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(C O P Y)

ARTHUR H. GRACEY
Mining Engineer

Tucson, Arizona.
February 20th, 1923.

The following is a brief outline of my experience as a mining engineer and operator -

After passing the matriculation examination for Queen's University, Kingston, Ontario, I went to Arizona and entered the employ of the Phoenix Mining Company, Cave Creek, Arizona, as a mill man. This was in 1888. From 1889 to 1895 I was employed in various capacities in mines and mills in Amador County, California, and operated a custom mill for a time. In 1896 was assistant superintendent for the Southwestern Mining Company at El Dorado Canyon, Lincoln Co., Nevada, where silver-gold ores were mined and milled. In 1897 and 1898 I attended the School of Mines at Queen's University, Kingston, Ontario, taking third and fourth year work and was employed by the Ontario Government to examine and report on mineral areas in various parts of the province. In 1899 I was sent to British Columbia as engineer and manager for the London and B. C. Goldfields Development and Exploration Company and the Oro Mining and Milling Company of which companies Sir George E. Foster, the Finance Minister of Canada, was the head. I remained in British Columbia for 16 years during which time I acted as engineer, manager or president and manager for various companies among them being the Silver Queen Mining Company, The Imperial Development Syndicate, The Eva Gold Mines, Ltd., The Athabasca-Venus Ltd., The Dundee Mines Ltd., and the Nugget Gold Mines, Ltd. Since 1915 I have been examining properties for myself and others in California, Nevada, Arizona, Sonora and Sinaloa, Mexico.

(Signed) A. H. Gracey.

REPORT
ON
GREAT AMERICAN MINE

* * * * *

PROPERTY AND TITLES:

The Great American Mine comprises a group of four contigous patented mineral claims (76 acres) known as Great American, Mineral survey No. 41; Horn Silver, survey No. 42; Sulphurette and Alice, survey No. 1262.

SITUATION AND ACCESSIBILITY:

The mine is situated in the foothills of the Swisshelm Mountains, Cochise County, Arizona, twelve miles east of Webb, a station on a branch of the El Paso and Southwestern R. R., 35 miles north of Douglas. Two good roads connect the mine with Webb and all outside points.

TOPOGRAPHY:

The surrounding country consists of low, rounded, grass covered hills forming the lower northeastern slope of the Swisshelm Mountains. The altitude above sea level is approximately 5000 feet. The main drainage follows a ravine of gentle slope to Whitewater Draw, a part of the Sulphur Spring Valley, 2-½ miles below the mine.

GEOLOGY:

The outstanding feature is the intrusion of a dike of rhyolite porphyry into and through limestone. In the fractured and altered zone along the contact between these formations occurs the ore deposit. The mode of occurance is characteristic of Southern Arizona mineral deposits. The ascending mineral bearing solutions have penetrated the fractures and seams along the contact and made out into the limestone beds replacing large areas of limestone with silica and depositing therewith valuable minerals.

These solutions evidently had a bountiful source, estimated by the area mineralized, and were of deep seated origin.

DISTRICT:

Cochise County comprises one of the most productive mineral

bearing regions of Arizona. The Great American Mine occupies a central position in this region. The famous mining camp of Tombstone, with a production of over $50,000,000 in gold and silver, lies 32 miles due west. Bisbee, the great copper camp, lies 26 miles southwest. The Commonwealth mine at Pierce, with a production of $18,000,000 in gold and silver, lies 18 miles northwest. Dos Cabezas, another gold and silver camp, lies 32 miles north. Courtland and Gleason, both copper camps, lie 18 miles to the west. Douglas, where the large smelter plants of the Phelps-Dodge Corporation and Calument and Arizona Company are situated, is 28 miles south.

ORE DEPOSIT:

The mineralized area, in the center of the property, is over 1000 feet long and from 50 to 100 feet wide. It is well exposed by the present working for a length of 500 feet and a width of 100 feet. The general strike of the deposit is northeast and southwest. The values contained are silver and gold, in the ratio of 3 ounces silver to $1.00 gold, accompanied with some iron pyrites and lead carbonates. The exposed ore is almost entirely oxidized. A portion of the gold is free and some native silver is shown but the latter occurs chiefly in the chloride form. High grade ore is irregularly distributed throughout the deposit and all former operations were confined to mining these leaving the lower grades behind. The latter constitute a large tonnage and are chiefly dealt with in this report. There had evidently been considerable difficulty and expense attached to the mining of the high grade ores owing to their irregular deposition throughout the deposit which necessitated the removal of a large amount of material and careful sorting. There are four large opencuts, or quarries, from 15 to 50 feet in diameter, with faces 10 and 20 feet high on the upper sides, large portions of which constitute ore of payable milling grade. All of the deposit carries some value. The gangue is much altered, highly silicious and hard and is variably colored from the effects of oxidation.

DEVELOPMENT:

The old workings are scattered, covering a surface area 500 feet long and 100 feet wide. A large portion consists of open-cuts, as mentioned, but several tunnels of varying length have been driven from them in a westerly direction. Beginning at the northeast end there is a large opencut 50 feet in diameter with a face 10 to 20 feet high on the upper side. Two tunnels have been driven from this cut one 60 and the other 20 feet in length. These were both driven out into the limestone at right angles to the contact but are in mineralized material throughout their length. Adjoining on the southwest and 20 feet higher is another large cut 100 feet long and from 25 to 40 feet wide with a short tunnel at the southwest end. Southwest of this again there is a narrow cut 60 feet in length forming the entrance to a tunnel 105 feet in length. Above this 22 feet higher and 40 feet distant is a small cut with a 20 foot tunnel. Above this again 100 feet distant and 44 feet higher is another cut 15 feet in diameter and 10 feet deep. Directly south of this latter cut on the same level and 220 feet distant, there is a short tunnel 25 feet in length at the face of which a winze has been sunk to a depth of 60 feet. This is the deepest work on the property. At a depth of 25 feet below the collar of the winze there is a drift northeast 84 feet in length and one to the southwest 45 feet in length. In the northeast drift, at a point 43 feet from the winze, there is a crosscut 12 feet to the east. Still further southwest from this latter work is another tunnel 75 feet long with a winze near the portal.

All the work described, amounting to 325 feet of tunneling, 70 feet of sinking and 130 feet of drifting has been done in the ore deposit and at many points ore of payable milling grade is exposed.

ORE TONNAGE AND VALUE:

On the attached sketch plan of the workings are noted the location, number, width and assay value of the samples taken. Some of the samples represent sections, only, of continuous payable width.

For instance in the deep cut near station 5 two sectional samples were taken, Nos. 15 and 16, representing a total width of 14 feet. The average value of this 14 feet is $10.00 per ton. Above this entrance of the tunnel opposite station 7 a width of 7 feet carries $9.00 per ton, assay No. 19. It was not possible to take continuous and regular samples of this wide band of ore owing to the irregularity of the workings and debris lying on the floors. Assay Nos. 17 and 18 are of samples taken across the upper face of the big cut above the pay ore which had been stripped down to the floor level. A very conservative estimate of the ore which can be quarried or glory-holed from these two exposures, without allowance for continuations in the length or depth, is 2000 tons averaging in value $10.00 per ton. That several times this amount exists there is no doubt. Located here also are two large dumps composed of reject after sorting out of the high grade from the material broken down in these cuts. A sample of the upper portion of the dump at station 5, estimated to represent 500 tons, assayed $29.00 per ton. Another sample representing a larger lower part of the dump assayed $13.20 per ton. Near station 7 there is a dump of from 75 to 100 tons of sorted ore averaging $35.00 per ton. The reject and dump at this point, which is low grade material from the tunnel, is estimated to contain 100 tons averaging $6.50. This being already mined will yield a milling profit.

Between station 3 and the southwest end workings there is an unexplored gap of 120 feet. The surface appearance here, however, is equally prmmising with any other portion of the deposit and the same may be said of the southwest continuations of the outcrop to the confines of the property.

Opposite station one and two the deepest work has been done and the highest and more regular values are found. This underground work is described under development heading. A careful sampling of these drifts and crosscuts, at an approximate depth of 35 feet below the surface, show an average value of $13.75 per ton

over an average sampled width of 11 feet for a length of 150 feet. As the faces, sides and bottoms of these drifts and crosscuts are still in good ore the full width, length or depth of this ore body is not determined. For instance assays Nos. 7 and 8 represent a width of 24 feet averaging $18.60 per ton and the face of the crosscut, represented by assay No. 8, $16.10 per ton, is still in ore. It will be noted also that face of the northeast drift, represented by samples Nos. 10 and 11, averages $19.64 per ton over a width of 10 feet and southwest end of the 20 foot winze, in the same ore body 150 feet distant, carries $12.60 per ton over a width of 7 feet. At neither of these points is the full width of the ore exposed.

A conservative estimate, therefore, of the ore available for easy and cheap mining in this block of ground down to an average depth of 50 feet below the surface, is 10,000 tons averaging in value $13.75 per ton. The reject and dumps at these workings are estimated to contain over 1000 tons three samples of which gave the following $12.80, $9.50 and $17.60 per ton or and average of $13.30 per ton.

A summary of the exposed and available tonnage and the average value show the following:-

| | | | |
|---|---|---|---|
| Northeast workings (end) | 2,000 tons at | $10 - | $20,000 |
| Southeast end workings | 10,000 tons at | $13.75 - | 137,500 |
| Dumps | 2,000 | $13.00 - | 26,000 |
| Total | 14,000 | | $183,500 |

WATER AND FUEL:

There is no developed water at the property but it has been encountered at moderate depths in the neighborhood and it seems certain an ample supply will result from the drilling of a well. There are several shallow wells within a half a mile of the mine belonging to a cattleman which provide all his needs. These are all in the gravel of the main drainage ravine below the mine and the water stands within 15 feet of the surface. South of the mine, about 1½ mile, is an old shaft over 100 feet deep which tapped a large flow. With a total lift of from 150 to 200 feet at this shaft water

would flow by gravity to the Great American mill site. There are therefor two possible sources for water supply; one to drill a well at the mine and the other to arrange for water at the shaft and pipe it to the mine.

There is ample wood for domestic purposes consisting of oak, juniper, and pinion pine. For power purposes crude oil burning engines will be the most economical.

PLANT AND TREATMENT:

The ore under consideration, being oxidized, presents no difficult treatment problems. The plant required would be simple and of standard construction. Laboratory tests indicate that an extraction of 90%, or better, will result with concentration and cyanidation of the tailings. The concentration resulting from the test averaged $162.40 per ton and the ratio of the concentration was 100 tons into 2-1/3 tons. The proportion of recovery was approximately 32% in the concentrates and 68% in the cyanide solutions. Sulfides will probably occur at depth but this combination treatment should still be effective.

Leaching or percolation tests, with ½ of one percent cyanide solution on the ore without concentration, ground to pass 48 mesh, gave an extraction of 85% of total values. This recovery would no doubt be higher in practice with agitation of the pulp so that cyanidation without concentration may prove the most economical treatment for the oxidized ores. Complete tests are now being made and the flow sheet and mill plans worked out.

The amount of capital required to purchase and install the plant, develop or secure water to handle from 35 to 50 tons per day will be approximately $25,000.

CONCLUSIONS:

Based on the results of my examination herein before given and with the suggested plant installed the following estimates

are believed to be conservative:-

| | | | |
|---|---|---|---|
| GROSS VALUE | 14,000 tons at ---------- | $13.10 | -------$183,500 |
| Less 10% loss in tails | | 1.30 | 18,350 |
| NET RECOVERY VALUE | | 11.80 | 165,150 |
| Less 10% royalty (which applies on purchase price) | | 1.18 | 16,515 |
| | | 10.62 | 148,635 |
| LESS COST MINING, MILLING | | 4.00 | 56,000 |
| NET PROFIT | PER TON | $ 6.62 Total | $ 92,635 |

Owing to the fact that the high grade ore has been extracted or "gouged" in the present workings, the values found by sampling of present exposures, as given represent low grade material only. It may, therefore, be reasonably expected that extensions of the ore bodies to be opened by further development will show higher average value as the high grade ore will be included. This probability is strengthened by the fact that the values contained in the reject dumps, left after high grade has been sorted out, checks closely with the average values exposed in the workings.

The inclusion of probable and possible ore would greatly increase the tonnage estimates. In fact it is my belief that at least double the amount of ore above given will be found to exist above the deepest point now developed while the possibilities with further development are very promising. Milling ores of the grade now shown, occuring in such satisfactory widths, and continuing to even moderate depths, would add a long life and much profit to the undertaking.

(Signed) A. H. Gracey

Tucson, Arizona
November 1st, 1922

(Copied by--M.F. 2/17/38)

C

Shipments
Great American

| Date | Dry tons | Gold oz. | Silver oz. | Copper % | Lead % |
|---|---|---|---|---|---|
| Oct. 29, 1912. | 32.0740 | 0.29 | 26.4 | | |
| Dec. 24, 1912 | 30.7200 | 0.38 | 35.9 | | |
| Aug. 21, 1920 | 19.3545 | 0.25 | 35.4 | | |
| Aug. 21, 1920 | 15.9985 | | 7.3 | | 19.8 |
| Sep. 13, 1920 | 37.4395 | 0.31 | 40.9 | | |
| Oct. 5, 1920 | 44.0050 | 0.393 | 36.54 | | |
| Nov. 24, 1920 | 51.0340 | 0.370 | 28.97 | | |
| Jan 3, 1921 | 54.2920 | 0.313 | 22.83 | | |
| Oct. 15, 1925 | 54.9050 | 0.185 | 19.23 | 0.09 | |
| Oct. 15, 1925 | 67.0430 | 0.17 | 16.34 | 0.09 | |
| Oct. 19, 1925 | 44.4810 | 0.18 | 19.10 | 0.08 | |
| Oct. 24, 1925 | 58.3600 | 0.17 | 17.86 | 0.07 | |
| Oct. 24, 1925 | 50.3120 | 0.14 | 15.90 | 0.09 | |
| May 24, 1934 | 38.1050 | 0.37 | 41.0 | 0.05 | |
| Jul. 25, 1934 | 32.7790 | 0.754 | 59.0 | 0.05 | |
| Nov. 6, 1934 | 30.9370 | 0.39 | 29.6 | 0.07 | |
| Feb. 19, 1935 | 41.9365 | 0.305 | 45.4 | 0.03 | |
| Mar. 19, 1935 | 34.4135 | 0.125 | 13.0 | 0.06 | 27.2 |

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REPORT
ON
GREAT AMERICAN MINE

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TOPOGRAPHY:

The surrounding country consists of low, rounded, grass covered hills forming the lower northeastern slope of the Swisshelm Mountains. The altitude above sea level is approximately 5000 feet. The main drainage follows a ravine of gentle slope to Whitewater Draw, a part of the Sulphur Spring Valley, 2-½ miles below the mine.

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The outstanding feature is the intrusion of a dike of rhyolite porphyry into and through limestone. In the fractured and altered zone along the contact between these formations occurs the ore deposit. The mode of occurance is characteristic of Southern Arizona mineral deposits. The ascending mineral bearing solutions have penetrated the fractures and seams along the contact and made out into the limestone beds replacing large areas of limestone with silica and depositing therewith valuable minerals.

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The amount of capital required to purchase and install the plant, develop or secure water to handle from 35 to 50 tons per day will be approximately $25,000.

CONCLUSIONS:

Based on the results of my examination herein before given and with the suggested plant installed the following estimates

are believed to be conservative:-

| | | |
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(Signed) A. H. Gracey

Tucson, Arizona
November 1st, 1922

(Copied by--M.F. 2/17/38)

GEORGE M. COLVOCORESSES
MINING AND METALLURGICAL ENGINEER
1102 LUHRS TOWER
PHOENIX, ARIZONA

Office Copy

February 18th, 1938

Messrs. E. A. Stanford & Fred Vossburg
Phoenix, Arizona

Gentlemen:

Following your request and as per arrangements made on the 12th instant, I have examined property of the Alpine Mining Co., known as the Great American Mine and beg to submit the following report.

The property held under lease and option from the Swisshelm Mining Co. consists of 4 patented mining claims and also 5 unpatented claims which do not appear to be in the same vicinity. The mine is located on the Great American Patented Claim which lies in the northeast section of the Swisshelm Mountains, Cochise County, Arizona at an elevation of 5000'. Complete details regarding the location, geology, ore occurrence and past history are given in the reports of Mr. Gracey and Miles Carpenter of which I understand you have copies so that I shall not repeat their statements except as references will be made to the more essential portions in the balance of this report.

Briefly, the ore deposit is a typical replacement in limestone with iron stained quartz forming pockets in a zone of silicification along a main fracture and on the bedding planes of the limestone at or near to the contact with an intrusive porphyry dyke. The ore carries values in gold and silver and in places some lead as carbonate, sulphate and sulphide.

Portions of this deposit have been developed in an erratic manner for the past twenty-five years and down to a depth of about 120 feet from the outcrop. I was furnished with a record of shipments up to April 1935 which may not be complete but recorded that 738 tons of ore had been shipped which, in round figures, had an average value of about $10 in gold at present price and about $15 in silver at present price, Presumably all this ore had been hand sorted but only two of these shipments contained any substantial quantity of lead.

I could find no authority for statements made by others, that from 4000 to 7000 tons of high grade ore had been produced and certainly a careful inspection of the mine workings did not tend to confirm any such record.

When the Alpine Mining Company took hold of this mine in 1935 or 1936, I understand that they were lead to believe that there was a considerable tonnage of high grade ore - $20 or better per ton - and a much larger quantity of $13.00 milling ore developed or indicated and that thru the construction and operation of a flotation mill ~~you~~ they might expect to be able to produce and treat at least 50 tons of mill ore per day with a good margin of profit.

In line with this plan of procedure, the Company put up very suitable camp buildings and installed mining and milling equipment and eventually started production in September 1937 since which date they have produced and shipped, according to the records given me, a total of 44 tons of concentrates from which the net returns have been $8,765.28 and 119 tons of crude ore from which the net returns were $717.14. Another lot of about 5 tons of concen-

trates with a value of perhaps $1500 was shipped out by truck on the evening of February 15th, 1938.

