timbering when necessary
dominating according to the law of the U. S. of A.
and the State of Arizona. Further Information
will be given if needed personally

Mrs Rosalia Weiss

there will be Papers made out ^{now} completely.

F. HOEKSTRA
N. O. PETERSON

Home Office
SOUTH PASADENA, CALIF.

*To
Newt*

ELECTRICAL MINE SURVEY CO.

DEPT. MINERAL RESOURCES
MINES SURVEYED SCIENTIFICALLY

JAN 28 1941

PHOENIX, ARIZONA

Bronx Copper Mines
Miami, Ariz.,

Jan. 27th, 1941

Mr. J. S. Coupal,
Director of Ariz., Dep't
of Mineral Resources near
Buckeye,
care of Chamber of Commerce,
Phoenix, Arizona.

Dear Sir;

Lacking a definite post-office address, I am taking the liberty of writing you in care of the Chamber of Commerce at Phoenix, trusting that this may reach you.

We have conducted a complete Geophysical Electrical survey on the Bronx Copper Mines, located about midway between Superior and Miami extending over a period of several months, from last June to September, 1940, to be exact, the results of which were very gratifying, enabling us to outline topographically a number of substantial ore-bodies.

Returning here last November, and being convinced by the result of the survey, we directed the sinking of a shaft, and after reaching the depth of 20 ft., we were forced thru excessive rains to abandon work, however, at that depth we encountered a two and a half foot vein, or ledge matter, which upon assay for Molybdenum at the International Smelter & Ref. Co., at Miami, assayed MoS_2 14%, which means 280 lbs., to the ton.

Since then we were forced to lay idle to the excessive rains, but a few weeks ago we again dewatered the shaft and obtained representative samples across the ledge, and had these assayed for copper at the Miami Copper Co., at Miami, and a few days later received the assay of 25%, which means 500 lbs to the ton of copper.

As the price of Molybdenum is considerably higher in price per lb. than copper, and having heard of your efforts in developing a recovery system for the former metals, we would welcome you to drive over here at your earliest opportunity and convenience, and assure your self of the merits of our ore, with the view in mind of being able to handle the molybdenum for us in some kind of an equitable deal to the mutual benefit of all concerned.

Trusting to hear from you by an early mail, giving us some definite time that we may be able to look for you,

We remain,

Sincerely yours,

ELECTRICAL MINE SURVEY CO.,

F. Hoekstra

F. Hoekstra, E.E.

● **MOLYBDENUM.** Eastern corporation consuming over 1,000,000 pounds of molybdenum per year is investigating independent sources of supplies. Engineers planning to come to Arizona to examine properties containing molybdenite or molybdates. Company contemplates operating and equipping such properties for production. Owners of such properties should make sure that a Mine Owner's Report has been filed with the Department of Mineral Resources, Capitol Building, Phoenix, Arizona, so that they may be submitted to the investigating engineers.

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
OWNERS MINE REPORT

Date July 25, 1939

1. Mine Bronx Mines
2. Mining District & County Globe Mining District
3. Former name Bronx Copper
4. Location Range 14-E - ¹⁵~~1-N~~; 8 $\frac{1}{2}$ miles from Miami on Globe-Superior Highway and 1-1/4 miles north.
5. Owner Rosalia Weiss
6. Address (Owner) Phoenix, Arizona
7. Operator H. A. Norvill
G. E. Hartin
8. Address (Operator) 805 S. Central
Phoenix, Arizona
9. President None named
10. Gen. Mgr. None named
11. Mine Supt. G. E. Hartin
12. Mill Supt. G. E. Hartin
13. Principal Metals Molybdenum and Muscovite
14. Men Employed One
15. Production Rate Not in production
16. Mill: Type & Cap. None installed
17. Power: Amt. & Type None
18. Operations: Present Consists in building roads, dewatering shafts, timbering drifts and tunnels, etc.
19. Operations Planned Operate a 50 ton mill, first processing the Muscovite to meet the paint and wall-paper industry specifications, hence, recover the Molybdenum.
20. Number Claims, Title, etc. Property consists of 15 claims - worked under lease and bond by H. A. Norvill and G. E. Hartin - Claims are unpatented.
21. Description: Topography & Geography The mountain has a north-south trend, the crest is approximately 1/4 mile west of Pinto Creek. The spurs usually trend north-west-south-east. The surface is unusually rough, many prominences or push up of large boulder formations of pegmatite porphyry overlay the formations generally. No living streams occur in the mountain or valleys. The precipitation is chiefly torrential showers in summer and light snows in winter which are carried off by the otherwise dry washes.
22. Mine Workings: Amt. & Condition No. 5 tunnel 110 ft., Winze 37 ft. and drift 52 ft. Consists of 12 ft. vein of Molybdenum and Muscovite. The vein proper carries 1.04% molybdenum and is approximately 7 ft. wide. The hanging walls are approximately 5 ft., carrying .25 of 1% molybdenum and practically pure muscovite (85 to 95%). No. 2 tunnel consists of a tunnel 209 ft., with a raise to the surface at 100 ft., a cross cut in the raise of approximately 105 ft. At the mouth of the tunnel there is a 70 ft. winze. There is a 132 ft. drift at 70 ft. with drift of 43 ft. from the main drift. This appears to be the bottom as far as copper and gold are concerned, but it is here that the molybdenum comes in. No. 6 Tunnel-

(22 cont.) originally worked as a silver mine. The ore being carried on mule back to the old Dominion Mine at Globe. This tunnel is badly caved and we have not been able to determine if the silver vein is still in this tunnel or not.

23. Geology & Mineralization The surrounding country is a pegmatite porphyry. The wall and surface is also pegmatite porphyry. The molybdenite occurs in fissure veins of Cerrusite, Muscovite and White Quartz. Muscovite veins occur on all the claims in this group and is encountered most any place the porphyry cap is penetrated. Large outcropping of muscovite occurs, indicating an unlimited tonnage. One geologist describes this zone as being a big bubble in the cooling of the earth's surface, and

24. Ore: Positive & Probable, Ore Dumps, Tailings (that our workings is sitting on top of an unusual large body of Molybdenum.

