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PRINTED: 04-14-2010

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES AZMILS DATA

PRIMARY NAME: SUNFLOWER GROUP

ALTERNATE NAMES:

NATIONAL QUICKSILVER
MIZPAH MERCURY
ARIZONA QUICKSILVER
BIG SAM
LOST PACKER
SUNNYSIDE
SADDLE MTN
PACKOVER
GO-BY CLAIM
PATENTED MS 4290

MARICOPA COUNTY MILS NUMBER: 615

LOCATION: TOWNSHIP 7 N RANGE 8 E SECTION 12 QUARTER C
LATITUDE: N 33DEG 57MIN 23SEC LONGITUDE: W 111DEG 29MIN 43SEC
TOPO MAP NAME: RENO PASS - 7.5 MIN

CURRENT STATUS: PAST PRODUCER

COMMODITY:

MERCURY
SILVER
GOLD LODE
LEAD
ZINC
COPPER

BIBLIOGRAPHY:

ADMMR SUNFLOWER GROUP FILE
ADMMR AMER. INT'L MINING & MILLING FILE
ADMMR LOST PACKER FILE
ADMMR SALLE MTN. FILE
USBM IC 8252, P 62, 65
ADMMR "U" FILE
AZBM BULL 122, P 73-81
AZ MINE INSPECTOR START FILE 1975

CONTINUED ON NEXT PAGE

CONTINUATION OF SUNFLOWER GROUP

BLM MINING DISTRICT SHEET
ADMMR SUNFLOWER MINE COLVO FILE
AZBM BULL. 180, P. 228

SUNFLOWER GROUP

MARICOPA COUNTY

World Mining Sept. 1965 p. 121 (MINE NEWS 5224)

ABM Bull. 122 p. 73
ABM Bull. p. 88

Skilling's Mining Review March 26, 1966 p. 24

IC 8252, p. 65

Sunflower Group (RFC file)
Miscellaneous (RFC file)
(Mercury properties)

American Internatl. Mining &
Milling Corp. (file)

RAJUSA MESSIA (A)

NOTE: There is additional information on the SUNFLOWER GROUP in the American International Mining and Milling (file). That information pertains primarily to American Int'l attempt to raise monies and apply exotic metallurgy techniques to materials from the Sunflower Group area.

Arizona Department of Mines and Mineral Resources

INFORMATION FROM MINE CARDS IN MUSEUM

ARIZONA

MM-K098 Cinnabar in Quartz

~~Massachusetts~~
~~Gila~~ Co.

Sunflower Mining Dist.

Mazatzal Mts.

Packover Mine MILS # 615

Sunflower Group (file)

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES

INFORMATION FROM MINE CARDS IN MUSEUM

ARIZONA

~~MARICOPA~~

Gila Co.

40 mi. SW of Payson

Sunflower Dsit.

Arizona Quicksilver Mine

MILS # 615

10-ARAL

Sunflower Group (Gila)

MM-K096 Cinnabar



RALPH MALCOM PABST
CHAIRMAN OF THE BOARD

THE HEREDITARY REGISTER
OF THE
UNITED STATES OF AMERICA

Mal Jernquist, Accountant
P.O. Box 637
Oakland, Or. 97462-0637

6535A Saddle Mountain

SEC. 14

JIM	MISS TRAIL BEVERLY
GLORIA	JANICE
CATHY	ELIZABETH

GOLDEN HORN 6	GOLDEN HORN 5	SILVER BELL 6
GOLDEN HORN 7	GOLDEN HORN 4	SILVER BELL
GOLDEN HORN 8	GOLDEN HORN 3	SILVER BELL
GOLDEN HORN 9	GOLDEN HORN 2	SILVER BELL
GOLDEN HORN 10	GOLDEN HORN 1	SILVER BELL

RED ROCK 12	RED ROCK 11	LONGUS	RAINBOW	IRON BUTTE NO. 2	SILVER BUTTE NO. 3	QUICK SILVER NO. 5
RED ROCK 10						
RED ROCK 6	NATIVE	JASPER		SULFIDE NO. 1	SILVER TIP NO. 4	QUICK SILVER NO. 4

RED ROCK 4	RED ROCK 3	RED ROCK 1	PACKOVER	GOPY	SUNNYSIDE NO. 5	WABASH
RED ROCK 7	RED ROCK 5	RED ROCK 2	TITANIC	IONE	JEFF TRAIL BLACK JACK NO. 6	ANACONDA

RED ROCK 8	RED ROCK 9	ALICE	BOB	LOLLIPOP	JUDY	NAI
						ERN

BIG SAM 6	BIG SAM 5					TOM 6
BIG SAM 7	BIG SAM 4					TOM 7
BIG SAM 8	BIG SAM 3					TOM 8
BIG SAM 9	BIG SAM 2					TOM 9
BIG SAM 10	BIG SAM 1					TOM 10
FRED 6	FRED 5					ELLEN 5
FRED 7	FRED 4					ELLEN 4
FRED 8	FRED 3					ELLEN 3
FRED 9	FRED 2					ELLEN 2
FRED 10	FRED 1					ELLEN 1
GREEN VALLEY 6	GREEN VALLEY 5					AIRPORT 5
GREEN VALLEY 7	GREEN VALLEY 4					AIRPORT 4
GREEN VALLEY 8	GREEN VALLEY 3					AIRPORT 3
GREEN VALLEY 9	GREEN VALLEY 2					AIRPORT 2
GREEN VALLEY 10	GREEN VALLEY 1					AIRPORT 1

5888

5214

5068

TRAIL

7NME Sec 7 L&N No. 3

SEC. 19

MANG.

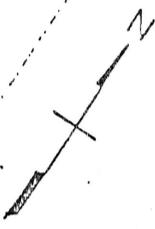
5296

ELL 5
BELL 4
BELL 3
BELL 2
BELL 1

SEC 12

SEC. 6

5713



VERE BELL 1	NARDINE	BIG DIKE	WATER SPOUT 6	WATER SPOUT 5	WATER SPOUT 15
WATER SPOUT NO. 2	RED ROCK	RED ROCK EXTENSION	WATER SPOUT 7	WATER SPOUT 4	WATER SPOUT 14
MARY	BLACK ROCK	CORNICOPIA EXTENSION	WATER SPOUT 8	WATER SPOUT 3	WATER SPOUT 13
PHIDE	CORNICOPIA	L&N No. 15	WATER SPOUT 9	WATER SPOUT 2	WATER SPOUT 12
DO No. 1	OHIO	L&N No. 4	WATER SPOUT 10	WATER SPOUT 1	WATER SPOUT 11
BARBARA	TOLEDO	L&N No. 10	ONEIDA 15	ONEIDA 6	ONEIDA 5
5	DICK 6	DICK 5	ONEIDA 16	ONEIDA 7	ONEIDA 4
4	DICK 7	DICK 4	ONEIDA 17	ONEIDA 8	ONEIDA 3
3	DICK 8	DICK 3	ONEIDA 18	ONEIDA 9	ONEIDA 2
2	DICK 9	DICK 2	ONEIDA 19	ONEIDA 10	ONEIDA 1
1	DICK 10	DICK 1	ONEIDA 20	ONEIDA 11	ONEIDA

SEC. 7

SEC. 8

MARY 5	CHLORINE 6	CHLORINE 5	SALT 6	SALT 5
MARY 4	CHLORINE 7	CHLORINE 4	SALT 7	SALT 4
MARY 3	CHLORINE 8	CHLORINE 3	SALT 8	SALT 3
MARY 2	CHLORINE 9	CHLORINE 2	SALT 9	SALT 2
MARY 1	CHLORINE 10	CHLORINE 1	SALT 10	SALT 1
SPRING 5	CYANIDE 6	CYANIDE 5	POTASSIUM 1	POTASSIUM 6
SPRING 4	CYANIDE 7	CYANIDE 4	POTASSIUM 2	POTASSIUM 7
SPRING 3	CYANIDE 8	CYANIDE 3	POTASSIUM 3	POTASSIUM 8
SPRING 2	CYANIDE 9	CYANIDE 2	POTASSIUM 4	POTASSIUM 9
SPRING 1	CYANIDE 10	CYANIDE 1	POTASSIUM 5	POTASSIUM 10

SEC. 11

AMERICAN INTERNATIONAL MINING
RARE METALS LODE CLAIM
SUNFLOWER MINING DISTRICT
MARICOPA COUNTY, ARIZONA

COMPILED FROM SURVEYS MADE JUNE-JULY 1968
FOR SUNFLOWER PROPERTIES INC. ALL CLAIMS
HAS BEEN DONE FROM GEODETIC MAPS WITH
1:50,000 SCALE

1968

News Clip 5/15/69
GREATER DENVER-PHOENIX MINING CO.

See Sunflower Group (file) - Maricopa County



5-15-69
Maricopa Co
B%

NAME OF MINE: NATIONAL

COUNTY: MARICOPA

(Arizona Quicksilver Mine)

DISTRICT: SUNFLOWER

METALS: HG

OPERATOR AND ADDRESS:

MINE STATUS

DATE:

DATE:

5/1/44

P. G. Flumerfelt, G.M.
Box 918, Mesa

5/1/44

Developing

5/9/44

William R. Robertson
Arizona Quicksilver Mine
Sunflower, Arizona

1/45

adding unit to mill.

5/45

Van Dyke, Gen. Mgr.

5/45

Producing

8/45

James F. Vassar, Sunflower

8/45

Developing

(Natl. Mng. & Mill. Co.)

8/46

Idle

GAZETTE
May 1-55

Information from MINE INSPECTOR'S OFFICE - August 15, 1957

NATIONAL MINE (Anniversary) 52 claims MARICOPA CO. 5-3-57
Sunflower, Arizona

Owner - Bill ^{Paulan?} Doolin, Bali-Hi Motor Court, Phoenix
Operator - " " " "
Agent in charge - Terso Contreras, 650 So. Grand Ave., Mesa, Ariz.

Hg - Development - 6 men.

L.A.S.

NATIONAL QUICKSILVER
SUNFLOWER GROUP

MARICOPA COUNTY
SUNFLOWER DIST.

According to Carlson, The National Quicksilver
group is owned by Sunflower Mines, Inc.,
(J. R. ^{Allen} Allan, 57 S. Hobson, Mesa) -(Agent
locally) a California group.

LEWIS A. SMITH
Memo
10-13-59

SUNFLOWER GROUP

MARICOPA COUNTY
~~CAVE CREEK DIST.~~

National Mining Co., Sunflower Group -

Now controlled by H. L. Allen, 117 So. Hobson, Mesa. Home Phone WO 4-4201
Office " WO 4-4401

This information was furnished by W. R. Dudley who examined the property
for H. L. Allen recently.

L. A. SMITH, 5-18-60 - Memo

REPORT

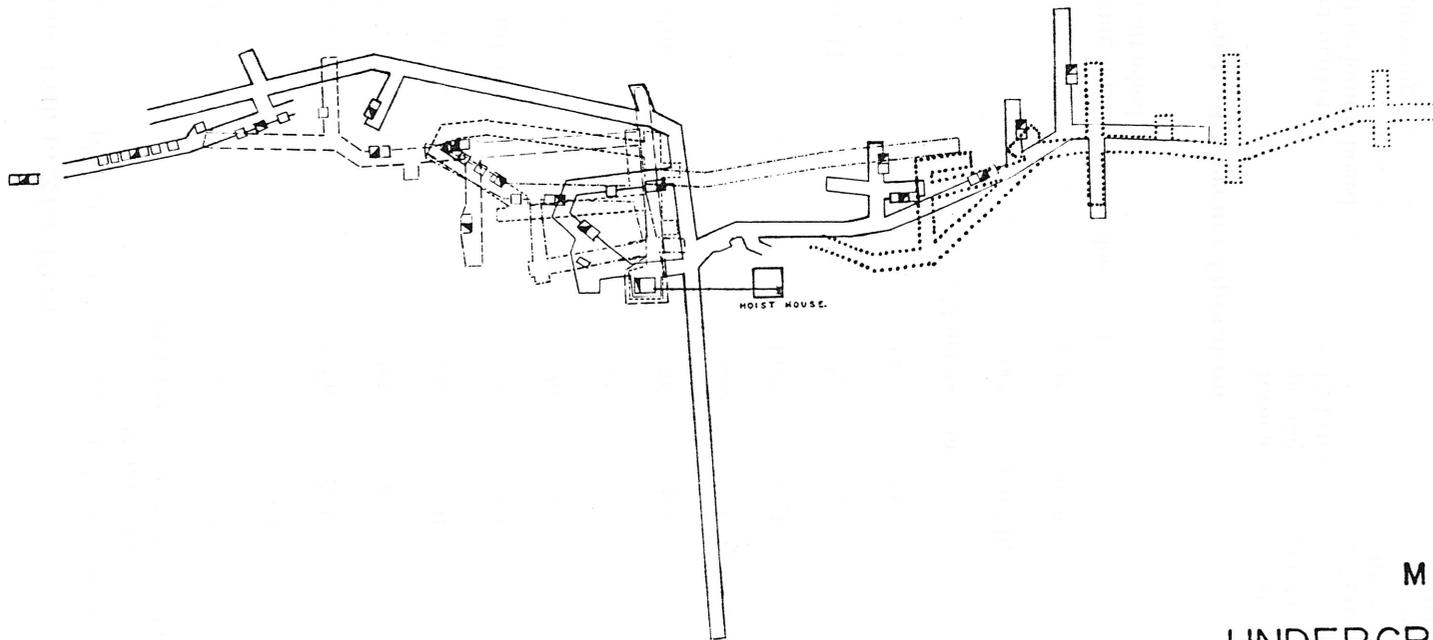
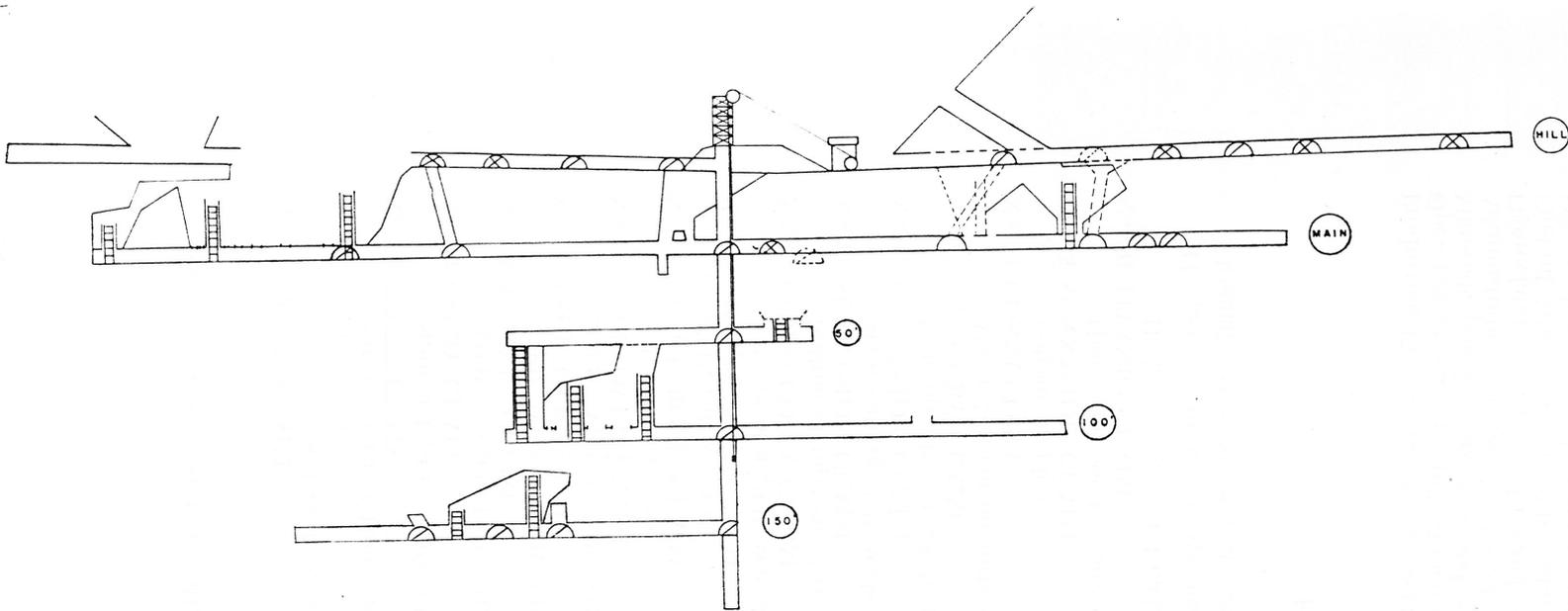
SUNFLOWER GROUP

of

MERCURY CLAIMS

ARIZONA

SUNFLOWER PROPERTIES
GOODRICH BUILDING
PHOENIX, ARIZONA



LEGEND	
.....	HILL
-----	MAIN
.....	50 FT.
.....	100 FT.
.....	150 FT.

MAP OF
 UNDERGROUND WORKINGS
 PASSOVER AND GOBY
 CLAIMS
 OF THE
 SUNFLOWER GROUP

June 14th to 21st 1949

Samples taken at this time with locations and also plotted on attached map of claims, were as follows:

	Mercury %	Mercury Lbs. per ton	Gold	Silver
No. 1 GO-BY CLAIM 22-ft. cut on face East of Hoist House . . . . .	.17%	3.4		
No. 2 GO-BY CLAIM 6-ft. cut East of Hoist House . . . . .	.22%	4.4		
No. 3 GO-BY CLAIM Summit East of Shaft, 4-ft. cut, no work	1.25%	25.0		
No. 4 GO-BY CLAIM 300 ft. East of Shaft, 3-ft. cut surface, no work . . . . .	.80%	16.0		
No. 5 TITANIC CLAIM 400 ft. West of Shaft, 4-ft. cut in drift . . . . .	.60%	12.0		
No. 6 PACK OVER CLAIM 500 ft. West of Shaft, 5-ft. cut on surface	1.23%	24.6		
No. 7 PACK OVER CLAIM 4-ft. cut on surface . . . . .	.16%	3.2	nil	trace
No. 8 BLACK ROCK CLAIM 3½-ft. cut on surface . . . . .	.40%	8.0	trace	.10 oz.
No. 9 CORNUCOPIA CLAIM 3-ft. cut of a 20-ft. vein 300 ft. in drift . . . . .	.30%	6.0		
No. 10 CORNUCOPIA CLAIM Bottom of pipe cut 3 ft. . . . .	.58%	11.6	trace	.80 oz.
No. 11 SUNNYSIDE CLAIM Main outcrop 4 ft. wide	1.67%	33.4		
No. 12 SUNNYSIDE CLAIM Outcrop 4-ft. cut 200 feet from No. 11 . . . . .	.27%	5.4		
No. 13 MERCURY CLAIM About 2-ft. cut on surface	4.22%	84.4		
No. 14 CORNUCOPIA Bottom of pipe		Manganese ore 13.28%		
No. 15 SUNNYSIDE CLAIM Highgrade ore 6 inches wide	5.96%	119.2 lbs.		
No. 16 TITANIC CLAIM Highgrade ore cut 4 inches	3.16%	63.2		

The last two are merely specimens showing highgrade ore does exist.
Original certificates of assays are hereto attached.

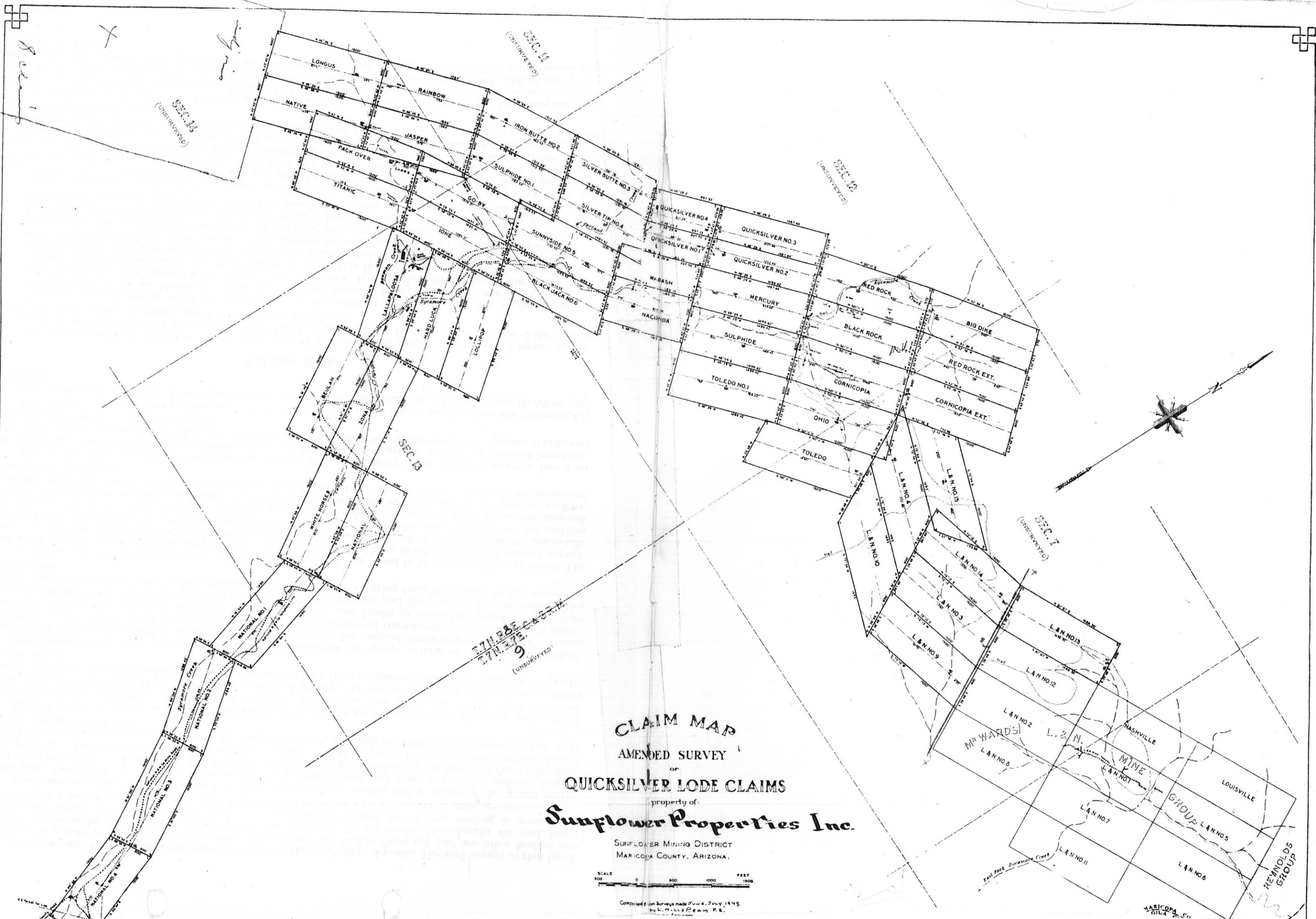
Estimate costs of Mercury Operation

	Income per day	Cost per day	Profits
Production 15 flasks per day @ \$83.00 present market	\$ 1,245.00		
Operating expense, payroll 25 men @ \$15.00 including board		\$375.00	
Materials, powder, caps, fuse and supplies		100.00	
Administration expense, legal, supt. and engineering		65.00	
Depreciation on tools and repairs		50.00	
Fuel oil, lubricating oil, oil for rotaries		50.00	
Mine timbers and underground supplies		25.00	
Unforeseen contingencies		43.33	
Road work and new development		120.00	
Royalties, 10%		124.50	
		<u>\$942.33</u>	
Daily income	\$ 1,245.00		\$1,245.00
Expenses			942.33
Daily profits			<u>\$ 302.67</u>
300-day operation per year	\$90,801.00		

350 to 400 tons daily operation such a plant would cost around \$175,000.00 and operating on ore averaging 2 lbs. to 3.8 lbs. to the ton.

