(27)
Item 19

REPORT ON THE

TECHATTICUP GROUP OF MINES

The Techatticup group of mines are located about one and one-half miles east of Nelson, Nevada, and six miles by road west of the El Dorado Ferry on the Colorado River.

From Las Vegas the mines can be reached over 42 miles of excellent auto road.

Las Vegas is the county seat of Clark County.

The group under consideration is made up of THE TECHATTICUP, TECHATTICUP EXTENSION, SAVAGE, GETTYSBURG, PRATT, REAL GOOD, LONE WILL, BUNKER HILL, EDITH C. AND SHANNON LODE mining claims, all patented, more fully discussed under title.

HISTORY

No authentic record of activities on the Techatticup can found prior to about 1860, when four brothers by name of Gerguson located what they called the Gettysburg Group, consisting of the Gettysburg, the Savage and the Techatticup claims. They pressed development for three years and in 1865 sold the Group to capitalists from Philadelphia, Pennsylvania, who organized the Southwestern mining Company to operate them. Activity was practically continuous from this date until 1897, when the Southwestern Mining Company was wiped out in the financial crash of Barker Brothers of Philadelphia, Pennsylvania, Fiscal Agents for this and many other

enterprises all over the world.

About 1870 the Southwestern Company bought three claims owned by three Piatt brothers, adjoining the Gettysburg Group on the west. During succeeding years up to the time of the financial crash, numerous mining claims were bought from prospectors until t total of 18 claims were owned by possessory title. All of the earlier production was shipped down the Colorado River to the Gulf of California and thence gy steamer to San Francisco and Swansea, Wales. About 1880 a mill was built on the banks of the riyer consisting of fifteen 850 pound stamps, roaster and pan and settler, operated by steam. About 1888 this process was discontinued and a cyanide plant installed, to follow the amalgamation in the original process.

After the financial debacle of 1897, a Mr. Joseph Wharton of Philadelphia, Pennsylvania, advanced money necessary to perform the required annual assessment work on the 18 claims, continuing this until about 1900, when he caused the holdings to be sold under sheriff's hammer to satisfy company notes given him for his advances, and he bid the property in, himself, thereby becoming sole owner. Assessment work was continued until 1903 when twelve of the mining claims and several mill sites on the Colorado River were covered by United States Patents.

In 1903 ten additional stamps were installed, a Daniel Best steam tractor with three trailer ore wagons were bought and a road cut through from El Dorado Canyon to the Techatticup Wash to accomodate it. The tractor proved a complete failure, however, and after about 1,000 tons of ore had been hauled to the river mill for treatment, there was an entire shut down.

No activity occured until 1905, when the resident manager for Mr. Wharton, Mr. Charles Gracey, sank the shaft

200 feet to the 400-foot level, and opened up a fine ore body between the 300 and 400-foot levels. This was done at the personal expense of Mr. Gracey, Mr. Wharton having refused to finance the work because he believed the mine to have been worked out. By Mr. Wharton's permission, Mr. Gracey was reimbursed for his expenditure by mill returns on the newly found ore.

Mr. Wharton died about 1906 and his property put in trust for his heirs with the Girard Trust Company of Philadelphia, Pa.

There was no further activity until 1913 when a lease was granted to M. A. Hellar and associates. A fifty ton full cyanide mill was installed at the Techatticup Mine, and activity was constant until 1920 when their lease terminated.

CLIMATE

Techatticup Mine elevation 2,500 to 3,000 ft.

Colorado River at Ferry 575 to 600 ft.

Las Vegas 2,020 ft.

This region is characterized by an arid climate, with high temperatures prevailing. Cloudy days are rare. Rainfall is seasonal; the heaviest showers occur during July, August and September, and are of short duration usuallly accompanied by violent electric storms. During the storms a heavy volume of water may fall. These are the months when roads receive their greatest damage, and the haulage of ores or equipment sometimes delayed.

From December to March, light showers are the rule with an occasional heavy storm. These gentler rains seldom do any damage and are more beneficial then damaging to roads and the country in general.

None of the climatic variations interfere with working the mines throughout the entire year. Freezing

conditions are rare so that with slight precaution pipe lines carrying water never give trouble at this elevation. Yearly average rain fall is betweeen 5.21 inches at the Colorado River and 6.78 inches at Nelson.

TITLE

The following more fully describes those certain mining claims in the El Dorado Mining District, Clark County Nevada, and is included in the original option agreement;

> Techatticup Group, insluding Techatticup, Techatticup Extension, Savage, Lone Will, Bunker Hill, and Real Good Lode Mining and Techatticup Mill Site claims as held under United States Patent Number 238728, Surveys Number 3873 A and B and recorded in Book 2 of Deeds, pages 310-311, in Clark County Nevada; also Gettysburg Lode Mining Claim as held under United States Patent Number 10292, Mineral Certificate Number 173, Survey Number 41, and recorded in the General Land Office at Carson City, Nevada, in Volume 121, Pages 457-460 inclusive; also the Piatt Lode Mining Claim as held under United States Patent Number 41048, Mineral Certificate Number 752, Survey Number 2085, and recorded in General Land Office at Carson City, Nevada, in Colume 418, pages 463-465, and also recorded in Bood 3 of Deeds, page 97, in Survey Number 4173, Patent Number 456441 recorded in Book 4, page 313, Records of Clark County, Nevada.

GEOLOGY AND VEIN FORMATION

The veins and ore bodies of the Techatticup Group of mines were formed along faults, cutting an intrusive monzonite porphyry which after a period of erosion was almost covered and surrounded by early tertiary volcanics. A later deep seated intrusive raised this mass until the overlying more or less bedded tertiary flows were tilted in both directions from the azis of the monzonite porphyry intrusive which was more or less easterly and westerly. During this movement the weight of the flanking accumlation of tertiary flows caused faulting to take place parallel to the original monzonite mass.

The veins with their accompanying ores formed along these faults through which the ore bearing hot solution circulated during the active and cooling period of the underlying intrusive.

After the vein forming period had passed, minor faulting occurred which dislocated the veins, but in no way affected their ore content, nor are these later faults mineralized in any way and with the exception of an occasional boulder of drag ore near where they cut the veins they are without value.

Erosion finally exposed the surface and part of the veins as we find them today.

The hardened areas standing out above the surface of the original monzonite intrusive are differentiations of the orgianl mass formed during the cooling period and have the appearance and texture of andesite. They are not andesite dykes. They are cut cleanly by all veins and faults and do not affect mineralization in any way. They give a characteristic rough appearance to the eroded surface, being harder than the enclosing monzonite porphyry.

