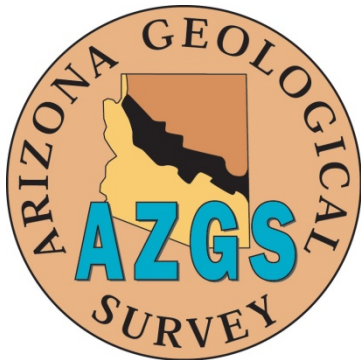




CONTACT INFORMATION
Mining Records Curator
Arizona Geological Survey
3550 N. Central Ave, 2nd floor
Phoenix, AZ, 85012
602-771-1601
<http://www.azgs.az.gov>
inquiries@azgs.az.gov

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Extra Copy

ENGINEER'S REPORT

ASH PEAK MINE

Consulting Engineer Wendler's report on the ASH PEAK MINE in Greenlee County, Arizona, is as follows:

January 17th, 1914.

To the Directors of the
International Mines Development Co.,
Los Angeles, Cal.

Gentlemen:-

Having completed my examination of the Ash Peak Mine and the economic conditions of the district as related to mining and milling operations, I report the resume of my investigation as follows:

- FIRSTLY: I have formed a good opinion of the existing ore bodies, their probable persistence in depth, and the possibilities of the mine to become a large and profitable producer.
- SECONDLY: I find the ore to be a very clean silver-gold ore, free from any base admixture, of good commercial grade, amenable to cyanidation, and yielding a high extraction at a low cost of treatment.
- THIRDLY: I find that sufficient water for all mining and milling purposes can be economically supplied from at least one, but very probably from two different sources.
- FOURTHLY: I have assured myself of the availability of cheap power, obtainable by installing crude oil internal combustion engines, and making use of the low-priced California oil supply.
- FIFTHLY: I find the general working conditions in the Ash Peak section to be equally as good as in any of the prominent mining districts of the Southwest. The climate is excellent. Distance from the railroad is only seven miles over a good automobile road. Labor is of the best, and wages are lower than in any other mining camp in Arizona. All necessities as well as conveniences that could be required are within easy reach and at the right prices.

In my detailed report herewith appended, you will find the full particulars, which form the basis of my preceding condensed summary. In conclusion of my observations, I may add that I consider the Ash Peak proposition one of unusual merit and attractiveness.

I am much impressed by the great resemblance of certain geological and mineralogical features, and the similarity of the ore and mode of occurrence to several of the big silver mines of Mexico which have come under my observation.

Such continuous, well-defined outcrops and wide bodies of quartz as mark the Ash Peak vein on the surface, are generally in themselves a good indication for the persistence of the vein in depth; when, as in this case, they are accompanied by extensive mineralization shown by development to be stronger and more pronounced at a depth of 500 feet (bottom of mine) than on and near the surface, the chances for the making of a large and profitable mine increase vastly, and when inferences can be drawn from analogous cases of ore occurrences, as can be done in this

case by comparison with certain other mines, the chances of failure decreases in proportion.

Taking into consideration all the latent possibilities which undoubtedly exist at Ash Peak, together with the excellent economic conditions referred to, I can fully endorse your acquisition of the property as proposed.

LOCATION:

The Ash Peak Mines are situated in Greenlee County, Arizona, about twelve miles west of Duncan, Arizona, and seven miles south of Sheldon, Arizona. Both these towns are located on the line of the Arizona & New Mexico Railway, a road running from Clifton, Arizona, to Hachita, in New Mexico. This railroad connects with the El Paso & Southwestern Pacific Railroad of Lordsburg, New Mexico. Good automobile roads lead from both Duncan and Sheldon to the Ash Peak Mines. The Gila River runs parallel to the railroad between Duncan and Sheldon. The nearest distance to the river and the railroad is somewhat more than four miles.