This return would give around 55% on the investment; should the market of mercury drop 10% to around \$1.00 per pound, it would still leave a reasonable profit.

Handwritten notes:
L. & P. ...
H. & P. ...



CLAIM MAP
AMENDED SURVEY
OF
QUICKSILVER LODE CLAIMS
property of
Sunflower Properties Inc.
SUNFLOWER MINING DISTRICT
MARICOPA COUNTY, ARIZONA.



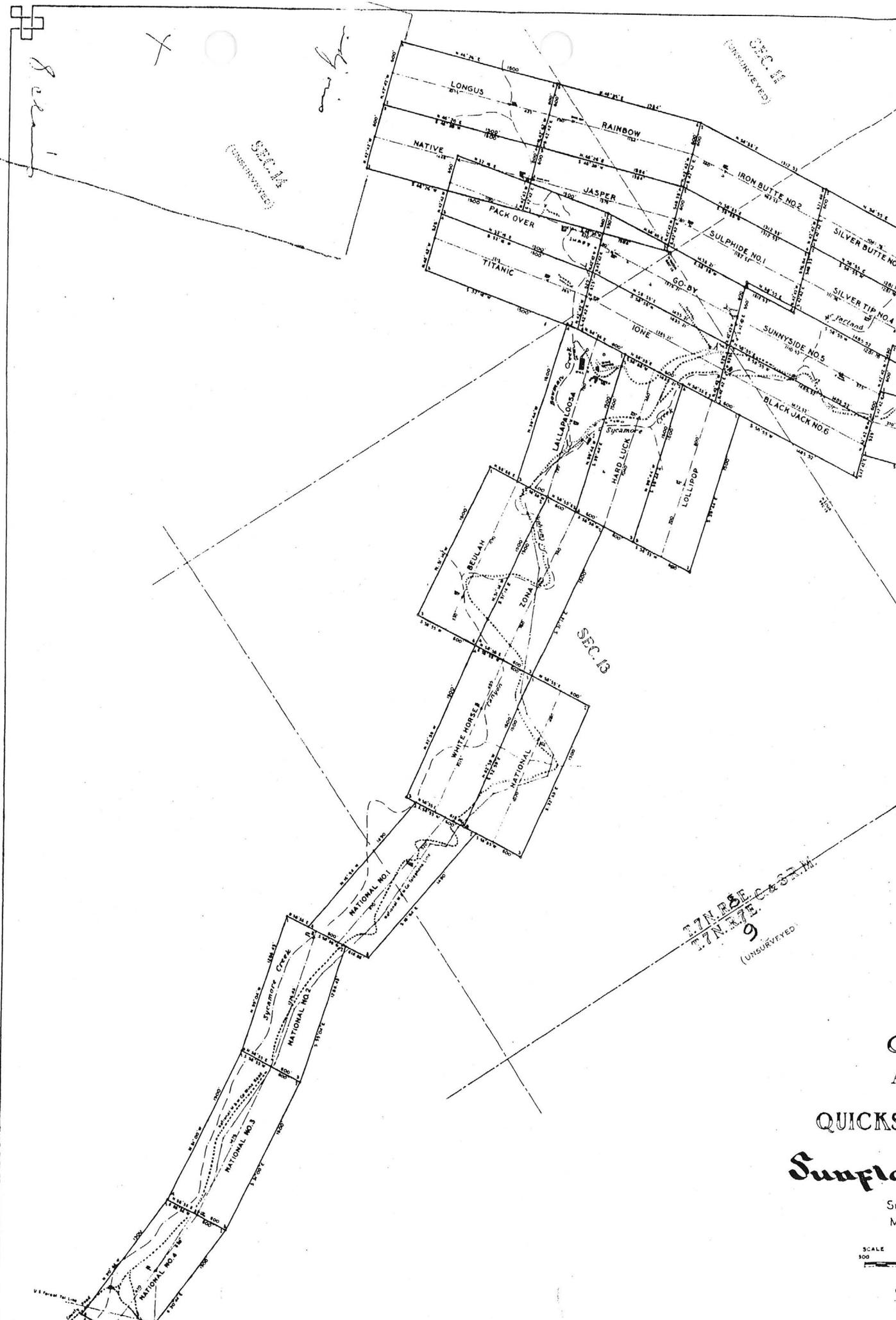
Compiled from surveys made June & July 1949
by L. Mills & Co. P.E.

Stamp:
T7N 8E C 27 W
T7N 7E S 9
(UNSURVEYED)

MARICOPA COUNTY

REYNOLDS GROUP

Handwritten notes:
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IND. SEC. C & S.M.
17N. 47E. 9
(UNSURVEYED)

C
A
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Sunflo
Sur
Ma

SCALE
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Co

AIM MAP

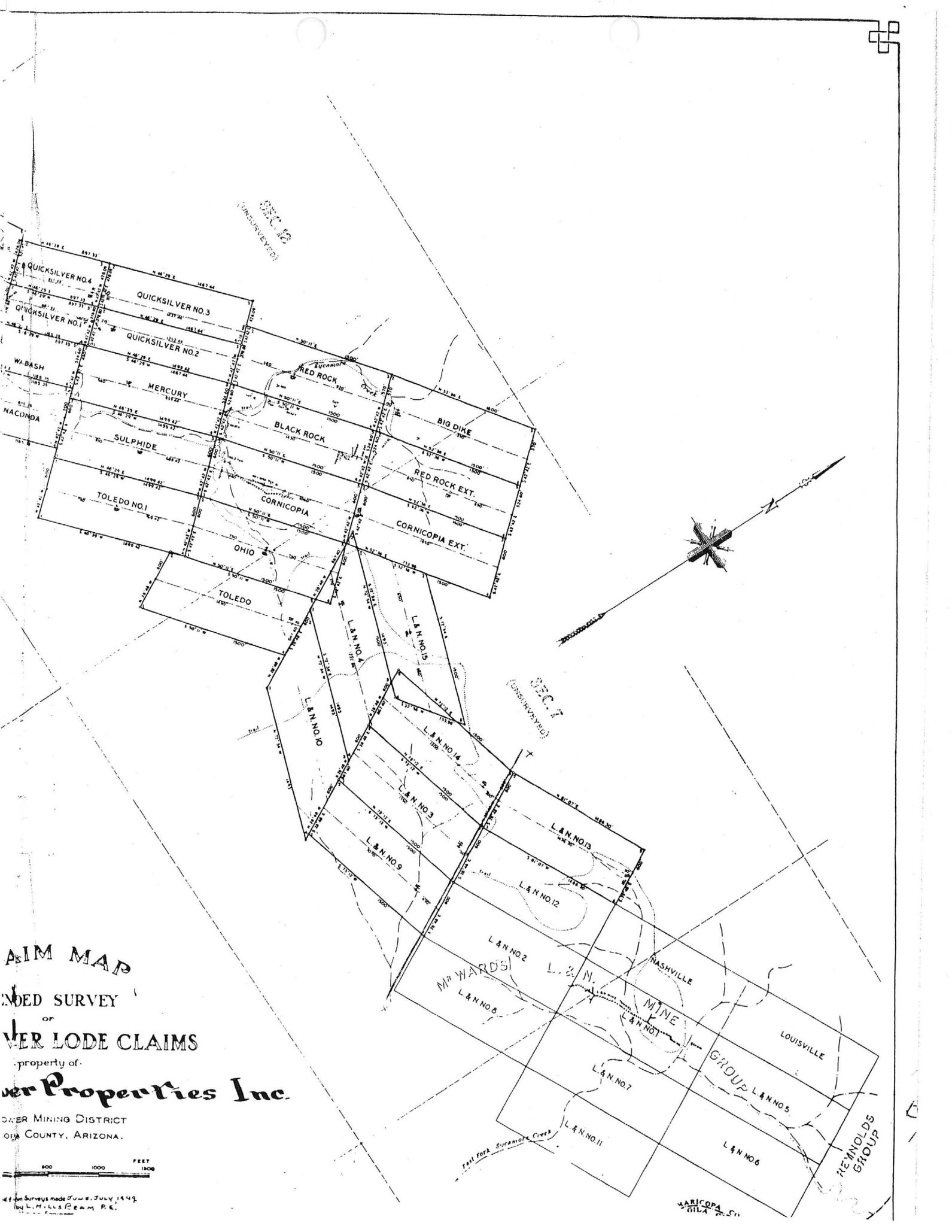
INDEXED SURVEY
OF
SILVER LODE CLAIMS

property of
Over Properties Inc.

COPPER MINING DISTRICT
GILA COUNTY, ARIZONA.



Original Surveys made June & July 1949
by L. M. L. S. Beam P.E.



Bold outcrops of bright red jasper were seen north of the quicksilver deposits. The rock occurs as thin bands or layers in a pale yellow, dolomitic limestone. These bands are highly contorted and are often broken into angular fragments by the dynamic metamorphism that produced the schistosity. Occasionally the rock has a mottled appearance due to small white specks in a vermilion-red matrix, and is very striking in appearance, especially on a wetted surface. Small crystals of pyrite were found on a fresh fracture in some specimens.

A schistose conglomerate was observed on Alder and Sycamore creeks, and is a part of the quartz-sericite schist zone. The pebbles are all more or less angular, and comprise such rock types as rhyolite, andesite, banded quartzite, brown slate, and red jasper. The angularity of the fragments, which show no distortion due to deformation, suggests a local derivation and transportation for only a short distance. Microscopic examination showed the feldspars in the fragments of andesite to be remarkably fresh, although the ferro-magnesian constituents were entirely altered to chlorite.

Rhyolite-porphry occurs as two broad bands traversing this district in a northeast direction, and more or less paralleling the schistosity. The rock is of a creamy-yellow color and porphyritic texture with numerous phenocrysts of quartz and feldspar visible on a weathered surface. The central portion of this intrusion is rather massive and shows but slight schistosity, while the borders have been compressed and recrystallized to a quartz-sericite schist.

Microscopically, the less sheared rock consists of phenocrysts of quartz, orthoclase, and acid plagioclase. Much of the feldspar is altered to secondary quartz and sericite. No original ferro-magnesian minerals remain, but the form of the alteration products suggests that biotite was an original constituent. The groundmass is microcrystalline and consists of quartz and orthoclase, with sericite and kaolin as secondary minerals. The more sheared portions of the rhyolite-porphry consist of quartz and sericite, and the positive identification of this highly compressed portion rests on the gradational intensity of the shearing from the center to the borders of the intrusive.

A specimen of rock collected near the trail along Alder Creek was found to be an amygdaloidal basalt. The rock breaks readily in one direction showing that a rude schistosity has been developed, but the general appearance in a hand specimen closely resembles an igneous rock. The amygdules, which consist of calcite, apparently have not been distorted by the metamorphism to which the rock has been subjected. Examined in thin sections the rock was found to consist largely of alteration products. No feldspar or original ferro-magnesian minerals remain. The alteration products are quartz as irregular grains and tiny veinlets, chlorite, serpentine, sericite, limonite, and kaolin. Nests of serpentine may have been formed from original olivine. Much of the magnetite present may be original.

Most of the schist exposed in this region was derived from sedimentary rocks. This conclusion is based on the finding of a conglomerate, original bedding planes in the slates and quartzite, and the presence of limestone. Very likely all the quartz-sericite schist was formed from sediments. The rhyolite-porphry, chlorite schist, and amygdaloidal basalt are of igneous origin.

This belt of schist continues northeastward to the northern end of the Sierra Ancha where the metamorphic rocks are overlain by a member of the Apache group of supposedly Cambrian age. The schists are therefore pre-Cambrian.

Volcanic Rocks

The effusive rocks are abundant on the west slope of the range and usually occur as lava mesas. Saddle Mountain, about 4 miles west of the camp on Alder Creek, is such a mesa. Here Ransome¹ examined the various flows that make up this mountain and described them as follows:

"The volcanic rocks under which the schist passes at its southwest end have a thickness of about one thousand feet on Saddle Mountain. At the base is a soft-brown tuff, andesitic or basaltic, with many schist fragments. This appears to be fifty to sixty feet thick. It is overlain by light-gray fine-grained andesitic tuff of approximately the same thickness. Above this lies about 200 feet of coarse andesitic tuff-breccia, the fragments being mostly a light-gray hornblende-biotite andesite. This is succeeded by about 300 feet of andesitic flow breccia, which appears to pass upward without recognizable plane of demarcation into a somewhat porous pink lava which, although resembling the dacite of the Globe-Ray region, proved on microscopic examination to be a fresh hornblende andesite with glassy groundmass. This flow or part of the flow is at least four hundred feet thick and forms the top of the mountain."

South of Red Rock Pass, between Sycamore and Slate creeks, the volcanic rocks have a total thickness of not over 700 feet. Here a well-stratified, brownish tuff, probably andesitic in composition, is the lowest member of the volcanic series observed in the vicinity of this pass; but, as the basement upon which it rests is not exposed, other flows may occur beneath it. This tuff is apparently present only on the west side of the pass, dips to the southwest at a low angle, and appears to fill a depression in an older topography. Above this tuff are flows of a light-colored biotite andesite with a thickness of at least 300 feet. On the east side of the pass a gravel rests on the eroded surface of these flows.

In the lower portion of Slate Creek is an exposure of olivine basalt intercalated in tilted conglomerate. The flow and conglomerate dip to the east at about 15°. Cliff sections along the stream show the basalt to have a thickness of between 80 and 100 feet. The rock is rather dark in color and very fine-grained, with olivine as the only megascopic mineral. This basalt has been thoroughly shattered and the fractures filled with innumerable veinlets of calcite.

¹Op. cit., p. 117.

Telephone
ORchard 7-5345

Beam Smelters

* * * 10535 BUFORD AVENUE * INGLEWOOD, CALIFORNIA

July 30th, 1949

Sunflower Properties Inc.
515 Goodrich Bldg.
Phoenix, Arizona

Attention: Mr. C. L. Dufur, Chairman of the Board:

Gentlemen:

Herewith I am handing you report on the Sunflower Group of mining claims located in Maricopa County, Arizona; attached thereto is a complete map of the claims and a map of the underground workings on the Passover and Go-By claims.

The cinnabar deposits on these claims are found in the schist and are impregnated in the schistos shear zones which can be traced for miles, and is intricately mixed in the schist, and appear with a finely disseminated yellow mineral, probably a mercury chloride and iron oxide. The ore bearing zone as a whole cuts across the rocks without regard for their structure and is well defined so that mining at deeper levels can be planned systematically, and the values show that there is a definite increase as depth is reached, and it is my belief that when this Sunflower property is opened up it will be one of the largest producers of mercury for many years to come. The possibilities of such a property are worthy of consideration of any reliable operator.

There are two methods of operating a property of this magnitude. Under the power shovel method of mining, open-cutting, and large enough furnaces to accommodate open pit mining, there is now ore available for 700,000 tons that will average better than 3.2 lbs. of mercury per ton, valued at \$2,240,000.00; the probable ores with only surface exposure and estimating tonnage, would exceed 2,354,000 tons. The other method of working this property would be to concentrate on the higher grade ore veins which are definitely present as shown by the report. I have approximated the number of tons of such ore at a conservative figure of 166,429 tons that could be held at 32.5 pounds per ton, the present market value gross \$5,408,942.50.

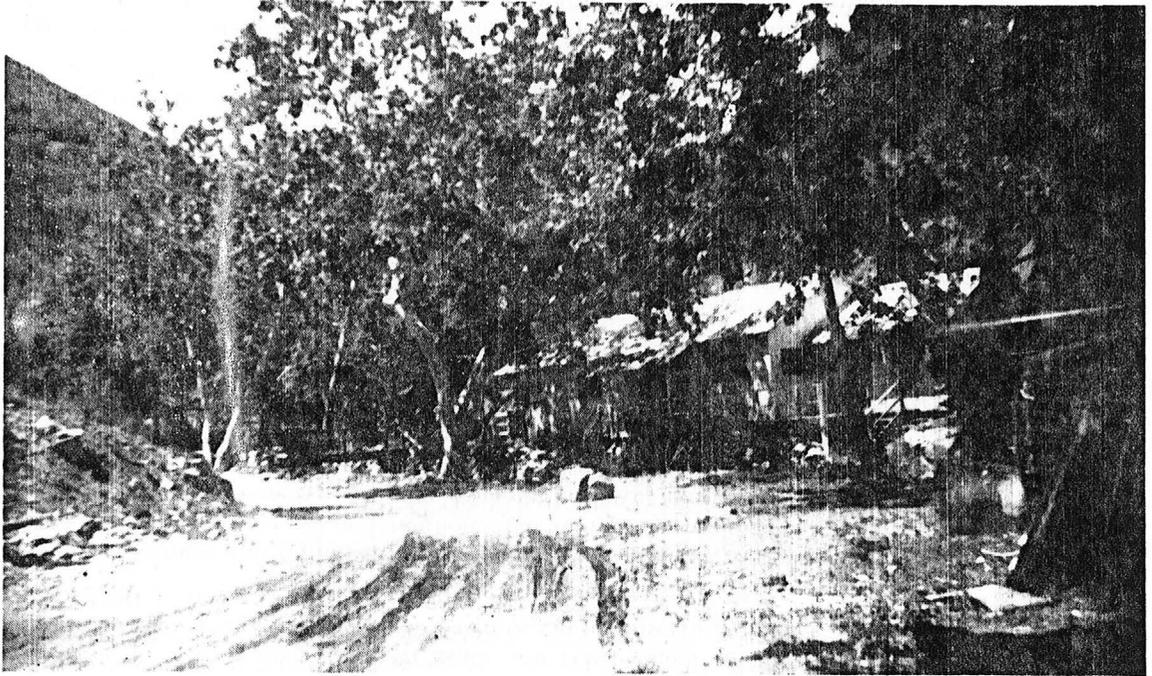
Allowing adequate mining and administration costs, depletion and taxes, the power shovel method would show a return of 8.6% net profit; the second method, that of mining principally the better grades of ore, will show a profit of 21.9%, leaving in reserve and stock piling the lower grades to be handled at some future date. In either method it would take many years to exhaust a natural supply of this type. At the present time we have a tariff protection of \$19.00 per flask on foreign mercury. The present belief that a surplus supply situation has developed in the United States has caused a reduction in Government purchases of Mexican, Canadian and domestic, but this is false information, as the majority of retailers admit that they are not carrying as large stocks as they should, and if they did stock up, it would create a shortage which would take many months to try and balance.

There are many industries laying plans at the present time to increase the use of mercury. One company we know quite well is the P. R. Mallory Company of Indianapolis, Ind., which has perfected, during the recent war, a long life dry cell battery using mercury as one of its principal components; they are now preparing to reach the domestic consumers and have more business lined up than they can adequately take care of. Also, there is another large corporation which has perfected mercury motors, and is now seeking a source of mercury in reserves. I might add that mercury is used in hearing aids, fire alarm equipment, portable radio sets, guided missiles, stratosphere rockets, electric switches, and gold mining, of course, and many other uses including medicinal.

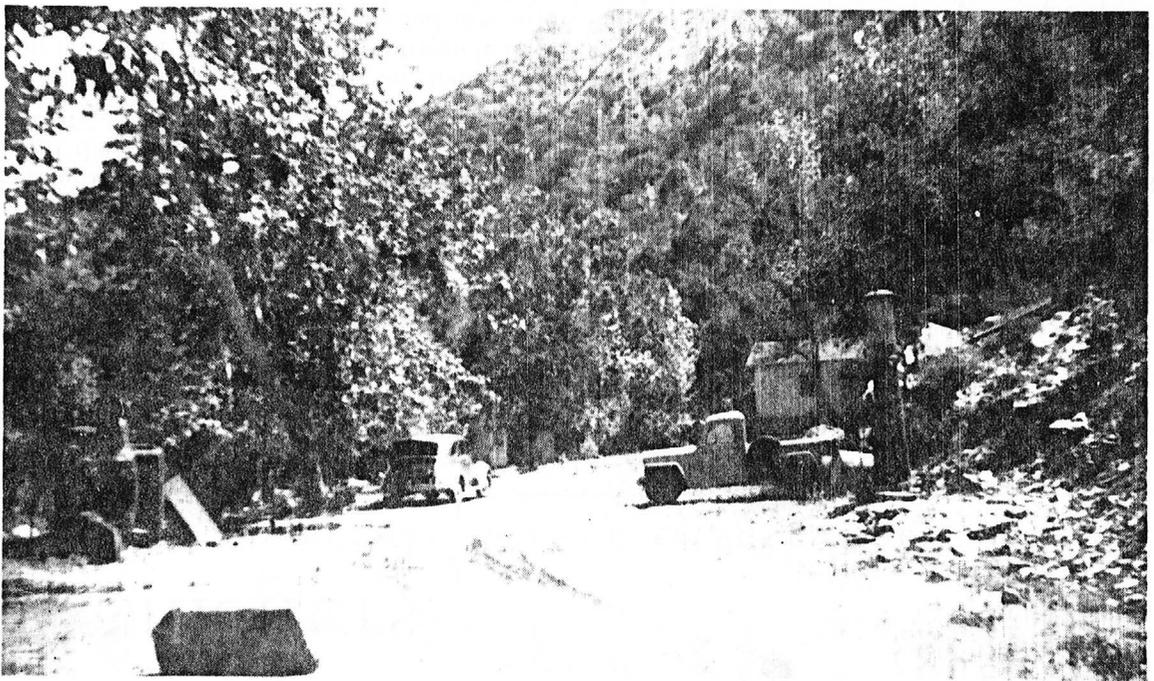
On a property of this size it would be my recommendation to proceed with plans for operation on either of the two plans suggested, as it would seem to be a sound undertaking with large possibilities.

Yours very truly,

(Signed) L. MILLS BEAM



Substantial building and pleasant camp sight



Showing entrance to camp coming from Bush Highway

This printed report is a direct copy of the engineers' original report compiled as of July, 1949, under the direction of L. Mills Beam, for the owners of the Sunflower Group of Quicksilver claims. The original is on file at the Office of the Secretary, Sunflower Properties, Goodrich Building, Phoenix, Arizona.