14,000 tons in sight, Appears to be unlimited. 300 tons on dump.

24-A Vein Width, Length, Value, etc.

25. Mine, Mill Equipment & Flow Sheet Have no mine or mill equipment; proposed flow sheet will be as follows:

Muscovite - Crusher and rolls with electrostatic separation

Molybdenum - Ball mill and flotation.

26. Road Conditions, Route Road fair condition

27. Water Supply Undeveloped - sufficient water for domestic purposes.

28. Brief History This property was worked some time in the 90's as a high grade copper, silver and gold mine. The Mason Theatre in Globe was built from the silver taken from Tunnel No. 6. A Mr. Wilson worked Tunnel No. 2 for gold and copper, taking out \$60,000.00 in gold from these workings. The lower tunnel on the 70 ft. level was worked following a very high grade gold stringer. At this depth the Molybdenum came in in white quartz. The bottom of this tunnel is in white quartz carrying values from 1.77% to 5% molybdenum. It was at this time that Mr. Frederic Weiss, a German geologist and graduate of Heidelberg University acquired title to these properties through purchase

29. Special Problems, Reports Filed and otherwise because he in those early times knew the value of these molybdenum properties. He held on to the property until the time of his death.

All problems practically solved.

30. Remarks All property needs is capital to put it on a paying basis. We are attaching hereto brief description of this property, reflecting our experiments, results of investigation, market possibilities and stating our deductions for consideration.

31. If property for sale: Price, terms and address to negotiate. Property is for sale or open to partnership agreement, purchase price \$200,000.00; \$20,000.00 down and \$20,000.00 per annum.

Mr. Norvill will sell lease for \$10,000.00, payable any arrangements they would care to make. 11-28-40

32. Signed..... H. A. Norvill.....
G. E. Hartin

33. Use additional sheets if necessary.

State of Arizona
MINE OWNER'S REPORT

Date: February 2, 1942

1. Mine: BRONX COPPER MINE
2. Location: 8½ miles from Miami on Globe-Superior Highway and 1½ miles north.
3. Mining District & County: Globe Mining District, Gila County, Arizona.
4. Former Name:
5. Owner: Mrs. Rosalia Weiss.
6. Address (Owner): 106 E. Country Club Drive, Phoenix, Arizona.
7. Operator: None.
8. Address (Operator):
9. President, Owning Co:
- 9A. President, Operating Co:
10. Gen. Mgr:
14. Principal Minerals: Molybdenum, Muscovite Mica, Copper, gold & Silver.
11. Mine Supt:
12. Mill Supt:
13. Men Employed:

BRONX COPPER MIN

Mo

Gila 4 - 4 T 1 N, R 14 E

Rosalia Weiss, ~~106 E. Country Club Dr., Phoenix~~
unclaimed 9-13-46

'42

18. Operations - Present: Rosalia Weiss, ~~106 E. Country Club Dr., Phoenix~~
unclaimed 9-13-46
19. Operations - Planned: Pending financing.
20. Number Claims, Title, etc: 13 unpatented claims.
21. Description - Topography & Geography: The mountain has a north-south trend, the crest is approximately 1/4 mile west of Pinto Creek. The spurs usually trend north-west-south-east. The surface is unusually rough, many prominences or push up of large boulder formations of pegmatite porphyry overlay the formations generally. No living streams occur in the mountain or valleys. The precipitation is chiefly torrential showers in summer and light snows in winter which are carried off by the otherwise dry washes.
22. Mine Workings - Amt. & Condition: No. 5 tunnel 110 ft., Winze 37 ft. and drift 52 ft. Consists of 12 ft. vein of Molybdenum and Muscovite. The vein proper carries 1.04% Molybdenum and is approximately 7 ft. wide. The hanging walls are approximately 5 ft., carrying .25 of 1% Molybdenum and practically pure muscovite (85 to 95%). No. 2 tunnel consists of a tunnel 209 ft., with a raise to the surface at 100 ft., a cross cut in the raise of approximately 105 ft. At the mouth of the tunnel there is a 70 ft. winze. There is a 132ft. drift at 70 ft. with drift of 43 ft. from the main drift. This appears to be the bottom as far as copper and gold are concerned, but it is here that the molybdenum comes in. No. 6 tunnel originally worked as a silver mine, the ore being carried on mule back to the old Dominion Mine at Globe. This tunnel is badly caved and we have not been able to determine if the silver vein is still in this tunnel or not.

23. Geology & Mineralization: The surrounding country is a pegmatite porphyry. The molybdenite occurs in fissure veins of sericite, muscovite and white quartz. Muscovite veins occur on all the claims in this group and is encountered most any place the porphyry cap is penetrated. Large outcropping of muscovite occurs, indicating an unlimited tonnage. One geologist describes this zone as being a big bubble in the colling of the earth's surface, and that our workings are sitting on top of an unusually large body of molybdenum.

24. Ore - Positive & Probable, Ore Dumps, Tailings: 14,000 tons in sight - appears to be unlimited. 300 tons on dump.

24A. Vein Width, Length, Value, etc:

25. Mine, Mill Equipment & Flow-Sheet: Have no mine or mill equipment.

26. Road Conditions, Route: Road fair condition.

27. Water Supply: Undeveloped - Sufficient water for domestic purposes.

28. Brief History: This property was worked some time in the 90's as a high-grade copper, silver and gold mine. The Mason Theatre in Globe was built from the silver taken from Tunnel No. 6. A Mr. Wilson worked Tunnel No. 2 for gold and copper, taking out \$60,000.00 in gold from these workings. The lower tunnel on the 70 ft. level was worked following a very high grade gold stringer. At this depth the Molybdenum came in in white quartz. The bottom of this tunnel is in white quartz carrying values from 1.77% to 5% molybdenum. It was at this time that Mr. Frederic Weiss, a German geologist and graduate of Heidelberg University acquired title to these properties through purchase and otherwise because he in those early times knew the value of these molybdenum properties. He held on to the property until the time of his death.