The elevations are as follows:

Duncan	3,536 feet
Sheldon	3,462 feet
Ash Peak Camp	4,665 feet

CLAIMS:

The holdings of the Ash Peak Mines consist of:

(1) Five lode claims, covering the outcrop of the Ash Peak ledge and containing the eighty-six acres of land, From east to west and five claims are as follows:

Great Eastern
Commerce
Fraction
Summit
Homestead

(2) Two mill sites, located in two claims each of five acres north of the lode claims. These locations are named:

Summit M.S.
Commerce M.S.

GEOLOGY AND VEIN FORMATION:

Manifest signs of strong volcanic activity can be observed throughout the Ash Peak region. Ash Peak proper is a mountain of volcanic tufa, rising precipitately about 1,500 feet above the surrounding country, and forming a well known landmark about a mile to the west of the mine. The formation to the east of Ash Peak mountain is Andesite. It is in the Andesite where is found the ore occurrences, which was the cause of my visit to the district.

Continuous bold quartz croppings, throughout the entire length of the five claims and beyond, mark the tread of the ledge for nearly two miles. The strike of the vein is to the Northwest, with a dip of 85 degrees from the horizontal to the Southwest.

The vein being harder than the andesite in which it occurs, erosion of the walls left it as a ridge of unmistakable nature, standing in places twenty to thirty feet wide and twenty feet above the soil.

The vein is probably the result of a combination process of partial filling of a fracture by ascending waters, probably of magmatic origin supplied by the cooling of igneous rocks and of replacement of the adjoining rock.

The principal gangue material is a white quartz, brecciated in parts. Calcite is found interspersed in the vein filling, and in some parts I found cavities filled with crystals of gypsum near the smooth and clearly defined hanging wall of unaltered andesite formed by the plane of the fracture. There is no wall defined footwall, here the andesite has been intensely altered and in places is entirely silicified.

ORE OCCURRENCE:

The pay ore has no visible demarcation, except the assay, but it is usually marked by a more crustified structure, containing finely divided sulphides disseminated through the quartz and showing also as parallel bands. In the ore shoots, the ore seems to be richest near the hanging wall, assumes a width of from six to sixteen feet, and the previous metal contents then gradually decreased until the ore has slowly merged into unaltered rock.

The silver occurs as argentite, except where the ore has enriched near the surface.

The class of argentite veins has numerous representatives among the silver mines of Mexico, where they are also generally found in the andesite as at Pachuca, Guanajuato, Zacatecas, etc., districts which of late years have come into renewed prominence by the successful application of the cyanid process to low grade silver ores.

The history of the Mexican mines is in general the same. While the silver contents naturally vary in the different veins, there is usually a richer ore found in the oxidized zone near the surface; this is followed as a rule by a very lean zone until at varying depths better ore is reached again. This is generally in the form of a primary ore. Whether or not this primary ore can be classed as pay ore, depends of course upon its grade as well as upon the economic conditions governing that particular mine, and upon the economic conditions governing that particular mine, and every district or property has to be considered individually. Often, but not necessarily always, a zone of secondary enrichment yielding very high grade ore, is encountered upon reaching the actual or former permanent water level.

Analogous conditions are in evidence at Ash Peak. At the Ash Peak Mine the work which has been done so far is confined to certain workings, known as the COMMERCE AND SHAMROCK mines. In both the Commerce and Shamrock shafts, work was originally commenced on what was manifestly vadose shoots, the ore of which owes its profitable or rich grade to surface enrichment. Chloride of silver is noticeable abundant in the richer ore from the surface workings of the Commerce and Shamrock mine, and occurrence quite frequent in the weathered and enriched zone of ore deposits in the arid regions of Mexico and Arizona.

The actual outcrop of the Ash Peak vein, shattered by the changes in temperature, offered a favorable field for the action of surface waters, which, descending, precipitated mineral held in solution, causing a concentration of metal in certain favorable portions of the weathered zone of the vein. This surface enrichment in the Ash Peak vein, as far as I have been able to observe in the workings on the Commerce and Shamrock, seems to extend to a depth of approximately 200 feet.