Along Bush highway with road in the distant



Camp showing heavy wooded section



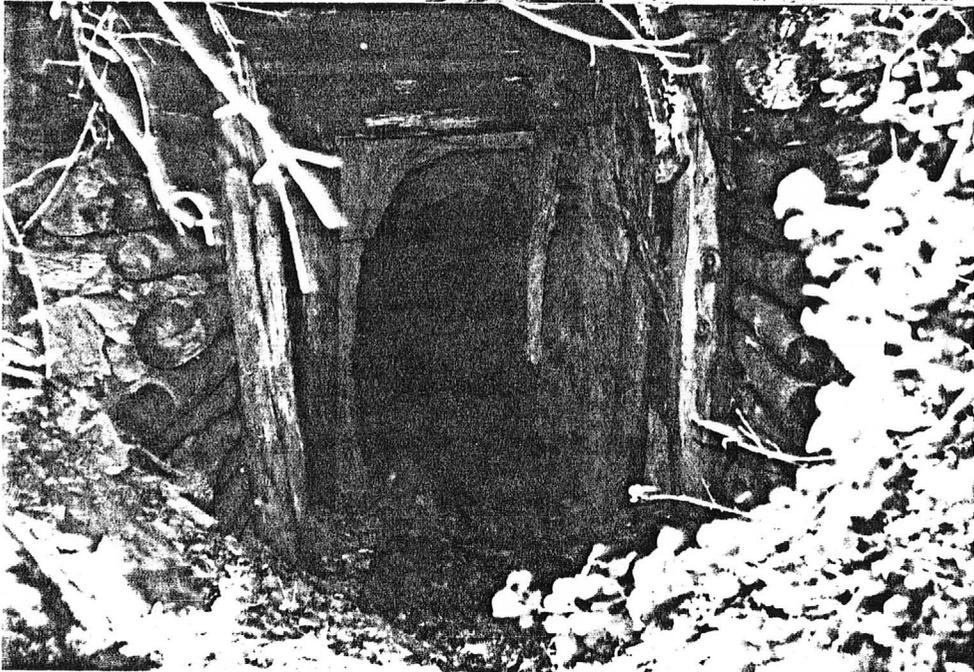
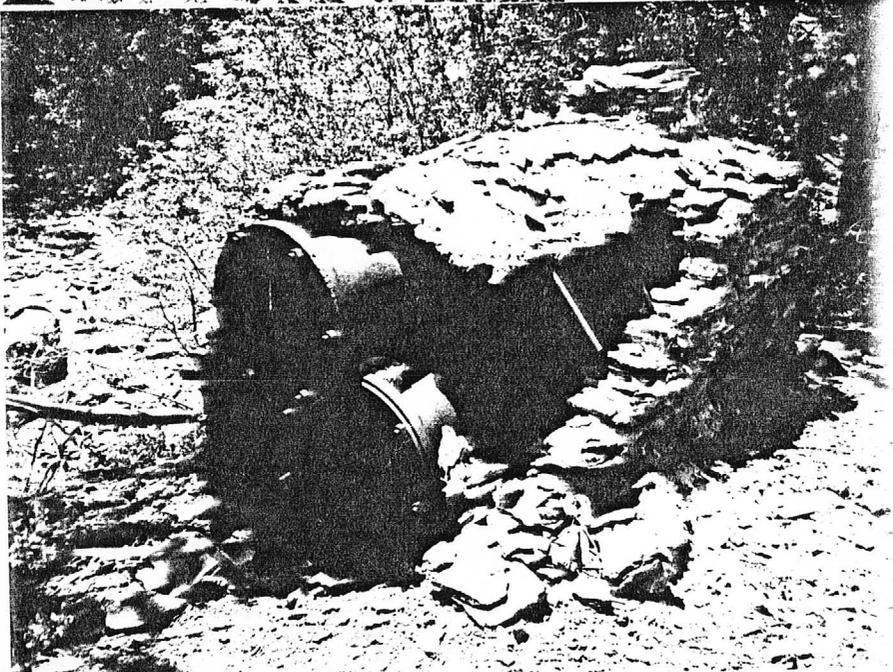
MAY, 1988
WJK
In the Matonj
from Norm
Hove Trails

↖ shown in front of
1st mine we come
to

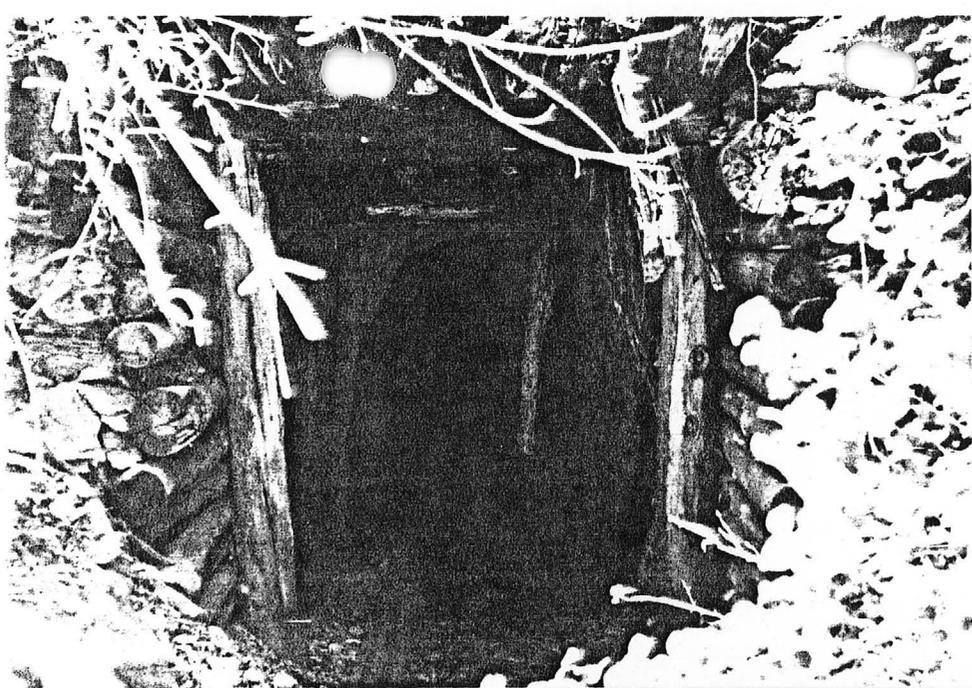
This is in front
of the first mine
we come to →

SUNFLOWER GROUP (F)

611988



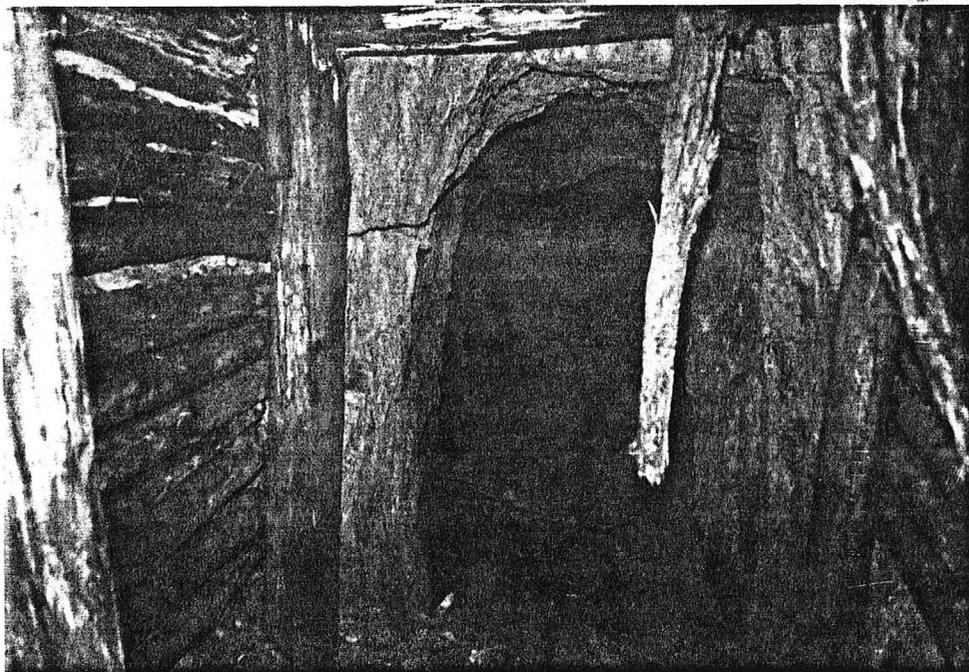
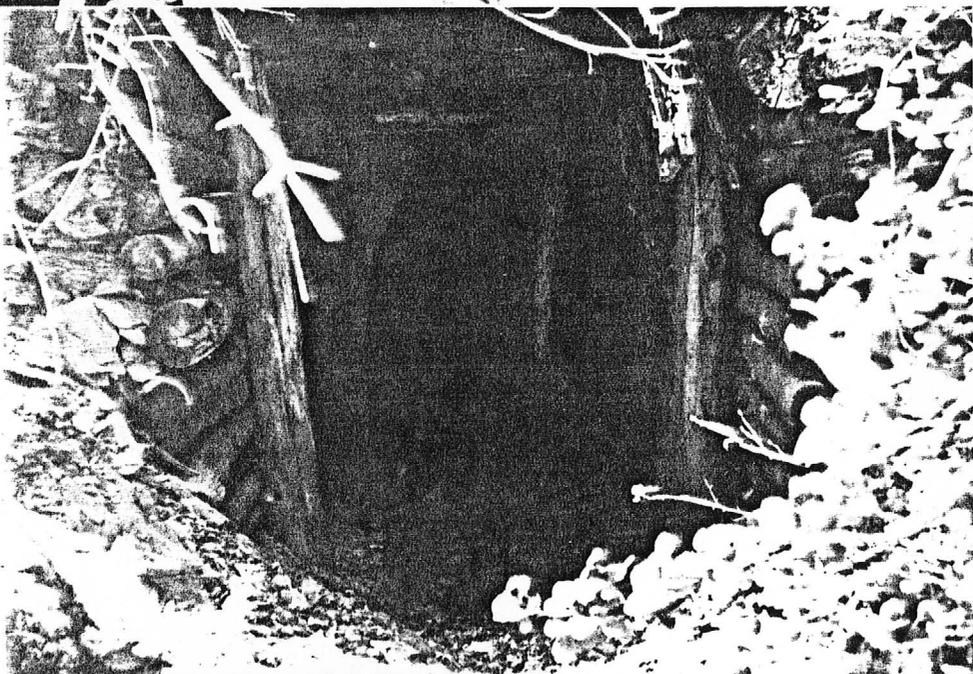
The first
mine.



The first
mine we
came to.

6/1988

SUNFLOWER GROUP (P)

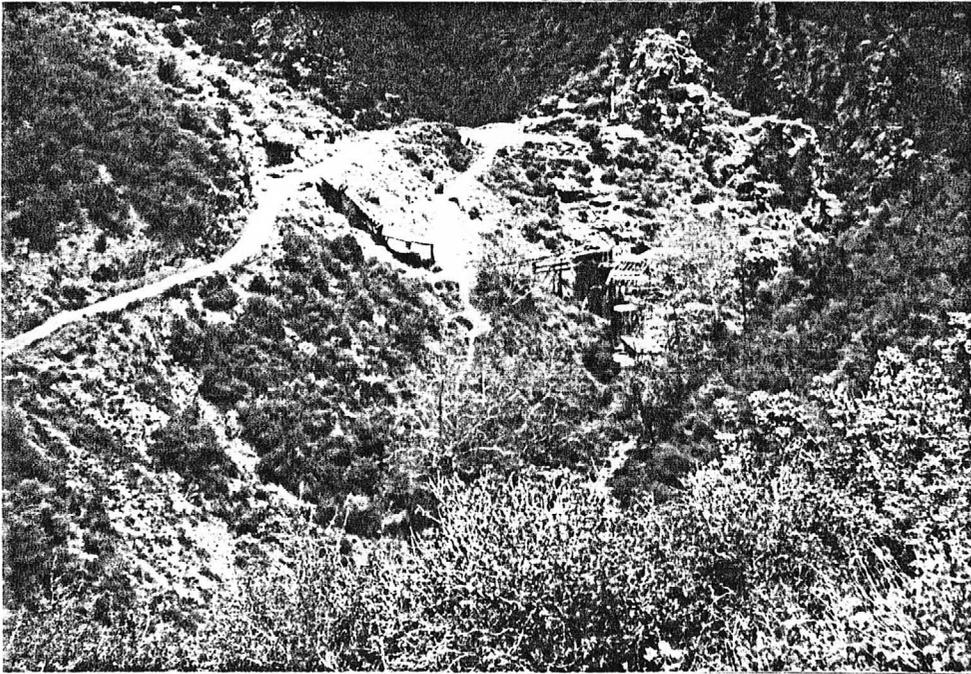
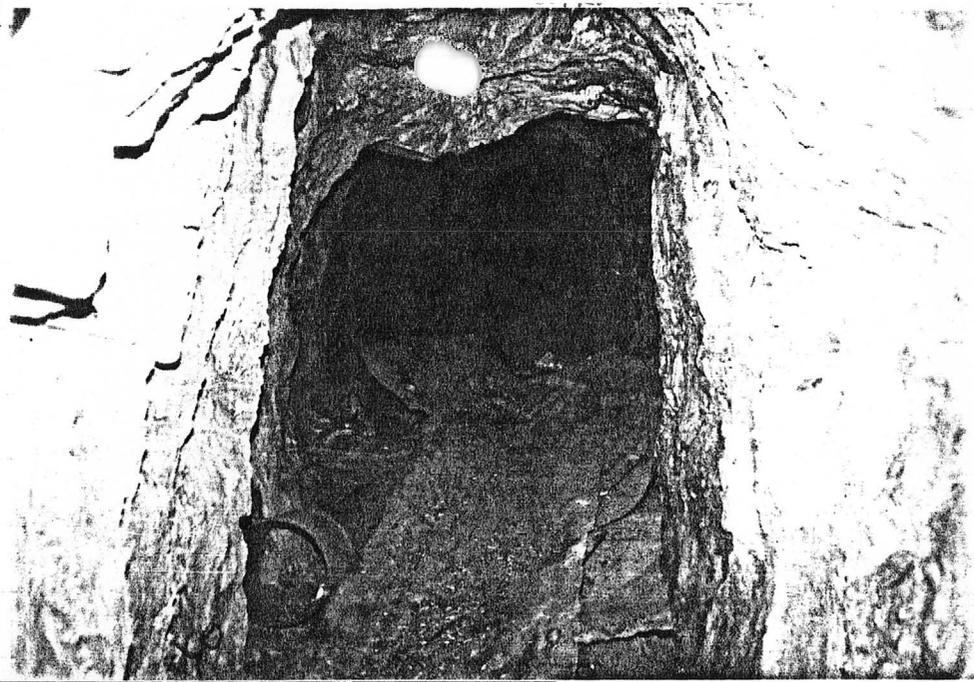


May 1988. In the Maternal
from Mormon Grove to

The first
mine we
came to

SUNFLOWER GROUP (F)

6/1/88



REPORT

The smelter?
← or refinery?
we found

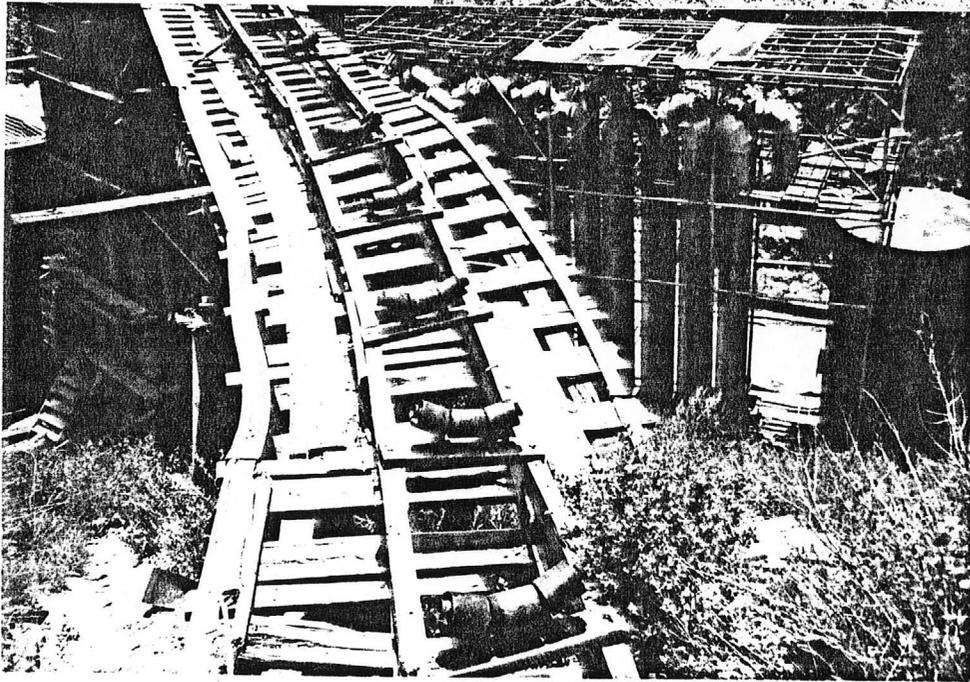
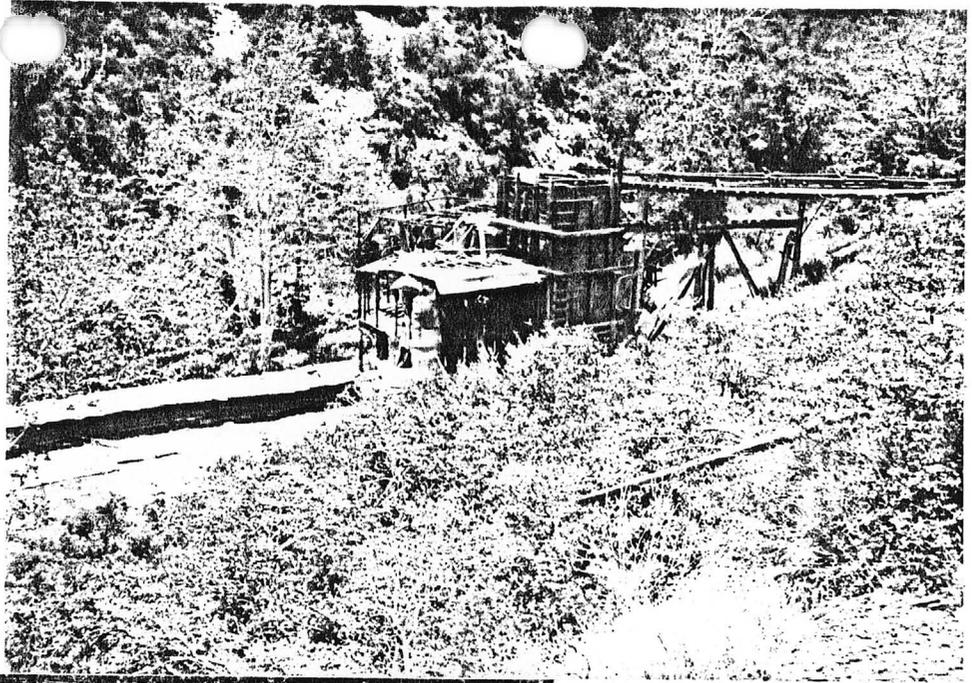


REPORT

The smelter?
or refinery?
we found.

6/1988

SUNFLOWER GROUP (P)



Report by: Major E. Allured
Mining Engineer
Los Angeles, California

SUNFLOWER GROUP OF CLAIMS

Sunflower Mining District on Mazatzal Range, Maricopa County, Arizona; about 82 miles from Phoenix over Bush Highway, on Sycamore Creek, with 3 miles of road over the property from highway to camp.

Location: There is surveyed and under construction an improvement in the road leaving Tempe and joining the Bush Highway going past the mine, which will shorten the distance from Phoenix by some 20 miles, as set out by the Highway Engineer to me. The road from the Bush Highway over the mine property to the camp is passable and can, with little expense, be made a good mine road. There are telephone connections on the property that can be reinstated, giving connections to rangers' station and nearby cities.

The property consists of 50 claims held by location and all surveyed for patent by mineral land surveyor with maps, properly tied in to U. S. Geological survey stakes. Names to the claims are all listed on maps attached.

Geology: Here I refer to the U. S. Geological Report of the Bureau of Mines by F. L. Ransome, Quicksilver Deposits of the Mazatzal Range Arizona, U. S. Survey Bulletin No. 620, and

University of Arizona Bulletin No. 122, Quicksilver Resources of Arizona, Tucson, June 1st, 1927, by Carl Lausen and E. D. Gardner.

Both of these publications cover the district exceptionally well. As Bulletin 122 is out of print, included here are copied extracts from this Bulletin with acknowledgments.

Also included is a copy of a portion of the report of Eldred D. Wilson, Geologist with the University of Arizona at Tucson. The balance of his report covers other properties in the district; not included.

Included herewith is a photostatic map of the district showing the geological formation, and a claim map showing location of samples taken.

Equipment: The surface equipment is living quarters, and buildings used for power house and office with assay laboratory; other buildings are cook house, mess hall, with cook's living quarters, and office attached, the telephone is there; 3 double houses and 8 single houses, one double house not finished—all new material—and two storage rooms; one underground, cemented; all machinery has been removed.

Water: Water for domestic use is from a spring above the camp piped in, and for milling purposes is also from springs and creek, when running, and from mine shaft pumped to storage tanks above mill. The records indicate there was sufficient water for all purposes.

Rainfall: The precipitation here is seasonal. During the winter months there is snowfall and in the summer there are the usual torrential downpours and thunderstorms.

Climate: The climate conditions are very mild in the summer, and the winter has some snow. Unless a severe winter, the snow lasts but a few days after a storm. The work can be carried on the year around as the elevation is 4600 feet at camp.

Around the camp it is fairly heavily wooded, with some large trees of black walnut, sycamore, cottonwood and cypress, some small varied brush with occasional juniper. It seems the earlier retorting was fired with oak and cypress.

Topography: The topography is very rugged and consists of deep V-shaped canyons separated by high ridges. The Sycamore Creek flows south across the schistose structure.

History: The history of the mercury occurrence in this district dates back to 1911. The Sunflower Group has had other names and several operators and, from all the records available, shows over 2000 flasks have been recovered. In the one period from May 4th, 1929, to July 22, 1931, there were recovered 1438 flasks, with some 225 flasks prior to this by small operators, while since 1931 other operators have recovered, from varied reports, a total of several hundred flasks.

I note from an Engineer's, a Mr. Bedford, field notes he has estimated that less than 1% of the ore on this group of claims has been mined, and from my observation, I am inclined to agree with him. It appears that the property has merely been scratched, or work enough done so far to see the magnitude of these ores. There is only one place the records show development from the underground maps where the shaft is 250 feet deep with laterals but a few hundred feet; all other workings are shallow.

Development: No systematic development has been done and there is no ore blocked, and I don't believe ever has been. It appears they ran the ore as it was encountered, with the exception of one place where the shaft is located on the Pack-over and Go-By claims there was some stopping from the 150 level, some from the 100 level, and some from the 50-foot level. This last mentioned is where the work was done too close to the shaft and weakened the head frame footings. It will be quite expensive to catch up this place, and far more economical

to enter the ore reserve above the shaft collar and to the east for about the next 1000 feet by using the No. 4 tunnel leading off the road to the mine, which is around the same elevation as the shaft collar, and mine the ore from the hill above through that entrance by shrinkage system or some other, as the engineer in charge decides.

This block of ore from the road level and tunnel entrance over the hill toward the west to the shaft is about 1000 feet and rises to around 200 feet over the hill with a vein structure of 70 feet in width. This block has some 700,000 tons of ore, and will supply a large mill for at least 2 years' operation with ore that samples show will run from 2 lbs. of mercury to 3.8 lbs. to the ton, while other development can be underway. This ore seems to be quite uniform through the vein where it can be sampled, as the only face at present is just east of the hoist house and shaft, and surface exposures over the hill. This vein structure or shear zone, as it appears, is very consistent throughout the entire claims, a distance of seven claim lengths, or around 10,000 feet, with the work on the two claims where the old shaft and hoist is at the deepest. Other openings show good ore on Sunnyside, Wabash, Mercury and Blackrock, along this structure.

This large ore structure running northeasterly and southwesterly stands nearly perpendicular and is badly broken up. Observing it from the only face available at the old hoist house on the Go-By claim, it shows the movement to fold from north to south, or from one wall to the other every few feet. No doubt, this will designate the mining methods selected by the engineer in charge.

There is other ore of much higher grade on the claims that is not within this same shear zone, but occurs in quartz seams from $\frac{1}{2}$ inch to several inches in width, heavily laden with the cinnabar crystals. These quartz seams make up a vein structure within the schist of from 3 to 5 feet of mineable ores. Some of this ore has retorted 14 lbs. to the ton, and some places much higher. The richest ores were found on the Sunnyside and the Cornucopia; one place there was taken out 146 flasks in a pipe 30" for 50 feet.

It is not possible to get into all the workings and really do the property justice. The sampling cuts could have been longer otherwise. This is due to obstructions caused by the period of time since the last work was done, but with little labor in reopening a better observation could be had.

On this large structure a quite interesting observance is the reaction of Radioesthesis. This same ore as on the surface with the cinnabar crystals gives a reaction to around 600 to 800 feet below the No. 4 tunnel and road level. No other place on the properties was the ore structure amenable to geophysical determination due to scattered ore interference outside the structures when trying for depth, with Radioesthesis.

A few well pointed diamond drill holes would prove very interesting.

It was with a great deal of pleasure that I was given the opportunity to visit this property, that will once again surely be a big producer of Quicksilver.

Respectfully,

(Signed) MAJOR E. ALLURED, M. E.

REVIEW
OF THE
SUNFLOWER MINE
MARICOPA COUNTY, ARIZONA

THE GREATER DENVER-PHOENIX
MINING CO., INC.