29. Special Problems, Reports Filed:

30. Remarks: All property needs is capital to put it on a paying basis.

31. If property for sale - Price, terms and address to negotiate: Property for Sale or Lease -

32. Signature: (Signed) MRS. ROSALIA WEISS,
106 E. Country Club Drive,
Phoenix, Arizona

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
MINE OWNER'S REPORT



Date

1. Mine *Bronx Copper*
2. Location
3. Mining District & County *Gila*
4. Former name
5. Owner *Mrs Rosalia Weiss*
6. Address (Owner)
7. Operator
8. Address (Operator)
9. President, Owing Co.
- 9A. President, Operating Co.
10. Gen. Mgr.
14. Principal Minerals *molybdenum + manganese*
15. Production Rate
16. Mill: Type & Cap.
17. Power: Amt. & Type
18. Operations: Present *Close down*
19. Operations: Planned *need machinery to work*
20. Number Claims, Title, etc. *4 Bronx Copper Claims
Bronx Copper n: 1-2-3-4-5-6 - and no. 4.
Star. Rosa Claims, n: 1-2-3-4 all in - very young
enjoying each other unpatented*
21. Description: Topography & Geography
*elevation 4100 mountain has Creek Bett.
the Bronx Creek. and Ranches*
22. Mine Workings: Amt. & Condition *Has tunnel n: 5 - 200 feet. or shaft 40 deep
a entrance tunnel 70 feet long or 1 1/2 Compartment
Shaft. full of water when workings are
shut off*

(over)

23. Geology & Mineralization

Micro, Copper, intication of gold and silver. Heavy ledge Black Pignite

24. Ore: Positive & Probable, Ore Dumps, Tailings

Some workings in Bronx Copper
no. 2. 280 feet deep drift or
40 feet tunnel rise above,

24A. Dimensions and Value of Ore body

or shaft. 60 feet deep and
connected by a 280 feet drift
all connected. but true the

25. Mine, Mill Equipment & Flow-Sheet

leasser left in bad condition
also in front of tunnel no 2

26. Road Conditions, Route

is a new shaft sunk has

27. Water Supply

20 feet good deep and in Ore.

28. Brief History

The Bronx Copper has been under option several
times but the leasser did not fulfill the agreement
and neglected the Property I was forced to

29. Special Problems, Reports Filed

cancel the Lease

30. Remarks

The Bronx Copper is to for sale open
for investigation.

31. If property for sale: Price, terms and address to negotiate.

Price \$100,000 Dollars

15000 Dollars down when the lease is signed. 15 per cent
net from the shipment 5 years time. 100 Dollar minimum

32. Signature

Mrs Rosaline Weiss

income each and every month

33. Use additional sheets if necessary.

the payments as well be
agreed in the lease.

BRONX MINES

The Bronx property consists of 15 unpatented claims, situated $8\frac{1}{2}$ miles from Globe, 11 miles from Superior on the Globe-Superior Highway. Claims are in the Globe mining district, Gila County, Arizona, at what is usually known as the "Top of the World." Within 15 miles of these properties are the following mines which have contributed millions of the world's wealth:

Inspiration Consolidated Copper Co.
 Miami Copper Co.
 Magma Copper Co.
 Belmont Copper Co.
 Old Dominion
 Gibson Mine

The Bronx property is surrounded by mines on three sides which have proven that the ore veins reach great depth. In fact the Globe mining District is one of the principal mining districts in Arizona.

HISTORY OF THE PROPERTY

This property worked some time in the 90's as a high grade copper, silver and gold mine. The Mason Theatre in Globe was built from the silver taken from Tunnel No. 6. A Mr. Wilson worked Tunnel No. 2 for gold and copper taking out \$60,000.00 in gold from these workings. The lower tunnel on the 70 ft. level was worked following a very high grade gold stringer. At this depth the molybdenum came in in white quartz. The bottom of this tunnel is in white quartz carrying values from 1.77% to 5% molybdenum. It was at this time that Mr. Frederic Weiss, a German geologist and graduate of Heidelberg University acquired title to these properties through purchase and otherwise because he in those early times knew the value of these molybdenum properties. He held on to this property until the time of his death.

WORKINGS

No. 5 - Tunnel 50 feet, Winze 25 feet and cross cut 25 feet. Consists of 12 foot vein of molybdenum and muscovite. The vein proper carries 1.04% molybdenum and is approximately 7 feet wide. The hanging walls are approximately 5 feet, carrying .26 of 1% molybdenum and practically pure muscovite (85 to 95%).

No. 2 - Tunnel consists of a tunnel 208 feet, with a raise to the surface at 100 feet, a cross cut in the raise of approximately 105 feet. At the mouth of the tunnel there is a 70 foot winze. There is a 100 foot drift at 70 feet with drifts of 90 feet from the main drift. This appears to be the bottom as far as copper and gold are concerned, but it is here that the molybdenum comes in.

No. 6 - Tunnel - Originally worked as a silver mine. The ore being carried on mule back to the old Dominion Mine at Globe. This tunnel is badly caved and we have not been able to determine if the silver vein is still in this tunnel or not.

INTEREST IN PROPERTY

We have a lease and bond on the property, the principal agreements of contract are as follows:

- 1 - Purchase price - \$100,000.00
- 2 - Payable from royalties at 10%, of mine or smelter net returns, minimum payments of \$100.00 per month average. All payments to apply on purchase price.
- 3 - Term of lease - 15 years.
- 4 - Usual requirements to perform assessment work, etc.

INVESTIGATIONS

MOLYBDENUM - Probably no other metal has experienced as phenomenal a growth in output during the past decade as Molybdenum. During the past decade domestic production increased approximately 750 per cent. This remarkable increase has been due to the growing realization that alloy steels, and more recently, alloy irons, containing small amounts of Molybdenum can better meet the more rigid and exacting specifications of manufacturers of steel and iron equipment for myriads of special uses.

Assays develop the fact that our grade of Molybdenum is free of arsenic, bismuth and has small copper content, and the University of Arizona has worked out flow sheet whereby we can make a 95% Molybdenum concentrate with an 89.4% recovery.