Precipitation of the mineral held in solution by the hot ascending water must have commenced when cooling began and pressure decreased on nearing the surface, but deposition took place rapidly and the silver and gold contents of the solution were mostly exhausted before they could reach the ACTUAL surface. This theory seems to find corroboration.

FIRSTLY: in the fact that the ore of the Ash Peak vein, on and near the surface owes its greater value to enrichment after deposition.

SECONDLY, in the fact that on reaching a depth of about 400 feet, and after having passed through a lean zone, as demonstrated in the workings of the Shamrock mine, good ore, but without any of the marks of the oxidation zone, again began to make its appearance, with a slow but gradual and noticeable increase in value as greater depth was attained.

DEVELOPMENT:

There are a number of shallow shafts, which were sunk years ago at different points along the ledge by chlorides. Good ore is stated to be in evidence in all of these old workings but at the time of my visit, I found all these holes in bad shape and inaccessible.

The development of late years, carried on by the present owners, was confined to the Summit and Commerce Claims.

SUMMIT:

The workings of this claim are known as the Shamrock Mine. (See Map) This mine is opened up by a shaft, 11 x 7 in the clear, to a depth of 500 feet. The only lateral development of any consequence was done on the 50 foot and 500 foot levels. On the intermediate levels, stations were cut and drifts commenced, but not continued.

The Shamrock shaft was sunk at a point on the ledge where Silver chlorides and bromides were encountered on the surface. Good pay ore commenced at grass roots, and a good deal of it is still standing in and near the shaft. In my examination I noticed good ore in the shaft down to a depth of 130 feet. The vein is very wide, and at this depth, the shaft seems to be quite a distance from the hanging wall. As the pay ore in the Ash Peak vein is known to always run near the hanging, I believe that crosscuts in that direction would probably reveal good ore even below the point of my lowest observation and down to the limit of the weathered zone.

Below this horizon which has been susceptible to surface enrichment, the shaft passes through a section nearly barren of values until at a depth of 395 feet it encounters a new shoot of pay ore. This ore, however, shows none of the minerals of oxidation. The length of the surface shoot above referred to, I measured to be seventy-five feet. The width of the ore as assumed from the width of the stopes seems to be about ten feet. Its depth has not been determined yet, but probably be in the neighborhood of 150 feet.

According to the records which I inspected, all the rock which came out of the shaft down to the 50-foot level, together with all the rock extracted from the two drifts on the 50-foot level, was shipped to the smelter. From the smelter settlements I find that it amounted to approximately 900 tons, and showed an average value of 24.25 oz. of silver and 80 cents gold per ton of 2,000 lbs.

This shipment included low-grade material from beyond the limits of the ore shoot on the 50-foot level, which somewhat lowered the value of the ore.

The records show other shipments, amounted to 362 tons, extracted from the stope ABOVE the 50-foot level (see map.) Smelter settlements for this ore give an average of 33.7 oz. silver and 80 cents gold per ton of 2,000 pounds.

These returns probably indicate more nearly the true value of the ore mined from the shoot.

Nothing has been stoped below the 50-foot level, and while no exact measurements of standing ore are possible, I would consider an estimate of 3,000 tons of ore averaging \$14. per ton, a very safe appraisal.

In my calculations, I figure silver at the rate of 55 cents and gold at \$20 per ounce.

The new ore encountered in the shaft at 395 feet depth continues down with improving values and shows good and strong in the bottom level of the mine (500) feet. This level was opened in both directions, but the owners, for the sake of economy decided not to drive in the hard quartz vein, but to run the drifts in the soft andesite of the hanging wall, parallel to the vein, and cross-cutting into the vein every 50 feet.

This program was carried out, and the vein on the 500 foot level, is exposed by these crosscuts only, with the exception of a stretch between the second and third west crosscut, where the vein was broken into and an underhand stope, 30 feet in length commenced on the ledge.