From a study of the veins themselves and the sulphide ore content and the containing monzonite porphyry I do not expect any change of conditions that would affect the value or size of these ore bodies or their characteristics for many ~~ddd~~ hundred feet below the present workings.

Later faulting has shifted ore zoned a few feet, especially to the east. But as the croppings are plainly visible on the surface and faults traceable across the formation there will be no difficulty in locating the veins and ore shoots on the lower levels.

THE TECHATTICUP MINE

The Techatticup is one of the most extensively developed mines in the district. The vein strikes N. 80 degrees E.

and dips north at about 85 degrees. At a point just west of the main working shaft the lode divides into two branches. The southern branch continues with a strike nearly east and west, dipping north at 60 degrees. From the intersection west, both branches of the veins are dislocated by two faults one dipping east, called the gulch fault, while the west dipping fault is called the tunnel fault.

The trace of the intersection breaks to the east at a low angle. To determine the exact location on the various levels of the actual position of the intersection has been complicated by the crushed zone caused by the gulch fault. This is an important point to determine as the two veins below the intersectioncontinue as one and through the dislocation of the tunnel fault the actual position of one segment of the Savage veing has not been determined. On the surface beyond the tunnel fault as east dipping fault dislocated the vein and the Savage vein has been shifted into several segments which fortunately outcrop strongly on the surface.

A thorough study of these faults is necessary to the future of this mine as on their being understood depends the savings of thousands of dollars that would be otherwise wasted in useless drifting.

By an inspection of the four cross-sections which accompany this report it will be noticed that toward the west the flat part of the vein shows plainly on section No. 1, and the intersecting of the two veins is plainly shown on cross-sections 3 and 4. The mine is in excellent condition, and the old stopes are open and very little work is necessary to begin the operation of mining the various blocks of ore now available.

PRODUCTION PAST AND RECENT.

Going over the past history and the records of the mine that are available, there is nothing to be found that gives an accurate account of the past production from the discovery of the property until 1913. From a few past reports I have assumed this to be 50,000 tons. Records are available for the production from 1920 to 1934. Recent production records are complete and follow on page 8.

Production	Tons Milled	Av Value Gold at $20.67	Total Value	Av Value Per Ton Gold @$35	Total Value
from discovery until 1913	50,000	$35.00	$725,563	$36.70	$1,750,000.00
1913-1920	40,936	17.71			1,024,778.08
1920-1934	3,362	19.00			63,878.00
1934-1935	5,388			12.60	57,833.86
				Total Prod.	2,896,489.94

1150

The cost of labor has not varied a great deal and the following table fits past and present:

Mine Labor

	Per Day
Machine Men	$ 4.50
Miners	4.50
Muckers	4.00
Top Men	4.00
Timber Men	4.50
Shift Bosses	5.00
Blacksmith	4.50
Engineers	5.00

Mill Labor

	Per Day
Assayer	$5.00
Foreman	6.00
Operators	5.00
Helpers	4.00
Mechanic	5.00
Diesel Men	5.00
Crusher Men	4.50
Truck Driver	4.50
Electrician	5.00

COST OF MINING AND MILLING

Cost of Mining

	Per Ton
Foreman & Shifters	$ 0.20
Timbering & Extraction	1.76
Hoisting	.16
Assaying	.07
Engineering & ½ overhead	.17
Sorting	.08
Power, Hoist & Compr.	.30
Supplies	.33
Powder	.15
Blacksmith	.16
	$3.38

Cost of Milling

	Per Ton
Foreman	$0.10
Operators	.27
Helpers	.12
Mechanic	.10
Assaying	.08
Diesel Men	.27
Crusher Man	.08
Electrician	.08
Power	.36
Supplies	.50
Water	.10
½ of Overhead	.17
	$ 2.23

ANALYSIS OF MINE AND MILL TEST OVER A PERIOD OF 6 MONTHS OPERATION: TECHATTICUP MINE BY SIMAC GOLD MINES CO.

4043 tons of mine ore milled @		$13.60 (12.60)	per T gross val.	$50,974.36 ÷ 4043 =
1345 " " dump " & fills @		5.10	" " " "	6,859.50
5388		11.50	Total Value	57,833.86 = 11.50
Metallurgical loss 15%			$10.021.68	
Smelter deductions 5.5%	$2,497.79			
Smelting charge	426.26			
Freight to Smelter	1,282.91		4,206.96	14,228.64
	4,206.96		14,228.64	
$4,206.96 divided by 5388= $.80			marketing ch.-Net rets. (smelter)	43,605.22
Cost of Mining 4043 T @ $3.77			$15,242.11	
Cost of handling dump 1345 T @ $1,00			1,345.00	
Cost of milling 5388 T @ $2.23			12,015.24	
Total cost mining & milling			28,602.35	28,602.35
			Profit------	15,002.87

No loss of time from breakdowns or lack of water have been considered as these factors can be eliminated. The accompanying list shows the lot numbers, date and net smelter returns on all concentrate shipments, as paid to the Simac Gold Mines Co. The factor of $.80 marketing charge as calculated is the actual cost of marketing the concentrates as charged to one ton of ore and will be used in the fufure calculations.

TECHATTICUP GROUP

Smelter Returns
Net amounts paid Simac Gold Mines Co.

Aug.22	Lot #1	$2,352.95
Nov.19	2	1,024.17
" "	3	1,267.86
Oct.13	4	1,277.40
" "	5	1,338.48
" "	6	964.42
Dec 8	7	1,634.62
" "	8	974.72
" "	9	1,385.89
" "	10	1,627.86
" "	11q	2,611.05
" "	12	2,249.02
" "	13	3,143.99
Jan.28	14	29.06
"b "	15	2,703.88
" "	16	2,823.32
" "	17	2,235.66
" "	18	2,022.39
" "	19	2,480.96
Feb.6	20	975.01
" "	21	401.01
" 11	22	919.47
" 26	23	964.25
Mar. 8	24	824.53
" 11	25	1,200.53
" 25	26	600.32
" 25	27	733.69
" 28	28	962.06
Apr.18	29	462.93
" 11	30	190.77
" 3	31	28.81
" 18	32	294.08
		$ 43,605.22

MILL AND MINE WORKINGS

The mine workings can be best understood by an inspection of the working plan marked Exhibit A and also a horizontal vertical projection marked Exhibit B.

It will be seen from an inspection of the plan or Exhibit A, that there remains considerably more than a fourth of the total possible ore still available in the mine.