October 15, 1984

I

INTRODUCTION

The Sunflower Mine group of claims is being examined, with two basic evaluation criteria in mind; one, the ore potential, in order of magnitude; and two, the metallurgical requirements for ore treatment.

An attempt will be made to correlate known data from nearby mercury properties with the data compiled during the examination of the Sunflower Group.

II

CONCLUSION AND RECOMMENDATIONS

The property has numerous Hydro-thermal oozes in the Vertical Standing Carnonaceous Schists and has the potential of becoming a major sized precious metal producer.

Laboratory and subsequent pilot plant testing reveals that the Oxygen and Chlorine Leaching method developed by the United States Bureau of Mines, Reno Metallurgy Center, Reno, Nevada, now being applied in several major operations in Nevada making the State the largest producer of gold in the United States, works unusually well.

Much of the ore can be mined open pit and large tonnages would be no problem as ore can be mined along a three mile trend readily from areas of greatest hydro-thermal activity; areas of increased deposition of finely disseminated precipitate minerals, along with Carbides, Carbonyl Compounds and Sulfides.

III

LOCATION AND DESCRIPTION

The Sunflower Group of contiguous unpatented mining claims is situate in the Sunflower Mining District, Maricopa County, Arizona, an unsurveyed area, approximately 55 miles northeast of Phoenix, Arizona. The area is accessible from Phoenix, via State Highway Number 87, then by approximately four miles of graded dirt road. However the mill-site is only 1 mile off the highway and

the road is well maintained with culverts and drainage.

The mine camp facilities include two cabins, 1 65 foot house trailer, 1 permanent bunkhouse, kitchen and shower. Springs in the area presently supply ample water for camp use.

Water development potential is favorable for a milling operation. Water is also supplied by 150 foot 5 x 5 shaft at the mill that makes considerable water and serves as 25,000 gallons of underground storage. In addition, there is a 500 foot well at the mill and above ground water storage of 50,000 gallons.

Elevations on the property average about 5,000 feet. The terrain is mountainous and is transected by steep, youthful canyons. However, access to and travel within the area is easily accomplished due to well developed system of roads.

In the general area, sporadic production has come from four other mercury mines. They are the Ord Mine, 2 miles northeast; the Rattlesnake Mine, 2 miles northeast; the Pine Mountain Mine, 2 miles north; and the Mercurio Mine, 2 1/2 miles northeast. These surrounding properties all have essentially the same approximate strike and dip of the formations and the mineralization is comparable.

Geographically, therefore, the Sunflower group occupies a very favorable, center of activity, position.

IV

OWNERSHIP

check

The Sunflower group of contiguous unpatented Lode Mining Claims situate in the SUNFLOWER MINING DISTRICT, Maricopa County, Arizona, an unsurveyed area, is owned by The Greater Denver-Phoenix Mining Co., Inc. and they are all duly recorded in the office of the County Recorder of Maricopa County, Arizona, and have been recorded with the Bureau of Land Management and serial numbers issued.

The claims are valid mining claims with annual assessment work performed and recorded.

V

GEOLOGY

(Excerpts from University of Arizona and Bureau of Mines studies)

The area is composed dominantly of a thick sequence of metamorphosed shale, grit, sandstone, and conglomerate that are assigned to the Alder Group of the Precambrian Yavapai series. In the Sunflower Mine area the Alder group is composed predominantly of phyllite and locally to schist.

The region was covered by extensive volcanic flows during the Tertiary and Quaternary time, but subsequent erosion has, over most of the area, re-exposed the Precambrian rocks.

Rhyolitic rocks, some massive and blocky and others porphyritic to felsitic in texture, all somewhat schistose, are observed in the area.

Although referred to in a Bureau of Mines and University of Arizona study as a mafic dike, (with dark-brown weathered surface exposure) tentatively named Basalt, a closer inspection in MacFarland Canyon reveals a Jasperoid Hydrothermal System. It trends northerly along the length of the group of claims.

The regional strike of the rock units, on the property is N. 55° E, and the dip averages about 60° NW; however, the dip steepens locally and some beds are almost vertical. Foliation is nearly parallel to the bedding in most places.

The rocks have undergone considerable deformation as indicated by the crumpled nature of the Phyllite, and by inconspicuous faults and shear zones that are parallel to the foliation. These faults and shear zones are important structural features because of the influence they no doubt have had on the control of ore deposition.

In support of a hydrothermal system all along the Zone of mineralization, there are numerous places where damp mucky SCHISTS of Cherry Red OOZE emanates from the Pink Schist while nearby a Purple OOZE is coming from Purple Schist in a pipe.

Mercury mineralization occurs quite predominantly in the sericite schist. Sericitization of the schist and deposition of mercury mineralization are probably closely related. Mercury Oxide is found throughout the trend and exists as a fine film between the layers of the schist. This FILM contains MICELLE GOLD in an Organo-Metallic state. It has been determined that these oxides contain the quantities of precious metals.

In the surface deposits, very fine-grained Mercury oxides containing PM's are disseminated through the sericite schist. Several 20,000 gallon slurry tests indicate that the average grade would run about .5 ounce of GOLD per Ton of ORE.

Underground, higher grade, coarser grained, Cinnabar meralization is found more often in shear zones and embedded in quartz veins.

The areal extent of known mineralization at this SW property is quite extensive, approximately 3.5 miles on a NE-SW Trend and 2,000 feet NW-SE. Within this area, there exists the potential of developing milling ore from surface and underground mining.

POTENTIAL ORE RESERVE

Based on surface and underground showings of Mercury mineralization, the writer estimates a minimum ore potential of approximately 100,000,000 tons of commercial grade ore.

VI

HISTORY OF DEVELOPMENT

This property had its greatest development and production effort during the 1940's and early 1950's for Mercury. However, during the past ten years or so, it has been prospected and has been developed to a limited extent for precious metals.

In recent years quite extensive road building and contour cutting has been accomplished, which has exposed previously unknown Mercury mineralization. Also, wagon drilling, has proven that the ore persists at depth. A rock chip sampling program, both surface and underground, with the samples tested by the Willemite screen method, and recorded as "G" (good), "F" (fair), "T" (trace), and "O" (none), was conducted and the results were spray painted at the sample sites. No matter how crude this method may sound, it does offer a reliable semi-quantitative indication of Mercury mineralization.

There is approximately 11,000 feet of underground development at this property exposing the ore body substantially.

VII

GEOPHYSICAL SURVEY

It has been observed that the higher grade Mercury mineralization also contains the precious metals and is associated with disseminated pyrite, manetite and more imprtanly a carbonaceous fraction containing an alloy of the Platinum Group Metals and Gold. Because of the associated pyrite, it is felt that an Induced Polarization geophysical survey should generate significant data to effectively design a drilling program.

VIII

EXPLORATION DEVELOPMENT

The carbonaceous mineralization exists as an Organic Mercurial Compound and is a true Organo Metallic Compound (Precipitate Mineral). A sampling on surface rocks should be done on a fresh cut as the literature relating to such indicate it volatizes above 122 degrees F, Indeed, frsh cuts are rich and left to stand over several months of weathering can scarely be seen. Such sampling has been done and open cuts exist in some 200 areas along the trend.

IX

ORE TREATEMENT

See Memorandum to Directors, The Greater Denver-Phoenix Mining Co., Inc, January 3, 1983.

X

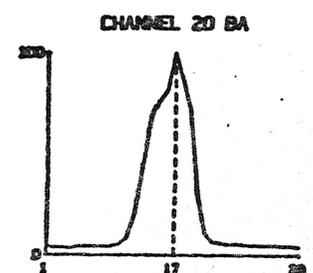
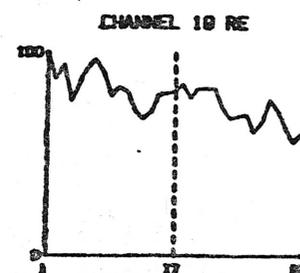
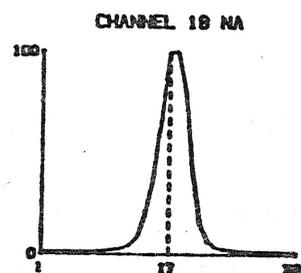
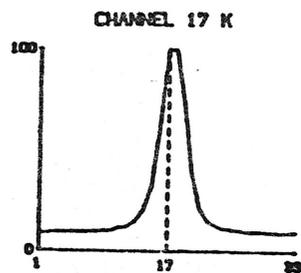
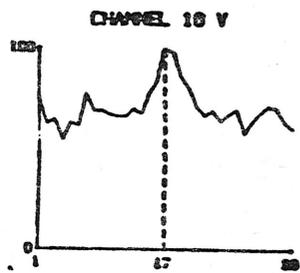
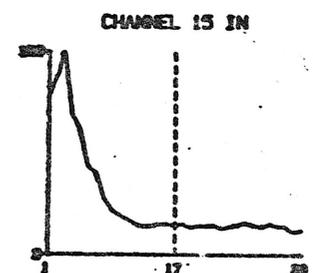
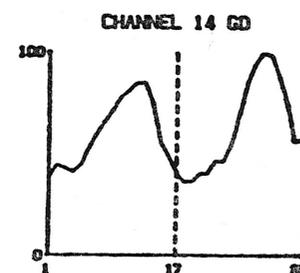
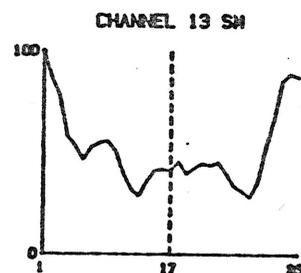
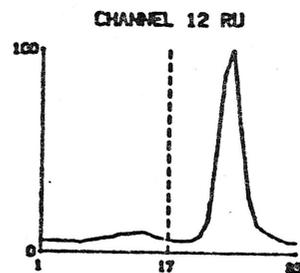
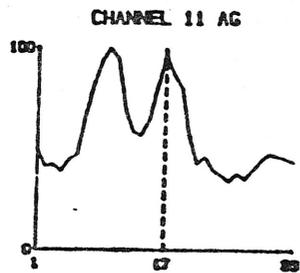
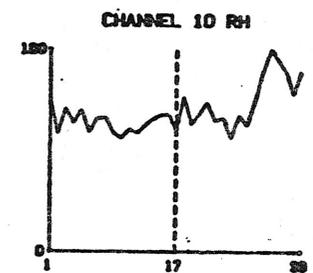
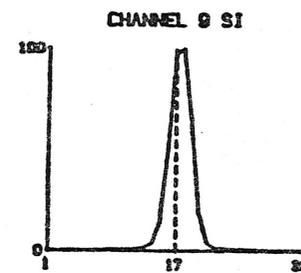
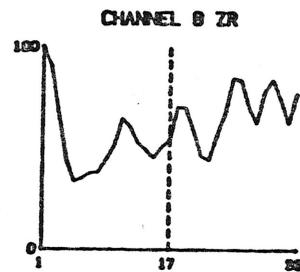
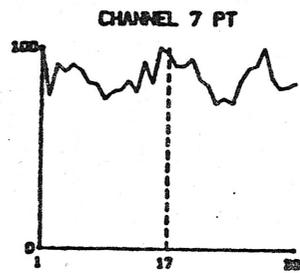
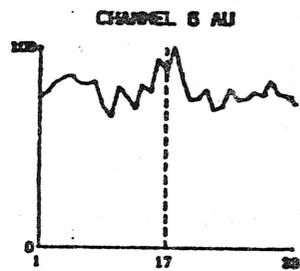
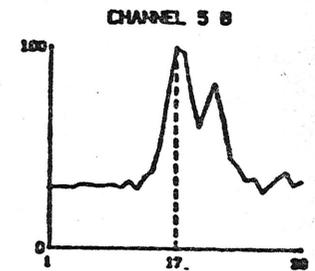
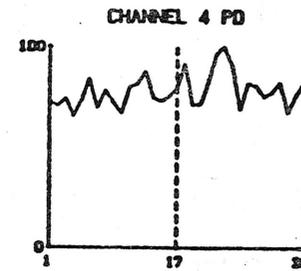
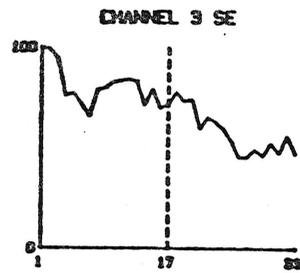
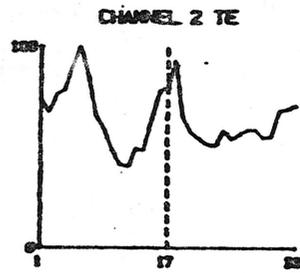
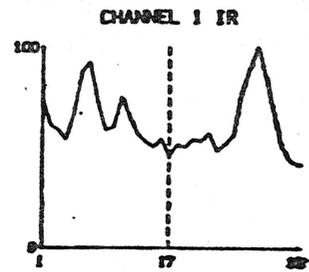
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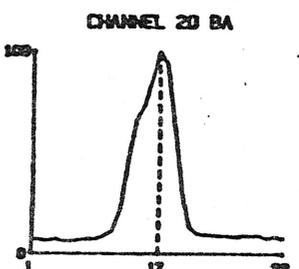
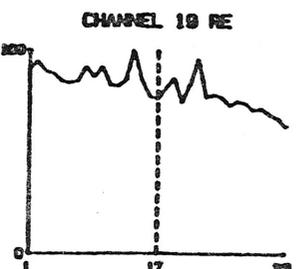
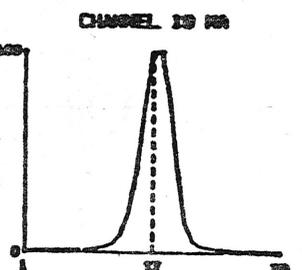
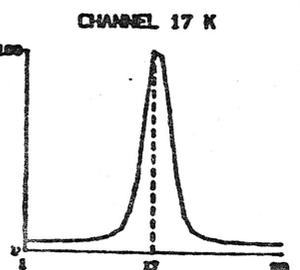
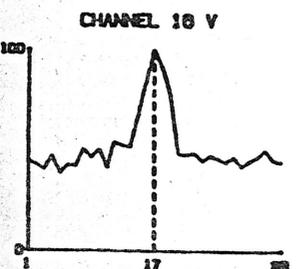
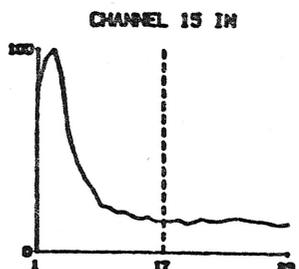
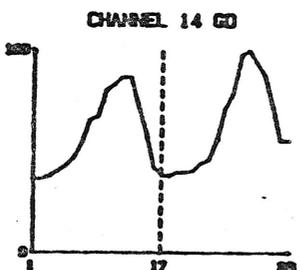
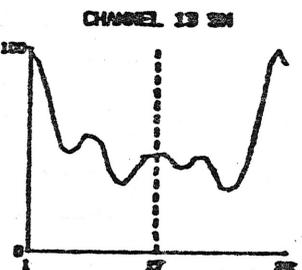
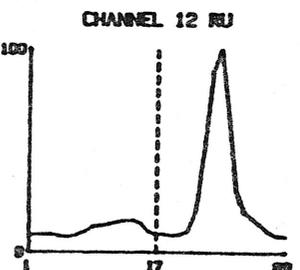
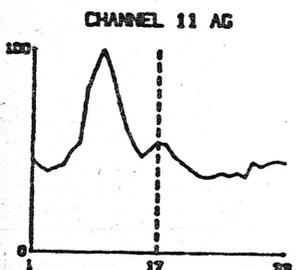
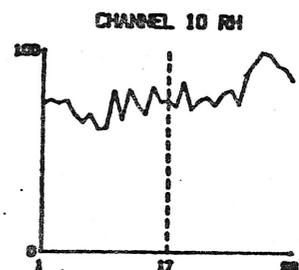
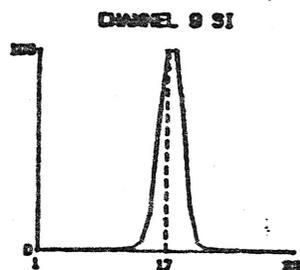
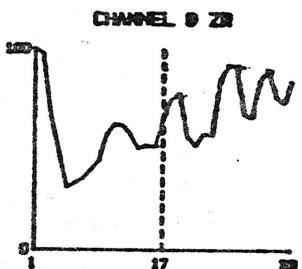
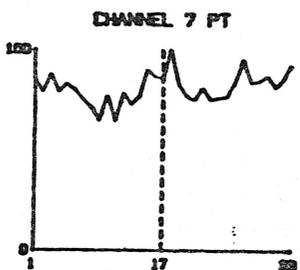
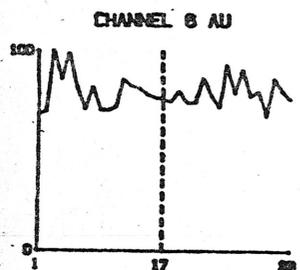
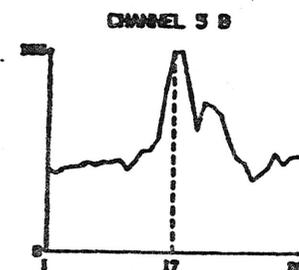
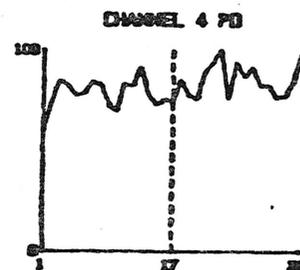
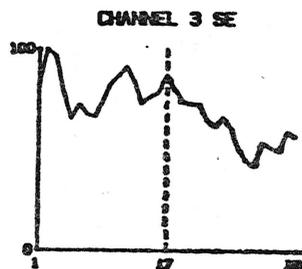
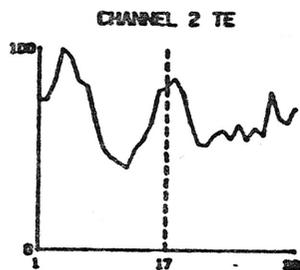
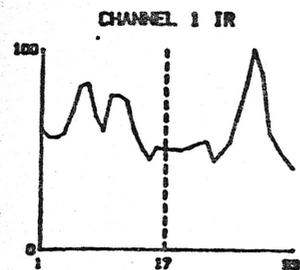
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ACS LABS/PROFILE SCANS - DUNCAN-CONS - 4/28/83



ACS LABS/PROFILE SCAN - DUNCAN-ORE - 4/28/83



THE GREATER DENVER-PHOENIX MINING CO., INC.

G O L D C O N T R A C T

\$5,000.00 invested in GDPM Gold Contract will deliver 15 ounces pg 995 bullion within 24 months, plus interest at 15% per annum.

Example: Current price of gold is \$325.00 per ounce and within two years a reasonable expectation is \$600.00 per ounce or more, based on predictions of most experts. 15 ounces would then have a value of \$9,000.00, plus interest computed at \$5,000.00 x 15% x 2 years - \$1,500.00. This would be paid in bullion for an additional 2 ounces, plus \$300.00 in cash.

The net result is 17 ounces of gold at \$600.00 per ounce which is \$10,200.00 plus \$300.00 in cash - \$ 10,500.00.

Gain \$5,500.00 held mostly in bullion and not taxable until realized. Most people prefer to hold bullion and borrow against it if need be.

S U N F L O W E R M I N E
(INCOME POTENTIAL)

Potential tons of commercial grade ore - 100,000,000 tons

Average estimated ounces of gold per ton - 1/2 ounce

Total potential ounces of gold - 50,000,000 ounces

Value of gold per ounce (rounded off) - \$350.00 per ounce

Total potential income of gold (\$17,500,000,000.00 (17 1/2 billion))

Total number of shares authorized - 10,000,000 shares

Potential value per share issued and outstanding 7,500,000 shares

Potential value per share (based on 10,000,000 shares) \$1,750.00

Average income from gold per ton of ore (1/2 x \$350) - \$175.00

Average cost to mine, mill & extract gold from 1 ton - \$75.00

Average profit per ton pf ore (\$175.00 minus \$75.00) - \$ 100.00

If profit per ton of ore was only \$ \$10.00 per ton, total potential income of gold (100,000,000 ton x \$10.00) would be \$1,000,000,000.00 (1 billion)

Potential value per share (based on 10,000,000 shares) - \$100.00

Current price per share - \$1.00

VIS6.8

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES

VERBAL INFORMATION SUMMARY

1. Information from: **Jerry E. Cobleutz**
Company: **Greater Denver-Phoenix Mining Co.**
Address: (for Mr. Cobleutz) 4133 N. 18th Drive
Phoenix, AZ 85015
2. Phone: (602) 279-0243
3. Mine: **Sunflower**
4. ADMMR Mine File: **Sunflower**
5. County: **Maricopa** MILS Number:
6. Summary of information received, comments, etc.:

Jerry Cobleutz reports he plans to start up and operate the Sunflower Mine and produce mercury. He further reported he has an arrangement or contract with Greater Denver-Phoenix Mining which owns the claims and mill. Reportedly American International Mining and Milling who has leased the property for many years is being removed.

Mr. Cobleutz reported that Ralph M. Pabst is the principal in Greater Denver-Phoenix and has mined the Sunflower producing mercury in the 1960s. Purportedly he produced \$80,000 in mercury daily. US Bureau of Mines Minerals Yearbook for the 1960's report total Arizona mercury production at less than \$300,000 in any year.

A list of claims held by Greater Denver-Phoenix and a copy of a letter from them declaring American International in default were provided for the mine file.

Date: June 13, 1991 Engineer: Ken A. Phillips 

SUNFLOWER GROUP

MARICOPA COUNTY

RRB WR 8/15/86: Discussed the Sunflower Mine of the Greater Denver-Phoenix Mining Co with Rolf Beaumonte.

RRB WR 8/22/86: Provided information to Rolf Beaumonte about the Greater Denver-Phoenix Mining Co. He intends to be in Arizona sometime next week and wants to visit the Sunflower Mine.

RRB WR 9/5/86: Visited the Sunflower Mine and Rattler Mill in the company of Rolf Beaumonte, 13382 Lampson Ave., Garden Grove, Calif. 92640 (714) 971-9527 or P O Box 10952-330 Housaton, Texas. Mr. Beaumonte had been told that the mine and mill were being operated by the Greater Denver Phoenix Mining Company and that they were storing the gold produced in a warehouse. Saw no evidence of recent work and no one was at the property. I later called Jim Duncan of American International Mining & Milling who said that the mill had not run since April and that he had never heard of the Greater Denver Phoenix Mining Company. Dave Killebrew of the Mesa District of Tonto National forest reported that American International Mining and Milling had filed a mining plan which has not been approved but that he knew nothing of a Greater Denver Phoenix Mining Co.

KAP WR 8/29/86: A visit was made to the Sunflower Mine (file), Maricopa County. A separate report has been written. Based on the complex geology, mineralization and past history of the property, it should be evaluated as a precious metal target. A portion of the old mercury retort plant is still standing at the property.

AMERICAN INTERNATIONAL MINING AND MILLING CORPORATION
P.O. Box 308 (206 South Beeline)
Payson, Arizona 85541

Maricopa County
Sunflower District.

President: James G. Duncan

Refiner : Archy Porch

KP WR 12/6/79: They are reportedly operating a mine and mill in the Sunflower District.

Statutory Agent: C.T. Corporate Systems, 14 N. 18th Avenue, Phoenix, Arizona 85007.

President : James G. Duncan, phone: 474-5843.

VicePresident : S. Ernest Theiss

Directors : Harry Lefcourt and Ion McCartney.

Scottsdale phone number in files no longer valid.

KAP WR 4/3/81: A report was received that some one had received an investment solicitation for some type of tax shelter investment in American International Mining and Milling Corp. Information from the files was supplied to the unidentified caller.

