CONTACT INFORMATION
Mining Records Curator
Arizona Geological Survey
3550 N. Central Ave, 2nd floor
Phoenix, AZ, 85012
602-771-1601
http://www.azgs.az.gov
inquiries@azgs.az.gov

The following file is part of the Grover Heinrichs Mining Collection

ACCESS STATEMENT

These digitized collections are accessible for purposes of education and research. We have indicated what we know about copyright and rights of privacy, publicity, or trademark. Due to the nature of archival collections, we are not always able to identify this information. We are eager to hear from any rights owners, so that we may obtain accurate information. Upon request, we will remove material from public view while we address a rights issue.

CONSTRAINTS STATEMENT

The Arizona Geological Survey does not claim to control all rights for all materials in its collection. These rights include, but are not limited to: copyright, privacy rights, and cultural protection rights. The User hereby assumes all responsibility for obtaining any rights to use the material in excess of "fair use."

The Survey makes no intellectual property claims to the products created by individual authors in the manuscript collections, except when the author deeded those rights to the Survey or when those authors were employed by the State of Arizona and created intellectual products as a function of their official duties. The Survey does maintain property rights to the physical and digital representations of the works.

QUALITY STATEMENT

The Arizona Geological Survey is not responsible for the accuracy of the records, information, or opinions that may be contained in the files. The Survey collects, catalogs, and archives data on mineral properties regardless of its views of the veracity or accuracy of those data.

MINERAL HILL MINE

OWNERSHIP:

Title to the property is held by PMC-Powdered Metals Corporation. The president and chief executive officer is Frederick E. Kallof, Suite 2010, TowneHouse Tower, 100 W. Clarendon, Phoenix, Arizona 85013, phone area code 602 - 277-4885.

LOCATION:

Sections 2, 3, 10, 11, 12, 14, & 15, Township 10 North, Range 17 West, Gila and Salt River Meridian, Yuma County, Arizona. The property is reached by traveling Northeast from Parker, Arizona on a paved and well-graded road; or on a well-graded road North of Bouse, Arizona for approximately 21 miles. There is also an air strip close to the property.

MINERALS:

Copper and associated minerals;
Specular Hematite.

PROPERTY:

The property consists of 15 patented and 53 unpatented federal lode mining claims and 2 placer claims.

WATER & UTILITIES:

a 1700 gallon per minute well provides water through an asbestos-cement pipeline to the property. The water available is more than adequate for any foreseeable need.

Electrical power is presently on the mine site adequate to operate an electrolytic refinery.

Patented Lode Mining Claims

SURVEY #2785
(Newman Group)

The following described patented lode mining claims located in Section 2, 3, 10 and 11, Township 10 North, Range 17 West of the Gila and Salt River Base and Meridian in the Bill Williams Mining District, Yuma County, Arizona, being shown on Mineral Survey No. 2785 on file in the Bureau of Land Management:

Queen of Copper
Copper King
Greater Jerome
Norma
Mohave Chief
Apex
Copper Prince
Copper Glance
Greater Bisbee

The patent to such claims was recorded in Docket 297, pages 458 through 467 in the office of the Yuma County Recorder, Yuma, Arizona.

SURVEY #2981
(Continental Group)

Those certain patented lode mining claims located in Sections 10 and 11, Township 10 North, Range 17 West of the Gila and Salt River Base and Meridian in the Bill Williams Mining District, Yuma County, Arizona, shown on Mineral Survey No. 2981 on file in the Bureau of Land Management, as follows:

Cavern
Continental No. 1
Continental No. 2
Continental No. 9
Continental No. 10
Continental No. 11

The patent to such claims was recorded in Docket 297, pages 222 through 228, in the office of the Yuma County Recorder, Yuma, Arizona

1704 W. Grant Rd.
Tucson, Arizona 85705

December 3, 1970

Mr. Frederick E. Kallof, Pres.
Powdered Metals Corporation
Suite 2010 Towne House
100 West Clarendon
Phoenix, Arizona 85013

Re: P.M.C.
Mineral Hill Prospect

Dear Mr. Kallof:

Thank you for the use of your brochure, which is enclosed.

We are continuing to study the property and you may be hearing from us in the near future.

We would like your written permission to discuss the property and obtain reports from Mr. Podesta.

Very truly yours,

ESSEX INTERNATIONAL, INC.

E. Grover Heinrichs

EGH:td
enclosure

Nov. 23, 1970

TO: H. Lanier

FROM: E. G. Heinrichs

SUBJECT: Mineral Hill Property
Powdered Metals Corp. (P.M.C.)
Summary of Current Status

On Oct. 16, 1970 Jay Landis, of Braden Machinery Co., informed me that the Arizona Bank was planning to foreclose on a loan to PMC.

The following information summarizes the property status:

1) Arizona Bank loan outstanding - $242,000.00. First mortgage on all machinery and lands.

2) Secondary indebtedness of other creditors - $700,000.00 approx.

3) Machinery on the site has a current market value of approximately $250,000.00.

4) Leach plant facilities in place on the site cost $2,000,000 (F. Kallof figure) includes crusher, 6 vats 1,000T capacity each, piping and etc. Prospectus dated May 1970 indicate on-site plant and equipment depreciated value of $1.3 million.

5) Approximately 200,000 T of 1½% Cu drilled out and in sight.

6) Approximately $30,000 needed to prove up 1,000,000 tons of ore estimated according to PMC geologist.

7) Financial problems started in March 1970 reportedly due to poor recovery of copper in the leaching process and inability to technically solve the problems on a very limited budget.

8) Portable machinery, including dump trucks, loaders, rippers, crusher, etc., valued at approx. $420,000.00.

9) A purchase agreement is in effect between PMC and Joe Minton and a Mr. Wallace of Walker Bank, Salt Lake City.

Conclusions and Recommendations

The equipment is reportedly in excellent condition and can be obtained on buying the note from The Arizona Bank (Mr. Engbergh). Supposedly the property goes with note.

The equipment should be inspected by a reputable independent equipment dealer as soon as possible. If it is worth in excess of $242,000, then little risk is involved to control the property and commence to evaluate the reserves, using the equipment as security.

If we decide to proceed on the Korn Kob or some other small leaching copper oxide property we could use the equipment to advantage on these other projects.

Based on a favorable deal with all parties concerned - i.e., Arizona Bank, PMC, other creditors, then we should as soon as possible try and evaluate the reserves by;

1) Geological mapping of the immediate claim area.

2) Do some drilling to establish ore grade and tonnage.

If the grade and tonnage prove to be negative, or if the metallurgy is negative, all Essex would be out is the cost to evaluate the property as the equipment could be used as previously outlined.

If the reserves are encouraging, then of course the equipment could be used for its original purpose of mining the Mineral Hill deposit.

E.G. Heinrichs

TO CLEM CHASE | AT MTN. STATES RESEARCH

SUBJECT Minerva Hill Mine file of Essex | DATE 3-24-77

Essex has loaned Mtn. States our file No. 61 on the above described property consisting of 58 pages including correspondence. The file is for your personal use and Essex makes no representations as the accuracy of data herein. The source of this file data is to be confidential and the file should be returned to this office by April 1, 1977.

PLEASE REPLY TO → SIGNED

DATE | SIGNED

Rediform ®
4S 469
Poly Pak (50 sets) 4P469

SEND PARTS 1 AND 3 WITH CARBON INTACT.
PART 3 WILL BE RETURNED WITH REPLY.

[illegible] Mining Claims

The following Unpatented Lode Mining Claims are located in Sectio 2, 3, 10, 11, 12, 14 and 15 of Township 10 North, Range 17 West of the Gila and Salt River Base and Meridian in the Bill Williams and Mineral Hill Mini Districts, Yuma County, Arizona:

Claim	Date Located	Date Recorded	Docket No.	Page No
Annex #1	2-18-61	3- 9-61	301	526
Annex #2	2-18-61	3- 9-61	301	527
Annex #3	2-18-61	3- 9-61	301	528
Annex #4	2-26-68	3-15-68	516	52
Annex #5	2-26-68	3-15-68	516	53
Annex #6	2-28-68	3-15-68	516	54
Annex #7	2-28-68	3-15-68	516	55
Annex #8	3- 1-68	3-15-68	516	56
Annex #9	3- 1-68	3-15-68	516	57
Annex Fraction	3-17-66	3-25-66	431	49
Extension #1	4-28-61	5-17-61	306	193
Extension #2	4-28-61	5-17-61	306	192
Extension #3	4-30-61	5-17-61	306	194
Extension #4	4-30-61	5-17-61	306	191
Bessie Belle	1-26-61	1-27-61	299	216
Cobre #1	1-25-61	1-27-61	299	217
Cobre #2	1-25-61	1-27-61	299	218
Cobre #3	4-25-61	5-17-61	306	187
Cobre #4	4-25-61	5-17-61	306	188
Cobre #5	4-26-61	5-17-61	306	189
Cobre Fraction	4-26-61	5-17-61	306	190
Norma Extension	3-16-66	3-25-66	431	44
Norma Extension #1	3-18-66	3-25-66	431	45
Norma Fraction	3-16-66	3-25-66	431	46
Eagle (Amended Loc.)	3-11-67	3-22-67	469	219a
Sheep (Amended Loc.)	3-11-67	3-22-67	469	218a
Lion (Amended Loc.)	3-11-67	3-22-67	469	217a
Lynx	3- 7-67	3-22-67	469	216
Cat	3- 7-67	3-22-67	469	215
Over	6- 8-65	6-17-65	409	645
Slight	6- 8-65	6-17-65	409	649
Slight #1	1-16-68	2- 5-68	510	201
Slight #2	1-16-68	2- 5-68	510	202
Slight #3	1-16-68	2- 6-68	510	203
Slight #4	3-12-68	3-15-68	516	64
Red #1	3-18-67	3-22-67	469	205
Red #2	3-17-67	3-22-67	469	206
Red #3	3-16-67	3-22-67	469	207
Red #4	3-16-67	3-22-67	469	208
Red #5	3-16-67	3-22-67	469	209
Red #6	3-16-67	3-22-67	469	210
Red #7	3-17-67	3-22-67	469	211
Red #8	3-18-67	3-22-67	469	212
Red #9	3-20-67	3-22-67	469	213
Red #10	3-20-67	3-22-67	469	214
Red #11	3- 4-68	3-15-68	516	58
Red #12	3- 4-68	3-15-68	516	59
Red #13	3- 4-68	3-15-68	516	60
Red #14	3- 4-68	3-15-68	516	61
Red Fraction	3- 6-68	3-15-68	516	62
Red Fraction #1	3-12-68	3-15-68	516	63
Copper Glance Extension	3-17-66	3-25-66	431	47
Copper Glance Fraction	3-17-66	3-25-66	431	48
Bobbie #1	2-27-61	3- 9-61	301	529

Unpatented Placer Mining Claims.

Those certain unpatented placer mining claims located in the Mineral Hill Mining District, Yuma County, Arizona, described as follows:

Loc No. 1 Located: 3- 2-61 Recorded: 3- 9-61 Docket: [illegible] Page [illegible]

PODESTA, MEYERS, ROMINGER AND CLIFT, INC.
Mining and Petroleum Geologists
4747 NORTH 16TH STREET
PHOENIX, ARIZONA 85016
PHONES: (602) 277-7736
(602) 277-7991
CABLE: POMECO

December 4, 1969

MINERAL HILL ORE RESERVES

BLOCK "A"	42,000 tons	1.37% Cu.
BLOCK "B"	443,600 tons	1.27% Cu.
TACTITE ZONE	247,200 tons	1.17% Cu.
BOBBIE BLOCK	267,600 tons	.93% Cu.
SUB TOTAL	1,000,000 tons	1.16% Cu.
NORMA FAULT	345,000 tons	2.20% Cu.
TOTAL	1,345,000 tons	1.43% Cu.

The above figures are the result of conferences with Mr. Luis Cramer, geologist for the mine from 1961 through 1968, and a critical review of his geological reports. In our opinion Mr. Cramer's work can be accepted without reservation. His geological reasoning is sound, his ore reserves have been calculated by approved methods and his map work shows meticulous attention to detail.

At this time, the reserves tabulated above have not been drilled sufficiently close to be classified as proven ore. Only further drilling will substantiate these tonnages, but we have little doubt that further drilling will not only confirm the tonnage listed but develop substantial additional ore.

Donald J. Podesta, President
Podesta, Meyers, Rominger & Clift, Inc.

PODESTA, MEYERS, ROMINGER AND CLIFT, INC.
Mining and Petroleum Geologists
4747 NORTH 16TH STREET
PHOENIX, ARIZONA 85016
PHONES: (602) 277-7736
(602) 277-7991
CABLE: POMECO

March 25, 1970

Mr. Fred Kallof
Powdered Metals Corporation
100 W. Clarendon
Suite 2020 TowneHouse
Phoenix, Arizona 85013

Dear Fred:

Attached is our cost estimate for a drilling program at Mineral Hill aimed at developing 1,100,000 tons of proved reserves. As you requested, the total of $27,500 represents the cost if we furnish all equipment and manpower. By utilizing your Air-Trac drilling rig and driller and having the drill cuttings assayed at the mine laboratory the out-of-pocket cost to you for this program would be reduced to approximately $10,000. If you are in agreement with this program we would appreciate being advised of your preferred starting date so that we can schedule our personnel accordingly. In addition to the drilling program we estimate the time necessary to map the surface geology of the remainder of your claims in the area would be approximately two months, of which a month and a half would be spent in the field. This field mapping program will cost a total of $10,000-$15,000 including a final report.