This ore has been thoroughly smapled wherever exposed, so there can be no question as to the width of ore, the tonnage remaining or its average value. The various blocks of ore are marked on the plan while an accompanying list of smaples shows the width and value which together with a calculated total value are noted on each block on both exhibits.

Any sample with a value above $50.00 has been discarded while all other samples regardless of value have been used in calculating of the total total value of each block

In listing the samples only widths and total values have been used and no attempt has been made to show the location of each sample on the plan. Samples were taken wherever possible of five ot ten foot intervals, and as the ratio of gold and silver is found to be almost a constant and as a stoped areas of the vein below the 100 foot level show an approximate constant average width and as the values in the remaining ore were consistent and show the same characteristics, therefore to avoid confusion the samples taken areshown on the lists which accompnay the maps instead of bein g shown on the maps themselves as it was found quite impossible to mark the exact position where the samples were taken. Each block is lettered and colored and on the map itself shows the calculated tonnage, the average width, value per ton and total value.

The worked out portions of both veins are designated on both Exhibits A and B by cross-hatching and each block of ore is colored to distinquish it from the areas which have been removed.

BLOCK A

Between the 300 foot level and the 100 foot level west of the shaft there lies a block of ore extending from the shaft to survey station 326 on the 300 foot level and from number 118 chute on the 100 foot level extending to the west edge of number 140 chute.

Of this block of ore there has been mined about one-fourth of the total area, leaving three-fourths intact. The value of this ore has been calculated from eighty-nine samples taken from both tops and bottoms of drifts and in stopes wherever it could be reached. From this data there has been calculated 7,613 tons of minable ore remaining in Block A, whose average value is $14.41 per ton, average width 30 inches, giving a total value of $109,558.00. This ore can be mined with a dilution of 15% which raises the tonnage to 8,755 tons and lowers the value of to $12.25 per ton, leaving a gross yield, when this area is mined of $107,248.00.

BLOCK B

Between the 300 foot level and the 350 foot level to the west the vein begins to flatten becoming very flat at the extreme west and below the 300 foot level and reaching to the 400 ft. level where the vein assumes its normal depth of about 80 degrees. The ore in this area was very rich and has been extensively mined. More than 50% of the total possible tonnage has been removed. This block of ore covers the same length as Block A and due to the roll in the vein there is considerable more depth of ore than possible to show on either the plan or projection. A cross-section through this stoped area

gives an idea of the increased tonnage due to the length of the flat stope. This cross-section is marked cross-section No. L. The calculated total tonnage of the Block devided by two gives 2,075 tons left, and from the assays of the samples taken of which there were 44 in number there has been calculated a value per ton of $24.75. The average width of this ore was found to be 19 inches and it is necessary to use a dilution vactor of 30% in calculating the possible yield and value of this ore. The tonnage available will then reach 2,700 tons while the average value is reduced to $17.22 per ton, making a corrected total yield of $46,500.00 for the area marked Block B.

East of the shaft about 125 feet the Techatticup vein seperated in two branches continuing east at an angle of 20 degrees to each other. The northern branch is still called the Techatticup vein while the south branch is known as the Savage vein.

The strike of the Techatticup vein is north 80 degrees east with a dip of 80 degrees north near the surface, and flattens below the 200 foot level to as low as 10 degrees. Just above the 400 foot level the vein again resumes its normal dip of 80 degrees.

The Savage vein strikes nearly east and west with a dip of 60 degrees to the north. In places this vein dips to as low as 27 degrees following more or less the same general zone as the flattened parts of the Techatticup vein.

The trace of the line of intersection of the two veins due to their different strike and dip, rakes to the east and the position of the veins are complicated by the crossing of the gulch fault dipping steeply to the east and the tunnel fault dipping to thewest. On the Savage vein above the 100 foot level east of the shaft there is an area of unstoped ground

either side of chute No. 107. This area is marked on the plan and projection (Exhibits A and B), as Block C. Sixteen samples were taken along exposed portions of Block C from which we calculate an average value of $12.31 per ton, or a gross total value of $24,200.00 total yield for Block C.

The Techatticup vein east of the shaft from the 100 level to the surface has been very thoroughly stoped and with the exception of afew small pillars cannot be counted upon to rpoduce any calculable tonnage.

BLOCK D.

On the 200 foot level east of the intersection the Savage vein shows a body of low-grade ore and between the 200 foot level east on this vein and the 100 foot level there is very little ore available. There is however, a small block of ore remaining between the shaft and the intersection and between the 200 and 100 foot levels which has been included as par t of a large body of ore measured from the 400 level east along the Techatticup vein between the shaft and intersection, which is marked on Exhibits A and B as Block D. At various points wherever the ore could be reached 33 amaples whose average width has been found to be 22 inches with an average value of $18.00 per ton. From these figures the calculated tonnage is 7,230 tons with a total gross value of $124,940.00.

The dilution in mining this ore will amount to 35% which increases the tonnage to 9,895 tons and lowers the value to $11.70 per ton and the total value to $115,771.00 the total gross yield of Block D.

BLOCK E

On the 100 foot level the Techatticup being vein is exposed between 104 chute east of the end of the drift and there lies a block of ground extending from the 100 foot level to the 200 foot level below along the so-called grup tunnel. This block of ground is marked on Exhibits A and B as Block E. This block has been sampled along the vein every five feet from 104 chute to the face of the drift. Also, down the winze to the 150 level as well as along the top of the grub tunnel and in the 151 drift. In this area the calculations are based on 23 samples taken which show an average width of 30 inches, an average value of $14.70, a calculated tonnage of 4,166 tons, which at $14.70 per ton gives $61,237.00 as a gross total value. From the character of the walls there has been figured a dilution of 30% giving 5,410 tons with an average value of $10.30 per ton, or $55,723.00 as the gross value mineable from Block E.

Block F

The area marked Block F on Exhibits A and B extends from the 200 foot level to the 500 taking in the Techatticup vein east from the gulch fault and extending to the tunnel fault taking in an area approximately 150 feet in length by 300 feet deep, out of which there has been mined from a stope above 550 chute on the 500 foot level about 1,000 tons. There is no question as to the remaining ground being a solid block of ore.

So little work has been done on the Techatticup vein in this section between the 200 foot level and the 500 foot that in 300 feet in depth there has been but one intermediate sample taken. This came from a cross-cut and showed 31 inches of ore assaying $43.75(not calculated).

