CONTACT INFORMATION
Mining Records Curator
Arizona Geological Survey
1520 West Adams St.
Phoenix, AZ 85007
602-771-1601
http://www.azgs.az.gov
inquiries@azgs.az.gov

The following file is part of the

Arizona Department of Mines and Mineral Resources 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.

Report on the Squaw Peak Mine Submittal

Yavapai County, Arizona

by

Gary Harmon and Justin Kreek

INTRODUCTION

The Squaw Peak Mining District was submitted by Mr. Jack James in August 1963. The property consists of 54 lode mining claims and six mill sites in Section 24, Township 13 North, Range 4 East, and Sections 19, 29, 30, 31, and 32, Township 13 North, Range 5 East, G & S R Base and Meridian. The District is some six miles south of Camp Verde, Yavapai County, Arizona, and is served by a good graveled road.

GEOLOGY

The rocks exposed in the district are pre-Cambrian to recent in age. The pre-Cambrian metavolcanics were intruded by a pre-Cambrian granite. The pre-Cambrian rocks are unconformably overlain by a series of relatively flat-lying Paleozoic sediments which represent the complete Grand Canyon Paleozoic sequence. The range is capped with remnants of Cretaceous sediments protected by Tertiary flows. The granite has been intruded by monzonite and rhyolite dikes in the southern half of the area. These dikes are following northwest striking fractures which parallel the Verde fault and which are filled with small quartz veins in the northern half of the area. The Verde fault is a major structural feature of the region and places Tertiary volcanics in the down-faulted northeast block against the pre-Cambrian granite and metavolcanics in the southwestern block. No mineralization was observed associated with the main fault zone.

Previous mapping by consultants show two area of "breccia pipes". After investigating the areas both on the surface and underground, the writers are of the opinion that the breccia zones were healed before the copper mineralization. It is felt that the northwestern trending fractures which carried the mineralizing solutions did not reopen the brecciated zones to any extent. The area mapped as a large breccia pipe has the same appearance, that is the breccia was already healed before copper mineralization.

The Verde Squaw workings pass under the large surface outcrop of "breccia pipe" some 400 feet below the surface. Here the zone is not as well brecciated, is less extensive, and the only copper minerals present are confined to the quartz filling of the northwest striking fractures. Remarkably few occurrences of secondary copper minerals were observed. Malachite and azurite disappeared from the workings only a few feet below the surface in the Verde Squaw area, leaving the sparse, hairlike fracture fillings of chalcopyrite as the principal copper mineral present. No zone of chalcocite enrichment was observed in the Verde Squaw area.

The "breccia pipe" of the main tunnel workings was examined both on the surface and underground. As in the case of the far larger structure to the north, the mineralization was confined to the northwest trending fractures with very little dissemination into the wall rocks.

The "haulage tunnel" apparently was driven to intersect the "pipe" at an elevation 300 feet below the main tunnel workings. Here again the copper mineralization was along fractures in narrow quartz veinlets, and there was no evidence of the breccia pipe. The secondary minerals are slightly more abundant here but still there is little development of the azurite or malachite "bloom" so often found on the walls of underground copper mines.

A small mill was built to process ore taken from a stope driven along an ore shoot which parallels a small breccia pipe. In effect this was a "vein" about three feet wide and thirty feet long which persisted a vertical distance of 200 feet. The ore shoot made possible the mining of some parallel structures of much lower grade until it was stoped out.

The mine workings have been sampled by at least two separate companies with the results of both samplings and thousands of feet of core from test holes in the haulageways showing that the average copper content is less than 0.4%. In 1960 a

surface core hole was drilled near the large breccia area but south of the surface outcrop of breccia. Dave Arnold and C. N. Holmes examined the core and stated that the hole did not intersect the breccia zone and penetrated relatively unaltered granite with little evidence of mineralization.

The geochemical survey completed by the previous workers was interpreted at that time as showing anomalous values in circular patterns that might have been associated with the breccia pipes. We feel that the anomalies should be interpreted as linear features associated with fractures, and in at least one case, the anomaly may be caused by the dump of an old adit.

SUMMARY AND CONCLUSIONS

We feel that the breccia zones were already healed before copper mineralization and thus could not act as favorable areas for ore deposition. The copper minerals then are confined to a northwest trending fracture system which is not dense enough to constitute an ore body. The sampling completed by the other companies shows that copper is present but is too low to be mined profitably in the foreseeable future. It is recommended that no further action be taken.

12/31/60

INTERMOUNTAIN EXPLORATION COMPANY

SQUAW PEAK MINE

RED HILL MINE

MOLYBDENUM PROSPECTS

Intermountain Exploration Company
Box 398
St. George, Utah

C O N T E N T S

OF 3-2692

INTERMOUNTAIN EXPLORATION COMPANY
P. O. BOX 396
ST. GEORGE, UTAH

December 31, 1960

SQUAW PEAK AND RED HILL MINES SUMMARY

The Intermountain Exploration Company has two molybdenum-copper properties, the Squaw Peak, at Camp Verde, Ariz. and the Red Hill at Daggett, Calif. Both have modest amounts of developed ore and prodpects for additional development of large tonnages.

The anticipated plan of approach is to begin with the Red Hill mine in California, and build a flotation mill which will be built on heavy duty trailers and easily moved to the other property. We plan to begin at Red Hill by mining such ore as is available from open cuts, an estimate of which is enclosed. This will return the full cost of the mill and equipment leaving a fair net profit after all costs. Some of this profit can be used to explore the deposit further, and some used to move the mill ultimately to Squaw Peak when the Red Hill is eventually worked out.

During the operation of Red Hill we anticipate doing development work at Squaw Peak, including some drilling. This will put the Squaw Peak property in preparation for mining when the Red Hill is completed. If Red Hill surprises us with additional ore reserves so that the operation can last many years, it may then become wise to build a separate mill at the Squaw Peak, but are plans are realistic, and we intend now to move the Red Hill mill to Squaw Peak.

The Squaw Peak development will have been done, and mining at this property appears to have a greater potential for tonnage and for eventual large operation, which is one reason for starting it second.

The anticipated profits and costs are itemized in the following report along with construction estimates, geological reports and drilling results. By tying the two properties together there is less risk to the investor that he will lose any part of his investment, and greater profit overall to be realized from the combination of the two properties.

Total capital to be raised: $131,950 to be returned as follows:

1.) From profits of Red Hill, $86,950 capital to be returned leaving anticipated profits of $154,411 to divide as agreed.
2.) From Squaw Peak $45,000 to be returned from profits leaving over $1,100,000 to be divided as agreed.

The calculations are summarized on the following pages, under "Economics".

INTERMOUNTAIN EXPLORATION COMPANY
P. O. BOX 366
ST. GEORGE, UTAH

December 28, 1960

SQUAW PEAK MINE CAMP VERDE, ARIZ.

Location and Access:

The Squaw Peak mine is in Yavapai County, Arizona, about 8 miles south of Camp Verde. It is 30 miles south of Clarkdale, a spur on the Santa Fe Railroad, where the old United Verde smelter was operated. This is the nearest railroad shipping point for ore or concentrate. The mine is reached over a good dirt road maintained by the county, and is 1/3 of the way up the slope of Squaw Peak, a prominent topographic feature shown on the Turret Peak quadrangle of U.S.G.S.

Property and Ownership:

The property consists of 61 unpatented claims and 6 millsites. The unpatented claims date back before 1900. For the past 45 years the claims were in the Squaw Peak Copper Company, which has now leased to Intermountain Exploration Company with option to purchase.

In addition to covering the copper-molybdenum showings, the claims also cover one lead prospect and one gold prospect.

Throughout its history the mine was operated by Edison Thacker of the Squaw Peak company, who died about 2 years ago. He had tried to bring the mine into production by raising money on small shipments and specimen sales, and by building a small 5 ton mill. He mined and milled 975 tons of copper-moly ore, the results of which are included elsewhere in this report. The results showed that even under these crude conditions an acceptable grade of moly concentrate was produced.

Geology:

The Squaw Peak mine is located in the west(upthrown) side of the Verde Fault, a major structural break of regional importance; the same fault that cuts the United Verde orebody 35 miles north. The fault at this place separates Devonian Limestone from pre-Cambrian granite. At the Squaw Peak mine the pre-Cambrian granite is intruded by a stock of quartz monzonite, probably also of pre-Cambrian age, which contains copper and moly in small amounts. The sampling done by various companies in the past indicated an average of 0.37%Cu and 0.03%Mo in the monzonite, which is actually a low grade porphyry-copper, although not commercial at the present time. It has been estimated that there is from 50,000,000 to 100,000,000 tons of this material available.

This mineralized stock is the host rock of the orebody of copper and molybdenum which is found in its center, and is of minable grade and tonnage. Concentrations of copper and molybdenum sulfides of spectacular prominence are found associated with quartz, related to some post-consolidation fractures within the stock.

The surface and underground workings were studied by J.M.Hill in 1949. He reported that disseminations were found in a stock of 2500' x 1500' in surface area and increasing in size with depth.

The underground workings were mapped by Hill in 1949, and the main level remapped by Wyman in 1960. Hill's map lacked structural definition. New mapping indicated a structural localization of ore within the stock.

Underground longhole percussion drilling was done by Intermountain Exploration Company in 1960. These outlined the area of the orebody to be approximately that outlined by the R.F.C. in their work during the war, as noted on the enclosed sketch. Compilation of sampling from stope backs, sides, raise samples, and drilling averages is shown in the appendix. In drilling in this manner, the sample recovered was a pulp, and it was noted in drilling that the flaky MoS_2 floated out readilly on the somewhat oily water, causing a selective elimination of part of the moly from the samples obtained wet.

The high grade moly extends from the surface to the lower level, 300 feet vertically below the main level, where it was picked up in a drillhole from the face drilled by Thacker. Geologic projection, however, indicated that the main body will be to the north of the haulage tunnel. Three diamond drill holes are planned to pick up,the projection.

Because of the nature of the ore occurrence at this property, the increase in both size and grade with depth, easy accessibility for mining, supply, power, and water, the Squaw Peak Mine holds much promise for development at minimum cost to become an important producer of moly and copper.

Mine Development:

The mine is located on a hill slope which allows development through tunnels, eliminating expensive shaft sinking, and hoisting. It is presently developed by three tunnels and a raise from the middle tunnel(Main tunnel) to the surface. This raise is in the middle of the orebody and will be of immediate help in mining.

The lower, Haulage Tunnel, was driven for ore extraction, and is sufficiently wide and straight that no additional work need be done. On the main level, however, the tunnel will need to be widened and straightened for efficient use.

Mining can be done by shrinkage stoping with minimum additional development, and an estimate of costs and a sketch of planned work is included in the appendix.

Operating problems;

Seldom is a mine found without problems of any sort, but at Squaw Peak this ideal is approached. The mine is situated ideally for access, mining, water, power, and labor supply. The ground stands well, no hoisting needed, and at the same time the deposit has all indications of becomming bigger than anticipated. The country rock itself, being a low grade porphyry copper, could some day become of economic value in a large scale operation.

Water Supply:

In the gravel flat below the mine there have been several wells drilled for exploration for irrigation water. These have found a supply of water slightly alkaline, pH 7.70 which is not too good for irrigation and culinary use, but which is satisfactory for milling. In addition there is a supply of fresh water which issues from the two mine tunnels that is sufficient for mine and culinary use. Additional water can be obtained from the nearby Verde River by leasing farm land. We have checked our rights to drill wells with the state, and these rights can be obtained for milling purposes by locating Millsites at the proposed mill location. The depth to water in most of the gravel area is about 50', and Robert Hollaman, a well driller, estimated the cost at $4 per foot plus casing.

Mining Methods, Costs, Capital Requirements:

Summaries of these items are included in the appended pages.

Richard V. Wyman

Richard V. Wyman, Mining Geologist
INTERMOUNTAIN EXPLORATION COMPANY

MINING COSTS SQUAW PEAK MINE

The anticipated mining costs are detailed below. On the Main level of the Squaw Peak mine there is a stope developed for mining which can easily be converted to the first cut of a shrinkage stope, as it already undercuts nearly all of the ore blocked out as "In Sight". The initial development cost is included under capital requirements. After this is completed, the stope can be carried from the Main level to the surface, following the ore as it is found, with the shrinkage drawn off from each cut, and stope filled with mined ore. This can then be drawn from two draw points planned as noted on the enclosed sketch.

Hauling can be done with an air trammer, hauling 10 tons per half hour to ore bins to be built outside on the present mine dump, from which the ore can be drawn into trucks for the 1 mile downhill haul to the millsite.

The stope back stands well and drilling can be done with stopers from the muck pile. A break of 20 tons per day per man in the stope should be a reasonable expectation under the conditions prevailing. No hoisting will be required.

Labor costs:		Per Ton
8-	Miners 8 in stope, 20 tons per man, $18 per day plus 12% ins.& taxes Costs $161 for 160 tons	$1.00
1-	Trammer- One man, load and haul 10 tons per ½ hour. $18 plus taxes($20.16) at 150 TPD	.13
2-	Muckers- 2 @ $20.16 net/ 150 tpd	.27
1-	Assayer-Sampler @ $20.16/150tpd	.13
1-	Mechanic @ $22 plus 12%($24.64)/150tpd	.17
1-	Shift Boss @ $24.64 net/150tpd	.17
1-	Office help @ $15 net	.10
	Labor and supervision per ton.	$ 1.97

*Superintendent included under milling cost.

Supplies: Cost per ton of ore mined:	
Powder 1 lb.	.25
Caps,(½)	.30
Timber,1'(chutes)	.10
Assay supplies	.07
Compressed air,oil	.10
Miscel.	.08
Hauling ore 1 mile	.25
	$ 1.15

Total	Labor	$1.97
	Supplies	1.15
Margin-	Errors	.38
		$ 3.50 Estimated mining costs per ton.

*Development costs included in capital requirement. For ore below the Main level and as yet undeveloped, 50¢ per ton is added for this development work per ton.