KAP WR 3/25/83: Donald G. Strachan, Geologist, Houston International Minerals Corp., P.O. Box 1486, 184 H Street, Hawthorne, Nevada 89415, phone: (702) 945-3536 was in and discussed some of their work in Arizona. They had received a submittal from American International Mining and Milling Corporation on a group of properties in the Sunflower District. He is studying the mercury-gold district for a possible precious metal target.

KAP WR 4/19/85: A copy of some data pertaining to solicitation for stock purchases in American International Mining and Milling Corp (file) by Specialty Financial Services, 3586 E. Washington Avenue, Madison, Wisconsin 53704 was provided by the Securities Division of the Arizona Corp. Commission. Although these items are related to the Sunflower Group (file) area of Maricopa and Gila Counties, they deal primarily with the investor's complaint and American International's attempt to raise money and develop exotic metallurgical techniques. They are included only in the American International file.

Visited National Mine (Sunflower). Two men working in old shaft - timbering and rehabilitating. Bill Hunter in charge of work. Verne Bradley, manager was in Phoenix. FTJ WR 6-27-69

Tom Bolich former owner of the Big Sam Mining Co. (Mercury Mine) phoned for a list of mining engineers. Sent him out list. He says he sold the Big Sam to Greater Denver-Phoenix outfit and they to Phoenix Sunflower Industries. Place now being stripped of equipment. Bolich put in about \$10,000 to help new owners, but to no avail. John Soule' WR 7-11-69

Active Mine List Oct. 1969 - 3 men - J.L. Robards, Gen. Mgr.

Went to Sunflower - National mine, Carlson plant - all idle. FTJ WR 2-27-70

Nick Carouso has located a group of claims adjoining the Sunflower group. He said a new group or company had taken over the National. Did not know who. FTJ WR 5-15-70

Active Mine List May 1970 - 15 men - Clem York, Proj. Engr. International Mine & Mill

H. A. Lee said some New York people were taking over the National mine and some of Carlson Claims. FTJ WR 5-29-70

Active Mine List Oct. 1970 - 15 men - Mr. Roark, Amer. Mng. & Milling Co.

MG WR 6/14/85: Have received word that American International Mining and Milling Corp (f) may have spent \$2 million developing the Sunflower property in Maricopa County. The president, Mr. James G. Duncan, is attempting to raise an additional \$300,000.

NJN WR 8/9/85: Hilton Cass, Geologist with the Forest Service Zone Office reported that he visited the Rattler Millsite operated by American International Mining and Milling (f). It is operated at T7N R9E Sec 19, NE, Maricopa County. This is probably the same site as the Rattlesnake Mill (f) which was a mercury retort mill. The Rattlesnake Mill (f) is not listed in Maricopa Co. MILS but should be added. Presently the site contains a 50 tpd ball mill, bank of flotation mills and various vats, tanks, conveyors and other mill equipment plus a camp to house the laborers. Mr. Duncan of American International Mining and Milling has proposed to do some open pit mining from the Sunflower Group (f) Maricopa County and process it at the mill.

NATIONAL MINE

MARICOPA COUNTY
SUNFLOWER DIST.

Mine & Mill Visit and Conference with Larry Holsinger and Wm Thompson, Metallurgist.
(V. D. Bradley is still Supt.) Wells Cargo Company.

Holsinger said that for a couple of weeks the operation had been held up by a problem of retort results. It appears that the heads were running $4\frac{1}{2}$ to 5 pounds of Hg to the ton and that the tails ran $\frac{1}{4}$ to $\frac{1}{2}$ pound to the ton, but recovery had been tentatively calculated at only about 60 percent. This poor recovery was attributed to the improper heating and leakage in the furnace. It was found that the 65 foot furnace, when running a temperature of 650 degrees at the firing^{end} and was running only 500-550 at the upper or feed end. The muck at the firing end was sintering while the upper end was not regarded as hot enough. B. L. Squires had suggested that it was more dust, that was sintering, than larger material and that, since the muck was moving down the furnace toward the flame, the mercury could be extracted without carrying a sintering temperature. It was also proposed that the Hg vapor will now be sent directly to the condensers and the condenser discharge (sludge) would then be sent to the cyclones after part of the Hg was extracted. The dust is settled almost entirely in the cyclones when the vapor dust from the retort are fed directly to them. However this dust contains much flower mercury and has to be re-retorted in a small furnace afterward.

As far as the mining is concerned, 6-8 lb material will be mined from the Bolich pit area. This zone is 12 feet wide. Other ore of a similar character occurs in the Cornicopia Tunnel $\frac{3}{4}$ mile NE of the plant. However, this tunnel would have to be repaired and a better access road built. Another favorable zone in a tunnel has been opened on the Packover Claim of the Sunnyslope Group of Claims also north of the mill. At the Bolich Pit the drill program shows that the 12 foot better band was continuous for some distance.

8 men are currently employed.

LAS MEMO 10/28/65

C. O. Carlson and Mrs. Carlson were in - reported they heard that United Equities Corp., had acquired the Bacon lease at the Pine Mountain. Carlson also said that National was still active using 6 men. He may erect a Hershoff Type of furnace at Sunflower. This would be 40 feet high, have 6-8 decks, and would be about 14 feet in diameter.

LAS WR 10/22/65

Telephone call~~ed~~ made to Tom Bolich relative to the status of the National Mine no notable changes have occurred. Tom said that National produced 21 flasks in 1965.

LAS WR 1/14/66

Conference with two employees at Sunflower Store - 2-23-66 and with Tom Bolich 2-25-66

The road is bad.

The Mill was not running due to repairs but four of the seven men were said to be sinking a shaft-like pit into a mineralized band (4-5 lbs. Hg to the ton) in the main pit. (Bolich said that this was under a fairly high wall and it is questionable as to safety). In this regard, they recently had two men injured when they exploded a missed hole. One of them is out of the hospital but the other is still in bad condition with multiple fractures on one side. The present option from Big Sam Mining Co. had until July 1st to run. So far, according to Bolich, Bradley's Group seems to be in financial straits, and were partly delinquent in their payments. (\$1000 per month) to Big Sam. Retort problems are still present. Bolich and Carlson both felt that the mill would benefit from added condenser capacity. Memo LAS 2-23-66

Mr. Tom Bolich, Big Sam Mining Co., (National Mine) - said that Wells Cargo had not met payments on their lease and unless they did by June 30, he would repossess the property. He has other interested parties. He said that Pine Mountain was busy and making 1½ flasks per day when retorting. LAS WR 5-13-66

Conference with C.O. Carlson and Tom Bolich

Wells Cargo is moving all equipment away from the premises, and according to Bolich, the option was not renewed, so the property reverts back to Big Sam Mining Co., as of July 1, 1966. Memo LAS 6-29-66

Conference with Tom Bolich

Bolich stated that a deal with a group to take over the property had not materialized. The Wells Cargo equipment is still lying near the Sunflower Store. Bolich and his group want to sell out. Memo LAS 10-31-66

Active Mine List April 1966 - 8 men

Learned that National Mine has two men mining and retorting small amount of low grade material. FTJ WR 6-30-67

Big Sam Mine semi-active. CLH WR 3-2-68

Active Mine List April 1968 - 3 men

Active Mine List Oct. 1968 - 5-7 men - Big Sam 15 men - Sunflower

Learned that Phoenix Sunflower Industries are operating the old National Mine, 25 men are employed. Verne Bradley is manager. They are treating 100 tpd according to Carlson and expect to produce 10 flasks per day. Road impassable to mine. FTJ WR 2-21-69

Active Mine List April 1969 - 10 men - National - 12 men Verne Bradley, Supt.

At present the two front loaders are being repaired and operations would be slow until the weather warmed up some. Tom Bolich broke his hand a while back, and this caused a lag in operations. Bolich feels that a deep shaft should be sunk (1000 feet or more) in order to prospect the area.

The last 3 flasks were sold at \$260 per flask, or about \$5-\$8 below the market quotations. The National Quicksilver is sold to a chemical firm in California, through a broker (Wm. Chase)

Thomas A. Bolich, 1604 S. Farmer Ave., Tempe - Tel. WO 7-3231
R. B. McGraw, 1448 W. 4th Place, Mesa

Memo LAS 2-27-64

According to Tom Bolich no production, but two flasks from experimental work, was made during the past 4 months. However, after a Houck jet oil feeder was installed and 50 tons of ore that assayed 10.4 lbs. per ton in quicksilver were retorted, but only 40 percent recovery was achieved. The jet was too powerful and blew much of the quicksilver gas past the condensers which did not have the capacity or strength to handle such pressures. If financial negotiations are successful Tom wishes to install 24 inch condenser tubes in two batteries of several each. A split damper will be installed between the retort and the condensers to minimize the effect of the pressure. The principal mineral here, is cinnabar which retorts very well, and no arsenic or antimony have been detected in the ore. The latter elements are deleterious. Also if all goes well, it is hoped that the shaft can be sunk to the 1020 ft. level. Bolich thinks that he can sink a two compartment shaft for \$68-75 per foot. The plant revision and the new shaft are estimated to need over \$500,000. The pit ore varies considerably in tenor from place to place and requires close blending controls in order to get an average of 5 pounds to the ton. Some bands run well over 1 percent.

Memo LAS 10-1-64 - Conference with Tom Bolich, Pres. Big Sam Mining Co.

Conference with Tom Bolich 2-25-65

Bolich said the National Mine and Mill had been optioned to Wells Cargo, Mining Division. They have recently brought in equipment and opened up considerable new ore on the east side of the ridge that contains the present pit. The present pit lies on the west side of the same ridge. If proper reserves can be developed they plan to enlarge the present mill by putting in a 500- ton, or larger, retort and a new condenser setup. Percy Chase, broker for Braun Chemical Corp. of Los Angeles, is reported to have bought a few flasks recently for \$450 per flask. The Feb. quoted price was \$450 to \$490, so the price offered by Chase probably may have had his brokerage fee deducted. Tom Bolich said that his retort could do very well with larger condensers. It is now capable of handling about 150 tpd. Memo LAS 2-25-65

C.O. Carlson was in and reported that Wells Cargo is putting in 3 cyclones and new condensers at the National mine. LAS WR 5-28-65

Interviews with James T. McFarland at the Ord Mine - 2-27-63

Mr. McFarland had been up to the National to try and help Tom Bolich with his Gould furnace, which had not been doing much good. Bolich purchased the furnace in Nevada and set his up at the National Mine. Apparently the loss of quicksilver was due to improper spraying of the crude oil flame over the ore. First, the oil is not pre-heated causing imperfect combustion and the oil which was not completely burning picked up much of the quicksilver. Secondly, the flame did not cover the entire charge with anywhere near uniformity so that the upper end of the furnace was carrying a temperature of 1400 to 1500 degrees F and the other end was much less. Thus only part of the quicksilver in the ore was vaporized. The feed was about the proper size, or about 3/4 inch and finer. McFarland suggested placing an air jet within oil feed nozzle and to pre-heat the oil.

The open cut which is about 100 feet long and up to 17 feet deep has disclosed a lens of 17 feet high, and extending for 50-60 feet along the cut of very good ore. This consists of numerous stringers of quartz in greenstone schist. The quartz stringers range from 1/4 to 1 inch wide and contain blebs and veinlets of cinnabar and metacinnabarite.

Surrounding the lense is a lower grade area that probably runs 3-5 pounds of quicksilver to the ton. McFarland said that if he was working the mine, he would work the better lense and explore it in depth. He does not believe that it pays to retort ore running less than 7-8 pounds per ton in small retorts. He said Bolich's retort heads are figures at 4-6 pounds, and that he had a good reserve of this grade. This general picture is verified by Gordon Grimes. He had also visited the plant. LAS Memo

Interview with C.O. Carlson

Mr. Carlson reported that Bolich had been running his new retort steadily of late and had produced considerable quicksilver. The plant has a capacity of 150 tons per day. At first, Carlson said, Bolich had difficulty with the retort firing due to incomplete oil combustion. This is reported to have been iron out. The ore is being obtained from an open cut and is reported to average between 4 and 5 pounds per ton. Carlson said that this grade would pay, if extraction is held at a good figure. The road is still very bad, being passable only with a pickup or four wheel drive vehicle. LAS Memo 6-27-63

According to C.O. Carlson who recently visited the property, Tom Bolich was working and was employing 8 people. Bolich is still open-pitting the ore in a cut near the mill. He has had some difficulty with oil combustion deficiencies but seems to have ironed out this problem, at least for the time being. LAS Memo 10-7-63

Conferences with Thomas A. Bolich, President and Roy B. McGraw, Secy. of the Big Sam Mining Co. 2-27-64 and 2-28-64

The Big Sam Mining Co. is composed of 9 men mostly local. In addition to Bolich and McGraw, Frank Bower, of Mesa, is Vice President. The mill has a working capacity of 115 tpd. The heads so far have run 3 1/2 to 5 lb. per ton and 115 tons of this yields about 3 flasks. The plant works well, now giving what Bolich considers good recoveries. The ore reserve of 3-5 lb. material is large. Bolich said that he had opened a new cut on top of the hill above the present pit. This cut, 12 feet deep and 24 feet long, had revealed 3-4 zones (veins?) that are a few feet wide and these assay from 5 to 24 lbs. per ton. The veins trend NE and dip 48° SE and follow the general schist trends.

National Mine (Sunflower)

Sunflower District, Maricopa County

Mr. Grimes stated that Tom Bolich and his partner were still doing development work at the National. Bolich had gone to Phoenix so no attempt was made to go to the National Mine. LAS Memo 2-7-62 Interview with Gordon Grimes

Mr. Carlson said that Tom Bolich and partner were still hunting for ore at the National but were slowed down by lack of funds. Carlson believes that the mine has some promise. Interview with C.O. Carlson. LAS 6-6-62

Mr. Grimes stated that Tom Bolich was erecting a 100-125 ton mill at the National mine and planned to open pit some lower grade ore (reported to run 5-7 pounds per ton). 4 men are reported to be working. Bolich had acquired the mill in California. LAS Interview with Gordon Grimes. 9-15-62

GREATER DENVER-PHOENIX MINING CO.

Post Office Box 250
Yoncalla, Oregon 97499

29 December 1986

American International
Mining & Milling Corp.
206 South Beeline
Suite Three
P.O. Box 308
Payson, AZ 85541

Gentlemen:

RE: CANCELLATION NOTICE

This is to advise you that you have exceeded the thirty (30) day period within which to cure the default notice mailed to your company under Certified Mail, Return Receipt Requested, No. P 490 279 587 and signed for by your agent.

Your company has failed to pay the minimum monthly payment for November 1986 to our company; also, the minimum monthly payments to Sunflower Properties, Inc. for the months of October and November 1986 in the amount of \$500.00 each, or \$1,000.00. The amount due our company being \$700.00 for the month of November.

Your check number 2261, drawn on your Trust Account, in the amount of \$700.00, paying for November 1986 was returned to us marked "Insufficient Funds". In the course of over one month this amount has not been made good to our company.

Therefore, under the terms and conditions outlined in the Agreement we have with your company we do hereby cancel the Agreement. Further, the 1 August 1961 Lease and Option Agreement between Sunflower Properties, Inc. and Thomas Bolich does hereby revert to our company. Under the Security Document executed for General Investment Corp/ American International Mining & Milling corp. to our company the mill, rolling stock, equipment and other persona; items listed in that Agreement also hereby reverts to our company.

With the holidays in process we are unable to get our Arizona based attorney to proceed to Payson and the mine/mill to claim them in our behalf. We are holding your company fully responsible until all itmes have been turned over to our agent and/or representative in the very near future according to the terms of our Agreement and the Security Document.

We will have paid, on or before to The Augury Press the sum of \$2100.00, which is the amount for November, December 1986 and January 1987. We have a check going forth to Sunflower Properties, Inc. in the amount of \$500.00, which pays the amount due for November 1986. It is our understanding The Augury Press will pay the December 1986 and January 1987 on or before the 15th January 1987. We have turned over to The Augury Press all of our right, title and interest in the 1 August 1961 Lease and Option Agreement as well as all right and title to the mill, equipment and rolling stock as covered by the Security Agreement. The



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AM. INT. MIN. & MILL. CO.
Box 308
PAYSON, AZ 85541

P 490 279 591

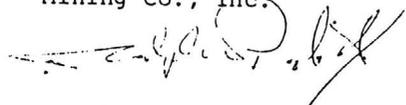
Page Two
 and rolling stock as covered by the Security Agreement. The

Russells have disclaimed any obligation to the Agreements and are not a party to the cancellation. The Augury Press has made the monthly payments for October, November, December 1986 and the January 1987 payment to the Russells. The Augury Press has assumed the liabilities and have reverted the Russells' claim to the Trust Deed, which terminates in nine years, less two months.

It is unfortunate that this has had to come about after over fourteen years of doing business with your company. However, the past seven months have been most hectic and has caused much stress and tension and expense to our company because of the late payment record. There has been no funds forthcoming to make the Insufficient check good and this because costly to both our account as well as that of The Augury Press. We have many, many long distant telephone calls over the payments and not one payment to cover these. We are most grateful you paid the charges the bank assessed against us because of the payments.

Thank you for your friendship and patience you have had with us in all our queries regarding payments for the past year.

Sincerely,
 The Greater Denver-Phoenix
 Mining Co., Inc.



Ralph M. Pabst, agent

cc: AZ attorney
 The Augury Press

CERTIFIED MAIL RETURN RECEIPT REQUESTED

CERTIFIED NUMBER P 490 279 591

<p>SENDER: Complete items 1, 2, 3 and 4. Put your address in the "RETURN TO" space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for service(s) required.</p> <p>1. <input type="checkbox"/> Show to whom, date and address of delivery. 2. <input type="checkbox"/> Restricted Delivery.</p> <p>3. Article Addressed to: AMERICAN INT. MIN. & MILL COPP P.O. Box 308 PAYSON, AZ 85541</p>		<p>4. Type of Service: <input type="checkbox"/> Registered <input checked="" type="checkbox"/> Certified <input type="checkbox"/> Express Mail</p> <p>Article Number P-490-279-591</p>
<p>Always obtain signature of addressee or agent and DATE DELIVERED.</p> <p>5. Signature - Addressee <input checked="" type="checkbox"/> X</p>		
<p>6. Signature - Agent <input checked="" type="checkbox"/> X <i>Ralph M. Pabst</i></p>		
<p>7. Date of Delivery 12/31/86</p>		
<p>8. Addressee's Address (ONLY if requested and fee paid)</p>		

COMPLETION OF ORE BIN and RETORT

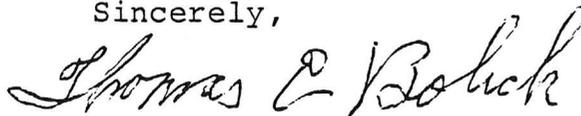
I, Thomas E. Bolich, authorized by Greater Denver-Phoenix Mining Co., Inc./Augury Press, do hereunder list the two job completions as ordered.

The crude ore bin, replacing the old one which was swept away in the winter storm, is all of new material: beams, Planks, bolts and washers, 1/2" steel plating and corrugated metal roofing. The total cost of the project was \$ 9,000.00 and the above named entities have paid that amount in full, thereby it is free and clear of any encumbrances whatsoever. This was built just above the mill, hooked to conveyor belt.

The retort, also of all new materials, was built across the creek from the cook shack, concrete foundation, lumber, steel cylinder, two steel caps, motor, copper tubing and corrugated metal roof. This being used to process the mud from the mill and also hy-grade ore from the claims. The total cost was \$ 5,500.00 and the above named entities have paid that amount in full, thereby it is free and clear of any encumbrances whatsoever.

Signed this 3rd day of April 1969 at Sunflower, Arizona.

Sincerely,



Thomas E. Bolich
Supervisor

ACCEPTANCE:
Greater Denver-Phoenix
Mining Co., Inc./ Augury Press



Ralph M. Pabst, President



THE GREATER DENVER-PHOENIX MINING CO., INC.

696 West Colter Street
Phoenix, Arizona 85013

Rec'd- 8-15-86

TO WHOM IT MAY CONCERN:

RE: Sunflower Mine, Maricopa County, Arizona....Owned and operated by The Greater Denver-Phoenix Mining Co., Inc. and operated by American International.

The company has spent several years in development to reach its present stage. With the amount of reserves showing a minimum ore potential of approximately 1000,000,000 tons of commercial grade ore, it could be bigger than Newmont Mining's strike which was written about in "Fortune", December, 1982. (Ex.A enclosed). The real delay to this point in time, is the process necessary to separate the gold and other precious metals. This process is now developed and is being used successfully elsewhere. In a Memo to the Directors, dated January 3, 1983, I quote: "The question now is can we do this? The answer is absolutely..YES! We can and have already completed a number of these extractions and only need to SCALE up into the operation! We have the tanks and Agitators and NOW the right technology." (Complete copy enclosed, Ex. B.).

The question is, if this is so, why do they need me to participate. The answer is they don't, if they take one of the several options that are available to them from large companies. However, under this type of agreement, much of the potential profit has to be assigned to the large companies that the present management would make much less money. They believe that doing the same thing on a smaller scale at first, and then larger, will give them more return for their time and money. The company has spent ten years to date, getting the company to the place where it will now grow rapidly. Some of the Directors and other people have been loyal because they knew the potential was there, and that it is now ready to be realized.

This material is not meant to be a solicitation for participation, nor is it to be duplicated for distribution.

Sincerely,

THE GREATER DENVER-PHOENIX
MINING CO., INC.

Richard Naughman
Richard Naughman

RN:mj

THE GREATER DENVER-PHOENIX
 MINING CO., INC.
 POST OFFICE BOX 250
 YONCALLA, OREGON 97499

Maricopa County Recorder
 111 South Third Avenue
 Phoenix, Arizona 85003

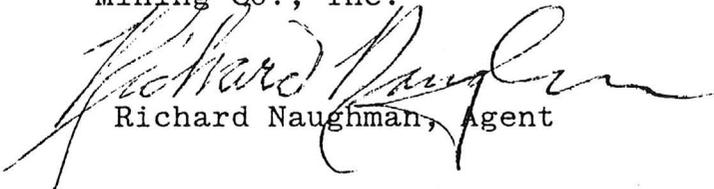
MINING -CLAIMS ASSESSMENT ANNUAL REPORT

Names, Location Notices of 50 unpatented lode mining claims situated in the Mazatal Region, Sunflower Mining District in Maricopa County, State of Arizona.

Name of Claim	Book	Page	Name of Claim	Book	Page
L & N #3	27	277	Longus	41	555
L & N #4	27	278	Rain Bow	41	559
L & N #9	27	283	Jasper	41	559
L & N #10	27	284	Lalapalloosa	41	560
L & N. #13	27	287	Hard Luck	41	555
L & N. #14	27	287	Lollipop	41	545
L & N # 15	27	288	Black Jack #6	41	551
National Lode	43	572	Sunnyside #5	41	558
National Lode #1	43	573	Sulfide #1	41	544
National Lode #2	43	574	Iron Butte #2	41	543
National Lode #3	43	575	Silver Butte #3	41	551
National Lode #4	43	576	Silver Tip #4	41	557
White Horse Lode	43	578	Quicksilver #1	41	553
Zona	41	404	Quicksilver #2	41	548
Beulah	41	404	Quicksilver #3	41	545
Toledo #1	41	549	Quicksilver #4	41	562
Toledo	41	549	Wabash	41	543
Ohio	41	550	Anaconda	41	551
Big Dike Exten.	43	83	Sulfide	41	547
Packover	41	556	Mercury	41	561
Go By	41	546	Red Rock	41	553
Ione	41	554	Black Rock	41	562
Titantic	41	546	Cornicopa	41	562
Native	41	560	Red Rock Exten.	41	548
Cornicopa Ext.Lode	43	577	Big Dike	43	82

The Greater Denver-Phoenix Mining Co., Inc. attests that between August 1, 1987 and July 31, 1988 more than \$5000.00 of work and/or improvements were performed on said claims. All expenses entailed in the operation were borne by aforesaid company to comply with the Federal Laws pertaining to assessment work.

Respectfully submitted,
 The Greater Denver-Phoenix
 Mining Co., Inc.