Toward the east this block of ore is faulted by the tunnel fault and its continuation beyond the fault is a large body of high grade mill ore extending from below the 400 level to the surface. We are justified in assuming this body of ore

as having been part of the block in question before it was faulted and using the average value of the ore that was mined from this faulted section as being representative of the ore remaining in the Techatticup vein ~~and~~ west of the fault. It is safe to use a calculated tonnage of 12,500 tons and an average width of 30 inches as well as a calculated value of $18.57 as being the average of the tonnage in this block of ore which gives us $232,125.00 as being the total possible value of block F, without calculation of dilution. 30% dilution gives 16,250 tons at $13.00 equals $211.2

BLOCK G

East of the tunnel fault there is being mined a very rich chute of ore shown on Exhibits A and B and extending along the surface east from the tunnel fault and along the 400 foot level 150 feet east of the tunnel fault. This area is 150 feet high by 230 feet long with an average width of 2 feet. The remaining ore is marked Block G. the calculated tonnage of which is 3,961 tons. While from 19 samples the value is found to be $20.56 per ton. This fact is strengthened by the car samples taken over a period of six months which fairly constant and as there is no dilution we may calculate the 3,961 tons at $20.56 per ton will yield a gross value of $81,438.00

BLOCK H

Below the 200 foot level from the intersection east the Savage vein has never been explored. There should be a very large tonnage of ore along this vein between the 200 level east and the 400 foot level lying between the intersection of the two veins to the tunnel fault.

West of the fault on the 511 foot level the two veins may be together and in that case would be found simply as one vein. Even should this be true there still must remain a large

tonnage between the 200 foot level and the 400 with a steep rake to the east. Mor e exploration work and more sampling must be done to determine the amount of ore in this area and its value. The only sampling possible is along the 200 foot level east and along the 400 drift between survey stations No. 417 to 425.

BLOCK I

Between the 200 foot level from the intersection east to the 400 foot level the Savage vein has never been explored and there must be a large block of ground extending from the intersection fo the tunnel fault. More exploration work and more smapling should be done to determine the amount and value of this undeveloped part of the Savage vein. Samples have been taken along the 400 drift between survey stations 417 to 425, a list of which is given below:

Width	Value
18 in.	$32.80
4 ft.	8.86
38 in.	3.17
24 in.	11.43
60 "	7.48
66 "	7.55
36 "	1,50
36 "	3.55
36 "	9.74
24 "	1.40
36 "	2.45
48 "	2.95
60 "	6.65
36 "	18.73
14 "	2.94
30 "	4.00
610 in.	124.64

Average width, 39½ inches, average value $7.80, calculated tonnage 8,000 tons calculated total gross value $72,400.00

BLOCKH

Width	Value
28 ih.	$32.82
18 "	18.67
48 "	9.82
36 "	40.51
36 "	12.53
36 "	6.98
202	$ 121.33

The average width 34 inches, average value per ton $20.22, total tonnage 5,208 tons, calculated value $105,305.76.

The first block of ore on this page marked Block I has a certain amount of uncertainty as to part of its tonnage due to the dislocation by the tunnel fault. A winze sunk on the vein from the 200 foot level half-way between 215 chute

and 230 chute. In studying this territory both on the 100 foot level and on the 400 I can find no reason for there not being a solid block of ground in this area which has been left intact due to the fact that it was probably of a grade that was too low to be profitable in the past. From several high grade samples that have been taken along the vein on the 200 foot level at the extreme east and it is probable that this block of ground will hold up to a grade that can be profitably mined under present methods.

Very few samples were taken to prove the value of Block H because this stope which we called 494 has been yielding a grade of ore considerably better than the value put in this estimate on page 16. There is no question as to the tonnage available as it is also being stoped above chute 466 and the twin chutes in what was formerly called the Powder Tunnel stope. Beyond this block of ground on the surface ore is found in the Techatticup vein croppings until it strike carries the croppings under the wash. Close to No. 494 chute on the 400 level the vein is dislocated by an east dipping fault and survey of the surface will show defenitely how to pick up the dislocated segment. This is a very important thing to do as the location of a new shaft for the future of this end of the mine depends a great deal upon proving the ore which we know from sampling the croppings exists from the 400 level to the surface.

Along the Savage vein east of the tunnel fault the outcroppings have been displaced again by the same fault mentioned in the paragraph bove which dips 60 degrees east. In the future we will refer to this fault as the Simons fault.

Were it not for the fact that the Savage vein outcrops strongly on the surface this easterly continuation might never have been discovered. There are four segments of this vein exposed in their entirety as surface outcroppings which lie together as shown on the maps. Repeated sampling of these

outcroppings show them to carry about the same value in gold and silver as the ore formerly mined, and they present an opportunity for an entirely new mine when they are opened up both from the old workings and a new shaft which will be considered later. To the west the Techatticup vein can be traced definitely for more than a thousand feet. While its outcropping is not as well defined as the croppings to the east, the trace of the vein is plainly market and inplaces high grade ore is found in the few pits that have been sunk on the vein to prospect it.

The fact that on the 100 foot level west when the frift was turned back to the vein good ore was found which has not been developed. This drift should be driven ahead for a few hundred feet to explore this section.

With the ore in sight in the old workings which are all open and in good shape and with the possibilities to the west along the Techatticup vein as well as east on both the Savage and Techatticup veins, I do not know where to look for a better mining opportunity from the standpoint of quantity and grade of ore. The property is so equipped that it can be put into operation for a comparatively small investment, which is will guaranteed by the value of the ore in sight.

At the ti e of this examination the 600 foot level had partially filled with water and could not be inspected. From its position on the map it is very bpobable that the 600 foot level never reached the vein.

Both the gulch and tunnel faults are close together at this horizon so that with their accompanying broken zones and displacements the following of the vein at this level so confused the old miners that they failed to find either the Techatticup or the Savage vein, or the vein which would be the result of the joining of the two veins together. The only way

to prove the ore on the 600 is to sink a winze from the 500 level and follow the ore to the 600 foot leve, at a point just below the 500 chute above which is being mined a large body of high grade ore.

This work is not of immediate importance as the ore in sight above as shown by the various blocks exposed will supply a 50 to 60 ton mill mill for many years.

MILL

The present mill was built by the Simac Gold Mines Co. and consists of a primary crusher fed by a belt conveyor from the coarse ore bin, which received the ore by cars from a storage bin located on the 100 foot level of the mine.