The result of the University test is as follows:

TEST ON MOLYBDENITE ORE

(Ore furnished by Mr. H. A. Norvill)

Four sacks of ore of about three hundred pounds was crushed by jaw crusher to about 1/4 inch. The whole sample was further crushed by rolls to pass a ten mesh screen. A sample of about 40 pounds was cut from the whole lot and ground in a small ball mill to about 8% on 60 mesh. The over size was mostly micaceous material. This was then sampled by riffing for an assay sample. The assay of this sample gave the following results:

Molybdenite (MoS ₂)	1.86%
Copper	0.21

Several small tests were run to arrive at the proper kinds and amount of reagents to be used.

Then a small flotation test was made in a Kilo Denver machine. The cell was run for thirty minutes removing a rougher concentrate. This concentrate was rerun in a smaller flotation machine making a cleaner concentrate and a cleaner tailing. In practice this cleaner tailing would be returned to the first cell in the roughing operation. After the rougher molybdenite concen-

trate was removed from the original ore the copper minerals were activated and the copper removed as a copper concentrate. The following table shows the results of this test:

TABLE 1.

Products	Tons from 100 ton ore	Assay %		Tons X%		Extraction or Loss	
		MoS ₂	Cu	MoS ₂	Cu	MoS ₂	Cu
Cleaner Conc.	1.0	95.3	0.25	95.3	0.3	52.0%	1.3%
Cleaner Tails	1.6	42.73	1.53	68.3	2.4	37.4	10.6
Copper Conc.	1.8	6.0	9.94	10.8	17.9	5.9	79.6
Tailing	95.6	0.09	0.02	8.6	1.9	4.7	8.5
Totals	100.0	1.83	0.22	183.0	22.5	100.0	100.0

This shows a concentrate of 95% Molybdenite and a recovery of 89.4% of the Molybdenite. The calculated assay of the heads from the products assay gave 1.83% MoS₂.

We have established markets in the United States and abroad for our product. One German Company wants to contract the entire Molybdenum output and are tracing us for a 50 ton trial shipment at the earliest possible date.

MUSCOVITE - Much investigation has been made to determine the quality of our Muscovite ores and its market value. The prices of Muscovite or Mica in various ground forms varies from \$23.50 to \$90.00 per ton, depending upon the color and freedom from stain, etc. and the method of treatment to preserve the lustre. We have an unlimited tonnage of Mica on these 15 claims which will meet the requirements of all the trades when properly processed.

The following is a brief description of the uses of Mica and prevailing prices according to their use:

<u>Industry</u>	<u>Use</u>	<u>Mesh</u>	<u>Price Per Ton</u>
Wall Paper	Tinting paper and as silver decorating	325	\$90.00
Paint	Paint Pigment	180-325	57.00 to 90.00
Asphalt Shingle	Coating and Water Proofing	40-180	40.00 to 60.00
Paper Roofing	Used between the paper when rolled to prevent sticking	20-100	23.50 to 30.00
Miscellaneous	Glass Manufacture Christmas Decorations, etc.	20-180	28.50 to 90.00

We have been advised by paint chemists that our product has distinct possibilities as a paint pigment and that only the mechanical means for proper processing is required. The Allis-Chalmers Manufacturing Corp. has now worked out a complete mill to process Muscovite, and the further process of separating the Muscovite by meshes. The following are the more important points of

their test:

TEST 819-A

Submitted by: H. A. Norvill, 805 So. Central Avenue, Phoenix, Arizona. A sample of 3 bags of Mica ore weighing 244 pounds was received September 20th.

The sample as received contained pieces up to 3 inches in diameter, with considerable fines. It was crushed in a gyratory crusher set at 3/8" opening.

The gyratory product had the following screen analysis:

<u>Mesh</u>	<u>% Weight</u>	<u>% Cum.</u>
On 3/8"	17.20	17.20
3M	16.34	34.04
4	12.50	36.54
5	5.93	52.47
8	4.75	57.22
10	3.14	60.36
14	2.93	63.29
20	2.46	65.75
28	3.14	68.89
35	4.28	73.17
48	5.31	78.48
65	5.49	83.97
100	5.16	89.13
150	4.28	93.41
200	3.33	96.74
-200	3.26	100.00

A plot of the screen analysis shows definitely that 20 mesh is the unlocking point; this was confirmed by microscopic examination of the screen fractions. Only one grain of unlocked Molybdenite was seen; this was minus 35 plus 48 mesh.

Part of the gyratory product was crushed through rolls set at 1/32 inch opening in closed circuit with a 20 mesh screen. The circulating load was about 100 per cent for more than 10 passes through the rolls.

The roll product contained about 10% of packed flakes, but these were readily broken up in the succeeding pass, so that they did not accumulate in the circulating load.

Screen Analysis Roll Product

Screen Analysis Circulating Load

<u>Mesh</u>	<u>% Weight</u>	<u>% Cum.</u>	<u>Mesh</u>	<u>% Weight</u>	<u>% Cum.</u>
On 20	0	0	On 6	0	0
28	13.97	13.97	8	1.79	1.79
35	14.33	28.30	10	9.85	11.64
48	12.98	41.28	14	32.20	43.84
65	18.42	59.70	20	51.44	95.28
100	14.70	74.40	-20	4.72	100.00
150	10.81	85.21		<u>100.00</u>	
200	7.57	92.78			
-200	7.22	100.00			
	<u>100.00</u>				

HYDRAULIC CLASSIFICATION AND TABLE CONCENTRATION

5000 grams of the minus 20 mesh roll product were passed through a Richards Hydraulic Classifier in 40 minutes, making four spigot products and an overflow slime. Each spigot product was dried and weighed. The first three spigot products were passed over a concentrating table, making a Mica product and a sand product, which discharged from the table above the Mica. A fairly good separation of sand and Mica was obtained. The fourth spigot product was too fine to table.

Only a few sulphide grains were seen, which included Molybdenite, Chalcopyrite, and Pyrite. No free gold was seen.

The specific volume, or grams per cubic inch, was measured for each product. A tared box just one cubic inch inside was filled without packing or tapping, the top levelled off with a straight edge, and the contents weighed. A low specific volume indicates a high Mica content.