Also attached is a brief preliminary economic study of the Mineral Hill mine, which shows that if we can develop the 1,100,000 tons of ore in Block B and the Norma Fault, you might expect a total net profit before taxes of approximately $3,500,000 to produce cement copper as you are now doing or $7,500,000 by producing powdered copper. At the rate of 5,000,000 lbs. of copper per year the reserves shown here would suffice for about six and one-half years.

If our suggested drilling program proves successful I have little doubt that we will be able to develop considerably more ore on the Norma Fault Block and from preliminary studies of the remainder of the acreage there appears to be a good possibility of developing ore deposits apart from the present pit area.

Very truly yours,

Donald J. Podesta, President
Podesta, Meyers, Rominger and Clift, Inc.

DJP:pp

PODESTA, MEYERS, ROMINGER AND CLIFT, INC.
Mining and Petroleum Geologists
4747 NORTH 16TH STREET
PHOENIX, ARIZONA 85016
PHONES: (602) 277-7736
(602) 277-7991
CABLE: POMECO

March 25, 1970

ESTIMATED COSTS FOR DEVELOPMENT DRILLING PROGRAM AT MINERAL HILL

BLOCK B (30 day field program)

Direct Drilling		
2,500 ft. @ $4 ft.	$10,000.00	
Move in-out	500.00	$10,500.00
Geological supervision & sampling		
Senior Geologist 40 hrs. @ $25	1,000.00	
Field Geologist 240 hrs. @ $10	2,400.00	
Geologists living expenses	550.00	
Mileage 3,500 mi. @ 15¢	525.00	
Field Supplies & misc.	150.00	
Long Distance	75.00	
Assays 200 @ $1.75	350.00	5,050.00
		15,550.00
Contingency		1,450.00
Total Block B		$17,000.00

NORMA FAULT (20 day field program)

Direct Drilling		
1,500 ft. @ $4 ft.	6,000.00	6,000.00
Geological supervision & sampling		
Senior Geologist 32 hrs @ $25	800.00	
Field Geologist 160 hrs. @ $10	1,600.00	
Geologists living expenses	400.00	
Mileage 2,000 mi. @ 15¢	300.00	
Field supplies & misc.	100.00	
Long Distance	50.00	
Assays 140 @ $1.75	245.00	3,495.00
		9,495.00
Contingency		1,005.00
Total Norma Fault		10,500.00
Total Block B		17,000.00
Grand Total		$27,500.00

PODESTA, MEYERS, ROMINGER AND CLIFT, INC.
Mining and Petroleum Geologists
4747 NORTH 16TH STREET
PHOENIX, ARIZONA 85016
PHONES: (602) 277-7736
(602) 277-7991
CABLE: POMECO

March 25, 1970

ECONOMICS OF MINERAL HILL
CEMENT COPPER

NORMA FAULT VEIN

Parameters

Possible reserves based on 1,600 ft. length; 30 ft. width; 200 ft. depth	768,000 short tons ore 23,347,200 lbs. pay copper
Grade:	1.90% Cu
Recovery:	80%
Price:	50¢ lb/Cu at mill

Gross Value of Ore

Based on above parameters — $15.20 ton of ore

Shrinkage Stopping Mining Method

	$/ton	$/ton	¢/lb.	¢/lb.
Gross Value	15.20	15.20	50.0	50.0
Mining Cost	7.50		24.6	
Milling Cost	5.06	12.56	16.7	41.3
Net profit before taxes		2.64		8.7

Total Gross Value of Possible Reserves

768,000 tons @ $15.20 = $11,673,600
23,347,200 lbs. @ $ .50 = $11,673,600

Total Net Profit Before Taxes

768,000 tons @ $2.64 = $ 2,027,520
23,347,200 lbs. @ $ .087 = $ 2,027,520

PODESTA, MEYERS, ROMINGER AND CLIFT, INC.
Mining and Petroleum Geologists
4747 NORTH 16TH STREET
PHOENIX, ARIZONA 85016
PHONES: (602) 277-7736
(602) 277-7991
CABLE: POMECO

March 25, 1970

ECONOMICS OF MINERAL HILL
CEMENT COPPER

BLOCK B

Parameters

Possible reserves:	333,000 short tons ore
	8,448,000 lbs. pay copper
Grade:	1.60% Cu
Recovery:	80%
Price:	50¢ lb/Cu at mill

Gross Value of Ore

Based on above parameters $12.80 ton of ore

Room and Pillar Mining Method

	$/ton	$/ton	¢/lb.	¢/lb.
Gross Value	12.80	12.80	50.0	50.0
Mining Cost	4.00		15.6	
Milling Cost	4.62	8.62	18.0	33.6
Net profit before taxes		4.18		16.4

Total Gross Value of Possible Reserves

333,000 tons @ $12.80 = $4,262,400
8,524,800 lbs. @ $ .50 = $4,262,400

Total Net Profit Before Taxes

333,000 tons @ $4.18 = $1,391,940
8,524,800 lbs. @ $ .164 = $1,391,940

PODESTA, MEYERS, ROMINGER AND CLIFT, INC.
Mining and Petroleum Geologists
4747 NORTH 16TH STREET
PHOENIX, ARIZONA 85016
PHONES: (602) 277-7736
(602) 277-7991
CABLE: POMECO

March 25, 1970

ECONOMICS OF MINERAL HILL
POWDERED COPPER

NORMA FAULT VEIN

Parameters

Possible reserves:	768,000 short tons ore
	23,347,200 lbs. pay copper
Grade:	1.90% Cu
Recovery:	80%
Price:	73.5¢ lb/Cu at mill

Gross Value of Ore

Based on above parameters $22.34 ton of ore

Shrinkage Stoping Mining Method

	$/ton	$/ton	¢/lb.	¢/lb.
Gross Value	22.34	22.34	73.5	73.5
Mining Cost	7.50		24.6	
Milling Cost	8.07	15.57	26.6	51.4
Net profit before taxes		6.77		22.3

Total Gross Value of Possible Reserves

768,000 tons @ $22.34 = $17,157,120
23,347,200 lbs. @ $ .735 = $17,157,120

Total Net Profit Before Taxes

768,000 tons @ $ 6.77 = $ 5,199,360
23,347,200 lbs. @ $ .223 = $ 5,199,360

PODESTA, MEYERS, ROMINGER AND CLIFT, INC.
Mining and Petroleum Geologists
4747 NORTH 16TH STREET
PHOENIX, ARIZONA 85016
PHONES: (602) 277-7736
(602) 277-7991
CABLE: POMECO

March 25, 1970

ECONOMICS OF MINERAL HILL
POWDERED COPPER

BLOCK B

Parameters

Possible reserves:	333,000 short tons ore
	8,524,800 lb. pay copper
Grade:	1.60% Cu
Recovery:	80%
Price:	73.5¢ lb/Cu at mill

Gross Value of Ore

Based on above parameters — $18.82 ton of ore

Room and Pillar Mining Method

	$/ton	$/ton	¢/lb.	¢/lb.
Gross Value	18.82	18.82	.735	.735
Mining Cost	4.00		.156	
Milling Cost	7.65	11.65	.299	.455
Net profit before taxes		7.17		.280

Total Gross Value of Possible Reserves

333,000 tons @ $18.82 = $6,267,060
8,524,800 lbs. @ $ .735 = $6,267,060

Total Net Profit Before Taxes

333,000 tons @ $ 7.17 = $2,387,610
8,524,800 lbs. @ $ .280 = $2,387,610

PODESTA, MEYERS, ROMINGER AND CLIFT, INC.
Mining and Petroleum Geologists
4747 NORTH 16TH STREET
PHOENIX, ARIZONA 85016
PHONES: (602) 277-7736
(602) 277-7531
CABLE: POMECO

March 25, 1970

SUMMARY OF ECONOMICS OF MINERAL HILL COPPER MINE

CEMENT COPPER

	Tons	Profit $/ton	Lbs.	Profit ¢/lb.	Total Net Profit
BLOCK B	333,000	4.18	8,524,800	16.4	$1,391,400
NORMA FAULT	768,000	2.64	23,347,200	8.7	2,027,520
	1,101,000	3.10	31,872,000	10.6	$3,418,920

POWDERED COPPER

BLOCK B	333,000	7.17	8,524,800	28.0	$2,387,610
NORMA FAULT	768,000	6.77	23,347,200	22.3	5,199,360
	1,101,000	6.89	31,872,000	23.8	$7,586,970

ROYALTY

A royalty to former owners of the property is as follows:

> One cent per pound of copper sold, until the sum of Two Hundred Thousand Dollars is paid; also fifty cents a ton of iron ore (Specular Hematite) until the sum of Five Hundred Thousand Dollars is paid.

The royalty is paid only if the mineral is produced and sold.

SALES CONTRACT

All copper production is to be sold to National Metals Company of Phoenix, Arizona pursuant to a Sales Contract until May 1, 1970.

The sales price f.o.b. mine site is 25 cents below the New York Commodity Exchange price for three months copper; or a minimum of 50 cents a pound, whichever is greater.

4847 North 62nd Avenue
Phoenix, Arizona 85033
February 4, 1970

Mr. Frederick E. Kallof, President
PMC-Powdered Metals Corporation
Suite 2010, 100 West Clarendon
Phoenix, Arizona 85013

Dear Mr. Kallof:

In December of 1969, you requested that I make a tour of inspection of the Mineral Hills Property, near Parker, Arizona. Following this tour, copies of all the drill hole information available from this property were given me. I was then further requested to carry out a computer study and evaluation of the drill hole data.

The procedure used in applying the computer to the solution of this problem is very similar to the ones used by most operating open pit mines in Arizona today. This method of calculating ore reserves is also completely acceptable by the Internal Revenue Department of the U. S. Government.

The drill hole data received by me consists of the following information for each hole: (a) hole number; (b) coordinates of the hole; (c) collar elevation; (d) assay sample interval with its corresponding total copper assay. The data was first compiled into an assay by bench form. A twenty-foot bench height was used throughout. By assigning a definite area of influence to each hole and using an in-place density factor of 12.5 cubic feet per ton, an ore reserve estimate was obtained. The ore reserve estimate printed out by the computer contains a by bench description of the ore-body as well as a "Grand Total Summary". Each bench and summary is further subdivided into small assay intervals showing tonnage and grade of material. All intervals show a cumulative total, for the bench, which is less than (.LT.) the interval in question. Also, a cumulative greater-than-equal-to (.GE.) interval is shown. Hence, looking at the "Grand Total Summary", it can be seen that the 0.25% to 0.30% Cu interval contains 903,000 tons with an assay of 0.27% Cu. Also, that all of the material assayed which is 0.25% Cu or greater totals 6,97[illegible],000 tons at an average Cu grade of 0.78%. All tonnage figures throughout the report are expressed in thousand ton units.

As to my qualifications to conduct a study of this nature, I would like to say that I have conducted work of this nature many times during the six years of experience that I have had working in the mining industry in the State of Arizona. I have a Bachelor of Science degree in mining engineering from the New Mexico Institute of Mining and Technology, which is MMT.

Sincerely,

Peter L. Pearce

PLP/sw

Mineral Hill Mine

For: Occidental International

By: Robert E. Holt

Commodity: Copper

Location: Sections 2, 3, 10, 11 T10N R17W Gila Salt River Meridian, Yuma County, Arizona. The property is reached by traveling northeast from Parker Arizona 25 miles on a well-graded gravel road.

Property: The property consists of 15 patented and 14 nonpatented federal lode mining claims and 2 placer claims the names of which are given on an attached sheet.

Ownership: The property is owned by a small, closely held corporation known as the Arizona Ranch and Metals Company. The principal stockholders in order of their interest are John Wallace, Salt Lake City, Utah; Mr. Joseph Minton, Scottsdale, Arizona; and Mr. Duncan Harrison, Salt Lake City, Utah. These three comprise the board of directors.

Mr. Minton is the president with a company address of 213 West Main Street, Scottsdale, Arizona, telephone 947-4651. Mr. Harrison is the general manager on the property with a

750,000 tons of overburden containing 0.16% to 0.5% copper has been removed and stockpiled for possible heap leaching. The 1000 ton per day crushing operation and the 6 vat leach plant should be completed within the next month.

The operators will have invested approximately 1 million dollars when the operation is finally completely on stream. The owners appear to be reluctant to sell now that they are so near to being in operation; however, it must be available or we would not have been permitted to examine it.

Recommendations

If an operation and ore body of this magnitude is of interest to Occidental International, it is recommended that a complete evaluation of the property be made.

