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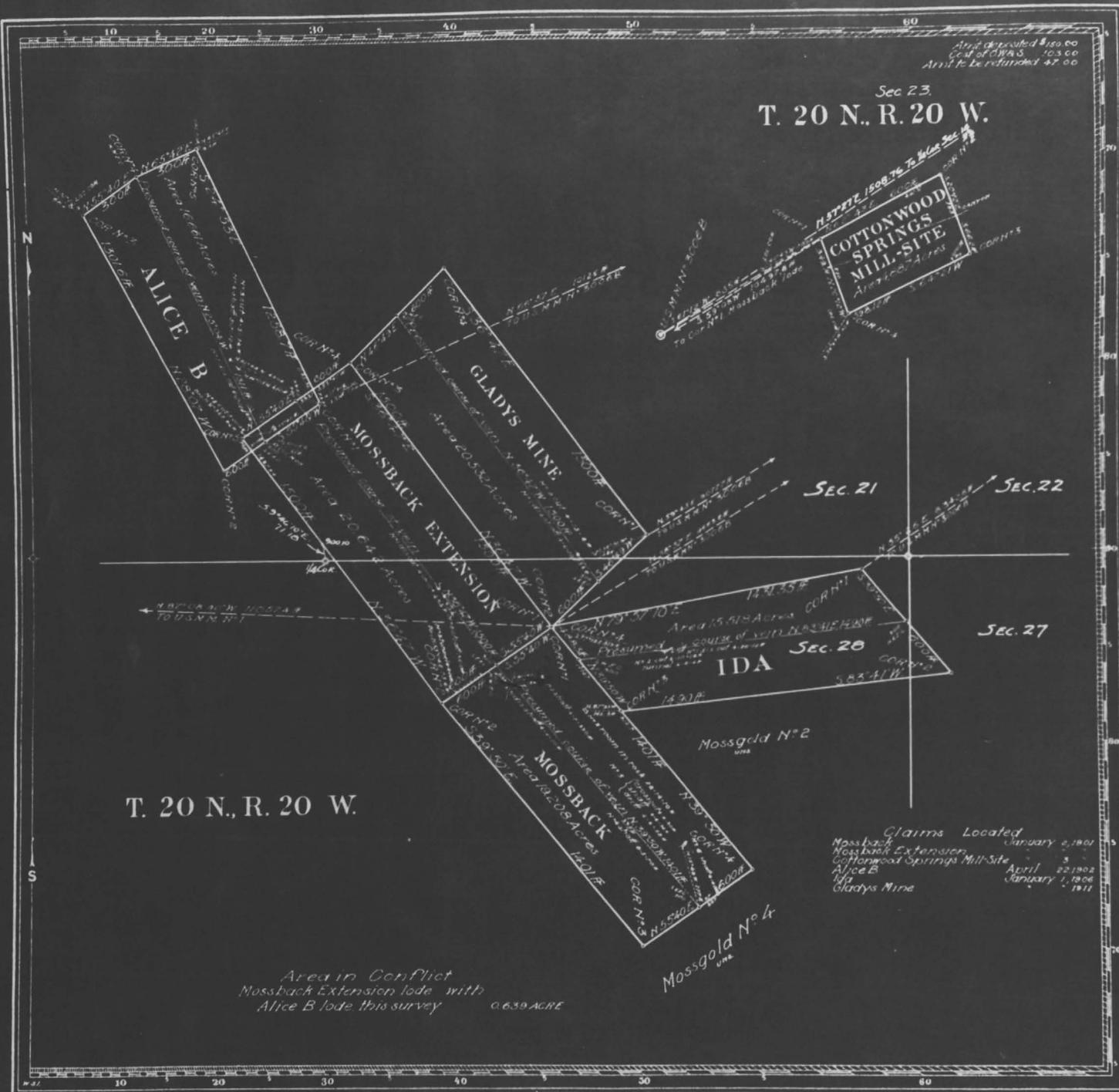
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Claims Located *see table*Mineral Survey No. **3006 A & B**Lot No. _____
Arizona Land District.**PLAT**
OF THE CLAIM OF

First National Bank of San Diego
KNOWN AS THE
Gladys Mine, Mossback, Mossback Extension, Alice B, Ida lodes, Cottonwood Springs Mill-Site

IN *San Francisco* MINING DISTRICT,
Mohave COUNTY, *Arizona*
Containing an Area of **96.809** Acres.

Scale of **400** feet to the inch.Variation **15° E.**

DATED *July 20-26*, 1912 BY
H.G. Schader

U.S. Mineral Surveyor.

The Original Field Notes of the Survey of the Mining Claim of First National Bank of San Diego known as the Gladys Mine, Mossback, Mossback Extension, Alice B, Ida lodes, Cottonwood Springs Mill-Site

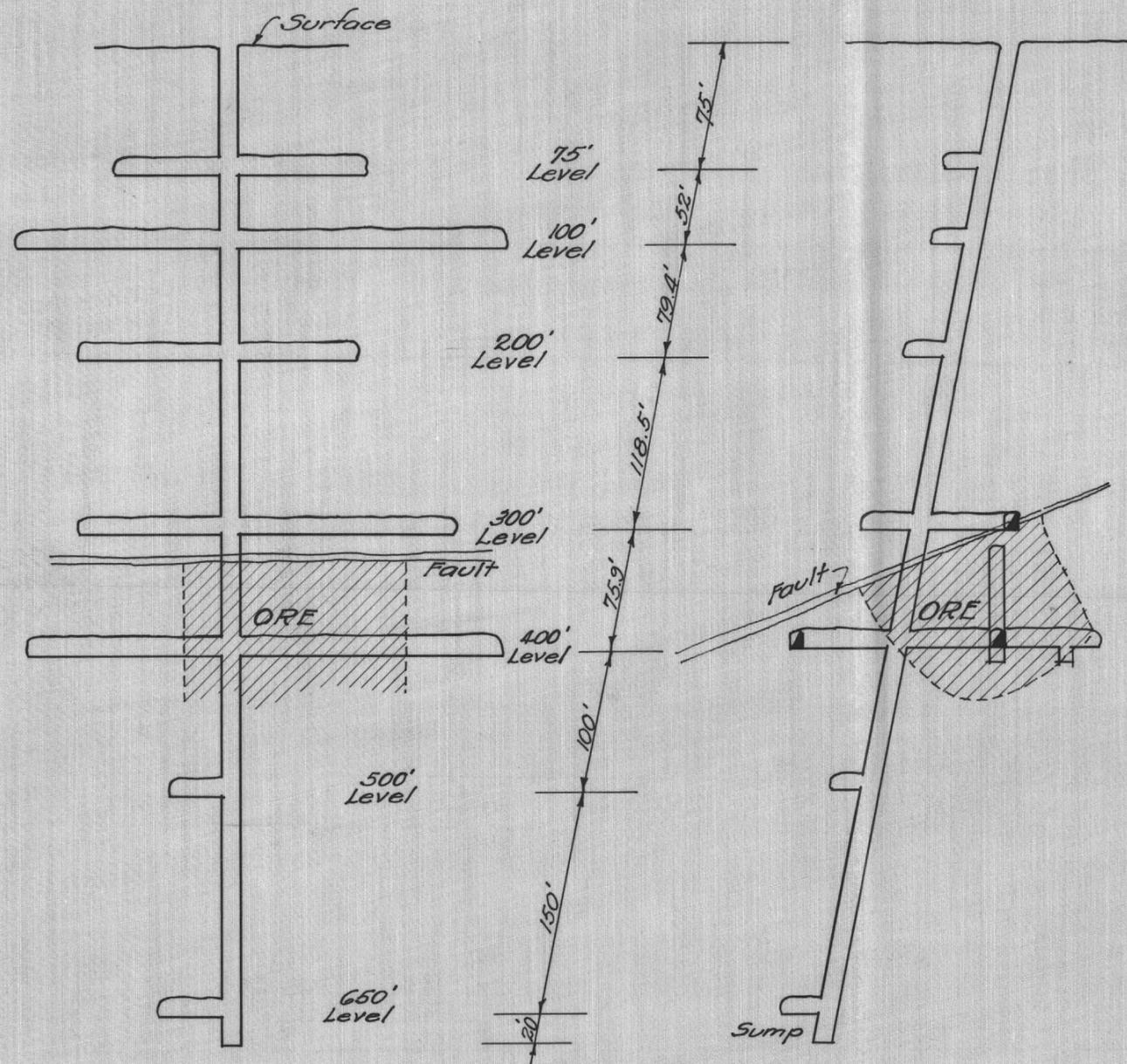
from which this plat has been made under my direction, have been examined and approved, and are on file in this Office; and I hereby certify that they furnish such an accurate description of said Mining Claim as will, if incorporated into a patent, serve fully to identify the premises, and that such reference is made therein to natural objects or permanent monuments as will perpetuate and fix the locus thereof.

I further certify that five hundred dollars worth of labor has been expended on improvements made upon said Mining Claim by claimant or its grantors, and that said improvements consist of shafts, pits, rooms in rock, & tunnels, for a total value of \$15,000.00. An undivided 1/4 interest, value \$3,750.00, in shaft No. 1 on the Mossback lode is credited to each of the Mossback, Mossback Extension, Ida and Alice B lodes of this survey.

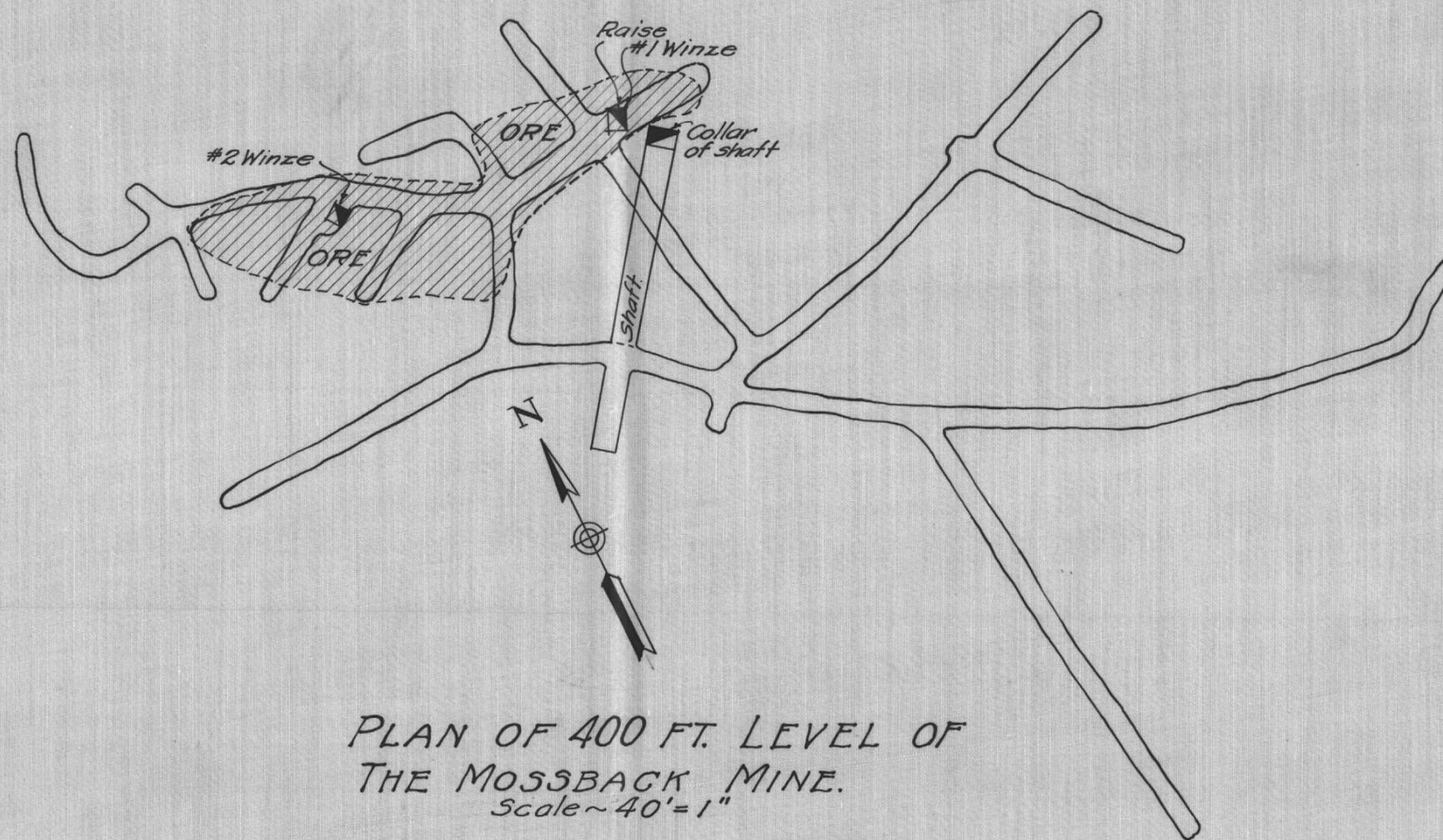
that the location of said improvements is correctly shown upon this plat, and that no portion of said labor or improvements has been included in the estimate of expenditures upon any other claim.

And I further certify that this is a correct plat of said Mining Claim made in conformity with said original field notes of the survey thereof, and the same is hereby approved.

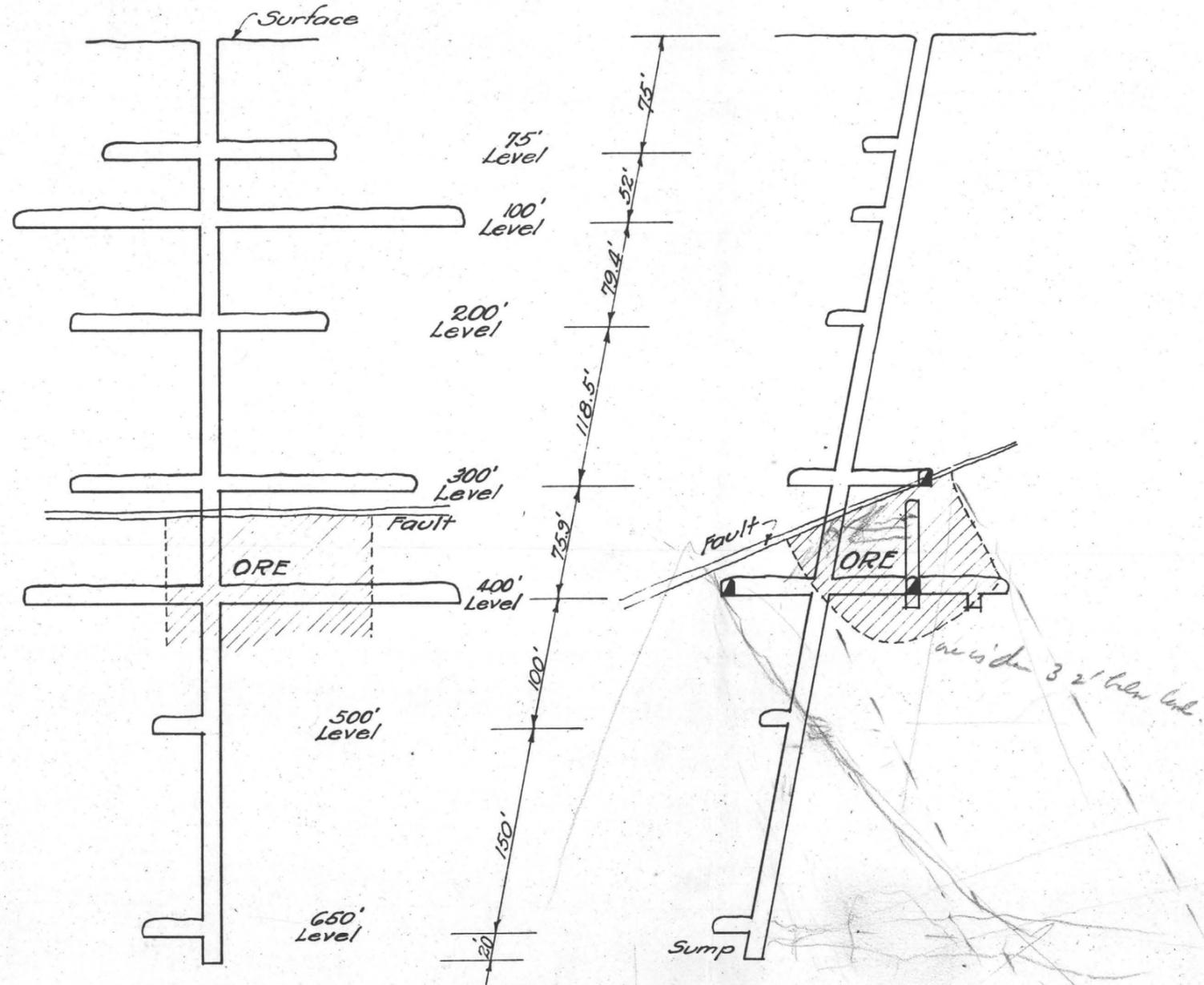
U.S. Surveyor General's Office, *Frank Schader*
Phoenix, Arizona } U.S. Surveyor General for
October 9, 1912 } **Arizona.**