The following results were obtained:

<u>Sample</u>	<u>Grams</u>	<u>% Wt.</u>	<u>Grams/Cu. Inch</u>
Heads	5000	100.00	16.435
Spigot No. 1	800	16.00	18.110
" " 2	1152	23.04	16.690
" " 3	2251	45.02	15.035
" " 4	470	9.40	11.490
Overflow Slimes	327	6.54	12.920

Table Concentration Tests

<u>Sample</u>	<u>Grams</u>	<u>% Wt.</u>	<u>Grams/Cu. Inch</u>
Spigot No. 1			
Heads	713	100.0	18.110
Mica	490	88.7	17.540
Sand	214	30.0	19.2605
Slime	9	1.3	
Spigot No. 2			
Heads	1026	100.0	16.690
Mica	762	74.3	16.250
Sand	242	23.5	19.210
Slime	22	2.1	
Spigot No. 3			
Heads	2000	100.0	15.035
Mica	1444	72.2	14.850
Sand	412	20.6	18.850
Slime	144	7.2	
Combined Results:			
Heads	5000	100.0	16.435
Mica Product	--	70.02	15.15
Sand Product	--	19.51	19.05
Slime Product	--	10.47	20.05

The specific volume of the slime product was calculated by difference.

There was considerable Mica in the sand product, so that in continuous operation the sand product would amount to less than 15% of the total weight of the feed, and the Mica product more than 75%.

A sample of the combined table concentrates was assayed and found to contain 0.005 oz. gold per ton.

SUMMARY AND CONCLUSIONS

Satisfactory unlocking of the sand from the Mica is obtained by crushing to minus 20 mesh in closed circuit with a screen.

The tests indicate that complete separation of the sand from the Mica at minus 20 mesh is not obtained by either hydraulic classification, table concentration, or jig concentration alone.

The best results were obtained by crushing to minus 20 mesh in rolls in closed circuit, separating into four spigot products and a slime overflow by hydraulic classification, and concentrating each spigot product separately on a table. At least 75 per cent of the weight of the feed can be recovered as relatively clean Mica by this method, and the various products will be graded as to size of flakes.

The hydraulic classifier product is the ideal table feed for this material.

OPERATIONS

The ores will first be passed through crusher and rolls to 20 mesh, which releases all of the Mica, hence the general mechanical routine of processing for the various commercial markets. Please note we will procure 37 tons of Mica from a 50 ton operation, plus 7.22% fines which pass to settling ponds, or approximately 40 tons of commercial Mica.

This leaves only 10 tons Silica and Molybdenum, which you can see makes a very high Molybdenum Concentrate, which will then be ground to 60 mesh which is the unlocking point for the Molybdenum and hence, processed according to flow sheet furnished by the University of Arizona.

The two processes follow each other normally, one unlocks from the Silica at 20 mesh, the other at 60 mesh, making a very simple milling process.

We are agreeably pleased with the processes above, but in order to be thorough in our investigations and before making any definite decision on machinery, we are having tests run by two of the best known manufacturers of Electrostatic equipment to ascertain if the Electrostatic process will make a better recovery on the Mica which is too fine to table. The Electrostatic process would also reduce the water consumption.

Our ore is a very unusual one, due to the fact it contains two elements, each of which are in sufficient quantity and quality to warrant operations for either. Government reports state it costs approximately \$25.00 per ton to grind schist and scrap Mica to a paint pigment, whereas nature has practically ground our product.

With properly equipped 50 ton plant we can turn out a complete line of Mica Products which we may reasonably expect to market at Eastern Points of call or Seaboard Territory at an average price of \$35.00 per ton. These products can be processed in our own mill, moved to Los Angeles Harbor in our own trucks, hence by water to Eastern markets for not to exceed \$18.00 per ton. From operations of a 50 ton mill we can reasonably expect to product 40 tons of finished Mica products per 24 hour day.

The Molybdenum content throughout this entire 12 foot vein will average 75 hundredths of 1%, or 15 pounds to the ton, which is worth, for 85% concentrate, approximately \$.45 per pound. However, our product being 95% concentrate and free from all harmful metals will be in the high premium class, and it is believed when ground through 325 mesh also and then reclaimed by flotation methods will make a 97% concentrate, thus placing it in the \$2.00 per pound class. It is with this thought in mind that we realize the importance of proper equipment for working our Molybdenum ores.

It is desired to process all Mica products now required by the industries referred to above and to properly process our Molybdenum to procure the highest prices possible; it is estimated that \$90,000.00 will be sufficient for these purposes and carry the expenses of operations until such time as we shall receive returns from the sale of our products.

The following is test made through Taylor Screens on 68 pounds of Muscovite Ore (Mica) from Bronx Mines, illustrating the percentages through various meshes which will be recovered by crushing and rolling and reflecting the fact that nature has practically ground our product for all commercial purposes, except the paint and wall paper industries. The Denver Equipment Company representative says our product can be ground to 200 mesh for not to exceed \$.35 per ton. Ground Mica at 70 mesh is quoted by the Mining Journal at \$60.00 to \$80.00 per ton.

<u>Mesh</u>	<u>Pounds</u>	<u>Per Cents</u>	<u>Approximate</u>
20	6.30	.089	9%
40	21.50	.319	32%
50	12.70	.188	19%
80	16.40	.238	24%
100	3.90	.059	6%
200	6.05	.090	9%
200	1.15	.017	2%
	<u>68.00</u>		

The consumption of ground Mica has increased in the United States from 4866 short tons in 1926 to 25,585 short tons in 1936, the last year for which the figures are available. Many new uses are being found for ground Mica, just how much we may increase this demand by lowering the price is difficult to predict. At the moment, it seems likely that the consumption of Mica can be greatly increased even at a cost well over \$50.00 per ton, but if we can believe some of the paint chemists the ground Mica business is only on the threshold of a new era of great expansion.

The cost of scrap Mica is \$14.00 per ton, plus \$25.00 per ton for grinding, making the ground Mica worth \$39.00 per ton without considering freight and handling charges. That is what most of our competitors have to contend with.