Milling Costs, estimated elsewhere in this report.

ORE RESERVES SQUAW PEAK MINE

Class 1 In Sight, developed
Class 2 In Sight, undeveloped (beneath main level)
Class 3 Probable, based on geological inference. To be proved in Phase #1

CLASS 1 IN SIGHT (Figures of blocks correspond to Ore Reserve section map)

Block 1 Samples		Cu%	Mo%
N.End Faces:	I.X.C.	1.00	0.126
	Ventures	1.00	no assay
S.End Faces:	I.X.C.	.83	0.155
	Ventures	.71	no assay
West face:	I.X.C.	.53	.138
	Ventures	.78	no assay
Back Sample:	I.X.C.	1.15	.286
	Ventures	1.00	no assay
1)Average Stope face		.87	.176
2)Crosscuts beneath stope		1.24	.287 (R.F.C,sampling)
3)Hammer hole samples		.80	.07* (I.X.C.1959)
Est. aver		1.0 %	.18 %
Production:		1.24%	.75 %

*Hammer holes run by IXC in 1959 were made in stope walls. Molybdenite was selectively floated from the samples, reducing the grade of Mo. (see report)

Tonnage: 6000 sq.ft. x 45', factor 12

$\frac{6000 \times 45}{12}$ = 22,500 tons
2,500 mined or removed
20,000 tons in Block 1

- 6

Block 2		Cu %	Mo%
	Upper part of raise-	1.36	.130
	Lower part of raise	1.36	.304
		1.36%Cu	.217% Mo.

Tonnage $\frac{30' \times 30' \times 80'}{12}$ = 6000 tons
250 extracted in raise
5750 tons in Block 2

less $\frac{6 \times 6 \times 80}{12}$

Recapitulation: CLASS 1 ORE, IN SIGHT AND DEVELOPED

Block 1	20,000 tons	1.0 % Cu	0.18% Mo.
Block 2	5,750	1.36	0.217
		1.08% Cu	0.188% Mo.

CLASS 2, IN SIGHT

Not accessible through present workings

Block 5 Crosscuts beneath stope: 1.37Cu .287% Mo (RFC)
Tonnage $\frac{6000 \text{ sq. ft.} \times 20'}{12}$ = 10,000 tons

---

CLASS 3, PROBABLE

Extensions of known ore, based on geologic probability.
Grade taken as average of nearest ore.

Block 4 Grade: Block 1 1.0 Cu .18 Mo
Block 2 1.36 .217
Av. Block 4 1.18 Cu .198 Mo

Tonnage $\frac{6000 \times 75}{12}$ = 37,500
6,000 (less block 2)
31,500 tons

Block 5 Grade: Block 4 average: 1.18Cu .198%Mo

Tonnage $\frac{6000 \times 40}{12}$ = 20,000 tons

Block 6 Grade: Block 3 average: 1.37% Cu .287%Mo. *

Tonnage $\frac{6000 \times 280' \text{high}}{12}$ = 140,000 tons

*A diamond drill hole drilled from the face of the haulage tunnel, 300 feet below the main level intercepted 9' reported by the owners to assay over 1% Mo. as shown in J.M.Hill's report. Further proof of this extension is needed and will be determined in Phase 1 by the three proposed diamond drill holes.

Total Reserves by Classes:	Class 1, Developed:	25,750 tons	1.08%Cu	0.188%Mo
	Class 2, In Sight, Undev	10,000	1.37	.287
	Class 3, Probable	191,500	1.31	.262
		227,250 tons, all classes		

Additional tonnage may exist below the Haulage tunnel, and in addition, the size of the orebody on the Haulage level is not known. The potential of the property then remains to be determined.

ECONOMICS SQUAW PEAK MINE

1.) Average Grade of Class 1 Ore:	1.08% Cu	.188% Mo.	0.5oz.Ag.	
	21.6#Cu	3.76#Mo.		
Recovery anticipated 90% in conc.	19.44#Cu.	3.38#Mo	.4oz.Ag.	
Value per lb. in Conc.	26¢	$1.20	$.86	
Net value of recov. metals	$5.05	$4.05	$.34	
Total net value per ton: (using 29¢ as refined Cu price)				$9.44
Est. milling cost at 150 TPD	$2.00			
Est mining cost at 150 TPD	3.50			
Direct costs	$5.50			- 5.50
Est. net each ton of class 1 ore:				$3.94
For entire tonnage of class 1 ore, $3.94 x 25,750				$101,455

2.) Average grade of Class 2 and Class 3 ore:	1.31% Cu	.262%Mo.	.5 oz.Ag.	
	26.2#	5.24#		
90% Recovery	22.? #	4.45#	.4 oz.	
Value, net 26¢ lb.Cu.	$5.77	$5.34	.34	
Total net per ton for products:				$12.45
			milling	2.00
For Class 2 and 3 ore an additional 50¢ for devel.			mining	4.00
Gross profit per ton:				$ 5.45
201,500 tons @ $5.45			$1,098,175	gross profit

Total anticipated net: $ 101,455
1,098,175
$ 1,199,630 less capital investment

Part of the anticipated Class 3 ore is available for mining above the Main level, but is classed as probable ore. It would be mined along with the Class 1 ore. The total tonnage available above the "Main" level would be as follows: 77,250 tons, which however includes probable ore, not sufficiently developed or known to be included as one block. The bluk of this ore would be available on the development as outlined, indicating a profit of about $350,000 less capital investment without mining any of the extended ore below the main level.

The principal long range possibility of the property is not included in these estimates. That is that the body will continue to increase in size with depth, and that the tonnage and grade are much greater. This possibility will be tested in Phase 1 of the development program.

At the mining rate of 150 tons per day, the Class 1 reserves would be mined in 8½ months, and the entire tonnage above the main level in approximately 2 years. During this time the exploration and development of the lower area can proceed.

ESTIMATED COSTS OF MINING EQUIPMENT AND DEVELOPMENT

Compressor 800CFM	$9,000	(Used reconditioned equipment available
2 12-B Eimco Muckers	4,700	in Utah or Arizona has been priced
10 2 ton side dump cars	1,500	and listed herewith)
1 Air trammer	1,600	
8 Stopers	2,400	(Supplies are new of standard manufacture)
Ore bin construction	1,500	
Steel, Rail, Pipe, Hose	2,000	
Welder and mech. supply	1,000	
Elec. lamps & Charger	250	
Pump, Tank & Line	750	
	$ 24,700	
Freight & Taxes	1,300	
	$ 26,000	

* A minimum budget would include rental of the principal capital items above on a rental purchase basis, whereby two months rental (usually 20% for small items or 10% of cost of compressor) is paid in advance and guaranteed. This would preclude using used reconditioned equipment as such contracts are usually for new equipment. We estimate that the cash requirement can be reduced to approximately $15000 by this system, although the untimate cost would be greater.

Development costs in mine: Main Level:	Drifting 200' @ $35	$7000
	Widening haulage	1300
	Raise preparation	700
		$ 9000

Total estimated costs of equipment and mine development to begin operation: $35,000

Minimum capital required for beginning operation using rental purchase: $24,000

PROPOSED SCHEDULE FOR SQUAW PEAK PROJECT

PHASE 1: Preparation:

Initial preparation will include the following items: 1.) Mill testing by independent firm, or by Intermountain Exploration Co. 2.) Diamond drilling from lower Haulage Level to determine location and extent of downward projection of molybdenum-copper orebody. 3.) Water well location and drilling.

Mill testing has been started, and is described elsewhere under Metallurgy. This cost was estimated by Galliger Corp. in Salt Lake City to be $1500. and to encompass three weeks work.

Diamond drilling from the lower level, necessary to locate the principal ore reserves for future operation, will require installation of 2000' of pipe and preparatory work totaling $2000. Drilling can be contracted for an estimated $7 per foot with 3 200' holes being required.

Water well drilling to locate sufficient water for the mill will be done in the gravel flat below the mine. Other wells in the vicinity have found water that would be suitable for this purpose at 50' depth, the only question being that of sufficiency. Other fresh water would be available by lease from irrigation rights in the Verde River. Well completion is included in the estimate of mill construction.

Preparatory phase-Squaw Peak:

Estimated time needed 2 to 3 months

Mill Testing	$1500
Drilling	6200
Water Location	2000
	$9700.00

PHASE 2: Development and Construction:

Mine development at Squaw Peak is already partly completed. The development required for extraction of the developed ore above the main level would be relatively simple. Shrinkage stoping is anticipated as being the most practical with the ground conditions and development already completed. The old Main Level tunnel would need to be widened and straightened, which would then provide direct access to the stope area. Two draw points would be established and loading of cars from these accomplished by using Eimco 12-B muckers. A plan of this development is included. Cribbed chutes and manway will be carried up with mining, and ventilation provided through the raise already in existance.

On the lower tunnel, or Haulage level, a similar type of development is anticipated, with a raise from this level to the Main level through the orebody. Extraction of the ore between these levels will be accomplished later.

Mine development and mill construction(or setting up of the mill after completion of work at Red Hill) will be dont simultaneously. The estimated costs are itemized on the enclosed list.

Mill construction costs are included on a separate list. The mill may be set up at either property, and moved to the other after termination of the work thereon.

Estimated time for construction and development is four months.

Oct, 19, 1949

REPORT
on the

SQUAW PEAK COPPER MINE
Yavapai County,
Arizona

by
J. M. Hill, Geologist

INTRODUCTION

Location and Access

The Squaw Peak Copper Mine, in eastern Yavapai County, is located two miles west of the Verde River about seven miles south of Camp Verde. The larger towns of Cottonwood, Clarkdale and Jerome are distant 28, 30 and 36 miles to the north. The famous copper town of Jerome is 39 miles east of Prescott, the County Seat of Yavapai County. Blacktop Highway 89 is taken when leaving Prescott, and followed to one mile beyond the Verde River bridge at Cottonwood. At this point a right turn is made south onto the Montezuma Castle paved road which goes to Camp Verde. South of the latter town there is a well signed and maintained gravel road to the Squaw Peak Mine. A branch of the Atchison, Topeka and Santa Fe Railroad reaches as far as the smelter at Clarkdale. (See Map #1)

Property and Ownership

As shown on Map #2, there are 19 claims in the Squaw Peak group. These are held by annual assessment, though there is sufficient work on the group to obtain U.S. Patent. The larger part of the ground is in Sections 29, 30 and 31 of Township 13 North, Range 5 East of the Salt River Meridian. This area is shown in the upper left corner of the U.S. Geological Survey topographic map, TURRET PEAK. The main Tunnel, at an elevation of 4,150', is two miles west of the Verde River, about one-third of the way up the slope of Squaw Peak. A high tension line of the Central Arizona Light & Power Company is one mile east of the Camp, and three-fourths of a mile east of Haulage Tunnel Portal, which is at an elevation of 3,850', just at the break of the mountain. There is a fine site for a large mill at the portal of the Haulage Tunnel.

The claims are owned by the Squaw Peak Copper Mining Company, an Arizona corporation, organized in 1916. Capitalization, at present, consists of 2 million $1.00 shares of common stock, of which 1,010,000 are outstanding, and 3,000 shares of $100.00 preferred stock, authorized in 1949, of which all are still in the treasury. The preferred stock carries 6% yearly cumulative dividends.

Mr. Edison Thacker is president and General Manager, as well as a director, of the Corporation. Other directors are V. E. Thacker and C. C. Michler.

SQUAW PEAK COPPER MINE
Yavapai County - Arizona 1949

C O N T E N T S

- - -

I was told by Mr. Thacker that there are about 400 stockholders of whom the addresses of only 260 are known. It is my understanding that Mr. Thacker owns or has control of sufficient stock to be in a position to make all decisions for the Company.

Finances

I was informed by Mr. Thacker that financially the Company is in good shape. The only obligation outstanding is the balance of a few thousand dollars on an R.F.C. loan made in 1942 for the enlargement of the flotation mill and for mine development. This loan is repayable on a basis of 5% of smelter settlements.

History

In a report, signed by W. E. Defty, dated November 29, 1916, the recommendation is made that the tunnel (Main Tunnel) be driven 200 feet to cut the downward extension of the ore body, "which appears to warrant exploitation for its copper and molybdenite values." A report of William Selinger, November 30, 1927, was made after the ore had been cut by this tunnel. A report by Robert J. Cole, February 8, 1929, was of especial interest as the porphyry was recognized as the ore carrier and the structural features were brought out. In Mr. Roy H. Belknap's report of January 29, 1940, driving of the Haulage Tunnel was recommended for an additional distance. Evidently funds were not available to continue this work to completion for it is still about 300 feet short of crosscutting the ore zone. In August 1942, the mine was examined and sampled by E. N. Campbell for the R.F.C., as a result of which work, an advance of $20,000 was made to the Squaw Peak Company.

Apparently no shipments were made from the mine prior to 1944, after the 35-ton flotation mill was in operation. The total production made from treating 1,000 tons of ore was 5.40% dry tons of 98.82% molybdenite (MoS_2), and and 36.034 tons of copper concentrate averaging 22.85% Cu., 1.92 oz. Ag. and 0.016 oz. Au.

No production has been made in the last few years as mill recovery, while good, was not as good as it might have been had there been adequate power. A small amount of development and diamond drilling was done in the ore zone on the Main Tunnel Level in 1948. At the present time plans are in the making to purchase additional power, either deisel or electric, so that mining can be started on the known high grade copper-"moly" ore developed.

Development

The ore zone is developed by numerous opencuts and two short shallow tunnels at the surface, at elevations of 4,425' to 4,450' and by an inclined shaft whose collar is at an elevation of 4,320'. This incline is on one of the major ore feeders, and is in high grade "moly" copper ore. It is connected with the Main Tunnel elevation of 4,150' by a raise in excellent ore from the stope above the Tunnel level (See Map #3). There is a small amount of diamond drilling in down holes from the Main Tunnel level, showing that the rich ore does go down 25 feet. The Haulage Tunnel, whose portal is near the middle of

the South View claim (See Map #2), 1,540 feet North 70° East of the portal of the Main Tunnel, is 300 feet lower, or at 3,850' elevation. From the face of the Haulage Tunnel, there is a diamond drill hole 150 feet long that cut mineralized porphyry for its whole length.