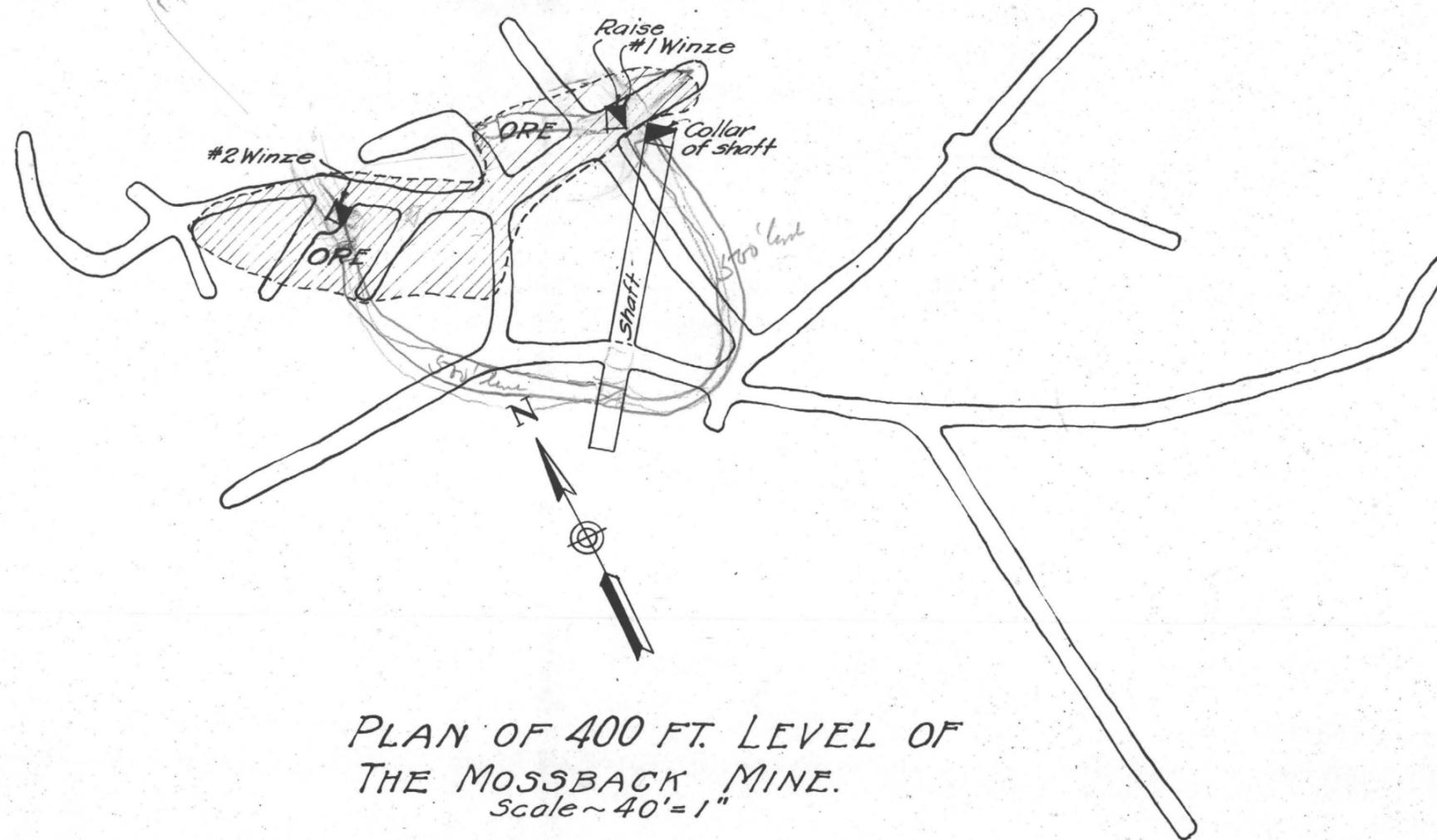
SECTIONS ON STRIKE AND DIP OF
THE MOSSBACK MINE
Scale ~ 100' = 1"



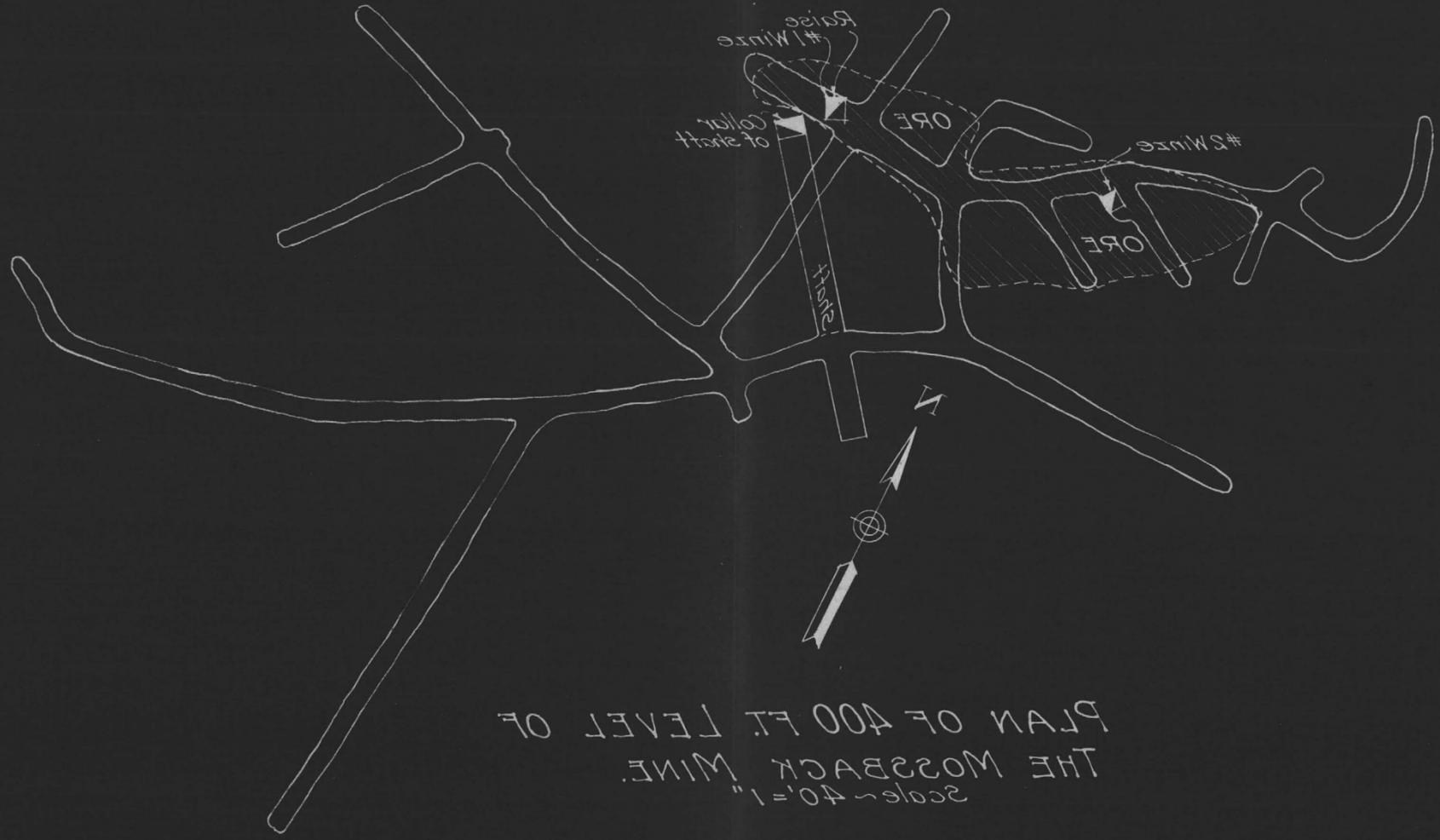
PLAN OF 400 FT. LEVEL OF
THE MOSSBACK MINE.
Scale ~ 40' = 1"



SECTIONS ON STRIKE AND DIP OF
THE MOSSBACK MINE
Scale ~ 100' = 1"



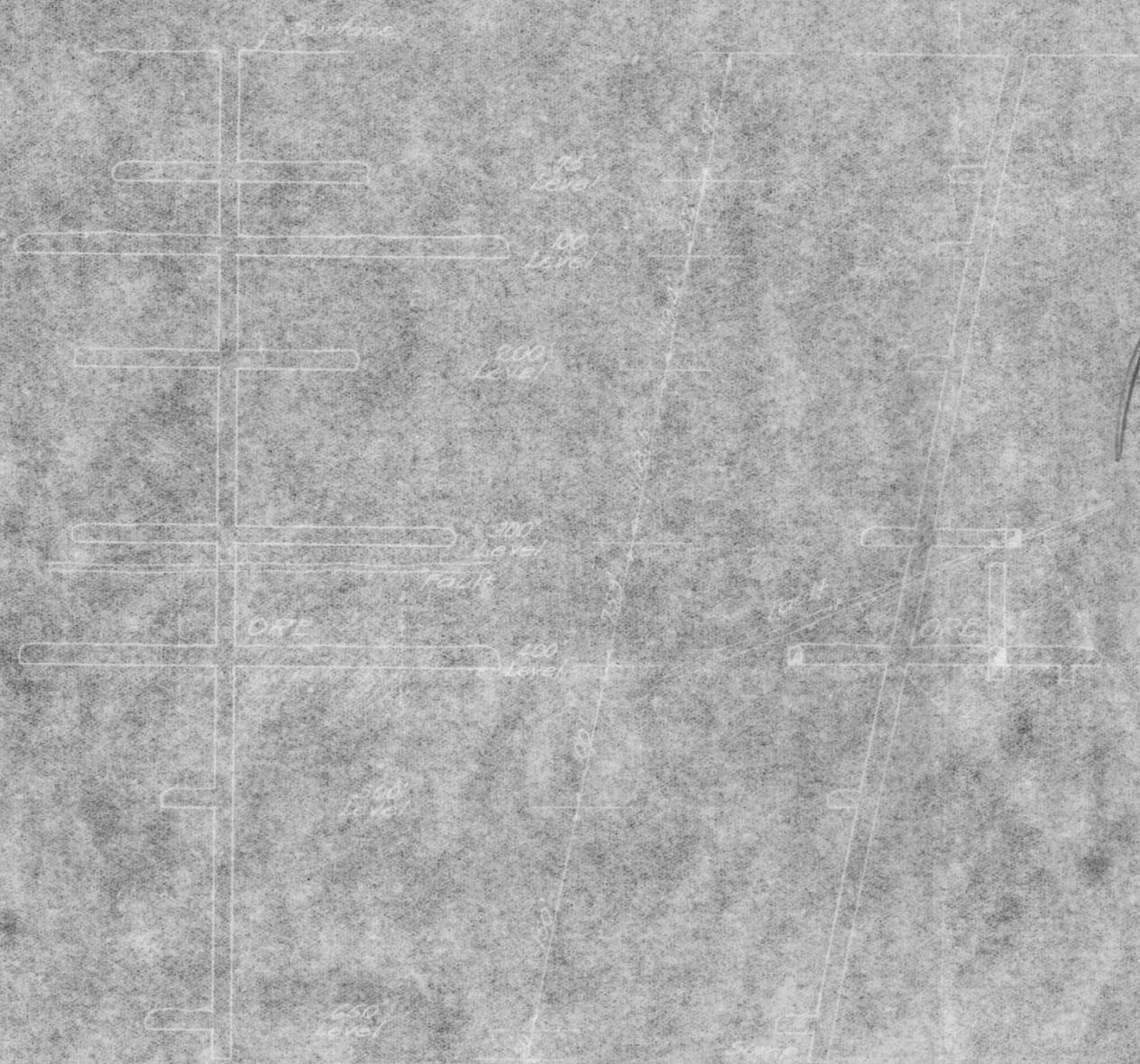
PLAN OF 400 FT. LEVEL OF
THE MOSSBACK MINE.
Scale ~ 40' = 1"



PLAN OF 400 FT LEVEL OF
THE MOSSBACK MINE.
Scale ~ 40' = 1"



SECTIONS ON STRIKE AND DIP OF
THE MOSSBACK MINE
Scale ~ 100' = 1"



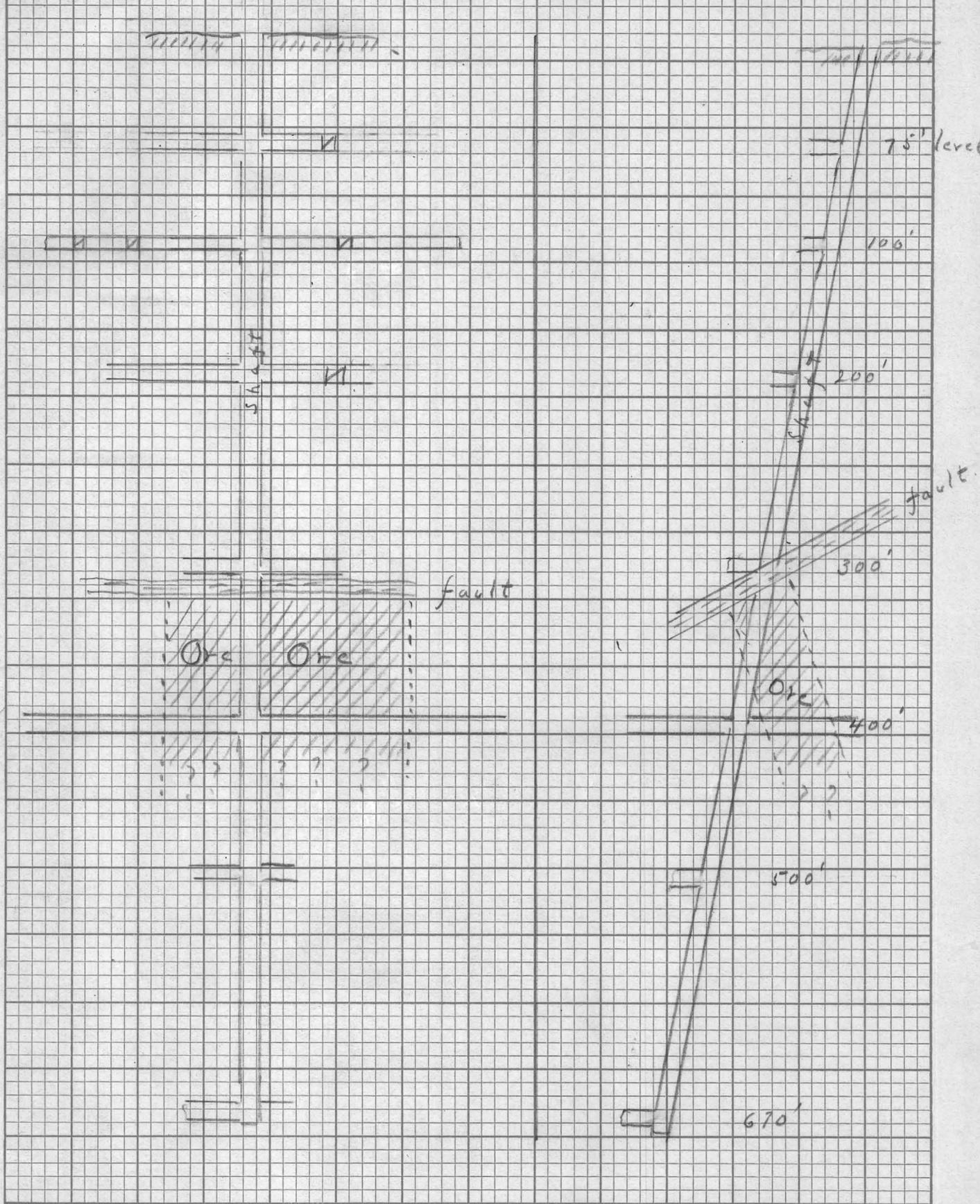
SECTIONS ON STRIKE AND DIP OF
 THE MOSSBACK MINE
 Scale = 100 ft.

Mossback file
 (Engine)



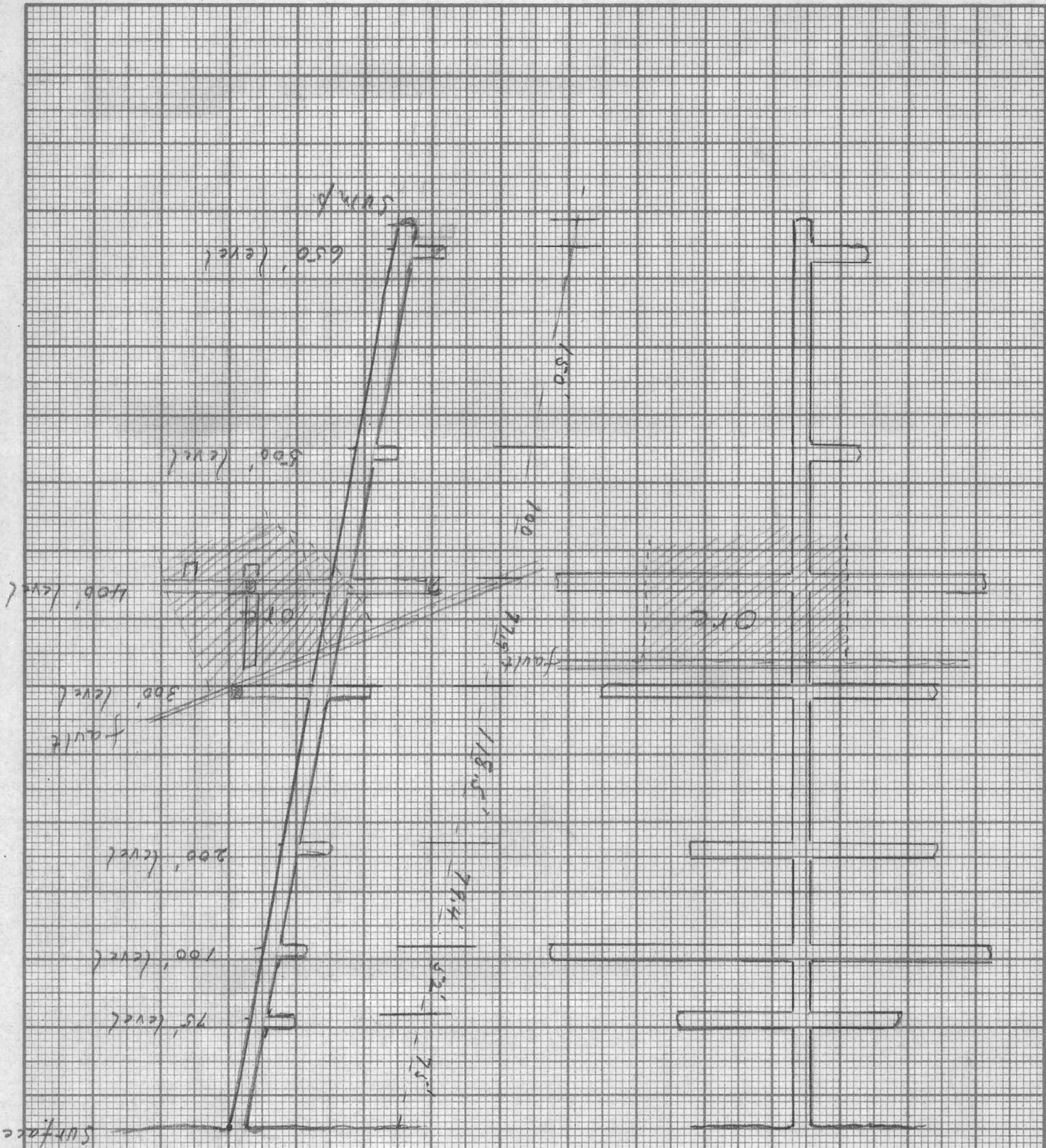
PLAN OF 400 FT. LEVEL OF
 THE MOSSBACK MINE
 Scale = 40 ft.