The steps to be made in this evaluation would be:

1. Acquire an agreement with Arizona Ranching and Metals which will permit sufficient time to evaluate the property.
2. Determine the specific gravity of the ore bodies and recalculate the tonnage.

3. Geologically map the pit and the are adjacent to it so as to develop definite ideas concerning the ore controls which in turn will help guide additional exploration.

4. Check sample the known ore to develop a confidence level in Arizona Ranching and Metals determinations and also to determine what other elements of value might be present. A small amount of this sampling can be done by channel sampling; however, the bulk of it will require sampling by drilling.

5. Have confirming metallurgical tests made on bulk samples of the ore.

6. Channel sample the accessable drifts and cross cuts.

7. Determine the usefulness of geophysical methods of exploration such as I.P. and magnetics and run the appropriate surveys. If magnetics prove useful the possibility of an airborne survey of the entire permissive area in this region should be considered.

8. Evaluate the mine-mill data.

9. Evaluate the geological, geophysical, and assay data for exploration potential.

10. From 8 and 9 above determine whether the property is worth purchasing or whether additional exploration is necessary to justify such a step. Moreover, a decision can be made at this time whether to explore the general region regardless of the decision reached on this property.

General

Mr. Duncan Harrison, the general manager of the mine, met me at Blythe, California, on the morning of October 3, and took me to the mine where one day was spent in a brief examination of the geology and general operations of the property. Mr. Duncan was very cordial and generally cooperative in supplying information requested, but hostile to some extent when discussing the possibility of selling the property.

The Mineral Hill property is actively being developed for mining. The overburden has practically been all stripped off and the mill and leaching plant are scheduled for completion within the next month. Without reviewing their financial standing it appears that the operation, for a small mine venture, is well financed. Approximately 40 men are employed in the developing and construction phase of the operation. A percentage of those employees live in trailers at the property or at the company owned ranch which is immediately adjacent to the mine.

Their credit rating locally appears good which is surprising in view of the fact that a previous "buyer" known as the Mineral Hill Mining Company, folded owing for wages and equipment; owing finance companies in fact for equipment, according to Mr. Harrison, that existed on paper only. In short, allegedly several smooth operators from California promoted the property for all that was promotable one way or another. Possibly this explains Mr. Harrison's hostility since it was they who "sold" to the promoters.

Vernon Pick of uranium fame has staked and drilled a block of claims on the east side of the property and is reportedly taking at least several of those claims to patent.

Geology

The geology of the area has never been mapped in any detail and consequently very little is known about it. Mr. Louis W. Cramer, a geologist from Salt Lake City, prepared a report on the property; however, he confined himself mainly to measuring the size of the ore body. Since this examination was designed primarily to decide whether the property warranted further work only a superficial look at the geology was made.

The property is in a low range of rugged hills within the Buckskin mountains and approximately 2 miles south of the Planet mine, 6 or 8 miles west of the Swansea mine and ½ mile north of the Continental mine. Generally speaking it is in an area of gneisses, schists, argillites, and limestones which have been extensively altered locally. The limestones have been thrust over the gneisses and schists. The ore occurs in a completely altered and replaced segment of the metamorphics, and in a portion of the limestone that has been converted to skarn.

The ore horizon that has been developed has a rough dimension of 600' x 1200' x 25' elongated in an east-west direction. It is, for practical purposes, flat lying although there is the suggestion that

its form is that of a gentle anticline with its axial plane through the center of the ore body and striking north-south. Structurally the ore is in what appears to be a rotational block. There are two rather strong normal faults closely associated with the ore horizon. One of these faults strikes roughly N60°E and dips 65° S and appears to limit the ore on the west. The other strikes approximately N 30° W and dips 85° E and appears to limit the ore on the east. The block between these two faults probably has had some rotational movement with the resultant creation of open spaces through fracturing, crushing and smearing which could be loci for additional ore. In addition to this the intersection of these two normal faults is a likely target area.

The bottom of the thrust plate is well exposed west of the mine with the limestones of the upper plate lying on the metamorphics of the lower plate. I was not taken south of the mine area where there is reported to be a "porphyry" outcropping which in places has been highly silicified.

The ore occurrence at Mineral Hill very closely resembles the Planet and Swansea ore bodies which are in the same general area. The Swansea produced 27,000,000 pounds of copper with a small amount of silver and the Planet produced 3,000,000 pounds of copper. Reportedly the Swansea, which as operated by ASARCO, ceased operations because of heavy ground conditions and not from a lack of ore.

Exploration at the Mineral Hill property is by no means complete; in fact there is reason to believe that with a sophisticated exploration program more ore will be found. I do believe, however, that the property is limited in size and that it probably will not exceed 3 to 5 million tons of oxide ore, although in fairness to the property, I must admit that this estimate is merely an educated guess.

Ore bodies

The ore horizon consists mainly of a hematite rich unit which has been silicified and fractured. The copper ore minerals are mainly chrysocolla with some malachite, azurite and I suspect cuprite and possibly bornite occurring as fracture fillings, replacement bodies and thin films or paint. Parts of this horizon are composed of specularite rather than hematite. In fact beneath the copper ore body there is an even larger iron ore body composed of specularite and hematite. Locally within the copper ore body the hematite in areas where there is no visible copper gives assay values as high as 4% copper. Colorwise either cuprite or bornite could be present in the hematite and would be difficult to see without the aid of a microscope, although you would not suspect bornite to be present in

a sulfur deficient environment. Moreover, the only sulfides reported were found in the lower section of a 300 foot drill hole.

The ore body was drilled out using a wagon drill and consequently there are no cores to be examined. Most of the holes were less than 150 foot deep. No mention was made of the sampling procedure which in this situation could be extremely important. The best ore intercept that I noted on their map was 33' of 3.75% copper. Some of the accessable underground openings are reported to contain large blocks of mineralized ground although they have never been systematically sampled.

The ore calculations made by Mr. Cramer were evidently done utilizing rectangular blocks of various sizes. He used a cubic footage conversion factor of 13 on the copper ore and 10 on the iron ore which certainly would give a conservative tonnage estimate. His calculations for both the copper and iron ore bodies are as follows:

Copper Ore

Flat copper bed

Drilled out

Tons	364,000
Grade	2.088%
Tons (includes above)	692,000
Grade	1.373%
Indicated ore	212,000

Limestone-Tactite contact ore

Tons	59,000
Grade	1.31%

Normal fault ore

NW segment

Tons	138,000
Grade	2.20%

Inferred

SW segment

Tons	69,000
Grade	2% ±

Total all classes

Tons	1,308,000
Grade	1.4%

Iron Ores

Specularite Point

Tons	361,000
Grade	49.3%

Upper bed

Tons	839,000
Grade	45.1%

Lower bed

Tons	2,156,000
Grade	49.3%

Total all classes

Tons	3,356,000

In 1956 1706.19 dry tons of copper ore which was shipped to a smelter contained the following percentages per ton:

Cu	SiO_2	Al_2O_3	Fe	CaO
3.65	51.9	7.9	14.6	1.0

In places the iron ore carries copper; however, the extent has never been determined. It has only a trace of phosphorous and one assay gave a 2% sulfur content; however, this is not thought to be uniformly true. It is interesting to speculate on the possible presence of bornite in this particular area of the iron ore body. One segment of the iron ore body was found to contain between 4 and 6 % manganese.

Metallurgical tests on the copper ores have been made by the U.S. Bureau of Mines in Tucson (Percolation Leaching of Oxidized Copper Ore from Mineral Hill Deposit, Yuma County, Arizona, by Philip A. Bloom and Carl Kampacek) Their tests show that a 95% recovery can be made by flood leaching minus 3/8" feed with 5% sulfuric acid solution, for a period of 2.5 days. The acid consumption was nominal and no difficulties were encountered in percolating the leach solutions through the bed.

According to Mr. Harrison the Metallurgical Research Center at the Colorado School of Mines at Golden, Colorado, has run successful tests on the ore. I did not get to see these results.

Mine, mill, leach plant

Approximately 750,000 tons of overburden running between 0.16% and 0.5% copper has been stripped and piled in a "gulch" for possible heap leaching at a later date. The mine is operated 2 shifts a day, 7 days a week. They operate 1 wagon drill, 2 35-ton trucks, 1 medium sized front end loader and 1 D8 cat equipped with rippers. Little or no blasting is done since the overburden is readily ripped. The equipment is all new and cost then about $275,000.00. The 364,000 tons of 2.038% Cu is practically all stripped and benched ready for min

as soon as the mill is ready to receive ore.

The mill is to be a 1000 ton per day crushing operation sizing to a 3/8" feed. This will be stockpiled by conveyor and loaded into 1 of 6 large leaching tanks with a front end loader at first and later by a large gantry.

It is to be an acid leach utilizing, hopefully, scrap car bodies for precipitating the copper. If this is not successful they will use cans. For the first 6 or 8 months they will produce cement copper; however, they plan to put in an electro winnowing system and produce a sponge copper for the powder copper industry. When the operation is on stream they expect to produce between 3/4 and 1 million pounds of copper per month on 1.5% cu heads with a recovery of 85% (probably a conservative estimate on the recovery).

The effluent from the leaching operation might contain sufficient iron to warrant investigating the possibility of selling the tailing residue as a soil conditioner.

Water supply in this area is critical. According to Harrison there is a ranch adjacent to the mining property with excellent water rights on the Bill Williams River. They have one well producing 1700 gallons per minute now and two additional wells which he claims are rated at 3000 gallons per minute each. Any deal made with them should definitely include at least sufficient water rights for the mining if not the entire ranch.

Claim Groups

15 Patented Lode Claims:

Claims	Survey Number
Queen of Copper	2785
Copper King	"
Greater Jerome	"
Norma	"
Mohave Chief	"
Apex	"
Copper Glance	"
Copper Prince	"
Greater Bisbee	"
Cavern	2931
Continental 1	"
Continental 2	"
Continental 9	"
Continental 10	"
Continental 11	"

Non-patented lode claims

Claim	Book	Page	Book	Page
Cobre #1			295	15
Cobre #2			299	217
Cobre #3	306	187	299	218
Cobre #4	306	188	295	17
Cobre #5	306	189	295	16
Cobre Fraction	306	190	306	190
Bobbie			301	529
Gunex #1			301	526
Gunex #2			301	527
Gunex #3			301	528
Rosie Belle			299	216
Extension #1			306	193
Extension #2			306	192
Extension #3			306	194
Extension #4			306	191

Non-patented placer claims

Joe #1 and #2 W/2 W/2 Sec 2 T10N R17W

	Book	Page
Joe # 1	301	524
Joe #2	301	525

REG. ARIZONA

F. C. RAMSING, E.M.
CONSULTING GEOLOGIST AND MINING ENGINEER
325 WEST CYPRESS STREET
PHOENIX ARIZONA

October 30, 1967

Mr. David S. Frank

Phoenix, Arizona

The following is a report of the Mineral Hill Copper Mining property which I visited on the 25th inst.

The Mineral Hill Copper property lies in northern Yuma County, Arizona, about 21 air-miles north of Bouse and 17 miles east of Parker, Arizona. It is also about 2.5 miles southeast of the old former large producer, the Planet Mine, and about one mile south from the Williams River.

The present property was discovered back in the 1880's. It is described briefly by Howland Bancroft of the U.S.G.S. in 1910 (Bul.-451). He suggested that the strata of this mine is contiguous to the Planet Mine, which was lifted and deformed perhaps by the same underlying magma.

In recent years, due to the high cost of labor and materials, mining of copper ores has reverted to the mass production by shovel, etc. of low grade disseminated ores. The Mineral Hill Mine is such a property. It contains the characteristic blanket of ore which so far contains only carbonates of copper, as did the top of the Ajo deposit which it resembles. This blanket is a maximum of 50 feet thick but averages 10 to 15 feet over an area of 1,200 by 1,600 feet.

It is well known today that disseminated deposits in the Southwestern copper province occur generally over "stocks" of usually coarse textured plutonic rocks of intermediate chemical composition that furnish the magmatic copper

F. C. RAMSING, E.M.
CONSULTING GEOLOGIST AND MINING ENGINEER
325 WEST CYPRESS STREET
PHOENIX, ARIZONA

solutions. These stocks may be of many shapes but average between 10 to 15 million square feet in surface dimensions.

The intrusive pierced Limestone at Ajo which fixated the copper as carbonates in the "Oxide zone". This is also true of the present deposit. But, in depth at Ajo, and directly below the "Oxide zone", was discovered a large body of sulphides of copper in a "reduced zone". This sequence is now sought for all new disseminated ore deposits in order to increase its potential worth.

In my opinion, the present property falls in this category. But here no one has prospected by drilling beyond a depth of 220 feet, whereas such exploratory hole should reach a depth of at least 1,000 feet. The present map surface shows an area of roughly 2,000,000 square feet or about one-fifth that of a normal deposit, such as Ajo. Therefore, the surface area of this deposit may also be expected to be larger than now indicated.