From the crusher the ore is screened by trommel screen. The fines (one-fourth inch mesh) join the fines from two sets of rolls and ## ultimately elevated to the fine ore storage bin. The coarse material in each place drops by gravity to one set of rolls so that the resulting product from both trommels are elevated by the same elevator to the fine ore bin. In this way an even size of ore can be fed automatically to the ball mill.

An automatic feeder feeds this ore to a 6x22 Hardinge ball mill, which is enclosed circuit with a Dorr duplex classifier. The coarse return is delivered back to the ball mill by a screw conveyor and shor scoop feeder. The classifier discharge is then elevated by a Kraugh pump to a Surge tank from where it passes to the flotation cells.

The flotation equipment consists of two Fagagren flotation cells followed by two Groch roughers. The combined froth from these four roughers pass to two Groch cleaners. The tailings are lifted again by a Kraugh pump to two Dorr thickeners in order to recover as much water as possible. After thickening the tailings pass to an Oliver filter in order to

salvage the last drop of water and retrun it to the mill. The tailings from the Oliver filter pass to the tailing disposal pile.

The accompanying flow sheet shows the present mill and the suggested changes in order to cheapen operations.

The concentrates from the Groch cleaner are accumulated in a series of steel compartments where, after decanting, they are spread out and partially dried before shipping them to the smelter.

The two difficulties that have to be faced are power and water. The use of gasoline engines in any form for power is out of the question. If Diesel power is considered at all the engines must be of a well known type recognized as being capable of constant use under difficult conditions. At this time it is probable that electric power may soon be available from Boulder Dam. If, however, it is necessary to resort to the use of any type of oil burning engine, I would recommend the use of 125 h.p. units would be sufficient for everything except the hoist. A smaller unit equally efficient should be considered as part of the hoisting equipment. The advantage of standardizing on one type of engine is obvious. The successful operation of any mill depends entirely upon the constant power from a reliable source.

There are a few changes in the present mill which will lessen the amount of power used and will considerably cheapen operations. Without considering the power at this time and considering only the mill itself I would replace the two sets of rolls and the bucket elevator by using below the present Blake primary crusher, a 10x18 Wheeling crusher, set to crush through one-fourth inch mesh. This crushed product should be conveyed by belt conveyor to the present fine ore bin through a trommel screen so placed that the oversize will return automatically

to the Wheeling crusher to be recrushed.

From the fine roe storage bin I would leave the mill as is with the exception of the two Kraugh pumps. These I would immediately replace by two inch Wilfley pumps as they are much more efficient and operate consistently.

The operation of the mill can be made more automatic by raising the head end of the classifier a few inches so that by putting a long scoop on the ball mill instead of the present short one the screw conveyor could be removed and the classifier returned will fall by gravity back to the ball mill box where ti will be picked up by the long scoop feeder.

The flotation machines should be put in good shape and used until necessary to replace them, at which time I would install one four-cell Kraut flotation machine to take their place.

At the discharge of the proposed belt conveyor there should be installed an automatic sampler with the accompanying equipment for taking and preparing a sample for the assayer. This equipment is outlined on the accompanying flow sheet.

The tailings should also be sampled by an automatic sampler so installed as to take its sample without the operator being able to interfere with its operation. With these two precautions, and by using the scales now installed on the track from the mine to the mill which will give an accurate measure of the ore delivered it is possible with these three appartases in operation to so check results that the highest efficiency of operation t# can be maintained. The present flotation mill was mentioned before, and was built by the Simac Gold Mines Co. with the idea of using it as a pilot mill to determine the mine possibilities and prove out the metallurgy of the ores. As Little money as possible was spent and has it not been for the failure of two new Diesel engines installed as power units highly recommended by their designers, it is safe to

say that this mill would be in operation at the present time.

After the failure of the Diesel engines, several old gas engines were put into commission to finish the test run.

The following summary calculated from an operation, without unnecessary loss of time using only actual running time an analysis of the results obtained is shown in the following tabulated results :

ANALYSIS OF MINE AND MILL TEST OVER A PERIOD OF 6 MONTHS OPERATION? TECHATTICUP MINE BY SIAM GOLD MINES CO.

4043 Tons of mine ore milled @ $12.60 per Tongross val.			$50,974.36
1345 Tons " dump ore and fille @$5.10 " " " "			6,859.50
		Total Val.	57,833.86
Metallurgical Loss 15%		$10,021.68	
Smelter deductions 5.5%	$2,497.79		
Smelting charge	426.26		
Freight to smelter	1,282.91		
Total Cost	4,206.96	14,228.64	14,228.64
$4,206.96 divided by 5388= $.80 marketing charge			
		Net smelter return--	43,605.22
Cost of mining 4043 T. @$3.77		$15,242.11	
Cost of handling dump 1345 T@$1		1,345.00	
Cost of milling 5388 T @$2.23		12,015.24	
Total cost mining & milling		28,602.35	28,602.87
		Profit	15,002.87

No loss of time from breakdowns or lack of water have been considered as these factors can be eliminated. The accompanying list shows the lot numbers, date and net smelter returns on all concentrate shipments, as paid to the Siame Gold Mines Co. The factor of $.80 marketing charge as calculated is the actual cost of marketing the concentrates as ₿ charged to one ton of ore and will be used in future calculations.

RECOMMENDATIONS

From a study of conditions both at the mine and in the mill, I have the following recommendations to make not considering the question of either power or water. Beginning with the mill I recommend the changes to be made as outlined above; the present Oliver filter should be replaced by a larger one so as to handle the tailings constantly and prepare them for disposal which in this case had best be a stacker.

The machine shop should be gone over and put back into service. In the hands of a competent mechanic this equipment will save many dollars and many trips to Vegas for repair parts.

A cement floor should cover the entire mill to prevent losses from overflows which happen from time to time. A cement floor also adds to the comfort and efficiency of operators and should be the first thing done to benefit new operation.

At the mine the hoist should be replaced, if electric power should become available. The present equipment is inadequate and at the least must be rebuilt as I find the crankshaft is sprung and must be replaced. The cylinder of the engine must be rebored and the piston built up and turned to fit. It is well to consider the cost of these repairs as it is often possible to buy a much better equipment for less than the repairs on the old.

The shaft should be cleaned of accumulated debris from top to bottom. New sills put in wherever needed, and lastly a proper signal cord should be installed that is so counterbalanced as to operate easily. This is one thing that is absolutely necessary, if men are to be moved up or down the shaft from one level to the other. Machine drills, jackhammers, and stopers with the accompanying steel should be brought up to standard.

All living quarters should be renovated and made as comfortable as possible. The dining room and kitchen are in fair shape and need only cleaning. A good change room must be built so as to provide a shower bath for each ten men.