Sections on Strike and Dip of Empire Mine

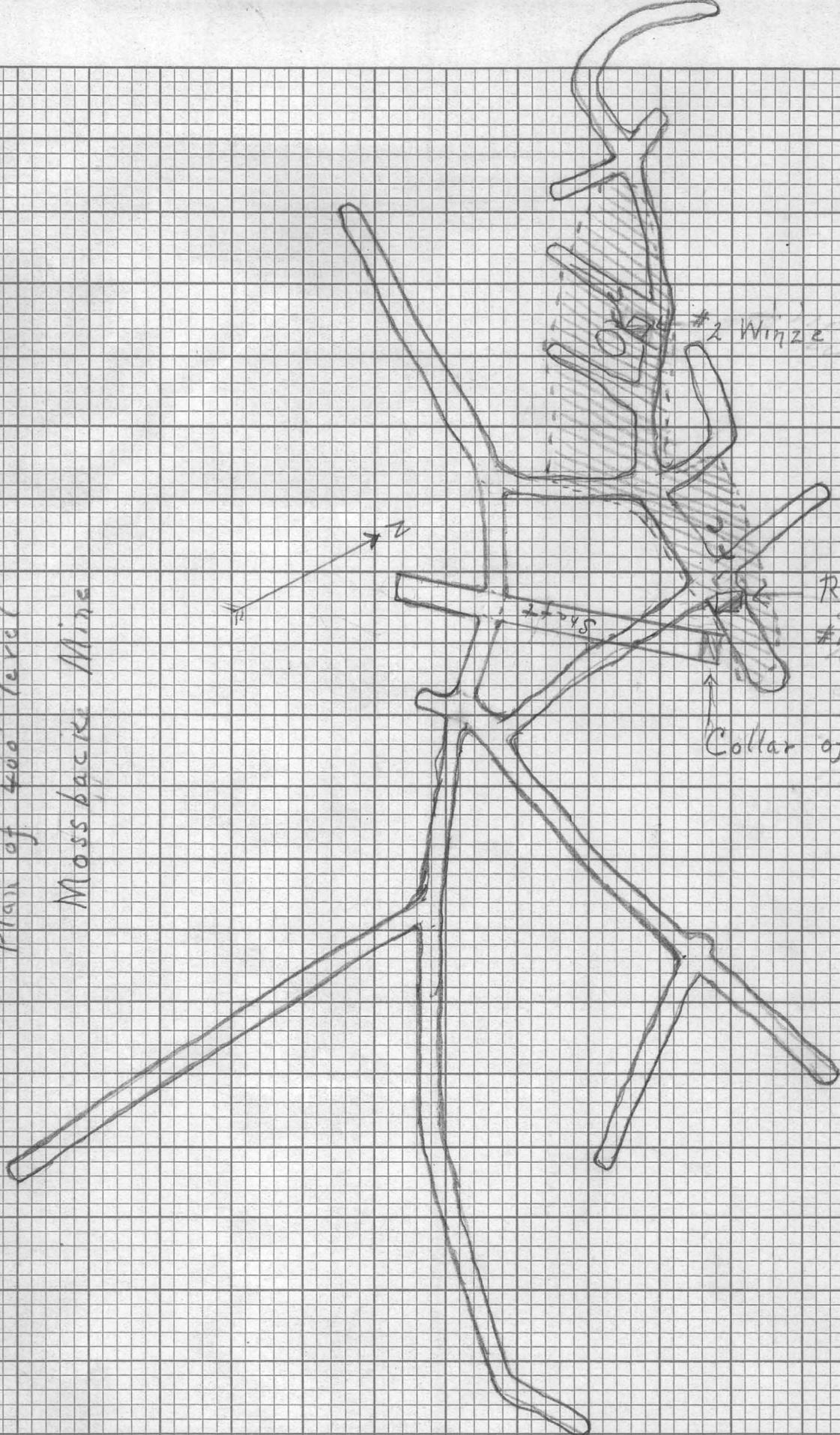


Sections on Strike and Dip of Mossback Mine

Scale 1" = 100'



Plan of 400' level
Mossback Mine



#2 Winze
Rais
#1 Winze
Collar of Shaft

Scale 40' = 1"

COPY

June 22, 1927

Mr. W. V. DeCamp, Gen'l. Mine Supt.

Re: Mossback Property (gold)
Oatman, Arizona.

Dear Sir:

LOCATION & ACCESSIBILITY:

The Mossback mine is located in the south-central part of section 19, T. 20 N., R. 20. W., about 6 miles in an air line northwest of Oatman. It is accessible by auto, the road taking off the Gold Road Oatman highway about a mile from the former town, and goes northwesterly down Silver Creek to within about a mile and a half of the property, where it turns northerly up a tributary wash to the mine.

SURFACE PLANT:

The property appears to be pretty thoroughly equipped. A 400 cu. ft. compressor is driven by a 75 HP motor. Transformer equipment is lacking, but the power line is in. The hoist is 45 HP. Most of the necessary miscellaneous equipment is on the property. The machinery is suitably housed. Drinking and cooling water is piped into camp. A small amount of repairing would put the camp in good shape for a small force of men.

TERMS:

The purchase price of the Mossback is stated at \$500,000, the first payment of \$100,000 coming due in two years, the rest payable at \$100,000 a year thereafter. 10% gross royalty is applicable on the purchase price.

GENERAL GEOLOGY:

On the surface at the shaft, there are three prominent ledges in between which there are some cross and parallel fractures which have been filled with ledge matter. The veins strike almost due northwest, and appear to have a general steep dip to the southwest. The combination of these veins constitutes a vein system which appears to have been formed in a fault zone which locally brings Oatman andesite into juxtaposition with Moss porphyry on its southwest. The Oatman andesite is the wall rock underground.

2-

VEINS AND DEVELOPMENT:

The veins are big, calcite ledges containing a considerable amount of unreplaced rock, mostly as pebbles and boulders, a little white quartz, dark green silicified rock, and fluorite was seen on the 100 level.

The principal working is an 80° incline shaft from which levels are driven on the 25, 50, 100, 200, 300, 400, 500 and 650 levels. On June 15th the lower two levels were under water.

The shaft has been sunk on the footwall, more northeastern, of these ledges, and follows it to between the two and three hundred levels. Here the vein appears to leave the hanging wall of the shaft, and it was necessary to crosscut from the shaft a few feet before the ledge was encountered. On the 4th level, no crosscutting into the hanging wall was done, but drifting was carried on to the southeast of the shaft, possibly somewhat in the footwall of the main ledge. Nevertheless, some ledge matter was encountered. The accompanying sketch shows the generalized features of the development as gathered from rough surveys and hearsay. It indicates that the footwall, northeastern, ledge, has been more or less explored from the surface to the 400 and perhaps on the 650.

I gathered from Pat Dillon, who worked at the property, and may have been foreman part of the time, that the 700 or 800 foot hanging wall crosscut on the 300 showed practically no ledge. This was inaccessible for checking because of a water dam and cave. If Dillon is right, the two big hanging wall ledges either pinch out or become insignificant on the 3rd level. This is entirely believable, for a surface tunnel that crosscuts the more southwestern of these ledges about 50' below an outcrop 30' wide shows but a few stringers of calcite. Hence, it appears to be characteristic of these ledges to be irregular and lenticular in habit, yielding an outcrop which is a series of branching lenses along a branching fissure system.

3-

ORE:

All of the mine workings accessible had been sampled at least three times, but I have been unable to secure any record of this so far. Dillon and others inform me that there is no ore shown in the mine except in the 400 working below described. Third hand information had a \$35 ore showing on the 500, but Dillon stated that only a little bunch of calcite ran ore on this level. Henson Smith, mining editor of the Mohave News, informed me that ^{on} the 650 level he had seen a crosscut running northeast which he had been informed ran \$9 for a crosscut distance of 245 feet. Dillon says no such crosscut exists on the 650 and, judging from the showing in the 400 crosscut, located similarly to Smith's conception of the 650 crosscut, I cannot but believe that Smith is mistaken.

The ore showing on the 400 is indicated by the samples which I took there. These were channel samples and should be fairly representative, even tho a wet sampling canvass meant considerable loss of fines. My sampling here averages about 25% lower than that of Light for the Tom Reed, of Bradley for the United Eastern, and of E. E. Campbell of Kingman.

It is noteworthy that locally, at least, this showing tends to pinch out with depth. Furthermore, this appears to be a cross vein in the footwall of the main vein system. Where it makes a junction with the main vein, there is some hope that there might be a real orebody. This is not explored on the 400. No matter which wall is considered indicative of the true dip of the "ore vein" it should be found in or near the drifting on levels above, and if the north slips indicate the true dip, in the workings below. As no ore has been found in such workings, there is but little encouragement for believe in an ore shoot at its junction with the main vein.

As the values are low where the "ore vein" or a footwall stringer intersecting it, is cut by the N 60 E crosscut on the 400, I can see very little hope for values in the easterly or southeasterly continuation of the "ore vein."

It must be admitted that the Mossbaek vein system is too irregular to allow absolute confidence in the projections of the "ore vein" above outlined. Nevertheless, this irregularity is, in itself, a hazardous factor, so that if the "ore vein" does not intersect the main vein system, as above outlined, such an irregularity becomes, in itself, a factor of compensating malimportance.

SUMMARY & RECOMMENDATIONS:

Considerable extensions of the "ore vein" appear to me improbable, and hence the property does not merit additional development under the terms submitted to us.

Yours very truly,

(signed) P. C. Benedict

Field Geologist.

UNITED VERDE COPPER COMPANY
SMELTER--ASSAY OFFICE

Clarkdale, Arizona, Dec. 29, 1926

Description		Ag. oz.	Au. oz.	Lead %
M1	Lab #. 3500	Tr	0.00	0.2
M2	3501	Tr	0.00	0.1
M3	3502	4.38	tr	85.0
M4	3503	Tr	0.00	1.3
M5	3504	0.64	0.00	2.9
M6	3505	1.02	0.01	2.4
M7	3506	4.66	Tr	7.2
M8	3507	0.54	0.00	4.5
M9	3508	0.50	0.00	5.3
M10	3509	3.40	0.01	7.3
M 11	3510	4.52	0.01	2.7
M 12	3511	0.42	0.00	0.4
M 13	3512	0.16	0.00	0.3
M 14A	3513	57.86	0.01	22.9
M 14B	3514	12.20	0.02	4.5
M 14C	3515	2.74	Tr	1.3
M 14D	3516	3.86	0.01	1.0
M 14E	3517	18.52	Tr	3.6
M 14F	3518	3.70	0.01	2.5
M 14G	3519	0.50	0.00	0.2
M 15	3520	1.16	0.00	1.4
M 16	3521	0.20	0.00	1.8
M 17	3522	0.38	0.00	4.6
M18A	3523	0.42	0.00	1.7
M 18B	3524	0.16	0.00	0.1
M 19	3525	0.14	0.00	Tr
M 20	3526	6.88	Tr	6.5
M 21	3527	5.06	0.04	1.3
M 22	3528	0.62	0.00	Tr
M 23A	3529	2.34	Tr	1.6
M 23B	3530	3.00	0.02	1.2
M 24	3531	1.02	Tr	0.9
M 25	3532	5.92	Tr	3.8
M 26	3533	13.44	Tr	0.6
M 27A	3534	1.72	Tr	1.8
M 27B	3535	0.72	Tr	1.1
M 28	3536	0.16	Tr	Tr
Composite of MSamples	3541	4.68	Tr	3.82n
Samples.	<u>Cu.</u>	<u>Cu.</u>		
F 1	3537	0.52	0.16	0.00
F 1B	3538	0.14	0.00	0.00
F 1C	3539	0.06	0.00	0.00
F 2	3541	0.37	0.00	0.00

June 20, 1927.

Mossback Mine Geol Dept.
P. C. Benedict.

M. B. #1	0.13	0.09
#2	0.35	0.50
#3	0.12	0.18
#4	0.36	0.34
#5	Nil	Tr
#6	Nil	Tr
#7	0.35	0.65
#8	0.22	0.44

*Ditto
Mossback
Mohave County*

Copied

UNITED VERDE COPPER COMPANY

JEROME, ARIZONA

June 22, 1927.

Mr. W. V. DeCamp,

Gen'l Mine Sup't.

Dear Sir: Re: Mossback Property (gold), Oatman, Ariz.

LOCATION & ACCESSIBILITY:

The Mossback mine is located in the south-central part of section 19, T. 20 N., R. 20 W., about six miles in an air line northwest of Oatman. It is accessible by auto, the road taking off the Gold Road Oatman highway about a mile from the former town, and goes northwesterly down Silver Creek to within about a mile and a half of the property, where it turns ^{northwesterly} up a tributary wash to the mine.

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The property appears to be pretty thoroughly equipped. A 400 cu. ft. compressor is driven by a 75 HP motor. Transformer equipment is lacking, but the power line is in. The hoist is 45 HP. Most of the necessary miscellaneous equipment is on the property. The machinery is suitably housed. Drinking and cooling water is piped into camp. A small amount of repairing would put the camp in good shape for a small force of men.

TERMS:

The purchase price of the Mossback is stated at \$500,000, the first payment of \$100,000 coming due in two years, the rest payable at \$100,000 a year thereafter. 10% gross royalty is applicable on the purchase price.

GENERAL GEOLOGY:

On the surface at the shaft, there are three prominent ledges, in between which there are some cross and parallel fractures which have been filled with ledge matter. The veins strike almost due northwest, and appear to have a general steep dip to the southwest. The combination of these veins constitutes a vein system which appears to have been formed in a fault zone which locally brings Oatman andesite into juxtaposition with Moss porphyry on its southwest. The Oatman andesite is the wall rock underground.

VEINS & DEVELOPMENT:

The veins are big, calcite ledges containing a considerable amount of unreplaced rock, mostly as pebbles and boulders, a little white quartz, dark green silicified rock, and fluorite was seen on the 100-level.

The principal working is an 80° incline shaft from which levels are driven on the 25, 50, 100, 200, 300, 400, 500 and 650 levels. On June 15th, the lower two levels were under water.

The shaft has been sunk on the footwall, more northeastern, of these ledges, and follows it to between the two and three hundred levels. Here the vein appears to leave the hanging wall of the shaft, and it was necessary to crosscut from the shaft a few feet before the ledge was encountered. On the 4th level, no crosscutting into the hanging wall was done, but drifting was carried on to the southeast of the shaft, possibly somewhat in the footwall of the main ledge. Nevertheless, some ledge matter was encountered. The accompanying sketch shows the generalized features of the development as gathered from rough surveys and hearsay. It indicates that the footwall, northeastern,

ledge has been more or less explored from the surface to the 400 and perhaps on the 650.

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ORE:

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SUMMARY & RECOMMENDATIONS:

Considerable extensions of the "ore vein" appear to me improbable, and hence the property does not merit additional development under the terms submitted to us.

Yours very truly,

F. C. Benedict

Field Geologist.

C O P Y

UNITED VERDE COPPER COMPANY
(A Corporation)
JEROME, ARIZONA

copied

Mr. W. V. DeCamp,

Gen'l. Mine Superintendent.

re: Empire (formerly Mossback) Mine,
Mohave County, Arizona.

Dear Sir:

I wish to supplement my report of June 22, 1927, with the following information gathered from a recent re-inspection of a few hours.

It is Mr. Luzon's opinion that the ore vein which I sampled at the time of my previous examination lies in between the footwall and middle vein rather than in the footwall of the footwall vein, as I stated in my previous report. Sufficient more development work has since been accomplished to make this appear probable, though not definitely proven.

At the time of my inspection, the ore vein had been drifted on for about 10 feet, and gave about \$10 average over a width of about 10 feet. The present Empire company (E. E. Campbell and associates) have continued drifting on this vein in both directions, and have opened up a shoot of ore 175 feet in length and of 20 feet average width, with a maximum width of 38 feet. Some phenomenal values were encountered, but according to their sampling, the whole shoot will average \$20 or better. The shoot has been developed sufficiently to be definitely terminated on both ends at this level.

In addition to this ore, a re-sampling of most of the rest of the mine has indicated the possibility of there having been some ore nearly developed in the old workings. Luzon tries to connect these up to make a block of ore by dodging around certain lean workings, etc. Without checking the sampling and doing a certain amount of cross-cutting, it is impossible to definitely state that there is not a block of ore here, but it appeared to me at least extremely spotty and erratic and of doubtful economic importance, at least above the 400-level. The mine has not been unwatered below the 400 as yet. It is, of course, possible that the scattered values might concentrate into a real ore shoot with depth.

To date the ore vein has apparently not been looked for or found on any other level than the 400, though it would be very inexpensive to do so on the 300 and higher levels. Present efforts are being concentrated on cross-cutting the whole vein system at two points about 500 feet apart.

Should we be offered the opportunity to continue development work on a more favorable basis than previously, I recommend so doing.

Yours very truly,

(Signed) P. C. Benedict
Field Geologist.

P.S. I found 17% adularia in a specimen of Mossback ore, which according to Lausen's work is a definite indication of valuable primary mineralization.