It is asserted by the owners, that the mined ore content averages 1.5 percent copper. This is now being mined from an observable bank of disseminated ore. It is then trucked to the mill where it is crushed in three stages to a minus three-eights inch size, then leached continuously in four vats by percolation and washed counter-currently. The recovery is from 70 to 80 percent of the contained copper, which is low by ordinary standards.

Various samples of rock and ore were collected by me during my inspection of the property. These have been subjected to stereoscopic examination to determine the mineral paragenesis i. e. the time order in which these minerals were precipitated. My interpretations are: (1) Quartz and copper were simultaneous and replaced the existing sandstone and limestones; (2) Chlorite was later, and replaced the existing rocks; (3) Specularite was last enclosing the

F. C. RAMSING, E.M.
CONSULTING GEOLOGIST AND MINING ENGINEER
325 WEST CYPRESS STREET
PHOENIX, ARIZONA

above minerals and entering pre-existing cracks in the quartz. The significance of this determination is that the copper ore is not dependent on the finding of specularite. The latter may have originated from another magmatic source.

The sandstone member of a sedimentary series lies adjacent to a limestone identified by G. M. Butler as of Carboniferous Age. The same succession is found in the Harcuvar Range to the northeast. This sandstone, in which most of the present copper is found, is soft and fissle and generally loosely consolidated. It is severely shattered at the surface as well as in the drilled holes, presumably by the underlying magma from which the mineralizing solutions were thought to have emanated.

CONCLUSIONS:

I believe the Mineral Hill Copper Property is a most valuable property and amenable to increased development, for the following three reasons:

(1) It has been already proven to be a small disseminated copper ore-body, containing economic ore of 1.5 percent copper. This, in my opinion, is only a small portion of a much larger ore-body determined only by drilling.

(2) At the present time, only the "Oxide zone" is known, but it may also contain a similar, perhaps thicker, "Sulphide zone" directly below the former.

(3) Like Ajo, no secondary enrichment zone is expected here, since the upward-rising solutions were fixated by the existing carbonate rocks. Relict sulphides, though common to most deposits, have not been found at this mine. But the protore is sufficiently rich to expect a valuable hypogene sulphide ore body in depth.

To ascertain a lower sulphide ore-body on this property, a minimum of two or more exploratory holes should be drilled at least 1,000 feet in depth

REG. ARIZONA

F. C. RAMSING, E.M.
CONSULTING GEOLOGIST and MINING ENGINEER
325 WEST CYPRESS STREET
PHOENIX, ARIZONA 85003

Biography of Frederick C. Ramsing, E. M.

Frederick Ramsing was born in 1890 in New London, Minnesota, and received his E. M. Degree (Engineer of Mines and Metallurgy) from the University of Minnesota.

Mr. Ramsing served on the technical staff at the Washoe Smelter at Anaconda from 1915 to 1926. He resigned from his post as Testing Engineer, Metallurgical Chemist and acting Chief Chemist at Anaconda due to arsenic burns and laboratory hazards. Geology was his chief outside interest during this period.

In 1928, he sought to promote a lime plant for Arizona, but the economic depression in the United States the following year precluded the establishment of the plant.

After serving as a refrigeration engineer for the Kelvinator Corporation during the 1930's, Mr. Ramsing returned to geology and the mining of manganese in 1940. From 1945 to the present time, he has been a consulting Geologist with his offices located in Phoenix, Arizona.

F. C. Ramsing, E. M.

REPORT ON

CONTINENTAL GROUP

MINERAL HILL MINING DISTRICT

YUMA CO., ARIZONA

April 1, 1961

Report on the Continental Group of Mining Claims and the South Part of the Mineral Hill Group of Mining Claims.

The mapping and investigation of the above ground was done in January and February, 1961 and is an extension of the mapping of the mineral Hill Group of Mining Claims done in October and November of 1960.

Property:

The area mapped includes the following patented and located mining claims:

Copper Glance	Sur No. 2785
Copper Prince	Sur No. 2785
Greater Bisbee	Sur No. 2785
Cavern	Sur No. 2981
Continental No. 1	" " "
Continental No. 2	" " "
Continental No. 9	" " "
Continental No. 10	" " "
Continental No. 11	" " "
Bessie Belle	Located Claim
Annex	" " "
Annex No. 1	" " "
Annex No. 2	" " "

Location and Accessibility:

The mapped area lies in Sections 10 and 11, T. 10 N., R. 17 W. Gila and Salt River Meridian, Yuma County, Arizona.

A fair-graded road has been made down Mineral Wash from the Osborne Well to the Mineral Hill Property. Two dozer roads off the graded road make the west and east sides of the Continental Group accessible.

Maps:

Plane-table and alidade were used to extend control over the mapped area. Attached are the following maps:

1. 100 scale map of Mineral Hill area.
2. 100 scale map of the Continental area.
3. 200 scale map of above sheets.

Geology:

Stratigraphy and Alteration:

The Cambrian sediments above the Flat Structure generally strike northwest and dip about 45 degrees to the southwest, in the area mapped.

The beds are mostly gray schists and siliceous quartzites. With the exception of the silicification, the formations are relatively unaltered.

Two areas of limestone were mapped. A limestone belt exists southeast of the Spanish Workings, along the southwest side of the Norma Fault to Tunnel 31-A on the Copper Prince Claim.

The other limestone area is on the south end of the Continental No. 10 and 11 Claims.

Pre-Cambrian gneisses, amphibolites, schists and chloritic schists cover the north part of the Annex Claims and the central part of the Continental No. 10 and 11 claims. These rocks generally strike northerly and have a westerly dip, although in the Box Canyon on the Continental 11 Claim they strike northwest and dip southwest.

On the south end of the Copper Glance and north end of the Annex No. 3 claims is a wide basic dike entering the area from the east. The dike terminates at its junction with the Norma Fault. A thin section indicates that the dike rock is granodiorite.

A small area of Tertiary sandstone-conglomerate occurs in the central part of the Annex No. 1 Claim.

Structure and Mineralization:

Flat Structure:

The Cambrian sediments truncate on the Flat Structure which is mapped in several places throughout the area. Below the Flat Structure are the Pre-Cambrian rocks.

It also appears to be a floor for the mineralization.

Norma Fault:

This fault was mapped on southeast from the Norma Shaft to the center of the southwest sideline of the Annex No. 3 Claim, a distance of some 2700 feet. It is exposed in the gulch at 4330 N. and 6600 E. No copper was noted at this point. It is also exposed in the next gulch southeast; no copper was seen at this exposure.

At Tunnel 31-A and shallow Shaft 31-C, located 100 to 200 feet, respectively, south-

west of the fault, a small spread of copper ore is indicated. Copper occurrences are noted in the limestone northwest to the Spanish Workings. The inference is therefore drawn that the Norma Fault and the beddings adjacent it may be productive throughout this length.

Continental Fault:

This fault trends northerly through the Annex No. 1, Greater Bisbee, Copper Prince, and junctions the Norma Fault in the southwest part of the Norma Claims. On the Annex No. 1 Claim it displaces the Flat Structure some 150 feet down on the east side. Near its junction with the Norma Fault, its displacement appears to be minor.

East-West Quartz Zone:

A strong zone of east-west south dipping faults trends across the Continental 2 and 1 Claims, the Cavern, the Greater Bisbee, and terminates against the Norma Fault on the south part of the Copper Prince Claim. Along this zone are sizeable bodies of quartz and quartz breccia. The most prominent areas being on the Continental No. 2 Claim and the south end of the Copper Prince Claim.

Production and Copper Occurrences on the Continental Claims:

One small stope has been mined on the Continental No. 11 Claim. It occurs at the intersection of a northwest strikingvein and a north-south vein. Both veins dip easterly. The stope is 3 - 5 feet wide and about 15 feet long. It probably terminates on the Flat Structure about a 100 feet below the surface.

A cross-cut tunnel (Continental Tunnel) was driven westerly under the stope, and an incline raise was driven to the stope. The tunnel is 125 feet lower than the ore outcrop and is in north dipping silicified pre-Cambrian schists. No ore was developed on

the tunnel level. The vein may be represented by a weak fault-slip cut in the tunnel 50 feet east of the raise. A strand of the Flat Structure is seen in the roof at the west end of the tunnel. It shows no mineralization.

The raise is inaccessible and it is therefore unknown whether mineralization has spread on the top of the Flat Structure where the copper fissure terminates on it.

In the east-central part of the Continental No. 11 Claim is a spread of specularite-copper mineralization on the Flat Structure. It is some 200 feet long and 8 to 12 feet thick and is developed by a short tunnel (33 G) and open cut at 20 B1. A sample across 2 feet of the schist above the portal assayed 2.00% copper. A general sample in the tunnel of the specularite mineralization assayed 1.00% copper.

Some 200 feet northwest of the cut at 20 B1, the dozer exposed a small patch of hematite silica which assayed 0.50% copper. This mineralization may be related to the northwest striking fissure mentioned above.

On the Continental No. 11 Claim at 25 G is a small cut on an east-west striking copper vein, 2-4 feet wide, which dips some 20 degrees to the north. It appears that some shipping ore has been sorted from the cut.

Continental Fault-Norma Fault Intersection:

This intersectional area appears to be the most favorable mapped. It is 300 feet southeast of the gulch in which the Norma Fault carries 6 feet of ore. Fifty feet southwest is a spread of specularite.

Conclusions:

In the area mapped three areas of interest occur.

1. Continental - Norma Intersection.

Some drilling should be done in this anomaly.

2. 31A Tunnel.

This is a flat copper fissure and flat spread of copper mineralization. No work is recommended at this time.

3. 33 G Tunnel

Specularite and copper mineralization spread on Flat Structure, on the Continental No. 11 Claim. No work is recommended here at the present time.

Louis H Cramer

10889 Wilshire Boulevard
Suite 1500
Los Angeles, California 90024

MEMO

OCCIDENTAL PETROLEUM CORPORATION

To R. C. Mayberry

Date December 3, 1966

From Ron Haxby

Subject: Mine valuation of the Mineral Hill Mine, Parker, Arizona

Introduction:

On November 21, 1966, Mr. J. Minton and Mr. J. Wallace of the Arizona Ranch and Metals Company presented to Oxy a copper oxide mine and leaching operation, for $5,000,000.

The writer spent four days examining the records and property as follows:

November 23, 1966 Parker, Arizona: Examined the mine with Mr. Lou Cramer, consulting geologist for the owners, Mr. Bob Porter, consulting Metallurgist for the owners, and, Mr. Duncan Harrison, Mine Manager.

November 26, 1966 and November 27, 1966: Examined the geologic maps, reports and mine plan.

November 28, 1966: Revisited the mine with Mr. Cramer, Mr. Porter, and Mr. Harrison.

Conclusion:

Based on the examination of the mine, geologic reports and mine plan, the present value (before taxes) of the property is $3,020,000. However, the property should not be purchased at this price until Oxy drills and assays several holes to check the validity of the assay values used in the ore reserve calculations.

The following factors are included in the valuation:

1. Open pit mining the copper ore. The value of the iron is not considered because a market has not been developed. Underground mining is considered uneconomic.

2. Copper ore reserves: 935,000 tons at 1.5% Cu.

3. Average copper production rate: 22,000 pounds per day.

4. Life of the mine: three (3) years.

5. Total operating cost: 25 cents per pound Cu.

6. Sales price: 45 cents per pound. Profit 20 cents per pound.

7. Annual profit from mine before taxes: $1,540,000.

8. Annual profit from waste dumps before taxes: $168,000.

9. Total annual profit before taxes: $1,708,000.

10. Present value is computed with a 20% return on investment and a 6% redemption of capital.

It is probable the electrowinning plant will reduce the cost of producing copper by 5¢ to 10¢ per pound. However, the plant is still in the break-in stage and it is difficult to predict the present operating cost. The writer assumes 25¢ per pound cost is conservative.

Recommendation:

The greatest problem is a lack of copper ore reserves that can be mined by open pit methods.

If Arizona Ranch and Metals Company and Oxy agree to the $3,020,000 present value price for the property, Oxy should take the following steps before signing the deal:

1. Spend from $20,000 to $42,000 (2 to 3 months time) to drill and assay the property to verify and increase the present ore reserves. This is necessary because Arizona Ranch and Metals Company drilling technique may not have provided representative samples. This is suggested by discrepancies in the actual ore zone tonnages and that indicated by drilling. However, the results to date suggest the actual quantity and grade of ore in the mine may be greater than indicated by drilling but this should not be taken for granted.

If after drilling, the reserves are less than anticipated, Oxy would reserve the right to drop the purchase option.

The exact number and location of the claims must be clearly defined. The company supposedly has a group of adjoining claims north of the pit that are not included on the claim map. Mr. Minton also has other claims on the ranch.

Market for the iron (specular hematite) would increase the value of the property. According to Mr. Minton a market has not yet been developed but has good possibilities.

Two other areas on the property deserve exploration drilling, they are:

(a) The Continental mine area.

(b) Area due west of the pit.

Ownership:

The property is owned by the Arizona Ranch and Metals Company and consists of 31 claims totaling 620 acres. The principal stockholders in the company are:

1. Joseph Minton - President - Scottsdale, Arizona
2. John Wallace - Secretary and Treasurer - Salt Lake City, Utah
3. Duncan Harrison - Mine Manager - Parker, Arizona

The first two stockholders control 90% of the stock.