Muscovite is simply Mica that has been subjected by nature to such a terrific pressure that it has already been ground more or less by nature. Our product is ground to the required fineness to meet practically all commercial purposes, more than 7% actually passing a 200 mesh screen, when passed through rolls set at 1/32 of an inch, while more than 40% of the product passes a 100 mesh screen, and the entire product passing a 20 mesh screen. This means that nature has already performed 60% of the labor of reducing this to commercial fineness, which means that 60% of our product has a commercial value when cleaned and processed without further grinding.

The vast increase in the use of Mica during the past ten years warrants the assumption that this increase will continue for some time to come, and the scarcity of a true Muscovite ore in deposits of sufficient size to warrant the erection of a separating plant makes this property doubly interesting.

ESTIMATED NET PROFITS

Profits estimated on showing and class of ore in No. 5 Tunnel:

Probable net profit per ton -----	\$	16.00
" tonnage per 24 hour ----- 50		
" daily profits -----		800.00
" working days per annum ----- 300		
" profits before payment of taxes, depletion, depreciation, royalties, etc. -----		240,000.00
" net profits per annum -----		150,000.00
" profits as compared to investment ----- 33-1/3%		
" market value of shares based on estimated profits -----		\$5.00

Respectfully submitted

Hardy A. Norvill
Hardy A. Norvill

HAN:M

TEST ON MOLYBDENITE ORE

Ore furnished By Mr. H. A. Norvill

Four sacks of ore of about three hundred pounds was crushed by jaw crusher to about 1/4 inch. The whole sample was further crushed by rolls to pass a ten mesh screen. A sample of about 40 pounds was cut from the whole lot and ground in a small ball mill to about 8% on 60 mesh. The over size was mostly micaceous material. This was then sampled by riffing for an assay sample. The assay of this sample gave the following results:

Molybdenite (MoS ²)	1.86%
Copper	0.21

Several small tests were run to arrive at the proper kinds and amounts of reagents to be used.

Then a small flotation test was made in a 2 Kilo Denver machine. The cell was run for thirty minutes removing a rougher concentrate. This concentrate was rerun in a smaller flotation machine making a cleaner, concentrate and a cleaner tailing. In practice this cleaner tailing would be returned to the first cell in the roughing operation. After the rougher molybdenite concentrate was removed from the original ore the copper minerals were activated and the copper removed as a copper concentrate. The following table shows the results of this test:

TABLE I.

Products	Tons from 100 ton ore	Assay %		Tons X %		Extraction or loss	
		MoS ²	Cu.	MoS ²	Cu.	MoS ²	Cu.
Cleaner Conc.	1.0	95.3	0.25	95.3	0.3	52.0%	1.3%
Cleaner Tails	1.6	42.73	1.53	68.3	2.4	37.4	10.6
Copper Conc.	1.8	6.0	9.94	10.8	17.9	5.9	79.6
Tailing	95.6	0.09	0.02	8.6	1.9	4.7	8.5
Totals	100.0	1.83	0.22	183.0	22.5	100.0	100.0

This shows a concentrate of 95% molybdenite and a recovery of 89.4% of the molybdenite. The calculated assay of the heads from the products assays gave 1.85% MoS².

In order to more nearly approach practice in the treatment of this ore a hundred pounds of this sample was treated in our large five cell test machine. This machine is a Denver Machine of the mechanical type. The ore was fed at the rate of about one pound per minute to a conditioner and from this machine to the five cells in series, each cell making a rougher molybdenite concentrate. The ore was 4 minutes in the conditioner and 25 minutes in the cells. The concentrate from the last two cells was fed back to the conditioner. After this test was completed the tailings were dewatered and fed to the conditioner where the copper was activated and then treated in the five cells, making a rougher copper concentrates.

The rougher molybdenite concentrate was again treated in a smaller machine making a concentrate and a tailing called the No. 2 cleaner tailing. The concentrate was again recleaned making a No. 1 cleaner concentrate and a No. 1 cleaner tailing. The following table shows the results of this test:

TABLE II.

Products	Tons from 100 tons ore	Assays % MoS ₂	% Cu.	Assays % MoS ₂	% Cu.	Extraction MoS ₂	or Loss Cu.
No. 1 Cl. Conc	0.77	97.29	0.14	0.749	0.001	43.8	0.7
No. 1 Cl. Tails	0.36	85.85	0.49	0.309	.002	18.1	1.3
No. 2 Cl. Tails	1.10	35.29	1.00	0.388	.011	22.7	7.2
Copper Cl. Conc.	0.70	20.98	14.22	0.147	.100	8.6	65.4
Copper Cl. Tail	0.46	2.14	2.20	0.010	.010	.6	6.5
Tailing	96.61	0.11	0.03	0.106	.029	6.2	18.9
Totals	100.00	1.71	0.15	1.709	.153	100.00	100.0

This shows that the last cleaning was not necessary as by combining the No. 1 cleaner concentrate and the No. 1 cleaner tailing the combined products will assay 93.6% MoS₂ and 0.25% copper. This test shows an extraction of 84.6% of the molybdenite. The last cell in the roughing test showed considerable molybdenite indicating that a longer time of treatment should be given by having more cells with the given rate of feeding.

The following are the reagents used and the amounts:

<u>Molybdenite Roughing</u>	
Sodium silicate	0.5 pounds per ton of ore
Sodium cyanide	0.2 " " " " "
Pine oil Yarmor F	0.05 " " " " "
Derosene	0.02 " " " " "
<u>Copper Treatment</u>	
Copper sulphate	0.5 lbs. per ton
Z-3 Xanthate	0.1 " " " "
Pine oil	0.015 " " " "
<u>Cleaning Molybdenite</u>	
Sodium cyanide	0.3 lb. per ton
Sodium silicate	0.5 " " " "

The following are the reagents used and the amounts:

Molybdenite Roughing

Sodium silicate	0.5 pounds per ton of ore
Sodium cyanide	0.2 " " " " "
Pine oil Yarmor F	0.03 " " " " "
Kerosene	0.02 " " " " "