The total returns have therefore been about $11,000 but during this period it appears that the operating expenses have considerably exceeded this figure so that the work has been carried on with a substantial loss and no progress has been made toward the repayment of the capital investment which I am told was in excess of $40,000. I was informed that a considerable amount of money is also due on royalty to the owners, for payment on account of some of the machinery and to certain associates or employees.

An analysis of the records and facts as I observed them leads me to conclude that the condition and value of the mine was not as represented at the time that you took it over in that there was not and had never been any substantial tonnage of ore developed or indicated and there was really no justification for building a mill which should never have been erected unless and until a large amount of further exploration and development had first been completed and only then provided this work had definitely proven the existence of a substantial tonnage of ore of sufficient grade to mine and mill with profit. The subsequent development work on the upper levels has been extremely limited and has yielded no important results while the long haulage adit driven about 120 feet below the outcrop failed to find pay ore where it intersected the main fracture and was not carried as a cross-cut far enough to intersect the projection of the bedding planes. The showings on this level must be admitted to be extremely discouraging and argue against the persistence of the ore in depth but they are by no means

conclusive and if any further exploration is to be done in the mine, I should strongly recommend that this be the first point of attack which I understand is also the advice of Mr. Snow.

The operation of this mine was undertaken on the assumption that $10.00 ore would be produced ~~and~~ with profit, but as a matter of fact it is now clear that $10.00 ore does not begin to pay under present conditions. The somewhat oxidized gold-silver-lead ore does not lend itself readily to concentration and while I could not obtain any complete metallurgical records, it appears that the mill recovery has averaged about 70% of gold-silver values while only two of the ten lots of concentrates have contained sufficient lead to be paid for by the smelter. I believe that some improvement in these results could be secured thru the installation of a new and more efficient flotation machine and an improved type of jig between the ball-mill and the classifier, but even after these alterations had been completed, I greatly doubt if the present mill would make better than 80% recovery by flotation. The addition of a cyanide plant would probably add somewhat to this recovery, but the expense would be substantial and such an operation would almost certainly involve the Alpine Co. in difficulties with the neighboring ranches. All the above was forecast by the tests of the ore made by the Southwestern Engineering Co., whose report does not seem to have been given due consideration.

Now assume that the mill is treating an ore with a gross value of $10.00 per ton and recovers $7.00 per ton in concentrates. The smelter does not pay ~~for~~ the full Government price for the gold and silver contained but actually pays a little over 90%

of that value so that the returns from the smelter would represent only $6.30 per ton and from this must be deducted a royalty of 10% to the owners of the property reducing the return by another 63¢. From the $5.67 remaining there must be deducted the smelter toll, sampling charges etc., and the cost of trucking to El Paso which (assuming a ratio of concentration of 30 to 1) together amount to approximately 50¢ per ton of ore leaving a net return of only $5.17 per ton of ore to cover the cost of development, mining, milling and overhead charges.

While it does not appear that any accurate cost records have been kept in the past, I gathered sufficient data to enable me to state very positively that the working costs have been substantially in excess of this figure even tho the management has made and is making every possible effort to economize but in doing so has of necessity slighted the proper development in the mine and also failed to keep the machinery in first class operating condition. I could not obtain any complete record of the tonnage treated to date nor of its value but it is very certain that the Company have not been able to make $10 ore pay in the past and it is unlikely that any substantial margin of profit can be earned on such material in the future. Personally, I feel that the minimum average value of pay ore should be taken at $12.00 per ton and even this grade will not be profitable and serve to repay its pro-rata share of the capital investment unless there is a substantially improvement in the underground conditions of the mine and the equipment of the mill.

Comparing the advantage of selective mining, sorting and

shipping crude ore of higher grade with the milling of the average grade and shipment of the resulting concentrates, I should say that it would be poor policy to follow the former procedure except at points where you can obtain a $25.00 product without an undue sorting expense.

The limitations of my examination did not permit any thorough sampling of the various ore exposures most of which at best represent only a few tons of material but according to the information given me by Mr. Snow and his son and my own examination of the workings and investigation of records and old assay plans, there seems to be ~~practically no tonnage~~ very little of this higher grade ore available for mining and now that the old stope-filling is practically exhausted there is only a very limited tonnage of $12.00 or even $10.00 ore in reserve for future operations.

There are three or four places in the mine where further exploration or development seems justified and might lead to the discovery of $12.00 ore but in my personal opinion the chances of finding any substantial quantity of this material are none too good. Meantime, it seems apparent that any continuation of the present policy of operating will only lead to further financial loss and therefore, I conclude that the Alpine Mining Co. should promptly decide to follow one of the two following alternatives:

(1) Shut down the mine and mill entirely and liquidate the company with such salvage of equipment and plant as may be possible, or

(2) Shut down the mill temporarily and concentrate on the development of new ore, particularly exploring the main fissure from the lower (haulage) level and the ore showing in the north and

south stopes on the sub-level. For this purpose a minimum of $5000,00 should be provided in addition to any sums that may be required to meet current or past obligations.

If the expenditure of this exploration fund should result in proving up a satisfactory tonnage of pay ore ($12.00 or better in value) then I should advise that the Company improve the conditions in its mill thru the replacement of the present flotation-machine and the installation of a larger jig by which changes I think that they might expect to realize an 80% recovery of values. I should also advise that it deepen and properly equip the main shaft and install a hoist so that the ore could be brought up to the surface at this point and trammed the short distance to the mill, thus cutting out expensive re-handling underground and the truck haul from the lower adit.

These improvements will probably cost an additional $5000.00 and further I most strongly recommend that the Company should provide a working capital of at least $5000.00 and preferably $10,000.00 which would permit the mine management to constantly keep the development ahead of production and also to save on transportation and smelter charges through shipping the concentrates in car load lots to Douglas or El Paso.

If future exploration and development should succeed in proving up a substantial tonnage of ore and economies resulting from changes in mining and milling practice should come up to my expectations, then I estimate that it would be possible to mine and mill a $10.00 grade of ore with a net return of $6.75 per ton in

place of $5.17 and at a total cost of $5.50. This would leave a profit of $1.25 per ton which, while much better than a loss, is not adequate from a mining standpoint and these calculations tend to confirm my opinion that your only chance of making this property valuable lies in the possibility of finding substantial tonnages that will run $12.00 or better.

The two samples which I took along the main fissure in the haulage adit assayed only $1.18 and $0.67 per ton in gold and silver. This is simply waste and indicates that no ore shoot has yet been found on this level. One sample taken in the sub-level was from a very nice showing of ore 5' in width along a bedding plane in the back of the south stope. This sample ran $7.00 in gold, 20.4 oz. in silver and carried some lead thus having a value of over $20.00 per ton but it did not represent any large tonnage and because of its location this ore could only be mined at the rate of a few tons per day.

If my second alternative plan should be adopted a certain quantity of this class of material could be mined in both the south and north stopes while the exploration was in progress and thus provide some reserve of broken material, which, depending on its average grade, could either be shipped crude or used to sweeten up the mill feed if operations should be resumed.

CONCLUSIONS:

The history of this operation (as is often the case) has shown a wide divergence between promise and performance and has been most unfortunate for the investors who were mislead by optomistic reportswhich do not appear to have been justified by the facts. It is my opinion that the present manager, Mr. W. M.

Snow and his assistants have done everything possible to meet this condition and deserve a great deal of credit for the manner in which they have held on under very adverse conditions, but now with the old-mine-fills practically exhausted, and with little pay ore in sight; with both mining and milling equipment requiring extensive repairs, with a shortage of absolutely essential supplies such as dynamite and grinding balls and facing other difficulties caused by lack of funds; it is rapidly becoming impossible for them to continue longer on the present basis and it will not be to the advantage of the stockholders of the company to have them attempt to do so.

As to the possible future value of this mine, it is hard to form any definite opinion;- The present showing is not attractive and the past record is distinctly bad. Deposits of this nature are notoriously pockety and neither on these claims nor in their vicinity has any paying mine ever been developed altho attempts to do so have been made at intervals for the past 30 years or more and in the aggregate a great deal of money has been spent to no avail.

I should not feel justified in recommending this mine as a new investment to anyone but in the case of the Alpine Co. it appears that their stockholders are facing a choice between the certainty of sustaining a loss of practically all of their past investment or of risking an additional sum of money on the chance that this further outlay may serve to reduce the present loss or possibly even to convert that loss into a profit.

Under these conditions, it seems to me that the stock-

holders of the Alpine Co., (if able and willing to do so) would be well advised to make ~~this~~ a last effort to save the company, provided, but only provided, that they clearly understand that any further money which they may put up will be for a mining-gamble pure and simple and that the chances of failure are probably greater than the chances of success.

If the Alpine Mining Company should decide to follow this conditional recommendation they must arrange to pay up or fund the existing obligations of the Company and provide $5000.00 for exploration and development. This work,-if properly guided,- should give pretty conclusive information as to the true value of the mine.

If the results are unfavorable the ultimate loss to the stockholders will probably be increased to the extent of the new outlay less the net value of any pay-ore that may be mined and shipped.

If the results are favorable, then it seems to me equally essential that a further sum of $10,000.00 to $15,000.00 should be available for the improvement of mining and milling equipment and to put the mine itself in a condition to be worked with efficiency and economy.

In closing I desire to express my thanks to Mr. Snow for his courtesy and most valuable assistance in this investigation, my sincere regret that its results were not more encouraging and my earnest hope that the Alpine Co. may yet be able to solve its problem in a satisfactory manner.

Yours very truly,

G. M. Colvocoresses

GMC:mf

Freehold  Total debt £7000 including Ore Sec & Lodged Cash &
Acc. exact amt to come. Value fd ex for Summ. 1700 = Yellow to pass
Lease on ale equip £800. Mach. - all fixed ex
Cam truck gng and S-t @ 3.00. = 1500 & hand
Cam tube & exp £900. & loan £600 for tube, powder etc.
Total obligations £7000 as for 6000
Co to find about £40000. & rets to come 15000 for ship x
hand for amount exp during syst.
Any debentures & Investment Insurance Co. & / Affirm Co to
secure & get to produce. Affirm Co for 10% royalty £ x 5% & Cam
& 5% & Lyndale Co. & ag to blend on royalties.
No open fund - mailable. & shd be powder, balls, fixed etc

Report by Co H Feby, 1923 (based on 20,00 tons & 1,00 ag. fixed and 2 months advance

| | | |
|---|---|---|
| Est 14000 t f.p. @ 13.10 (old price = | 183500 | 183500 |
| Less than 10% | 18350 | |
| 10% royalty on recovery. | 16515 | |
| Ins & Welfare @ 4.00 | 56000 | |
| Exp. exp. | 25000 | |
| | 115865 | 115865 |
| | | 67635 |

Shaft.
Lloyds Bank has
any participation in
this est of tonnage. Ti -
Loss probably

Est Report for above open
+ a list of probable & possible ore.
Remarked Cyanide treatment

Record of Shipments
1912 & 1935: inc 737 t ore, ave val close & 35/- f.t. + Exp.

Days by Mine Captain Dec 36
Exp. Est 20000 t for this supply @ 13.00 f.t.
Rem Cyanide & fix work 90% ore
Title produced

2/13.38

Alpine Mining Co. an Ely Corp
Elpaso, Cmp. Nr. Mt. Snow. - Ingr.

3/28 cl.

how? V 1 hr & made 6 frg a found shown ? corp
an by other shaw

Lem & finding added corp
& how V & spot

Finish older shown & Lem finger shown
& Cochem. R.C. - Indstr, Limit - Shale

Elev 7 corp in 5000', finish site & g Lem bldgs
& work > down for how
Hall 7 Plan finish spot & Com - Ly & Light on track Emmell
until light 32 the Lem an

Comparative Costs 10 2 simple tabs & Survey, Comm & other Stockdale Ore fault finished etc

7.462

| Mg cost of Mg Costs | Grade 10000 Tons per shift Equip for Ld. Steps. | Grade 25000 If mine deals for 50 T product & has Skips for me. |
|---|---|---|
| | Ore found Cross by 16 t f | |
| Blend. | 1.00 | 1.00 | 0.50 |
| Stoping (only) | 2.00 | 2.00 | 1.50 |
| Tramg trucks | 1.50 | 1.50 | 0.50 |
| Milling | 2.00 | 2.00 | 1.50 |
| Overhead & Expenses etc | 2.50 | 2.50 | 1.50 |
| | 9.00 | 9.00 | 5.50 |
| Milly recov. Royalty on 10.00 | 70% = 7.00 | | |
| | 70 | | |

Ld. 35 / 32.31825

192358

31 5

81

70

118

105

132

105

275

280

Exs. 7.7 % (Avg.

Cy. 65 / 5890

19

585

95

62

190

570

5890

From rate of ore deducted for mill losses 20%

From value of ore deducted for mill loss of 30%
" 9% of 70% of rate

By Royalty 10%

Return must pay for mining, milling, & trucking & overhead

5.50 + 50 = 6.00

Gr 10.00

From mine Field deductions 9%

On 10.00

3.00

.63

3.63 bal. 6.37

.64 bal. 5.63

Farm all attended.

Live cedgrs

| | | |
|---|---|---|
| (1) | 869.24 | 399.55 |
| (3) | 1304.75 | 635.29 |
| 4 | 625.25 | 256.77 |
| 5 | 1548.75 | 775.06 |
| 6 | 726.27 | 348.24 |
| 7 | 702.42 | 312.47 |
| 8 | 525.98 | 236.07 |
| 9 | 754.12 | 340.10 |
| 10 | 806.35 | 359.27 |
| 12 | 902.15 | 226.55 |
| | 8765.28 | 3919.36 |
| | | 8765.28 |
| | Cow | 12684.64 |

44t cow & yielded 12684.64
2889.20
44 / 12684
88
388
352
364
352
120

Eq. 288 lb. tow

44t @ 30-1
30
1320 / 12684
1188

1 Eq + p

| | | |
|---|---|---|
| 2 | 3344.14 | 147.91 |
| 11 | 3838.40 | 675.1 |
| | 7175.54 | 215.42 |
| | | 7175.54 |
| | | 60 / 9329.96 |
| | | 155.55 |

60t @ yielded 155.55 lb tow
less truck

? Cow treated in mill & produce same loss tow.

? Mill started & operate by.
Start ship under 2/8.88

? Mining Co bound by royalty of 10% on ~~selected~~ return a gross ind

8765.28
1500
717
10982

16/8 / 12/8

8.00
1.3

If this dr should prop 10.00 f. tn + costs total cost could be reduced to 6.00 f. tn. & rem inf to 80%

Then 8,00 rd r shld be red 16% f cmette dedt & rep. & r = 1.30 leng 6.70 rete = prfl f 70 ct. X-h reff to tube / prop attracte.

In my proj. i r h to have ad land 12.00 f. tn ct prod/min & profit / mer limit w 15.

? (1) Is there any chan f making any profit f cotte pn. cr at present. Can - no.

(2) Is 0 any ch f inj / gd to 14:00 x r h reg to make prop imp f prf on prod tm. , Can - no.

(3) I o any chan f proj up reff 12.00 i & profit / limit f mer reg a dest x r tub / Cann cotte fm. C. Yes. & subtitute

(4) Is 5 chan mutter tube as a Commtn inj limit C. - no

(5) " " " " " as a inj gamble. C. - ?

Rem. dep / rules billy to gamble at limit $25,000 in chan f prof in i, no chan f duty + dep 2 f. i

# Some typical heads & tails.

| | Trans. Cards. | Inches. | Jan. Low. Am. | Jan. Low. Inches. | Jan. Klein. Tons | Jan. Klein. Inches. | Jan. Tons | Jan. Inches. | Feb. Tons | Feb. Inches. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | | |
| 2 | | | | | | | | | | |
| 3 | 32 | 16.55 | | | | | | | | |
| 4 | | | | | | | | | | |
| 5 | 27 | 10 52 | | | | | | | | |
| 6 | | | | | | | | | | |
| 7 | 29 | 11 56 | | | | | | | | |
| 8 | | | | | | | | | | |
| 9 | | | | | | | | | | |
| 10 | | | | | | | | | | |
| 11 | | | | | | | | | | |
| 12 | 22 | 11 58 | | | | | | | | |
| 13 | 14 | 10 99 | | | | | | | | |
| 14 | | | | | | | | | | |
| 15 | 35 | 5 78 | | | | | | | | |
| 16 | | | | | | | | | | |
| 17 | 51 | 4 24 | | | | | | | | |
| 18 | | | | | | | | | | |
| 19 | 52 | 3 50 | | | | | | | | |
| 20 | | | | | | | | | | |
| 21 | 46 | 7 18 | | | | | | | | |
| 22 | 18 | 8 25 | | | | | | | | |
| 23 | 24 | 8 25 | | | | | | | | |
| 24 | | | | | | | | | | |
| 25 | 27 | 5 47 | | | | | | | | |
| 26 | 25 | 5 47 | | | | | | | | |
| 27 | 22 | | | | | | | | | |
| 28 | 23 | | | | | | | | | |
| 29 | 24 | | | | | | | | | |
| 30 | 20 | | | | | | | | | |
| 31 | 21 | | | | | | | | | |
| Tot | 512 | | | | | | | | | |

Tails on to 1.40

Ave kg. .20

Aj. 1.69–3.93 av. 2.50

2.70

Ave Int. 8,50

Run 70%

131

4.5 / 140

135

50

Jan Wind & Wiled 250 t, Jan 1 to 28. Wiled 140 tons
Feed. 4.5 t, Ratio 30 & 1.4 Eggs

Feb 1 to 14 th. (14 days) Feed 164 t. & Feed
5 t of Corn x r go 30 ov.

Ore shows some jarosite, ~~limonite~~ $SO_3$ & Fe oxysulphate + portable + $H_2O$ Sometimes carries Cu & Pb.

The general geology as per reports by Tracey & Carpenter had note particularly that the mineralized area lies along a fissure in the limestone which varies from a crack up to 10' & the ore makes and as replacement pockets along the bedding planes in the lime & also to some extent along the contact with these porphyry (rhyolite) dykes. The size, shape & value of these pockets is variable and some of them appear to be large. They all contain quartz generally brecciated which has replaced the limestone some of which is so highly silicified as to be almost pure silica, some zinc oxide & a little zinc sulphide & often lead carbonate, occasionally a little galena.