Past and Present Production:

The property has been worked on a limited basis since the time of the Spaniards. Within the year, the owners have constructed a modern copper oxide leaching plant and are producing cement copper. The present production rate is 16,000 pounds Cu. per day and is scheduled to reach 30,000 pounds Cu. per day.

Geology:

The property has been mapped by Mr. Lou W. Cramer, consulting geologist from Salt Lake City.

The copper ore occurs as chrysocolla and minor amounts of malachite in a flat lying bedded deposit. The iron occurs as specular hematite and is associated with the copper.

Ore Reserves:

The copper ore body is estimated by Mr. Cramer to be approximately 1,368,000 tons at 1.4% Cu. The iron ore body is estimated to be 3,356,000 tons at 45-49% iron.

The writer is convinced that most of the copper ore in the Norma Fault can only be recovered by underground methods which would be uneconomic. Therefore, the open pit mine reserves used for the mine valuation are as follows:

Flat bed copper	
Proven	751,000 tons
Inferred at 40% assured	84,000
	835,000 tons at 1.4% Cu.
Norma Fault	100,000 tons at 2.2% Cu.
Total	935,000 tons at 1.55% Cu.
Dumps: 900,000 ton at 0.24 Assume 0.10% recovered by heap leach	900,000 tons at 0.10%

Capital Investment:

To date, capital investment is as follows:

Mine	$ 300,000
Leach Plant	$ 1,500,000
	$ 1,800,000
Additional equipment needed (electrowinning plant)	$ 300,000
	$ 2,100,000 (owners estimate)

Costs and Profits:

Value of the copper. . . . 45¢ per pound Cu. at the mine. (National Metals, Phoenix, is the buyer)

Owners estimate of operating cost. . . . 20¢ per pound Cu.

Writers estimate of operating cost. . . . (includes depreciation and depletion) 25¢ per pound Cu.

Estimated profit = 45-25= 20¢ per pound Cu. before taxes.

Electrowinning may increase the profit.

Dumps: Recovered copper by heap leaching costs - 12¢ per pound Cu.

Copper Production:

Present production	10,000 pound Cu. per day.
Expected production	36,000 pound Cu. per day.
Average production	22,000 pound Cu. per day.

Present Value:

Daily ore production	1,000 tons per day.
Ore production (350 day year)	350,000 tons per year.
Annual profit from mine	$1,540,000
Annual profit from leach dumps	$ 168,000
Annual profit: Total	$1,708,000 per year (before taxes)

Present Value before tax at 20% return on investment and 6% redemption of capital (Hoskold):

Present value	$3,320,000
Less electrowinning plant	$ 300,000
Adjusted present value =	$3,020,000 (before taxes)

Proposed Exploration:

If Oxy and Ranchers agree on the price for the mine the exploration and development money used to prove the reserves will be allocated as follows:

Drilling - up to	$ 30,300
Assays	6,000
Geologic mapping	2,500
Supervision	1,200
Drill site preparation	2,000
Total	$42,000

This amount of money would prove out the main ore zone and explore the two other potential areas on the property. Cut off point in the event the drill results were very poor would be from $15,000 to $20,000.

RH:bbs

cc: Dr. A. Hammer
T. Wachtell
J. Roberts
R. C. Mayberry
R. Haxby

NO. OF VATS		CU IN HEADS %	LBS.	CU IN TAILS %	LBS.	TONS IN VATS	CU EXTR.		DAYS OPER.
5	11/66	1.02	331,540	.441	143,372	16,250	188,168		22
5	12/66	1.14	567,400		372,200	25,100	195,200		31
5	1/67		497,800		242,200	20,800	255,600		25
5	2/67		539,400		260,800	22,400	278,600		28
5	3/67	1.3	544,752		169,200	24,800	375,552		30
5	4/67		567,967		268,305	23,752	299,662		30
5	5/67		631,546		210,053	24,740	421,493		31
5	6/67		494,707		190,425	24,900	304,282		30
5	7/67		608,098		198,339	24,200	409,759		29
5	8/67		691,206		177,819	24,462	513,387		30
5	9/67		766,073		215,062	23,894	551,011		29
5	10/67		769,515		257,865	24,922	511,650		29
							4,304,364		
5	11/67		699,459		190,997	23,610	508,462		27
5	12/67	1.43	635,165	.44	197,575	22,227	437,590		26
5	1/68	1.09	572,712	.34	165,125	26,362	407,587		31
5	2/68	1.22	622,437	.34	182,662	25,480	439,775		29
5	3/68	1.02	535,361	.30	165,370	25,990	369,991		30
5	4/68	1.02	535,796	.30	165,333	25,897	370,463		30
5	5/68	1.08	578,312	.39	208,330	26,685	369,982		31
5	6/68	1.08	540,330	.37	188,038	25,235	352,292		29
6	7/68	1.22	562,969	.34	156,758	23,074	406,211		26
6	8/68	1.03	552,017	.22	119,000	27,093	440,017		31
6	9/68	1.02	524,564	.23	115,779	25,699	408,785		30
6	10/68		472,287		120,784	27,238	351,503		31
							4,862,658		
6	11/68	.85	471,194	.35	174,667	27,488	296,527		29
6	12/68	.85	486,332	.28	159,873	28,639	326,459		29
6	1/69		451,338		149,819	28,117	301,519		28
6	2/69	.66	305,928	.26	114,331	26,677	191,597		27
6	3/69		492,528		175,345	30,248	317,183		30
6	4/69		398,800		116,866	29,331	281,934		29
6	5/69		358,277		139,335	29,265	218,942		30
6	6/69		399,604		210,111	27,439	189,493		28
6	7/69	.94	530,107	.41	228,127	28,391	301,980		30
6	8/69	1.199	511,560	.262	111,388	21,253	400,172		23
6	9/69	.57	291,882	.30	129,238	25,778	162,584	Tails	26
6	10/69		303,171		168,780	29,021	134,391	"	31
							3,122,781		
6	11/69	.63	357,470		177,290	27,772	180,480	"	30
6	12/69	.634	371,555	.257	151,515	29,261	220,040	"	31
6	1/70		383,890		148,830	26,877	235,060		28
6	2/70		380,170		197,370	22,317	182,800		25
6	3/70		260,565		93,569	14,421	166,996		16
6	4/70	.908	434,120		188,375	23,384	245,745		27
							1,231,121		
6	5/70		112,220						

Operations ceased 5/6/70 Total 3½ yrs. - 13,521,000#

P.M.C. Powdered Metals Corp.
1205 W. Latham
Phoenix, Arizona
attn: Mr. Norman Hatcher

United States Department of Interior
Bureau of Mines
Redondo Tower
8 West Paces Redondo
Tucson, Arizona 85705

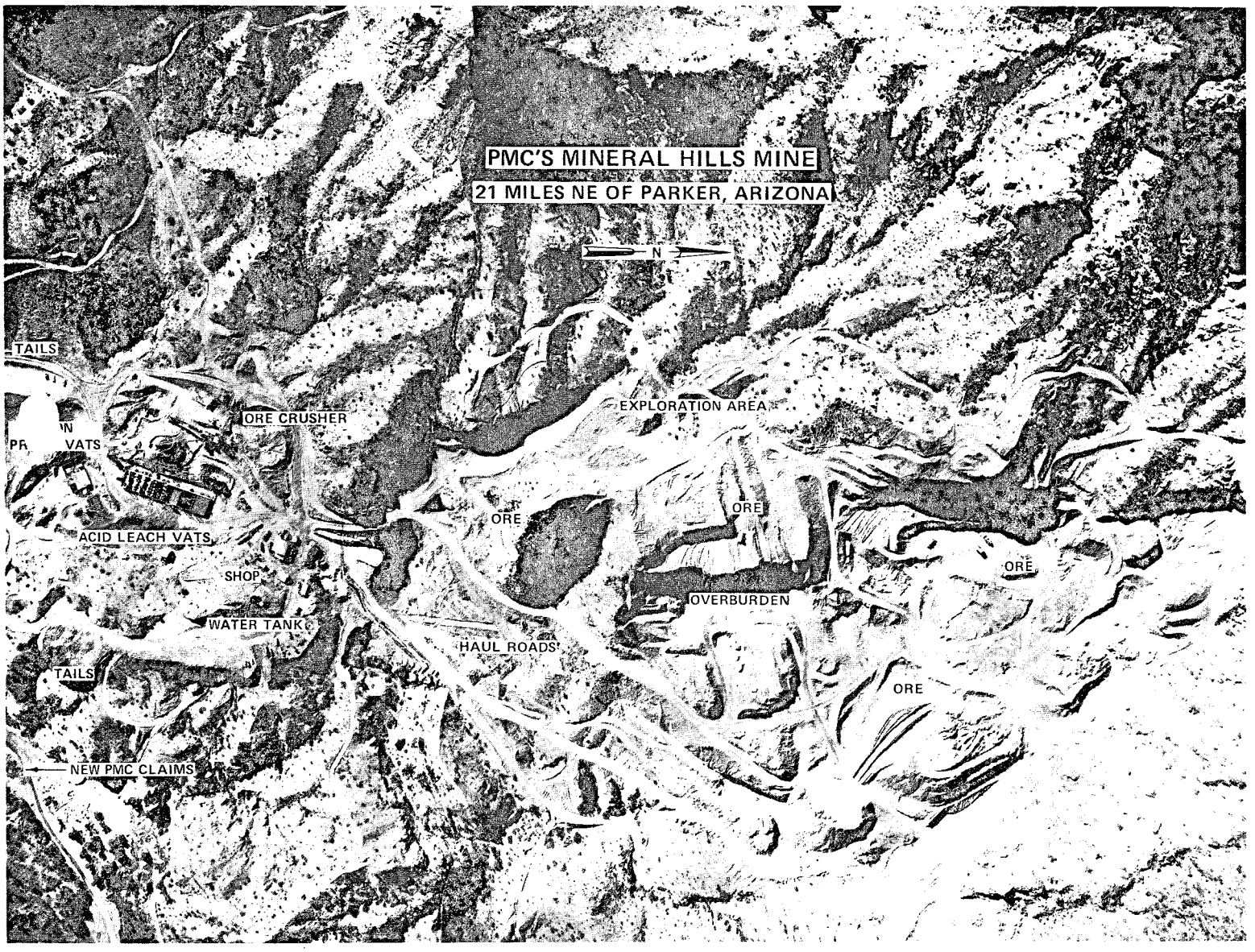
POWDERED METALS CORPORATION

NEWSLETTER

For the stockholder family of Powdered Metals Corp.

PMC-POWDERED METALS CORPORATION Suite 2010 100 W. Clarendon Phoenix, Arizona 85013

PMC A SMALL DENT MADE IN 2512 ACRES OF POTENTIAL COPPER!



PMC The aerial photo (above) taken of our Mineral Hill Mine near Parker, Arizona, shows principal operations and the location of our pit operation and current ore deposits. New drilling is now underway to prove up more copper ore reserves. PMC recently optioned 54 new mining claims adjacent to Mineral Hill totaling 1080 acres. PMC's holdings at Mineral Hill amount to 2512 acres including the new claims.

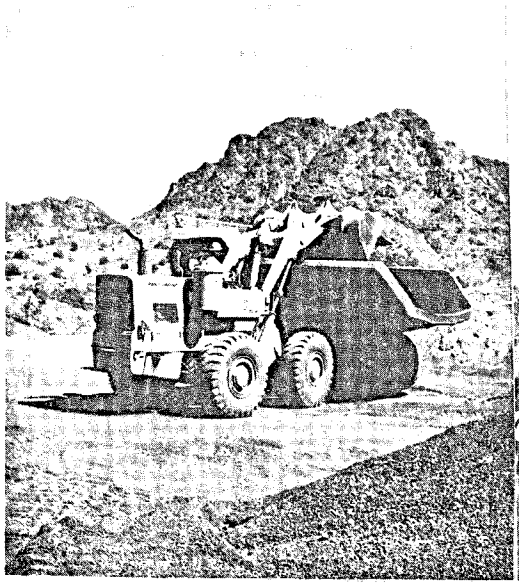
POWDERED METALS CORPORATION

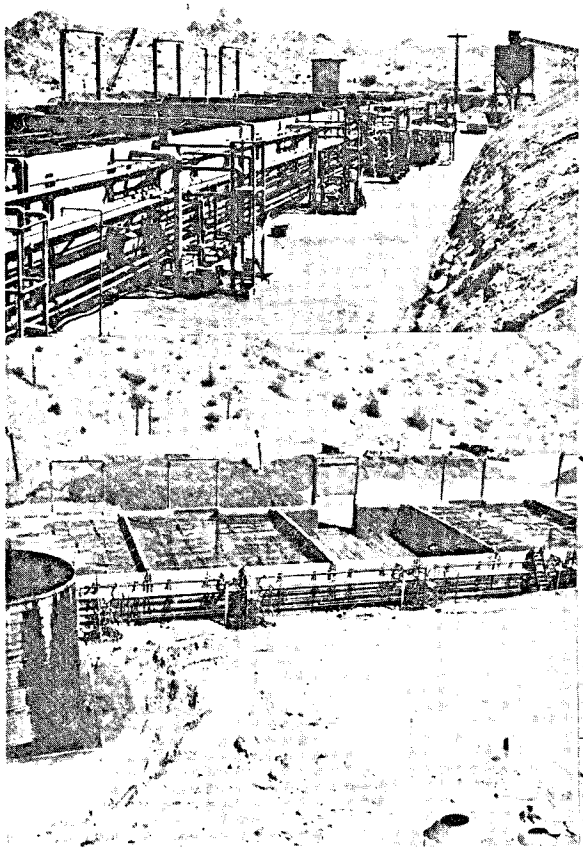
NEWSLETTER

For the stockholder family of Powdered Metals Corp.