*Benedict
from*

UNITED VERDE COPPER COMPANY

SMELTER—ASSAY OFFICE

copy

DEC 29 1926

CLARKDALE, ARIZONA, _____, 19____

DESCRIPTION	Cu. Per Cent	Ag. Ounces	Au. Ounces	LEAD	SiO2 Per Cent	Al2O3 Per Cent	Fe Per Cent	S. Per Cent	Zn. Per Cent	CaO Per Cent	MgO Per Cent	H2O Per Cent
				Insol. Per Cent								
Benedict Samples from Kingman Ariz 12/24/26												
M 1												
	Lab. #											
M 2	3500	Tr	0.00	0.2								
M 3	3501	Tr	0.00	0.1								
M 4	3502	4.38	tr	85.0								
M 5	3503	Tr	0.00	1.3								
M 6	3504	0.64	0.00	2.9								
M 7	3505	1.02	0.01	2.4								
M 8	3506	4.66	Tr	7.2								
M 9	3507	0.54	0.00	4.5								
M 10	3508	0.50	0.00	5.3								
M 11	3509	3.40	0.01	7.3								
M 12	3510	4.52	0.01	2.7								
M 13	3511	0.42	0.00	0.4								
M 14A	3512	0.16	0.00	0.3								
M 14B	3513	67.86	0.01	22.9								
M 14C	3514	12.20	0.02	4.5								
M 14D	3515	2.74	Tr	1.3								
M 14E	3516	3.86	0.01	1.0								
M 14F	3517	18.52	Tr	3.6								
M 14G	3518	3.70	0.01	2.5								
M 14H	3519	0.50	0.00	0.2								
M 15	3520	1.16	0.00	1.4								
M 16	3521	0.20	0.00	1.8								

COPPER BY _____
 GOLD AND SILVER BY _____
 ANALYSES BY _____
 BY _____

[Signature]
 Chief Chemist

UNITED VERDE COPPER COMPANY

SMELTER—ASSAY OFFICE

DEC 29 1926

CLARKDALE, ARIZONA, _____, 19____

Page 2

DESCRIPTION		Cu. Per Cent	Ag. Ounces	Au. Ounces	LEAD Insol. Per Cent	SiO2 Per Cent	Al2O3 Per Cent	Fe Per Cent	S. Per Cent	Zn. Per Cent	CaO Per Cent	MgO Per Cent	H2O Per Cent
Benedict Samples (Continued)													
M17	Lab # 3522		0.38	0.00	4.6								
M18A	3523		0.42	0.00	1.7								
M18B	3524		0.16	0.00	0.1								
M19	3525		0.14	0.00	Tr								
M20	3526		6.88	Tr	6.5								
M21	3527		5.06	0.04	1.5								
M23	3528		0.62	0.00	Tr								
M23A	3529		2.34	Tr	1.6								
M23B	3530		3.00	0.02	1.2								
M24	3531		1.02	Tr	0.9								
M25	3532		5.92	Tr	3.8								
M26	3533		13.44	Tr	0.6								
M27A	3534		1.72	Tr	1.8								
M27B	3535		0.72	Tr	1.1								
M28	3536		0.16	Tr	Tr								
Composite of M Samples	3541	0.0	4.68	Tr						3.8			
F1	3537	0.52	0.16	0.00									
F1B	3538	0.14	0.00	0.00									
F1c	3539	0.06	0.00	0.00									
F2	3540	0.37	0.00	0.00									

COPPER BY _____
 GOLD AND SILVER BY _____
 ANALYSES BY _____
 _____ BY _____



 Chief Chemist

UNITED VERDE COPPER COMPANY

MINE—ASSAY OFFICE

Copper

JEROME, ARIZONA,

JUN 20 1927, 19

DESCRIPTION	Cu Per Cent	Ag Ounces	Au Ounces	Insol. Per Cent	SiO ₂ Per Cent	Fe Per Cent	Al ₂ O ₃ Per Cent	S Per Cent	Zn Per Cent	CaO Per Cent	MgO Per Cent	H ₂ O Per Cent
Moss Back Mine Geol. Dept. P.C.B.												
M.B. #1		0.13	0.09	1.80	3.15							
2		0.35	0.50	10.00	17.50							
3		0.12	0.18	3.60	6.20							
4		0.36	0.34	6.80	11.90							
5		Nil	tr									
6		Nil	tr									
7		0.35	0.65	13.00	22.75							
8		0.22	0.44	8.80	15.40							
				6/20								
				.37								
				35								
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COPPER BY _____
 GOLD AND SILVER BY _____
 ANALYSES BY _____
 BY _____

Paul T. Allsman
 Chief Chemist

(1)
COPY

Los Angeles, California
January 29, 1930

Mr. A. F. Muter, E. M.,
310 Roosevelt Building,
Los Angeles, California.

Dear Sir:

I herewith hand you two brief reports on Empire Consolidated Mines Company. One by Dr. A. R. Whitman, Dean of Geology of the University of California, and one by Jno. W. Henderson, Engineer and Operator of experience.

Dr. Whitman is one of the foremost geologists of the time, and his researches inquiring into relation of cooling rock masses and ore deposition, and migration of solutions through or into a rock mass, are advanced and comprehensive, and it is recognized these conditions likely governed the ore deposits of this district, his favorable findings for Empire are of much interest.

Mr. Jno. W. Henderson is a man of technical ability, and much practical experience, having been in charge of many properties and associated with some of our largest gold mining companies. Locally he was instrumental in following and demonstrating the ore body of the Big Jim Mine in Oatman, which produced several million dollars and substantial profits. He is confident he recognizes in Empire the same conditions he first recognized in Big Jim, and because of which Big Jim was successfully developed. He is in charge of Empire in my absence.

While speaking of Oatman, it is as well here to tell you that the Oatman district has produced in the neighborhood of forty million dollars in gold in about twenty years. The most spectacular producer of the district being the United Eastern,

which was discovered in 1916-17, and produced about sixteen millions in less than five years, paying about twelve million dividends. The Tom Reed has produced about the same amount over a longer period; and the Gold Roads is credited with about eight millions, having on one level one of the longest continuous shoots of commercial gold ore ever found in lode mining, being some thirty-four hundred feet in length. The Tom Reed is still a producer, having sent to the mint, the first week in January, 1930 eighteen hundred ounces of gold bullion. This was mostly from a new shoot opened on the nine fifty level and which seems to be parallel to the old works. The company is now sinking a shaft to cut this new ore at the fifteen fifty level, having spent \$80,000.00 for pumping equipment to handle the water. Gold Road is now also just going into production again, getting ore from what appears to be a new ore shoot parallel to the old works.

These remarks are merely to show that this is a gold district of merit, and as we have in Empire a property of exceptional promise, subject to same geological conditions as our well known neighbors, we should expect, with proper development a real producer. The present ore showing I have disclosed on the four hundred level compares more than favorably with any of the ore discoveries in the older properties, at the same stage of development. The history of this property goes back to the early days of mining in the Southwest. In 1863-64 a garrison of California volunteer soldiers were located in this district, and as they were mostly recruited from mining districts, there were among them many miners, and they located several properties that produced high grade from the grass roots. One of these, the Moss, about one mile from Empire, produced \$240,000 from a surface pocket in 1864-65. Also the Ora Blanco (now Empire) was located and high grade was taken from vein croppings netting

in the neighborhood of \$60,000 in 1864-65. The property then lay dormant until about 1905, when the First National Bank of San Diego advanced some \$30,000 to develop the mine and patent to five claims and one water right was acquired by them. In 1913 a group of coal operators from Virginia became interested in the property and expended about \$300,000 in acquiring title, installing electrical power line, equipment, and development work. They sank the shaft from the 300 mark to 670 feet and did considerable drifting, but their work was all to the Southeast, away from the now known ore zone, and the underground work was not closely watched by the management, with the result that several ore disclosures were overlooked and not developed.

In 1927 I unwatered the mine to the four hundred level and observed what looked like the making of an ore shoot. I interested Mr. E. E. Campbell, a Canadian Engineer, who financed a short campaign of development work, and this to date has disclosed some 20,000 tons of ore that will break down about \$12.50 per ton. This is not positive as no raises have as yet been put through the ore, but figuring area disclosed and assuming seventy feet of backs, this tonnage is indicated. The upper edge of this ore shoot is shown in the shaft seventy feet above the four hundred level. At one point on the four hundred level, the commercial ore disclosed is thirty-four feet in width, and I am informed from a reliable source that the shaft went through ore, close to the five hundred feet, that gave from \$20.00 to \$90.00 per ton, by car samples as it was dumped at the surface. This information may be authentic, as by plotting the ore now disclosed (dips known), shows that it should be very close to the shaft at or above the five hundred level.

There is every reason to believe this ore will extend to depths corresponding to other properties of this district, over one thousand feet, in which case this one ore shoot will make a producing mine; and as this is not the only shoot that should be

4
found (at least three others are indicated) the property should develop into a producer of long life.

The surface crop of Empire is one of the most prominent of the entire district. The veins occur in a shear zone (extending the length of the property) three hundred feet in width at the point of development. The shaft is sunk in the foot wall vein to the three thirty foot level, at which point the shaft enters the broken mass of the shear zone in which it continues to the six hundred seventy foot level. There was considerable development done on this level to the southeast, and it is not known if any of it was confined to the vein, but it is reported to the present management by men acquainted with the old works, that one cross-cut went into, or through, sixty feet of \$9.00 ore, but this remains to be confirmed.

The hanging wall vein has never been explored underground and offers much potential ore bearing territory, as the surface crop is more prominent than the foot wall vein and shows in places good gold value. This vein can be explored by cross-cuts and diamond drilling from the present works.

Considerable water is reported from the bottom level and will assure an ample supply for mill purposes.

I have had personal charge of this property and directed the development that has disclosed the present known ore, and I am confident that further development will show much more ore on the dip and strike of both foot and hanging wall veins.

Yours vtruly,

(Signed) M. B. Lauzon

Vice-President and General Manager
Empire Consolidated Mines Co.

NOTES BY G. M. COLVOCRESSES

EMPIRE MINE (MOS SBACK)

2/20.34

Talk with Morris Lauzon in Phoenix. Lauzon says that about one year ago he took a six year lease on this mine with option to purchase for \$125,000 and royalty on sliding scale depending on the grade of ore from 5 to 15%. Obligated to spend at least \$1000 per month and keep mine and equipment in shape.

Since then he has associated himself with some oil people who have put up a little money for mill and other equipment and for operating but they now seem likely to fall down on their obligations and within a month or so Lauzon may be able to make a new deal.

No development work has been done in the mine but he has sufficient equipment to do this with a few minor additions and his plan for development is the same as before.

A little mill was built for amalgamation and flotation and has recently been treating about 18 tons per 24 hours (ore is very hard to crush). Ore has come from the 400' level and there has been no attempt at selective mining. It has averaged about 0.3 oz. per ton and he has recovered on plates about \$3000 and has over \$2000 in concentrates. A good recovery is made by this method, altho cyanide might improve upon it in a large plant. Milling costs have been \$1.40 per ton, which is very good considering the size of the mill.

The concentrates carry :

Au 4 oz.
Ag 4 oz.
Fe 20 to 26%
S, 15 to 20%
Insol. balance, and no copper or lead.

These might be treated with advantage at Humboldt.

Lauzon still thinks that the mine will develop into a large body of low grade ore and should soon justify a mill of 50 to 75 tons daily capacity.

The vital question seems to be the average grade of the ore which should be in excess of 0.3 oz. in order to leave a good profit. Values are very erratic. The present little mill might be very suitable for bulk sampling.

3/18/36

Lauzon called and said that the Mollin Investment Co. had done practically no work since last December and had advanced no money since that date and therefore it was his intention to declare a forfeiture of their lease about April 1st, and he might then write me and give me time to investigate through a personal visit to the mine when he would give me all data relative to the work which has been done there during the past year. The Mollin Co. have also been operating the Quartette Mine at Searchlight, where they have invested about \$140,000 with small prospect of getting it back. Chas. Smith (formerly of Ray) is their engineer.

During the past year about 2500 tons of ore have been taken from the mine by Lauzon and the Mollin Co. and either shipped or milled and the average grade has been \$9.00 per ton, which has left no margin of profit when working on this small scale.

The development work has consisted of additional raises above the 400' level which have tended to show a somewhat larger ore body up to the 300 fault than could previously be estimated, but the average grade seems to be only .344 oz., say \$9.00. Some additional work here might further increase the size of the ore shoot which in places is said to be near 60' wide.

Shaft was unwatered to below the 500' level and water is still held to that point; it is in good condition.

On the 500' level drifts were run, as shown in pencil on the map, to cut the extension of the ore below the #1 winze and below the #2 winze, but in neither case was any ore found and the ground appears to be badly broken up and the ends of the drift are in a fault or shear zone. Additional drifting to the extent of about 250' should be done to continue looking for the ore; cost, say \$2500.

If the ore shoot has faulted as Lauzon believes, the lower segment of the ore body may have been cut on the 650' level and Lauzon has been told that much good ore was found there. Shaft could probably be unwatered and 650' level opened up for about \$1500.

It appears therefore that further expense to the extent of

\$5000 (including engineer's fee) would have to be made in order to properly open up the mine to below the 650' level where Lauzon believes that there is good chance to find better grade ore, but if no more ore is found there or on the 400' and 500' levels it would merely be a case of salvaging the proven ore below and above the 400' level which probably does not exceed 10,000 tons and would not justify the construction of a mill, the present mill being practically worthless.

If the average ore would not yield a recovery of more than \$8.00 per ton as now seems probable, there would be little or no profit in mining and either milling it on the ground or shipping it to the Tom Reed Mill. Therefore, the proposition does not look very attractive.

NOVEMBER, 1937.

Have had no recent information regarding the operations or development of the mine which did appear to hold very attractive possibilities when I last visited it in the spring of '35.

It appears that the development since that date has been largely unsatisfactory and that the grade of production does not stand up to the sampling in place.

Such being the case it is probable that I should revise my previous opinion and consider that the mine is only suitable for very small scale operations which would have to be confined to the higher grade portions of the ore bodies, but I would not wish to make this statement positive without a further inspection for which no opportunity has presented itself during the past two years.

G. M. C.

Mossback Mine
Datman, Arizona
Nov. 16, 1934

A 11/16
34

Mr. G.M. Calvocoresess,
Luhrs Tower, Phoenix, Arizona.

Dear Mr. Calvocoresess:

Just returned from deer hunt and find your letter and beg of you that you so excuse my delay in answering.

Was sorry that missed you when in Phoenix . My lay here is as follows-- have a six year lease and option to purchase - dated June 31, 1933- price 125,000\$- no payments but royalties as follow--1% per dollar to 15\$ - every thing above 15\$ to take the 15% rate; this is on net recovery and not assay values; all royalties to apply on purchase price. must keep continuously working , 1000\$ per month to be expended as a minium. Workman like manner etc. Have expended last twelve months about twenty seven thousand dollars. Have good 20 - 25 t ton mill running order. Electric power from Kingman. Flotation--Amalgamation of float concentrates; tails from amalgamation dept. shipped to Tom Reed Mill for cynidation. Anal. bullion to U.S.Mint. Mill recovery 90% plus. Have milled some 2500 mine cars and have received some \$9,000 mostly from development work in stating raises and cutting out chambers. no real stoping done. In September 1934 started two winzes and milled about 100 tons from them and recovered 2100\$. These winzes were started to see if the ore looked solid below the 400 level and it appears to more solid and of better grade. The proper way is to come under this zone from the 500 level as it appears that there is only the top of the ore exposed on the 400 . Also rock reported on the 700 level would now be of comercial grade. Have ore above the 400 to the surface that can now be mined at a profit but should have at least a fifty ton mill. Have started raises on the 75 level and the 130 level all in com ore . A second oppening must be put in from the 400 to the surface ; this raise can be run in ore and will be necessary before stoping can be begun. The present buckets must be replaced by skip , rails and guides to make it safe and assure cheaper mining costs. I have put in a dam on the 400 level and connected to it a four stage Byron Jackson electric pump- 100 g.p.m. I had started to unwater below the 400 in Sept. when shut down due to finances. Water now up in the station but can be expelled in about a week with the electric pump. Cost of going to the 500 will be about 2500\$ to unwater and timber where needed. Sixty feet of cutting should cut the 400 ore shoot and will take about 400 feet more drifts and cuts to out line ore zone if of about the same as the 400. Will require about 30,000\$ to do what is needed and then will be ready for a mill of fifty to 100 tons.

Will give a fifty % interest in my lease for financing. Or can make most any reasonable arrangement; would sell but prefer to sit in. Have put in to date about 42,000\$; this includes mines put up by the Texas interests but which I will pay them back. I may hear that the Texas parties are in shape to continue in a few days but if they are not must make arrangements with some one else. If you are interested write me . The above will give you an idea of things as they are but of course it would be necessary to talk things over to come to any understanding. Best regards,
M. B. Lanyon

GEORGE M. COLVOCORESSES
MINING AND METALLURGICAL ENGINEER
1108 LUHRS TOWER
PHOENIX, ARIZONA

Corrected copy without map & E. A.

March 21, 1938

REPORT ON MOSSBACK MINE

This report is based on my own investigations during the past five years and on the reports and data obtained from various other engineers and reliable publications. My aim is to present the future possibilities of the mine and the advisability of an investment assuming that a satisfactory interest in the present lease can be acquired or a new lease and option on similar terms can be obtained from the owners.

The gold values quoted in this report are based on the present price of \$55.00 per oz., unless otherwise stated.

LOCATION:

The property consists of five patented mining claims, namely; the Mossback, Mossback Extension, Alice S., Gladys Mine, and Ida; also the Cottonwood Springs unpatented millsite together with water rights. Altogether 95.8 acres are included, located near Silver Creek in the San Francisco Mining District, Mohave County, Arizona, about six miles north of the town of Catman with which they are connected by a fair dirt road. The distance to Kingman, the county seat and nearest railway point, is 35 miles. The elevation at the mine is 2300 feet and the climate is dry with a mean annual rainfall of about nine inches. The summers are hot, but on the whole climatic conditions are favorable to mining. The district immediately surrounding the mine is composed of low ridges

running in a northerly-southerly direction with higher ranges rising to the west and forming a part of the range of the Black Mountains.

The claims are shown on Mineral Survey No. 3008 A & B and are now the property of the Empire Consolidated Mining Company, a Nevada Corporation with headquarters at Toronto, Canada. I have obtained an abstract of title which can be passed upon by our attorneys, but meantime I am assured both by the President of the company and by their local attorney and Secretary at Kingman that the title is valid and that there are no liens or encumbrances on the property other than the unpaid taxes referred to later in this report.

HISTORY:

The Mossback Mine was first located in 1854 and was then known as the "Oro Blanco" because of a prominent white outcrop of calcite vein matter. During the next two years it is reported to have produced some \$60,000 worth of gold (at the old price) from surface pits and shallow shafts, one of which reached a depth of 60'. No systematic development was attempted and work was thereafter suspended for many years while the property was held by parties living in San Diego, California. In 1913 a group of Virginia coal operators took over the mine and sunk the main shaft to a depth of 670', also doing considerable work on various levels as outlined below. These operations are said to have been poorly conducted and they were not profitable since no substantial body of ore was found.

The Empire Company acquired the property in 1927 and continued development work especially on the 400' level where they

discovered and partially developed an ore shoot which appeared to be promising. This company subsequently became involved in financial difficulties because of other operations and in 1933 they leased the mine to M. S. Lauzon, their former manager, who is now in possession as lessee and optionee and who has made various attempts to secure outside financial assistance, but generally on rather unfavorable terms to the new capital, which limited his dealings to entirely irresponsible parties.

The Gattman District has been by far the largest gold producer in Arizona and is credited with a total output of close to \$40,000,000, principally from three mines; the Gold Road, Tom Reed, and United Eastern which last two include the Big Jim. At the present mining operations are progressing in the Tom Reed at a depth of over 1600' and lessees are working in the United Eastern. The United States Mining, Smelting & Refining Company, owner of the Gold Road, has recently started to re-open that property and is now preparing for operations on a large scale. A number of lessees and small operators are also working at various points and shipping their output to the Tom Reed Mill, which is receiving custom ore.

GEOLOGY AND ORE OCCURRENCE:

The Gattman District is one of comparatively recent volcanic activity and appears to be underlain by granite and batholiths of eruptive rocks all of which are covered by more recent eruptives principally andesite, diorite, rhyolite, and intrusions of younger granite. In places these are capped by basalt.