From my very brief investigation I hardly feel qualified to dispute the opinion of several engineers that these solutions came from depth & that the good bodies of high grade ore will be found below the permanent water level (depth unknown) but I could see no evidence pointing in that direction & am much inclined to think that the deposits are from surface solutions & that no large bodies will be found below altho there is room for opinion & if it might require complete opinion.

More important to my mind is the history of the property which was apparently discovered in the 70's worked in a very small way here & there by surface adits intermittently up to 1908 then developed more extensively until 1919 when it was the site of a $30,000 stock co. promotion. Operated again in 1924 & 5 & recently worked by Yuma Co

Leaving all I said The results of all of these efforts have entirely failed to make a mine or to produce any with any substantial tonnage I we decided a year indicated as to make any certain production of for me & aside from perhaps a few small deposits of 40 or 50 oz, (which was probably easily mined) it seems apparent that all of the gold quartzes, like Goodwin have usually had many in the ventures.

These small surface reflected deposits in limestone are nothing such as Leadville, sometimes the fissures are as rich as any, — as at Kokomo, Min & Gem of the Aspen in Colorado & have produced as much as several hundred dollars per ton, while I came upon a fine fissure in the quartzite hill, above or in the core the hill of the fissure will carry 20 - 30,00 oz & the lower gold natural gold bullion of the ore is as high as 1/3 and when I finally struck and it is wide & seems thin above & it is very evident that this property has been appealed to. any of the large & prompt capitalists who have operated or are operating in its vicinity & to whom its existence must have been well known for the past 30 years.

(e)

6.30
.63
5.67

Lumber for 30 ft wall of dry,

| | | |
|---|---|---|
| Miner | 3 hours | = 16.50 |
| | 1 blacksmith | 5.00 |
| | 1 Laborer | 4.00 |
| | 2 smelters | 8.00 |
| | 2 lunch | 8.00 |
| | | 41.50 |

| | | |
|---|---|---|
| smelter | 1 furnace | 6.00 |
| | 2 smelters | 10.00 |
| | 1 engr. | 5.00 |
| | 1 helper | 4.00 |
| | 1 dryer | 4.00 |
| | | 29.00 |

| | | |
|---|---|---|
| | | 29.00 |
| furnace (2) | | 7.00 |
| assayer | | 5.00 |
| overhead | | 14.00 |
| | | 26.00 |
| | | 96.50 |
| Mud in clerk. | | 4.50 |
| | | 101.00 |

Call 100 ft dry ft Cu.
+ 12% for mine & time = 112.00

Power, fuel, supports etc. 50 (?)
162

Say 5.50 ft. ton.

J. T. Strickdale in Mule 36(?) hands hog of upon showing + assay & says that the known past production of the mine is 14,700 t val ≈ 65,800 & that / est fut production is 6200 val ≈ 123,800, — [wonder where he gets his figures]

Estimates area of copping: 131,700' by 80 = 10,000 t p. 8 f depth [by 2]

Strickdale estimates a large tonnage of ore / deeps & upon run 15-25 p ton S. - public & / only deeps & known & tried & ships & & c reported OK by C.g. engrd 7,000 p t

(d)

Alternate Programs.

(1) Close project entirely with such salvage as may be possible & with no additional expense

(2) Close down mill pay off debts & concentrate on the exploration work & develop ore & put the mine in shape for a production of at least 1000 t per month which is all that present water supply will permit. Put up fund to pay debts by $500,, for upper 500, & work on development adding fracture by 200 & in both stope & drift stope. Expl. of this $500 may result in proving up an indicated ore of 10-12000 t of ore & if this will average 12,00 p. ton things will look a lot better. Should then decision shift & permit work on & before next mill & take interest in mill which altogether will cost another 15000 & at least ore 10,000 should be provided for working capital & to put mine & proper shape for continuous production. Can your supply of ore & labor developed in advance. Margin on 1,00 ton will always handle ore 1,00 & 1,50 of ore so & 0-00 waste & dead in f.s. grade. On 12,00 ton margin $3,50 & on 15,00 tons 5,00 so & of each the past mine of 40 & new mine of 20. total 60,000 tons mine & ore from 6000 t of 10,00 ton or 24000 t of 12 or 12000 t of 15, Chem are all against it. & a gamble.

(over)

# THE GREAT AMERICAN MINE

By

Miles M. Carpenter, E. M.

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FOREWORD:

This report is made to condense and bring up to date a mass of information dating back over fifty years on the Great American Mine. It is based on five full days study of the property during a period of three months, together with data from reports by A. H. Gracey and C. L. Orem, both of whom are mining engineers of recognized standing, personally known to the writer. Quotations from these reports will be properly credited.

PROPERTY AND TITLES:

The Great American Mine group comprises four contiguous patented mining claims, Great American, M S No. 41, Horn Silver M S No. 42, Sulphurette and Alice, No. 1262, total area 76 acres.

SITUATION:

The property is located on the north-east slope of the Swisshelm Mountains, Cochise County, Arizona. It is reached over 12 miles of improved road and 3 miles of good natural road leading off State Highway No. 81, now being hard surfaced. This highway extends from Douglas, the smelter town of the Phelps Dodge Corporation, to Cochise, a station on the main line of the Southern Pacific railroad. The distance to Douglas is 41 miles, 15 miles over dirt road and 26 miles over highway. The freight rate from Douglas to El Paso, location of the lead smelter of the A. S. & R. Company, is $2.00 per ton on ore valued at $15.00 to $20.00 and $5.40 on ore or concentrate of $100 to $150 valuation. The smelter at Douglas is not handling lead ores at this time.

TOPOGRAPHY:

A small hill rising a couple hundred feet above the lower tunnel level is the site of the mine. This hill has a medium slope

to the north and northeast where the country consists of low, rounded grass covered hills flanked by a broad shallow arroyo with a branch of Sulphur Springs Valley beyond. On the west the ground rises rather abruptly. The altitude is about 5,000 feet above sea level.

GEOLOGY:

"The outstanding feature is the intrusion of a dike of rhyolite porphyry into and through limestone. In the fractured and altered zone along the contact between these formations occurs the ore deposit. The mode of occurrance is characteristic of Southern Arizona mineral deposits. The ascending mineral bearing solutions have penetrated the fractures and seams along the contact and made out into the limestone beds replacing large areas of the limestones with silica and depositing therewith valuable minerals. These solutions evidently had a bountiful source, estimated by the areas mineralized." - Gracey (1922)

"In the altered and fractured zones, along the contact of the porphyry and limestone which compose the mineralized area of this deposit, the mineralizing solutions have replaced certain strata in the limestone more extensively than others and has followed the fractures and seams. This is shown by the present tunnels. Those beds which have been more susceptiable to replacement by reason of their favorable chemical composition can be cheaply developed by cross-cuts and inclined raises at right angles to the bedding planes. Some of these are extensively mineralized for considerable distances beyond the extent of the present workings. It is quite likely that similar beds will be encountered with deeper work as geological sections of the district show several hundred feet of favorable Carboniferous beds below these levels." - Orem (1923)

The present stage of development does not make clear the relation of the porphyry to the ore bodies. The largest body of porphyry visable lies east of the zone, and the contact with the

limestone, where exposed, shows feeble mineralization and no ore of commercial grade. However, at the south-west end workings is a tongue of intensely altered porphyry 4 ft. to 12 ft. in width that is exposed for a distance of about 100 feet in a southerly direction. At the 75 foot tunnel this appears as the foot-wall of a true contact vein dipping steeply eastward with ore of good grade and width making into the limestone. This porphyry also appears in the southerly end of the 40 foot level south. By far the most important ore bodies so far opened are in fracture zones in the silicified limestone, some distance from any known porphyry.

ORE DEPOSIT:

The outcrop covers the apex of the small hill described in a preceding paragraph on topography. It is a completely silicified limestone exceedingly hard and wear resisting. A common feature of the outcrop is brecciation which has been followed by intense silicification, nodules of chert being plentiful.

"The mineralized area, in the center of the property is well over 1,000 feet long and from 50 to 100 feet wide. It is well exposed by the present workings for a length of 500 feet and a width of 100 feet. The general strike of the deposit is NE-SW. The values contained are silver and gold in the ratio of 3 ounces silver to .05 ounces gold, accompanied by some iron pyrite and lead carbonates. The exposed ore is almost entirely oxidized. A portion of the gold is free and some native silver is shown but the latter occurs chiefly in the chloride form. High grade ore is irregularly distributed throughout the deposit and all former operations were confined to mining these, leaving the lower grades behind. All of the deposit carries some value. The gangue is much altered, highly siliceous and hard and is variably colored from the effects of oxidation." - Gracey (1922).

"The present workings do not determine the lateral extent of the ore body nor the distance along the strike. The mineralized area southwest beyond the present workings is well altered and silicified the full length of the property. The south-west drift, on the 40 foot level in the 60 foot winze, shows fair values over 13 feet and this should prove favorable ground for future development along the strike." - Orem (1923)

DEVELOPMENT:

"The old workings are scattered covering a surface area 500 feet long and 100 feet wide. A large portion consists of open cuts, as mentioned, but several tunnels of varying length have been driven from them in a westerly direction. Beginning at the northeast end there is a large open cut 50 feet in diameter with a face 10 to 20 feet high on the upper side. Two tunnels have been driven from this cut, one 60 and the other 20 feet in elngth. These were both driven out into the limestone at right angles to the contact but are in mineralized material throughout their length. Adjoining on the south-west and 20 feet higher is another large cut 100 feet long and from 25 to 40 feet wide with a short tunnel at the south-west end. South-west of this again there is a narrow cut 60 feet in length forming the entrance to a tunnel 105 feet in length. Above this 22 feet higher and 40 feet distant is a small cut with a 20 foot tunnel. Above this again, 100 feet distant and 44 feet higher is another cut 15 feet in diameter and 10 feet deep. Directly south of this latter cut on the same level and 220 feet distant, there is a short tunnel 25 feet in length at the face of which a winze has been sunk to a depth of 60 feet. This is the deepest work on the property. At a depth of 25 feet below the collar of the winze there is a drift north-east 84 feet in length and one to the south-west 45 feet in length. In the north-east drift, at a point 43 feet from teh winze, there is a crosscut 12 feet to the east. Still further south-west from this latter work there is a tunnel 75 feet long with a winze near the portal."

"All the work described, amounting to 325 feet of tunneling, 70 feet of sinking and 130 feet of drifting, has been done in the ore deposit and at many points ore of payable milling grade is exposed." - Gracey (1922)

The foregoing detailed description of the old workings, made in 1922, is applicable today as only a few hundred tons of ore were gouged from the south-west end workings and shipped during the interim. The noticeable changes are the widening of the drifts on the 40 foot level, the stoping of a car load of lead ore from the lower level of the 60 foot winze and stoping a few car loads from the last mentioned 75 foot tunnel.

New development was begun in the winter of 1935 when a tunnel was started to follow roughly the southerly contact, pass beneath the old workings and explore the deposit along the strike at this level. Of course, it is planned to connect by raises to the old workings for ventilation and the economical mining of the ore above. This tunnel is now in about 350 feet, with two miners working in the face.

At the present stage of development, it is difficult to figure with exactness either the tonnage or the average value. It is the type of deposit most generally underestimated by conservative engineers.

ORE TONNAGE AND VALUE:

Following laborious measurements and sampling by Gracey, the maps of which are now missing, he concludes:

"A conservative estimate, therefore, of the ore available for easy and cheap mining in this block of ground (south-west workings) down to an average depth of 50 feet below the surface is 10,000 tons, averaging in value $13.75 per ton. The reject dumps at these workings contain over 1,000 tons, estimate, three samples of which gave the following: $12.80, $9.15 and $17.60 per ton, or an average of $13.30 per ton."

"A summary of the exposed and available tonnage and the average value show the following:

| | | | | |
|---|---|---|---|---|
| North-east end workings | 2,000 | tons at | $10.00 | $20,000.00 |
| South-west end workings | 10,000 | " " | 13.75 | 137,500.00 |
| Dumps | 2,000 | " " | 13.00 | 26,000.00 |
| | 14,000 | | | $183,500.00 " |

"The inclusion of probable and possible ore would greatly increase the tonnage estimates. In fact it is my belief that at least double the amount of ore given above will be found to exist above the deepest point now developed while the possibilities with further development are very promising. Milling ores of the grade now shown, occuring in such satisfactory width, and continuing to even moderate depths, would add a long life and much profit to the undertaking." --Gracey (1922)

The above figures are based on $20.00 per ounce for gold and $1.00 per ounce for silver. At the present price of $35.00 and $0.77 respectively, the value is a few cents per ton higher.

In the 40 ft. level stope of the south-west workings, which represented the principal part of the 10,000 tons of exposed ore, the original sampling may be summarized as follows:

| | | | | |
|---|---|---|---|---|
| By Gracey | 8 samples, | total width | 69 ft, | average value $14.36 |
| By Orem | 2 samples, | total width | 58 ft, | average value $17.85 |
| | 10 samples, | total width | 127 ft, | average value $15.31 |

Subsequent to the samplings by Gracey and Orem, the property was operated by leasers who shipped 453 tons of ore taken mainly from the south-west ore bodies that averaged Gold 0.2523 oz., Silver 26.6 oz, value in gold $8.83, silver $20.48, total $29.31.

The ore bodies of the south-west end workings are described below and the samples from the several blocks averaged as follows:

| Block | Location | Av Ore Width |
|---|---|---|
| "A" | 75-ft. shaft, upper 15 feet and 25 feet drift N.E. | 2 ft. |
| "B" | 75-ft. shaft, 40 feet level stope, length 45' S.W. | 15 ft. |
| "C" | 75-ft. shaft, 40 ft. level stope, length 90' N.E. | 15 ft. |
| "D" | 75-ft. shaft, lower drifts in lead area, length 70'. | 4 ft. |
| "E" | 75-ft. drift, contact vein on dump level, dir S.W. | 6 ft. |

* Includes composite of 7-6 ft cuts.

| Block | Number Samples | Average Length | Gold Oz.-Ton | Silver Oz.-Ton | Value Per ton | |
|---|---|---|---|---|---|---|
| "A" | 3 | 2.0 ft | 0.466 | 18.98 | $30.94 | |
| "B" | 8 | 11.66 ft | 0.145 | 10.79 | 13.22 | |
| "C" | 20 | 9.1 ft | 0.181 | 13.29 | 16.54 | |
| "D" | 6 | 4.0 ft | 0.116 | 13.12 | 19.38 | (Includes lead) |
| "E" | 5 | 6.0 ft | 0.20 | 10.82 | 16.25 | |
| Average | 42 | 8.0 ft | 0.173 | 12.56 | 15.72 | (Without lead) |

The tonnage at present available scaled downward to compensate for incomplete sampling is estimated in round numbers at 20,000 tons, of $13.00 per ton average value, distributed:

| | | | |
|---|---|---|---|
| North-east end workings | 2,000 tons @ | $10.00 | $20,000 |
| South-west end workings | 15,000 tons @ | 14.00 | 210,000 |
| Dumps | 3,000 tons @ | 10.00 | 30,000 |
| | 20,000 tons | | $260,000 |

A comparison of this estimate with that of Gracey made 14 years previously shows the character of this deposit. Leasers, without doing any systematic development, gutted out at least 453 tons of ore that averaged $29.31 per ton, and the mine then showed more tonnage and slightly higher grade.

ORE TESTS AND TREATMENT:

"The ore under consideration, being oxidized, presents no difficult treatment problems. The plant required would be simple and of standard construction. Laboratory tests indicate that an extraction of 90%, or better, will result with concentration and cyanidation of the tailings. The concentrates resulting from the tests averaged $162.40 per ton and the ratio of concentration was 100 tons into 2-1/3 tons. The proportion of recovery was approximately 32% in the concentrates and 68% in the cyanide solutions."

"Sulphides will probably occur at depth but this combination treatment should still be effective."

"Leaching or percolation tests with ½ of one percent cyanide solution on the ore without concentration, ground to pass 48 mesh, gave an extraction of 85% of total values. This recovery would no doubt be higher in practice with agitation of the pulp so that direct dyanidation without concentration may prove the most economical treatment for the oxidized ores. Complete tests are now being made and flow

sheet and mill plans worked out." - Gracey (1922)

The additional tests referred to were conducted by C. L. Orem in the metallurgical laboratories of the University of Arizona early in 1923. Thirty tests were run covering cyaniding by percolation, by agitation and in combination with table concentration. A few tests were made with flotation. Complete records of these tests are on hand but herein are essential details of a few tests that indicate practical treatment methods.

Test No. 29, All Slime Agitation

| Material | Weight | Assay Ag Oz | Assay Au Oz | Total Oz. Silver | Total Oz. Gold | Percent Silver | Percent Gold | Extracted Total | |
|---|---|---|---|---|---|---|---|---|---|
| Heads | 100.00 | 16.54 | 0.208 | 1654 | 20.80 | -- | -- | -- | Content |
| Sol.24 hrs | 100.00 | 13.45 | 0.190 | 1345 | 19.00 | 81.4 | 91.4 | 85.00 | |
| Sol.48 hrs | 88.89 | 13.97 | 0.190 | 1391 | 19.00 | 84.1 | 91.4 | 86.70 | |
| Sol.72 hrs | 77.78 | 14.21 | 0.190 | 1410 | 19.00 | 85.2 | 91.4 | 87.5 | |
| Tails | 100.00 | 2.44 | 0.018 | 244 | 1.80 | 14.8 | 8.6 | 12.5 | Residue |

Cyanide strength 5# per ton solution, Consumption 1-¼# per ton ore. Lime used 2# per ton. Solution 1:1 with ore, Temperature 14-21 deg. Centigrade. Assays based on products.

This test indicates that 91.4% of the gold content goes into solution within 24 hours and that no additional extraction was obtained in 48 hours additional time, and 81.4% of the silver is dissolved in the first 24 hours which increases to 84.1% at the end of 48 hours. On a 50 ton plant this means an additional recovery of 23 oz. silver in the second 24 hours. The further recovery in the third 24 hour period is less than 10 ozs.