 Richard Naughman, Agent



THE GREATER DENVER-PHOENIX MINING CO., INC.
696 West Colter Street
Phoenix, Arizona 85018

MEMORANDUM TO DIRECTORS

May 5, 1983

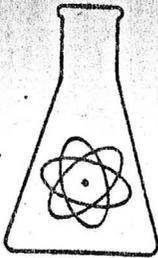
Much has been said about the complex coordination compounds in the Sunflower ore and the formation of organo-metallics when Mercury, Carbon Graphite, Chlorine, Bromine, Fluorine (Halogens) are present in the ore with Arsenic, Antimony and all of the precious metals including the PGM. Additionally in the presence of Osmiridium there are many unstable compounds that cause very erratic behavior.

Recently Prescott, Ball, and Turben through Mr. Mavec and his associate, Mr. Al Meyers, in New York, have retained a prominent metallurgist to evaluate our ore and are using "Direct Coupled Argon Plasma Spectroscopy" in a totally enclosed digestion bomb so that any vapors will not be lost. Several labs in the New York area that had this technology were located and a request made to look at our raw ore from the Bell tunnel. This work is now in process and Mr. Meyer, Mr. Mavec, and Mr. Shapiro of Recere Copper and Brass, a metallurgist, expect to be at the Sunflower Mine for an inspection very soon.

In the meantime, we have sent fresh samples to Analytical Consulting Services in Houston, TX, with a request to analyze these samples in the ordinary way and to rigorously analyze them using the "Direct Coupled Argon Plasma Arc Spectroscopy" method.

Enclosed are the results for your file and summarize as follows:

Bell Tunnel Raw Ore	Digestion Bomb Oz./ton	Aqua Regia Open Beaker Os./ton
Au	.34	.09
Ag	.50	.04
Pd	.50	.08
Pt.	.72	.10
Rh.	(.01	(.01
Ru.	3.8	(.01
Ir	.42	(.01



ACS LABS

ANALYTICAL CONSULTING SERVICES, INC.

6251 Corporate Drive • Houston, Texas 77036 • 713/995-8080

MAY 5 1983

April 29, 1983

Jim Duncan
American International Mining & Milling
P.O. Box 308
Payson, AZ 85541

Subject: Multi-element scan of two ore samples; precious metal analysis of two ore samples.

Re: Lab No. 5240

Analytical Data: Results reported in troy oz/ton.

<u>Sample ID</u>	<u>Metal</u>	<u>Digestion Technique HF-Bomb</u>	<u>Aqua-Regia Open Beaker</u>
Raw Ore	Ir	0.42	<0.01
	Pd	0.50	0.08
	Au	0.34	0.09
	Pt	0.72	0.10
	Rh	<0.01	<0.01
	Ag	0.50	0.04
	Ru	3.8	<0.01
Mill Flotation Concentrate	Ir	0.96	1.12
	Pd	0.38	0.16
	Au	1.59	1.60
	Pt	1.0	0.03
	Rh	<0.01	<0.01
	Ag	5.0	6.71
	Ru	4.5	0.49

(Continued)

Serving Industry in

Analytical Consulting, Laboratory Services, Ore Sample Analysis, Accurate Trace Element Analysis Using Argon Plasma Emission Spectrometry



No 507

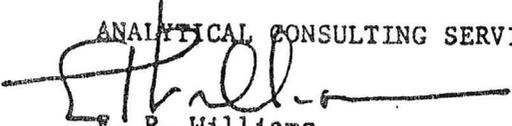
SPECTROGRAPHIC ANALYSIS

Results reported in ppm except where noted.

<u>Metal</u>	<u>Raw Ore</u>	<u>Mill Flotation Concentrate</u>
B	<1	<1
Zn	210	0.15%
As	36	0.45%
Mn	0.17%	0.15%
Cd	<1	<1
P	500	300
Be	<1	<1
Al	0.43%	0.50%
Fe	8.1%	15%
Sn	19	90
Pb	15	0.25%
Cu	82	0.78%
Ti	0.63%	0.50%
Ca	2.6%	3.0%
Mg	0.45%	0.50%
Mo	<1	<1
Co	70	400
Cr	380	220
Ni	130	230
Te	<1	<1
Se	113	250
Zr	40	15
Si	20%	29%
Sm	<1	<1
Gd	<1	<1
In	<1	<1
V	210	92
K	2.1%	0.96%
Na	0.28%	0.19%
Re	100	140
Ba	280	510

Sincerely,

ANALYTICAL CONSULTING SERVICES, INC.


E. P. Williams
Director

EPW/gf



THE GREATER DENVER-PHOENIX MINING CO., INC.
696 West Colter Street
Phoenix, Arizona 85013

January 3, 1983

MEMORADUM TO DIRECTORS

In April, 1982, Pennsylvania State University held a 2-day symposium entitled "1982 - Mineral Review for Industry" at University Park, PA. A strong emphasis was placed on the "geochemistry of hydrothermal gold deposits."

It was noted that gold will precipitate from an oxidized acidic, chloride, hydrothermal solution upon entering reducing and slightly alkaline rocks. (e.g. rocks that are high in carbon, pyrite, and carbonates and containing ferrous iron in the pyrite). This gold is in the form of a slimy precipitate.

Geochemists have for years relied on concentrations of Mercury, Arsenates, Antimonates and Barium as gold indicators and pathfinders to lead them to high concentrations. (These conditions are all met in the Carbonaceous Schists of the Sunflower Mine.) Aluminum Carbonate, Magnesium Carbonate, Arsenates, Antimonates, Mercury, Alkaline Rocks, Slimy Precipitates, Iron Pyrites, etc. (Spectrographic analysis shows Fe 32%; Magnesium 15%; Aluminum 1.25%; and Antimony 1.3% in the Mill Flotation concentrate.)

The precipitates above mentioned are soluble in alkaline media and are finely disseminated throughout the Metamorphic rocks, (Schists). The presence of carbon, Iron, Aluminum, and Magnesium as reducers is the cause of the precipitation and forms coordination compounds of carbon and if any Sulfur or Nitrogen is present will form Humic Acid extremely difficult to extract the same as in carbon compounds. These are called "organo metallic compounds" and must be chemically reacted over an extended length of time with 'oxidizers' to break up these long chain Organic Compounds, (Polymers).

In a Government funded research program at Reno, Nevada, jointly sponsored by Newmont Mining; hydrothermal deposits of Carbonaceous gold containing Nitrogen and Sulfur were investigated and methods devised to recover the gold from the coordination compounds of Carbon and Humic Acid (Sulfur and Nitrogen) (C)-N-S) (Organometallic compounds)

Subsequently to this very successful program several of these hydro-thermal deposits have been placed in production - CARLIN, JERRITT CANYON, DUVAL, HOMESTAKE, etc. Carlin, Jerritt Canyon and Duval have made Nevada the largest producers of gold in the United States. Jerritt Canyon produced over 200,000 ounces in 1982 from ores containing as little as .05 ounce per ton.

January 3, 1983

It is interesting on the Sunflower property that the entire zone of mineralization covering 15,000 feet of vertical standing scgist paraellels a Jasperiod-Breccia system throughout the distance and is a hydrothermal deposite which is written up in the University of Arizona Bulletin No. 122 studies on "Quicksilver Resources of Arizona". We have just recently determined that the ore contains organic carbon with sulphur which would lock the precious metals into CARBONYL ORGANIC COMPOUNDS. For some time since 1976 we have been aware of the slimy material being a precipitate and soluble in alkaline water, etc. to form a pinl to red solution. We have made numerous attempts to extract the precious metals from the Organo-metallic Compounds etc. with varying results.

It has recently come to our attention that Jerritt Canyon and Carlin inject Hot Steam at 125 PSI and tremendous Volumes of Air into their MILL SLU RY for 12 hours at a temperature of 180 degrees F. to convert all of the Iron, Lead, Arsenic, Antimony and Sulfur compounds to an OXYGENATED Compound that does not react to Cyanide thus are no longer Cyanicides. (Destroyers of Cyanide)

Following this lengthy treatment with Oxygen they inject Chlorine in limited quantities slowly over an additional 12 hours at 120 degrees F. This converts all remaining base metals to Chlorides which renders them nonreactive to CYANIDE. Chlorine as an OXIDIZER completely destroys all Nitrogen and Carbon Compounds. The residues that are left are treated in a f stage Carbon in Pulp process utilizing an extremely dilute solution of .05% Cyanide and 20 Mesh Carbon Granules. These Carbon Granules are stripped in caustic Cyanide and the LIQUOR subjected to Precipitation with ZINC or Electrowinning to obtain the Gold in bullion form.

The question now is can we do this? The answer is absolutely - YES!!! We can and have completed a number of these extractions and only need to scale up into the operation. We have the tanks and the Agitators and NOW the TECHNOLOGY!

NOTE: 3 punds raw Bell Tunnel ore in 3 liters of ph 11.5 Na_2CO_3 solution is dark cherry red in 2 hours with minimum agitation. With hot steam and air added with constant agitation should do wonders in converting the unwanted species to Oxygenated Compounds. Further, 50 pounds o- Chlorine Gas to each ton of ore treated destroys the CARBONYL Compounds with Sulfur and Nitrogen when leached over an extended length of time.

The residues of this pretreatment are taken back into a 50% Slurry with a Carbon in Pulp dilute Cyanide process developed by the Bureau of Mines. These Carbon Granules are worked in a counter-current system and pulled off continuously after being loaded with the precious metals. This highly concentrated LIQUOR is then electro-won from solution and deposited on a steel wool cathode and subsequently smelted into bullion.

January 3, 1983

All of this information and these processes have been patented and assigned to the United States Secretary of the Interior who has declassified the material for the use of the industry in general. These Bulletins are readily obtained from the Bureau of Mines as follows:

- RI 7573 "Oxidation Process for Gold Recovery from Carbon Bearing Gold Ore" by Scheiner and Lindstrom
Reno Metallurgy Center, Reno Nevada
- IC 8770 "Leach-Carbon Adsorption Methods" by Heinen and Lindstrom
Reno Metallurgy Center, Reno, Nevada
- "Innovations in Gold Metallurgy" by Potter and Salisbury
Salt Lake Metallurgy Research Center
Salt Lake City, Utah

All of these methods have been used to prove the Sunflower Ore and found to be valid for this ore!

CONSIDER THESE FACTS!

The mill normally and conservatively delivers 10 gallons per minute pf 50% Slurry. (It has the capacity of a full output of 17.5 gallosn per minute which would increase the above.)

If the ore has .333 ounces of finely disseminated Precipitates of gold per ton, then 15,000 gallons of Slurry has 10 ounces of gold.

The Jay Wilson Report indicates this finely disseminated Precipitate Gold which volatizes in a Fire Assy to be in the neighborhood of 12 ounces per ton of raw ore. Should Wilson:s assays prove to be correct, then we could produce substantially more. Obviously, we would install larger Leach Tanks to increase our Oxygenation and Chlorincation capacity to take the full Mill output and run the Mill ast least a 6-day week.

VERIFICATION AND ASSAY OF THE RAW ORE

Take 3 Pounds of finely comminuted raw ore into agitation for 30 minutes at 180 degrees F. with Hypochlorite (HTH) at 50 - 100 pounds per ton pr ore. Decant off solution and treat residues on the alkaline side with Hypochlorite for 1 hour at 180 degrees F. then settle out and decant off Red Liquor, treat Red Liquor with Au Electrodes and Extract with NaBH_4 .

ALTERNATE

Take 15 grams of raw ore into a Reduction Burn with NH_4Cl , KMNO_4 , NaClO_3 and NH_4NO_3 Flour; NaB_4O_7 10 H_2O so that you do not drive finely disseminated Precipitate gold into a vapor phase - keep it in the Residues and Fire Assay.

American International
Mining & Smelting (file) N



AMERICAN AWARD REAL ESTATE

Phillip T. Anderson, Broker/President

July 14, 1982

Mr. Charles Clemons
Bechtel Corporation
7975 N. Hayden Rd. Ste. 200C
Scottsdale, AZ 85258

Dear Mr. Clemons:

I am enclosing information on Sunflower Mine we discussed over the telephone.

With present refining mill at maximum capacity the projections are \$7,000,000 profit on processing 6,000 tons of ore annually.

\$ 1166/ton
6000 $\overline{) 7000000}$ *Profit*

Although there is no information included in the package, the Mining Corporation will definitely be interested in a Joint Venture.

Please contact me if there is any further information you would like, or if you would be interested in visiting the mine.

Sincerely,

Clark Welliver

Clark Welliver
Realtor Associate

CW/cm

Enc:

R. C. CLEMONS

JUL 15 1982



**AMERICAN AWARD
Real Estate**

CLARK WELLIVER
Investment Properties
Commercial/Investment Division

9402 North Central Avenue
Phoenix, Arizona 85020
Phillip T. Anderson, Broker

Business: 861-3206
Residence: 246-7720

RESIDENTIAL * * * COMMERCIAL * * * LAND * * * INVESTMENTS

Exhibit A

PART I

An option for 12 months upon the deposit pursuant to this Agreement of \$250,000, which upon acceptance of said option offer shall become immediately spendable and non-refundable.

PART II

An additional option for 12 months, upon the expiration of the option described above (PART I), upon the deposit pursuant to this Agreement of \$2,000,000; which upon acceptance of said option offer shall become immediately spendable and non-refundable.

Acceptance of the aforesaid options and receipt of funds called for thereunder shall entitle optionor to the following rights during the respective terms thereof:

(1) The right to exercise the purchase of the Sunflower Mine property at any time during the option periods with a down payment of 5 (five) percent (\$40,000,000 down) and annual payments on the anniversary of such exercise of \$10,000,000 for a period of 76 years for a total purchase price of \$800,000,000; provided that such payments may be made from royalties derived from gross Mill proceeds.

(2) Should the first payment be made (PART I), the right to share in 40% of gross proceeds of the entire Mill output, such share not to exceed \$400,000, during the 12 months operation following such payment, and should the second payment be made (PART II) the right to share in 40% of gross Mill proceeds of \$6,000,000 gross, but not to exceed an additional 12 months operation even though this gross has not be achieved.

(3) Acceptance of any option offer is conditioned upon the negotiation of an acceptable contract for purchase by which the option(s) would be exercised.

Ames. Ind. Mining
P.O. Box 308 Payson, AZ 85541

GENERAL INFORMATION
SUNFLOWER MINE
SUNFLOWER MINING DISTRICT
SUNFLOWER, ARIZONA

SUNFLOWER CLAIMS:

269 ± lode, hardrock, precious metal, unpatented claims are included in this mine. Claims are filed in the name of American International Mining and Milling Corp. with the Maricopa County, Arizona, Recorder and the Bureau of Land Management (BLM). Assessment work is current and recorded affidavits have been filed with BLM. Bonds and mining operation plans are filed with the U.S. Forestry Dept. in Mesa, Arizona.

LOCATION:

The claims are located 6 miles northwest of Sunflower, Arizona, on route 87 North of Mesa, Arizona. The 269± claims are situated on Federal Lands in the Tonto National Forest, situated in Maricopa County, Arizona, as follows: (See Attached Map.)

Sections: 1, 2, 11, 12, 13, 14, 23, & 24, Township 7 North, range 7 East,
G & SR, B & M
and sections: 5, 6, 7, 8, 17, 18, 19 & 20, Township 7 North, range 8 East,
G & SR, B & M

PILOT MILL:

A pilot mill having a 24-hour capacity of 50 tons for crushing, grinding, and froth flotation is completely installed in operating condition. Additionally, a reduction and refinery plant is required to produce marketable bullion or concentrate product, and has not been installed to date.

MILLING OPERATION:

Engineering has been conducted over the past two years making 20-ton batch runs on raw ore, producing flotation concentrate yielding 500 lbs of concentrate per 20 ton runs. An average of one percent of the flotation concentrate is precious metals. Further leaching and electrolytic processing of the flotation concentrate produces a 10:1 concentration resulting in 50 lbs. of Anode Slime which by test contains about ten per cent precious metals, other than silver and mercury.

EXTRACTION:

See test reports attached performed by James G. Duncan and Dr. Pal Ananthakristnan dated Oct. 19, 22, and 26, 1981, typifying results from many tests.

More research is required to finalize the best extraction methods from this highly volatile ore, complicating recovery. The precious metals of the gold and platinum group are organically compounded with silver and mercury. Although on the average tests indicate a recoverable four ounces of precious metals other than silver and mercury by the above procedure, about 8 pounds of mercury and 20 ounces of silver per ton is present in this ore, and certainly these values would also be recovered in a full scale milling and refining operation. From

Page two
General Information
Sunflower Mine

the values found present in this ore, it is reasonable to project that the pilot operation could produce, per each 10 hour day (one shift) approximately 75 ounces of precious metals other than silver and mercury, which could financially sustain a sizable engineering and planning program.

MINE OPERATION:

For the most part, pilot mining has been conducted underground on the Go-by claim, in two 300 ft. tunnels, pointing Westward. It is estimated that 8 to 10 million tons lays in the Sunnyside, Go-by and Packover claims in vertical schistose veins.

James G. Duncan, and other experts estimate 40 million tons of this ore to a depth of 500 ft. in lodes running 10,000 ft. east to southwesterly. Vein widths range up to 300 ft. wide, and in general, not less than 70 ft. wide. Approximately 11,000 ft. of tunnelling remain on the property from mercury mining during the early 1900's which facilitates easy access and examination of the ore. All ore examined along this trend runs high in value, and in general, the more mercury present, the greater the values of the gold and platinum group metals.

SALE PRICE:

\$800,000,000 (Eight hundred million dollars) cut off against an option and royalty program with 5% cash down payment as outlined in the attached "Exhibit A" of the Authorization to Sell Agreement.

Emphasis is made that although the sellers shall remain flexible as to terms, they shall require an active role in the development of the 50-ton per day pilot operation, during the interim or option period, to be completed prior to executing the royalty-purchase agreement. The buyers capability to develop a progressive mining and refining operation must be demonstrated and an on-going mining operation assured prior to effecting title transfer.

Oct. 26, 1981

To Whom it May Concern:

Re: Certification of AIM&M
Electrolytic Anode Slime

The attached analysis made by National Technical Systems following procedures used successfully by our company is interpreted by us for your ready understanding and mathematically computes out as follows:

A 150 gram sample was selected at random for the analysis and approximately 14.79 grms of Precious Metals, other than Silver, was obtained which is 9.86%.

I Chlorides	= 2.40 grms	= $\frac{2.40}{150}$	= 1.60%
II Filtrates	= 9.22 grms	= $\frac{9.22}{150}$	= 6.15%
III Nitric Residue	= 3.17 grms	= $\frac{3.17}{150}$	= 2.11%
		Total	<u>9.86%</u>

Further

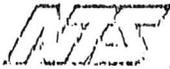
2.98 grms was Au	= $\frac{2.98}{150}$	= 1.98%
4.99 grms was Pt	= $\frac{4.99}{150}$	= 3.32%
3.50 grms was Pd	= $\frac{3.50}{150}$	= 2.33%
1.20 grms was Rh	= $\frac{1.20}{150}$	= .80%
2.12 grms was Ir	= $\frac{2.12}{150}$	= 1.41%
	Total	= 9.86%

A copy of the procedure used in obtaining these precious metals is also enclosed for your use in checking the analysis. You will note that decomposition of organic mercurials with a Halogen component is extremely important!

Very truly yours,

AMERICAN INTERNATIONAL
MINING & MILLING CORP.

October 22, 1981



National
Technical
Systems

Scientific
Services
Group

Testing Division
1438 Potrero Avenue
South El Monte, California 91733
Tel: 213 283 8465

TESTED FOR

AMERICAN INTERNATIONAL MINING
205 South Bee Line - Suite 3
Payson, Arizona 85541

1.0 SAMPLE TESTED

1.1 One sample labelled "Anode slime".

2.0 TESTS CONDUCTED

2.1 Chemical analysis of the anode slime for gold and platinum group metals in accordance with the procedure submitted by James Duncan. Metal analysis was done by AA.

3.0 TEST RESULTS

3.1 150 gram sample digested in 25% nitric acid yielded a residue of 31.22 grams.

3.2 The filtrate was precipitated and the chlorides leached in aqua regia to precipitate a total of 3.07 grams of metal complex.

Analysis of silver button showed:

Pt - 0.18 g

Au - 1.79 g

Pd - 0.43 g

3.3 Nitric filtrate (less chlorides) yielded a precipitate of 9.22 g, consisting of:

Pt - 4.81 g

Pd - 3.07 g

Au - 1.19 g

Rh - 0.13 g

Ir - 0.02 g

3.4 31.22 g of nitric residue digested in aqua regia gave a 7.41 g of residue whose silver button analysis showed:

Rh - 1.07 g

Ir - 2.10 g

Respectfully submitted,

P. V. Ananthakrishnan
P.V. Ananthakrishnan - Chemist



AMERICAN INTERNATIONAL MINING & MILLING CORP.

206 S. BEELINE, SUITE 3
P.O. BOX 308
PAYSON, ARIZONA 85541

Phone 602-474-5843

August 18, 1981

Dear Mr. Theiss:

The attached Report No. 563-4682 dated August 12, 1981 has been extended mathematically for your convenience to reflect the oz. per ton and dollar values.

This is for your information and file and not to be used for publicity purposes.

Gold .13% of 2000 = 2.6 lbs x 15 = 39 oz/ton @ \$400.00 =	\$15,600.00
Platinum 2.1% of 2000 = 42 lbs x 15 = 630 oz/ton @ \$430.00=	\$270,900.00
Palladium .49% of 2000 = 9.8 lbs x 15 = 147 oz/ton @ \$110.00	\$16,170.00
Rhodium .021 % of 2000 = .42 lbs x 15 = 6.3 oz/ton @ \$500.00 =	\$3,150.00
Iridium .22% of 2000 = 4.4 x 15 = 66 oz/ton @ \$500.00 =	\$33,000.00
Total	<u>\$338,820.00</u>

Source: July 1, 1981 Simmons Precious Metaletter

AMERICAN INTERNATIONAL
MINING & MILLING CORP.


 JAMES G. DUNCAN,
 President

Apple Stone

JGD:dh



August 12, 1981

TESTED FOR

AUG. 17 1981

American International Mining
206 South Beeline - Suite 3
Payson, Arizona 85541

1.0 SAMPLE TESTED

1.1 One sample labelled, "Untreated anode slime".

2.0 TESTS CONDUCTED2.1 Analysis of the sample by chemical acid extraction methods.
Hydrolytic precipitation was used to analyze the platinum group metals.3.0 TEST RESULTS

3.1	Gold	- 0.13%
	Platinum	- 2.10%
	Palladium	- 0.49%
	Rhodium	- 0.021%
	Iridium	- 0.22%

P. V. Ananthakrishnan
Chemist

P. V. Ananthakrishnan

THIS REPORT APPLIES ONLY TO THE SAMPLE, OR SAMPLES, INVESTIGATED AND IS NOT NECESSARILY INDICATIVE OF THE QUALITY OR CONDITION OF APPARENTLY IDENTICAL OR SIMILAR PRODUCTS. AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC AND THESE LABORATORIES, THIS REPORT IS SUBMITTED AND ACCEPTED FOR THE EXCLUSIVE USE OF THE CLIENT TO WHOM IT IS ADDRESSED AND UPON THE CONDITION THAT IT IS NOT TO BE USED, IN WHOLE OR IN PART, IN ANY ADVERTISING OR PUBLICITY MATTER WITHOUT PRIOR WRITTEN AUTHORIZATION FROM THESE LABORATORIES.

Quantitative Analysis of the Anode Slime - Contd.

V. Summary:

chlorides = 15 grms.
 filtrate = 24 grms.
residues = 31 grms.

Total: 70 grms. from 1 lb. of Anode Slime

VI. 70 grms. X 50 = 3,500 grms./50 lbs.

The amount of these precipitates and residues that will convert to DORE Metal will depend on volatilization losses, purity of the precipitate, and other variables; but in general, should follow the above recoveries, that approximates 75%.