In the immediate vicinity of the Mossback the country is green chloritic andesite probably formed in the tertiary period and locally termed the Gattman andesite, and this is intruded by a dyke of granite porphyry known as the Moss porphyry. The local

German district, are confined to irregularly distributed

The ore-shoots on the Mosback, as in other mines of the

vein and the porphyry adjoining.

that all future exploration should be confined to the hanging wall

foot wall vein is worthless as it carries little or no quartz and

from geological considerations it seems probable that the

investigation.

body of low grade ore in the porphyry is well worthy of further

per ton and in my opinion the possibility of finding a sizeable

this vein some of the porphyry carries values as high as \$6.00

\$1.00 to \$12.00 gold per ton. It should also be mentioned that near

said that in places surface samples have yielded assays of from

or iron and manganese, and a little flour gold in pockets and it is

width of 10' to 20' and is more silicious showing also some oxides

is mostly calcite containing little or no quartz, has a surface

elsewhere about 60 degrees to the southwest. The footwall vein

northwest of the main shaft. The dip is in places nearly vertical,

striking northwest-southeast, but they come together some 600'

well veins. These run nearly parallel for a considerable distance

veins are noted and referred to as the hanging wall and the foot

On the surface of the Mosback claims two well defined

percentage of quartz which is mixed with the calcite.

silicate). The gold content seems to bear a direct relation to the

in part been replaced by quartz and calcite (a potassium aluminum

veins of this district are generally composed of calcite which has

Northeast wall and the porphyry forming the southwest wall. The

zone seems to lie along the contact of the andesite forming the

Veins occur in shear zones and faults and the Mosback

structure trends North 50 degrees East.

occurring at intervals in the veins and accompanying an increase in the percentage of quartz which is mixed with calcite. It is probable that these result from a replacement of calcite by quartz and adularia and represent the last phase of the deposition of the minerals in the vein. The gold is generally extremely fine and occurs as a thin film or stain in the quartz and calcite. Theoretically it is free milling, but because of its extreme fineness it has been found that a better recovery can be made by the cyanide process than by any type of concentration, and recoveries of 97% to 98% are recorded in the cyanide plants whereas the best recovery obtainable ~~for~~^{by} flotation is approximately 93%.

MINE EQUIPMENT:

The Mossback Mine is furnished with electric power by the Desert Power and Water Company of Kingman. The cost appears to be slightly less than 5¢ per KWH. There is telephone connection with Oatman and Kingman, domestic water is piped over a mile from Cottonwood Springs.

The collar of the shaft is equipped with a satisfactory gallows frame and nearby is a power house containing a 40 H. P. hoist with gas engine, operating at a very slow speed, also a 360 cubic foot electrically driven compressor with motor and a ventilating fan. There is a blacksmith shop with an old type Leyner drill sharpener and other essential equipment.

Electric power is carried down the shaft to the 400' level where there is a triplex pump driven by a 25 H. P. motor. A #5 Cameron pump is on the property and the shaft is partially equipped with an airlift installation which could be utilized to unwater below the 400' level where the water now stands. The shaft

is 4' by 7', but there is no division between ^{the} man way and hoisting compartment and the timbering and ladders are in very poor condition. Hoisting men and ore is at present accomplished with a small bucket running on guides and before any further work, even for exploration, is conducted a certain amount of timbering should be done in the shaft and the bucket replaced by a skip with proper guides.

In the mine there are two or three serviceable air drills, also necessary pipe, hose, rails, steel and accessory equipment.

Living accommodations consist of a Superintendent's house and two other buildings sufficient to permit feeding and housing a crew of about fifteen men.

A small mill has recently been built and equipped with grinding and flotation equipment which is in bad shape, but could probably be fixed up at small expense for the efficient treatment of about 20 tons of ore per day.

Taken altogether the present equipment is sufficient to permit continuing the exploration and development both on the 500' and on the 650' level after some repairs and alterations had been made and these should not involve an expenditure of more than \$^{2,500}~~2,000~~, excluding such additional timbering as may be necessary in the shaft below the present water level.

DEVELOPMENT WORK AND ORE OCCURRENCE:

The shaft has been sunk at an angle of 80' degrees from the horizontal, dipping to the southwest. This follows the calcite (foot wall vein) for 300' and a little below this point the vein is thrown out of the shaft by a cross-fault. The shaft next entered some ore (presumably the hanging wall vein) at a depth of 330' and followed this down for some 50' when it again returned to the country rock. I am told that some ore in the shaft averaged better

than \$15.00 per ton, but have had no opportunity to verify this statement, although in 1930 I was able to note the existence of the ore and also to examine most of the workings on the upper level which are more particularly described below.

75' LEVEL (TRUE DEPTH BELOW COLLAR OF SHAFT ON INCLINE 75')

Drifts on this level show a little ore in a vein composed of calcite and breccia. One pocket is said to have assayed \$40.00 but for the most part the ore exposed here is low grade and there is no indication of any substantial shoot.

100' LEVEL (TRUE DEPTH ON INCLINE 127')

Long drifts run out on the vein to the northwest and southeast and some low grade ore was encountered in small patches.

200' LEVEL (TRUE DEPTH ON INCLINE 206')

Drifts were run on the vein to the northwest and southeast and there were also several crosscuts. A few small pockets^{of} ore were found.

300' LEVEL (TRUE DEPTH ON INCLINE 325')

Some drifting was done and one long crosscut to the southwest from which an assay of \$15.00 was obtained. The ore was only encountered in pockets, mostly low grade, and nothing of commercial value was developed.

As mentioned above a fault cuts through the shaft at a depth of about 330' and the foot-wall vein which had been followed down to this point is displaced. I think it probable that ore which makes in below this is really in the hanging wall vein.

400' LEVEL (TRUE DEPTH ON INCLINE 401')

The drifts and crosscuts are quite extensive on this level, but the work was originally misdirected aiming to develop

the foot wall vein. However, the hanging wall vein was cut on the north side of the shaft and while the ore shoot is somewhat irregular it has been opened up by drifts and crosscuts for a length of 150' and seems to have a maximum width of 40' near its center and an average width of over 20'. This shoot as now outlined on the level would contain about 250 tons of ore per vertical foot and since it seems probable that the same shoot was traversed by the shaft and it is now developed by a raise more than 60' high from the drift and by two winzes, one of which has a depth of 10', I believe that it is justifiable to estimate that at least 12,000 tons of ore can be considered as highly probable after making due allowance for irregularities in shape and for inclusions of some wall rock and breccia.

The ore on the 400' level has been carefully sampled several times by competent engineers. Mr. Lauzon, the Superintendent, tells me that his sampling gave an average of better than \$20.00 per ton and ^{that} this value was closely checked by E. E. Campbell, former Manager of the Company, and by Professor A. R. Whitman, Consulting Engineer. The report of F. C. Benedict, Field Engineer for the United Verde Copper Company, gives an average of \$13.00 per ton and he states that Victor Light of the Tom Reed Mine, and J. W. Bradley of the United Eastern obtained averages of about \$17.00 per ton. In all cases the results of individual samples were very erratic as is usual in the Oatman District and the values varied from \$2.00 to \$50.00 per ton.

I have never attempted to systematically sample this ore shoot, but from several samples which I have taken on various visits to the mine and from records of the mill-runs and shipments which I have seen I feel satisfied that Benedict's figures may be

considered as very conservative and that it is reasonably safe to estimate an average value of \$13.00 per ton or a recoverable value of \$12.00 per ton. These figures can be further confirmed by another sampling which would cost about \$500.00.

In similar ores of the Catman District the ratio of gold to silver is uniformly about one oz. of silver to two ounces of gold and on this basis the silver value in the Mossback ore would not exceed 15¢ per ton and can be neglected for the present.

The water below the 400' level has never been pumped out of the shaft since I have been familiar with the mine, but I am reliably informed that on the 500' level there is a station and a drift to the south for some 30' in which a small pocket of calcite was encountered showing good gold value. This work, however, was done in the wrong direction as far as developing the 400' ore shoot is concerned.

At 650' depth there is said to be another station and a drift 100' to the south from which a crosscut runs to the northeast. Some calcite and vein matter were discovered but no pay ore. This work was also done in the wrong direction.

Below the 650' level the shaft bottoms in a sump 20' deep and it is stated that at that depth the shaft and mine workings make over 20,000 gallons of water per day which would be ample for a mill of 100 tons daily capacity.

PROBABLE EXTENT OF ORE:

I believe that the hanging wall vein only is likely to contain pay ore and although the existence of post mineral faults make it difficult to trace the course of the veins it appears to me that this vein has not been sufficiently prospected above the fault which cuts it above the 400' level. In some similar cases the upper section of a faulted vein carried good values and further efforts

should be made to search for ^{the} one shoot in the hanging wall vein from the upper levels. On the other hand it is quite possible that the values in this vein have been leached out above the fault and for the time being it seems advisable to confine exploration to the lower workings of the mine and to the one ore shoot which has been developed on the 400' level, although there is a chance that similar shoots may occur at other points along the vein, which, on the surface, is indicated by a strong outcrop for a distance of over half a mile.

It is my firm opinion that there are excellent chances of finding a substantial downward extension of pay ore below the 400' ^{level} ~~shoot~~, and I base this belief on three different grounds.

First; the actual exposure of ore in the mine is certainly attractive and ⁱⁿ any mine would justify exploration with depth unless there was some compelling reason for believing that the values were cut off immediately below either by faulting or change of formation, neither of which appears likely in the case in point.

Second; there is a strong similarity between the conditions in the Mossback and in several of the other mines in the Catman District. I mention particularly the United Eastern, where the values on the 250' level were practically nil and where the ore on the 365' level averaged \$9.00 per ton, but on the 465' level the ore shoot was 24' wide and 900' long and averaged \$35.00 per ton continuing to be of approximately this size and grade down to the 800' level.

At the Big Jim-Astec there was no ore to a depth of 240' where the vein was cut by a fault and just below the fault the values were \$12.00 per ton but rapidly increased and averaged around \$28.00 for 300' further down.

I have tabulated from reliable sources the occurrence of several of the principal ore shoots of the Oatman District from which over 90% of the total production has been made and the results are shown on Exhibit A attached. Of the 16 shoots listed, five were commercial from the surface downwards, but eleven only began to yield pay ore after substantial depth had been gained.

It would not be safe to conclude from this record that a similar condition will be found at the Mossback, but there is at least some evidence in that direction.

Third; I also believe that the probability of finding ore in depth is strengthened by the accepted geologic theory of the ore deposition. The geology of the Oatman District has been carefully studied by many independent geologists and by F. C. Schrader and W. Lindgren, of the U. S. G. S. and Carl Lausen for the Arizona Bureau of Mines. All the geologists seem to agree that the metallic minerals in the veins and also the quartz were deposited from hot ascending solutions which originated from a cooling magma at a considerable depth below the surface. These minerals, including the gold, may have been derived either from the magma itself or from the rocks which lay above it and which were fissured and faulted by the disturbances attending the intrusion and cooling. The solutions were thus forced up into the shear zones and crevices in the andesite and porphyry where the metals were precipitated and according to this theory it is quite logical to suppose that there was a distinct zone of mineralization which was definitely related to the contour of the underlying magma, but also in some degree to the contour of the then existing surface. Of course, the present surface has been greatly lowered by erosion and there has been leaching and later faulting and many other factors have tended to make all conclusions

very uncertain.

Records indicate that the principal ore shoots have a vertical height of from 300' to 800' and the enrichment begins at the top and plays out at the bottom very abruptly. If we therefore assume that the top of the Mossback ore shoot is located in the vicinity of the fault below the 300' level it is reasonable to suppose that the pay ore should extend downwards to 700' or 800' depth from the surface. Such a supposition can only be verified by actual exploration, but in this case, with the shaft already sunk to a depth of 670', it is fortunate that such exploration will require a comparatively small expenditure.

PROPOSED TERMS OF OPERATING:

The lease and option on this property was given to Mr. Lauzon on June 5, 1935 and will expire on June 5, 1939, unless sooner relinquished by the lessee or canceled by the owner for non-performance. The purchase price is stipulated at \$125,000.00 payable at the expiration of the lease and all royalties paid in the meantime will be applied to reduce this payment if the option is exercised. The royalties on shipments are based on a sliding scale starting with 5% on ore having value of \$5.00 per ton and mounting pro rata to 10% on ore having a value of \$10.00 to \$15.00 or more per ton. Calculations made in this report (in which it is assumed that the average recoverable value of the ore will be \$12.00 per ton) estimate the royalty at 10%, but it will obviously be much to the advantage of the operators if \$15.00 ore can be produced even though this will involve a higher rate of royalty.

The lease contains the usual provisions regarding operation and payment of taxes and the protection of the owners from

liability for labor and supplies, and it is particularly stipulated that at least \$1,000 must be spent monthly for development and operation of the mine. This figure would certainly be exceeded in any of the procedure advised in this report.

The lessee may cancel the agreement and cease operating at any time by giving thirty days' notice to the owner and thereafter a period of ninety days is allowed in which the lessee may remove and dispose of any equipment except the rails, piping and timbers which he may have placed in the mine. No payment to the owners other than the royalty is required during the term of the lease.

Since the present lessee appears to be actually in default, in respect to many of the terms of the agreement, any assignment of all or any portion of his rights should only be taken with the full consent and approval of the directors of the Empire Consolidated Co., and since this lease involves an option to purchase the entire property it should also be ratified by the Empire Stockholders. I am advised both by the President and Secretary of the Empire Co. that such approval and ratification can readily be obtained whenever Lauzon is willing to make an assignment to any responsible parties.

I have proposed to Lauzon that he should assign this lease to the parties whom I represent with no obligation on their part to pay existing debts other than a power bill of about \$200.00 and delinquent taxes to the extent of \$1000 which must be paid if the assignment is held after November of this year, and that Lauzon will thereafter be given a 10% interest in any net profits which may accrue from the operations. I propose to ask \$500 for my services and report and to reserve as my commission a similar interest of 5% so that from any profits that might be earned the new investors would be entitled to first repay themselves the total amount of capital invested and

DEVELOPMENT AND MINING:

If satisfactory terms can be made for acquiring an assignment of the lease and option on the Mossback I tentatively advocate the following procedure;

(1) Investigate through your attorneys the title and legal status of the property, lease and assignment, and at the same time arrange for a check sampling of the ore exposed in the mine, particularly on the 400' level and in the raise and winzes. These steps will require the better part of one month and unless legal complications develop they should not involve an expenditure of more than \$1,000 including the \$100.00 which would be paid to the lessee for one month's option on the assignment.

(2) If the above investigations are satisfactory and confirm the statements made in this report it will then be in order to promptly take the assignment of Lauzon's lease and I should expect payment of my fee of \$500.00. The first work in the mine will be to fix up the shaft and install a skip to replace the bucket. Some timbering will be required and probably some repairs to the pipe lines and electric wiring. At the same time the shaft can be unwatered down to the 500' level using the air lift installation, and if necessary supplementing this with the Cameron sinking pump. I have no positive information regarding the condition of the shaft below the 400' level but since very little timbering is required I do not expect that any great amount of new timbering will be necessary except the installations of a few ~~pipes~~^{bearers} and ladders, also the guides on which the skip will run down to the 500' station. The total cost of this work I estimate at \$3,500 and again approximately thirty days will be required.

As soon as the 500' level is unwatered proceed to drift

toward the ore shoot developed above. A drift will have to be run from 80' to 100' in order to strike the projection of the 400' level ore shoot and whether or not ore is found at this point it will be advisable to do additional drifting and crosscutting to the extent of at least 200'. The total cost for drifting and crosscutting on this level I estimate at \$4,800 and between two or three months will be required.

(4) As soon as the 500' level has been opened up further procedure will naturally be determined on the basis of the conditions which may actually be disclosed. If no ore is found on the 5th level it is probable that no further exploration or development would be justified, and it would then become a question of salvaging the ore which has already been developed as quickly and as cheaply as possible. For this purpose I believe that the present equipment would be sufficient after some slight additions and alterations had been made as contemplated in connection with unwatering the shaft, but the output of the mine will be limited to probably 30 tons per day so that the salvaging operations will require something over a year.

In preparing to mine the ore it will first be advisable to deepen one or both of the winzes which are now started from the 400' level and thus to delimit the downward extension of the ore. If this goes down only 20' or 30' it can be reclaimed by underhand stoping but if it should extend much deeper than that it will probably pay to raise up from the 500' and to stope out from the 500' the ore which occurs between that level and the 400', but in any event this should not actually be stoped until the ore developed above the 400' has been worked out.

I have already stated that a minimum of 12,000 tons of ore appears to be highly probable and it is almost certain that this

estimate will be increased to some extent by the deepening of the winzes but for present calculations I shall assume that no further ore will be developed. The actual cost of mining, including hoisting, should not exceed \$3.00 per ton considering that the preparatory work is already completed.

In order to treat this ore it may prove advantageous to fix up the little mill which Lauzon has already placed on the property, but leaving this question aside for the moment we know positively that we can ship the crude ore to the custom mill at the Tom Reed Mine. The cost of loading and trucking is \$1.20 per ton and the treatment charge is \$3.60 with payment of 25% of the gold contained at the \$35.00 price. To allow for contingencies I am assuming a trucking and milling cost of \$5.00 instead of \$4.80 per ton and a paid for recovery of \$12.00 per ton. The estimated results of these operations are shown in detail on exhibit B attached, and even on this basis of finding no additional ore whatever it appears that a small profit should be realized except for ^{unforeseen} unfavorable contingencies.

If a good ore shoot should be found on the 500' level and appear to extend further down I feel that it will be advantageous to promptly proceed to unwater the shaft down to the 650' level and to carry on similar development at this point in the hope of finding a continued extension of the ore body. Some production of ore could be made while this work was in progress, but from a purely operating standpoint I think it would be best to complete the development on the 650 as well as on the 500 and to put up raises from 650' to 400' and also such raises above as might be necessary to meet legal requirements before attempting to make any steady production from the mine. Unwatering and repairing the shaft from 500 to 650' and development on that level may be expected to require about three months and to

involve, as far as can be foretold, an additional expenditure of about \$10,000 including the cost of the raises from 650 to 500 and 500 to 400, and also the payment of \$1000 delinquent taxes which will have to be made during this period.

It may be found that the ore will continue downward to the 500' but does not continue to the 650' and in that case the situation will have to be considered in the light of the actual developments and the financial results of operation will lie between the figures shown on the schedules as representing on one hand only the salvage of the ore above the 400' and on the other hand the mining and treatment of ore which forms a continuous body from above 400' to 650' and perhaps still further down.

In the following schedules the estimates for development cost, mining and milling are all based on the actual operating records of various mines in this district with proper adjustments for the location and physical conditions at the Mossback and the present costs for labor and supplies. In items such as retimbering, etc, where the actual conditions are not known a liberal allowance has been made, and I believe that the estimates can nearly all be improved in actual practice unless some unforeseen and unlikely contingency should upset all logical calculations that can be made at present.

CONCLUSION:

It is my opinion that an investment in the Mossback Mine, if made on approximately the terms outlined above, offers a rather exceptional opportunity.