According to the records, everything hoisted from 395 feet to 500 feet depth in the shaft, (bottom) was shipped to the smelter.

Settlement sheets show that these shipments amounted to 625 tons, and averaged 13.6 ounces silver and \$1 gold per ton equivalent to \$8.48 per ton of 2,000 pounds. Present value \$18.00.

The last car of ore shipped, and weighing about 40 tons came from the crosscuts on the 500 foot level, and I find from the smelter liquidation that it averaged 16.2 ounces silver and \$1.20 gold, equivalent to \$10.11, present value \$24.60 per ton of 2,000 pounds.

	Feet
Sampling and assays on the 500 foot level (see map) show the ore shoot there to have a length of not less than ...	250

The assumed width, as calculated from the average width exposed in the crosscuts is	9
---	---

Depth of the ore shoot actually developed up to date in shaft from 395 feet to 500 feet	105
---	-----

Average value of the ore exposed in the shaft as per shipment of 625 tons, per ton, \$8.48 (present value \$18.78).

Average value of the ore in the bottom level (500) as per sampling of crosscuts and underhand stope \$10.44, (present value \$23.10).

The ore between the fourth and fifth level is only developed through the shaft and the bottom drift, giving it an exposure on two sides. This fact prevents the exact estimation of positive ore standing between the two levels, but I consider that it can be assumed with safety that there will not be less than 10,000 tons of ore averaging \$8.50 per ton (present value \$18.80) available between those two levels.

COMMERCE:

The distance on the ledge between the Shamrock and Commerce markings is 2,800 feet.

This mine is opened up by a shaft 220 feet deep. The entire workings (see map) are in quartz, but not in pay ore, except in the southeast part of the mine, where a short shoot of ore 50 feet in length, which reaches to the surface, has been exploited. The width of the ore in this shoot, as far as I could determine, is about 8 feet near the surface and 18 feet on the 200 foot level.

According to the records, the ore shipped from this shoot to the smelter amounted to 840 tons of an average value of 20 ounces silver and 80 cents gold, equivalent to \$11.80 per ton, (present value \$26.50).

There is a pillar of ore standing between the 100 foot level, and 200 foot level, (see map) which I sampled. The assay returns showed a value of \$10.90 (present value \$24.40) and probably about 1,500 tons of this grade ore could be extracted from this pillar. From the above the 100 foot level probably 500 tons more of the same grade could be mined, making a safe total of 2,000 tons of ore averaging \$10.90 per ton (present value \$24.40).

Conditions relative to the ore occurrence as described in the Shamrock mine, apply also to the Commerce. The short ore shoot, which has been exploited in the Commerce, although it is still in evidence on the lowest level (200 feet) will in all probability be followed by a lean zone, which in turn will again in all likelihood be succeeded by new, deeper seated ore bodies.

The illustration presented by the deeper exploration of the vein through the Shamrock workings would seem to indicate that these new ore bodies, wherever encountered, should be of commercial grade, stronger and of greater length than the surface shoots. Judging by comparison with similar ore occurrence in other mines, they should prove persistent in depth.

There is a dump at the Commerce mine which, as I am informed, represents all of the material taken from the mine in development exclusive of the ore from the shoot which was shipped.

According to the records, 1,254 tons taken from this dump were shipped to the smelter and were paid for at the rate of \$8.60 per ton (present value \$18.00). There was probably some of the ore from the shoot mixed with this shipment, as my sampling showed a somewhat lower assay. I calculate the tonnage in this dump at approximately 8,000 tons, averaging \$6.00 per ton (present value \$11.50).

METALLURGY:

The ore is a most perfect cyaniding ore. It is free from all base metals. Tests have shown it to be readily soluble if reduced sufficiently fine and it crushed rapidly under a stamping blow.

In testing the ore it was ground to pass 200 mesh, agitated with double its weight of solution containing 4 pounds K.Cy. per ton, 5 line, 2 pounds salt, and 1 pound lead acetata per ton of solution.