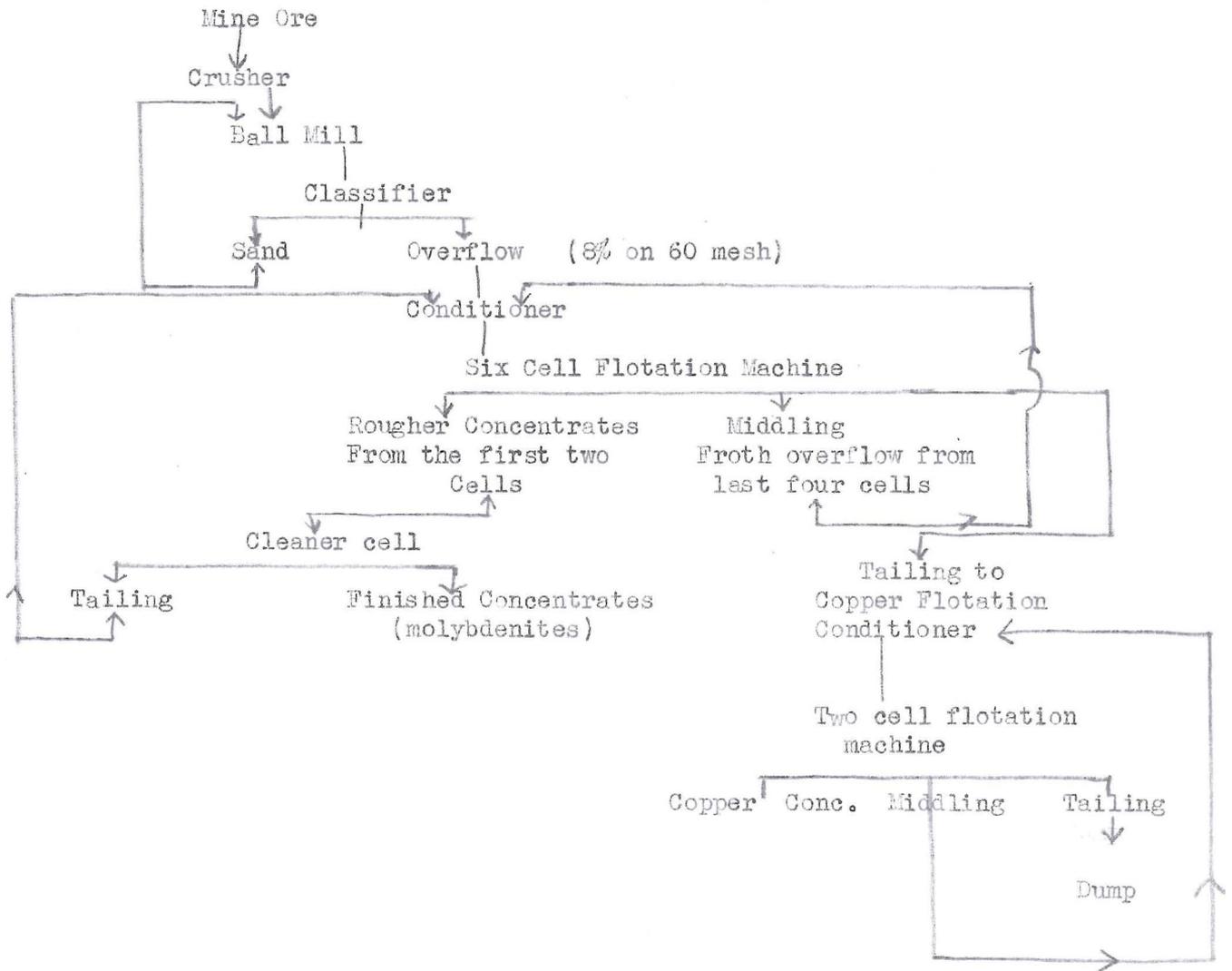
Copper treatment

Copper sulphate	0.5 lbs. per ton
2-3 Xanthate	0.1 " " "
Pine oil	0.015 " " "

Cleaning Molybdenite

Sodium cyanide	0.3 lb. per ton
Sodium silicate	0.5 " " "

Suggested flow sheet for the Molybdenite ore furnished by Mr. H. A. Norvill for testing at the University of Arizona.



BRONX COPPER MINE

The Bronx Copper Mine consists of 18 unpatented claims situated on the Superior-Globe Highway; 11 miles from Superior, $8\frac{1}{2}$ miles from Globe; in the Globe Mining District, Gila County, Arizona.

High tension power lines and telephone poles are on the property.

The elevation is 4000 feet. The mountain has a north-south trend, the crest approximately $1/4$ mile west of Pinto Creek. The spurs usually trend north-west-south-east. The surface is unusually rough. Push-ups or prominences of large boulder formations of pegmatite porphyry overlay the formations generally.

No living streams occur in the mountain or valleys; precipitation consists chiefly of torrential showers in summer and light snows in winter and is carried off by the otherwise dry washes. The mine can be operated the year round. Water is undeveloped, but sufficient for domestic purposes.

This property is unusual due to the fact that it contains two elements, molybdenum and muscovite, both of sufficient quality and quantity to be worked separately.

The molybdenum occurs in fissure veins of cerrusite,[?] muscovite and white quartz. Muscovite occurs in veins on all the claims in the group and is encountered most any place the porphyry cap is penetrated. Large outcroppings of muscovite occur, indicating unlimited tonnage. One geologist described this zone as being a big bubble in the cooling of the earth's surface, with these workings sitting on top of an unusually large body of molybdenum.

This property was worked in the 90's as a high grade copper, silver, and gold mine. There are tunnels on claims No. 3, 4, 5, and 6.

Tunnel #6, on claim No. 6, was originally worked for high grade silver and proved very profitable, the ore being carried by pack-mule to the Old Dominion Mine at Globe. The tunnel is caved and no attempt has been made to determine whether or not the silver vein is still there. The record of a 1935 assay taken from the portal showed gold \$11.20; silver \$27.80; copper 6.5% - \$11.70.

Tunnel #5, on Claim No. 5, is 110' with a winze 37' and a drift of 65'. The vein proper is approximately 7' wide and carries 1.04% molybdenum. The 5' hanging wall of practically pure muscovite (85 to 95) carries .25% to 1% molybdenum.