Test No. 20-21 Table Concentration & Percolation

| Material | Weight | Assay Ag Oz | Assay Au Oz | Ozs Extracted Silver | Ozs Extracted Gold | Percent Silver | Percent Gold | Extracted Combined | |
|---|---|---|---|---|---|---|---|---|---|
| Heads | 100.00 | 15.74 | 0.186 | 1584.6 | 18.65 | -- | -- | -- | (Content) |
| Concentrates | 2.73 | 148.22 | 1.220 | 404.6 | 3.33 | 25.5 | 17.9 | 22.9 | Total |
| Sol 48 hrs | 97.27 | 8.56 | 0.130 | 832.6 | 12.65 | 52.6 | 67.8 | 57.9 | 80.8% |
| Sol 72 hrs | 91.79 | 9.26 | 0.140 | 64.3 | .92 | 4.0 | 4.0 | 4.3 | 85.1% |
| Tails | 997.27 | 2.91 | 0.018 | 283.1 | 1.75 | 17.9 | 17.9 | 14.9 | 100.0% |

Ore crushed to 48 mesh, concentrated on a laboratory size table, Ratio of concentration 36.6 to 1. Table middlings, sands and slime tailing percolated in a 1 to 1 solution, not built up, strength 5#, NaCN to ton of solution, consumption 1.9# per ton ore. Lime used 2# per ton ore, consumption 1-¼ lbs. per ton. Terperature 14-21 deg. C.

This test indicates that it will be possible to take off a table concentrate containing 20-25% of the gold and silver ina product with an assay value of about $150.00 per ton, a concentrate of medium high grade. About 70% of the metals remaining in the table tails are extracted by cyanide leaching in 48 hours on contact, which rises to 76% in 72 hours of contact.

Another metallurgical test of this ore was made in May of the current year by the Southwestern Engineering Company, Los Angeles, The ore was low grade, assaying: Gold 0.12 oz., silver 10.9 oz., per ton.

This test was quite complete using flotation, gravity concentration and cyanidation, singly and in various combinations. The results are set forth in a lengthy report which is available for inspection, but herein are quoted only the salient points of the conclusions.

"It is concluded from the results of the testing conducted that 65 to 70% of the gold and silver can be recovered by straight flotation. The rougher flotation concentrates produced varied from 1.24 oz. gold and 111.85 oz. silver per ton with a ratio of conpentration of 14.58:1, to 2.64 oz. gold and 245.85 oz. silver per ton with a ratio of concentration of 33.33:1. In practice a ratio of concentration of approximately 30:1 can be expected and the concentrate grade should assay approximately 2.6 oz. gold and 240 oz. silver per ton."

"By cyanide agitation of the flotation tailings for 24 hours, total flotation-cyanidation recovery of 84% of the gold and 76% of the silver can be obtained. With 48 hours agitation, the gold recovery would probably be increased to a total of 91%."

"Direct cyanide agitation of the crude ore results in extractions of 83 to 91% of the gold and 76 to 78% of the silver."

"Separation of the sands from flotation tailings followed by cyanide leaching does not yield sufficient additional recovery to justify the operations."

"Either direct cyanide agitation of the crude ore, or flotation followed by cyanide agitation of the tailings results in higher extraction than straight flotation. The capital investment would be much lower for a straight flotation plant than for a combination flotation-cyanide plant or an all-cyanide plant."

A detailed study of test results from both sources shows that cyanide-agitation makes a satisfactory extraction of the combined metals, Orem obtaining 86.7% and the Southwestern 82.4% on a 48 hour treatment. The higher percentage extraction in Orem's tests is doubtless due to using a higher grade of ore. Orem extracted $15.28 from ore assaying $17.63 per ton; Southwestern extracted $10.37 from ore assaying $12.50 per ton.

The tests indicate that it will be difficult to reduce the average value of the tailing below $2.20 per ton, regardless of grade, since the lower limits of tailing assays were .01 to .015 oz. gold and 2.3 oz. silver. Hence the overall extraction will probably drop below 80% on $10 ore and exceed 85% on $20 ore.

The Southwestern discouraged the use of cyanide leaching of sands, but their tests were not conclusive. Orem's tests show that percolation is feasible. He extracted 81.6% of the gold and 60.6% of the silver in 72 hours, which rose to 89.2% gold and 69% silver in 144 hours on ore that was crushed only to 10 mesh. He concludes, after a sizing test on 48 mesh tailing: "No use crushing as fine as 48 mesh. Length of contact more important than fine crushing." However, medium crushing does shorten the time necessary to get a given extraction.

Before deciding upon a treatment method the following should be carefully tested: Crush in ball mill discharging onto a gravity table, taking off a high grade concentrate and throwing middlings and sands to classifier set at about 30 mesh. Return oversize to ball mill and run undersize to leaching tanks of sufficient capacity to give three to four days contact.

The cost of such a plant will be little if any more than for a flotation plant and will have the advantage of obtaining 70% to 75% of the recovered metals in form of bullion which will bring the full mint price. The extraction should approach that of a cyanide agitation plant and the operating cost will be considerably less. This plan of treatment has the further advantage of recovering a good percentage of the lead in table concentrates. This lead would be lost in a cyanide agitation plant. The recovered lead should go a long ways toward paying the marketing expense of the table concentrates.

On the basis of 50 tons daily capacity the plant cost should be $15,000 to $20,000 for flotation or gravity concentration followed by cyanide leaching. It would require $25,000 to $30,000 for a worth while cyanide agitation plant.

WATER:

A shaft on another property reported capable of furnishing 20,000 gallons per day is the source of water for the milling operation, requiring for delivery a 1-½ mile pipe line.

CONCLUSIONS AND RECOMMENDATIONS:

After five full days spent on the property and a thorough study of the maps, assay records and reports, I am convinced that the Great American Mine is a valuable property based on ore actually in sight, and it is my opinion that further development will increase this value many times. Although the returns from ore already marketed plus the gross value of ore now exposed pass $350,000 the deposit is probably only scratched.

It is in an area where mines in the same general formation have gone to depth and produced millions in metals. The camps of Bisbee, Tombstone, Courtland, Gleason and Common wealth (Pearce) suggest the possibilities, though I do not expect this mine to reach the magnitude of the mines named. However, conditions indicate the probability of ore production from this property running into the millions.

Backed by the substantial tonnage of ore exposed and the favorable working conditions, production can be reached with a negligible chance of loss. With economical and skillful handling, the only chance is how large the profits will be. It is inconceivable that the present ore exposures could all fail before enough profit was realized to repay the cost of required development and milling plant.

Therefore, I recommend the Great American Mine as an exceptional property, carrying not only rare factors of safety but strong promise of making a real mine under further development.

Two plans of operation are suggested, depending upon the amount of capital available, either of which should be successful.

1st. An intensive development campaign in which the lower tunnel is driven under the old workings and the heart of the hill intelligently explored. The question of milling plant and permanent mine openings for production will follow the results of the exploration.

2nd. A minimum development to provide an economical method for extracting ore to supply a 50-ton milling plant, which should be erected as quickly as possible and the further development of the mine carried on from the profits of the mill operation.

Meantime, larger scale ore tests should be made, the most suitable flow sheet decided upon and a mill designed. With the ore already known a 50-ton mill is justified, but a few hundred feet more development in the tunnel is likely to prove the need of more mill capacity.

The capital required is roughly estimated at $40,000 for the second plan, provided no ore whatever is developed beyond the present known tonnage. In the highly probable event of opening shipping grade ore by even a small amount of development, then this amount might be cut down substantially.

For the first plan of 'tearing open the ground', the capital requirement is difficult to foresee. If ore of shipping grade is opened, then it would justify a larger and probably more expensive plant and the required capital might reach $100,000 or even more.

Respectfully submitted,
Signed - Miles M. Carpenter, E. M.
Registered Mining Engineer.

December 8, 1936.
No. 350, State of Arizona.

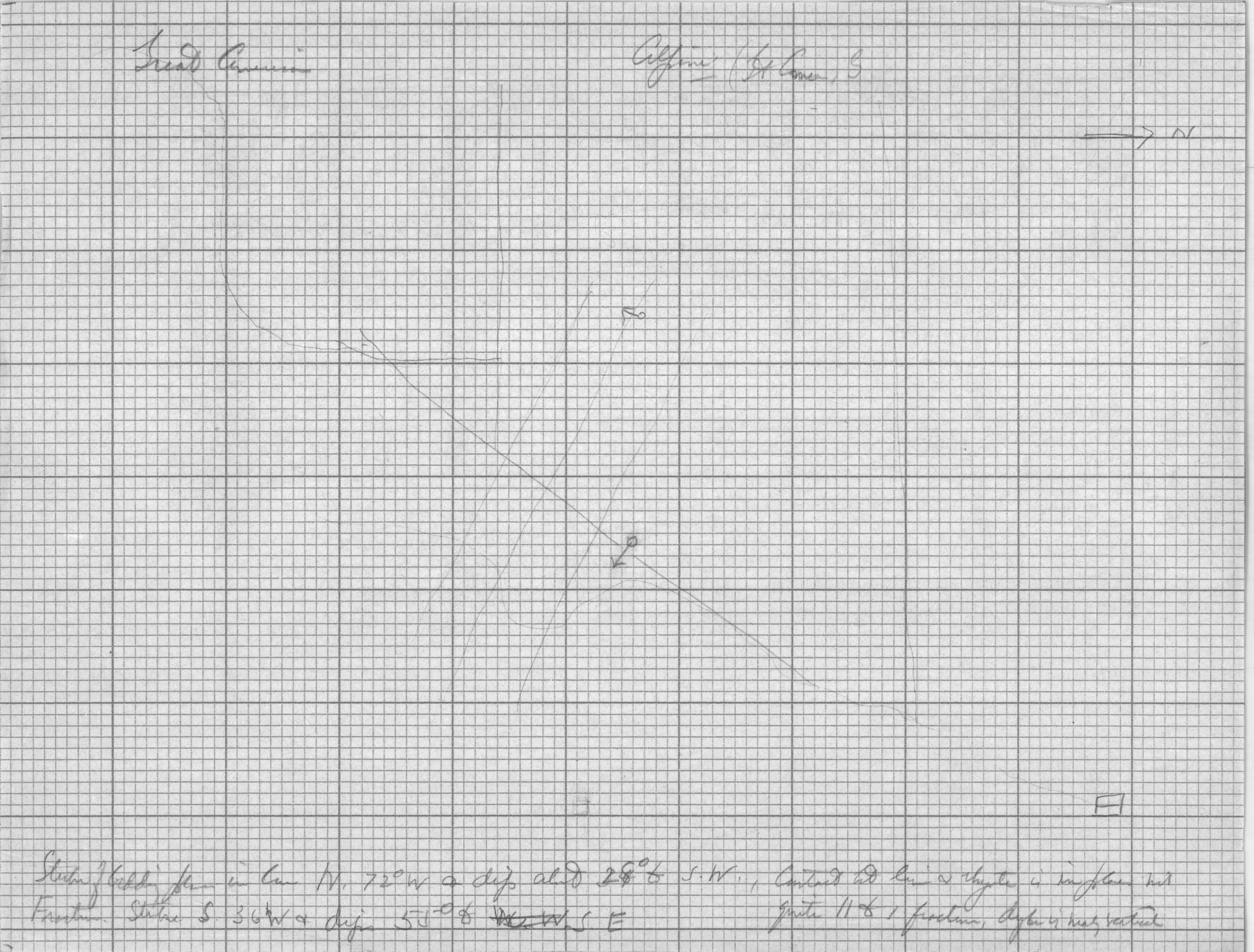
a years extension secured on these payments

## BUSINESS SET-UP

Payment for the property is thru royalties on production. The fixed payments are $10,000 due Sept. 1, 1937; $40,000 due Sept. 1, 1938. Ten percent of the smelter or mint returns are applied to these payments. The balance of the purchase price is carried on royalty payments, payable when and if produced.

The following tables indicate how the payments would accrue under operation of a 50-ton milling plant and an investment of $30,000 the smallest scale operation deemed feasible. The first figure of $150,000 gross recovery is based on 81.7% recovery of the metals estimated to be in sight. Subsequent figures assume $10.00 per ton net recovery.

| | | | Totals Payments | Profits |
|---|---|---|---|---|
| Gross Recovery from 14,000 tons in sight | | $150,000 | | |
| Deduct royalty payments @ 20% | | 30,000 | | |
| | | 120,000 | | |
| Less Operating Expense | | 50,000 | | |
| | | 70,000 | | |
| Less Investment | | 30,000 | | |
| | | 40,000 | | |
| Add wreckage value of equipment | | 6,000 | | |
| Operating Profit | | 46,000 | $30,000 | $46,000 |
| Gross Recovery from next 5,000 tons | | $ 50,000 | | |
| Deduct royalty payments @ 20% | | 10,000 | | |
| | | 40,000 | | |
| Less Operating Expense | $ 17,500 | | | |
| Less Development | 5,000 | 22,500 | | |
| | | 17,500 | | |
| Less Additional depreciation | | 1,000 | | |
| Operating Profit | | $16,500 | $40,000 | $62,500 |
| Gross Recovery from next 30,000 tons | | 300,000 | | |
| Deduct royalty payments 15% | | 45,000 | | after Walker was retired |
| | | 255,000 | | |
| Less Operating Expense | $105,000 | | | |
| Less Development | 30,000 | | | |
| Less Repairs & Replacements | 15,000 | 150,000 | | |
| Operating Profit | | $105,000 | $85,000 | $167,500 |
| Gross Recovery from next 50,000 tons | | $500,000 | | |
| Deduct royalty payment 5% | | 25,000 | | after Swasheln Co. was retired. |
| | | 475,000 | | |
| Less Operating Expense | $175,000 | | | |
| Less Development | 50,000 | | | |
| Less Repairs and Replacements | 25,000 | 250,000 | | |
| Operating Profit | | $225,000 | $110,000 | $392,500 |




Stratificazione in Cava N. 72° W a disp. alto 28° S.W., Contatto tra Cava e strato a inglobare nel Frontone. Strato S 36 W a disp. 55° S ~~W~~ E

Grotta 11 a Frontone, dyke a high vertical

The President stated that the stockholders should also be requested to amend Section 34 of the By-Laws so as to eliminate the requirement that the date of original issue of certificates of preferred stock should be stamped on said certificates. Thereupon, on motion duly seconded, the following Resolution was unanimously adopted:

RESOLVED, that at the meeting of the stockholders of this Company called for the purpose of considering an amendment to the Articles of Incorporation of this Company the stockholders be requested to amend Section 34 of the By-Laws of the Company so that the same shall read as follows:

> "Section 34. The certificates of stock of the corporation shall be numbered and a record of the issuance of said certificates entered in the books of the corporation as they are issued. All certificates of stock of the corporation shall be signed by the President, (or Vice-President), and Treasurer, (or Assistant Treasurer), and shall bear the corporate seal."

(2)

Products 15 & 20, about 1000 to 1500 ft

Reported to be about ~~25~~ 30000 ft

25 ft to about 300' wide to max depth

175' & 100' tunnel & depth to 1750'

Land & engineers.

---

Etta by W. R. Ransdell, La.

Travis, Frank Pickard & Frankfurter

Smith

No. SHARES.

METEOR CRATER EXPLORATION & MINING COMPANY

Incorporated under the laws of the State of Delaware.

Shares of Preferred Stock - par value of $100.each.
Shares of Common stock without nominal or par value.

THIS IS TO CERTIFY that

is the owner of fully paid and non-assessable shares of the ⋮ 7% Cumulative Preferred Stock, of the par value of $100.each ⋮ : Common Stock without nominal or par value :

of METEOR CRATER EXPLORATION & MINING COMPANY, transferable in person or by duly authorized attorney upon surrender of this certificate properly endorsed.

For a full statement of the rights, privileges and restrictions, limitations and preferences of the 7% Cumulative Preferred Stock and the Common Stock reference is made to Article 4 of the Certificate of Incorporation, as amended, a copy of said Article 4 of the Certificate of Incorporation as amended being printed in full upon the back of this certificate.

This certificate and the shares represented thereby are issued and shall be held subject to all the provisions of the Certificate of Incorporation of the Company, a copy of which is on file at the office of the Registrar, and to all of which provisions the holder, by the acceptance hereof, assents.

This certificate is not valid until registered by the Registrar.

WITNESS the seal of the corporation and the signatures of its duly authorized officers this day of 19 .

METEOR CRATER EXPLORATION & MINING COMPANY
By

_____
President
Vice-President.

_____
Treasurer.

REGISTERED
INTEGRITY TRUST COMPANY,
Registrar,
By
Assistant Secretary
(seal)

NOTE: The form of preferred and common will be the same except for the third line.
On the back will be printed Article 4 of the Certificate of Incorporation as amended, a copy of which will be found in the minutes of the current meeting of Directors. This is not to be inserted in the minute book and is for information only. Cancelled printed certificates may be put in the minute book later.

32878

Ind. 24

~~Frost~~ Dominion Mining Co. Succeeded

by ~~Frost~~ Swastika Mining & Milling Co.

Address / Swastika Ont. Can

Country / Ontario Prov. Can

Property & Equipment 15000 ~~$~~ 18.00

Average Thickness & width 30 ft Ore milled

Shipped ~ '20

---

Swastika Gold Mines Co

Owner / Address of Head Office, &c.