PMC-POWDERED METALS CORPORATION Suite 2010 100 W. Clarendon Phoenix, Arizona 85013

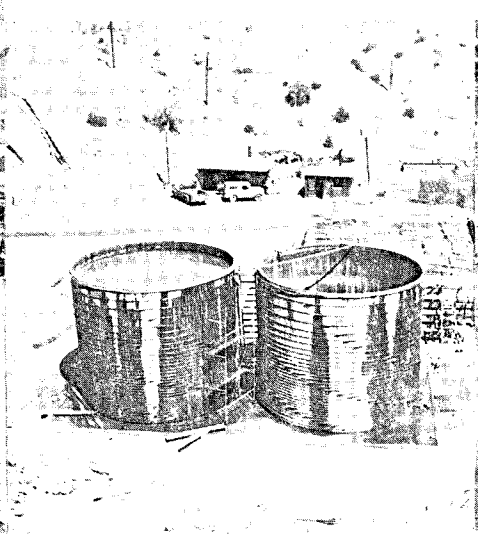
PMC WE'RE IN BUSINESS!!

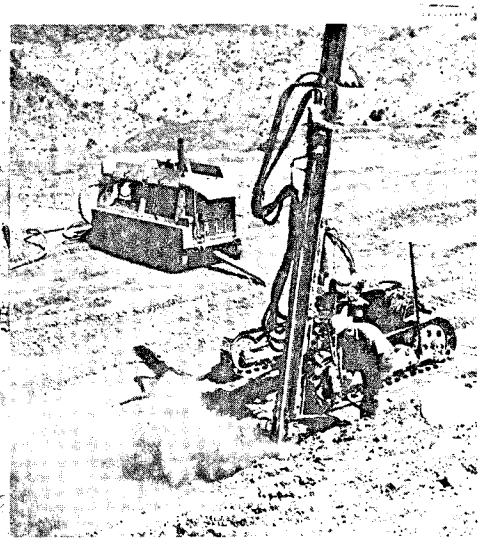


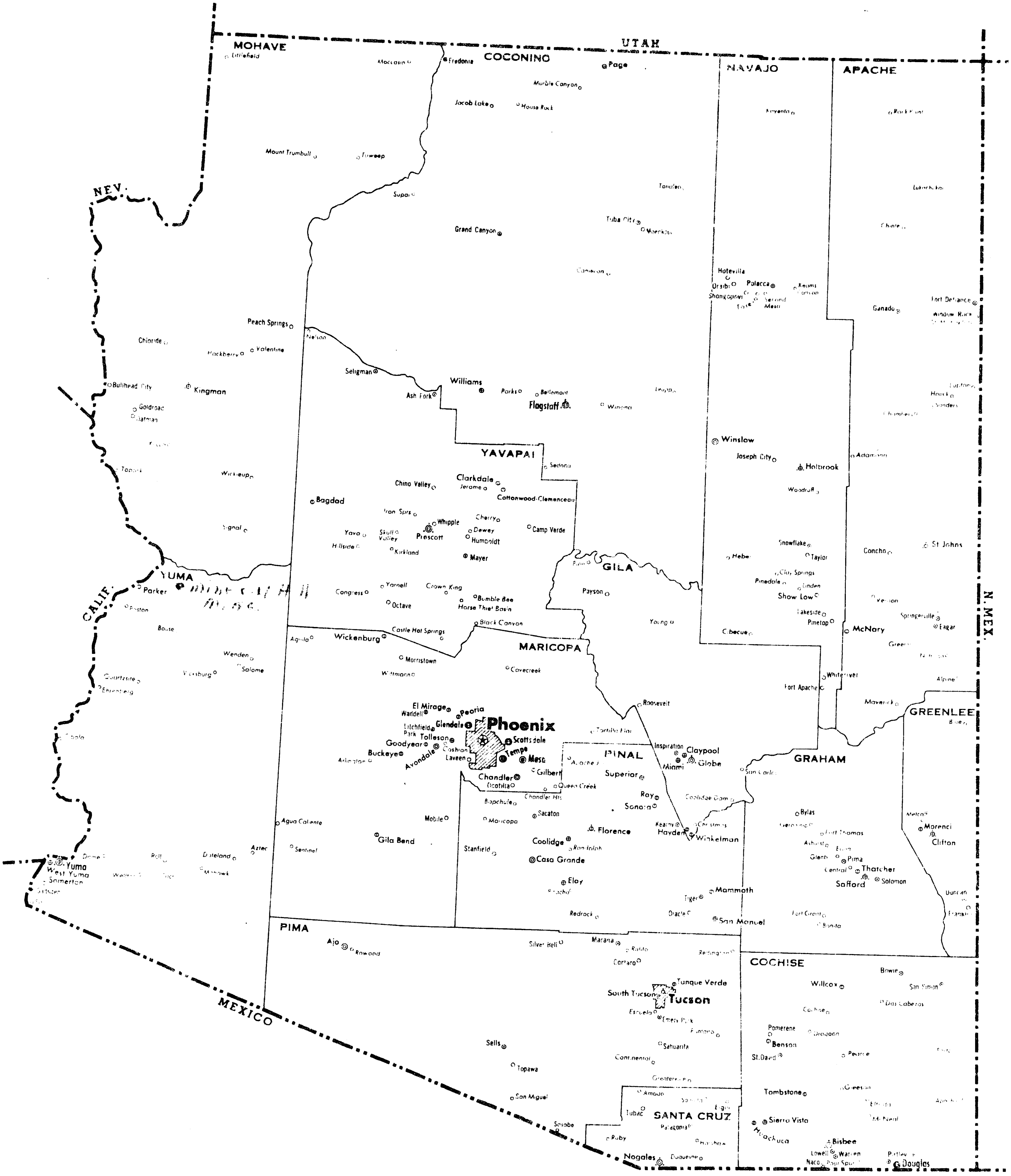


PMC

PMC'S NEWEST ACQUISITION - THE PRODUCING "MINERAL HILL" COPPER MINE LOCATED 21 MILES N.E. OF PARKER, ARIZONA!






UTAH
NEV.
CALIF.
MEXICO
N. MEX.
MOHAVE
COCONINO
NAVAJO
APACHE
YAVAPAI
GILA
YUMA
MARICOPA
PINAL
GRAHAM
GREENLEE
PIMA
SANTA CRUZ
COCHISE
Littlefield
Moccasin
Fredonia
Page
Marble Canyon
Jacob Lake
Mount Trumbull
Supai
Grand Canyon
Tuba City
Hotevilla
Oraibi
Polacca
Ganado
Fort Defiance
Window Rock
Chinle
Peach Springs
Chloride
Valentine
Hackberry
Bullhead City
Kingman
Seligman
Ash Fork
Williams
Parks
Bellemont
Flagstaff
Winona
Winslow
Joseph City
Holbrook
Woodruff
YAVAPAI
Sedona
Clarkdale
Jerome
Cottonwood-Clemenceau
Chino Valley
Bagdad
Iron Spgs
Whipple
Prescott
Cherry
Dewey
Humboldt
Camp Verde
Yava
Skull Valley
Hillside
Kirkland
Mayer
Congress
Yarnell
Octave
Crown King
Bumble Bee
Horse Thief Basin
Black Canyon
Castle Hot Springs
Wickenburg
Aguila
Morristown
Wittmann
Cavecreek
Payson
Young
Snowflake
Taylor
Heber
Clay Springs
Pinedale
Linden
Show Low
Lakeside
Pinetop
McNary
Cibecue
Concho
St. Johns
Springerville
Eagar
Vernon
Whiteriver
Fort Apache
Alpine
Maverick
Parker
Bouse
Wenden
Salome
Quartzsite
Ehrenberg
Vicksburg
Wickieup
Signal
Roosevelt
El Mirage
Peoria
Waddell
Glendale
Phoenix
Litchfield Park
Tolleson
Goodyear
Buckeye
Avondale
Cashion
Laveen
Scottsdale
Tempe
Mesa
Gilbert
Chandler
Ocotillo
Chandler Hts
Queen Creek
Arlington
Tortilla Flat
Inspiration
Claypool
Miami
Globe
Superior
Ray
Sonora
San Carlos
Coolidge Dam
Bapchule
Maricopa
Sacaton
Mobile
Agua Caliente
Sentinel
Gila Bend
Stanfield
Florence
Kearny
Hayden
Christmas
Winkelman
Coolidge
Randolph
Casa Grande
Eloy
Picacho
Tiger
Mammoth
Redrock
Oracle
San Manuel
Bylas
Geronimo
Fort Thomas
Pima
Thatcher
Safford
Solomon
Central
Fort Grant
Bonita
Morenci
Clifton
Duncan
Franklin
Yuma
West Yuma
Somerton
Roll
Dateland
Mohawk
Aztec
Ajo
Rowood
Silver Bell
Marana
Rillito
Cortaro
Tanque Verde
South Tucson
Tucson
Sahuarita
Continental
Sells
Topawa
San Miguel
Sasabe
Amado
Tubac
Patagonia
Ruby
Nogales
Bowie
San Simon
Willcox
Dos Cabezas
Cochise
Pomerene
Benson
St. David
Pearce
Tombstone
Sierra Vista
Huachuca
Bisbee
Lowell
Warren
Naco
Douglas
Pirtleville

MINERAL HILL MINE

OWNERSHIP:

Title to the property is held by PMC-Powdered Metals Corporation. The president and chief executive officer is Frederick E. Kallof, Suite 2010, TowneHouse Tower, 100 W. Clarendon, Phoenix, Arizona 85013, phone area code 602 - 277-4885.

LOCATION:

Sections 2, 3, 10, 11, 12, 14, & 15, Township 10 North, Range 17 West, Gila and Salt River Meridian, Yuma County, Arizona. The property is reached by traveling Northeast from Parker, Arizona on a paved and well-graded road; or on a well-graded road North of Bouse, Arizona for approximately 21 miles. There is also an air strip close to the property.

MINERALS:

Copper and associated minerals;
Specular Hematite.

PROPERTY:

The property consists of 15 patented and 53 unpatented federal lode mining claims and 2 placer claims.

WATER & UTILITIES:

a 1700 gallon per minute well provides water through an asbestos-cement pipeline to the property. The water available is more than adequate for any foreseeable need.

Electrical power is presently on the mine site adequate to operate an electrolytic refinery.

EXHIBIT B

MINERAL HILL MINE EQUIPMENT
(continued)

GENERAL EQUIPMENT:
Magnet, Dings, Type 45MAG 115V DC, 45"
Magnet, permanent, Schraeder
Trac Drill, Cleveland Model LDC-3, penumatic, Ser. #7138
Gardner-Denver compressor, diesel, 315, portable, Ser. #140193

HEAVY EQUIPMENT:
Truck, Caterpillar, 1966, Model No. 769, Ser. #99F-667
Truck, Caterpillar, 1966, Model No. 769, Ser. #99F-670
Traxcavator, Caterpillar, Model 988, Ser. #87A01091
Tractor, Caterpillar D-8, Ser. #46A12980
Crane, P&H, mobile 20-T, mtd on trk w/Waukesha Engine, Ser. #805669
Grader, Adams, Model 512, Ser. #2466W-UD-14
Dumptor, Hoehring, Mod. W-60, Ser. #D-3557, w/GM engine, Ser. #4A62474RC
Dumptor, Hoehring, Mod. W-60, Ser. #D-3557, w/GM engine, Ser. #471RC63
Back Hoe, John Deere w/front end Loader, Ser. #447521
Dumptor, Hoehring, Mod. W-60, Ser. #D-5613
Loader, Caterpillar 950, Ser. #90A2342
Dumptor, Koehring, Ser. #D-4666
Dumptor, Koehring, Ser. #D-4798 (We have 5 dumptors operable, 2 for
Dumptor, Koehring, Ser. #4A39997 salvaging parts)
Crane, Koehring, Ser. #5121
*Loader, Caterpillar 950, Ser. #90A1923
*Compressor, Gardner-Denver, Rota-Screw, portable w/Cat D333T eng. Ser. #5055
*Swing Crane, TD-18, International, Ser. #TDR721344
*Tractor, D-9, Caterpillar with 9U Dozer, #9 Ripper, Ser. #66A0608

WATER SUPPLY:
Steel Pipe, 8" w/vicatulic couplings, complete, water line
Storage Tank, wood stave, 12' x 12'
Mine water well, complete

POWER SUPPLY:
Cord, boxes, covers, pump panels, reducers, motors, lines, complete

BUILDINGS:
Change House
Assay Building
Storage Building, frame
Warehouse and Shop, steel
Construction Building
HCB Electrolytic Building
Tool Shed
Trailer Park (less personally owned trailers)

OFFICE FURNITURE:
Typewriter, elec., Montgomery-Ward
Desks (3)
Chairs (4)
Table
Book Case
Swivel Chair
File Cabinet

*These items are covered by purchase contracts to Arizona Bank as scheduled at Exhibit D herewith.