Total development consists of 4,160 feet of tunnel and drift, of which 2,050 feet is at the Haulage Tunnel and 2,175 feet in the Main Tunnel; and, 217 feet of raises, mostly into the stope area above the south drift from the Main Tunnel. The stope has an area of approximately 1,375 square feet, and slightly over 1,000 tons of ore have been extracted from it to date. Since mineralization does extend to the Haulage Tunnel level and some ore has been determined at that level, it can be said that there is the possibility of 575 feet of mining ground above the lowest development.

GEOLOGY

General

Map #2 shows the general geologic setting of the Squaw Peak claims. The Verde Fault is the most conspicuous item of the geology since it separates blue gray limestone (probably Devonian) east of the fault from old Pre-Cambrian granite. The fault zone, itself, is well marked by a series of drainage lines and low saddles on the interdrainage areas. The mouth of the Haulage Tunnel is not over 50 feet from this line. West of the fault, the mountain rises steeply, being composed for the most part of the Old Granite. This weathers readily in to a coarse reddish, grey grit. The rounded outcrops are clothed with brush, and solid rock is inconspicuous. Intruded into this granite, there are many large and small dikes, and a stock of a hard grey, red weathering, porhyritic monzonite, which in many exposures shows quartz, so it might be called quartz-monzonite. This rock has a blocky jointing and resists weathering so the outcrops stand well above the reddish grit derived from the old granite. The monzonite is the host rock for the ore, though there are some veins along fractures in the old granite near the stock.

These old formations extend over a width of about one mile, west of the Verde Fault and nearly to the base of the peak which is known as Squaw Peak. At an elevation of about 5,000' the igneous rocks are capped by sedimentary rocks. First a thin layer of red flaggy sandstone, above which there is a considerable thickness of blue grey limestone (probably Devonian in age) like the limestone at the base of the mountain east of the Verde Fault. The limestone is said to be capped by basalt which weathers red and is finely visicular. Floats of these higher unmineralized formations can be seen in all the steep east draining canyons.

Geology of the ORE ZONE

On the generalized geologic map of the claims (See Map #2), it will be seen that the bulk of the monzonite stock is on the Girder, Green Chief, Edith and Green Parrot Claims. It covers an area approximately 2,500 feet in length, trending about North 30° West, has a maximum, on surface, width of 1,500 feet, and an average width of 900 feet. There are several large dikes extending both northwest and southeast from the main mass of the stock, so its actual area would be larger than the two million square feet of the stock proper. Only the larger dikes are indicated on Map #2. It is known that on the Main Tunnel the

stock is 720 feet wide and probably more, and that on the Haulage level, 300 feet lower, the monzonite is 800 feet or more in width.

As will be seen from a study of Map #2, "Geologic Map of Mine Workings", all of these old formations are broken by many fractures and some faults of considerable magnitude. A great many of these breaks are about parallel to the Verde Fault, and are doubtless related to that movement. Most of the fractures and faults dip to the southwest at fairly steep angles, though some have dips as low as 35 degrees. Movement on most of these breaks seems to have been normal--that is, the "up" side slipped downward. There are also a large number of nearly east-west trending rather tight breaks that dip a medium to flat angles, either north or south. In the more highly mineralized area opened by the crosscuts from the south drift and in the stope, there are at least three conspicuous north to North 10° West vertical fissures that are highly silicious and carry chalcopyrite, molybdenite and a little sphalerite. Ore from these veins carry more than average value in gold and silver. The mineralized monzonite, adjacent to these quartz veins, is much altered with a peculiar purplish-red cast of the phenocrysts and is cut by a close irregular system of quartz veinlets, all of which carry more than ordinary quantities of copper and "moly".

On the Main Tunnel level, what appears to be, good copper mineralization first shows 130 feet out from the turntable, where the north and south drifts take off, and extends to the strong fault shown just east of the dam, in the westward extension of the tunnel (See Map #3). In the north drift, copper mineralization shows up all along for 400 feet - almost to the monzonite-granite contact. The south drift is well mineralized to the south end - a distance of 240 feet.

On the Haulage Tunnel level, 300 feet below the Main Tunnel, copper mineralization begins to show up well - 523 feet out from the face, and the 150 foot diamond drill core shows at least that distance to be mineralized (See Map #4). The total known width of mineralized monzonite on the Haulage level is therefore 673 feet. It should be noted that there is one area, 9 feet wide, cut between 57 and 66 feet by the diamond drill, that showed 0.70% Cu. and 1.02% MoS_2, as shown on Map #3. This high "moly" area is almost directly in line with one of the vertical high grade veins, shown on the Main Tunnel level, and in the stope.

That the copper mineralization is not entirely confined to the immediate monzonite stock, is shown by several mineralized zones along fractures cut nearer the mouths of both the Main and Haulage Tunnels. One or two of these are not at all bad looking, and elsewhere might have been developed as most promising. These can be considered as reserves for future exploration.

The sulphides, pyrite, chalcopyrite, a little bornite and molybdenite are seen directly at the surface, though there is a little copper carbonate staining on joints of the monzonite all over the surface of the ore zone. This staining extends northward for a considerable distance beyond any underground work. It will be noted, however, from Map #2 that the stock narrows to the northwest on the surface. Southeastward from the shaft, the stock at surface quickly narrows to a dike about 50 feet wide at the top of the ridge and less than that in the next canyon south.

ESTIMATION OF VALUE AND TONNAGE

Sampling

I did not attempt to sample any part of the Squaw Peak Mine. The following estimates are based on the sample results of engineers that have made reports on the property, as mentioned under History. I have seen the original reports, and have no reason to doubt the material I have used in making the following calculations. I did carefully examine all of the workings that were accessible, and have noted on Map #4, "Sampling Map of Mine Workings", my impression of the kind and degree of mineralization. On this map, there is also given the results of sampling by Thacker (as the work progressed), by Sturgis (date of this sampling uncertain, but presumable about the time of the Cole report in 1929, as only copper content is shown) and the Campbell (R.F.C.) sampling of the copper "moly" body in the south drift.

The ore in the high grade stope area (see insertion Map #3 and Map #4), which was milled, is estimated by Mr. Thacker to have carried 1.20% MoS_2 and 1.45% Cu. The R.F. C. sampling in the cross cuts below the stope average 1.37% Cu., 0.287% MoS_2 and 0.79 oz. Ag. The copper checks with Thacker's estimate, but he is 1% higher than Mr. Campbell in "moly". This may be due to the fact that in this area the "moly" is in very large crystals, which give a deceptive appearance of richness and are very difficult to sample. However, it should be noted that in milling the 1,000 tons that came from this stope, the recovered minerals, with admitted low recovery of the "moly", indicated that the ore carried 0.0015 oz. gold, 0.15 oz. silver, 0.48% MoS_2 and 1.24% copper. It is quite evident from an inspection of the tailings that considerable "moly" was lost. As a matter of fact, Mr. Thacker estimates that his recovery of "moly" was only 60 to 65 percent of the content of the ore. Under this assumption, the ore carried at least 0.76 "moly". It seems to me safe to estimate the so called high grade ore at 1.20% Cu., 0.75% MoS_2 and 0.50 oz. silver. This figure will be used in calculations.

The general mineralization is definitely copper, with only a small "moly" content - probably under 0.25% MoS_2 , though little is actually known as to the "moly" content since it has not been properly sampled and assayed for both copper and "moly". The average of the area of definitely copper mineralization, as indicated by the Thacker and Sturgis sampling shown on Map #4, is copper 1.63% without the 7 assays of high grade copper ore sampled by Sturgis. With those high Sturgis samples included, the average would be copper 3.88%. In the following calculations, the figures of 1.63% Cu has been used.

Volume of Ore

As stated under Geology of the Mineral Zone, the monzonite is definitely mineralized over an area 2,500 feet long by an average of 900 feet wide on the surface - a total of 2,250,000 square feet. On the Main Tunnel level the area is developed for 640 feet in length and 280 feet wide, - a total of 179,200 square feet. Taking only the footage developed by the Main Tunnel, with an average depth from surface of 170 feet, there is fairly definitely established possible ore, totaling 30,464,000 cubic feet, which using the factor of 12 cubic

feet per ton, shows 2,538,000 tons of material, averaging Cu. 1.63% and MoS_2 0.24%. Probable ore, as indicated by the surface area, could total 31,900,000 tons above the Main Tunnel. That this is a fair assumption, is indicated by the presence of fair copper-"moly" at the "moly" surface tunnel (300s and 750 w on Map #4), and in several cuts as far north as the 1,000' coordinate.

Admitted that development in the Haulage Tunnel only partly shows the width of mineralization 673 feet, this is over twice as wide as the demonstrated ore zone on the Main Tunnel. The geology indicates that this stock of monzonite gets larger with depth, as evidenced by the many dikes shown on the surface. It seems reasonable to suppose that for each foot of depth below the haulage level, there will be at least 14,900 tons immediately below the area developed in the Main Tunnel, and an additional possibility of 172,600 tons assuming that the stock has vertical boundaries of the dimensions shown on the surface. Whether this mass of 56,260,000 tons will be ore remains to be proven by development. It is safe to assume that the values shown on the Main Tunnel level will continue downward for at least 50 feet, which would indicate additional probable ore of 746,650 tons, and possible additional ore at 8,630,000 tons.

Of immediate interest from an operating standpoint is the body of high grade "moly"-copper ore partly developed in the south drift of the Main Tunnel, in the stope and in the raise to connect with the surface shaft (See Map #3 and #4). This richer core of the ore body, as at present indicated by development, is 40 feet wide, 240 feet (possible 400 feet) long and 170 feet high above the Main Tunnel. It is safe to assume that it will be of approximately the same character for at least 25 feet below the tunnel level. It contains 200,000tons above the tunnel, and a possible 12,000 tons for 25 feet below the level, that should carry 1.20% Cu., 0.75% MoS_2 and 0.50 oz. Ag.

There are at Squaw Peak Mine 3,284,650 tons of probable ore above or just below the Main Tunnel level, which contain 102,313,000 pounds of recoverable copper and 11,259,000 pounds of recoverable molybdenite, which have a combined market value of $17,000,800 or $5.175 per ton.

In the following table calculation, poundage of metal is based on a metallurgical recovery of 95% of the copper and 85% of the molybdenite.

METAL CONTENT AND VALUE OF ORE

ORE BODY	@ 1.63% Cu.		@ 0.20% MoS_2	
	Copper		Molybdenite	
Probable Ore: 3,284,650 Tons	Pounds	Value @ 10¢*	Pounds	Value @ 54¢**
Above Main Tunnel	78,632,000	$ 7,863,200	8,659,200	$ 4,676,000
50' below Main Tunnel	23,631,200	2,361,200	2,599,800	1,403,900
Total	102,263,200	$10,224,400	11,259,000	$ 6,079,900
Possible Ore: 37,992,000 Tons				
Above Main Tunnel	909,322,100	$90,932,200	99,830,800	53,908,600
50' below Main Tunnel	267,270,100	26,727,100	28,492,000	15,385,300
Total	1,176,593,200	$116,659,300	128,322,800	$ 69,293,900

250' above Haulage Tunnel: 47,630,000 tons - - no real basis for evaluation

* 10¢ per pound for copper in concentrate sent to smelter

** 54¢ per pound, Eng. and Min. Journal, October 1949, page 100

The high grade "moly"-copper stope in the south drift contains, above the Main Tunnel, 260,000 tons of reasonable sure ore which should yield on the same basis of calculation as used above: 4,560,000 pounds of copper; 2,550,000 pounds of molybdenite; and 95,000 ounces of silver, having a total value of $1,882,000, or $9.41 per ton (silver estimated at 60¢ at smelter). It is quite possible (as Mr. Thacker believes) that there are several thousand tons of ore immediately surrounding the high grade stope, which will average nearer 1.45% copper and 1.20% MoS_2 than the figure I have used for calculating the core area.