Prop. / Claims, Area

12 m Railroad / RR 30 m / Elevation

Gold-bearing-lode or ~~Limestone~~ - Limestone - andesite

Enclosed & Associated in Limestone

Gold Predominates

— OCTOBER —

Great American Mill record

| | HOURS RUN | TONS TREATED | CONCTS TONS | CONCTS GROSS VALUE | HEADS ASSAY AU | HEADS ASSAY AG | HEADS ASSAY TOTAL VALUE | TAILS AU | TAILS AG | TAILS VALUE |
|---|---|---|---|---|---|---|---|---|---|---|
| Oct 1 to 3 | | 32 | | | 700 | 955 | 1655 | tr | 223 | 220 |
| 4 + 5 | | 27 | | | 228 | 824 | 1052 | .70 | 223 | 363 |
| 6 + 7 | | 29 | | | 140 | 1016 | 1156 | .70 | 393 | 463 |
| 11 + 12 | | 22 | | | 210 | 948 | 1158 | .35 | 239 | 274 |
| 13 | | 14 | | | 175 | 924 | 1099 | .35 | 206 | 241 |
| 14 + 15 | | 35 | | | .70 | 508 | 578 | tr | 177 | 177 |
| 16 + 17 | | 51 | | | .70 | 354 | 424 | trace | 169 | 169 |
| 18 + 19 | | 52 | | | 35 | 315 | 350 | trace | 194 | 184 |
| 20 + 21 | | 46 | | | 105 | 608 | 713 | " | 223 | 223 |
| 22 | | 18 | | | .70 | 755 | 825 | " | 280 | 280 |
| 23 | | 24 | | | .70 | 755 | 825 | " | 280 | 280 |
| 25 | | 27 | | | .70 | 477 | 547 | " | 246 | 246 |
| 26 | | 25 | | | .70 | 477 | 547 | " | 246 | 246 |
| 27 | 225 | 22 | 424 | | Assays not available | | | | | |
| 28 | | 23 | | | " | | | | | |
| 29 | | 24 | | | " | | | | | |
| 30 | | 26 | | | " | | | | | |
| 31 | | 21 | | | " | | | | | |

1:50

9.30
.75
8.55
5.25
3.30

3.00
1.25
4.25
1.00
5.25

101

98

40

90

85.5

7.50

6.75

8.55

7.75

6.75

8.55

6.75

8

16

2

6

8

12

10.50

6

80

58

72

200

50

10000

(C O P Y)

ARTHUR H. GRACEY
Mining Engineer

Tucson, Arizona.
February 20th, 1923.

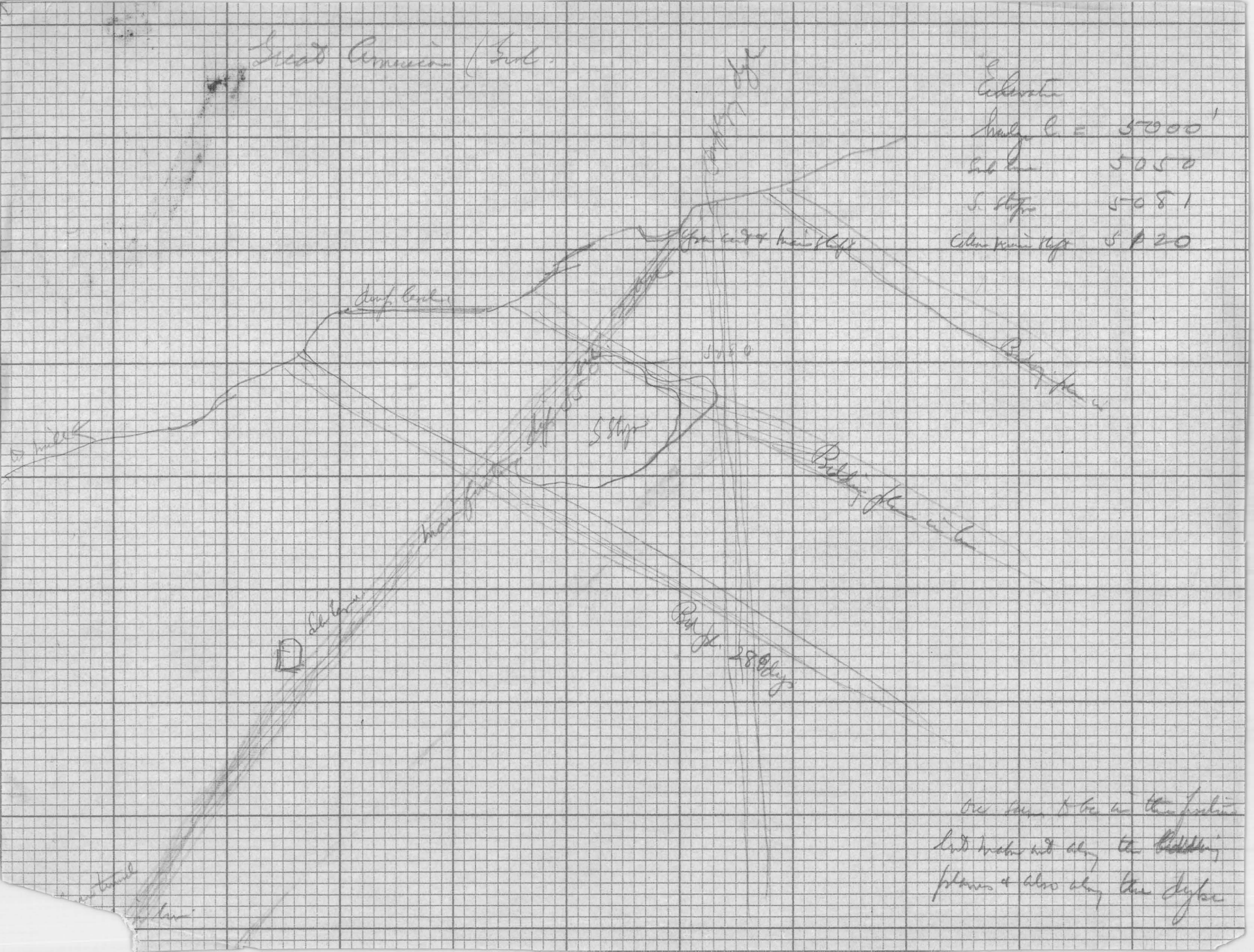
The following is a brief outline of my experience as a mining engineer and operator -

After passing the matriculation examination for Queen's University, Kingston, Ontario, I went to Arizona and entered the employ of the Phoenix Mining Company, Cave Creek, Arizona, as a mill man. This was in 1888. From 1889 to 1895 I was employed in various capacities in mines and mills in Amador County, California, and operated a custom mill for a time. In 1896 was assistant superintendent for the Southwestern Mining Company at El Dorado Canyon, Lincoln Co., Nevada, where silver-gold ores were mined and milled. In 1897 and 1898 I attended the School of Mines at Queen's University, Kingston, Ontario, taking third and fourth year work and was employed by the Ontario Government to examine and report on mineral areas in various parts of the province. In 1899 I was sent to British Columbia as engineer and manager for the London and B. C. Goldfields Development and Exploration Company and the Oro Mining and Milling Company of which companies Sir George E. Foster, the Finance Minister of Canada, was the head. I remained in British Columbia for 16 years during which time I acted as engineer, manager or president and manager for various companies among them being the Silver Queen Mining Company, The Imperial Development Syndicate, The Eva Gold Mines, Ltd., The Athabasca-Venus Ltd., The Dundee Mines Ltd., and the Nugget Gold Mines, Ltd. Since 1915 I have been examining properties for myself and others in California, Nevada, Arizona, Sonora and Sinaloa, Mexico.

(Signed) A. H. Gracey.

Great American (East.

| Elevation | |
|---|---|
| Shaft C. = | 5000' |
| Sub level | 5050 |
| S. Stope | 5081 |
| Above main Stope | 5120 |



Ore seems to be in the fractures
and water and along the bedding
planes & also along the dykes

No. 9 Co Great American Mining & Milling Co

Phoenix, Arizona,
Feb 17 38

CHAS. A. DIEHL

# 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 Ounces | SILVER Tenths | VALUE (Oz.) $35.00 | GOLD Ounces | GOLD Hundths | VALUE (Oz.) $35.00 | TOTAL VALUE Of Gold and Silver | PERCENTAGE | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| A 1 | | .2 | | | .03 | $1.05 | | | |
| A 2 | 20 | .4 | | | .20 | $7.00 | | | |
| A 3 | | .5 | | | .01 | $.35 | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

Charges $ 3.75

Assayer Arizona Assay Office

12/8/36

# THE GREAT AMERICAN MINE

By

Miles M. Carpenter, E. M.

-*-*-*-*-*-*-*-

## FOREWORD:

This report is made to condense and bring up to date a mass of information dating back over fifty years on the Great American Mine. It is based on five full days study of the property during a period of three months, together with data from reports by A. H. Gracey and C. L. Orem, both of whom are mining engineers of recognized standing, personally known to the writer. Quotations from these reports will be properly credited.

## PROPERTY AND TITLES:

The Great American Mine group comprises four contiguous patented mining claims, Great American, M S No. 41, Horn Silver M S No. 42, Sulphurette and Alice, No. 1262, total area 76 acres.

## SITUATION:

The property is located on the north-east slope of the Swisshelm Mountains, Cochise County, Arizona. It is reached over 12 miles of improved road and 3 miles of good natural road leading off State Highway No. 81, now being hard surfaced. This highway extends from Douglas, the smelter town of the Phelps Dodge Corporation, to Cochise, a station on the main line of the Southern Pacific railroad. The distance to Douglas is 41 miles, 15 miles over dirt road and 26 miles over highway. The freight rate from Douglas to El Paso, location of the lead smelter of the A. S. & R. Company, is $2.00 per ton on ore valued at $15.00 to $20.00 and $5.40 on ore or concentrate of $100 to $150 valuation. The smelter at Douglas is not handling lead ores at this time.

## TOPOGRAPHY:

A small hill rising a couple hundred feet above the lower tunnel level is the site of the mine. This hill has a medium slope

to the north and northeast where the country consists of low, rounded grass covered hills flanked by a broad shallow arroyo with a branch of Sulphur Springs Valley beyond. On the west the ground rises rather abruptly. The altitude is about 5,000 feet above sea level.

GEOLOGY:

"The outstanding feature is the intrusion of a dike of rhyolite porphyry into and through limestone. In the fractured and altered zone along the contact between these formations occurs the ore deposit. The mode of occurrance is characteristic of Southern Arizona mineral deposits. The ascending mineral bearing solutions have penetrated the fractures and seams along the contact and made out into the limestone beds replacing large areas of the limestones with silica and depositing therewith valuable minerals. These solutions evidently had a bountiful source, estimated by the areas mineralized." - Gracey (1922)

"In the altered and fractured zones, along the contact of the porphyry and limestone which compose the mineralized area of this deposit, the mineralizing solutions have replaced certain strata in the limestone more extensively than others and has followed the fractures and seams. This is shown by the present tunnels. Those beds which have been more susceptiable to replacement by reason of their favorable chemical composition can be cheaply developed by cross-cuts and inclined raises at right angles to the bedding planes. Some of these are extensively mineralized for considerable distances beyond the extent of the present workings. It is quite likely that similar beds will be encountered with deeper work as geological sections of the district show several hundred feet of favorable Carboniferous beds below these levels." - Orem (1923)

The present stage of development does not make clear the relation of the porphyry to the ore bodies. The largest body of porphyry visable lies east of the zone, and the contact with the

limestone, where exposed, shows feeble mineralization and no ore of commercial grade. However, at the south-west end workings is a tongue of intensely altered porphyry 4 ft. to 12 ft. in width that is exposed for a distance of about 100 feet in a southerly direction. At the 75 foot tunnel this appears as the foot-wall of a true contact vein dipping steeply eastward with ore of good grade and width making into the limestone. This porphyry also appears in the southerly end of the 40 foot level south. By far the most important ore bodies so far opened are in fracture zones in the silicified limestone, some distance from any known porphyry.

ORE DEPOSIT:

The outcrop covers the apex of the small hill described in a preceding paragraph on topography. It is a completely silicified limestone exceedinly hard and wear resisting. A common feature of the outcrop is brecciation which has been followed by intense silicification, nodules of chert being plentiful.

"The mineralized area, in the center of the property is well over 1,000 feet long and from 50 to 100 feet wide. It is well exposed by the present workings for a length of 500 feet and a width of 100 feet. The general strike of the deposit is NE-SW. The values contained are silver and gold in the ratio of 3 ounces silver to .05 ounces gold, accompanied by some iron pyrite and lead carbonates. The exposed ore is almost entirely oxidized. A portion of the gold is free and some native silver is shown but the latter occurs chiefly in the chloride form. High grade ore is irregularly distributed throughout the deposit and all former operations were confined to mining these, leaving the lower grades behind. All of the deposit carries some value. The gangue is much altered, highly siliceous and hard and is variably colored from the effects of oxidation." - Gracey (1922).

"The present workings do not determine the lateral extent of the ore body nor the distance along the strike. The mineralized area southwest beyond the present workings is well altered and silicified the full length of the property. The south-west drift, on the 40 foot level in the 60 foot winze, shows fair values over 13 feet and this should prove favorable ground for future development along the strike." - Orem (1923)

DEVELOPMENT:

"The old workings are scattered covering a surface area 500 feet long and 100 feet wide. A large portion consists of open cuts, as mentioned, but several tunnels of varying length have been driven from them in a westerly direction. Beginning at the northeast end there is a large open cut 50 feet in diameter with a face 10 to 20 feet high on the upper side. Two tunnels have been driven from this cut, one 60 and the other 20 feet in elngth. These were both driven out into the limestone at right angles to the contact but are in mineralized material throughout their length. Adjoining on the south-west and 20 feet higher is another large cut 100 feet long and from 25 to 40 feet wide with a short tunnel at the south-west end. South-west of this again there is a narrow cut 60 feet in length forming the entrance to a tunnel 105 feet in length. Above this 22 feet higher and 40 feet distant is a small cut with a 20 foot tunnel. Above this again, 100 feet distant and 44 feet higher is another cut 15 ffet in diameter and 10 feet deep. Directly south of this latter cut on the same level and 220 feet distant, there is a short tunnel 25 feet in length at the face of which a winze has been sunk to a depth of 60 feet. This is the deepest work on the property. At a depth of 25 feet below the collar of the winze there is a drift north-east 84 feet in length and one to the south-west 45 feet in length. In the north-east drift, at a point 43 feet from teh winze, there is a crosscut 12 feet to the east. Still further south-west from this latter work there is a tunnel 75 feet long with a winze near the portal."

"All the work described, amounting to 325 feet of tunneling, 70 feet of sinking and 130 feet of drifting, has been done in the ore deposit and at many points ore of payable milling grade is exposed." - Gracey (1922)

The foregoing detailed description of the old workings, made in 1922, is applicable today as only a few hundred tons of ore were gouged from the south-west end workings and shipped during the interim. The noticeable changes are the widening of the drifts on the 40 foot level, the stoping of a car load of lead ore from the lower level of the 60 foot winze and stoping a few car loads from the last mentioned 75 foot tunnel.

New development was begun in the winter of 1935 when a tunnel was started to follow roughly the southerly contact, pass beneath the old workings and explore the deposit along the strike at this level. Of course, it is planned to connect by raises to the old workings for ventilation and the economical mining of the ore above. This tunnel is now in about 350 feet, with two miners working in the face.

At the present stage of development, it is difficult to figure with exactness either the tonnage or the average value. It is the type of deposit most generally underestimated by conservative engineers.

ORE TONNAGE AND VALUE:

Following laborious measurements and sampling by Gracey, the maps of which are now missing, he concludes:

"A conservative estimate, therefore, of the ore available for easy and cheap mining in this block of ground (south-west workings) down to an average depth of 50 feet below the surface is 10,000 tons, averaging in value $13.75 per ton. The reject dumps at these workings contain over 1,000 tons, estimate, three samples of which gave the following: $12.80, $9.15 and $17.60 per ton, or an average of $13.30 per ton."

"A summary of the exposed and available tonnage and the average value show the following:

| | | | | |
|---|---|---|---|---|
| North-east end workings | 2,000 | tons at | $10.00 | $20,000.00 |
| South-west end workings | 10,000 | " " | 13.75 | 137,500.00 |
| Dumps | 2,000 | " " | 13.00 | 26,000.00 |
| | 14,000 | | | $183,500.00 " |

"The inclusion of probable and possible ore would greatly increase the tonnage estimates. In fact it is my belief that at least double the amount of ore given above will be found to exist above the deepest point now developed while the possibilities with further development are very promising. Milling ores of the grade now shown, occuring in such satisfactory width, and continuing to even moderate depths, would add a long life and much profit to the undertaking." --Gracey (1922)

The above figures are based on $20.00 per ounce for gold and $1.00 per ounce for silver. At the present price of $35.00 and $0.77 respectively, the value is a few cents per ton higher.

In the 40 ft. level stope of the south-west workings, which represented the principal part of the 10,000 tons of exposed ore, the original sampling may be summarized as follows:

| | | | | | | |
|---|---|---|---|---|---|---|
| By Gracey | 8 samples, | total width | 69 ft, | average value | $14.36 |
| By Orem | 2 samples, | total width | 58 ft, | average value | $17.85 |
| | 10 samples, | total width | 127 ft, | average value | $15.31 |

Subsequent to the samplings by Gracey and Orem, the property was operated by leasers who shipped 453 tons of ore taken mainly from the south-west ore bodies that averaged Gold 0.2523 oz., Silver 26.6 oz, value in gold $8.83, silver $20.48, total $29.31.

The ore bodies of the south-west end workings are described below and the samples from the several blocks averaged as follows:

| Block | Location | Av Ore Width |
|---|---|---|
| "A" | 75-ft. shaft, upper 15 feet and 25 feet drift N.E. | 2 ft. |
| "B" | 75-ft. shaft, 40 feet level stope, length 45' S.W. | 15 ft. |
| "C" | 75-ft. shaft, 40 ft. level stope, length 90' N.E. | 15 ft. |
| "D" | 75-ft. shaft, lower drifts in lead area, length 70'. | 4 ft. |
| "E" | 75-ft. drift, contact vein on dump level, dir S.W. | 6 ft. |

* Includes composite of 7-6 ft cuts.

| Block | Number Samples | Average Length | Gold Oz.-Ton | Silver Oz.-Ton | Value Per ton | |
|---|---|---|---|---|---|---|
| "A" | 3 | 2.0 ft | 0.466 | 18.98 | $30.94 | |
| "B" | 8 | 11.66 ft | 0.145 | 10.79 | 13.22 | |
| "C" | 20 | 9.1 ft | 0.181 | 13.29 | 16.54 | |
| "D" | 6 | 4.0 ft | 0.116 | 13.12 | 19.38 | (Includes lead) |
| "E" | 5 | 6.0 ft | 0.20 | 10.82 | 16.25 | |
| Average | 42 | 8.0 ft | 0.173 | 12.56 | 15.72 | (Without lead) |

The tonnage at present available scaled downward to compensate for incomplete sampling is estimated in round numbers at 20,000 tons, of $13.00 per ton average value, distributed:

| | | |
|---|---|---|
| North-east end workings | 2,000 tons @ $10.00 | $20,000 |
| South-west end workings | 15,000 tons @ 14.00 | 210,000 |
| Dumps | 3,000 tons @ 10.00 | 30,000 |
| | 20,000 tons | $260,000 |

A comparison of this estimate with that of Gracey made 14 years previously shows the character of this deposit. Leasers, without doing any systematic development, gutted out at least 453 tons of ore that averaged $29.31 per ton, and the mine then showed more tonnage and slightly higher grade.