From an analysis of the above report there is nothing to prevent this gold mine from yielding its value at a profit except poor engineering and inadequate equipment.

Standard machinery that has withstood the test of time should alone be used.

A careful survey and sampling of the mine shows a large tonnage of ore that can, by careful manipulating, yield a profit for every ton extracted and milled.

The test run made by P. A. Simon for the Simac Gold Mines Co. over a period of six months proved that the mill could be kept going 24 hours per day and certain grade of ore between $11.00 and $12.00 could bemaintained from the mine workings.

This test further proved that the ore would yield its value to the flotation process, and it also gave data on which mining and milling costs could be calculated. These are higher than the calculated costs where Diesel power is used as given in the table of mining and milling costs, Page 7. The changes necessary in the equipment is entirely justified by the amount of ore still available in the old workings. If electric power becomes available the costs of both mining and milling can be reduced again as the cost of power will be less, and fewer men necessary.

The following summary of the facts brought out by this examination is intended to show at a glance the possibilities of this mine and to give in consensed form everything contained in the above report.

When studied in connection with the accompanying exhibits it will be noted that every estimate is consistent with the record of past production and that the ores in sight today are relatively of a lower grade than those last mined, even if the increased price of gold indicates an average value similar to the ores mined during the last period of production.

SUMMARY

BLOCK	VALUE TONS	WIDTH	PER TON	TOTAL VALUE	DILUTION %	TONS	YIELD VALUE	TOTAL VALUE
A	7613	30"	$14.41	$109,558.	15	8755	$12.25	$107,248
B	2075	19"	24.75	51,256.	30	2700	17,22	46,500
C	2000	31"	12.31	24,620	10	2200	11.00	24,200
D	7330	22"	18.00	124,940	35	9895	11.70	115,771
E	4166	30"	14.70	61,237	30	5410	10.30	55,723
F	12500	30"	18.57	232,125	30	16250	13.00	211,250
G	3961	35"	20.56	81,478	00	3961	20.56	81,438
H	5205	36"	20.32	105,305	00	5205	20.32	105,305
I	8000	40"	7.79	62,400	00	8000	7.79	62,400
	64850						124.79	809,835

Average Val. Per T. @$13.78

Cost of Mining	$3.38 per ton
Cost of Milling	2.23 " "
Marketing	.80 " "
Metallurgical loss 15%	6.80 " "

Subtacting 15% of the average value per ton shown above to be $13.78 the average recovery will be $11.72 per ton. 62376 tons at $11.72 equals $731,046.72 total recovery, after deduction all cost except depletion and ammortization, and as both of these charges will be very small it is safe to consider that there is in sight a profit of $331,216.00 when mined and milled.

Figuring this on the daily basis and using 60 tons per day as a mill capacity and 28 working days per month, using again the avewage value of the ore per ton, we find the following to be a conservative estimate. Remembering that the metallurgical loss can be reduced to 10% instead of the 15% figured in all of our estimates.

60 tons per day at $13.78		$826.80
Cost of mining 60 To.day @$3.38 ton	$202.80	
marketing charge $.80 T. day @ $2.23	48.00	
Cost of milling 60T per day $2.23 ton	133.80	
Metallurgical loss 15%	124.00	
	507.00	507.00
Profit per day ----------		319.00

the above summary tells its own story. The cost of additional equipment to make this possible cannot be accurately calculated until it is known whether electric power is to be available or it will be necessary to generate power with Diesel engines. Additional equipment figuring on either gas or electric power and the required work

to be done in the mine and mill plus the water line to the river and the working capital necessary for a thirty day operation can be roughly estimated at about $36,000 and while no detailed costs have been compiled covering this point I think it is safe to say that $50,000 made available will be sufficient to put this mine into full operation with the best equipment possible, to handle 60 tons of ore per day, which will yield a profit of more than $300.00 per day. Without figuring any other ore than the present tonnage in sight there will be guaranteed a profit of more than $300,000.00 in three years.

The Diamond Gold Mines Company have the advantage of an already opened up mine with a $100,000.00 worth of equipment and nearly a half a million dollars worth of development work that make the present ore in sight available. The only new development would be a new shaft on the east end which will tend to cheapen mine operation for extracting the ore now being mined on the 400 foot level and also pave the way for opening up the large ore possibilities along extensions of both the Techattieup and the Savage veins below where they outcrop on the surface.

The possible ores that are to be found east along these veins as well as the ores which are practically proven below the 400 foot level on the Techattieup vein from the tunnel fault east to the point marked chute 494 and the ores which may be found to the west, added to the above mentioned posibilities, insures a long, profitable operation. When we consider that these ores are partly proven we can safely assume that the future possibilities for new ore being opened up practically guarantees a tonnage as large, at least, as the ores now in sight.

Besides the mine equipment the new company takes advantage of a mill equipment easily worth $50,000, as well as a camp equipment consisting of a good boarding house, and houses for enough men to carry on the work of mining and milling easily worth $10,000 or more.

Considering all of these facts and the relatively small amount of money needed to put this property into production, it is plain that the expenditures as outlined above are fully justified from every standpoint.

There is no better or safer investment in the state of Nevada that this mine offers to any one desiring an investment guaranteed to pay a profit over a period of many years.

I recommend the Techatticup Mine to its present stockholders and to any one desiring an opportunity to take advantage of the present price of gold with their money safeguarded by yhe tonnage and value of the ore reserves at present available. Under the management of men who are well versed in the science of mining and milling their investment is as safe and the returns as certain as it is possible for any business to be, and probably safer than any other opportunity to be found in the business world of today.

Respectfully submitted,

D. F. Meikeljohn E. M.

NEW ESTIMATE BASED ON USING ELECTRIC POWER

Having just received the following letter from Mr. P. A. Simon to inform me that electric power is assured for the El Dorado Canyon District from Boulder Dam and will be available to the Diamond Gold Mines Company at cost not to exceed one-half cent per kilowatt hour:

May 23, 1935

Mr. D. F. Meiklejohn
City

Dear Mr. Meiklejohn:

In further reference to your inquiry in regard to the electric power from the Boulder Dam, the Eldorado Mining District is now organizing a power district and just as soon as the organization is complete and the Public Service Commission approve ot it, then the district will become eligible to make an application for a loan from the P.W.A. From all indicaions we anticipate no trouble to get the necessary amount from the P.W.A. to build this line, however, if the district fails to get the money, there are several mine operators in Eldorado Canyon, including ourselves, who have pledged themselves to put up enough money to build the lines and if necessary will do so. In either case when the line is complete, and I understand from Mr. Walter Young, Engineer in charge of the Boulder Dam, that the power will be available about the first of 1936.