Operating Problems

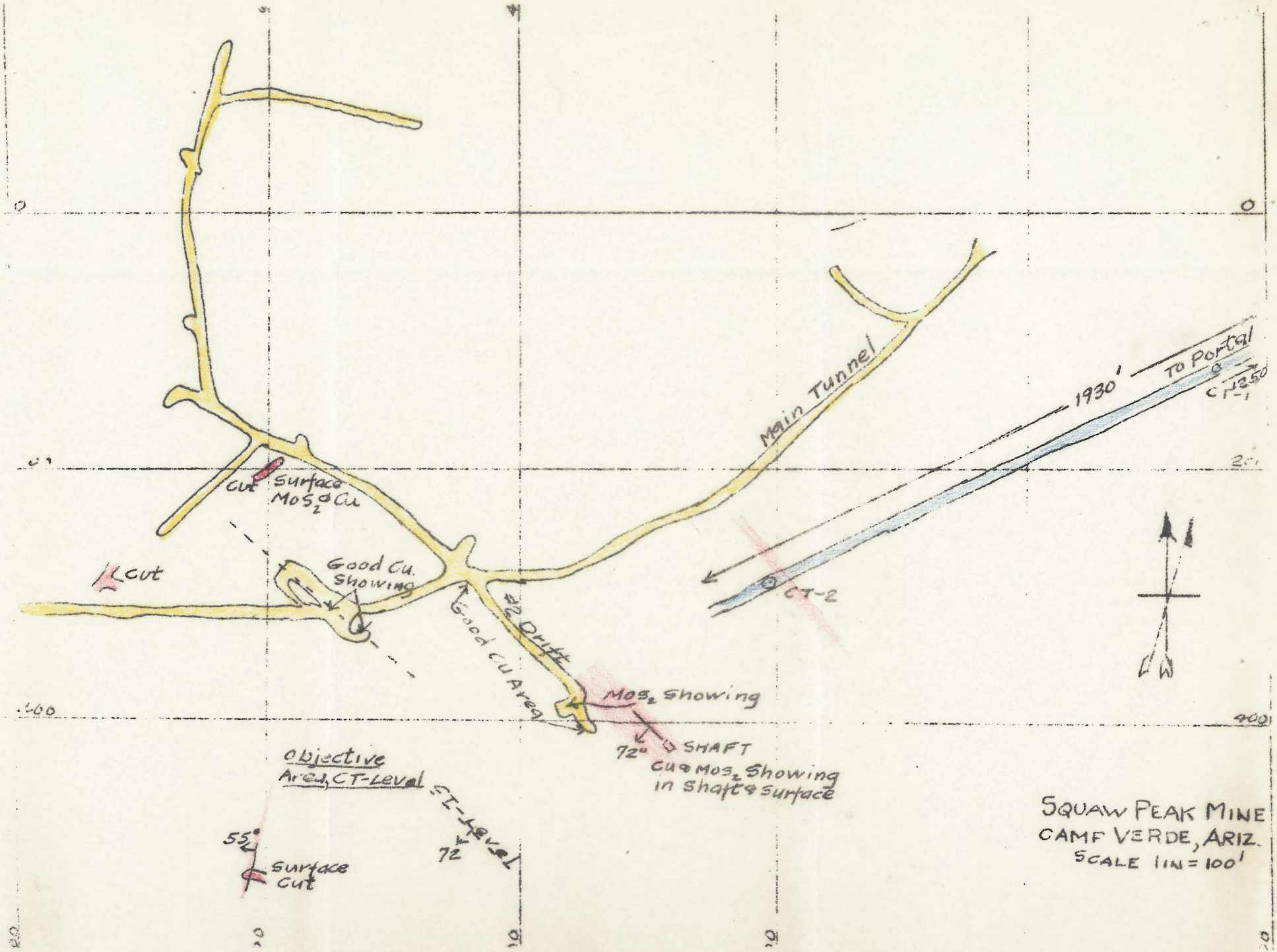
In the mining department, there should be no difficult problems for the ground stands well, as evidenced by the condition of the various workings. The larger faults will require heavy timbering, but as a rule the widths to be taken care of are small as compared with the rest of the openings which require no timber. The principal development for the immediate future will be the driving of more raises into the high grade stope area.

It is Mr. Thacker's opinion that with the gradual slackening off of mining at Jerome it will be possible to get well trained mine labor for $11.00 and common labor for $10.00 per day. The cost of timber is coming down, and it is believed that mine timber can be purchased for 60 to 70 dollars per thousand. Thacker has recently been informed that a low electric power rate (the high tension line is only a mile from the mine) can be expected if it is decided to do away with the present deisel power plant.

The milling problem is not so simple. The present 35-ton per day plant will need overhaul before it can be expected to make the savings that are known to be possible on this ore. The present deisel engine is old and does not give quite enough power to run the crusher and maintain a steady flow of power to properly operate the flotation cells. It appears that it would be wiser and only a little more expensive to install electric power for individual drive on all the mill equipment than to purchase a new and larger deisel engine. In order to make the best recovery possible, it would be advisable to buy at least 4 additional Denver flotation cells - 2 for the copper circuit and 2 for "moly" cleaner work. A new and larger crusher with rebuilding of the feed bins is also indicated. Mr. Thacker has estimated that these changes can be made for under $10,000. This expenditure would seem to be amply justified when one considers the quantity of good ore that can be considered immediately available.

In discussing the problem of cost of operation with Mr. Thacker, he estimated that using the revamped mill at a 35-ton per day basis, his costs would run about $7.00 per ton. This would apparently leave an operating profit of over $2.00 per ton on the ore from the 200,000 tons of high grade ore indicated in the south drift development.

If the proposed development works out as seems probable and connection between the Main Tunnel and Haulage level is made, a new larger mill will undoubtedly be established at the excellent site near the portal of the lower tunnel. With a well planned mill, there will undoubtedly be a considerable saving in milling cost. Also to be borne in mind, is the fact that the larger the tonnage handled the less cost per ton follows automatically.


Main Tunnel
1930'
To Portal
CT-1
CT-2
Cut
Surface MoS_2 & Cu
Cut
Good Cu. Showing
#2 Drift
Good Cu Area
MoS_2 Showing
72'
SHAFT
Cu & MoS_2 Showing in Shaft & Surface
Objective Area, CT-Level
ST-Level
55'
72
Surface Cut
SQUAW PEAK MINE
CAMP VERDE, ARIZ.
SCALE 1 IN = 100'

RECOMMENDATIONS

It would seem advisable for the company to try to raise sufficient funds to revamp the present mill and begin production. With the company in the sound financial condition that exists that should not be difficult. It would be advisable to raise at least $30,000 - preferably $50,000 - to assure that the program of development and production would meet with no hitches.

There should be instituted a continuing prospecting campaign by drilling laterally from the south drift for extensions of the high grade copper-"moly" ore, and below the Main Tunnel level to determine more accurately the shape of the main copper ore body. That may be of importance.

Work should be started in development in the Haulage Tunnel level. It should be driven ahead to entirely crosscut the monzonite stock so that this large mass of potential ore can be sampled and appraised. Drilling laterally and in upholes from the Haulage level should be carried out.

Certainly more drilling and development on the copper body in the north drift on the Main Tunnel level is indicated and a connection should be driven from the present north heading to surface - approximately 375 feet - for proper ventilation of that area.

The program of prospecting the large potential copper ore body is going to take time and a large amount of money. It may be that one of the large mining companies could be interested in such a program and the company should consider such a move in my estimation. Of course, it would be much easier to interest outside assistance if the mine were on an operating basis. I, therefore, suggest that steps be taken as rapidly as possible to get into production from the high grade ore zone.

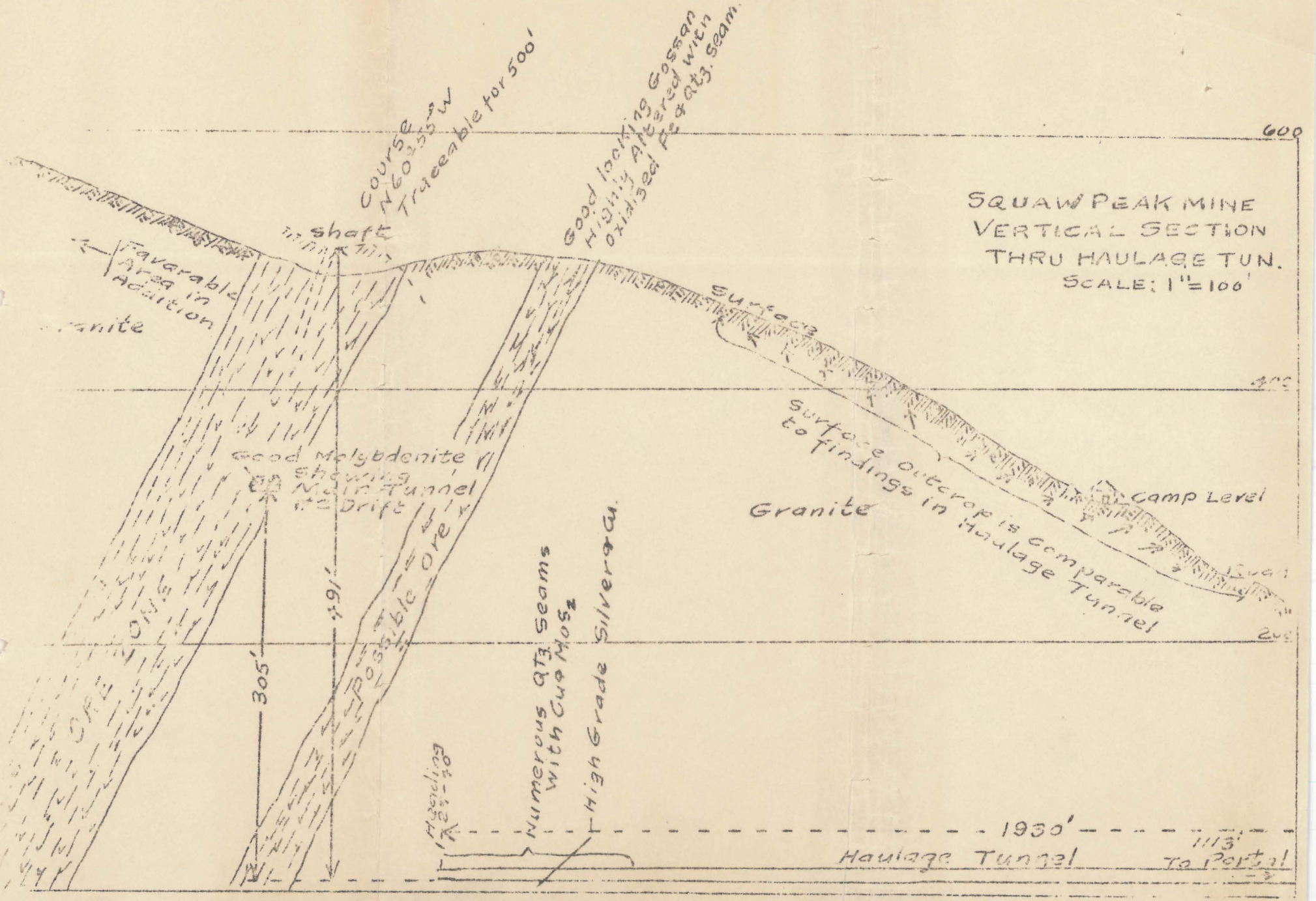
Acknowledgments

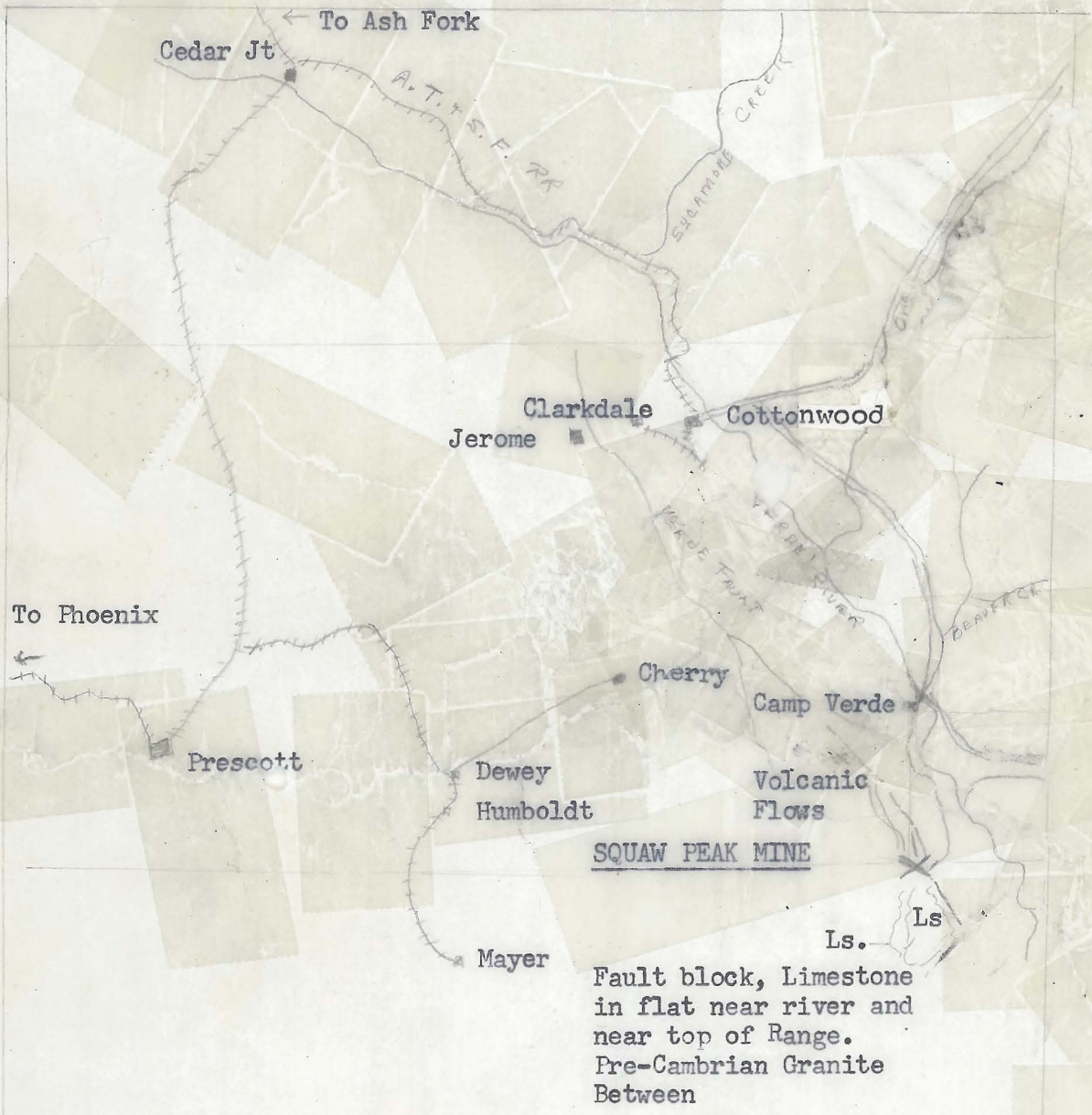
I wish to express my thanks for the many courtesies extended by Mr. and Mrs. Thacker during my stay at the mine. Mr. Thacker turned over for my use, any and all records, the maps of workings, and various surveys which were of much help in arriving at the conclusions contained in this report.