EXHIBIT B

ARIZONA RANCH AND METALS COMPANY

MINERAL HILL MINE EQUIPMENT

TOOLS AND SMALL EQUIPMENT:
33,000 gallon water storage tank
10,000 gallon water storage tank, steel welded, rubber lined, upright
Cement Pump, Azar, Model C-30A, Ser. #6504
Gardner-Denver Sinker Drill, Model S-33, Ser. #253664
Electric Welders, Hobart (2), used
Electric Welder, Lincoln, SAE 300K-1196 300 AMP w/starter, F-225, Cont. eng.
Welding Torches, H.D.Smith, #SS-319 (3)
Radial Saw, Shopcraft
Undercoat Pump
Transit, Berger & Sons
Vibrators(2) Dreyer. Model CE, B, Ser. #CE1917 and #B-5806
Grease Rack
Evaporative Cooler (6)
Space Heaters (2)
Compressor, Gardner-Denver w/Wisc. Mod. AENLG Gas eng. Ser #497498
Drench Showers (5) Haws Model 8300
Power Jack, S-180, 50-Ton Pump & Cyl.
Power Jack and tire mounting tools (Goodyear)

AUTOMOTIVE:
Dodge Dart, 4-Dr. Sedan, Ser. #F58869-LL41-B65-145676, 1966
International Scout 800 PU Truck, Ser. #780905G172462, 1966
International Travellette 6-Man PU MOdel D-1100, Ser. #SB544910A, 1966
GMC Water Trk w/3" Esseck Pump, Ser. #270451898, 1947
FWD Winch Trk 4-wheel drive w/gin poles, Ser. #65090, 1942
International 1-Ton PUSer. #S120 4x4 29132, 1956
House Trailer, Paragon, 12' x 46' (office) Ser. #64-74-12-46-64015, 1964
International 6 x 6 Trk, boom, Ser. #18334, 1945
*Dodge Dart, 4-Dr Sedan, Ser. #LL41B-75-122876, 1967
International, ½-T PU Ser. #516185, 1967

LABORATORY EQUIPMENT:
Pulverizer w/motor, Type UA, Braun
Chipmunk Crusher w/motor, Type VD Braun
Ore Grinder w/motor, No. 2, M&S
Vibrating Hot Plate, elec.
Balance
Misc. switches, elements, flasks, scale, et.

MILL EQUIPMENT:
Secondary and Tertiary Cone Crushers, Models 489 and 48FC,
Ser. Nos. 6854 and 6855, complete w/stands, 125 HP motors.
Conveyors: 345' - 30", 183' - 24", 528' walkway, tunnel conveyor and
3 syntron vibrating feeders
Primary Crushing Plant, Cedar Rapids, portable w/jaw crusher, Ser. #17661,
w/grizzly, elec. motors mntd on hvy duty semi-trlr
Leach Vats (6) complete w/pumps and equip.
Acid storage tanks (2) 10'6" dia. x 45' horizontal 7/16" carbon steel
Acid storage tank 10'6" dia. x 45', incl. pipe and valves
Acid storage tanks, wooden (2)
Precipitation Vats complete w/3 type HHC Sperry Filter presses w/plates, etc.
Electoryltic Plants (2) complete with accessories, Westinghouse
Steel tanks (2) lined w/koroseal PVC 4'3" x 9'30" long

EQUIPMENT

	$ Value
Caterpillar 769, 35 Ton Truck (1966), Serial Number 99F670	$ 31,000
Caterpillar 769, 35 Ton Truck (1966), Serial Number 99F667	31,000
Caterpillar D9G Powershift Tractor (1968), Serial Number 66A6068 with Hydraulic U Dozer, Tilt Cylinder and Parallogram Ripper	46,000
Caterpillar D8 Powershift Tractor (1966) Serial Number 46A12980 with Hydraulic Straight Dozer, Tilt Cylinder and Parallogram Ripper	22,000
Caterpillar 988 Wheel Loader (1969) with 6 Yard Bucket, Serial No. 87A3269	64,000
Caterpillar 988 Wheel Loader (1966) with 6 Yard Bucket, Serial No. 87A1091	33,000
Caterpillar 950 Wheel Loader (1969) with 3 Yard Bucket, Serial No. 90A2342	16,200
Caterpillar 950 Wheel Loader (1968) with 3 Yard Bucket, Serial No. 90A1923	12,250
Gardner-Denver SP600 Air Compressor (1968) on Wheels Serial No. 505555	10,250
Gallion Motor Grader	2,500
Four (4) Dumpster Trucks	4,000
Crusher System & Related Equipment	148,000
Total	$420,200

P.O.Box 1631
Yuma, Arizona 85364
602/ 783-7866

P.O.Box 188
Wellton, Arizona 85356
602/ 785-3391

BRADEN
MACHINERY CO.

P.O.Box R
Blythe, California 92225
714/ 922-2191

P.O.Box 588
El Centro, California 92243
714/ 352-0211

May 27th, 1970

P.M.C. - Powdered Metals Corporation
Suite 2020
Townehouse Tower
100 W. Clarendon
Phoenix, Arizona

Attn: Mr. F. E. Kallof

Dear Mr. Kallof:

At the request of your office Braden Machinery Co. has run an evaluation of the equipment as listed on the enclosed sheet.

To the best of our knowledge the value figures would represent a figure somewhere between wholesale and retail.

I believe you could add twenty per cent (20%) to these figures if the machines were in top condition on a retail basis.

If we can be of further help, please call.

Sincerely,

Jay Landis

Jay Landis

JL/m

enc.

STATE OF ARIZONA
Department of Property Valuation
Utilities and Mines Division
4530 North Central Avenue
Phoenix, Arizona 85012

NOTICE OF VALUATION OF CENTRALLY VALUED PROPERTIES FOR AD VALOREM TAX PURPOSES

MAY 12 1970

Date May 6, 1970

61-908-0

PMC-POWDERED METALS CORP.(MINERAL HILL MINE)
TOWNE HOUSE TOWERS SUITE 2010
100 W. CLARENDON
PHOENIX AZ 85013

Pursuant to Section 42-124.02B., Arizona Revised Statutes, the FULL CASH VALUE of your properties located in Arizona is as follows:

Full Cash Value $ 912,000

Assessment Ratio 60 %

Arlo Woolery - Director

Arlo Woolery

ASSESSMENT RATIO. Section 42-227, Arizona Revised Statutes, provides that the assessment ratio indicated above applied to the **FULL CASH VALUE** yields the assessed value subject to all applicable state and local levies.

APPEALS. The Department of Property Valuation may, upon written application of the property owner, change the valuation to properly reflect the full cash value thereof. Such application by the property owner must be made before May 20, 1970.

DPV FORM 50-10
2/69

Patented Lode Mining Claims

SURVEY #2785
(Newman Group)

The following described patented lode mining claims located in Section 2, 3, 10 and 11, Township 10 North, Range 17 West of the Gila and Salt River Base and Meridian in the Bill Williams Mining District, Yuma County, Arizona, being shown on Mineral Survey No. 2785 on file in the Bureau of Land Management:

Queen of Copper
Copper King
Greater Jerome
Norma
Mohave Chief
Apex
Copper Prince
Copper Glance
Greater Bisbee

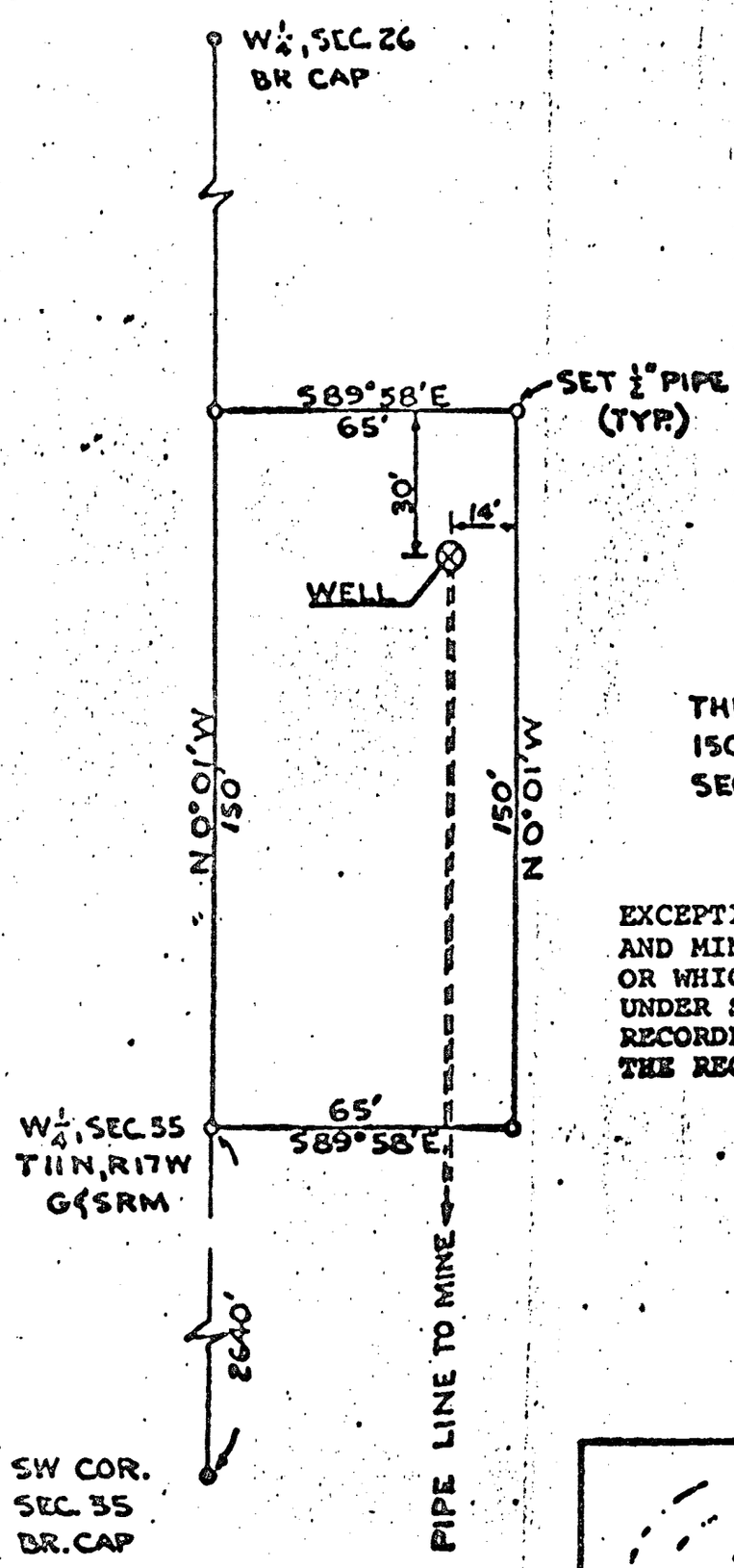
The patent to such claims was recorded in Docket 297, pages 458 through 467 in the office of the Yuma County Recorder, Yuma, Arizona.

SURVEY #2981
(Continental Group)

Those certain patented lode mining claims located in Sections 10 and 11, Township 10 North, Range 17 West of the Gila and Salt River Base and Meridian in the Bill Williams Mining District, Yuma County, Arizona, shown on Mineral Survey No. 2981 on file in the Bureau of Land Management, as follows:

Cavern
Continental No. 1
Continental No. 2
Continental No. 9
Continental No. 10
Continental No. 11

The patent to such claims was recorded in Docket 297, pages 222 through 228, in the office of the Yuma County Recorder, Yuma, Arizona



SCALE 1" = 40'

DESCRIPTION

THE WEST 65 FEET OF THE SOUTH 150 FEET OF THE SW¼ SW¼ NW¼ SECTION 35, T11N, R17W, G&SRM.

0.224 ACRES

EXCEPTING THEREFROM ALL OIL, GAS, COAL AND MINERALS WHATSOEVER ALREADY FOUND OR WHICH MAY HEREAFTER BE FOUND UPON OR UNDER SAID LAND AS RESERVED IN DEED RECORDED IN DOCKET 57 AT PAGE 310 IN THE RECORDS OF YUMA COUNTY, ARIZONA

Thomas J. Yandell
10/9/67

WELL PROPERTY SURVEY
ARIZ. RANCH AND METALS CO.
PARKER ARIZ.