The mine was not attractive under the old price of gold both because there was some risk of loss in undertaking the essential development and the expected margin of operating profit would have been small unless the average grade of the ore had improved with depth. The investment was entirely ruled out because the Empire Company until recently asked a ridiculous purchase price of \$500,000 payable at the rate of \$100,000 per annum. In 1930 and '31 the United Verde Copper Company and at least one other large company would have been prepared to undertake the development of the mine if more reasonable terms could have been secured.

The present terms of lease and purchase appear to me fair and reasonable/^{and} with the new price of gold it would seem that no actual loss could result to investors, barring some wholly unforeseen contingency, even under the most unfavorable assumptions regarding the grade and quantity of the ore. The initial investment is limited to a maximum of \$20,000 including ample working capital, and this should be returned in less than two years with a small profit.

On the other hand if developments should prove favorable the installation of proper mining and milling equipment will increase the total investment, including a proportionate working capital, to a total of \$125,000, which, however, should be repaid during the next three and one half years (i. e. before any payment to the owners other than royalty is required), plus a net profit of \$255,000 representing more than 200% on the maximum investment involved.

thereafter would receive 85% of any further net profits. The way in which this plan is expected to work is set forth in detail in the schedule given in Exhibit B, attached.

Calculations in this report are based on the assumption that a 90% interest in the present lease and option can be secured, but if this should not prove possible I believe that the owners would be disposed to declare a forfeiture of the present lease, as they can very properly do and to give me a new lease and option on similar terms perhaps even extending the period to a later date than 1939.

The profits which I have estimated are all based on the assumption that the ore does not extend below the 650' level, whereas it may well go to a substantially greater depth, although probably not below 900' or 1000'. They are also based on the grade of the ore developed on the 400' level whereas in nearly all the ore shoots of the Catman District values have substantially increased below the apex of the ore shoot and have averaged substantially better than \$30.00 per ton at present price.

In the event of finding either an additional quantity of ore or an improvement in the value the profits will greatly exceed my present estimates and it may appear advisable to complete the purchase of the mine in June of 1939, by which time the royalties paid should have substantially reduced the balance of the purchase price.

Attached to this report are Exhibits A and B, mentioned above, and also a map of the mine workings taken from old surveys and an inspection of such openings/^{as}are now accessible.

Yours very truly,

G. M. Colvocoresses
G. M. Colvocoresses

IF GOOD ORE IS FOUND ON 500' LEVEL

FURTHER DEVELOPMENT

Previous investment to develop 500' level as above.	\$10,000.00	
Estimated cost of unwatering to 650' level, fixing shaft, payment of taxes.	5,000.00	
Drifting to assumed location of ore shoot and additional drifting to 300' with raises, etc.	5,000.00	
TOTAL		\$20,000

EQUIPMENT ETC. FOR REGULAR PRODUCTION.

Then if good ore is found on 650' level a total of approximately 80,000 tons should be developed & further expenses would be as follows:

New Mine equipment	\$20,000.00	
100 ton cyanide mill.	40,000.00	
Alterations to shaft & mill for operating and incidental.	8,000.00	
Raises to surface & other essential work.	12,000.00	
Total expense to put mine on a producing basis at rate of 100 tons per day.		\$100,000

OPERATING EXPENSE

Mine and mill should then go on regular production in accordance with the following estimate.

Total costs of mining including overhead 80,000 @ \$4.00	\$320,000.00	
Milling ore and marketing bullion @ \$2.00 per ton.	160,000.00	
Royalty 10% of \$960,000	96,000.00	
Total of all expenses to work out mine to 650'		\$676,000
Total net returns from 80,000 tons @ \$12	\$960,000.00	
Less total expense	676,000.00	
Operating profit after repayment of investment and all operating expenses.	\$284,000.00	
Estimated salvage in equipment.	16,000.00	
	\$300,000.00	

85% of above = \$255,000, net profit to investors.

Greatest amount of investment at any one time including \$25,000 working capital would be \$225,000, which should be returned in three and one-half years from date plus a net profit of over 200%.

FINANCIAL SCHEDULES AND ESTIMATESINVESTMENT AND OPERATING EXPENSESPRELIMINARY EXPENSES:

Payment for 30 days option on assignment of lease.	\$100.00
Legal expense for investigation of titles, etc.	400.00
Expense of sampling mine.	500.00

If option exercised

Payment to G. M. Colvocoresses for service.	500.00
Payment of delinquent power bill.	200.00
Repairs to shaft and installation of skip.	2500.00
Unwatering shaft to 500' level & repairs.	1000.00

Drifting to expected location of ore shoot and additional drifting; total 300' including overhead and inspection.	4800.00
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Total investment involved in determining the existence of and extent of ore on the 500' level.	\$10,000
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RECLAIMING ORE ALREADY DEVELOPED:

If no satisfactory showing is found on 500' level the mining and shipping of the developed ore around the 400' level can then be promptly undertaken with the present equipment plus the shaft improvements, etc., already made. Assuming that a minimum of 12,000 tons of \$13.00 ore should be mined and shipped to the Fox Feed mill, the estimates are as follows:

Cost of mining = \$20.00 ^{3.00} per ton.	36,000.00
Shipment & Treatment charges = \$5 per ton.	60,000.00
Payment of delinquent taxes.	1,000.00
Incidental exp. supervision, etc.	2,600.00
Royalty, 10% of \$144,000	14,400.00
TOTAL	<u>\$124,000.00</u>

Recovered value on 12,000 tons = \$12.00 per ton.	\$144,000
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Leaving a net operating profit after repayment of investment of \$20,000 of which 85% i. e. \$17,000 would go to the investors. Maximum investment at any one time including working capital \$20,000.

GEOLOGICAL REPORT ON
EMPIRE CONSOLIDATED MINE (MARCH 6, 1929)
(MOSSBACK)

Mr. E. E. Campbell
200 Bay St.
Toronto

My dear Mr. Campbell:

As you requested, I have examined the Empire Mine, formerly known as the Mossback Mine, in the Oatman District, Arizona, on March 2nd, and 3rd, and have the following^{to} report:

GENERAL STATEMENT.

The geological conditions and commercial values already exposed in the mine seem to me to indicate the possibility of a profitable enterprise; and I believe the situation to call for adequate further exploration.

GEOLOGY.

On account of the dependence of my recommendations upon the geological conditions at the property, I will first discuss those factors. Having had no opportunity to include the district in my study, I have accepted the report of F. L. Ransome for data which I was not able to gather myself. That report was published by the U. S. G. S. as Bulletin 743, in 1923.

The only visible formation essentially involved in the genesis of this ore is the Moss Porphyry, which as a stock has intruded the older volcanic flows of andesite, locally known as the Oatman andesite, and has been once covered by subsequent flows of Gold Road latite lava which have since been eroded away at this point. The gulch below the shaft to the northeast forms an approximate west boundary to a strip of the Oatman andesite which dips northeasterly under the later flows of latite; as both volcanic formations overlie and dip northeasterly from the area of Moss porphyry containing the ore bodies of the Empire Mine, they may be disregarded in connection with the geology of the mine.

It is significant that the ore bodies of the district lie within seven different formations, four of which are lavas, two porphyries, and one Cambrian granite. In all of the mines of the district, the temperature of the rocks increases downward at an abnormally high rate so that the ground water at a depth of 2900' is near the boiling point. Also the rule is recognized by Ransome and by various operators in the district, that the commercial ore occurs chiefly and conspicuously between the 100 foot and 1000 foot levels.

It seems obvious in view of these facts, that the ores are independent of their wall rocks, and are related to the rock temperature gradient. This together with the fact that the ore bodies are of nearly uniform mineral composition seems to indicate quite certainly that the genesis of the deposits is so directly due to an underlying batholith which perhaps may be related to the basaltic lava flows which terminated igneous activity in the region.

At the Empire property the ore occurs in roughly lenticular lodes without consistent walls. These lodes are distributed along two or three wavy shear zones contained in and parallel with a belt of structural weakness having a width of perhaps 300 feet and a length of over half a mile. The strike is northwest and the dip probably about vertical, or it may incline southwesterly like the calcite vein at the shaft. The shear zones are not straight, but come together at intervals in such a manner as to suggest a roughly rhombohedral form like that shown on the accompanying map of part of the surface area, but future developments may alter this pattern; while the lodes are even more indefinable since they consist of irregular veins and masses of vein matter more or less aggregated along groups of minor faults and zones of brecciation. For working purposes as well as for discussion these aggregations of vein matter may be advantageously regarded as lenticular lodes, although the term "vein" may be used with that meaning.

These lenticular lodes consist essentially of calcite and quartz vein matter with adularia and flour gold in places where there is the strongest mineralization. It seems not unlikely that the gold, adularia, and quartz will be found in greatest proportion where mineralization has been most intense, usually in the mid-portion of the lenticular lodes and between the 100 ft. level and the 1000ft. levels, perhaps centering on the 400 or 500 foot levels.

I believe the faulting to be insignificant for present operations, and the two veins developed on the 400 ft. level to be separate veins. For working purposes I propose that the shaft vein be designated No. 1, and the one next north of it be designated No. 2 vein.

EXPLORATION.

These conditions cited above suggest that the best exploration will be to operate on the 400 level or the 500 level by drift, crosscut and raise, as well as by diamond drill, and generally to regard the broadest part of a lens as the part of most intense and profitable mineralization, the marginal portions being dominately calcite or quartz and poorest in gold. Of course, the sound prospecting rule of following the values is not to be disregarded in deference to the one just mentioned.

I believe that the developments already made indicate commercial ore in No. 2 vein north and west of the shaft; and the above geological conditions point to the possibility of equally good or better ore on all other veins until the contrary is proven.

(signed) Alfred R. Whitman

NOVEMBER, 1937.

Have had no recent information regarding the operations or development of the mine which did appear to hold very attractive possibilities when I last visited it in the spring of '35.

It appears that the development since that date has been largely unsatisfactory and that the grade of production does not stand up to the sampling in place.

Such being the case it is probable that I should revise my previous opinion and consider that the mine is only suitable for very small scale operations which would have to be confined to the higher grade portions of the ore bodies, but I would not wish to make this statement positive without a further inspection for which no opportunity has presented itself during the past two years.

G. M. C.

NOTES RELATIVE TO EMPIRE MINE - FORMERLY KNOWN AS MOSS BACK

Location Oatman District, Mohave County, Northwestern Arizona - reached by 7 miles of good road from the town of Oatman.

Property Five patented claims together with water rights. Title said to be perfect.

Ore Occurrence Similar to that in Oatman District. The ore occurs as a replacement of calcite by gold-bearing quartz and adularia. ^{potassium aluminum silicate K AlSi₃O₈ (molybdenum orthoclase)} The vein on this property is in a wide shear zone and the replacement was probably subsequent to the faulting. Country rock is andesite? traversed by dikes of dark fine-grained rock, also of calcite. The ore itself is the same character as at Oatman and recovery of gold will necessitate cyaniding.

Development Shaft is 700' in depth. Work on the three upper levels indicates that these are in a badly fractured zone and, except for some small chutes, no regular ore body has been proved. On the 400' level substantial development has been done delimiting a chute of ore about 140' in length and with width varying up to 34'. Good chances that additional development will increase the length of this chute. Values are erratic but average \$12.00 per ton according to one sampling, or \$17.00 according to

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another sampling, for the accuracy of which the present management will not vouch. Several hundred samples taken altogether mostly by channelling with air hammer.

Below the 400' level no development has been carried into the ore zone, but indications point to the fact that the ore which appeared to be faulted above the 400' level will be found in place below and it should lie not more than 80' from the shaft on the 5th level and 120' from the shaft on the 7th level.

If the main ore chute, as developed on the 400' level, continues downward, approximately 300 tons per vertical foot will be developed. ²⁷⁰

Assay map of the 400' level is furnished by the owners which substantiates statements made above.

Equipment

Mine is all equipped for operation on fairly large scale and with suitable power and mining plant, but no mill.

*Electrification
for*

The water is at present being kept down below the 400' level but funds are not available to continue this pumping much longer and examination will have to be made promptly.

Terms

The Company owning the property has a large capitalization but no great amount of stock is issued. Control of the company could be purchased on terms which are not yet definitely fixed but could probably be made quite reasonable considering that no funds are at present available to determine whether or not

this property has the making of a real mine.

All the money paid for property at the outset would go to purchase Treasury stock and thus be expended for development.

It would appear that an expenditure of approximately \$20,000 should be sufficient to explore the 5th and 7th levels thoroughly enough to enable one to form a pretty good estimate as to the ore existing in this area which, from present indications, might amount to nearly 100,000 tons, and, if grade is maintained, a net profit of over \$5.00 per ton should be earned.

Conclusion

According to reports of reliable engineers, this is a very promising prospect or partially developed property and one where a comparatively small amount of expense and additional development is likely to definitely determine its value as a mine. The present showings seem to justify this expenditure under a favorable option agreement.

The history of the Oatman district, particularly of the United Eastern, Gold Road and Tom Reed Mines, and the recent discovery of high grade ore in the latter property, encourage the belief that similar ore chutes exist in the Moss Back and are likely to prove fairly persistent and the probability that the ore shown on the 400' level will extend downwards for a considerable distance unless some geological reason not set forth in the description of the property should lead to a contrary conclusion.

J. Mc

EMPIRE CONSOLIDATED GOLD MINING CO.

OATMAN, ARIZONA

PROPERTY:

This property, formerly known as the Mossback Mine, consists of five patented mining claims, named as follows:

Mossback
Mossback Extension
Alice B.
Gladys
Ida, and in addition the Cottonwood Springs

Mill Site, comprising in all 98.6 acres.

The title to all claims is perfect, and is owned outright by the company, and is free from all indebtedness.

LOCATION:

The property is located in San Francisco Mining District, Mohave County, Arizona, 4 miles north of the town of Oatman, Arizona, the famous gold camp.

PHYSICAL CONDITIONS.

Easy access is had to the property from Oatman, over a fair country road thru a rolling country, without severe grades. The elevation of the property is about 2200 ft. above sea level. The country is typical of the Arizona desert.

POWER & TELEPHONE.

Electric power is supplied to the mine by the Desert Power & Water Co. of Kingman, Arizona, distant about 35 miles. Local and long distance telephone line connects with Oatman.

WATER:

Ample water for camp and domestic purposes is supplied by gravity flow from the Cottonwood Springs Millsite, $1\frac{1}{2}$ miles from the Mine.

The present existing mine workings supply about 1200 gallons of water per 24 hours. This amount will be increased by additional work. Several shafts in the vicinity of the mine will furnish sufficient water for milling purposes.

BUILDINGS.

The mine is well equipped with buildings for all present purposes. They are built of wooden frame, sheathed with corrugated iron. They consists of:

Transformer House	16 x 24 Feet
Change Room	14 x 28 "
Hoist & Compressor House	28 x 32 "
Blacksmith Shop	24 x 30 "
Superintendent's House	18 x 30 "
Cookhouse & Dining Room	16 x 54 "
Bunk House	16 x 30 "

EQUIPMENT

The machinery & equipment now upon the property is sufficient for all exploration purposes, with very little additions. It consists of the following:

- 1-- 40 H. P. Fairbanks-Morse Type N. B. Hoist
- 1-- Imperial Type 10, Two Stage I. R. Compressor, CAPACITY: 360 Cu. Ft. driven by
- 1-1 75 H. P. General Electric 440 Volt Motor
- 1-- Ten Inch ventilating fan driven by 2 H. P. Motor.
- 1-- 4 x 6" Deming Station pump, triplex, driven by a 25 H. P. motor.
- 2-- #5 Cameron Sinking pumps, complete blacksmith shop equipment

GEOLOGY:

The vein on the Empire property lies on the contact between the Oatman andesite on the north-east wall and the Moss porphyry on the south-west wall. The vein system strikes approximately N. 40 Degs. West, and dips to the southwest at about 80 degs. The Oatman andesite is more extensively altered at the Empire property than in the immediate Oatman mines, but has been identified by Mr. Alfred R. Whitman, Consulting Geologist, University of California at Los Angeles.

The Empire Group is located in and along the general north-west mineralized structure extending from south of Oatman and Goldroad to the Katherine District, 18 miles north of the Empire and is on the contact of the Oatman andesite, known locally as the "Ore Maker" of the district. This seems to place the property in a zone of probably enrichment similar to that of the immediate Oatman district.

The production of the Oatman District is so well known that it is not necessary to include such data. The recent discovery of new valuable ore bodies on the property of the Tom Reed Gold Mine Col lends added interest to the entire section, and will no doubt lead to exploration of a more definite character than has been practiced in the past.

VEIN OUTCROPPINGS:

The vein outcroppings upon the Empire appear prominently over a low hill or dome for a distance of over one-half mile on a general strike of North 45 degs. west, and a dip of 80 degs. to the southwest. The footwall outcrop consists of a vein from ten feet to thirty feet wide. This vein is called the Calcite Vein, and contains very little evidence of silicification, which seems essential to gold deposition in this district. The values found in this vein both upon the surface and underground are very low and erratic. In spite of this fact nearly all of the underground work performed by the previous owners of the property was confined to this vein.

Southwest from the shaft and roughly parallel to the Calcite Vein. This hanging wall vein is from 5 to 30 feet wide and is highly silicified and reported assays of many samples taken at various points over the surface give returns from \$0.80 to \$10.60 in gold per ton.

PREVIOUS DEVELOPMENT.

No records or maps of the work done on the Mossback property previous to its acquisition by the Empire Cons. Mining Co. are available. The present existing shaft was sunk to a depth of 640 ft. It follows the calcite vein to a point just above the 300' level. At this point a fault was encountered and the vein has apparently been moved into the hanging wall or towards the southwest.

A short distance below the 300 ft. level the shaft again encountered an ore zone, but of a different character from that shown in the vein above, being highly silicified. The shaft passed thru this ore for a distance of 50', then again passes into country rock.

On the 75, 100, 200, and 300 foot levels drifts have been extended each way from the shaft for some distance and a few short

define

crosscuts driven to the foot and hanging wall to the vein which varies from 10 to 20 ft. in width. On these levels the vein gangue is principally calcite with a little scattered quartz. Some fifty samples which the author cut showed values from \$0.80 to \$26.45, but they were quite erratic. From these levels it might be possible by selective mining methods to extract a considerable tonnage or profitable ore when a mill is available.

The Empire Co. has pumped the shaft out only to 400 level. The 500 and 650 levels are under water. Patrick Dillon, who was instrumental in persuading Mr. M. B. Lauzon to unwater the shaft down to the 400 level, on his knowledge of the ore left unexplored by the previous owners, is responsible for the statement that on the 500 level a station was cut and a drift run southerly for 30', and on the 650 level a station was cut, a drift extended southerly 100', thence a diagonal crosscut northeasterly where a calcite vein was cut, upon which a drift was run for a considerable distance. This would seem to be upon the "Calcite Vein" exposed in the upper levels.