The State of Nevada has fixed the price of power at the Boulder Dam switch at 2½ mills, and as you know the distance between Boulder Dam and Eldorado Canyon is only 22 miles, we can reasonably expect to get the power delievered to us at a cost not to exceed ½ of 1¢ per K.W.hour.

Yours very truly,

P. A. Simon"

With electric power assured at a cost of one-half cent per kilowatt hour and estimating that we will use approximately 300 H.P. on the 60 ton basis this cost will be about $.20 per ton of ore treated, which will be divided evenly between mine and mill.

The use of electric power at this cost materially cheapens the cost of production and I am compiling a new summary of mine and mill costs based on the use of power from Boulder Dam at one-half cent per kilowatt hour.

COST OF MINING AND MILLING
BASED ON USE OF ELECTRIC POWER.

Cost of Mining	Per Ton	Cost of Milling	Per Ton
Foremen & shifters	$0.18	Foreman	$0.10
Engineering & overhead	.17	Operators	.25
Timbering & extraction	1.76	Helpers	.20
Sorting	.08	Mechanic	.08
Hoisting	.15	Assaying	.08
Power, Hoist & Compr.	.10	Crusher Man	.08
Assaying	.07	Power	.10
Supplies	.33	Supplies	.50
Powder	.15	Water	.10
	.16	½ Overhead	.17
Total	$3.15		$1.66

Using the new cost of mining and milling as tabulated above together with the accumlated data on average value and tons available, the estimate of daily profits based on 60 tons per and 28 working days per month will be as follows:

60 tons per day at $13.78			$826.80
Cost of mining 60T. per day @	$3.15	$189.00	
Cost of milling 60T per day @		99.60	
Marketing charge $.80 per ton		48.00	
Metallurgical loss 10%		82.60	
Total		419.20	419.20
Profit per day			$ 407.60

The increased profit of $87.80 per day is due entirely to the use of electric power furnished from the power generated at Boulder Dam. What is true at the Techatticup Mine will be true of for the entire Eldorado Canyon district and with electric power assured many of the mines now idle can be re-equipped and become profitable producers.

With the cost of mining and milling reduced to $4.81 per ton, or a total cost of $5.29 it simply means that ores carrying as low as $7.00 per ton can be mined and milled profitably when the question of power is settled. On the basis of Diesel power we estimated a recovery of $331,046.00 in sight. This figure now becomes $774,086.00. Subtracting the cost of mining and milling which is $324,801.00 we have left a profit of $449,285, an increased profit of $118,069.00 from

the ore in sight alone.

From an engineering standpoint this increased production from the processing of the ores now ready for mining we can calculate a factor of safety 25% greater by the use of electric power than by using Diesel engines and generating the power used on the ground.

When the increased profit from using electric power is compared with the low cost of running a hi-line to the Eldorado district it certainly is an argument in favor of this work to be carried out and finished before the power is available so that mp ;pst to,e wo;; pecir betweem tje avao;abo;otu pf power at the Boulder Dam and its delivery over a suitable power line to the Eldorado Canyon mining district. Now that this work has been definitely decided upon its importance to the mine with which this report is concerned cannot be overestimated. It absolutely guarantees a profit from nearly every ton of ore that can be extracted from the main workings of the Techatticup Mine and insures beyond question the success of this property. I am supplementing the main report with this addition because of its importance.

Respectfully,

D. F. Meiklejohn E. M.

SAMPLES FROM BLOCK A

Width	Value
43in.	$ 6.80
39 "	5.18
39"	4.70
42 "	4.14
45 "	5.05
54 "	7.26
56"	28.76
28"	40.47
24"	34.42
49"	21.07
45"	15.08
30"	1.22
36"	7.39
36"	7.54
21"	6.34
18"	2.83
18"	20.62
21"	.89
20"	10.35
18"	6.47
20"	2.55
40"	.84
37"	8.59
48"	7.36
35"	7.51
28"	10.06
22"	13.23
242	13.51
41"	26.61
30"	17.16
36"	18.00
52"	15.80
36"	26.33
34"	13.82
29"	12.50
20"	5.10
20"	17.82
12"	11.19
14"	9.41
18"	11.40
18"	36.60
18"	10.31
29"	5.99
36"	5.61
20"	13.47
15"	3.05
19"	7.29
18"	10.03
25"	2.00
30"	2.95
24"	6.55
36"	5.20
13"	2.63
13"	3.20
14"	2.27
18"	4.40
18"	2.29
2582in.	

57
28
85

Width	Value
20in.	$21.90
27"	2.02
27"	2.30
21"	6.74
28"	42.00
14"	15.28
36"	12.92
31"	11.44
23"	3.98
24"	2.62
43"	6.70
39"	7.26
38"	5.88
42"	5.20
45 "	5.74
54"	7.26
56"	28.76
34"	42.22
24"	42.35
49"	21.07
45"	15.08
30"	3.07
36"	12.25
21"	7.54
18"	7.15
30"	5.07
12"	12.75
26"	63.00
2582in.	144.39
	$ 1238.39

28

14

SAMPLES BLOCK B

Width	Value
25in.	$38.02
21"	48.87
18"	7.44
19"	5.78
21"	17.95
14"	20.46
18"	32.85
22"	7.88
18"	51.86
14"	2.27
12"	28.52
20"	21.46
22"	43.29
15"	.75
17"	50.74
13"	38.40
12"	21.30
22"	4.15
18"	3.66
26"	12.75
26"	63.79
12"	144.39
12"	21.50
21"	10.60
28"	8.25
24"	3.67
25"	.80
25"	53.17
23"	.90
17"	94.23
13"	17.54
28"	10.88
22"	.79
26"	32.80
26"	47.66
23"	1.47
26"	10.44
29"	12.61
22"	5.78
18"	17.85
34"	20.46
15"	11.62
26"	.87
30"	13.31
918in.	957.18

44

1063.68

SAMPLES BLOCK C

Width	Value
56in.	$ 5.33
18"	5.01
28"	8.90
27"	6.77
22"	10.33
23"	16.89
33"	13.47
30"	32.02
24"	10.29
29"	15.82
21"	19.62
33"	5.92
24"	9.41
36"	8.94
29"	7.82
31"	20.42
502in.	196.96