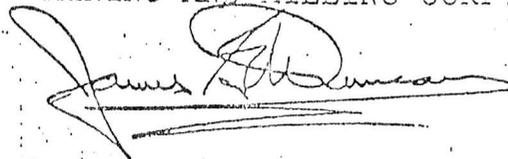
Calculating from the above 3,500 grms./50 lbs.

$$\frac{3,500}{28.35} = 123 \text{ oz./50 lbs. X } 40 = 4,920 \text{ oz./Ton of Anode Slime}$$

$$\frac{4,920}{800} = 6.15 \text{ oz./Raw Ton of Ore}$$

Using a conversion to DORE Metal factor of 75% then 4.61 oz. X .911 converts it to troy oz. which 4.20 troy oz. of Precious Metals other than Silver per ton of Raw Ore.

AMERICAN INTERNATIONAL
 MINING AND MILLING CORP.



Quantitative Analysis of the Anode Slime

Produced by AIM&M

Oct. 19, 1981

I. Digest 1 lb/gal in 25% Nitric and obtain a residue - 107 grms.
(Not over 120°F until Hg Halide compounds have been decomposed!)

II. Precipitate the filtrate and claim the chlorides. Leach the chlorides in hot dilute AR and precipitate the LIQUOR - wash precipitates in alcohol, NH₃Cl & water to obtain a total weight of 15 grms. Gather 15 grms precipitates in 45 grms Silver, to which a 100:1 Au inquant has been added, and get a button=57 grms. Note! 12 grms of GAIN is obtained from 15 grms of precipitates. Digest the Silver Button; analyze the solution by Spectrophotometer and read as follows:

Au =	9 grms
Pt =	1 grm
Pd =	2 grms
Total =	<u>12 grms</u>

III. Precipitate the Nitric filtrate (less chlorides) and obtain 24 grms. of precipitates - wash in alcohol, NH₃Cl and water (warm). Gather 15 grms of these precipitates in 45 grms Silver to which an Au inquant of 100:1 has been added and get a Silver Button of 57.5 grms. Note! 12.5 grms of GAIN is obtained from 15 grms of precipitates. Digest the Silver Button; analyze the solution by Spectrophotometer and read as follows:

Pt =	7.7 grms
Pd =	3.0 grms
Au =	.50 grms
Rh =	.22 grms
Ir =	.68 grms
Os =	.60 grms
Total =	<u>12.5 grms</u>

IV. Treat the 107 grms of residue 1 hr. in 25% AR (1:3:16) and retain the residue of 31 grms. Gather 15 grms of these residues in 45 grms of Silver, to which a 100:1 Au inquant has been added, and obtain a button of 53 grms. Note! 8 grms of GAIN is obtained from 15 grms of residue. Undoubtedly this GAIN would be substantially more if 20 parts of Silver were used. Digest the Silver Button; analyze the solutions by Spectrophotometer and read as follows:

Pt =	.75 grms
Pd =	.5 grms
Rh =	2.5 grms
Ir =	4.0 grms
Os =	.25 grms

THE CARRIAGE WORKS, INC.

Balance Sheets
March 31, 1986

Assets	March 31, 1986
Current assets	
Cash	\$ 6,830
Stock (Note 1)	- 41,400
✓ Certificates (Note 2) ✓	24,359
Machine shop equipment	40,331
Rolling equipment	13,800
Heavy duty equipment	9,500
Inventory	43,780
Breeding Ranch	125,000 - ?
Total current assets	\$ 305,000
Liabilities	
Current liabilities	
Mortgage, 8 per cent	81,000
Mortgage, 6.2 per cent	22,000
Note	1,600
Total current liabilities	104,600
Stockholders' equity	
Common Stock, No Par Value	
Authorized: 1000 shares	
Issued: 501 shares	
Value per share: \$400	200,400
Treasury stock: 110 shares	-
	\$ 305,000

NOTATIONS

Note 1

This is 20,700 shares of stock of T. E. Corporation with a value of \$ 2.00 per share. This was formerly Thermal Hydraulics, Inc. Dividends are paid on royalties from the heat pump patent.

Note 2

These certificates are divided into two categories, gold and mercury contracts. There are two (2) \$5,000.00 each, gold contracts paying fifteen (15) per cent interest. There are three (3) \$3,200.00 each Mercury contracts, paying fifteen (15) per cent.

Note 1 is a Colorado corporation

Note 2, both are an Arizona corporation



K

STATE OF ARIZONA
 DEPARTMENT OF MINERAL RESOURCES
 MINERAL BUILDING, FAIRGROUNDS
 PHOENIX, ARIZONA 85007

American International Mining and Milling Corporation

Office interview. April 20, 1976

James G. Duncan, President, came in the office after earlier telephone call. We discussed his monopole material. Called Joe Arundale of U.S. Bureau of Mines, Phoenix. Mr. Arundal told Mr. Duncan to send good samples of the material to the U.S. Bureau of Mines Metallurgical Center in Salt Lake City.

Mr. Duncan said he thought there was a national interest in a monopole material.

Mr. Duncan said the material is ground in a Ball Mill. Output is tabled. Tails go to a unit cell (?). From there a classifier is used with fines going to cleaner cells. Two cons are produced. They are similar in composition, differing only in size.

The property involved is the Sunflower Group. (Part of National Mine and claims held by a Mr. Grime and a Mr. Carlson).

John H. Jett
 Director

JHJ:pp

*American International
 Mining & Milling
 James Duncan
 old national mercury mine
 prod. several tons cons
 w/ Andy P. Sub. etc*

*From
 interview
 8-17-79*

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine Various

Date October 3, 1975

District Sunflower

Engineer Ken A. Phillips

Subject: Claims held by American International Mining & Milling Corp.

Information from: James G. Duncan, President

Address: P.O. Box 15234, Phoenix, 85060; located Suite 10, 3530 East
Indian School Road

Mr. Duncan reported that his company owns or controls under leases and options the following claims in the Sunflower District:

Arizona Mercury (50 claims)
Sunflower Group
Red Rock (9 claims)
Golden Horn (10 claims) obtained from Ralph Pabst
Silver Bell (10 claims) " " " "
Cypres (11 claims) obtained from Carlson

Further, he reported they have a small mill on the East Fork of Sycamore Creek. The mill produces a concentrate containing 10-15 lbs. of mercury per ton (0.5-0.75 percent?). They are working on processes to recover the microscopic beads of native mercury combined with gold, silver and platinum contained in their ore.

ARIZONA DEPARTMENT OF MINERAL RESOURCES
Mineral Building, Fairgrounds
Phoenix, Arizona

1. Information from: Dan Duncan
Address: ST Rt Box 600 Payson
2. Mine: National, Ratter, Cain Spring, Cypress, (O.L. Carlson Claims) 3. No. of Claims - Patented _____
Unpatented _____
4. Location: _____
5. Sec. _____ Tp. _____ Range _____ 6. Mining District _____
7. Owner: _____
8. Address: _____
9. Operating Co.: American International Magn. Mfg. Co.
10. Address: as above
11. President: Roy Horsey 12. Gen. Mgr.: Dan Duncan
13. Principal Metals: Hg 14. No. Employed: 5
15. Mill, Type & Capacity: _____
16. Present Operations: (a) Down (b) Assessment work (c) Exploration
(d) Production (e) Rate _____ tpd.
17. New Work Planned: _____

18. Misc. Notes: Has taken over Carlson's properties - Carlson is in Wikieup. American International is going to try to reach or perhaps use Clotaten

Date: 2-2-72

F. T. Johnson
(Signature) (Field Engineer)

ZONA DEPARTMENT OF MINE & RESOURCES

Mineral Building, Fairgrounds

Phoenix, Arizona

- 1. Information from: J. L. Roberts
- Address: Jakes Corner
- 2. Mine: National 3. No. of Claims - Patented _____
Unpatented _____
- 4. Location: _____
- 5. Sec 31 Tp 8N Range 9E 6. Mining District Sunflower
- 7. Owner: Frank A Bauer
- 8. Address: 31 W 2nd St. Mesa 964-3197
- 9. Operating Co.: Sunflower Properties Inc.
- 10. Address: 31 W 2nd St. Mesa
- 11. President: Frank A Bauer 12. Gen. Mgr.: J. L. Roberts
- 13. Principal Metals: Hg 14. No. Employed: 4
- 15. Mill, Type & Capacity: _____
- 16. Present Operations: (a) Down (b) Assessment work (c) Exploration
(d) Production (e) Rate _____ tpd.
- 17. New Work Planned: _____

18. Misc. Notes: _____

Undecided what they will do. Mr Bauer is
paying \$1200/mo divided between Bolich and Phoenix
Sunflower Industries. Robert hopes they will decide
to operate as they have some ore blocked out. ?

Date: Oct 28 1969

F. I. Johnson
(Signature)

(Field Engineer)

DEPARTMENT OF MINERAL RESOURCES

STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine National (Sunflower) Mine and Mill Date June 23, 1965
District Sunflower District, Gila County Engineer Lewis A. Smith
Subject: Visit and conferences with V.D. Bradley, Supt. and Larry Holsinger, Foreman (Wells Cargo Trucking Co.) and C.P. Keegel (Geologist for Monsanto Chemical Co.)

Larry Holsinger's mailing address is P.O. Box 590, Mesa, Arizona (Sunflower Store Box)

Wells Cargo has been revamping the Bolich mill and has added 3 cyclones between the retort and the condensers. An enclosed screw conveyor has been installed to carry the retorted waste to a waste dump. The cyclones include a 9 foot and two 10 foot (diameter) types that are in a row next to the condenser tubes. They are about 15 feet high with cones on the bottom end. It is figured that the first cyclone (9-foot) will eliminate most of the retort dust and the second will drop most of the mercury.

Considerable dozer stripping and benching has been done in three places, one each on the Sunflower, Sunnyslope and Cornicopia claim groups. Several cuts in a vertical range of 150 feet were made. Core drilling at a flat angle is being done to establish the depth of the ore to 50 feet below the surface are being drilled, the longest, so far, being 238 feet long. Core recovery has been very good, the holes, more or less, crosscutting the schistosity. Later some 45 degree holes will prospect the ore zone to a greater depth. The drilling rate has been considered to be no more than fair.

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It is now planned/mill 100 t.p.d. although the plant has a rated capacity of 115 tons. The projected heads, at present, are figured to be 3-4 pounds to the ton, by open pit mining. This ore will probably come from the old Bolich open pit and possibly from a couple of newer benches. According to Bradley, by selective mining a head of 6-8-pounds could be held, but the tonnage would be reduced.

The long tunnel reportedly 1200 feet long is said to have two or more decidedly prospectable zones.

The retort is not a Gould, but was made by a California engineering firm for a Nevada Group. Bolich bought it from the Nevada Co. and installed it at the National about 3 years ago. The firing end has been equipped with a jet oil feeder that "atomizes" the fuel. It is made by the Hauck Mfg. Company of Brooklyn, N.Y. Fuel oil will be used. The feed end of the retort (upper end) is equipped with a new automatic feeder that has a variable thrust of 1 to 9 inches, and is regulated by a lever-gauge. Firing temperature will range from 560-600 degrees C at first, but this may be reduced to as low as 450 degrees if this heat proves better. The plant should begin operations in about a week.

It is now considered probable that Wells Cargo and Monsanto Chemical Company, 800 N. Lindburg Blvd., St. Louis, Mo., may participate on a 50-50 basis in the operation.

DEPARTMENT OF MINERAL RESOURCES

STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine National Quicksilver Mine Date 10-24-62
District Sunflower District, Maricopa Co. Engineer Lewis A. Smith
Subject: Interview with C. O. Carlson, at Sunflower.

Mr. Carlson recently had visited the National Mine, now operated by Tom Bolich, Jake's Corner. Bolich brought a Gould retort in Nevada and is now setting it up. The retort is 60 x 8 feet and will normally handle 50 tons per day. (Carlson said it was in good condition.) The plant will include a bin (with grizzly), a Blake Jaw Crusher, screens, Gould furnace, and condenser tubes. The furnace feed will be minus 3/4-inch. Bolich calculates to fire the furnace with oil or Bu Gas, and will carry a vaporization temperature of about 1400 degrees F. Bolich plans to open pit an area reported to run about 3-5 pounds of quicksilver to the ton. It is now figured that it will be at least 90 days before operation of the mill can be accomplished. Previous exploration has shown a considerable tonnage of reserves of 4 pounds grade. Some "sweetner" is available. Bolich has two men besides himself. The road is in very bad shape and cannot be traversed by ordinary car.

Mining will be done by cat and front end loader with a short haul to the mill.

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine National Mine - now Sunflower Date February 7, 1961
District Sunflower District, Maricopa County Engineer Lewis A. Smith
Subject: Interview with C. O. Carlson

Mr. Carlson stated that Tom E. Bolich, Tonto Basin, Arizona, and his partner were working at the National on some sort of agreement with the present owners. Carlson had heard that such an agreement occurred about one month ago, but knew no more about the setup.

Active Oct. 1961

10

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine Sunflower Group (National Mine)

Date May 11, 1960

District Sunflower, Maricopa Co.

Engineer Lewis A. Smith

Subject: Interview with W. R. Dudley, Consulting Geologist.

The Sunflower Group has been leased by H. L. Allen, who now has complete control.

Address: 117 South Hobson, Mesa (WO 4-4201 or 4-4401)

Mr. Dudley stated that the average ore, according to Allen, runs about $2\frac{1}{2}$ pounds to the ton in large volume. Some better spots run up to 1% of Hg. Dudley also said that there is an old Gould furnace capable of handling 200 tons daily, a crusher, 65 ton per hour ball mill, a KW generator operated by a diesel engine, and several motors in addition to a screening plant. The mine is reported to be in bad shape, but considerable bulldozer work had been done fairly recently. The cut is 100 or more feet long and 10-12 feet deep at the deepest place.

DEPARTMENT OF MINERAL RESOURCES

STATE OF ARIZONA

FIELD ENGINEERS REPORT

Mine NATIONAL QUICKSILVER Date February, 1957
District Sunflower, Maricopa County Engineer B. J. Squire
Subject: Recent Operating History

In 1955 West End Opeteca Mine Company had a lease on the Sunnyside Claim and produced for about 3 months in batch retorts. They worked a high grade streak in the Sunnyside.

Mercury Ore Company had a lease on the property in 1954, succeeded by Arizona Mercury Mines Inc., Bishop, California, in 1955, which during the year was reorganized as Arizona Cinnabar, Inc., - George Craig, Mgr. They continued work on the mill until December 1955.

January 1956, Dr. Ross, of Los Angeles, California, acquired the lease from Sunflower Properties, the owner, and operated until December, 1956 under the name of Mizpah Mercury Mines. He installed a large retort of his own design, which was never operated.

January 1957, Bill Dulan of Kingman, Arizona, took a lease from the Sunflower properties. He is currently working 2 or 3 men on development.

DEPARTMENT OF MINERAL RESOURCES

REPORT TO OPA ON ACTIVE MINING PROJECT

Date Jan 11 - 1945
 Name of Mine National Mercury Milling Co.
 Owner or Operator Geo. L. Machris
 Address Box 1695 Phoenix
 Mine Location Superior District

Filing Information

File System.....

File No.....

This chart to be used for gallons of gasoline required per month.

PRESENT OPERATIONS: (check X)

Production ; Development ; Financing.....; Sale of mine.....;

Experimental (sampling).....; Owner's occasional trip.....;

Other (specify).....

PRODUCTION: Past and Future.

Tons

Approx. tons last 3 months

Approx. present rate per 3 months

Anticipated rate next 3 months 4500 per year

If in distant future check (X) here

EQUIPMENT OPERATED:

Type	Quantity or Horse Power	Miles or Hours Per Month	Gallons Required Per Month <i>Quarter</i>
Personal Cars
Light or Service Trucks
Ore Hauling Trucks
Compressors <i>and</i>
Other Mine or Mill Eqpt. }	<u>3000</u>

PRODUCT PRODUCED OR CONTEMPLATED: Name metals or minerals.

Mercury

REMARKS:

This company has developing and producing for past 12 years.
Application approved.

ARIZONA DEPARTMENT OF MINERAL RESOURCES

By Ch. Heber
Field Engineer D. W. M. R.

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine National Mining and Milling Co. Date January 14, 1944
District Sunflower Mining District Engineer J. S. Coupal
Subject: Present Condition of Operations

George L. Machris, 1206 Maple Avenue, Los Angeles, sole owner, and doing business as National Mining and Milling Company; mine address, Percy G. Flumerfelt, superintendent, Adams Hotel, Phoenix, Arizona; owning properties known as Arizona Quicksilver group, Cornucopia group, Sunnyside group, making 44 claims all adjoining, located in Sunflower Mining District, Maricopa County, Arizona, about 60 miles north and east from Phoenix.

Properties purchased outright for cash from June, 1942 to October 1942. Have pursued developing and revamping mine and furnace continuously since November 1, 1942. Roughly, including purchase price of properties, there has been approximately \$300,000 expended on these operations.

No Government loans have been applied for or received by these operations. In November, 1942 application for "qualified producer" was made and contracted in name of National Mining and Milling Company early in 1943.

The company has been developing mines, building proper roads from their outlying workings to the furnace, revamping the Gould's furnace and accessories to the furnace during the past year and a half. They made no production and made no sales of mercury during the six months prior to this date. They could market 6 or 8 flasks by January 31, 1944, which is available from test runs.

During the past six months Arthur Davis, consulting mining engineer and geologist for the Wilshire Oil Company, controlled by George L. Machris, has carefully examined and recommended a comprehensive property and reduction plant program, which was approved and is now in process of completion. It included mine development and revamping of the furnace.

The engineer reports 4,000 tons of 5# mercury ore broken in bins and stopes and an estimated 35,000 tons of about the same grade of ore reasonably in sight and a large tonnage of possible which may be developed under the mine developed now outlined and being carried forward.

The company has experienced difficulty making proper recovery in their ores in the present 85 ton Gould's furnace due to the mixture of fine and coarse ore. It has been recommended that the fines and coarse be separated and the plus 1/4" product be treated in the present plant and the minus 1/4" be treated in a new 50 ton complete unit which equipment is being moved to the property and is being installed.

From this it is obvious that the election of Item 8 (b) by the Metals Reserve Company in their order of May 11, 1943, "Information Concerning Production of Domestic Mercury", will make it impossible for this operation to recover the capital investment made in an effort to produce mercury for war needs.

K096

Sunflower Grp

MINE SPECIMEN FOR DEPARTMENT OF LIBRARY AND ARCHIVES

(Do not write in this space)

(Wrap each specimen separately, or place it in a substantial bag, by itself, with a number attached, identical with the number on this card.)

Ore _____

Cabinet _____

No. _____

Specimen No. 22, collected by Newton Wolcott

Field Engineer

Name of ore Quicksilver, gold, silver and copper Operator Arizona Quicksilver Corp.

Minerals contained Cinnabar, azurite, malachite Mine active or inactive Inactive

with gold and silver If inactive, when operated 1937

Gangue Altered schist Specimen presented by T.J. Long

Depth at which taken Surface outcrop Date January 5, 1940.

Approximate mineral content (in terms of average per ton) \$12 in gold and silver in addition to quicksilver and copper. Notes (Any general information regarding the history of the property.)

An undeveloped lead.

Name of mine or claim Arizona Quicksilver

Group _____

District Sunflower

Location (distance and direction by highway from what town) 40 Mi. SE of Payson

Owner of property Ariz. Quicksilver Corp.

If more space is desired for notes, use other side.

This specimen is now in the ADMR Museum see K number 110 or 100 x 9.2 x 3.0 cm

1-19-40

1-19-40

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine ARIZONA QUICKSILVER

Date June 4, 1942

District

Engineer Fred H. Perkins

Subject: Arizona Quicksilver Partnership
✓ Gus Magnuson, Box 918 Mesa, % Sunflower Store
✓ T. J. Long, Globe, Arizona

Arizona Quicksilver Mine

Located 70 miles north of Phoenix on Bush Highway, and 3 miles North off of the Bush Highway.

1941 Production all in Quicksilver - about \$16,000 sold this year by A. V. Walsh and W. A. Wallace, leasers. Price received \$190.00 per flask.
Sold to Bedford Chemical Company, Los Angeles, California.
20 - 25 men in crew.

1942 This property is under option to a Montana crowd of old time miners. Deal made and money due June 15, 1942.
This crowd expect to go after the operation in a big way - and soon.
With the equipment and development on this property 25 men can produce 100 flasks per month.
1 shaft 225 ft. deep and 3000 ft. of drifts and cross cuts.
No one employed at present.

9-30-42

Current problem is one of labor and priority.

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
OWNERS MINE REPORT

Date November 1, 1939

See map of claims
Mine 1st Group - Red Rock Ex. & Red Rock #1
2nd Group - Pack Over Ex. & Pack Over Ex. #1

District - Sunflower

Location - Mazatzal Mts adjoining Arizona Quicksilver property on north and south

Former Name - Part of Lost Packer
 Part of Martin Group

Owner - Earl E. Webster

Address - 1025 Fairmont Avenue
Phoenix, Arizona

Operator

Address

President

Gen. Mgr.

Mine Supt.

Mill Supt.

Principal Metals - Quicksilver

Men Employed

Production Rate

Mill: Type & Cap.

Power: Amt. & Type

Operations: Present

Operations Planned

Number Claims, Title, etc. - 2 groups of 2 claims each as above, adjoining Arizona Quicksilver property on northeast and southwest. This property has produced over 1,600 flasks of quicksilver, principally on Pack Over and Go By claims. This group shown on accompanying map.

Description: Topography & Geography

Mine Workings: Amt. & Condition



Mining Journal
2/29/40

Geology & Mineralization

Ore: Positive & Probable, Ore Dumps, Tailings

Mine, Mill Equipment & Flow Sheet

Road Conditions, Route - Closest road at Arizona Quicksilver mine

Water Supply - Water easily developed in the neighborhood -
Pack Over Ex. #1 - well timbered with growth of cypress.

Brief History

Special Problems, Reports Filed

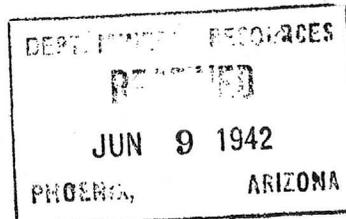
Remarks

If property for sale: Price, terms and address to negotiate -
Will consider sale of claims outright for small price
or will consider a development proposition.

SIGNED - Earl E. Webster

SURVEY OF OPERATING MINES

By: Fred H. Perkins



June 4, 1942

ARIZONA QUICKSILVER

Arizona Quicksilver Partnership

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9.30-42

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DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine NATIONAL QUICKSILVER
District SUNFLOWER
Subject: Operating Status

Date April 23, 1955
Engineer B. J. Squire

Operating Company:

West End Opeteca Mines Co.
P. O. Box 2251
Mesa, Arizona
also Long Beach, California

Mgr. - Nick Comerkeski
Engineer - Ted Schackelford

Ore grade:

Mr. Comerkeski reports lowest face assay as .91% Hg.
A consulting engineer made report on property before
operator took over.

Production rate:

Now producing 15 to 20 flasks of mercury per month
in batch retorts.

Work done:

Opening up and retimbering old drifts, new ore bins
and road work.

Mill:

Arizona Cinnabar, George Craig, Mgr., has contract
to mill dumps and ore in flotation mill designed by
Eisenhauer Engineering Corp., of Los Angeles. Mill
is complete except for concentrate filter and oper-
ating at 50 TPD capacity. Final capacity 150 TPD.
Concentrate is batch retorted.

DEPARTMENT OF MINERAL RESOURCES

STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine National (Sunflower) Mine and Mill

Date June 23, 1965

District Sunflower District, Gila County

Engineer Lewis A. Smith

Subject: Visit and conferences with V.D. Bradley, Supt. and Larry Holsinger, Foreman (Wells Cargo Trucking Co.) and C.P. Keegel (Geologist for Monsanto Chemical Co.)