Tunnel #2, on claim No. 3, is 210' on the first level and 130' at the lower level. This appears to be the bottom as far as copper and gold is concerned, but it is here that the molybdenum comes in. The tunnel produced \$60,000.00 in gold alone. The lower tunnel on the 50' level was worked, following a very high-grade gold stringer. At this depth molybdenum is said to have appeared in white quartz, carrying values from 1.77% to 5% molybdenum. It was at this stage that the German geologist, a graduate of Heidelberg University, acquired title to these properties through purchase and otherwise, and retained control until the time of his death. Since then his widow has kept the property in good standing.

BRONX COPPER MINE

Scale 1 c.m. = 12.7 ft.

drawn by F. Hoekstra.
Aug. 10, 1940.

Cross section and plan of tunnel #2
#3 CLAIM

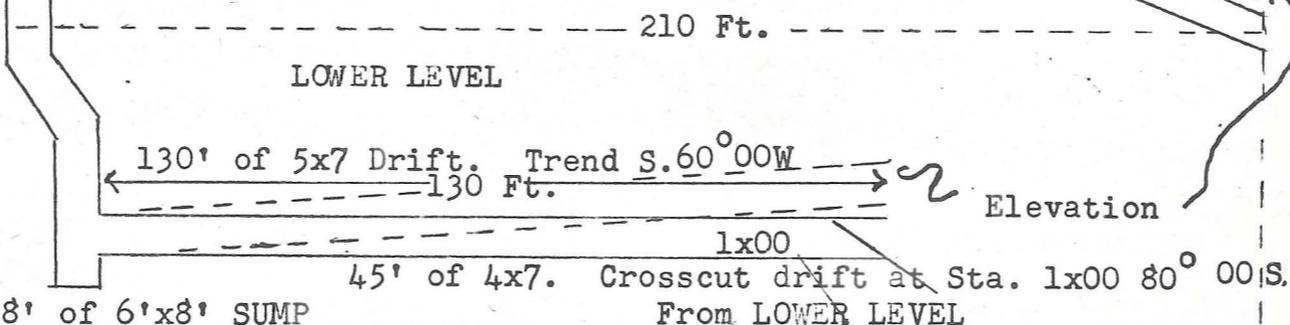
ELEVATION 25°

Stope
210' of 5'x7' Drift. Trend S.60°00'W
46' of 4x5 Raise at Sta. 1x00
Sta. 0x15 is 50' of 6x8 Shaft
Shaft is on vein leaning S 1½" in 4'8"
1st LEVEL

Subject to transit correction

DUMP

Declination 14°



PLAN VIEW

Scale 1 c.m. = 12.7 ft.
F. H. 1940.

Blacksmith Shop

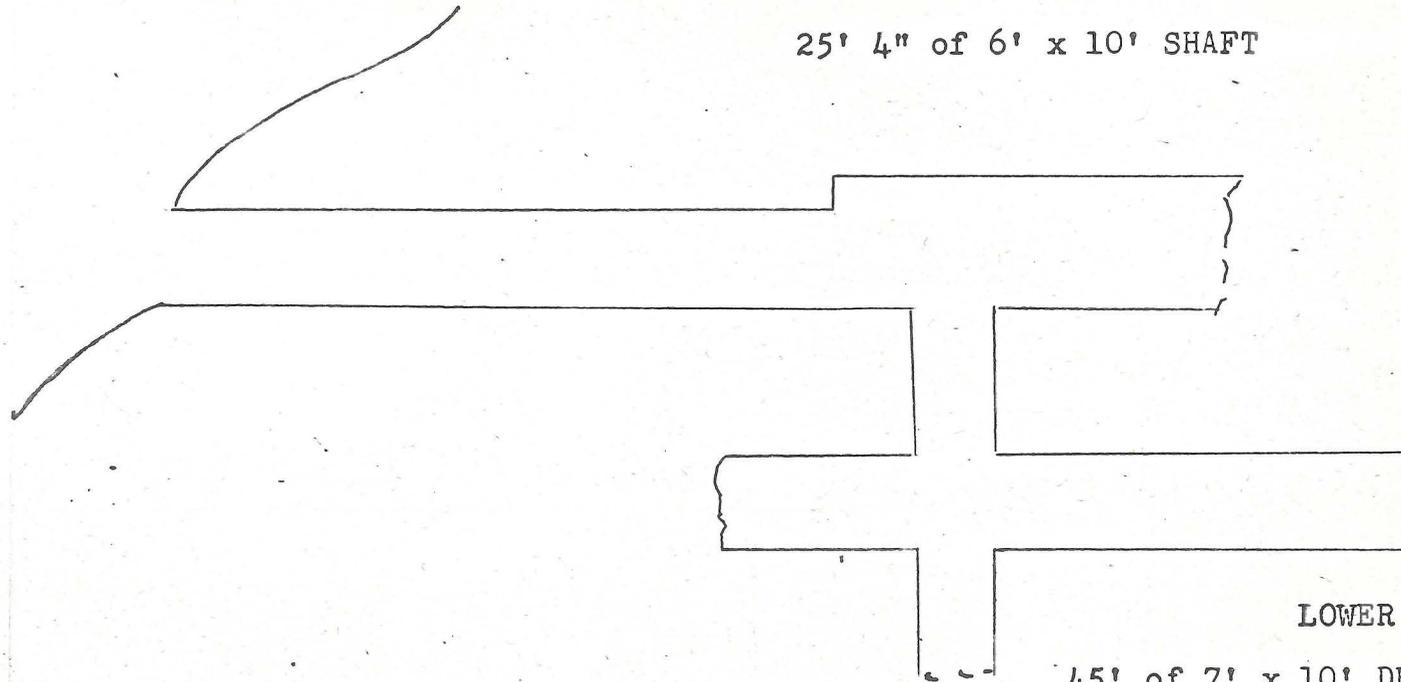
Stope to surface

#5 WORKINGS

1st LEVEL

68' of 5' x 7' Drift. 42' of 10' x 15' Drift Trend N. 20°00 E

25' 4" of 6' x 10' SHAFT



LOWER LEVEL

45' of 7' x 10' DRIFT N. 20°00E OF SHAFT

20' of 7' x 10' DRIFT S. 20°00W OF SHAFT

12' of 6' x 10' SUMP