ORE TESTS AND TREATMENT:

"The ore under consideration, being oxidized, presents no difficult treatment problems. The plant required would be simple and of standard construction. Laboratory tests indicate that an extraction of 90%, or better, will result with concentration and cyanidation of the tailings. The concentrates resulting from the tests averaged $162.40 per ton and the ratio of concentration was 100 tons into 2 1/3 tons. The proportion of recovery was approximately 32% in the concentrates and 68% in the cyanide solutions."

"Sulphides will probably occur at depth but this combination treatment should still be effective."

"Leaching or percolation tests with ½ of one percent cyanide solution on the ore without concentration, ground to pass 48 mesh, gave an extraction of 85% of total values. This recovery would no doubt be higher in practice with agitation of the pulp so that direct dyanidation without concentration may prove the most economical treatment for the oxidized ores. Complete tests are now being made and flow

sheet and mill plans worked out." - Gracey (1922)

The additional tests referred to were conducted by C. L. Orem in the metallurgical laboratories of the University of Arizona early in 1923. Thirty tests were run covering cyaniding by percolation, by agitation and in combination with table concentration. A few tests were made with flotation. Complete records of these tests are on hand but herein are essential details of a few tests that indicate practical treatment methods.

Test No. 29, All Slime Agitation

| Material | Weight | Assay Ag Oz | Assay Au Oz | Total Oz. Silver | Total Oz. Gold | Percent Silver | Percent Gold | Extracted Total | |
|---|---|---|---|---|---|---|---|---|---|
| Heads | 100.00 | 16.54 | 0.208 | 1654 | 20.80 | -- | -- | -- | Content |
| Sol.24 hrs | 100.00 | 13.45 | 0.190 | 1345 | 19.00 | 81.4 | 91.4 | 85.00 | |
| Sol.48 hrs | 88.89 | 13.97 | 0.190 | 1391 | 19.00 | 84.1 | 91.4 | 86.70 | |
| Sol.72 hrs | 77.78 | 14.21 | 0.190 | 1410 | 19.00 | 85.2 | 91.4 | 87.5 | |
| Tails | 100.00 | 2.44 | 0.018 | 244 | 1.80 | 14.8 | 8.6 | 12.5 | Residue |

Cyanide strength 5# per ton solution, Consumption 1-¼# per ton ore. Lime used 2# per ton. Solution 1:1 with ore, Temperature 14-21 deg. Centigrade. Assays based on products.

This test indicates that 91.4% of the gold content goes into solution within 24 hours and that no additional extraction was obtained in 48 hours additional time, and 81.4% of the silver is dissolved in the first 24 hours which increases to 84.1% at the end of 48 hours. On a 50 ton plant this means an additional recovery of 23 oz. silver in the second 24 hours. The further recovery in the third 24 hour period is less than 10 ozs.

Test No. 20-21 Table Concentration & Percolation

| Material | Weight | Assay Ag Oz | Assay Au Oz | Ozs Extracted Silver | Ozs Extracted Gold | Percent Silver | Percent Gold | Extracted Combined | |
|---|---|---|---|---|---|---|---|---|---|
| Heads | 100.00 | 15.74 | 0.186 | 1584.6 | 18.65 | -- | -- | -- | (Content) |
| Concentrates | 2.73 | 148.22 | 1.220 | 404.6 | 3.33 | 25.5 | 17.9 | 22.9 | Total |
| Sol 48 hrs | 97.27 | 8.56 | 0.130 | 832.6 | 12165 | 52.6 | 67.8 | 57.9 | 80.8% |
| Sol 72 hrs | 91.79 | 9.26 | 0.140 | 64.3 | .92 | 4.0 | 4.0 | 4.3 | 85.1% |
| Tails | 997.27 | 2.91 | 0.018 | 283.1 | 1.75 | 17.9 | 17.9 | 14.9 | 100.0% |

Ore crushed to 48 mesh, concentrated on a laboratory size table, Ratio of concentration 36.6 to 1. Table middlings, sands and slime tailing percolated in a 1 to 1 solution, not built up, strength 5#, NaCN to ton of solution, consumption 1.9# per ton ore. Lime used 2# per ton ore, consumption 1-¼ lbs. per ton. Terperature 14-21 deg. C.

This test indicates that it will be possible to take off a table concentrate containing 20-25% of the gold and silver ina product with an assay value of about $150.00 per ton, a concentrate of medium high grade. About 70% of the metals remaining in the table tails are extracted by cyanide leaching in 48 hours on contact, which rises to 76% in 72 hours of contact.

Another metallurgical test of this ore was made in May of the current year by the Southwestern Engineering Company, Los Angeles, The ore was low grade, assaying: Gold 0.12 oz., silver 10.9 oz., per ton.

This test was quite complete using flotation, gravity concentration and cyanidation, singly and in various combinations. The results are set forth in a lengthy report which is available for inspection, but herein are quoted only the salient points of the conclusions.

"It is concluded from the results of the testing conducted that 65 to 70% of the gold and silver can be recovered by straight flotation. The rougher flotation concentrates produced varied from 1.24 oz. gold and 111.85 oz. silver per ton with a ratio of conpentration of 14.58:1, to 2.64 oz. gold and 245.85 oz. silver per ton with a ratio of concentration of 33.33:1. In practice a ratio of concentration of approximately 30:1 can be expected and the concentrate grade should assay approximately 2.6 oz. gold and 240 oz. silver per ton."

"By cyanide agitation of the flotation tailings for 24 hours, total flotation-cyanidation recovery of 84% of the gold and 76% of the silver can be obtained. With 48 hours agitation, the gold recovery would probably be increased to a total of 91%."

"Direct cyanide agitation of the crude ore results in extractions of 83 to 91% of the gold and 76 to 78% of the silver."

"Separation of the sands from flotation tailings followed by cyanide leaching does not yield sufficient additional recovery to justify the operations."

"Either direct cyanide agitation of the crude ore, or flotation followed by cyanide agitation of the tailings results in higher extraction than straight flotation. The capital investment would be much lower for a straight flotation plant than for a combination flotation-cyanide plant or an all-cyanide plant."

A detailed study of test results from both sources shows that cyanide-agitation makes a satisfactory extraction of the combined metals, Orem obtaining 86.7% and the Southwestern 82.4% on a 48 hour treatment. The higher percentage extraction in Orem's tests is doubtless due to using a higher grade of ore. Orem extracted $15.28 from ore assaying $17.63 per ton; Southwestern extracted $10.37 from ore assaying $12.50 per ton.

The tests indicate that it will be difficult to reduce the average value of the tailing below $2.20 per ton, regardless of grade, since the lower limits of tailing assays were .01 to .015 oz. gold and 2.3 oz. silver. Hence the overall extraction will probably drop below 80% on $10 ore and exceed 85% on $20 ore.

The Southwestern discouraged the use of cyanide leaching of sands, but their tests were not conclusive. Orem's tests show that percolation is feasible. He extracted 81.6% of the gold and 60.6% of the silver in 72 hours, which rose to 89.2% gold and 69% silver in 144 hours on ore that was crushed only to 10 mesh. He concludes, after a sizing test on 48 mesh tailing: "No use crushing as fine as 48 mesh. Length of contact more important than fine crushing." However, medium crushing does shorten the time necessary to get a given extraction.

Before deciding upon a treatment method the following should be carefully tested: Crush in ball mill discharging onto a gravity table, taking off a high grade concentrate and throwing middlings and sands to classifier set at about 30 mesh. Return oversize to ball mill and run undersize to leaching tanks of sufficient capacity to give three to four days contact.

The cost of such a plant will be little if any more than for a flotation plant and will have the advantage of obtaining 70% to 75% of the recovered metals in form of bullion which will bring the full mint price. The extraction should approach that of a cyanide agitation plant and the operating cost will be considerably less. This plan of treatment has the further advantage of recovering a good percentage of the lead in table concentrates. This lead would be lost in a cyanide agitation plant. The recovered lead should go a long ways toward paying the marketing expense of the table concentrates.

On the basis of 50 tons daily capacity the plant cost should be $15,000 to $20,000 for flotation or gravity concentration followed by cyanide leaching. It would require $25,000 to $30,000 for a worth while cyanide agitation plant.

WATER:

A shaft on another property reported capable of furnishing 20,000 gallons per day is the source of water for the milling operation, requiring for delivery a 1-½ mile pipe line.

CONCLUSIONS AND RECOMMENDATIONS:

After five full days spent on the property and a thorough study of the maps, assay records and reports, I am convinced that the Great American Mine is a valuable property based on ore actually in sight, and it is my opinion that further development will increase this value many times. Although the returns from ore already marketed plus the gross value of ore now exposed pass $350,000 the deposit is probably only scratched.

It is in an area where mines in the same general formation have gone to depth and produced millions in metals. The camps of Bisbee, Tombstone, Courtland, Gleason and Common wealth (Pearce) suggest the possibilities, though I do not expect this mine to reach the magnitude of the mines named. However, conditions indicate the probability of ore production from this property running into the millions.

Backed by the substantial tonnage of ore exposed and the favorable working conditions, production can be reached with a negligible chance of loss. With economical and skillful handling, the only chance is how large the profits will be. It is inconceivable that the present ore exposures could all fail before enough profit was realized to repay the cost of required development and milling plant.

Therefore, I recommend the Great American Mine as an exceptional property, carrying not only rare factors of safety but strong promise of making a real mine under further development.

Two plans of operation are suggested, depending upon the amount of capital available, either of which should be successful.

1st. An intensive development campaign in which the lower tunnel is driven under the old workings and the heart of the hill intelligently explored. The question of milling plant and permanent mine openings for production will follow the results of the exploration.

2nd. A minimum development to provide an economical method for extracting ore to supply a 50-ton milling plant, which should be erected as quickly as possible and the further development of the mine carried on from the profits of the mill operation.

Meantime, larger scale ore tests should be made, the most suitable flow sheet decided upon and a mill designed. With the ore already known a 50-ton mill is justified, but a few hundred feet more development in the tunnel is likely to prove the need of more mill capacity.

The capital required is roughly estimated at $40,000 for the second plan, provided no ore whatever is developed beyond the present known tonnage. In the highly probable event of opening shipping grade ore by even a small amount of development, then this amount might be cut down substantially.

For the first plan of 'tearing open the ground', the capital requirement is difficult to foresee. If ore of shipping grade is opened, then it would justify a larger and probably more expensive plant and the required capital might reach $100,000 or even more.

Respectfully submitted,
(signed) Miles M. Carpenter, E. M.
Register Mining Engineer.

No. 350 State of Arizona.

Phoenix, Arizona,
Dec. 8, 1936.

February 18th, 1938.

Mr. W. M. Snow, Manager
Alpine Mining Company
Elfrida, Arizona

Dear Mr. Snow:

As promised, I am herewith returning the tracing which I took from your office, also the reports by Miles Carpenter and Arthur H. Gracey and the proposed business set-up schedule.

The samples which I took from the mine gave the following results:

No. 1 - taken across the fracture near the end of your haulage level assayed: .03 ozs. in gold and .2 ozs. in silver.

No. 3 - which was taken across the fracture near to where the haulage adit first intersected it assayed: gold .01, silver .5. You will recall that you were with me when this last sample was taken and it is unfortunate that neither of these showed any substantial value.

My sample No. 2 was taken across 5' of good ore in the back of the south stope and this assayed: gold .20, silver 20.4 ozs., making a value of over $20.00 per ton in addition to some lead which was not run. This is a very nice grade of ore but I fear that the sample did not represent any substantial tonnage.

I completed my report on the property today and Mr. Stanford came in at noon and took copies for Mr. Vossburg and himself. I certainly hope that my visit may prove of some benefit to all parties concerned and I tried to explain to Stanford some of the difficulties that you were up against.

I met Bill Gohring on the street today and he was looking very well and I was glad to tell him that I had had the pleasure of seeing you so recently.

Let me repeat my sincere thanks for you hospitality and the much valuable information which you gave me. I certainly hope that we shall meet again in the near future.

Sincerely,

GMC:mf

Ends v C tol of 2.20 agreed of heads loading < 80% recov in 10.00 T
& > 85% in 20.00 T

Cyan. recommends cyanide

Thinks fine T produced + below 2 / mesh of dollar + stages recommend

Allentown plan (1) Leaving 1 T

X (2) Ty ahead on process T + additional dollar / ton to present

Est cyaniding @ 40.00 of 2 shifts of 1, 100,000 ton

→

Test of ore by Continental Eng. Co for Mark Semmell, Cyl. Mfg Co

Cyanide recov. 83-91% on a 75-75% test

Flot recov. 65-70% of all value

Bond recov by flot + cyan of flot tests + Cash not to be installed at later date

Sample 75# for mine report of mine samples, highly oxid + iron oxid & highly silica gangue, free gold of fine & some to never seen ag. Sld & to seem to be closely assoc + locked within iron oxides in iron pyrites, Pb carbonate (cerussite) + X / ag & to seem to be assoc

| | | |
|---|---|---|
| Ag. | 0.10 oz = | 3.50 |
| | 10.90 ag. | 6.50 (@ 65, 60% |
| | | 10.00 a fine assay & = mint |

1 sample assay a ton = 12-13 + ag. & > 10.00 oz -

| | | |
|---|---|---|
| a fine assay & | Au = 10.12 = | 4.20 |
| | Ag = 9.00 | 8.85 |
| | | 10.05, Calc 10.00 T |

Heavy assay a carbonate + flot & gave ag recov 18% final

Ratio in practice & 30:1.

Stages flot bulk recov 2 > 65-70% + add ag of max. 10% for

Cyan. Co., Company of Cyan ~~Co. Ltd~~

Limited Cyan Co. was incorporated in 80-85 years as Company of Cyan-Lyte

Bisbee Cyanide & Cyan Co. and Cyan Chemical Co.

Cyanide Co. of Calif. (El Paso Smelter)

| 37 | Klondyke Lot # | Au | Ag. | Pb. | Cu | Net Value | Lbs Cu Delivered | Lbs Cu to Refiner | Net Weight approx. | Ingot Grade |
|---|---|---|---|---|---|---|---|---|---|---|
| 10/7 | 12042 | 1.98 | 216.6 | 2.0 | 0.16 | 219.35 | 5.53 | 6.22 | 207 | Insols = 8 |
| 11/10 | 8585 | 3.53 | 480.0 | 1.7 | 0.16 | 458.36 | 5.94 | | | $H_2O$ = 4.2 |
| 11/18 | 5716 | 2.87 | 327.5 | 1.8 | 0.27 | 327.60 | | | | Ins 50.6 |
| 11/24 | 8713 | 3.90 | 575.4 | 2.9 | 0.35 | 585.75 | 5.74 | | | $SiO_2$ 47.8 |
| 12/3 | 7782 | 2.32 | 292.3 | 2.9 | .19 | 284.62 | 5.58 | | | Fe 17.7 |
| 12/8 | 9118 | 2.03 | 222.2 | 10.1 | .35 | 231.41 | | | | CaO 3.6 |
| 12/18 | 8815 | 1.64 | 174.8 | 5.8 | .25 | 181.91 | | | | Zn 1.3 |
| 12/31 | 9101 | 2.29 | 240.3 | 3.8 | .26 | 246.37 | | | | S 14.8 |
| 1/22 | 9084 | 2.47 | 258.2 | 3.3 | .25 | 265.02 | | | | $Al_2O_3$ 2.3 |
| 2/8 | 8294 | 3.02 | 296.8 | 10.0 | .25 | 280.89 | | | | As 0.35 |
| | 87248 | | | | | 3034.33 | | | | Sb. 0.47 |
| | | | | | | 303.4/Lt | 6.00 | 297. | | |
| | Cu | | | | | | | | | |
| 10/7.37 | 39442 | 0.45 | 24.5 | 1.3 | .05 | 32.11 | 4.99 | 3.80 | 24 | Cu. |
| 1/22 35 | 79890 | 0.105 | 9.425 | 17.5 | .15 | 18.81 | 5.21 | 1.90 | 11.0 | / |
| | 119332 | | | | | | | | | $H_2O$ = 4.3 |
| | | | | | | | | | | As .25 |
| | | | | | | | | | | $SiO_2$ 62.0 |
| | | | | | | | | | | Fe 6.0 |
| | | | | | | | | | | CaO = 10.5 |
| | | | | | | | | | | Zn = 0.2 |
| | | | | | | | | | | S = 11.0 |
| | | | | | | | | | | $Al_2O_3$ = 8.4 |

Smelter pays for gold @ 32.81825/fn. oz Cu. 44t @ 3000. /t. = 13000 +

" " " silver. 0.62625

Charges - 6.00 simply & return box.

a years extension
reduced our three
payments

## BUSINESS SET-UP

Payment for the property is thru royalties on production. The fixed payments are $10,000 due Sept. 1, 1937; $40,000 due Sept. 1, 1938. Ten percent of the smelter or mint returns are applied to these payments. The balance of the purchase price is carried on royalty payments, payable when and if produced.