Respectfully submitted,

J. M. Hill
Registered Geologist

October 19, 1949


SQUAW PEAK MINE
VERTICAL SECTION
THRU HAULAGE TUN.
SCALE: 1" = 100'
600
400
200
Course N60°35'W Traceable for 500'
Good looking Gossan Highly Mineralized with oxidized Pb & Qtz. seam.
Shaft
Favorable Area in Addition
Granite
Surface
Good Molybdenite Showing in Main Tunnel & Drift
Surface outcrop is comparable to findings in Haulage Tunnel
Camp Level
Granite
Ore
Possible Ore
305'
491'
Numerous QTZ. Seams With Cu & Mo S2
High Grade Silver Cu.
Mineralized Zone
1930'
1113'
Haulage Tunnel
To Portal



SQUAW PEAK COPPER MINE
INDEX MAP
Showing relation to Verde Fault
Scale 1 inch = 8 miles

J.M.H. 10/19/49

1949

SQUAW PEAK COPPER MINE
Yavapai County - Arizona

C O N T E N T S

- - -

REIORT
on the

SQUAW PEAK COPPER MINE
Yavapai County,
Arizona

by
J. M. Hill, Geologist

INTRODUCTION

Location and Access

The Squaw Peak Copper Mine, in eastern Yavapai County, is located two miles west of the Verde River about seven miles south of Camp Verde. The larger towns of Cottonwood, Clarkdale and Jerome are distant 28, 30 and 36 miles to the north. The famous copper town of Jerome is 39 miles east of Prescott, the County Seat of Yavapai County. Blacktop Highway 89 is taken when leaving Prescott, and followed to one mile beyond the Verde River bridge at Cottonwood. At this point a right turn is made south onto the Montezuma Castle paved road which goes to Camp Verde. South of the latter town there is a well signed and maintained gravel road to the Squaw Peak Mine. A branch of the Atchison, Topeka and Santa Fe Railroad reaches as far as the smelter at Clarkdale. (See Map #1)

Property and Ownership

As shown on Map #2, there are 19 claims in the Squaw Peak group. These are held by annual assessment, though there is sufficient work on the group to obtain U.S. Patent. The larger part of the ground is in Sections 29, 30 and 31 of Township 13 North, Range 5 East of the Salt River Meridian. This area is shown in the upper left corner of the U.S. Geological Survey topographic map, TURRET PEAK. The main Tunnel, at an elevation of 4,150', is two miles west of the Verde River, about one-third of the way up the slope of Squaw Peak. A high tension line of the Central Arizona Light & Power Company is one mile east of the Camp, and three-fourths of a mile east of Haulage Tunnel Portal, which is at an elevation of 3,850', just at the break of the mountain. There is a fine site for a large mill at the portal of the Haulage Tunnel.

The claims are owned by the Squaw Peak Copper Mining Company, an Arizona corporation, organized in 1916. Capitalization, at present, consists of 2 million $1.00 shares of common stock, of which 1,010,000 are outstanding, and 3,000 shares of $100.00 preferred stock, authorized in 1949, of which all are still in the treasury. The preferred stock carries 6% yearly cumulative dividends.

Mr. Edison Thacker is president and General Manager, as well as a director, of the Corporation. Other directors are V. E. Thacker and C. C. Michler.

I was told by Mr. Thacker that there are about 400 stockholders of whom the addresses of only 260 are known. It is my understanding that Mr. Thacker owns or has control of sufficient stock to be in a position to make all decisions for the Company.

Finances

I was informed by Mr. Thacker that financially the Company is in good shape. The only obligation outstanding is the balance of a few thousand dollars on an R.F.C. loan made in 1942 for the enlargement of the flotation mill and for mine development. This loan is repayable on a basis of 5% of smelter settlements.

History

In a report, signed by W. E. Defty, dated November 29, 1916, the recommendation is made that the tunnel (Main Tunnel) be driven 200 feet to cut the downward extension of the ore body, "which appears to warrant exploitation for its copper and molybdenite values." A report of William Selinger, November 30, 1927, was made after the ore had been cut by this tunnel. A report by Robert J. Cole, February 8, 1929, was of especial interest as the porphyry was recognized as the ore carrier and the structural features were brought out. In Mr. Roy H. Belknap's report of January 29, 1940, driving of the Haulage Tunnel was recommended for an additional distance. Evidently funds were not available to continue this work to completion for it is still about 300 feet short of crosscutting the ore zone. In August 1942, the mine was examined and sampled by E. N. Campbell for the R.F.C., as a result of which work, an advance of $20,000 was made to the Squaw Peak Company.

Apparently no shipments were made from the mine prior to 1944, after the 35-ton flotation mill was in operation. The total production made from treating 1,000 tons of ore was 5.40% dry tons of 98.82% molybdenite (MoS_2), and and 36.034 tons of copper concentrate averaging 22.85% Cu., 1.92 oz. Ag. and 0.016 oz. Au.

No production has been made in the last few years as mill recovery, while good, was not as good as it might have been had there been adequate power. A small amount of development and diamond drilling was done in the ore zone on the Main Tunnel Level in 1948. At the present time plans are in the making to purchase additional power, either deisel or electric, so that mining can be started on the known high grade copper-"moly" ore developed.

Development

The ore zone is developed by numerous opencuts and two short shallow tunnels at the surface, at elevations of 4,425' to 4,450' and by an inclined shaft whose collar is at an elevation of 4,320'. This incline is on one of the major ore feeders, and is in high grade "moly" copper ore. It is connected with the Main Tunnel elevation of 4,150' by a raise in excellent ore from the stope above the Tunnel level (See Map #3). There is a small amount of diamond drilling in down holes from the Main Tunnel level, showing that the rich ore does go down 25 feet. The Haulage Tunnel, whose portal is near the middle of

the South View claim (See Map #2), 1,540 feet North 70° East of the portal of the Main Tunnel, is 300 feet lower, or at 3,850' elevation. From the face of the Haulage Tunnel, there is a diamond drill hole 150 feet long that cut mineralized porphyry for its whole length.

Total development consists of 4,160 feet of tunnel and drift, of which 2,050 feet is at the Haulage Tunnel and 2,175 feet in the Main Tunnel; and, 217 feet of raises, mostly into the stope area above the south drift from the Main Tunnel. The stope has an area of approximately 1,375 square feet, and slightly over 1,000 tons of ore have been extracted from it to date. Since mineralization does extend to the Haulage Tunnel level and some ore has been determined at that level, it can be said that there is the possibility of 575 feet of mining ground above the lowest development.

GEOLOGY

General

Map #2 shows the general geologic setting of the Squaw Peak claims. The Verde Fault is the most conspicuous item of the geology since it separates blue gray limestone (probably Devonian) east of the fault from old Pre-Cambrian granite. The fault zone, itself, is well marked by a series of drainage lines and low saddles on the interdrainage areas. The mouth of the Haulage Tunnel is not over 50 feet from this line. West of the fault, the mountain rises steeply, being composed for the most part of the Old Granite. This weathers readily in to a coarse reddish, grey grit. The rounded outcrops are clothed with brush, and solid rock is inconspicuous. Intruded into this granite, there are many large and small dikes, and a stock of a hard grey, red weathering, porhyritic monzonite, which in many exposures shows quartz, so it might be called quartz-monzonite. This rock has a blocky jointing and resists weathering so the outcrops stand well above the reddish grit derived from the old granite. The monzonite is the host rock for the ore, though there are some veins along fractures in the old granite near the stock.

These old formations extend over a width of about one mile, west of the Verde Fault and nearly to the base of the peak which is known as Squaw Peak. At an elevation of about 5,000' the igneous rocks are capped by sedimentary rocks. First a thin layer of red flaggy sandstone, above which there is a considerable thickness of blue grey limestone (probably Devonian in age) like the limestone at the base of the mountain east of the Verde Fault. The limestone is said to be capped by basalt which weathers red and is finely visicular. Floats of these higher unmineralized formations can be seen in all the steep east draining canyons.

Geology of the ORE ZONE

On the generalized geologic map of the claims (See Map #2), it will be seen that the bulk of the monzonite stock is on the Girder, Green Chief, Edith and Green Parrot Claims. It covers an area approximately 2,500 feet in length, trending about North 30° West, has a maximum, on surface, width of 1,500 feet, and an average width of 900 feet. There are several large dikes extending both northwest and southeast from the main mass of the stock, so its actual area would be larger than the two million square feet of the stock proper. Only the larger dikes are indicated on Map #2. It is known that on the Main Tunnel the

stock is 720 feet wide and probably more, and that on the Haulage level, 300 feet lower, the monzonite is 800 feet or more in width.

As will be seen from a study of Map #2, "Geologic Map of Mine Workings", all of these old formations are broken by many fractures and some faults of considerable magnitude. A great many of these breaks are about parallel to the Verde Fault, and are doubtless related to that movement. Most of the fractures and faults dip to the southwest at fairly steep angles, though some have dips as low as 35 degrees. Movement on most of these breaks seems to have been normal--that is, the "up" side slipped downward. There are also a large number of nearly east-west trending rather tight breaks that dip a medium to flat angles, either north or south. In the more highly mineralized area opened by the crosscuts from the south drift and in the stope, there are at least three conspicuous north to North 10° West vertical fissures that are highly silicious and carry chalcopyrite, molybdenite and a little sphalerite. Ore from these veins carry more than average value in gold and silver. The mineralized monzonite, adjacent to these quartz veins, is much altered with a peculiar purplish-red cast of the phenocrysts and is cut by a close irregular system of quartz veinlets, all of which carry more than ordinary quantities of copper and "moly".

On the Main Tunnel level, what appears to be, good copper mineralization first shows 130 feet out from the turntable, where the north and south drifts take off, and extends to the strong fault shown just east of the dam, in the westward extension of the tunnel (See Map #3). In the north drift, copper mineralization shows up all along for 400 feet - almost to the monzonite-granite contact. The south drift is well mineralized to the south end - a distance of 240 feet.

On the Haulage Tunnel level, 300 feet below the Main Tunnel, copper mineralization begins to show up well - 523 feet out from the face, and the 150 foot diamond drill core shows at least that distance to be mineralized (See Map #4). The total known width of mineralized monzonite on the Haulage level is therefore 673 feet. It should be noted that there is one area, 9 feet wide, cut between 57 and 66 feet by the diamond drill, that showed 0.70% Cu. and 1.02% MoS_2, as shown on Map #3. This high "moly" area is almost directly in line with one of the vertical high grade veins, shown on the Main Tunnel level, and in the stope.

That the copper mineralization is not entirely confined to the immediate monzonite stock, is shown by several mineralized zones along fractures cut nearer the mouths of both the Main and Haulage Tunnels. One or two of these are not at all bad looking, and elsewhere might have been developed as most promising. These can be considered as reserves for future exploration.

The sulphides, pyrite, chalcopyrite, a little bornite and molybdenite are seen directly at the surface, though there is a little copper carbonate staining on joints of the monzonite all over the surface of the ore zone. This staining extends northward for a considerable distance beyond any underground work. It will be noted, however, from Map #2 that the stock narrows to the northwest on the surface. Southeastward from the shaft, the stock at surface quickly narrows to a dike about 50 feet wide at the top of the ridge and less than that in the next canyon south.

ESTIMATION OF VALUE AND TONNAGE

Sampling

I did not attempt to sample any part of the Squaw Peak Mine. The following estimates are based on the sample results of engineers that have made reports on the property, as mentioned under History. I have seen the original reports, and have no reason to doubt the material I have used in making the following calculations. I did carefully examine all of the workings that were accessible, and have noted on Map #4, "Sampling Map of Mine Workings", my impression of the kind and degree of mineralization. On this map, there is also given the results of sampling by Thacker (as the work progressed), by Sturgis (date of this sampling uncertain, but presumable about the time of the Cole report in 1929, as only copper content is shown) and the Campbell (R.F.C.) sampling of the copper "moly" body in the south drift.

The ore in the high grade stope area (see insertion Map #3 and Map #4), which was milled, is estimated by Mr. Thacker to have carried 1.20% MoS_2 and 1.45% Cu. The R.F. C. sampling in the cross cuts below the stope average 1.37% Cu., 0.287% MoS_2 and 0.79 oz. Ag. The copper checks with Thacker's estimate, but he is 1% higher than Mr. Campbell in "moly". This may be due to the fact that in this area the "moly" is in very large crystals, which give a deceptive appearance of richness and are very difficult to sample. However, it should be noted that in milling the 1,000 tons that came from this stope, the recovered minerals, with admitted low recovery of the "moly", indicated that the ore carried 0.0015 oz. gold, 0.15 oz. silver, 0.48% MoS_2 and 1.24% copper. It is quite evident from an inspection of the tailings that considerable "moly" was lost. As a matter of fact, Mr. Thacker estimates that his recovery of "moly" was only 60 to 65 percent of the content of the ore. Under this assumption, the ore carried at least 0.76 "moly". It seems to me safe to estimate the so called high grade ore at 1.20% Cu., 0.75% MoS_2 and 0.50 oz. silver. This figure will be used in calculations.

The general mineralization is definitely copper, with only a small "moly" content - probably under 0.25% MoS_2 , though little is actually known as to the "moly" content since it has not been properly sampled and assayed for both copper and "moly". The average of the area of definitely copper mineralization, as indicated by the Thacker and Sturgis sampling shown on Map #4, is copper 1.63% without the 7 assays of high grade copper ore sampled by Sturgis. With those high Sturgis samples included, the average would be copper 3.88%. In the following calculations, the figures of 1.63% Cu has been used.

Volume of Ore

As stated under Geology of the Mineral Zone, the monzonite is definitely mineralized over an area 2,500 feet long by an average of 900 feet wide on the surface - a total of 2,250,000 square feet. On the Main Tunnel level the area is developed for 640 feet in length and 280 feet wide, - a total of 179,200 square feet. Taking only the footage developed by the Main Tunnel, with an average depth from surface of 170 feet, there is fairly definitely established possible ore, totaling 30,464,000 cubic feet, which using the factor of 12 cubic

feet per ton, shows 2,538,000 tons of material, averaging Cu. 1.63% and MoS_2 0.24%. Probable ore, as indicated by the surface area, could total 31,900,000 tons above the Main Tunnel. That this is a fair assumption, is indicated by the presence of fair copper-"moly" at the "moly" surface tunnel (300s and 750 w on Map #4), and in several cuts as far north as the 1,000' coordinate.