PREVIOUS DEVELOPMENT WORK.

Shaft	670 ft.
75 Ft. Level	48 "
100 " "	344 "
200 " "	188 "
300 " "	77 "
400 " "	465 "
500 " "	Unknown Amount
600 " "	" "

WORK DONE BY EMPIRE CO.

All of the work done by the Empire Co. has been done upon the 400 Level. The orebody developed by them lies north and west from the shaft. This orebody is quite silicious and resembles the hanging wall vein more than the calcite footwall vein. It has not yet been determined whether it is the footwall vein, or the hanging wall vein, or a zone before unknown. Considerable post-mineralization faulting has occurred. More exploration will be necessary before the geology will be known. The orebody outlined upon the 400 level has been definitely proven to surround the shaft from the 320 to the 370 level, and to apex under the fault that cuts the shaft at the 300 level.

It is 140 ft. in length and 45 ft. wide in the center, averaging between 15 and 20 feet wide.

CHARACTER AND VALUE OF ORE BODY.

Sufficient work has not yet been done to determine accurately the limits of this orebody. Considerable areas of brecciated material are noted in the crosscuts on the strike of the zone, due very likely to disturbed conditions at this horizon. Over 80 samples have been taken on this orebody, varying from \$2.50 to \$125. a ton in gold. An average value of samples taken from this orebody on the 400 level and the shaft above it is approximately \$12.50 per ton. Its limits are now known as 140' x 15' x 100' without any allowance below the 400 level.

SIMILARITY TO OATMAN MINES.

The author has had many years experience in the Oatman District and wishes to mention a seemingly comparative condition in the Empire Mine to that found in the Big Jim Mine at Oatman. The main ore bodies of the Big Jim Mine apexed just above the 240 Level, directly in contact with the Mallery Fault. The Mallery Fault strikes northwest and dips to the southwest at 65 degs. Where the fault cuts the vein, the vein is 23 ft. in width and sampled \$6.50 in gold. As increased depth was obtained, these values increased materially.

The fault on the 300 ft. level of the Empire Mine is similar to that of the Big Jim. Here, as at the Big Jim, the new orebody apexes up against a southwest dipping fault striking in a general northwest direction, much like the Mallery fault, and is probably relative to the regional north-west anticlinal folding of the district. In a north-west vertical section thru the shaft a series of minor sympathetic fractures to the main fault on the 300 ft. level is noted, with increasing higher angles as the surface is approached.

Another instance of similarity in the Empire and Big Jim properties is the inconsistency in the ore values. The majority of the samples taken in both properties show low values, with occasional high assays. The author assisted in sampling the Big Jim Mine three times and the average values were about \$10.00, yet when the ores of the

Big Jim were milled by the United Eastern Co., they yielded about \$19.00 per ton. On the Big Jim Mine the values increased from the Mallery fault downwards. This same condition exists at the Empire, the values being higher upon the 400 level than in the shaft between the 300 and 400 levels.

MINING & MILLING.

The gangue minerals are calcite and quartz with small amounts of adularia. The gold is in free state and there are practically no sulphides present. A high recovery is made on the ores of the district with cyanide treatment with all sliming.

In an operation of some magnitude, say not less than 200 tons per day, total costs of mining and milling will not exceed \$6.00 per ton.

CONCLUSION:

In conclusion it is the author's belief that the new ore body exposed upon the 400 level and from there up to the 300 level will continue to lower levels, better defined, and carrying higher values. It is believed that it increases in magnitude to the northwest.

The further exploration of this property should be attractive, inasmuch as there is substantial evidence of a valuable deposit awaiting development. The property is ready for immediate operation, fully equipped and in good state of repair. It is located in what has been proven to be the best gold district in the southwest, and can be operated the year round.

(signed) J. W. Henderson

(COPY)

United Verde Copper Co.
(A Corporation)
Jerome, Arizona

Mr. W. V. DeCamp, Gen'l. Mine Supt.

--- Re: Empire (formerly Mossback)
Mohave County, Arizona

Dear Sir:

I wish to supplement my report of June 22, 1927, with the following information gathered from a recent re-inspection of a few hours.

It is Mr. Luzon's opinion that the ore vein which I sampled at the time of my previous examination lies in between the footwall and middle vein rather than in the footwall of the footwall vein, as I stated in my previous report. Sufficient more development work has since been accomplished to make this appear probable, although not definitely proven.

At the time of my inspection, the ore vein had been drifted on for about 10 feet, and gave about \$10. average over a width of about 10 feet. The present Empire Co. (E. S. Campbell and associates) have continued drifting on this vein in both directions and have opened up a shoot of ore 175' in length and of 20' average width, with a maximum width of 38'. Some phenomenal values were encountered, but according to their sampling, the whole shoot will average \$20 or better. The shoot has been developed sufficiently to be definitely terminated on both ends at this level.

In addition to this ore, a resampling of most of the rest of the mine has indicated the possibility of there having been some ore nearly developed in the old workings. Luzon tries to connect these up to make a block of ore by dodging around certain lean workings, etc., Without checking the sampling and doing a certain amount of cross-cutting, it is impossible to definitely state that there is not a block of ore here, but it appeared to me at least extremely spotty and erratic and of doubtful economic importance, at least above the 400 level. The mine has not been unwatered below the 400

2-

as yet. It is, of course, possible that the scattered values might concentrate into a real ore shoot with depth.

To date the ore vein has apparently not been looked for or found on any other level than the 400, though it would be very inexpensive to do so on the 300 and higher levels. Present efforts are being concentrated on crosscutting the whole vein system at two points about 500 feet apart.

Should we be offered the opportunity to continue development work on a more favorable basis than previously, I recommend so doing.

Yours very truly,

(signed) P. C. Benedict
Field Geologist.

P. S. I found 17% adularia in a specimen of Mossback ore, which according to Lausen's work is a definite indication of valuable primary mineralization.

GEORGE M. COLVOCOSESSES
MINING AND METALLURGICAL ENGINEER
1108 LUHRS TOWER
PHOENIX, ARIZONA

STATEMENT RELATIVE TO EMPIRE MINE (MOSSBACK)

Enclosed, herewith, are copies of reports on this property by M. B. Lauzon, present Manager, Prof. A. R. Whitman, and J. W. Henderson.

GENERAL DESCRIPTION

The history, location, and geology and equipment are all well covered in the attached reports and no repetition is required. The actual depth of the shaft is variously given as 640', 650', and 670'. Lauzon informed me that the last figure was correct.

The showings in the upper level of the mine are very erratic. One side of the shaft was cut-sampled by the company operating from 1913 to 1916, and I am told that the average of their assays was \$30.00 per ton. At best this must represent a small shoot or chimney of ore which does not extend for any great distance and cannot be located with certainty in any of the workings on the various levels.

In various places on the four upper levels some good values were found but represented pockets or small veins of ore, the enriching solutions having apparently come through narrow seams from which the values only extend for a short distance. An inspection of these workings leads me to believe that the upper section of the mine down to the fault which crosses the shaft at a depth of about 330' is of little value, although,

if the property were operating and equipped with a concentrator, a certain amount of pay ore might be taken out with some margin of profit.

Indications on the surface show a strong well-defined shear zone mineralized with vein material, but apparently generally lacking in commercial values. A sampling of the outcrops by the present management did not give encouraging results, and, although the records indicate that some very high grade ore was taken out in the early days; this must have been confined to small pockets locally enriched.

To the southeast of the main shaft about 500' there is an old shaft some 80' in depth in which it is said that ore was found and some other pits and tunnels in the hillside yielded values but nowhere indicated any persistent ore body.

In 1915 or 1916 the company then operating cut through the vein on the 400 level but at a point where the ground was badly shattered and the importance of this discovery was apparently not realized. The present company took up the work at this point in 1927 and drifted to the northwest opening up a good body of ore with drifts and crosscuts at various places, but not penetrating at any place to the hanging wall vein which may be considered as having attractive possibilities. The ore body developed or indicated is described in the attached reports and was thoroughly sampled as shown on an assay map. The samples were all cut with an air hammer and were carefully taken and should represent a fair average of the accessible ore. One of these samplings was made by Mr. Lauzon, whom I have known for several years and consider a reliable and conservative man. The other by H. C. Wilmot, an engineer of good standing. I am told that

the two samplings checked closely and that Mr. Wilmot was quite satisfied to accept Lauzon's results in some small sections of the ore body which he did not have opportunity to sample himself. The remark in reference to the agreement of the sampling refers to the general results since, as is usual in ore bodies of this kind, individual samples frequently varied to a considerable extent although taken quite close together.

GRADE OF ORE

The ore shown on the 400 level is the only body that forms a basis for estimate of grade, but, because of its somewhat irregular shape and the varying width of the samples taken, (which width is not recorded on the assay map) it is difficult to strike any very accurate average. Samples vary all the way from over \$200.00 per ton to less than \$2.00 per ton, but the great bulk of them range from \$8.00 to \$45.00. Lauzon has estimated that the ore body sampled should break down with an average of better than \$21.00 per ton. An arithmetical average of 80 samples recorded on the map is slightly over \$20.00, but if some small sections of the ore body were eliminated in mining, it should be possible to maintain a grade better, representing probably eighty to ninety percent of the total ore included in the limits of the samples. All values given are for gold content only; silver values are not reported, but, judging by such assays as were made and by the records of other producers in the Oatman District, these will probably not exceed .25 oz. per ton and may be neglected in preliminary estimate.

FUTURE DEVELOPMENT

The plan of development advocated by the management would be to unwater the main shaft and to drift from the station

on the 500 level and from the present workings on the 670, striking into the downward projection of the ore which is developed on the 400 and proving up the extent and value of these extensions by drifts and crosscuts which might be supplemented by diamond drilling, from the 500 and 670, as these points are reached.

I believe that this method of procedure is logical and estimate that from \$25,000 to \$30,000 should be sufficient to carry it to a point where fairly positive estimates could be made of all the ore body between the fault at 350 and the 670 level, assuming that raises or diamond drill holes should be run vertically from the 400 to the line of the fault and through the ore between the lower levels.

Development of the ore within the limits indicated on the 400 level would represent about 250 tons per vertical foot, or say, 80,000 tons between the fault and the 670 level, and there seems good reason to hope that both the quantity and quality of ore will improve with depth, since the general appearance of the property, coupled with the records of other mines in this district indicate that the workings on the 400 level are near the apex of the ore shoot which appears to be increasing in size as it goes downward. I would particularly mention that the record of the Oatman District is favorable to this supposition, for, while the Gold Road Mine contained pay ore from the surface fairly continuously down to the 1000' level, both the Tom Reed and the United Eastern- in which conditions were very similar to those at the Empire- showed only low values in small pockets from the surface to a point below the 300' level, and almost the entire production of these mines came from between the 400 and 1200. It would be unsafe to conclude that the conditions

in the Empire will be altogether similar, but there is, I think, sufficient ground for such a supposition to justify the necessary exploration, at least to the extent of determining the conditions which will exist between the 400 and 670.

WORKING COSTS

I cannot altogether agree with estimates made by others in this regard. While mining conditions are generally favorable at the Empire, the actual cost record of producing mines in this district, taken in conjunction with the relative price of labor and supplies at the present time lead me to make the following estimate of costs on the basis of mining and milling 100 tons of ore per day.

Mining(including normal development)...	\$5.50	per ton
Milling	2.25	" "
General expense and overhead	1.50	" "
Tailings Loss (on basis of \$20 heads) ..	0.75	" "
		<u>\$10.00</u>

Under these circumstances I believed that the average grade of the ore should be at least \$20.00 per ton in order to allow a satisfactory margin of profit. It cannot be said that the ore on the 400 quite attains this grade, but I consider that it is well within the realm of probability that the grade of the ore body below this level may bring up the average to that figure, or even higher, and, in this connection it may be recalled that the ore on the 365' level at the United Eastern sampled less than \$5.00 per ton, while the same ore body on the 450' level averaged \$22.00 per ton (old price) which ^{last} ~~cost~~ would represent \$37.00 ore at present price of gold.

PRESENT SITUATION

Since examining this mine in 1930 I have seen a report on the property made in 1927 by an engineer of the United Verde Copper Company and his sampling of the 400 foot level indicated that a substantial quantity of better than \$15.00 ore was developed or prospective at this point. This engineer recommended that the United Verde Company should carry on development of the property provided that different terms of lease and option could be obtained, and the company was prepared to follow this recommendation but could not then secure the concessions in terms that they felt essential.

A similar position was taken by eastern clients to whom I had presented this property in 1930, but since that date substantially better terms can be made with the owners and because of this fact and especially because of the increased price of gold I consider that the proposition is extremely attractive as a speculative mining venture.

The work done on the property subsequent to 1930 has included the construction of a 20 ton mill which is very suitable for bulk sampling and has been used for the production of a small quantity of gold obtained from development work. The ore was treated in this mill on plates and with subsequent concentration and a 90% recovery of values was made, but in a larger commercial plant it is quite certain that 95% or better could be recovered by cyanide treatment, as this was consistently done in the other mills at Oatman treating similar ores.

In the matter of development two winzes were started below the 400 ft. level and the ore mined from these

yielded a recovery of \$21.00 per ton while the ore shoots appeared to be very strong and persistent.

At the present time it would appear advisable to spend approximately \$30,000 to complete the proposed development below the 400 and down to the 700 ft. level, and if the ore continues as indicated, this work should prove up approximately 80,000 tons which might reasonably be expected to have a value somewhat in excess of \$20.00 per ton at present price and from which a net profit of \$10.00 per ton should be realized. However, in order to realize this profit it would be necessary to erect a 100 ton cyanide mill and to install some other equipment which altogether would cost about \$70,000.

The interested parties are now willing to agree to give a 50% or slightly greater interest in their six year lease and option (terminating in 193⁷) to parties who would advance the \$30,000 necessary for the development. The purchase price at which the property is optioned is \$125,000 and ^{having} without/attempted to negotiate any detailed agreement I am confident that this could be worked out in such a way that new interest who would finance the development, install the additional equipment, and put up the purchase price for the property involving a total of about \$225,000, would be able to repay themselves in full for this expenditure out of the first operating profits and then to divide subsequent profits on the basis of about 60 to 40 with the present lessees. In line with such an arrangement it might reasonably be expected (provided the underground development is favorable) that the outlay of \$225,000 would bring in a return of something over \$500,000 plus subsequent profits which might be realized from any ore developed below the 700 ft. level.

CONCLUSION

It is obvious that a portion of the first development money will have to be risked in order to prove or disprove the existence of the ore body below the 400' level. The limit of this I place at \$10,000 which should be ample to prove or disprove the extension of the ore to the 500' level and the only chance for a loss lies in the possibility that the ore-shoot bottoms almost directly below the 400' level. This seems most improbable in view of the geology and the recent development in the winzes sunk short distances below the 400 and still in excellent ore.

I am well convinced that the further development of this property would be an excellent mining risk and that the chances for a return of the money with substantial profit would be exceptionally good for ventures of this nature.

G. M. COLVOCORESSES

November 28, 1934

G. M. Colvocoresses

(2)

COPY

GEOLOGICAL REPORT ON

Copied

EMPIRE CONSOLIDATED MINE (March 6, 1929)

Mr. E. E. Campbell,
200 Bay Street
Toronto, ~~Campbell~~:

My dear Mr. Campbell:

As you requested, I have examined the Empire Mine, formerly known as the Mossback Mine, in the Oatman District, Arizona, on March 2nd and 3rd, and have the following to report.

GENERAL STATEMENT

The geological conditions and commercial values already exposed in the mine seem to me to indicate the possibility of a profitable enterprise; and I believe the situation to call for adequate further exploration.

GEOLOGY

On account of the dependence of my recommendations upon the geological conditions at the property, I will first discuss those factors. Having had no opportunity to include the district in my study, I have accepted the report of F. L. Ransome for data which I was not able to gather myself. That report was published by the U. S. G. S. as Bulletin 743, in 1923.

The only visible formation essentially involved in the genesis of this ore is the Moss Porphyry, which as a stock has intruded the older volcanic flows of Andesite, locally known as the Oatman Andesite, and has been once covered by subsequent flows of Gold Road Latite lava which have since been eroded away at this point. The gulch below the shaft to the Northeast forms an approximate West boundary to a strip of the Oatman Andesite which dips Northeasterly under the later flows of latite; as both volcanic formations overlie and dip Northeasterly from the area of Moss Porphyry containing the Ore bodies of the Empire Mine, they may be disregarded in connection with the geology of the mine.

It is significant that the ore bodies of the district lie within seven different formations, four of which are lavas, two porphyries, and one Cambrian granite. In all of the mines of the district, the temperature of the rocks increases downward at an abnormally high rate so that the ground water at a depth of 2900' is near the boiling point. Also the rule is recognized by Ransome and by various operators in the district, that the commercial ore occurs chiefly and conspicuously between the 100 foot and 1000 foot levels.

It seem obvious in view of these facts, that the ores are independent of their wall rocks, and are related to the rock tempera -

ture gradient. This together with the fact that the ore bodies are of nearly uniform mineral composition seems to indicate quite certainly that the genesis of the deposits is directly due to an underlying batholith which perhaps may be related to the basaltic lava flows which terminated igneous activity in the region.

At the Empire property the ore occurs in roughly lenticular lodes without consistent walls. These lodes are distributed along two or three wavy shear zones contained in and parallel with a belt of structural weakness having a width of perhaps three hundred feet and a length of over half a mile. The strike is northwest and the dip probably about vertical, or it may incline southwesterly like the calcite vein the shaft. The shear zones are not straight, but come together at intervals in such a manner as to suggest a roughly rhombohedral form like that shown on the accompanying map of part of the surface area, but future developments may alter this pattern; while the lodes are even more indefinable since they consist of irregular veins and masses of vein matter more or less aggregated along groups of minor faults and zones of brecciation. For working purposes as well as for discussion these aggregations of vein matter may be advantageously regarded as lenticular lodes although the term "vein" may be used with that meaning.

These lenticular lodes consist essentially of calcite and quartz vein matter with adularia and flour gold in places where there is the strongest mineralization. It seems not unlikely that the gold, adularia, and quartz will be found in greatest proportion where mineralization has been most intense, usually in the mid-portion of the lenticular lodes and between the 100 foot level and the 1000 foot levels, perhaps centering on the 400 or 500 foot levels.

I believe the faulting to be insignificant for present operations, and the two veins developed on the 400 foot level to be separate veins. For working purposes I propose that the shaft vein be designated No. 1., and the one next north of it be designated No. 2 vein.

EXPLORATION

These conditions cited above suggest that the best exploration will be to operate on the 400 level or the 500 level by drift, crosscut and raise, as well as by diamond drill, and generally to regard the broadest part of a lens as the part of most intense and profitable mineralization, the marginal portions being dominantly calcite or quartz and poorest in gold. Of course, the sound prospecting rule of following the values is not to be disregarded in deference to the one just mentioned.