The following tables indicate how the payments would accrue under operation of a 50-ton milling plant and an investment of $30,000 the smallest scale operation deemed feasible. The first figure of $150,000 gross recovery is based on 81.7% recovery of the metals estimated to be in sight. Subsequent figures assume $10.00 per ton net recovery.

| | | | Totals | |
|---|---|---|---|---|
| | | | Payments | Profits |
| Gross Recovery from 14,000 tons in sight | | $150,000 | | |
| Deduct royalty payments @ 20% | | 30,000 | | |
| | | 120,000 | | |
| Less Operating Expense | | 50,000 | | |
| | | 70,000 | | |
| Less Investment | | 30,000 | | |
| | | 40,000 | | |
| Add wreckage value of equipment | | 6,000 | | |
| Operating Profit | | 46,000 | $30,000 | $46,000 |
| Gross Recovery from next 5,000 tons | | $ 50,000 | | |
| Deduct royalty payments @ 20% | | 10,000 | | |
| | | 40,000 | | |
| Less Operating Expense | $ 17,500 | | | |
| Less Development | 5,000 | 22,500 | | |
| | | 17,500 | | |
| Less Additional depreciation | | 1,000 | | |
| Operating Profit | | $16,500 | $40,000 | $62,500 |
| Gross Recovery from next 30,000 tons | | 300,000 | | |
| Deduct royalty payments 15% | | 45,000 | | |
| | | 255,000 | | |
| Less Operating Expense | $105,000 | | | |
| Less Development | 30,000 | | | |
| Less Repairs & Replacemets | 15,000 | 150,000 | | |
| Operating Profit | | $105,000 | $85,000 | $167,500 |
| Gross Recovery from next 50,000 tons | | $500,000 | | |
| Deduct royalty payment 5% | | 25,000 | | |
| | | 475,000 | | |
| Less Operating Expense | $175,000 | | | |
| Less Development | 50,000 | | | |
| Less Repairs and Replacements | 25,000 | 250,000 | | |
| Operating Profit | | $225,000 | $110,000 | $392,500 |

after Walker was retired

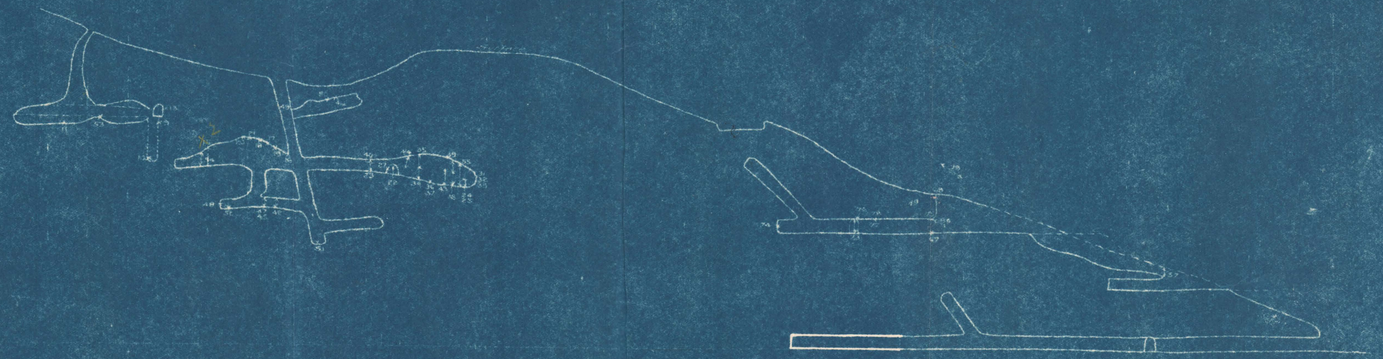
after Sevenbulm Co. was retired

## ASSAYS

| NO | WIDTH | AU-Oz | AG Oz | LOCATION | |
|---|---|---|---|---|---|
| 1 | GEN | 11 | 10.0 | DUMP 1500 T. | S.W.WKGS |
| 2 | " | 12 | 7.11 | " | " |
| 3 | " | 19 | 12.8 | " | " |
| 4 | " | 08 | 5.86 | " | " |
| 5 | " | 4 | 3.6 | " | " |
| 6 | GRAB | 12 | 6.0 | " | " |
| 7 | " | 74 | 6.8 | " | " |
| 8 | " | 20 | 13.0 | LEAD ORE | " |
| 9 | 12' | 17 | 8.5 | COLLAR 20' WINZE | " |
| 10 | 7' | 11 | 10.4 | S. SIDE BOT. | " |
| 11 | 6 | 24 | 23.74 | FLOOR U.H. STOPE | " |
| 12 | 1.5 | 035 | 1.6 | SURF QTZ. | " |
| 13 | 2 | 60 | 20.8 | VERT FRACTURE | " |
| 14 | 3 | 02 | .4 | SURF QTZ | " |
| 15 | 1.3 | 06 | 4.0 | ROOF & END STOPE | " |
| 16 | 10' | 09 | 8.0 | S. SIDE WINZE 40 LEV. | S. |
| 17 | 20 | 18 | 7.3 | ROOF STOPE 40' LEV. | S. |
| 18 | 1.25 | 32 | 10.8 | " " " | S. |
| 19 | 20' | 12 | 6.88 | " " " | S. |
| 20 | 12' | 20 | 17.1 | " " " | S. |
| 21 | 12' | 22 | 29.78 | S. WALL " " | S. |
| 22 | 12' | 17 | 12.7 | X CUT " | N. |
| 23 | 6' | 14 | 13.0 | E. SIDE DRIFT " | N. |
| 24 | 4' | 13 | 8.6 | X CUT " | N. |
| 25 | 6 | 16 | 21.2 | FACE DRIFT " | N. |
| 26 | 4.2 | 22 | 15.0 | 7-6' CUTS " | N. |
| 27 | 6' | 15 | 6.9 | X CUT & FACE HOR. " | N. |
| 28 | 6' | 19 | 15.2 | ROOF OLD DRIFT " | N. |
| 29 | GRAB | 40 | 43.7 | SHOWS PYRITE " | N. |
| 30 | " | .48 | 32.3 | " " " | N. |
| 31 | 8 | 18 | 11.4 | FACE " | N. |
| 32 | 8 | 13 | 16.2 | " " " | N. |
| 33 | 6.5 | 08 | 7.92 | " " " | N. |
| 34 | 8' | 06 | 8.14 | W. SIDE STOPE " | N. |
| 35 | 8 | 16 | 10.4 | " " " " | N. |
| 36 | 5' | 28 | 8.52 | FLOOR " | N. |
| 37 | 8' | 04 | 1.72 | " " " | N. |
| 38 | 6' | 06 | 6.2 | E. SIDE " " | N. |
| 39 | 6' | 32 | 27.9 | " " " " | N. |
| 40 | 7' | 30 | 14.1 | W. " " " | N. |
| 41 | GRAB | 18 | 30.4 | SHOWS PYRITE " | N. |
| 42 | 8' | 46 | 50.33 | E. SIDE DRIFT 60' LEV. | S. |
| 43 | 6.5 | 24 | 24.1 | W. SIDE STOPE 40 " | N. |
| 44 | 6' | .21 | 19.7 | " " " " | N. |
| 45 | 4 | 08 | 6.2 | PB 20.39% " 60' | S. |
| 46 | 2 | 56 | 26.24 | ROOF NARROW STOPE | |
| 47 | 4 | 02 | 5.2 | PB 29.58% 90' LEV. | S. |
| 48 | 4 | 02 | 5.5 | PB 15.57% FACE " " | S. |
| 49 | 2' | 25 | 8.2 | W. WALL & COLLAR WINZE | |
| 50 | 2' | 59 | 22.5 | ROOF NARROW STOPE | |
| 51 | 3 | 10 | 8.3 | BOTTOM 75' WINZE | |
| 52 | 5 | 04 | 5.52 | WALLS & BACK 60' LEV. | S. |
| 53 | 3' | 02 | 10.58 | BOTTOM 75' DRIFT | " |
| 54 | 5' | 08 | 2.88 | CONTACT 40' LEV. | S. |

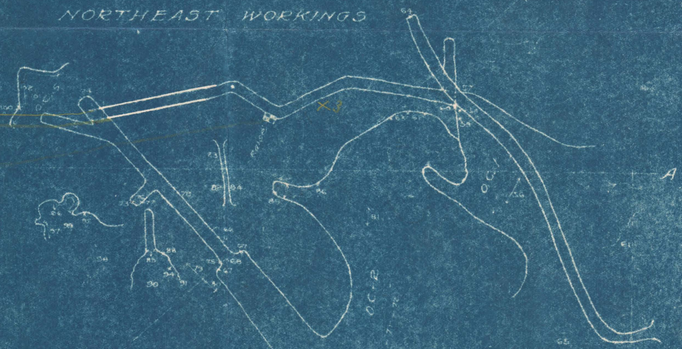
| NO | WIDTH | AU-Oz | AG Oz | LOCATION | |
|---|---|---|---|---|---|
| 55 | 7' | 20 | 13.6 | W. SIDE 40 LEV. | N. |
| 56 | 2.5 | .02 | TR | FLOOR OC 1 ALT LEVEL | |
| 57 | 2' | 13 | 11.0 | ABOVE PORTAL TUN. | |
| 58 | 2.5 | 03 | 3 | S. SIDE " " | |
| 59 | 3' | 04 | 9 | BELOW No 58 | |
| 60 | 4.5 | 26 | 34.5 | INSIDE TUN. IN RAISE | |
| 61 | GRAB | 06 | .382 | LOWER DUMP | |
| 62 | " | 05 | 7.4 | BOTTOM STOPE 8x40 | |
| 63 | 16' | 1.0 | 23.3 | 3-6' CUTS INCL. TO OC-2 | |
| 64 | 6 | 01 | 1.2 | 3-6' CUTS FACE TUN. OC. 1 | |
| 65 | GRAB | .02 | 2.38 | LOWER DUMP | |
| 66 | 15 | 05 | 8.1 | 2 CUTS OC-2 165' TUN. | |
| 67 | 8 | 1.0 | 5.6 | PORTAL " " " | |
| 68 | 6' | 1.75 | 10.7 | OVER PORTAL " | |
| 69 | GRAB | .25 | 2.38 | | |
| 70 | | 15 | 10.2 | | |
| 71 | " | 1.5 | 12.5 | DUMP: OC-2 1600 T. | |
| 72 | | 12 | 22.56 | | |
| 73 | 4 | 16 | 3.24 | FACE X CUT 105' TUN. | |
| 74 | 12 | 02 | .31 | " " " " | |
| 75 | 3' | 09 | 1.1.0 | PORTAL " " | |
| 76 | 2' | .45 | 4.3 | ROOF & SIDE X CUT " " | |
| 77 | 2 | 06 | 1.4 | BELOW No 76 " | |
| 78 | 10' | .06 | TR | GOUGE FE STG " | |
| 79 | 14 | 16 | 5.5 | OVER PORTAL " " | |
| 80 | 8 | 2.0 | 16.0 | BELOW No 79 " | |
| 81 | 7 | 1.5 | 6.0 | BENCH HARD ORE OC-2 | |
| 82 | 13 | 06 | 2.5 | ALT. SURF GOSSAN TRENCH | |
| 83 | 15 | 04 | 2.2 | " " " | |
| 84 | GRAB | 02 | 1.2 | " LIMESTONE | |
| 85 | 5' | 02 | 1.8 | VERT. CUTS SHORT TUN. OC-2 | |
| 86 | 10' | .02 | 1.02 | " NEAR " " | |
| 87 | GRAB | 04 | 1.44 | DUMP 120 T. OC-3 | |
| 88 | 10' | 06 | 1.26 | CUT RED OXIDE MAT. | |
| 89 | 5 | 11 | 2.5 | " EACH SIDE TUN. OC-4 | |
| 90 | GRAB | .42 | 1.2 | ORE on DUMP " | |
| 91 | " | 06 | .57 | TYPE SILICIFIED L.S | |
| 92 | " | 7.6 | 4.2 | OK. ORE over 105' OC-3 | |
| 93 | " | 2.0 | 18.6 | ORE on DUMP OC-3 | |
| 94 | 2 | 4.5 | 4.3 | N. SIDE BOTTOM OC-3 | |
| 95 | A | 06 | 3.4 | " OC-4 | |
| 96 | 15' | 08 | 4.76 | HOR. CUT AROUND OC-4 | |
| 97 | 6 | 02 | .34 | " " OC-4 | |
| 98 | GRAB | 08 | 1.6 | DUMP 50 T. OC-4 | |
| 99 | " | .38 | 30.5 | " SMALL OC-4 | |
| 100 | 1' | 43 | 9.6 | ORE OC-5 | |
| 101 | GRAB | 06 | 9.54 | DUMP 100 T. OC-5 | |
| 102 | 15' | 04 | 3.32 | HOR. CUT AROUND OC-5 | |

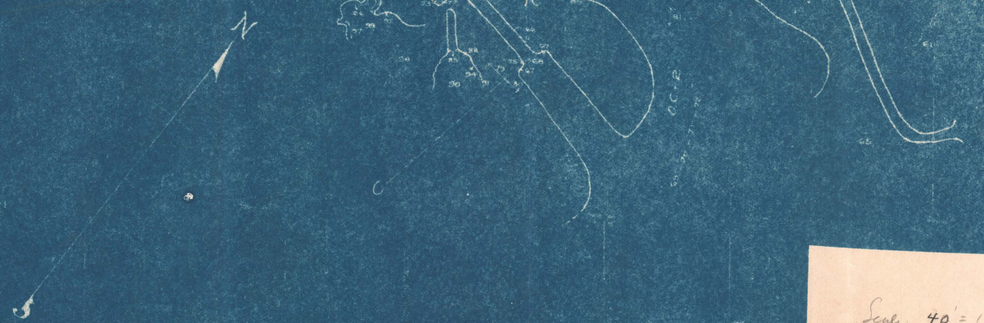
LONGITUDINAL SECTION ON VERTICAL PLANE A A



SOUTHWEST WORKINGS

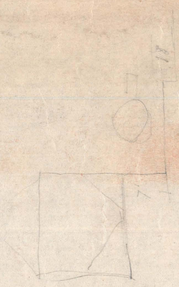
NORTHEAST WORKINGS





Traced from pencil sketch of Miles Carpenter of Nov 12 1936
Compiled from owners data.

Scale 40' = 1"



Great American Mine

Carpenter shaft & assay

R 27 E R 28 E

HORN SILVER No 3

HORN SILVER No 2

HORN SILVER

SULPHIDE

GREAT AMERICAN

ALICE

WHALE No 6

WHALE No 5

RHYOLITE HILL

HILLSIDE

N. MAMMOTH No 2

N. MAMMOTH No 3

N. WHALE No 4

N. WHALE No 2

N. WHALE No 3

LITTLE TREE

MAMMOTH No 3

MAMMOTH No 2

N. MAMMOTH

MAMMOTH

N. WHALE

EAST MINE

WHALE

MT. KING

COLFORD

MT. QUEEN

RANDELL HOUSE

FAULT

R 27 E R 28 E

Scale 1/4800

0 1/8 1/4 1/2 1 Mile

400 0 400 800 1200 Feet

200 100 0 500 1000 Meters

N

Buildings

Shafts or pits

Tunnels

Open cuts

Strike-dip of stratified rocks

Strike dip of faults

# MAP OF SWISSHELM MINING DISTRICT

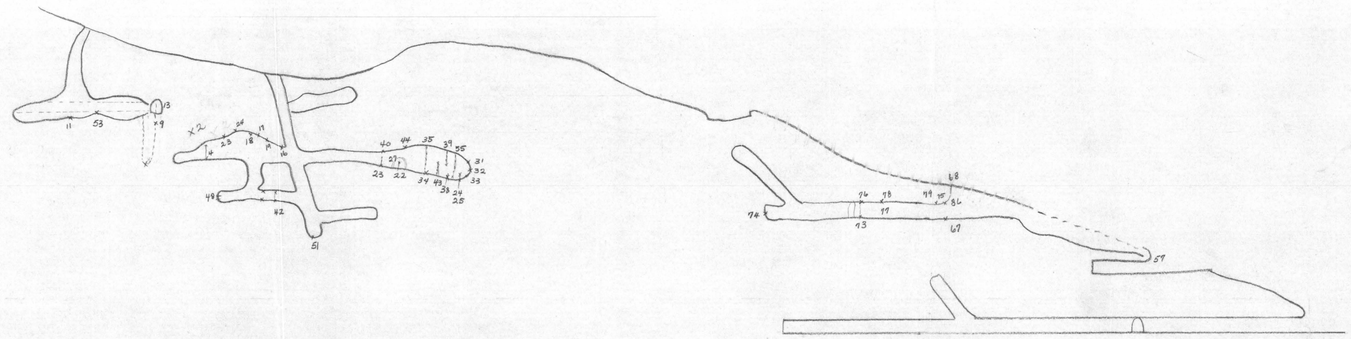
## ASSAYS
(Great American Mine)