Larry Holsinger's mailing address is P.O. Box 590, Mesa, Arizona (Sunflower Store Box)

Wells Cargo has been revamping the Bolich mill and has added 3 cyclones between the retort and the condensers. An enclosed screw conveyor has been installed to carry the retorted waste to a waste dump. The cyclones include a 9 foot and two 10 foot (diameter) types that are in a row next to the condenser tubes. They are about 15 feet high with cones on the bottom end. It is figured that the first cyclone (9-foot) will eliminate most of the retort dust and the second will drop most of the mercury.

Considerable dozer stripping and benching has been done in three places, one each on the Sunflower, Sunnyslope and Cornicopia claim groups. Several cuts in a vertical range of 150 feet were made. Core drilling at a flat angle is being done to establish the depth of the ore to 50 feet below the surface are being drilled, the longest, so far, being 238 feet long. Core recovery has been very good, the holes, more or less, crosscutting the schistosity. Later some 45 degree holes will prospect the ore zone to a greater depth. The drilling rate has been considered to be no more than fair.

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The long tunnel reportedly 1200 feet long is said to have two or more decidedly prospectable zones.

The retort is not a Gould, but was made by a California engineering firm for a Nevada Group. Bolich bought it from the Nevada Co. and installed it at the National about 3 years ago. The firing end has been equipped with a jet oil feeder that "atomizes" the fuel. It is made by the Hauck Mfg. Company of Brooklyn, N.Y. Fuel oil will be used. The feed end of the retort (upper end) is equipped with a new automatic feeder that has a variable thrust of 1 to 9 inches, and is regulated by a lever-gauge. Firing temperature will range from 560-600 degrees C at first, but this may be reduced to as low as 450 degrees if this heat proves better. The plant should begin operations in about a week.

It is now considered probable that Wells Cargo and Monsanto Chemical Company, 800 N. Lindburg Blvd., St. Louis, Mo., may participate on a 50-50 basis in the operation.

DEPARTMENT OF MINERAL RESOURCES

STATE OF ARIZONA

FIELD ENGINEERS REPORT

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ARIZONA QUICKSILVER

June 4, 1948

Fred H. Perkins

Arizona Quicksilver Partnership
Ous Magnuson, Box 910 Mesa, ☽ Sunflower Store
T. J. Long, Globe, Arizona

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1 shaft 225 ft. deep and 5000 ft. of drifts and cross cuts.
No one employed at present.

9-30-48

Current problem is one of labor and priority.

STATE OF ARIZONA
DEPARTMENT OF MINERAL RESOURCES
MINERAL BUILDING, FAIRGROUNDS
PHOENIX 7, ARIZONA



January 28, 1964

C
O
P
Y

M. H. Salsbury
Project Coordinator
Bureau of Mines, Area V
Box 3928
Tucson, Arizona 85717

Dear Mr. Salsbury:

With reference to your letter of January 24th about Big Sam Mines Co:

An attorney here, who has a client interested in the Sunflower district, tells us the following:

"Joe Bessler, President of the Sunflower Corporation, reported that Tom Bolich, et al had leased the Sunflower's National Quicksilver Mine. Mr. Bolich is reported to have a big dog called "Sam", and he named his company the Big Sam Mining Co. He closed down operations a few months ago but did ship and operate during 1963. It is reported that he (Mr. Bolich) has a new backer now from Mesa called McGrath or McGraw and they might resume operations, presumably under a different name than the Big Sam Mining Co."

Thomas E. Bolich's home is at 1604 South Farmer Avenue, Tempe, Arizona.

Yours very truly,

FRANK P. KNIGHT
Director

FPK/H

*Visitor stated Big Sam is at
Tom Wells of Wells Range - L.P. - 5-21-65*

QUICKSILVER RESOURCES OF ARIZONA

Page 60 Mazatzal Mountains Deposit Location (Written in 1927)

The Mazatzal Mountains, of the Basin and Range type, lie in the central portion of the State. They trend slightly west of north, extend from the Salt River on the south to the East Verde River on the north, and have a total length of about 50 miles. On the east side of the range is Tonto Creek which discharges into the Roosevelt Reservoir, and on the west side is the Verde River, a branch of the Salt River.

Cinnabar was discovered in 1911 on the west slope of this range on Alder Creek, about 6 miles north of the Sunflower Ranch. (See Fig. 10.) Within the last few years several promising deposits have been found on Slate Creek, on the east slope of the range. This mineralized belt trends nearly east and west and is approximately midway between the north and south ends of the range. As the summit of the range is the boundary between Maricopa and Gila counties, the deposits occur in both counties; those on the west side being located in Maricopa County.

Climate and Vegetation

On both sides of the range the camps occur in deeply incised and steep-walled canyons and are surrounded by high peaks and ridges. The camp on Alder Creek is at an elevation slightly greater than 4,000 feet above sea level, while those on Slate Creek are somewhat under 3,000 feet. Even at the latter locality the summer heat is not excessive, and this is due largely to the greater elevation of the surrounding mountains which are an important factor in moderating the summer heat. During the winter months, however, snow falls frequently, but seldom remains on the ground more than a few days. The climatic conditions, therefore, are not likely to interfere with mine operations.

Rainfall, as in other parts of Arizona, is seasonal, and falls chiefly as torrential downpours during the summer months, and are usually accompanied by an intense electrical display. During the late autumn and winter the precipitation is chiefly as snow, and may be expected in the spring months even as late as the first of April. No records are available of the precipitation in this immediate vicinity, but it is probably greater than 15 inches per annum. In both Slate and Alder creeks water for domestic purposes is available throughout the year except following an exceptionally dry season, and even then some clear, cool water may be obtained from shallow wells sunk in the banks of the streams.

The vegetation in this vicinity is quite varied, and consists of a variety of trees, brush, and grasses. On Pine Mountain and on the upper slopes of Mount Ord is a good stand of yellow pine. At lower elevations and usually in sheltered ravines on the north sides of the higher points is an abundance of cypress. This occurs within easy reach of all the prospects and is the best wood available for mine timbers. A considerable stand of live oak and an occasional juniper are to be found at elevations around 4,000 feet. In the past oak wood has been used to fire the retorts. The slopes of the hills, especially at lower altitudes, are clothed with a dense growth of brush. Only a few of the species of brush occurring here are of value as feed for cattle, and as a whole they are a great hindrance to the prospector.

Topography

The topography is rather rugged and consists of deeply incised, V-shaped canyons separated by high ridges. Both Alder and Sycamore creeks flow south across the schistose structure, while Slate Creek nearly parallels this structure. At the camp on Alder Creek the canyon is 1,000 feet deep and the slopes approach the critical angle for rock slides. The hardness of the rock has influenced the roughness of the topography; where slates outcrop, the hillsides are smooth and have rounded slopes, but, where rhyolite porphyry or jasper outcrop, cliffs predominate.

Nearly everywhere there is some evidence of recent uplift and rejuvenation of the streams. This uplift probably took place at the close of the Tertiary period.

General Geology

The quicksilver deposits in this region were examined by Dr. F. L. Ransome in the autumn of 1914 and his report was published by the United States Geological Survey.¹ Since Ransome's report was issued considerable development work has been done and many additional claims located. The deposits on Slate Creek have been located in the last few years.

The southern half of the Mazatzal Mountains consists almost entirely of granitic rocks that locally may be somewhat gneissic, and are probably entirely pre-Cambrian in age. Near the extreme southern end of this range where the Roosevelt Dam was constructed across the Salt River is an excellent section of Paleozoic rocks. This section consists of quartzites and limestone of the Apache Group, and Devonian and Mississippian limestones.² These Paleozoic rocks, however, are limited to a small area in these mountains, but originally extended many miles farther north.

¹Ransome, F. L., Quicksilver Deposits of the Mazatzal Range, Ariz.: U. S. Geol. Survey Bull. 620, pp. 111-128, 1916.

²Ransome, F. L., Some Paleozoic Sections in Arizona and their Correlation: U. S. Geol. Survey Prof. Paper 98-K, pp. 149-152, 1916.

On the north slopes of Mount Ord the granitic rocks have invaded pre-Cambrian crystalline schist, and from Slate Creek northward the basement of the range consists of these metamorphic rocks. From Mazatzal Peak to North Peak a massive-bedded and highly indurated quartzite rests unconformably on the upturned edges of the crystalline schists. This formation has been described by E. D. Wilson;¹ and it was by him assigned to the pre-Cambrian and correlated with the Grand Canyon series.

At lower altitudes, on the west side of the range, the older rocks are locally covered by volcanic flows and associated tuffs. Volcanic rocks are rare on the east slopes of these mountains and only a single occurrence of lava was observed. This consisted of a flow of basalt intercalated in conglomerate on Slate Creek. On both sides of Tonto are numerous exposures of buff sandstone and red and green shales which in places are gypsiferous. These sediments and volcanic rocks are probably of late Tertiary age. The youngest formation in this vicinity consists of Quaternary gravels and sands, and caps the Tertiary sediments mentioned above.

Metamorphic Rocks

In the immediate vicinity of the quicksilver prospects the prevailing rock is a crystalline schist that varies considerably both in mineral composition and texture. Quartz-sericite schist and brown slate predominate, but in addition chlorite schist, quartzite, and a dolomitic marble have been found. A massive vermilion-red jasper and a schistose rhyolite-porphyrity form a part of this pre-Cambrian crystalline complex.

When Ransome² examined the quicksilver prospects in this region he found that the schists could be subdivided into eight zones arranged symmetrically on each side of the jasper as a central axis. The relations of these zones to each other are shown diagrammatically in Fig. 11. He says: "It will thus be seen that in the southwestern part of the quicksilver belt the distribution of the rocks is such as to suggest that the jasper zone occupies the axis of a compressed syncline or anticline. Towards the northeast, on the east slope of the Mazatzal Range, the symmetrical arrangement of the rock zones is less evident."

The strike of the schistosity varies somewhat from place to place, and in Alder Creek is from 43° to 70° east of north, while on Slate Creek it is more nearly east and west. The dip of the schistosity is usually at steep angles to the northwest, but exceptions to this prevailing northwest dip were noted at several places. Surface creep is very pronounced on these steep slopes and often extends for a distance of 15 or 20 feet below the surface. This has sometimes misled prospectors, who do not know the cause of this phenomenon, and has led them to believe that their vein dips into the hillside at a low angle.

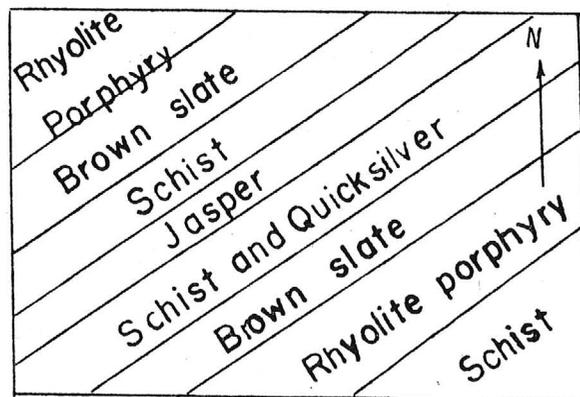


Fig. 11—Sketch showing relative positions of the schist zones, Mazatzal Mountains.

Quartz-sericite schist is the most abundant type of metamorphic rock in the district. It varies in composition from a quartzite containing a little mica to a light-colored phyllite in which mica predominates. Other mineral constituents are present, but only in minute quantities, and are unimportant in the classification of these rocks. A notable exception is at Baker's camp on Slate Creek where this variety of schist contains considerable calcite and a small amount of chlorite.

The brown slate is a fine-grained rock with a well-developed parting along which the rock cleaves readily. Although the mineral constituents are of small size, quartz and sericite were determined microscopically, and the brown color is due to a ferruginous pigment, probably the mineral hematite. Banding due to slight differences in composition may represent bedding planes, and near the Cornucopia claim this feature indicates that the schistosity makes an angle of approximately 45° with the original stratification.

An area of chlorite schist is well exposed on the Packover and Go-By claims of the Sunflower Group. The rock is of a dark greenish color, and does not cleave as readily as the other mica schists or brown slates. The rock consists largely of chlorite and quartz, but small amounts of magnetite, sericite, and limonite are present. Some thin sections consist entirely of angular fragments of andesite and suggest that the rock was originally a volcanic tuff or breccia. A little red jasper was found associated with this variety of schist.

¹Wilson, E. D., Proterozoic Mazatzal Quartzite of Central Arizona: *Pan-American Geologist*, Vol. 38, pp. 299-312, 1922.

²Ransome, F. L., Quicksilver Deposits of the Mazatzal Range, Arizona: *U. S. Geol. Survey Bull.* 620, p. 117, 1916.

The volcanic rocks in this region are a part of the extensive lava field occurring to the northwest of the Mazatzal Mountains. In this region, as in many other parts of the State, the volcanic rocks are probably of Tertiary age; and the andesites are undoubtedly older than the basalts exposed in the banks of Slate Creek.

Ore Deposits

At the time of Ransome's visit, in the autumn of 1914, very little development work had been done; and, although considerably more underground development work has been completed since then, the deposits are still to be considered as prospects rather than developed mines. Several new groups of claims have been located in the last few years, but only location and assessment work has been done on them.

The distribution of the groups of claims located for cinnabar is shown in Fig. 12. An inspection of this map shows that there are three distinct belts or zones of mineralization: The Alder Creek belt; Sycamore Creek-Pine Mountain belt; and the Slate Creek belt. In general, these groups of claims closely parallel the schistosity.

On the Sunflower Group Ransome¹ recognized three approximately parallel lodes which are several hundred feet apart. The central or Packover lode is probably continuous with the ore found on the Cornucopia claim of the Robbins Group and may extend northward to Bowman's claims. Recent development work has shown that this lode consists of fairly well-defined ore shoots lenticular in plan, with a pitch to the southwest.

These lenses do not have clear-cut walls nor were they found to follow well-marked fissures except in a few instances. Where mineralization has occurred along faults, the cinnabar is often in one or both walls and decreases with increased distance from the fracture.

Faulting both earlier and later than the metallization was observed. The earlier faulting seems generally to have a northeast trend. The few lenses of ore found on the Cornucopia claim are along these northeast faults. A clear-cut example of later faulting was observed on the Go-By claim. Here the ore body was displaced by a northwest fault.

The ore consists of veinlets cutting the schists or as thin films on fracture planes. Some disseminated cinnabar in the body of the schist was also observed. The veinlets vary in width from a fraction of an inch to 6 inches or more, but a vein with a width of 2 inches or more is exceptional. Usually these small stringer veinlets are parallel, and when abundant enough the rock constitutes ore. Much of the mineralized schist observed carries so few of these small veins that careful sorting must be practiced to make a good grade of furnace ore. Tiny veinlets of cinnabar sometimes occur on fracture planes across the schistosity. Such specimens are very spectacular, as the cinnabar covers broad areas; and the tendency is to overestimate the grade of such ore.

Cinnabar is the only important quicksilver mineral in the ore, although small amounts of the chloride, calomel, and native quicksilver have been found. Metacinnabarite may be present in small amounts. An unknown gray mineral was found associated with cinnabar in polished surfaces of ore. This mineral is slightly harder than cinnabar and may be tetrahedrite, but this could not be determined positively as the amount of it found was too small to be tested separately. Pyrite is abundantly associated with cinnabar in ore from the lower tunnel on the Cornucopia claim. Cinnabar was found to fill fractures in the pyrite and has probably replaced this mineral to a slight extent. However, a crystal of pyrite surrounded by cinnabar was found in ore from the Sunnyside claim, and the pyritohedral faces on this crystal showed no evidence of replacement; and the pyrite is undoubtedly the earlier of the two minerals associated with the cinnabar ore from Slate Creek and on Alder Creek. Mr. Wesley Goswick, whose claims are on Slate Creek, gave the writers a specimen of stibnite and reported that it came from near his quicksilver claims. No stibnite was found associated with cinnabar in any of the specimens of ore collected from this district.

Gangue minerals consist chiefly of quartz, calcite, and a ferruginous carbonate. A small amount of serpentine was found in ore from the Red Bird Group on Slate Creek, and sericite occurs with quartz in ore from the Cornucopia claim. Tourmaline occurs as a gangue mineral in tiny veinlets closely associated with quartz and cutting the ferruginous carbonate. This black tourmaline is not abundant as a megascopic constituent of the ore, but is more widespread as microscopic needles. Quartz is by far the most important gangue mineral and occurs in two generations, both of which contain tourmaline. This quartz is always of a milky-white color and incloses numerous minute inclusions, circulate in outline and arranged in rows like a string of beads. The ferruginous carbonate was tested chemically and found to contain considerable iron and lime and a small amount of magnesia. It probably contains both the ankerite and siderite molecules, and on weathering leaves a residue of limonite.

An intergrowth of this carbonate with quartz produces an interesting structure which, in many respects, resembles the columnar structure in lavas. This is shown in the illustrations on Plate X-A. The columns are often curved and extend across the vein from wall to wall. They do not consist of single crystals, but rather as interlocking grains of quartz that do not even have the same crystallographic orientation. This columnar structure is not to be confused with the typical comb structure so commonly associated with crustification. There is no banding due to crustification in the quicksilver veins of this district, and drusy cavities are rare. Some of these cavities are transverse to the walls of the vein and are lined with crystals of quartz; others are irregular in outline with sharp-pointed crystals of the carbonate on which cinnabar has been deposited.

The intimate intergrowth of quartz, carbonate, and tourmaline suggests that they were probably formed at about the same time, but this intergrowth is traversed by a second generation of quartz veins with tourmaline.

¹Op. cit., p. 119.

Pyrite is later than the quartz-tourmaline veinlets and was probably formed at the same time as the sericite occurring in the ore from the Cornucopia claim. Cinnabar was the last mineral to be deposited, and replaces both the carbonate and quartz. It fills fractures in the tourmaline and pyrite, and may have replaced the latter mineral to some extent.

Outcrops are not conspicuous. Many of these lodes consist of small stringers or veinlets containing abundant carbonate; and, consequently, they weather more readily than the inclosing wall rock. Then, too, the rather dense growth of vegetation on the slopes of these hills rather effectively protects the thin mantle of soil covering the outcrops. Where quartz is abundant as a gangue mineral the course of the lode is more easily followed on the surface, as float is abundant on the lower slopes and can readily be traced to its source. Very often quartz and a ferruginous carbonate are intimately intergrown and, on weathering, this combination leaves an open-textured or spongy ore consisting of quartz and limonite with tiny veinlets of cinnabar. Outcrops of this porous ore are likely to be covered by soil.

Cinnabar is a rather stable mineral and does not alter readily under the influence of surface agencies. The adamantine luster is usually dulled by exposure to weathering, and the mineral may be covered by a thin film of a dark substance that may be the secondary sulphide, metacinnabarite. That some oxidation and reduction of the sulphide has taken place was definitely determined by the finding of calomel and metallic mercury. A bright yellow mineral found on the L and N group may be one of the rare oxychlorides of mercury, but the quantity of it found was too small to determine the mineral specifically.

Sunflower Group

The original discovery of cinnabar in the district was made on the Sunflower Group by E. H. Bowman in 1911, who at that time located part of the claims. In 1913 Mr. Bowman sold his claims for \$10,000 to the Sunflower Cinnabar Mining Company, which did most of the work on the ground. The property later was acquired by Judge Charles Ainsworth, of Phoenix, who sold it to the Arizona Quicksilver Corporation in 1924. The Arizona Quicksilver Corporation, which owns this group, is a subsidiary of the Great Lakes Security Company, of Toledo, Ohio. W. S. Stalker, of Toledo, is president of the corporation, and E. W. Bedford, of Phoenix, is local manager. The Arizona office is located at 326 Heard Building, Phoenix, Arizona.

The Sunflower Group consists of 17 unpatented claims on Alder Creek. The hillsides are very steep, which facilitates mining by tunnels. The surface is covered with scrub oak and manzanito, which makes progress over the surface difficult. Most of the ore on this group was found on the Packover, Go-By, and Sunnyside claims, on what is known locally as the Packover lode. Several hundred feet to the northwest is a parallel lode known as the Native or Jasper; similarly, southeast of the Packover is the Ione lode. These nearly parallel lodes or belts of mineralization trend northeastward with the strike of the schistosity. On both the Ione and Jasper lodes only location and assessment work has been done, and the main development has been confined to the Packover lode.

The ore shoot on the Go-By claim has a length of from 200 to 300 feet, and has been shown to be continuous over this distance by numerous trenches or open-cuts across the lodes at close intervals. The width of the mineralized schist is quite variable. Development work done under Mr. Bedford's direction suggests that the ore shoot pitches to the southwest, and the strike is approximately N. 45° E. The country rock is largely a dark green, chlorite schist containing some red jasper. The planes of schistosity have a nearly vertical dip. Cinnabar occurs in small veinlets up to an inch or more in width. Locally, these small veins may widen within a distance of only a few feet along the strike until the width is 10 or 12 inches. This lenticular shape is rather characteristic of these veins. Quartz, tourmaline, and carbonate are the gangue minerals, and pyrite is only sparingly present in ore from this claim. Near the southwest end of the Go-By claim the lode has been displaced by a fault which strikes N. 55° W., and dips 70° to the southwest. In an adit which cuts this fault is a zone of brecciation with the planes of schistosity in the footwall curved to the west. This suggests that the hanging wall has been displaced relatively to the northwest, but the amount of displacement could not be determined. Cinnabar was found in the crushed gouge and as a smear on the slickensided surfaces of the wall, showing that the movement was definitely later than the mineralization. These relations are shown in Fig. 14. A little cinnabar and pyrite was found in jasper near the end of this adit.

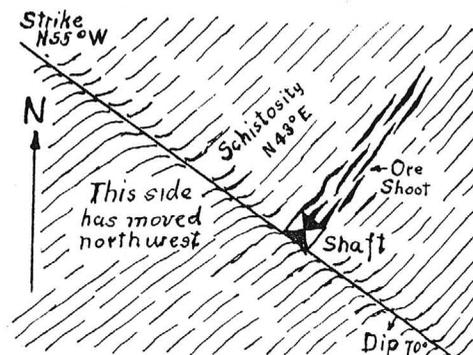


Fig. 14.—Diagrammatic sketch showing faulted ore body, Sunflower Group.

ARIZONA QUICKSILVER MINE

Mill Report — May, 1931

Mined 2,098 tons of ore, .19% at head. or 3.8 lbs. of mercury to ton.

Sorted Out 268 tons at Crusher Feeder

1,830 tons milled—extraction 89.18%

Metal Recovery 5,780.7 lbs. or 76 flasks @ \$100.00 \$7,600.00

OPERATING EXPENSE:

*Labor, 22 men	\$3,124.50
**Supervision, etc.	1,150.00
Kiln (8 gals. per ton) 14,640 gals. @ 10c	1,464.00
Power Plant (192 gals. day) 5,760 gals. @ 10c	576.00
Powder	100.00
Caps and Fuse	30.00
Truck Maintenance	200.00
Insurance	25.00
Miscellaneous	300.00
	\$6,769.50

(Cost per ton for Mining and Milling \$3.2214) (Cost per flask \$89.07) 6,769.50

Gross Profit \$ 830.50

(before plant depreciation, depletion, taxes and interest taken.)

*2 Men in Power Plant \$6.15 and \$4.50	\$ 10.65
2 Men in Hoist House @ \$5.25	10.50
3 Men in Mill, 1 @ \$5.00, 2 @ \$4.00	13.00
3 helpers @ \$3.00	9.00
1 Crusher Man	5.00
4 Miners @ \$5.00	20.00
3 Miners @ \$4.50	13.50
2 Trammers @ \$5.00	10.00
1 Blacksmith	5.00
1 Trucker	7.50
	\$ 104.15
For 30 days	\$3,124.50

**Mill Superintendent	\$400.00
Mine Superintendent	400.00
Bookkeeper	200.00
Cook	150.00
	\$1,150.00

Daily Tonnage Treated, 61 ton.