Admitted that development in the Haulage Tunnel only partly shows the width of mineralization 673 feet, this is over twice as wide as the demonstrated ore zone on the Main Tunnel. The geology indicates that this stock of monzonite gets larger with depth, as evidenced by the many dikes shown on the surface. It seems reasonable to suppose that for each foot of depth below the haulage level, there will be at least 14,900 tons immediately below the area developed in the Main Tunnel, and an additional possibility of 172,600 tons assuming that the stock has vertical boundaries of the dimensions shown on the surface. Whether this mass of 56,260,000 tons will be ore remains to be proven by development. It is safe to assume that the values shown on the Main Tunnel level will continue downward for at least 50 feet, which would indicate additional probable ore of 746,650 tons, and possible additional ore at 8,630,000 tons.

Of immediate interest from an operating standpoint is the body of high grade "moly"-copper ore partly developed in the south drift of the Main Tunnel, in the stope and in the raise to connect with the surface shaft (See Map #3 and #4). This richer core of the ore body, as at present indicated by development, is 40 feet wide, 240 feet (possible 400 feet) long and 170 feet high above the Main Tunnel. It is safe to assume that it will be of approximately the same character for at least 25 feet below the tunnel level. It contains 200,000tons above the tunnel, and a possible 12,000 tons for 25 feet below the level, that should carry 1.20% Cu., 0.75% MoS_2 and 0.50 oz. Ag.

There are at Squaw Peak Mine 3,284,650 tons of probable ore above or just below the Main Tunnel level, which contain 102,313,000 pounds of recoverable copper and 11,259,000 pounds of recoverable molybdenite, which have a combined market value of $17,000,800 or $5.175 per ton.

In the following table calculation, poundage of metal is based on a metallurgical recovery of 95% of the copper and 85% of the molybdenite.

METAL CONTENT AND VALUE OF ORE

ORE BODY	@ 1.63% Cu.		@ 0.20% MoS_2	
	Copper		Molybdenite	
Probable Ore: 3,284,650 Tons	Pounds	Value @ 10¢*	Pounds	Value @ 54¢**
Above Main Tunnel	78,632,000	$ 7,863,200	8,659,200	$ 4,676,000
50' below Main Tunnel	23,631,200	2,361,200	2,599,800	1,403,900
Total	102,263,200	$10,224,400	11,259,000	$ 6,079,900
Possible Ore: 37,992,000 Tons				
Above Main Tunnel	909,322,100	$90,932,200	99,830,800	53,908,600
50' below Main Tunnel	267,270,100	26,727,100	28,492,000	15,385,300
Total	1,176,593,200	$116,659,300	128,322,800	$ 69,293,900

250' above Haulage Tunnel: 47,630,000 tons - - no real basis for evaluation

* 10¢ per pound for copper in concentrate sent to smelter

** 54¢ per pound, Eng. and Min. Journal, October 1949, page 100

The high grade "moly"-copper stope in the south drift contains, above the Main Tunnel, 260,000 tons of reasonable sure ore which should yield on the same basis of calculation as used above: 4,560,000 pounds of copper; 2,550,000 pounds of molybdenite; and 95,000 ounces of silver, having a total value of $1,882,000, or $9.41 per ton (silver estimated at 60¢ at smelter). It is quite possible (as Mr. Thacker believes) that there are several thousand tons of ore immediately surrounding the high grade stope, which will average nearer 1.45% copper and 1.20% MoS_2 than the figure I have used for calculating the ore area.

Operating Problems

In the mining department, there should be no difficult problems for the ground stands well, as evidenced by the condition of the various workings. The larger faults will require heavy timbering, but as a rule the widths to be taken care of are small as compared with the rest of the openings which require no timber. The principal development for the immediate future will be the driving of more raises into the high grade stope area.

It is Mr. Thacker's opinion that with the gradual slackening off of mining at Jerome it will be possible to get well trained mine labor for $11.00 and common labor for $10.00 per day. The cost of timber is coming down, and it is believed that mine timber can be purchased for 60 to 70 dollars per thousand. Thacker has recently been informed that a low electric power rate (the high tension line is only a mile from the mine) can be expected if it is decided to do away with the present deisel power plant.

The milling problem is not so simple. The present 35-ton per day plant will need overhaul before it can be expected to make the savings that are known to be possible on this ore. The present deisel engine is old and does not give quite enough power to run the crusher and maintain a steady flow of power to properly operate the flotation cells. It appears that it would be wiser and only a little more expensive to install electric power for individual drive on all the mill equipment than to purchase a new and larger deisel engine. In order to make the best recovery possible, it would be advisable to buy at least 4 additional Denver flotation cells - 2 for the copper circuit and 2 for "moly" cleaner work. A new and larger crusher with rebuilding of the feed bins is also indicated. Mr. Thacker has estimated that these changes can be made for under $10,000. This expenditure would seem to be amply justified when one considers the quantity of good ore that can be considered immediately available.

In discussing the problem of cost of operation with Mr. Thacker, he estimated that using the revamped mill at a 35-ton per day basis, his costs would run about $7.00 per ton. This would apparently leave an operating profit of over $2.00 per ton on the ore from the 200,000 tons of high grade ore indicated in the south drift development.

If the proposed development works out as seems probable and connection between the Main Tunnel and Haulage level is made, a new larger mill will undoubtedly be established at the excellent site near the portal of the lower tunnel. With a well planned mill, there will undoubtedly be a considerable saving in milling cost. Also to be borne in mind, is the fact that the larger the tonnage handled the less cost per ton follows automatically.

RECOMMENDATIONS

It would seem advisable for the company to try to raise sufficient funds to revamp the present mill and begin production. With the company in the sound financial condition that exists that should not be difficult. It would be advisable to raise at least $30,000 - preferably $50,000 - to assure that the program of development and production would meet with no hitches.

There should be instituted a continuing prospecting campaign by drilling laterally from the south drift for extensions of the high grade copper-"moly" ore, and below the Main Tunnel level to determine more accurately the shape of the main copper ore body. That may be of importance.

Work should be started in development in the Haulage Tunnel level. It should be driven ahead to entirely crosscut the monzonite stock so that this large mass of potential ore can be sampled and appraised. Drilling laterally and in upholes from the Haulage level should be carried out.

Certainly more drilling and development on the copper body in the north drift on the Main Tunnel level is indicated and a connection should be driven from the present north heading to surface - approximately 375 feet - for proper ventilation of that area.

The program of prospecting the large potential copper ore body is going to take time and a large amount of money. It may be that one of the large mining companies could be interested in such a program and the company should consider such a move in my estimation. Of course, it would be much easier to interest outside assistance if the mine were on an operating basis. I, therefore, suggest that steps be taken as rapidly as possible to get into production from the high grade ore zone.

Acknowledgments

I wish to express my thanks for the many courtesies extended by Mr. and Mrs. Thacker during my stay at the mine. Mr. Thacker turned over for my use, any and all records, the maps of workings, and various surveys which were of much help in arriving at the conclusions contained in this report.

Respectfully submitted,

J. M. Hill
Registered Geologist

October 19, 1949

Economey Geogy and Metallurgy of the

SQUAW PEAK COPPER MINING COMPANY

Jerome, Yavapai County, State of Arizona

By E. W. Groves

Metallurigal Engineer.

I have been asked to examine this Groupe of Mining Claims, and write a report on the same. I herewith submit the following [illegible] from my point of view, and hope the same will be satisfactory to you.

Geoglogy, its study, and values to mining, a brief outline of the methods employed to determine the various Minerals and rocks, and the value to mining resulting from will not be a miss here.

AGES OF ROCKS, Rocks are classified into various ages, each age representing a period of time, in which no great change accords in climatic conditions, and in which formation of rocks was gradual. Where a radical change occurs in the Earth's Formation, such for instance as to destroy certain animal and vegetable life; a new age begins the separation of rocks into ages is simply for the convenience in determining their time of formation, and the lines between any two ages, are rarily more distinct than the formation or distruction of some form of life that may become fossils imbedded and thereby aid us to determine a particular period. The oldest age is called the Arcayne, the age without any form of life except perhaps the Pruotoza, which was the oldest organism.

Much of our Metalliferous deposits are found in these formations. Other ages succeded in their various and gradual changes. Ages when animals of huge dimentions roamed the land, filled the seas and air. The great Mastodan and Mammouth and many others. Also many trees and plants grew prolific during this damp and torrid period.

Prominent amoung the trees was the Lyppododendrid, somewhat resembling our modern palms.

Many forms of life are foun fossilized in the rocks that are distinctive of some particuler period of time. For example the Trilibite and Amenite each having its life formed and taken away, never to appear again during and continuing through their different and particular ages. One age the Devoni and the seas was crowded with many kinds of fish as is attested by the rocks, these rocks being filled with their fossils. Ages as is further divided into periods Epod and Aeris. The duration of these time limits are more difficult to determine but they may be determined by various means, for example we will take three continuous periods of time. A certain fossil is formed in the first and second period, then becomes extinct. Another fossil is formed in the second perios and runs through the third, this determines the second period; and so on various forms are employed to derive as closely as possible to the time condition of the Earth's Formation. These fossils aid greatly in the determination of time of formation of sedementry rocks such as lime-stone, quartz etc/, but are destroyed in eruptive rocks or rock greatly metamorphosed where different methods must then be employed. As these are the fomms

of rocks that directly concern us as in our Mines in the Squaw Peak Copper Mining Company, we will lay aside the discussion of sedimentary rock fossils etc.

As arevallent, but to have in a more complet form of the methods employed in Geological research, I thought it advisable to describe as much of the progress as I have even , even though it does not apply direct to our case in hand.

MINERALS.

A mineral is a specific description unvariable in principal of structure always formed by involurable rules of nature. Now when a certain mineral is formed, its physical and chemical charistics are essentually constant a slight variation in crystals as to collor, imperfect crystallation of certain faces etc., are due to cause form and distinct from the formation of the crystal, and in no wise is the principle impaired upon in which the crystal is made. Nature makes no mistakes.

We sometimes find broken crystals. Nature did not form them thus. We often find crystals discolored. Now it arises why? Because the conditions of the solution in which the crystals was formed prevented the explosion of the form colloring matter and combined it in its structure.

The stude of minerals is termed minerology and is the poetry of Geology. All the rock beneath the Lime-bearing Andasite, noticibly in the meneral formation of the veins, in the absence of sulphates many phosphates occur . Noticibly also the zinc unaltered by subsequent perculation no carbonates or cylicates being present no carbonates of copper formed.

In the fissures through this Group of claims you may find some Apatite and Sanadine crystals. This ore is Gold ore carrying the base in Calcupyrite Copper and sparingly, copper carbonates/

These veins are filled from below and all indications points to the fact that the great ore body will be found deeper in approximately in a source of the metal bearing solution. And the deed mining is the solution of ore continued in deposition and increased value. The contour of the claims are peculiarly adapted to this mode of development and may generally be carried on by tunnel. But some labor must be expended in such development as all veins have their barren zones of poorer or richer material. Parts of the group of claims are covered with timber for mining and pure spring water for milling Sodium nutralization conditions ideal, and an abundance of concentrating ore in sight.

If the business men of each County would maintain a Chamber of Commerce and carefully compile statistics each year of their production and possible production of the mining resources within their respective counties. The state now has a similar bureau to receive, examine and publish the reports of the various Counties, so that copies of such reports would fall into the right hands for consideration; railroads would not be so dillatory in coming through and opening up this great state. Such a bureau can only be operated b through the business fraternity and by those who act through patriotism.

After these installations, the mining and milling from my determination shows a 40 equal 60 per cent extraction. 40 per cent development and 60 per cent profit under the present physical conditions.

These conditions can be improved. After some deeper development, the ore which will increase our concent ates with depth.

The mineralized zone seems to be about seventy-five feet between walls, Ribbed with quartz veins allcarrying calcupyrite values. When these veins come together at water level forming a body that can be mined ore and waste separately a high grade product will result. However, the production now in sight is profitable under the aforesaid determinations.

Mining is a business and not a speculation carried under business methods.

GENERAl DESCRIPTION OF CLAIMS.

The group consists of twenty claims all in a body, with four good springs; old and new developments, adits, shafts, tunnels cuts etc., are in milling ore.

Open for investigation to the mining fraternity.

Installing machinery, development assays, assays in average will be mailed to the stock-holders, large and small on the first of each calendar month of the year from the company. Those holding stock that the company does not know the whereabouts of will observe the publication in the paper that publishes the county news monthly.

ORE TREATMENT.

The ore is susceptible to Economic treatment with resulting high extractions of metal values; simple and pure concentration, gravity, 4 3/10 to 8 1/10.

Concentrates.

26% copper, 44% cilica 22% iron/

Gold value 7 to 8 dollars. Silver 14 ozs. will be close check on these concentrates.

BUSINESS METHODS.

The company has set aside 300?000 shares to be sold at 15¢ a share for installing an electric plant from the Power company, so economy development can be done. One unit of a concentrating plant can be installed so we can build up our units and not tear out.

April 21, 1930

REPORT
on
Squaw Peak Copper Mining Co.

Squaw Peak Copper Mining Company incorporated in Arizona, December 1916.

Authorized Capitalization 2,000,000 shares, at $1.00 per, share par value. All stock is common stock, and forever, non-assessable. Issued and outstanding to date, 953,350 shares.

SITUATED:-

Squaw Peak Mining District, Yavapai County, Arizona. Two miles west of the Verde River, and Six miles South of Camp Verde. (Map of Yavapai County, whic shows location of holdings is herewith attached).

CLAIMS:-

Twenty Nine claims comprise the group; the titles to these are held by the preformance of annual assessment work.

WATER:-

There two servicable springs above our workings and on the property, that will furnish domestic water to take care of approximately 3000 population. Underground development is furnishing ample water to supply a 100 ton mill. Additional underground workings will undoubtly develop more water. There is an unlimited supply in the Verde River two miles distant.

ROAD:-

Servicable road leads to the Camp and workings.

POWER:-

At present a 75 H.P. Holt gass engine is being used for drilling operations: but the Fossil Creek Power line passes within one mile of the workings.