| No. | Width | Au. Oz. | Ag. Oz. | Location | Wkgs. |
|---|---|---|---|---|---|
| 1 | Gen. | .11 | 10.0 | Dump 1000 T. | SW. |
| 2 | Gen. | .12 | 7.1 | Dump 1000 T. | SW. |
| 3 | Gen. | .19 | 13.8 | Dump 1000 T. | SW |
| 4 | Gen. | .08 | 5.36 | Dump 1000 T. | " |
| 5 | Gen. | .14 | 3.6 | Dump 1000 T. | " |
| 6 | Grab | .12 | 6.0 | Dump " | " |
| 7 | Grab | .74 | 6.8 | Dump 1000 T. | S |
| 8 | Grab | .20 | 19.0 | Lead ore | S |
| 9 | 12' | .17 | 3.5 | Collar 20'win. | S |
| 10 | 7' | .11 | 10.4 | S. Side Bot. " | S |
| 11 | 6' | .24 | 23.74 | Floor UH Stope | S |
| 12 | 1.5' | .035 | 1.6 | Surf Qtz. | S |
| 13 | 2' | .60 | 20.8 | Vert. Fracture | S |
| 14 | 3' | .02 | .4 | Surf Qtz. | S |
| 15 | 13' | .06 | 4.0 | Roof & End Stope | S |
| 16 | 18' | .09 | 8.0 | S. Side winze 40' lev | S |
| 17 | 20' | .19 | 7.3 | Roof Stope 40' Lev. | S |
| 18 | 1.25' | .32 | 10.8 | Roof Stope " " | S |
| 19 | 20' | .12 | 6.88 | Roof Stope 40' Lev. | S |
| 20 | 12' | .20 | 17.1 | Roof Stope 40' " | S |
| 21 | 12' | .22 | 29.78 | E. Wall " " | S |
| 22 | 12' | .17 | 12.7 | X-cut " | N |
| 23 | 16' | .14 | 13.0 | E. Side Drift " " | N |
| 24 | 4' | .18 | 9.6 | X Cut " " | N |
| 25 | 6' | .16 | 21.2 | Face Drift " " | N |
| 26 | 42' | .22 | 16.0 | 7-6' Cuts " " | N |
| 27 | 16' | .16 | 6.9 | X-cut & Face Hor! | N |
| 28 | 6' | .19 | 15.2 | Roof Old drift 40'L. | N |
| 29 | Grab | .40 | 49.7 | Shows Pyrite | N |
| 30 | " | .48 | 52.9 | " " | N |
| 31 | 8' | .18 | 11.4 | Face 40' lev | N |
| 32 | 8' | .13 | 12.7 | Face " " | N |
| 33 | 6.5' | .08 | 7.92 | Face " | N |
| 34 | 8' | .06 | 8.14 | W. Side stope " " | N |
| 35 | 6' | .16 | 10.4 | W. Side stope " " | N |
| 36 | 5' | .28 | 8.52 | Floor stope " " | N |
| 37 | 8' | .04 | 1.72 | " " " " | N |
| 38 | 6' | .08 | 6.2 | E. Side " " | N |
| 39 | 6' | .32 | 27.9 | E. Side Stope " " | N |
| 40 | 7' | .30 | 14.1 | W. Side " " " | N |
| 41 | Grab | .18 | 30.4 | Shows pyrite " | N |
| 42 | 4 | .46 | 50.39 | E. Side drift 60' lev | S |
| 43 | 8.5 | .24 | 24.1 | W. Side stope 40'" | N |
| 44 | 6' | .21 | 19.7 | W. side stope 40'L. | N |
| 45 | 4' | .08 | 6.2 | Pb. 20.35% 60'L. | S |
| 46 | 2' | .56 | 26.24 | Roof narrow stope | |
| 47 | 4' | .02 | 5.2 | Pb 20.58% 60' L. | S |
| 48 | 4 | .02 | 5.5 | Pb 15.57% Face" " | S |
| 49 | 2' | .25 | 8.2 | W. wall & Collar win. | |
| 50 | 2' | .59 | 22.5 | Roof Narrow stope | |
| 51 | 5' | .10 | 8.9 | Bottom 70' winze | |
| 52 | 5' | .04 | 5.52 | Walls & Back 60' L. | S |
| 53 | 3' | .02 | 10.58 | Bottom 75' drift | |
| 54 | 5' | .08 | 2.88 | Contact 40' level | |
| 55 | 7' | .20 | 13.6 | W. Side 40' Lev. | N |
| 56 | 2.5' | .02 | Tr | Floor O.C.1-Lime | N |
| 57 | 2' | .13 | 11.0 | Above portal Tun. | |
| 58 | 2.5' | .03 | .3 | S. Side " " | |
| 59 | 3' | .04 | .9 | Below No. 58 | |
| 60 | 4.5' | .30 | 34.5 | Inside tunnel in Raise | |
| 61 | Grab | .06 | 3.82 | Lower dump | |
| 62 | " | .08 | 7.4 | Bottom stope 8'x40' | |
| 63 | 18' | .10 | 23.3 | 3-6' cuts incl. to OC-2 | |
| 64 | 6' | .01 | .12 | 3-6' cuts face Tun. OC-1 | |
| 65 | Grab | .02 | 2.38 | Lower dump | |
| 66 | 15' | .08 | 2.1 | 2 Clks. OC-2 105' Tun. | |
| 67 | 8' | .10 | 5.6 | Portal " " " | |
| 68 | 6' | .075 | 10.7 | Over Portal " " | |
| 69 | Gr. | .26 | 23.8 | } | |
| 70 | Gr. | .15 | 10.2 | } | |
| 71 | Gr. | .19 | 12.5 | } Dump O.C.-2 1000 T. | |
| 72 | Gr. | .12 | 22.56 | } | |
| 73 | 4' | .16 | 3.24 | Face X-cut 105 Tun. | |
| 74 | 12' | .02 | 3.1 | " " " | |
| 75 | 3' | .09 | 11.0 | Portal " " | |
| 76 | 2' | .45 | 4.3 | Roof & side X Cut 105'Tun. | |
| 77 | 2' | .06 | 1.4 | Below No. 76 | |
| 78 | 10" | .06 | Tr. | Gouge Fe Std. | |
| 79 | 14' | .16 | 5.5 | Over Portal " " | |
| 80 | 8' | .20 | 16.0 | Below No. 79 " " | |
| 81 | 7' | .15 | 6.0 | Bench Hard. Ore O.C-2 | " |
| 82 | 13' | .06 | 2.5 | Alt. Surf. Gossan Trench | |
| 83 | 15' | .04 | 2.2 | " " " " | |
| 84 | Gr. | .02 | 1.2 | Alt. Limestone | |
| 85 | 5' | .02 | .18 | Vert. cuts Short Tun. OC-2 | |
| 86 | 10' | .02 | .02 | " " Near " | |
| 87 | Gr. | .04 | 1.44 | Dump 120 T. OC-3 | |
| 88 | 10' | .06 | 1.26 | Cut red oxide mat. | |
| 89 | 9' | .11 | 2.5 | Cut each side tun. OC-4 | |
| 90 | Gr. | .42 | 11.2 | Ore on dump OC-4 | |
| 91 | Gr. | .06 | 5.7 | Type silicified LS | |
| 92 | Gr. | .76 | 4.2 | Ox. Ore over 105' OC-3 | |
| 93 | Gr. | .20 | 18.6 | Ore on dump OC-3 | |
| 94 | 2' | .45 | 4.3 | N. side bottom OC-3 | |
| 95 | 8' | .06 | 3.4 | OC-4 | |
| 96 | 15' | .08 | 4.76 | Hor. cut. Around OC-4 | |
| 97 | 6' | .02 | .14 | " " OC-4 | |
| 98 | Gr. | .08 | 1.6 | Dump 50 T. OC-4 | |
| 99 | " | .38 | 33.5 | Dump small OC-4 | |
| 100 | " | .43 | 9.6 | Ore OC-5 | |
| 101 | Gr. | .06 | 9.54 | Dump 100T OC-5 | |
| 102 | 15' | .04 | 3.32 | Hor. Cut around OC-5 | |

Scale of map: 40' = 1"

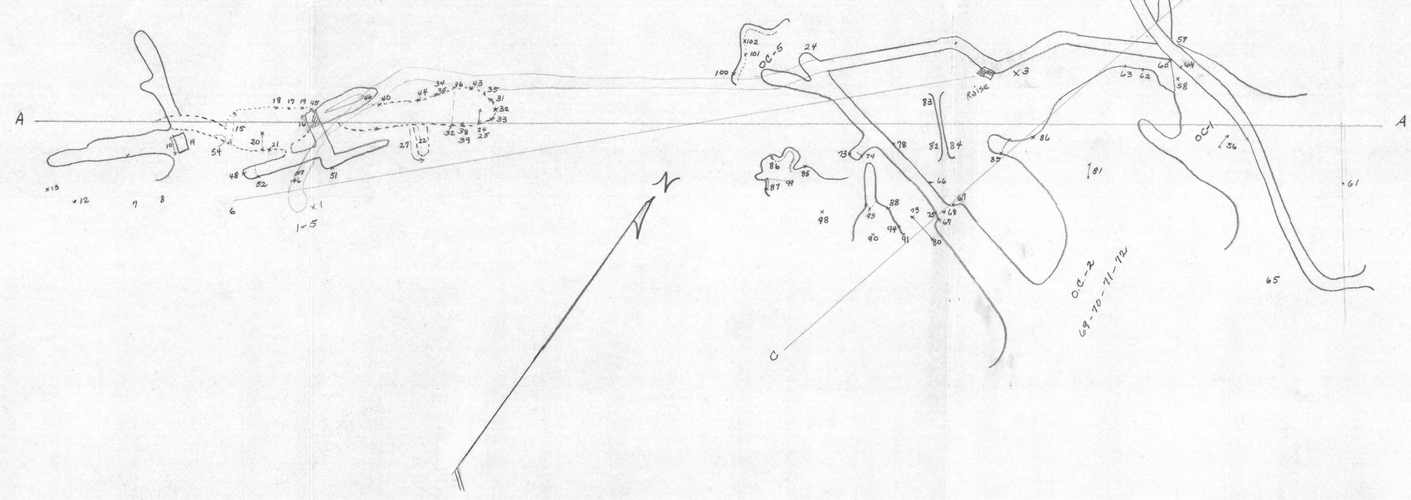
(Original sketch by Miles Carpenter on November 12, 1936)

LONGITUDINAL SECTION ON VERTICAL PLANE A-A



SOUTHWEST WORKINGS

NORTHEAST WORKINGS



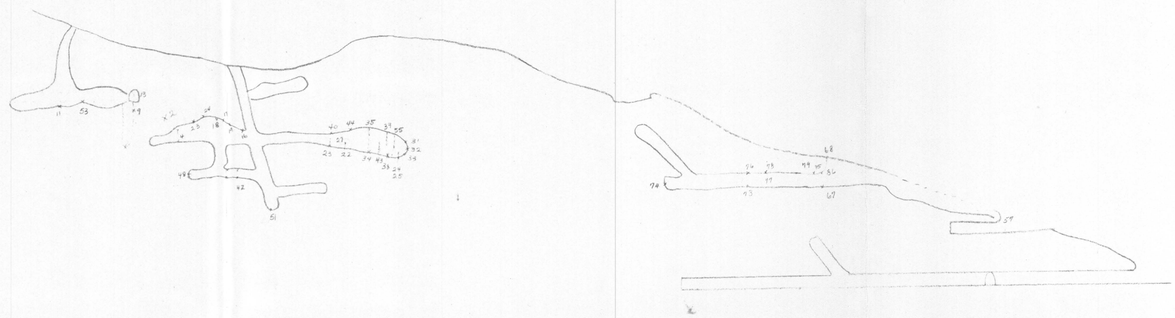
## ASSAYS
(Great American Mine)

| No. | Width | Au. Oz. | Ag. Oz. | Location | Wkgs. | No. | Width | Au. Oz. | Ag. Oz. | Location | Wkgs. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Gen. | .11 | 10.0 | Dump 1000 T. | SW. | 55 | 7' | .20 | 13.6 | W. Side 40' Lev. | N |
| 2 | Gen. | .12 | 7.1 | Dump 1000 T. | SW. | 56 | 2.5' | .02 | Tr | Floor O.C.1-Lime | N |
| 3 | Gen. | .19 | 13.8 | Dump 1000 T. | SW | 57 | 2' | .13 | 11.0 | Above portal Tun. | |
| 4 | Gen. | .08 | 5.36 | Dump 1000 T. | " | 58 | 2.5' | .03 | .3 | S. Side " " | |
| 5 | Gen. | .14 | 3.6 | Dump 1000 T. | " | 59 | 3' | .04 | .9 | Below No. 58 | |
| 6 | Grab | .12 | 6.0 | Dump " " | " | 60 | 4.5' | .30 | 34.5 | Inside tunnel in Raise | |
| 7 | Grab | .74 | 6.8 | Dump 1000 T. | S | 61 | Grab | .06 | 3.82 | Lower dump | |
| 8 | Grab | .20 | 19.0 | Lead ore | S | 62 | " | .08 | 7.4 | Bottom stope 8'x40' | |
| 9 | 12' | .17 | 3.5 | Collar 20'win. | S | 63 | 18' | .10 | 23.3 | 3-6' cuts incl. to OC-2 | |
| 10 | 7' | .11 | 10.4 | S. Side Bot. " | S | 64 | 6' | .01 | .12 | 3-6' cuts face Tun. OC-1 | |
| 11 | 6' | .24 | 23.74 | Floor UH Stope | S | 65 | Grab | .02 | 2.38 | Lower dump | |
| 12 | 1.5' | .035 | 1.6 | Surf Qtz. | S | 66 | 15' | .08 | 2.1 | 2 Clks. OC-2 105' Tun. | |
| 13 | 2' | .60 | 20.8 | Vert. Fracture | S | 67 | 8' | .10 | 5.6 | Portal " " " | |
| 14 | 3' | .02 | .4 | Surf Qtz. | S | 68 | 6' | .075 | 10.7 | Over Portal " " | |
| 15 | 13' | .06 | 4.0 | Roof & End Stope | S | 69 | Gr. | .26 | 23.8 | ) | |
| 16 | 18' | .09 | 8.0 | S. Side winze 40' lev | S | 70 | Gr. | .15 | 10.2 | ) | |
| 17 | 20' | .19 | 7.3 | Roof Stope 40' Lev. | S | 71 | Gr. | .19 | 12.5 | ) Dump O.C.-2 1000 T. | |
| 18 | 1.25' | .32 | 10.8 | Roof Stope " " | S | 72 | Gr. | .12 | 22.56 | ) | |
| 19 | 20' | .12 | 6.88 | Roof Stope 40' Lev. | S | 73 | 4'. | .16 | 3.24 | Face X-cut 105 Tun. | |
| 20 | 12' | .20 | 17.1 | Roof Stope 40' " | S | 74 | 12' | .02 | 3.1 | " " " | |
| 21 | 12' | .22 | 29.78 | E. Wall " | S | 75 | 3' | .09 | 11.0 | Portal " " | |
| 22 | 12' | .17 | 12.7 | X-cut " | N | 76 | 2' | .45 | 4.3 | Roof & side X Cut 105' Tun. | |
| 23 | 6' | .14 | 13.0 | E. Side Drift " " | N | 77 | 2' | .06 | 1.4 | Below No. 76 | |
| 24 | 4' | .18 | 9.6 | X Cut " " | N | 78 | 10" | .06 | Tr. | Gouge Fe Std. | |
| 25 | 6' | .16 | 21.2 | Face Drift " " | N | 79 | 14' | .16 | 5.5 | Over Portal " " | |
| 26 | 42' | .22 | 16.0 | 7-6' Cuts " " | N | 80 | 8' | .20 | 16.0 | Below No. 79 " " | |
| 27 | 16' | .16 | 6.9 | X-cut & Face Hor'l | N | 81 | 7' | .15 | 6.0 | Bench Hard. Ore O.C-2" " | |
| 28 | 6' | .19 | 15.2 | Roof Old drift 40'L. | N | 82 | 13' | .06 | 2.5 | Alt. Surf. Gossan Trench | |
| 29 | Grab | .40 | 49.7 | Shows Pyrite | N | 83 | 15' | .04 | 2.2 | " " " " | |
| 30 | " | .48 | 52.9 | " " | N | 84 | Gr. | .02 | 1.2 | Alt. Limestone | |
| 31 | 8' | .18 | 11.4 | Face 40' lev | N | 85 | 5' | .02 | .18 | Vert. cuts Short Tun. OC-2 | |
| 32 | 8' | .13 | 12.7 | Face " " | N | 86 | 10' | .02 | .02 | " " Near " | |
| 33 | 6.5' | .08 | 7.92 | Face " | N | 87 | Gr. | .04 | 1.44 | Dump 120 T. OC-3 | |
| 34 | 8' | .06 | 8.14 | W. Side stope " " | N | 88 | 10' | .06 | 1.26 | Cut red oxide mat. | |
| 35 | 6' | .16 | 10.4 | W. Side stope " " | N | 89 | 9' | .11 | 2.5 | Cut each side tun. OC-4 | |
| 36 | 5' | .28 | 8.52 | Floor stope " " | N | 90 | Gr. | .42 | 11.2 | Ore on dump OC-4 | |
| 37 | 8' | .04 | 1.72 | " " " " | N | 91 | Gr. | .06 | 5.7 | Type silicified LS | |
| 38 | 6' | .08 | 6.2 | E. Side " " " | N | 92 | Gr. | .76 | 4.2 | Ox. Ore over 105' OC-3 | |
| 39 | 6' | .32 | 27.9 | E. Side Stope " " | N | 93 | Gr. | .20 | 18.6 | Ore on dump OC-3 | |
| 40 | 7' | .30 | 14.1 | W. Side " " " | N | 94 | 2' | .45 | 4.3 | N. side bottom OC-3 | |
| 41 | Grab | .18 | 30.4 | Shows pyrite " | N | 95 | 8' | .06 | 3.4 | OC-4 | |
| 42 | 4 | .46 | 50.39 | E. Side drift 60' lev | S | 96 | 15' | .08 | 4.76 | Hor. cut. Around OC-4 | |
| 43 | 8.5 | .24 | 24.1 | W. Side stope 40'" | N | 97 | 6' | .02 | .14 | " " OC-4 | |
| 44 | 6' | .21 | 19.7 | W. side stope 40'L. | N | 98 | Gr. | .08 | 1.6 | Dump 50 T. OC-4 | |
| 45 | 4' | .08 | 6.2 | Pb. 20.35% 60'L. | S | 99 | " | .38 | 33.5 | Dump small OC-4 | |
| 46 | 2' | .56 | 26.24 | Roof narrow stope | | 100 | " | .43 | 9.6 | Ore OC-5 | |
| 47 | 4' | .02 | 5.2 | Pb 20.58% 60' L. | S | 101 | Gr. | .06 | 9.54 | Dump 100T OC-5 | |
| 48 | 4 | .02 | 5.5 | Pb 15.57% Face" " | S | 102 | 15' | .04 | 3.32 | Hor. Cut around OC-5 | |
| 49 | 2' | .25 | 8.2 | W. wall & Collar win. | | | | | | | |
| 50 | 2' | .59 | 22.5 | Roof Narrow stope | | | | | | | |
| 51 | 5' | .10 | 8.9 | Bottom 70' winze | | | | | | | |
| 52 | 5' | .04 | 5.52 | Walls & Back 60' L. | S | | | | | | |
| 53 | 3' | .02 | 10.58 | Bottom 75' drift | | | | | | | |
| 54 | 5' | .08 | 2.88 | Contact 40' level | | | | | | | |

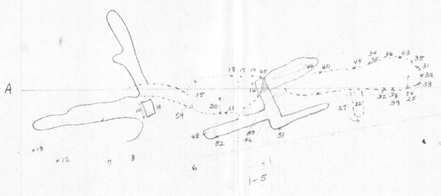
Scale of map: 40' = 1"

(Original sketch by Miles Carpenter on November 12, 1936)

LONGITUDINAL SECTION ON VERTICAL PLANE A A



SOUTHWEST WORKINGS



NORTHEAST WORKINGS