BY: R.B. WILLIAMS & ASSOC
ENGINEERS & ARCHITECT

OCT., 1967

Unpatented Lode Mining Claims

The following Unpatented Lode Mining Claims are located in Sectio 2, 3, 10, 11, 12, 14 and 15 of Township 10 North, Range 17 West of the Gil and Salt River Base and Meridian in the Bill Williams and Mineral Hill Mini Districts, Yuma County, Arizona:

Claim	Date Located	Date Recorded	Docket No.	Page No
Annex #1	2-18-61	3- 9-61	301	526
Annex #2	2-18-61	3- 9-61	301	527
Annex #3	2-18-61	3- 9-61	301	528
Annex #4	2-26-68	3-15-68	516	52
Annex #5	2-26-68	3-15-68	516	53
Annex #6	2-28-68	3-15-68	516	54
Annex #7	2-28-68	3-15-68	516	55
Annex #8	3- 1-68	3-15-68	516	56
Annex #9	3- 1-68	3-15-68	516	57
Annex Fraction	3-17-66	3-25-66	431	49
Extension #1	4-28-61	5-17-61	306	193
Extension #2	4-28-61	5-17-61	306	192
Extension #3	4-30-61	5-17-61	306	194
Extension #4	4-30-61	5-17-61	306	191
Bessie Belle	1-26-61	1-27-61	299	216
Cobre #1	1-25-61	1-27-61	299	217
Cobre #2	1-25-61	1-27-61	299	218
Cobre #3	4-25-61	5-17-61	306	187
Cobre #4	4-25-61	5-17-61	306	188
Cobre #5	4-26-61	5-17-61	306	189
Cobre Fraction	4-26-61	5-17-61	306	190
Norma Extension	3-16-66	3-25-66	431	44
Norma Extension #1	3-18-66	3-25-66	431	45
Norma Fraction	3-16-66	3-25-66	431	46
Eagle (Amended Loc.)	3-11-67	3-22-67	469	219a
Sheep (Amended Loc.)	3-11-67	3-22-67	469	218a
Lion (Amended Loc.)	3-11-67	3-22-67	469	217a
Lynx	3- 7-67	3-22-67	469	216
Cat	3- 7-67	3-22-67	469	215
Over	6- 8-65	6-17-65	409	645
Sight	6- 8-65	6-17-65	409	649
Sight #1	1-16-68	2- 5-68	510	201
Sight #2	1-16-68	2- 5-68	510	202
Sight #3	1-16-68	2- 6-68	510	203
Sight #4	3-12-68	3-15-68	516	64
Red #1	3-18-67	3-22-67	469	205
Red #2	3-17-67	3-22-67	469	206
Red #3	3-16-67	3-22-67	469	207
Red #4	3-16-67	3-22-67	469	208
Red #5	3-16-67	3-22-67	469	209
Red #6	3-16-67	3-22-67	469	210
Red #7	3-17-67	3-22-67	469	211
Red #8	3-18-67	3-22-67	469	212
Red #9	3-20-67	3-22-67	469	213
Red #10	3-20-67	3-22-67	469	214
Red #11	3- 4-68	3-15-68	516	58
Red #12	3- 4-68	3-15-68	516	59
Red #13	3- 4-68	3-15-68	516	60
Red #14	3- 4-68	3-15-68	516	61
Red Fraction	3- 6-68	3-15-68	516	62
Red Fraction #1	3-12-68	3-15-68	516	63
Copper Glance Extension	3-17-66	3-25-66	431	47
Copper Glance Fraction	3-17-66	3-25-66	431	48
Bobbie #1	2-27-61	3- 9-61	301	529

Unpatented Placer Mining Claims

Those certain unpatented placer mining claims located in the Mineral Hill Mining District, Yuma County, Arizona, described as follows:

Loc No. 1 Located: 3- 2-61 Recorded: 3- 9-61 Docket: [illegible] Page [illegible]

Non-patented lode claims

Claim	Book	Page	Book	Page
Cobre #1			295	15
Cobre #2			299	217
Cobre #3	306	187	299	218
Cobre #4	306	188	295	17
Cobre #5	306	189	295	16
Cobre Fraction	306	190	306	190
Bobbie			301	529
Gunex #1			301	526
Gunex #2			301	527
Gunex #3			301	528
Rosie Belle			299	216
Extension #1			306	193
Extension #2			306	192
Extension #3			306	194
Extension #4			306	191

Non-patented placer claims

Joe #1 and #2 W/2 W/2 Sec 2 T10N R17W

	Book	Page
Joe # 1	301	524
Joe #2	301	525

Claim Groups

15 Patented Lode Claims:

Claims	Survey Number
Queen of Copper	2785
Copper King	"
Greater Jerome	"
Norma	"
Mohave Chief	"
Apex	"
Copper Glance	"
Copper Prince	"
Greater Bisbee	"
Cavern	2981
Continental 1	"
Continental 2	"
Continental 9	"
Continental 10	"
Continental 11	"

as soon as the mill is ready to receive ore.

The mill is to be a 1000 ton per day crushing operation sizing to a 3/8" feed. This will be stockpiled by conveyor and loaded into 1 of 6 large leaching tanks with a front end loader at first and later by a large gantry.

It is to be an acid leach utilizing, hopefully, scrap car bodies for precipitating the copper. If this is not successful they will use cans. For the first 6 or 8 months they will produce cement copper; however, they plan to put in an electro winnowing system and produce a sponge copper for the powder copper industry. When the operation is on stream they expect to produce between 3/4 and 1 million pounds of copper per month on 1.5% cu heads with a recovery of 85% (probably a conservative estimate on the recovery).

The effluent from the leaching operation might contain sufficient iron to warrant investigating the possibility of selling the tailing residue as a soil conditioner.

Water supply in this area is critical. According to Harrison there is a ranch adjacent to the mining property with excellent water rights on the Bill Williams River. They have one well producing 1700 gallons per minute now and two additional wells which he claims are rated at 3000 gallons per minute each. Any deal made with them should definitely include at least sufficient water rights for the mining if not the entire ranch.

Upper bed

Tons	839,000
Grade	45.1%

Lower bed

Tons	2,156,000
Grade	49.3%

Total all classes

Tons	3,356,000

In 1956 1706.19 dry tons of copper ore which was shipped to a smelter contained the following percentages per ton:

Cu	SiO_2	Al_2O_3	Fe	CaO
3.65	51.9	7.9	14.6	1.0

In places the iron ore carries copper; however, the extent has never been determined. It has only a trace of phosphorous and one assay gave a 2% sulfur content; however, this is not thought to be uniformly true. It is interesting to speculate on the possible presence of bornite in this particular area of the iron ore body. One segment of the iron ore body was found to contain between 4 and 6 % manganese.

Limestone-Tactite contact ore

Tons	59,000
Grade	1.31%

Normal fault ore

NW segment

Tons	138,000
Grade	2.20%

Inferred

SW segment

Tons	69,000
Grade	2% ±

Total all classes

Tons	1,308,000
Grade	1.4%

Iron Ores

Specularite Point

Tons	361,000
Grade	49.3%

a sulfur deficient environment. Moreover, the only sulfides reported were found in the lower section of a 300 foot drill hole.

The ore body was drilled out using a wagon drill and consequently there are no cores to be examined. Most of the holes were less than 150 foot deep. No mention was made of the sampling procedure which in this situation could be extremely important. The best ore intercept that I noted on their map was 33' of 3.75% copper. Some of the accessable underground openings are reported to contain large blocks of mineralized ground although they have never been systematically sampled.

The ore calculations made by Mr. Cramer were evidently done utilizing rectangular blocks of various sizes. He used a cubic footage conversion factor of 13 on the copper ore and 10 on the iron ore which certainly would give a conservative tonnage estimate. His calculations for both the copper and iron ore bodies are as follows:

Copper Ore

Flat copper bed

Drilled out

Tons	364,000
Grade	2.088%
Tons (includes above)	692,000
Grade	1.373%
Indicated ore	212,000

Exploration at the Mineral Hill property is by no means complete; in fact there is reason to believe that with a sophisticated exploration program more ore will be found. I do believe, however, that the property is limited in size and that it probably will not exceed 3 to 5 million tons of oxide ore, although in fairness to the property, I must admit that this estimate is merely an educated guess.

Ore bodies

The ore horizon consists mainly of a hematite rich unit which has been silicified and fractured. The copper ore minerals are mainly chrysocolla with some malachite, azurite and I suspect cuprite and possibly bornite occurring as fracture fillings, replacement bodies and thin films or paint. Parts of this horizon are composed of specularite rather than hematite. In fact beneath the copper ore body there is an even larger iron ore body composed of specularite and hematite. Locally within the copper ore body the hematite in areas where there is no visible copper gives assay values as high as 4% copper. Colorwise either cuprite or bornite could be present in the hematite and would be difficult to see without the aid of a microscope, although you would not suspect bornite to be present in

its form is that of a gentle anticline with its axial plane through the center of the ore body and striking north-south. Structurally the ore is in what appears to be a rotational block. There are two rather strong normal faults closely associated with the ore horizon. One of these faults strikes roughly N60°E and dips 65° S and appears to limit the ore on the west. The other strikes approximately N 30° W and dips 85° E and appears to limit the ore on the east. The block between these two faults probably has had some rotational movement with the resultant creation of open spaces through fracturing, crushing and smearing which could be loci for additional ore. In addition to this the intersection of these two normal faults is a likely target area.

The bottom of the thrust plate is well exposed west of the mine with the limestones of the upper plate lying on the metamorphics of the lower plate. I was not taken south of the mine area where there is reported to be a "porphyry" outcropping which in places has been highly silicified.

The ore occurrence at Mineral Hill very closely resembles the Planet and Swansea ore bodies which are in the same general area. The Swansea produced 27,000,000 pounds of copper with a small amount of silver and the Planet produced 3,000,000 pounds of copper. Reportedly the Swansea, which as operated by ASARCO, ceased operations because of heavy ground conditions and not from a lack of ore.

Geology

The geology of the area has never been mapped in any detail and consequently very little is known about it. Mr. Louis W. Cramer, a geologist from Salt Lake City, prepared a report on the property; however, he confined himself mainly to measuring the size of the ore body. Since this examination was designed primarily to decide whether the property warranted further work only a superficial look at the geology was made.

The property is in a low range of rugged hills within the Buckskin mountains and approximately 2 miles south of the Planet mine, 6 or 8 miles west of the Swansea mine and ½ mile north of the Continental mine. Generally speaking it is in an area of gneisses, schists, argillites, and limestones which have been extensively altered locally. The limestones have been thrust over the gneisses and schists. The ore occurs in a completely altered and replaced segment of the metamorphics, and in a portion of the limestone that has been converted to skarn.

PLANET
SWANSEA
CONTINENTAL

The ore horizon that has been developed has a rough dimension of 600' x 1200' x 25' elongated in an east-west direction. It is, for practical purposes, flat lying although there is the suggestion that

The Mineral Hill property is actively being developed for mining. The overburden has practically been all stripped off and the mill and leaching plant are scheduled for completion within the next month. Without reviewing their financial standing it appears that the operation, for a small mine venture, is well financed. Approximately 40 men are employed in the developing and construction phase of the operation. A percentage of those employees live in trailers at the property or at the company owned ranch which is immediately adjacent to the mine.

Their credit rating locally appears good which is surprising in view of the fact that a previous "buyer" known as the Mineral Hill Mining Company, folded owing for wages and equipment; owing finance companies in fact for equipment, according to Mr. Harrison, that existed on paper only. In short, allegedly several smooth operators from California promoted the property for all that was promotable one way or another. Possibly this explains Mr. Harrison's hostility since it was they who "sold" to the promoters.

Vernon Pick of uranium fame has staked and drilled a block of claims on the east side of the property and is reportedly taking at least several of those claims to patent.

8. Evaluate the mine-mill data.

9. Evaluate the geological, geophysical, and assay data for exploration potential.

10. From 8 and 9 above determine whether the property is worth purchasing or whether additional exploration is necessary to justify such a step. Moreover, a decision can be made at this time whether to explore the general region regardless of the decision reached on this property.

General

Mr. Duncan Harrison, the general manager of the mine, met me at Blythe, California, on the morning of October 3, and took me to the mine where one day was spent in a brief examination of the geology and general operations of the property. Mr. Duncan was very cordial and generally cooperative in supplying information requested, but hostile to some extent when discussing the possibility of selling the property.

3. Geologically map the pit and the are adjacent to it so as to develop definite ideas concerning the ore controls which in turn will help guide additional exploration.

4. Check sample the known ore to develop a confidence level in Arizona Ranching and Metals determinations and also to determine what other elements of value might be present. A small amount of this sampling can be done by channel sampling; however, the bulk of it will require sampling by drilling.

5. Have confirming metallurgical tests made on bulk samples of the ore.

6. Channel sample the accessable drifts and cross cuts.

7. Determine the usefulness of geophysical methods of exploration such as I.P. and magnetics and run the appropriate surveys. If magnetics prove useful the possibility of an airborne survey of the entire permissive area in this region should be considered.