TRANSPORTATION:-
29 miles to Rail Road, where custom smelter is located (Clemenceau,) Trucking costs will approximate $1.75 per ton, with present road conditions . A Rail Road survay passes near the Property. This Railroad id proposed to connect Clarkdale, and Mesa. It is speculative as to when this will be built.

EQUIPMENT AND SURFACE IMPROVMENTS:-
Equipment installed and in use at lower tunnel consists, of 75 H.P. power plant I2 X I0 Sullivan single stage air compressor, No.4 Ingersall-Rand "Leyner" Rock Drill steel sharpner. I¼ inch hollow drill steel. Chicago Pneumatic No. 5 Heavy Drifter, with heavy mounting. Complete Mine Blacksmith outfit. Three Muck cars, I8 inch gauge. Car track advanced to heading. High preasure water piped to all places where needed. Mine ventilation plant now in use is rather small, and can be replaced at a nominal cost. All equipment accept ventilation plant is amply adequate for the speedy prosecution
for the speedy prosecution of lower tunnel development. Lower tunnel equipment is substantialy housed in rough lumber frame buildings.
Other equipment consists of, Sullivan E -8 Diamond Drill outfit Complete, with 500 feet of rods, and I9,½ karet stones. 8 X 9 Sullivan air compressor Gass engine power plant (This was used in Main tunnel development) Two Jack-hammers, and drill steel for them. Buldings on Main tunnel level are: Boarding house. Three Bunk houses. Laboratory, Office, Power House, Change room (hot water- shower, toilet and lavatory). and Modern three room dewling. Buildings on this level are all of substantial construction, and with the exception of Change room and Blacksmith shop are of metal exterior. Materail is bought for three room living

quarters, and change house to be built on lower level.

DESCRIPTION OF WORKINGS:-

At some of the surface outcropings, shallow tunnels, and open cuts were driven. There is one 75 foot shaft, with tunnel connecting bottom. All openings reveal copper content in the bottom. These shallow workings distributed I600 feet lengthwise with the mineralization, and 600 feet in a croswise direction. Three of these are shown on the attached Main tunnel drawing, and are marked X-2, Shaft, and Wet tunnel. neither the Shaft, or X-2 was reached with main tunnel development. At X-2, a good surface showing is found occuring in a 75 foot dike of silicious porphory. 4 ft. face assays I.I0 Cu., Other surface outcropings occur in an altered granit, with heavy iron stain very apparent. Copper carbonate stains, show the presents of copper in substantial dikes of altered granit, covering an area of 400 feet, North and East of marking X-2. This area is unprospected, and indicates good promis at depth.

Sunrise Claim- Open cut in silicified schistose material; three feet in width, with strong coloration of copper carbonates. Sample across this face assays 4.25 Cu. Approximate vertical elivation above Lower tunnel 800 feet

Seventy five foot shaft, in altered granit, shows the presence of copper its entire depth. At the bottom there is a short drift and two crosouts east and west. All showing mineralization of pyrite, chalcopyrite, bornite and flower like spots of molybdenite. South drift from bottom of shaft assays 0.02 gold, trace silver 3.I0 Cu.

Green Chief tunnel, approxamately 825 feet verticly above lower tunnel level; I00 foot tunnel, 30 feet drift folowing six inch stringer of quartz heavily charged

with chalcopyrites. Stringer assays 6.75 Cu, trace gold and silver.

Wet Tunnel, 218.62 verticaly above main tunnel level or 533.62 above lower tunnel. Cuts quartoze granit I50 feet, full of slips and seams heavily charged with yellow and brown iron oxid, with specks of copper carbonite all through the mass. Arter driving heading No., 7 it appears as though this will centeralize at depth to form a junction with ore developed, in heading No 8 and in drift 2-L, and should be at a vertical depth of I73 feet below main tunnel (If dip and strick continues same as out in main tunnel workings) This centeralization should take place nearly under large prominent carbonet stained dikes of altered granit, adjoining popheritic marked X-2.

There are other shallow tunnels, and surface openings which are not marked, all show the presents of copper values and several of them the presents on molybdenite.

Main Tunnel, 315 feet verticaly above lower tunnel. Over 2300 feet of work acomplished. Horizontal drawing gives some detail of findings and values encountered. With exception of area marked (Area C) all ore encountered on this level is Primary, and a small amount of gold and silver is sulphid contained. Area A is a continuation of Heading L-II6 in ore, and a appears very promising on the east side of heading No.8, Reason for not further exlporing this area, was our lack of finance, and our desire to pick up X-2. X-2 was not encountered in heading No.8 due to formation diping down and away from heading No. 8. This is very evident in the last 75 feet.

With work acomplished as outlined, Main tunnel development, has not proven the full extent of ore en-

a very presistant character; continuing down to un-known depths., and in several places ore bearing areas show widening at depth. It is quite probable that, at depth, Area C will develop some secondary ore of very high commercial value.

Development work, on upper levels warrent an expenditure for deeper mining. A long water drain haulage tunnel, was started October 23 1929. This tunnel is 315 feet verticaly below Main tunnel, and will be driven in a straight line to cut under Main tunnel ore centralization. This will require a total distance of 2000 feet. 585 feet of this distance has been accomplished to date. One shift of two men are now working. After our mineralized area is entered, considerable drifting and prospecting may be required. An aditional $50,000.00 will prove up and develop our most promising areas.

Mill Construction:-

If only milling ore is developed ther will be required an additional expenditure of from $100,000 to $180,000 for mill construction,. Reason for giving a varying amount is becaus mill construction should be of as large a capacity, in unit form as mine production can support. Additional mill units should be built as fast as production, can furnish the ore, and development warrants. Additional units should be built from returns on concentrate sales.

Mill test.

Ore is extremely easy to treat by flotation. high recoveries and good concentrates were readily obtained. Mill tests show eight to one Concentrate, Concentrate assaying 24.26 Cu. Containing 96.14 of copper. Concentrate assaying $2.80 per ton Gold & Silver.

It is highly probable that lower tunnel will develop ore of sufficient grade, for immediate quanity shipping, and that our mill construction can be delayed with our mill ore in reserve, until, highgrade ore sales furnish funds for mill construction.

If lower tunnel develops ore in quanity, and grade, as main tunnel development appears to warrant, we will soon be able to return a highly satisfactory return on all the outstanding stock.

Time required depends upon available finance. With $50,000.00 we should be able to fully prospect and develop the lower level in Nine Months or 270 days. The first 120 will be consumed in advancing another 1000 feet, and at a cost of approximately $14.00 per foot. From this point it is probal that two side drifts should be started, and as the determinations warrant, crosscuts should be driven off the side drifts. It is likely that main heading should be continued to a total distence of 2000 feet from starting point. The later part of our development will be accomplished at a much faster rate of speed; but at a higher cost per foot of advancement. This additional cost will be due to, distance required to tram muck, mine air conditions due to powder smoke, and a strong possibility of having to do some timbering, in areas near ore.

Careful estimate would place the cost of our work at $20.00 per foot, after we enter the mineralized zone. All footage estimates to include, air and water line, car track railing, and track ties to all headings. equipment repair and maintainance.

Managment:-

Development will be under supervision of competent mining direction. Expendature of funds will be entirely

for Mine development, looking to profitable production , and for the highest possible return on the investment.

The writers personal contact has been almost continuous with the property, and in direct supervision of the ore bodies, as they were developed since 1915.

Justification for the expenditure, and development as above outlined is only partialy covered, in this report. It will suffice to say in conclusion that it is a safe assumption to expect production, equaly as large and as profitable as has been recorded at any property in Arizona.

Yours very truly

Edison Thacker President.
SQUAW PEAK COPPER MINING CO.

Dated
April 21, 1930.

11/29/16

Officers

J. J. CAIN
PRESIDENT
H. W. THACKER
VICE-PRES.
EDISON THACKER
SEC. AND MGR.

The Squaw Peak Copper Mining Company

Postoffice Box 625 — Jerome, Arizona

Directors

J. J. CAIN
H. W. THACKER
EDISON THACKER
R. THACKER
ARTHUR W. WHITAKER

REPORT ON PROPERTY SQUAW PEAK MINING COMPANY

The following is the Mining Engineer's report on our property, dated at Phoenix, Arizona, November 29, 1916. You will also find claim and key map on pages four and five.

SITUATED

Squaw Peak Mining District, Yavapai County, Arizona. Two miles west of the Verde River and seven miles south of Camp Verde.

ROADS

The wagon road from the valley to main tunnel can be made passable at a nominal expenditure.

WATER

There are several serviceable springs upon the property, and an unlimited supply in the Verde River, two miles distant.

POWER

At present a small steam plant is used for the drilling operations, but the Fossil Creek Power Line passes within one mile of the property.

CLAIMS

Twenty claims comprise the group; the titles to these are held by the performance of annual assesment work.

DESCRIPTION OF WORKINGS

MAIN TUNNEL—Course southwest from gulch, 265 feet in length. In block faulted gray granite with east-west slips. The face shows narrow veinlets of quartz carrying chalcopyrite. (Sample at this face marked No. 1.)

Two inch white quartz seam, carrying chalcopyrites, with visible platting of molybdenum on both sides of seam. This seam crosses tunnel at right angles. Some seams appear to show fine specks of native copper but on investigation prove to be fine speck of oxidized stained quartz. In canyon to right of main tunnel the rugged croppings of granite show copper carbonates on the fracture faces, as well as iron oxides. Short tunnel up the gulch on east course, and at a point about 204 feet from portal of tunnel, showing copper carbonates, intensely fractured and porphyrized ground with abundance of ferrugenous stain. (Sample No. 3 culled from the face of this working.)

Open cut above latter working shows malachite and azurite and ferrugenous stain in altered granite.

GREEN CHIEF CLAIM

Fourteen feet open cut on east side of hill, showing copper carbonates in face. (Sample No. 4 from this face.)

There is some good appearing carbonate ore on the dump that was taken from this cut. The granite at this point is porphyritic, and has a general course which can be easily followed northeast-southwest. 100 foot tunnel in granite, at end is cross cut 30 feet in length, following a 6 inch streak of quartz heavily charged with chalcopyrites. Tunnel thirty feet in length, course west, opposite side of gulch from camp, following crushed quartzose granite, full of slips and seams, and heavily charged with yellow and brown iron oxides, with specks of copper carbonates all through the mass.

SUNRISE CLAIM

Open cut in silicified schistose material, three feet in width, with strong coloration of copper carbonates. (Sample No. 6 taken across this face.)

GREEN LEAF CLAIM

Seventy-five foot shaft, in altered granite its entire depth, shows the presence of copper. At bottom there is a short drift south and two cross-cuts east and west, all showing mineralization of pyrite, chalcopyrite, bornite and flower like forms and spots of molybdenum. Sample No. 7 was taken four feet in width from shaft in south drift all of which shows a decidedly visible contents of the mineralization previously specified. Awaiting further development work as outlined was the reason of not taking more samples from different positions in these workings. Open cut at foot of hill in soft decomposed ground, with yellow and brown ferrugenous stain. Sample No. 8 is from this point.

DESCRIPTION OF SAMPLINGS

Sample No. 1.—Across the face of the main tunnel, granite with quartz seams showing copper sulphide.

Sample No. 2.—Seam in tunnel carrying minute specks of native copper.

Sample No. 3.—Face of short tunnel up gulch, 42 inches in width crushed granite showing copper carbonates and limonite.

Sample No. 4.—44 inches in face of fourteen-foot open cut showing copper carbonates and specks of ferrugenous oxides, in porphyritic granite.

Sample No. 5—6-inch streak in crosscut end of 100 foot tunnel, heavy in chalcopyrite.

Sample No. 6.—Three foot silicified schist in open cut strongly impregnated with copper carbonates.

Sample No. 7.—Four feet along south drift bottom of seventy-five foot shaft.

Sample No. 8.—Three feet across face soft decomposed ground in open cut bottom of hill.

ASSAY DETERMINATION

No.	Silver	Ounces Gold	Value	Percentage Copper
1.	.....	.....	...	0.50 per cent
2.	.....	.....	...	0.30 per cent
3.	.....	.....	...	1.50 per cent
4.	.....	.....	...	1.10 per cent
5.	Trace	Trace	...	6.75 per cent
6.	.....	.....	...	4.25 per cent
7.	Trace-	0.02	.40	3.10 per cent
8.		.03	.60	.....
	Molybdenum, 0.16 per cent		...	.....