I believe that the developments already made indicate commercial ore in No. 2 vein north and west of the shaft; and the above geological conditions point to the possibility of equally good or better ore on all other veins until the contrary is proven.

Very truly,
(Signed) Alfred R. Whitman

(3)

EMPIRE CONSOLIDATE GOLD MINING COMPANY

OATMAN, ARIZONA

Copied

COPY

PROPERTY

This property, formerly known as the Mossback Mine, consists of five patented mining claims, named as follows: Mossback Mossback Extension, Alice B., Gladys Mine, and the Ida, and in addition the Cottonwood Springs Mill Site, comprising in all 98.6 acres

The title to all claims is perfect, and is owned outright by the Company, and is free from all indebtedness.

LOCATION.

The property is located in San Francisco Mining District Mojave County, Arizona, four miles North of the town of Oatman, Arizona the famous gold camp.

PHYSICAL CONDITIONS.

Easy access is had to the property from Oatman, over a fair country road through a rolling country, without severe grades. The elevation of the property is about 2200 feet above sea-level. The country is typical of the Arizona desert.

POWER AND TELEPHONE.

Electric power is supplied to the mine by the Desert Power and Water Company, of Kingman, Arizona, distant about 35 miles. Local and long distance telephone line connects with Oatman.

WATER.

Ample water for camp and domestic purposes is supplied by gravity flow from the Cottonwood Springs Millsite, one and one-half miles from the Mine.

The present existing mine workings supply about 1200 gallons of water per 24 hours. This amount will be increased by additional work. Several shafts in the vicinity of the mine will furnish sufficient water for milling purposes.

BUILDINGS

The mine is well equipped with buildings for all present purposes. They are built of wooden frame, sheathed with corrugated iron. They consist of:

Transformer House	16 x 24 Feet
Change Room	14 x 28 "
Hoist and Compressor House	28 x 32 "
Blacksmith Shop	24 x 30 "
Superintendents House	18 x 30 "
Cookhouse and Dining Room	16 x 54 "
Bunk House	16 x 30 "

EQUIPMENT

The machinery and equipment now upon the property is sufficient for all exploration purposes, with very little additions. It consists of the following

- 1 - 40 H. P. Fairbanks-Morse Type N. B. Hoist
- 1 - Imperial type 10, Two Stage I. R. Compressor
Capacity 360 Cu. Ft. driven by
- 1 - 75 H. P. Gen. Elec. 440 Volt Motor
- 1 - Ten Inch Ventilating Fan Driven by 2 H.P. Motor
- 1 - #5 Layner Drill Sharpener
- 1 - 4x6" Deming Station Pump, Triplex, driven by a 25 H. P. motor.
- 2 - #5 Cameron Sinking Pumps, Complete Blacksmith Shop Equipment.

GEOLOGY

The vein on the Empire property lies on the contact between the Oatman Andesite on the North-East wall and the Moss porphyry on the South West Wall. The vein system strikes approximately N40 Degrees West, and dips to the S. W. at about 80 Degrees. The Oatman andesite is more extensively altered at the Empire property than in the immediate Oatman mines, but has been identified by Mr. Alfred R. Whitman, Consulting Geologist, University of Cal. at Los Angeles.

The Empire Group is located in and along the general North West mineralized structure extending from South of Oatman and Goldroad to the Katherine District 18 miles North of the Empire and is on the contact of the Oatman andesite, known locally as the "Ore Maker" of the district. This seems to place the property in a zone of probably enrichment similar to that of the immediate Oatman district.

The production of the Oatman District is so well known that it is not necessary to include such data. The recent discovery of new valuable ore-bodies on the property of the Tom Reed Gold Mines Co. lends added interest to the entire section, and will no doubt lead to exploration of a more definite character than has been practiced in the past.

VEIN OUTCROPPINGS.

The vein outcroppings upon the Empire appear prominently over a low hill or dome for a distance of over one half mile on a general strike of North 45 degrees west, and a dip of 80 degrees to the South-West. The footwall outcrop consists of a vein from 10 feet to 30 feet wide. This vein is called the calcite vein, and contains very little evidence of silicification which seems essential to gold deposition in this district. The values found in this vein both upon the surface and underground are very low and erratic. In spite of this fact nearly all of the underground work performed by the previous owners of the property was confined to this vein.

Southwest from the shaft and roughly parallel to the

Calcite Vein. This Hanging Wall Vein is from 5 feet to 30 feet wide and is highly silicified and reported assays of many samples taken at various points over the surface give returns from \$0.80 to \$10.00 in gold tper ton.

PREVIOUS DEVELOPMENT.

No records or maps of the work done on the Mossback property previous to its acquisition by the Empire Cons. Mining Co. are available. The present existing shaft was sunk to a depth of 640 feet. It follows the calcite vein to a point just above the 300 foot level. At this point a fault was encountered and the vein has apparently been moved into the hanging wall or towards the South-west.

A short distance below the 300 foot level the shaft again encountered an ore zone, but of a different character from that shown in the vein above, being highly silicified. The shaft passed through this ore for a distance of 50 feet, then again passes into country rock.

On the 75, 100, 200, and 300 foot levels drifts have been extended each way from the shaft for some distances and a few short crosscuts driven to the foot and hanging wall to define the vein which varies from 10 to 20 feet in width. On these levels the vein gangue is principally calcite with a little scattered quartz. Some fifty samples which the author cut showed values from \$0.80 to \$26.45 but they were quite erratic. From these levels it might be possible by selective mining methods to extract a considerable tonnage of profitable ore, when a mill is available.

The Empire Company has pumped the shaft out only to 400 level. The 500 and 650 levels are under water. Patrick Dillon, who was instrumental in persuading Mr. M. B. Lauzon to unwater the shaft down to the 400 level, on his knowledge of the ore left unexplored by the previous owners is responsible for the statement that on the 500 level a station was cut and a drift run southerly for 30 feet, and on the 650 level a station was cut, a drift extended southerly 100 feet, thence a diagonal crosscut north-easterly where a calcite vein was cut, upon which a drift was run for a considerable distance. This would seem to be upon the "Calcite Vein" exposed in the upper levels.

PREVIOUS DEVELOPMENT WORK.

Shaft	Foot level	670 Feet
75	" "	48 "
100	" "	344 "
200	" "	188 "
300	" "	77 "
400	" "	465 "
500	" "	Unknown Amount
650	" "	" "

WORK DONE BY EMPIRE CO.

All of the work done by the Empire Col. has been done upon the 400 level. The orebody developed by them lies North and West from the shaft. This orebody is quite silicious and resembles the hanging wall vein more than the calcite footwall vein. It has not yet been determined whether it is the foot wall vein, or the hanging wall vein, or a zone before unknown. Considerable post-mineralization faulting has occurred. More exploration will be necessary before the geology will be known. The orebody outlined upon the 400 level has been definitely proven to surround the shaft from the 320 to the 370 level, and to apex under the fault that cuts the shaft at the 300 level. It is 140 feet in length and 45 feet wide in the center, averaging between 15 and 20 feet wide.

CHARACTER AND VALUE OF OREBODY.

Sufficient work has not yet been done to determine accurately the limits of this orebody. Considerable areas of brecciated material are noted in the crosscuts on the strike of the zone, due very likely to disturbed conditions at this horizon. Over 80 samples have been taken on this orebody, varying from \$2.50 to \$125.00 a ton in gold. An average value of samples taken from this orebody on the 400 level and the shaft above it is approximately \$12.50 per ton. Its limits as now known are 140' x 15' x 100' without any allowance below the 400 level.

SIMILARITY TO OATMAN MINES.

The author has had many years experience in the Oatman district, and wishes to mention a seemingly comparative condition in the Empire Mine to that found in the Big Jim Mine at Oatman. The main ore bodies of the Big Jim Mine apexed just above the 240 level, directly in contact with the Mallery Fault. The Mallery Fault strikes North-west and dips to the Southwest at 65 degrees. Where the fault cuts the vein, the vein is 23 feet in width and sampled \$6.50 in gold. As increased depth was obtained, these values increased materially.

The fault on the 300 Foot level of the Empire Mine is similar to that of the Big Jim. Here, as at the Big Jim the new orebody apexes up against a South-West dipping fault striking in a general North-West direction, much like the Mallery fault, and is probably relative to the regional North-West anticlinal folding of the district. In a North-West vertical section through the shaft a series of minor sympathetic fractures to the main fault on the 300 ft. level is noted, with increasing higher angles as the surface is approached.

Another instance of similarity in the Empire and Big Jim properties is the inconsistency in the ore values. The majority of the samples taken in both properties show low values, with occasional high assays. The author assisted in sampling the Big Jim Mine three times and the average values were about \$10.00, yet when the ores of the Big Jim Mine were milled by the United Eastern Company, they yielded about \$19.00 per ton. On the Big Jim Mine the values increased from the Mallery fault downwards. This same condition exists at the Empire, the values being higher upon the 400 level than in the shaft between the 300 and 400 levels.

MINING AND MILLING.

The gangue minerals are calcite and quartz with small amounts of adularia. The gold is in free state and there are practically no sulphides present. A High recovery is made on the ores of the district with cyanide treatment with all sliming.

In an operation of some magnitude, say not less than 200 tons per day, total costs of mining and milling will not exceed \$6.00 per ton.

CONCLUSION.

In conclusion it is the author's belief that the new ore body exposed upon the 400 level and from there up to the 300 level will continue to lower levels, better defined, and carrying higher values. It is believed that it increases in magnitude to the North-West.

The further exploration of this property should be attractive, inasmuch as there is substantial evidence of a valuable deposit awaiting development. The property is ready for immediate operation, fully equipped and in good state of repair. It is located in what has proven to be the best gold district in the Southwest, and can be operated the year round.

(Signed) J. W. Henderson.

No. 24 Co

Phoenix, Arizona,

CHAS. A. DIEHL

Mar 7 35

ARIZONA ASSAY OFFICE

Phone 3-4001

315 North First Street

P. O. Box 1148

This Certifies That samples submitted for assay by **Mr. G. M. Colvocoresses**

contain as follows per ton of 2000 lbs. Avoir.

MARKS	SILVER		VALUE (Oz.)	GOLD		VALUE (Oz.)	TOTAL VALUE Of Gold and Silver	PERCENTAGE				REMARKS	
	Ounces	Tenths		Ounces	Hundths								
						\$35.00							
Mossback #1			(Raise 60' high)	.42		\$14.70							Sub sample from bin
Mossback #2			(Raise 10' deep)	.41		\$14.35							" " " "

4/90 354

Lanyon Adams' that he shipped 87 tons of ore from this
huge pit as it broke down and that it ran \$12.85

Charges \$2.00

Assayer - Arizona Assay Office. *C.A.S.*

Notes by S.M.C.

EMPIRE MINE

(Mossback)

2/20/34

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Talk with Morris Lansen in Phoenix. Lansen says that about one year ago he took a six year lease on the mine with option to purchase for \$125,000 and royalty on sliding scale depending on grade of the ore from 5 to 15%. Obligated to spend at least \$1000 per month and keep mine and equipment in shape.

Since then he has associated himself with some oil people who have put up a little money for mill and other equipment and for operating but they now seem likely to fall down on their obligations and within a month or so Lansen may be able to make a new deal.

No development work has been done in the mine but he has sufficient equipment to do this with a few minor additions and his plan for development is the same as before.

A little mill was built for amalgamation and flotation and has recently been treating about 18 tons per 24 hours (ore is very hard to crush). Ore has come from the 400' level and there has been no attempt at selective mining. It has averaged about 0.3 oz. per ton and he has recovered on plates about \$3000 and has over \$2000 in concentrates. A good recovery is made by this method altho cyanide might improve upon it in a large plant. Milling costs have been \$1.40 per ton which is very good considering the size of the mill.

The concentrates carry Au 4 oz
Ag 4 oz.
Fe 20 to 26%
S 15 to 20%

Insol. - balance and
no Cu or Pb. These might be treated with advantage at Humboldt.

Lansen still thinks that the mine will develop into a large body of low grade ore and should soon justify a mill of 50 to 75 tons a daily capacity.

Empire Mine - #2

The vital question seems to be the average grade of the ore which should be in excess of 0.3 oz. in order to leave a good profit. Values are very erratic. The present little mill might be very suitable for bulk sampling.

NOTES RE MOSSBACK 3/18/36

Lauzon called and said that the Mollin Investment Co. had done practically no work since last December and had advanced no money since that date and therefore it was his intention to declare a forfeiture of their lease about April 1st and he might then write me and give me time to investigate through a personal visit to the mine when he would give me all data relative to the work which has been done there during the past year. The Mollin Co. have also been operating the Quartette Mine at Searchlight where they have invested about \$140,000 with small prospect of getting it back. Chas. Smith (formerly of Ray) is their engineer.

During the past year about 2500 tons of ore have been taken from the mine by Lauzon and the Mollin Co. and either shipped or milled and the average grade has been \$9.00 per ton which has left no margin of profit when working on this small scale.

The development work has consisted of additional raises above the 400' level which have tended to show a somewhat larger ore body up to the 300 fault than could previously be estimated but the average grade seems to be only .344 oz. say \$9.00. Some additional work here might further increase the size of the ore shoot which in places is said to be near 60' wide.

Shaft was unwatered to below the 500' level and water is still held to that point, it is in good condition.

On the 500' level drifts were run, as shown in pencil on the map, to cut the extension of the ore below the #1 winze and below the #2 winze, but in neither case was any ore found and the ground appears to be badly broken up and the ends of the drift are in a fault or shear zone. Additional drifting to the extent of about 250' should be done to continue looking for the ore, /say ^{cost} \$2500.

If the ore shoot has faulted as Lauzon believes the lower segment of the ore body may have been cut on the 650' level and Lauzon has been told that much good ore was found there. Shaft could probably be unwatered and 650' level opened up for about \$1500.

It appears therefore that further expense to the extent of about \$5000 (including Engineer's fee) would have to be made in order to properly open up the mine to below the 650' level where Lauzon believes there is a good chance to find better grade ore but if no more ore is found there or on the 400' and 500' levels it would merely be a case of salvaging the proven ore above and below the 400' level which probably does not exceed 10,000 tons and would not justify the construction of a mill, the present mill being practically worthless.

If the average ore would not yield a recovery of more than \$8.00 per ton as now seems probable there would be little or no profit in mining and either milling it on the ground or shipping it to the Rom Reed Mill. Therefore, the proposition does not look very attractive.

Nov 1937

2 Carbons

Have had no recent information regarding
the operations or development of the mine which
did appear to hold very attractive possibilities
when I last visited it in the Spring of

'35.

It appears that all the development since
that date has been largely unsatisfactory
& that the grade of production does not
stand up to the sampling in place.

Such ~~has~~ ~~off~~ being the case it is
probable that I should revise my previous

c-o-p-y

Cordes, Arizona. Oct. 20, 1920.

Mr. H.W.Fisher,
Jerome, Arizona.

Dear Mr. Fisher:-

You expressed yourself here to me that you might want to take a working bond on the copper shaft or in fact the entire group here at the Camp. So if you are still in that notion I will give you the most desirable terms.

All the time you would want in which to pay the purchase price. Practically continuous work, a ten percent gross royalty, to be applied on the purchase price.

You will kindly let me know whether or not you are inclined to this proposition.

Hoping to hear from you soon, am

Yours very truly,

(signed) SAM. A. PARKER

P.S.

I inquired about you and found out that you were at Jerome.

Opinion & Consider that the mine is only suitable
 for very small scale operations which would
 have to be confined to the higher grade portions
 of the ~~ore~~ ore-bodies but I would
 not wish to make this statement positive
 without a further inspection for which no
 opportunity has presented itself during the
 past two years.

J. M. Colman

J. M. Colman

J. M. Colman

3- S. B.

ore will exist below the 500 foot level.

(4) You are to give me a Five per cent (5%) non-assessible interest in the Mossback property subject to the terms and conditions of such agreements as may be made with Laurzon and/or with the owners of the property and subject to the repayment to you of all of your expenditures which may be made in acquiring, developing, and exploiting the said mine. My 5% interest is applicable in the event that a sale or lease/by you to other parties and in respect to any net profits which may be derived from such sale or lease.

The continuance of ^{my obligations under} this agreement shall be for a period of not more than thirty (30) days during which it is understood that you will either definitely determine to proceed with the development and operation of the Mossback, in which event the terms of this agreement shall be substantiated in a more formal contract between us, providing for the same considerations as above indicated or otherwise in the event that you decide not to proceed with the development of the Mossback it is understood that both parties shall be released from all obligations hereunder and that I shall be at liberty to deal with other parties in respect to this property.

This letter is written and executed in duplicate and my signature and your signature hereon under the word "accepted" will bind us both to the terms hereof.

Yours very truly,

ACCEPTED:

W. H. Brady

S. H. Colverson

MINING DEED

THIS INDENTURE, Made the 5th day of June, in the year of our Lord, One Thousand Nine Hundred and Thirty²Three, between EMPIRE CONSOLIDATED MINING COMPANY, a Nevada Corporation, the party of the first part, and M. B. LAUZON, of Oatman, Arizona, the party of the second party.

WITNESSETH: That the said party of the first part, for and in consideration of the sum of Ten and no/100 (\$10.00) DOLLARS lawful money of the United States of America, to it in hand paid by the said party of the second part, the receipt whereof is hereby acknowledged, has granted, bargained, sold, remised, released and forever quit-claimed, and by these presents does grant, bargain, sell, remise, release, and forever quit-claim, unto the said party of the second part, and to his heirs and assisns:

The MOSSBACK GROUP of five patented lode mining claims situate in the SAN FRANCISCO MINING DISTRICT, Mohave County, Arizona, and known as:

MOSSBACK:
MOSSBACK EXTENSION:
ALICE B:
GLADYS:
IDA: and
COTTONWOOD SPRINGS MILLSITE AND
WATER RIGHT;

together with all machinery, mine, and mill equipment, improvements, buildings, and fixtures, water and water rights of Cottonwood Springs and Cottonwood Creek, together with all pipes and pipe lines in connection therewith, all of which are particularly described in that certain Mortgage or Trust Deed recorded in Book 5 of Mortgages on Pages 125-142, Records of Mohave County, Arizona, wherein ARIZONA MOSSBACK MINES COMPANY is first party and DOLLAR SAVINGS & TRUST COMPANY is second party, to which reference is made for a more particular description.

Together with all dips, spurs, and angles, and also all the metals, ores, gold and silver-bearing quartz, rock and earth therein; and all the rights, privileges and franchises thereto incident, appendant and appurtenant, or therewith usually had and enjoyed; and also, all and singular the tenements, hereitaments, and appurtenances thereto belonging, or otherwise appertaining, and the