SAMPLES BLOCK D

12"	$ 6.38
14"	18.08
22"	12.33
22"	17.80
33"	15.32
0"	31.28
42"	15.62
32"	12.07
0"	17.53
14"	30.10
0"	21.50
14"	10.89
0"	17.52
14"	47.46
34"	17.73
16"	11.23
27"	23.54
19"	24.05
24"	82.75
27"	17.23
16"	10.80
28"	7.25
26"	8.07
34"	70.59
23"	7.16
19"	8.03
20"	18.35
27"	18.57
23"	9.93
27"	11.35
19"	4.77
20"	3.56
23"	16.18
18"	13.14
28"	12.30
0"	12.32
731"	$693.19

SAMPLES BLOCK E

Width	Value
29in.	$ 7.82
33"	13.41
18"	5.01
28"	3.07
27"	6.77
22"	10.33
23"	6.80
33"	4.92
24"	8.94
21"	19.62
29"	15.82
31"	20.12
30"	32.02
24"	10.29
22"	13.19
16"	8.00
60"	28.40
20"	36.00
28"	30.00
36"	25.00
36"	15.60
42"	6.50
25"	9.60
620in.	$337.21

SAMPLES BLOCK F

38in.	$16.82
37"	25.65
26"	24.07
18"	42.85
24"	24.50
38"	11.50
26"	11.16
24"	10.51
42"	48.87
18"	8.07
35"	42.11
20"	8.55
60"	28.40
42"	8.05
20"	36.00
12"	11.33
490in.	$359.04

SAMPLES BLOCK G

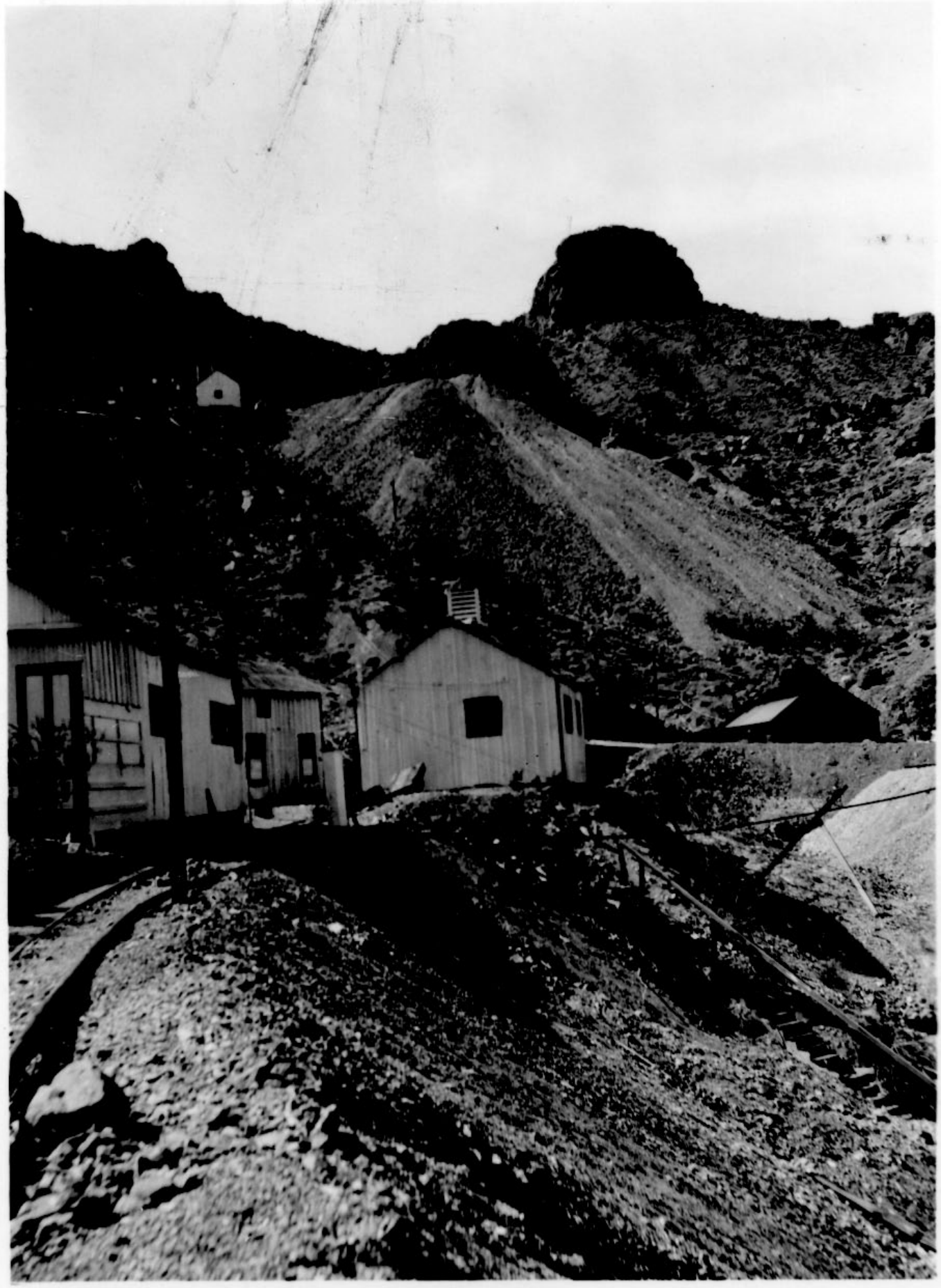
Width	Value
12in.	$14.27
14"	20.69
24"	8.86
30"	5.77
16"	4.34
18"	41.90
12"	20.60
18"	10.50
20"	25.70
24"	59.40
18 "	14.82
18"	18.35
12"	18.54
14"	12.11
22"	46.64
14"	13.62
20"	12.11
22"	46.42
18"	11.55
336in.	390.76

SAMPLES BLOCK H.

28in.	32.82
18"	18.67
48"	9.82
36"	40.51
36"	12.53
36"	6.98
202	121.33

SAMPLES BLOCK I

18in.	32.20
48"	8.86
38"	3.17
24"	11.43
60"	7.48
66"	7.55
36"	9.74
36"	1,50
36"	3.55
24"	1,40
38"	2.45
48"	2.95
60"	6.65
36"	18.75
14"	2.94
30"	4.00
610in.	$124.64



Tecbatticup Mine
Aug 1936

This was taken from the end of the mill on the top foot level. The pepper dump is from the 600 ft shaft incline.
Assay office & blacksmith shop in foreground.

(27)

Item 19