GEOLOGY AND MINERALIZATION

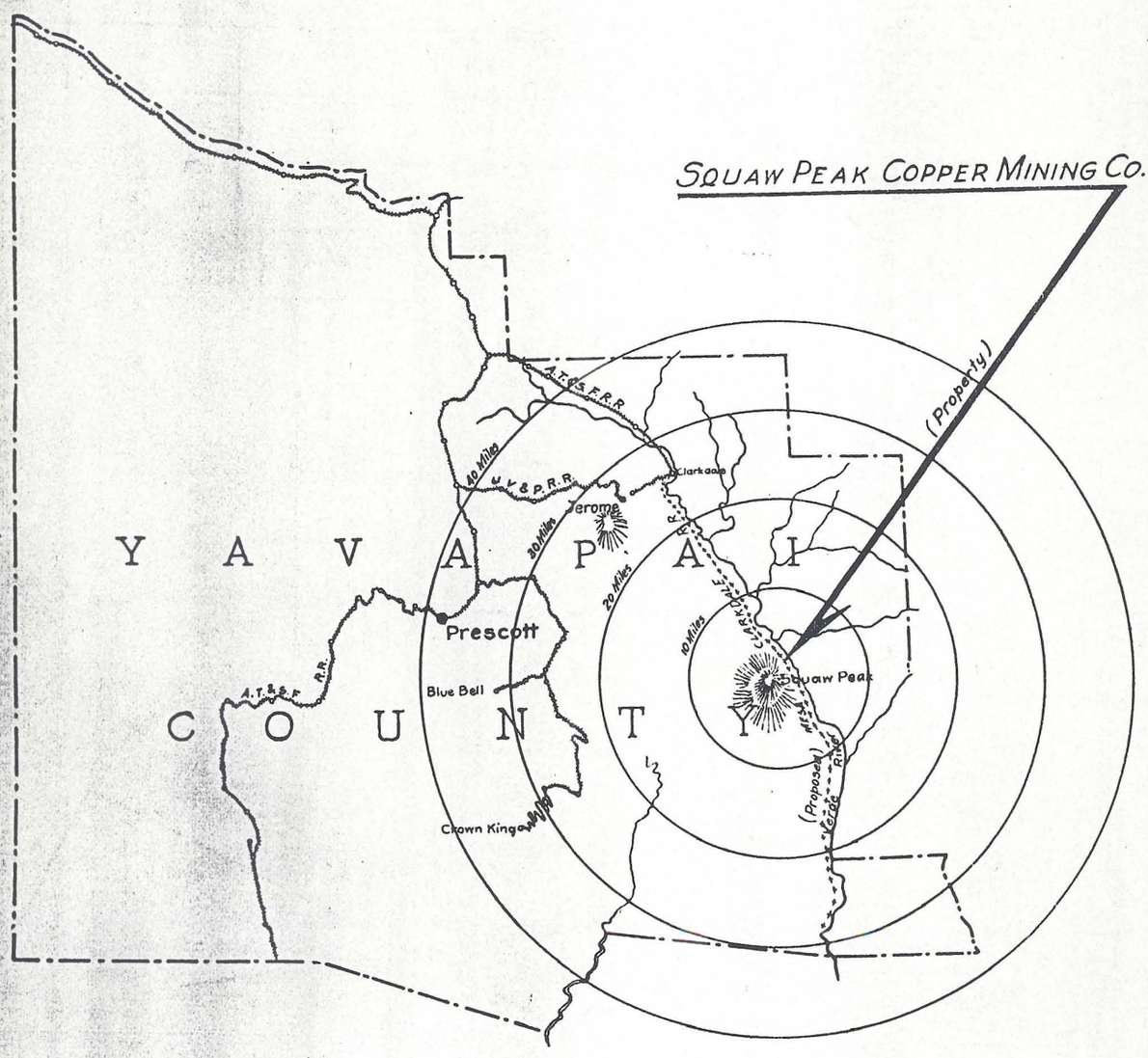
The general formation which these claims cover is a fine grained quartzose feldsphatic gray granite covered on its higher eminences with red sandstone, limestone and basaltic flow in order of ascension as named. The main granite mass has subsequently been intruded by another granite, this altered area of granite is distinctive and is defined from the general body by its inclusions of other rocks, and its minute quartz seams and disseminations of pyrite affording a distinct coloration on the surface as a resultant of weathering. Also, the visible contents of copper carbonates on the surface and specks of same in the shallow workings, and oxidization of original specks of chalcopyrites. The lines of this granite are easily traceable on the surface, by its general disintegration and oxidization, and has a general course northeast-southwest All openings sampled show the presence of copper values, and in several of them the presence of Molybdenum.

CONCLUSIONS AND RECOMMENDATIONS

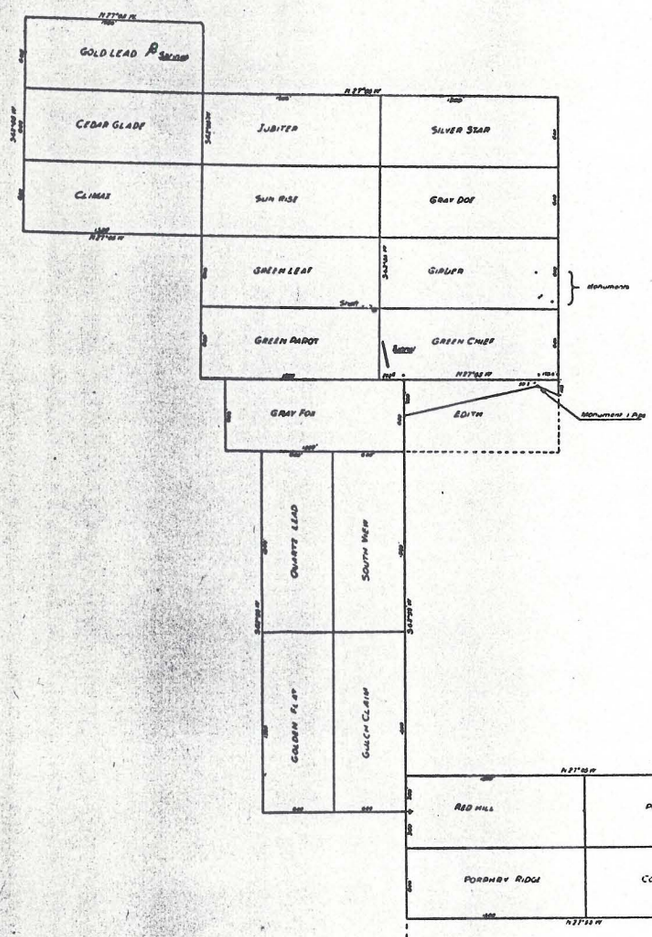
As the determinations prove, the property has some value in copper contents, and the presence of Molybdenum may prove of commercial value with further developments, and such I recomend under competent mining direction. In my opinion the present tunnel continued under the altered granites would be the best mode of proving up these areas. The distance to be penetrated from the present face would be from 200 to 300 feet, at the same time this would give a similar depth from the apex. There is sufficient merit and indicative mineralization to warrant this work being carried out. and drifts in any direction might be run from this working if future developments demonstrated the necessity. I would advice that in so much as it is now evident that your present plant is totally inadequate to perform the work required of it I am entirely in accord with your installing a motor or gasoline engine for the generation of power which is needed. This is absolutely essential for the energetic and satisfactory development of the property. The property affords sufficiently meritorious features to warrant expenditure for the furtherance of developments as outlined.

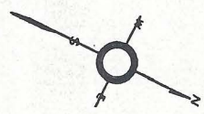
(Signed) W. E. DEFTY,
MINING ENGINEER.

Dated at Phoenix, Ariz., November 29th., 1916.


SQUAW PEAK COPPER MINING CO.
(Property)
Y A V A P A I
C O U N T Y
A.T.&S.F.R.R.
40 Miles
U.V.&P.R.R.
Jerome
Clarkdale
30 Miles
20 Miles
10 Miles
Prescott
Blue Bell
A.T.&S.F. R.R.
Squaw Peak
(Proposed) Verde River
Crown King

CLAIM MAP
OF
SQUAW PEAK COPPER MINING COMPANY
JEROME ARIZONA
YAVAPAI COUNTY





Surveyed Dec 1916

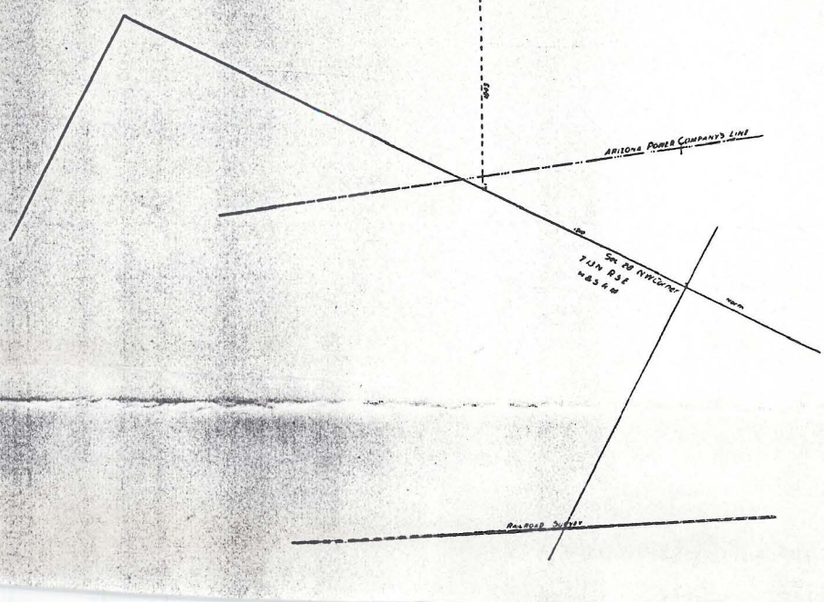


Exhibit P

11/29/16

12

REPORT

ON

PROPERTY

"SQUAW PEAK" COPPER MINING COMPANY.

SITUATED

Squaw Peak Mining District, Yavapai County, Arizona. Two Miles west of Verde River and seven miles south of Camp Verde.

ROADS

The wagon road from the valley to main tunnel can be made passable at a nominal expenditure.

WATER

There are several servicable springs upon the property, and an unlimited supply in the Verde River, two miles distant.

POWER

At present a small steam plant is used for the drilling operations, but the Fossil Creek Power Line passes within one mile of property.

CLAIMS

Fourteen claims comprise the group; the titles to these are held by the performance of annual assessment work.

DESCRIPTION OF WORKINGS

Main Tunnel

Course southwest from gulch, 265 feet in length. In block faulted gray granite with east-west slips. The face shows narrow veinlets of quartz carrying chalcopyrite.

(Sample at this face marked No. 1)

Two inch white quartz seam, carrying chalcopyrites, with visible plating of molybdenum on both sides of seam. This seam crosses tunnel at right angles. Somes sdams appear to show fine specks of native copper, but on investigation prove to be fine specks of oxidized stained quartz. In canyon to right of main tunnel the rugged croppings of granite show copper carbonates on the fracture faces, as well as iron oxides.

Short tunnel up gulch east course, and at a point about 204 feet from portal of tunnel, showing copper carbonates, intensely fractured and porphyrized ground with abundance of ferrugenous stain.

(Sample No. 3 culled from face of this working)

Open cut above latter working shows malachite and azurite and ferrugenous stain in altered granite.

"GREEN CHIEF CLAIM"

Fourteen feet open cut on east side of hill, showing copper carbonates in face.

(Sample No. 4 from this face)

There is some good appearing carbonate ore on the dump that was taken from this cut.

The granite at this point is porphyritic, and has a gerneral course which can be easily followed northeast-southwest.

100 foot tunnel granite, at end is cross cut 30 feet in length, followinga 6 inch streak of quartz heavily charged with chalcopyrites.

Tunnel thirty feet in length, course west, opposite side of gulch from camp, following crushed quartzose granite, full of slips and seams, and heavily charged with yellow and brown iron oxides, with specks of copper carbonates all through the mass.

SUN RISE CLAIM

Open cut in silcified schistose material, three feet in width, with strong coloration of copper carbonates.

(Sample No. 6 taken across this face)

GREEN LEAF CLAIM

75 foot shaft in altered granite its entire depth, shows the presence of copper. At bottom there is a short drift south and two cross cuts east and west, all showing mineralization of pyrite, chalcopyrite, bornite, and flower like forms and spots of molybdenum.

Sample No. 7 was taken four feet in width from shaft in south drift, all of which showed a decidedly visible contents of the mineralization previously specified.

Awaiting further development work as outlined was the reason of not taking more samples from different postiions in these workings.

Open cut at foot of hill in soft decomposed ground, with yellow and brown ferrugenous stain.

(Sample No. 8 from this point)

DESCRIPTION OF SAMPLINGS

Sample No. 1

Across face of main tunnel, granite with quartz seams showing copper sulphide.

Sample No. 2

Seam in tunnel carrying minute specks of native copper.

Sample No. 3

Face of short tunnel up gulch, 42 " in width crushed granite showing copper carbonates and limonite.

Sample No. 4

44" in face of fourteen foot open cut showing copper carbonates, and specks of ferrugenous oxides, in porphyritic granite.

Sample No. 5

6" streak in cross cut end of 100 foot tunnel, heavy in chalcopyrite.

Sample No. 6

Three foot silicified schist in open cut strongly impregnated with copper carbonates.

Sample No. 7

Four feet along south drift bottom of seventy-five foot shaft.

Sample No. 8

Three feet across face soft decomposed ground in open cut bottom of hill.

ASSAY DETERMINATION

No.	Ounces silver	gold	value	Percentage copper.
1				0.50%
2				0.30%
3				1.50%
4				1.10%
5	Trace	Trace		6.75%
6				4.25%
7	Trace	0.02	.40	3.10
8		.03	.60	
7	Molybdenum	0.16%		

GEOLOGY AND MINERALIZATION

The general formation which these claims covdr is a fine grained quartzose feldsphatic gray granite covered on its higher eminences with red sandstone, limestone and basaltic flow in order of ascension as named. The main granite mass has subsequently been intruded by another granite, this altered area of granite body by its inclusions of other rocks, and its minute quartz seams and disseminations of pyrite affording a distinct coloration on the surface as a resultant of weathering.

Also, the visible contents of copper carbonates on the surface and specks of same in the shallow workings, an oxidization of original specks of chalcopyrites.

Thelines of this granite are easily traceable on the surface, by its general disintegration and oxidization, and has a general course northeast-southwest.

All openings sampled show the presence of copper values, and in several of them the presence of Molybdenum.

CONCLUSIONS AND RECOMMENDATIONS

As the determinations prove, the property has some value in copper contents, and the presence of Molybdenum may prove of commercial value with further developments, and such I recommend under competent mining direction. In my opinion, the present tunnel continued under the altered granites would be the best mode of proving up these areas.

The distance to be penetrated from the present face would be from 200 feet to 300 feet, at the same time this would give a similar depth from the apex.

There is sufficient merit and indicative mineralization to warrant this work being carried out, and drifts in any direction might be run from this working if future developments demonstrated the necessity.

I would advise that this work could be accomplished by the present samll plant, and hand work. It would undoubtedly take a little longer, but a larger plant could be installed should the developments warrant and commensurate to meet any proven requirements.

The property affords sufficiently meritorious features to warrant expenditure for the furtherance of developments as outlined.

Signed W E Defty

Mining Engineer.

Dated at Phoenix,

November 29, 1916.