Heads assayed	Ag. Oz.	Au. Oz.
Ore ..1.....	12.00	.035

Tails assayed		
after 12 hours	4.00	.012
after 24 hours	2.00	
after 48 hours	0.56	none

Extraction	95.33%	100%
------------------	--------	------

Solution after 48 hours agitation showed K. Cy. strength 2.3 pounds per ton.

Stamp duty for Ash Peak ore, using 1,400 pound stamps, should be about 5 tons per stamp per 24 hours.

GENERAL OPERATING CONDITIONS:

Climatic conditions are excellent. There is a good supply of high class labor available from the nearby towns of Clifton and Morenci. For mining, mostly Mexican labor is used, and wages run from \$1.50 for surface work to \$2.50 for machine drillers. Wages for American skilled labor, carpenters, mechanics etc., range from \$3.00 to \$4.00.

Cost of store and mining supplies averages about the same as at the principal mining camps of Arizona.

Timbering in the mine will be limited to occasional stulls.

There is an excellent mill site available back of the Shamrock shaft.

COST OF MINING AND MILLING:

An exact estimate is not possible at the present moment, but I should say that after all the necessary development work has been accomplished, with the ore in readiness for stoping, and mining operations scientifically and economically conducted, the cost of production, including everything, for the ore delivered at the mill should not exceed \$2.00 per ton.

Neither should the cost of milling and cyaniding in a plant of say 150 tons daily capacity pass the \$2.00 per ton limit.

ORE AVAILABLE AT PRESENT CLOSE TO THE SHAFT:

Shamrock Mine, upper levels, 3,000 tons averaging \$14. per ton; Shamrock Mine, between fourth and fifth levels, 10,000

tons averaging \$10.90 per ton; Commerce dump, no cost of extraction attached, 8,000 tons averaging \$6.00 per ton. Total 23,000 tons. Average value Silver 24 oz. Gold 80 cents.

No possibilities are taken into consideration.

POSSIBLE PROFITS:

It will of course first be necessary to continue with the development of the mine, and make greater ore reserves available before deciding upon the erection of a big mill and powder plant, but, with a mill once in operation, the ore which the property shows right today should yield a profit sufficient to pay for the whole mill and power plant.

The estimate of profit to be realized from future ore can at present of course only be made approximately.

In allowing \$2.00 for cost of mining, I believe that I am leaving a good margin of safety.

Taking up the cost of treatment, I would allow only for a 90 percent extraction of the values instead of the 95 per cent extraction of the tests.

The cost of power, according to calculations, should not exceed \$36.00 for 360 days, which is equivalent to ten cents per horsepower per day.

I figure, however, 50 per cent more and make it 15 cents and allow the use of $1\frac{1}{2}$ horsepower per ton of ore treated, thereby raising the cost per horsepower for each ton of ore treated to $22\frac{1}{2}$ cents.

Chemical consumption at a liberal allowance would be as follows:

Key	20¢ per ton
CaO	02¢ per ton
Zn	05¢ per ton
PbA	02¢ per ton
Cleanup Chemicals	02¢ per ton

Total 42¢ per ton

Figuring labor at the rate of \$50.00 daily for a treatment of 150 tons, would show a cost of $33\frac{1}{3}$ ¢ per ton.

For incidentals and marketing I allow 18¢ per ton. This brings the total for treatment up as follows:

Power	$22\frac{1}{2}$ ¢ per ton
Chemicals	41 ¢ per ton
Labor	$33\frac{1}{3}$ ¢ per ton
Incidentals	18 ¢ per ton

Treatment total \$1.15 per ton

The grand total would therefore be:

MINING	\$2.00
TREATMENT	1.15
	<u>\$3.15</u>

According to this calculation, and allowing for 10 percent. Loss of value in the treatment it would take an ore having a value of \$3.50 to pay expenses and anything above this value would be gain.

An ore containing silver and gold to the amount of \$8.50 (present value \$19) which is the average allowed for the Shamrock ore, and allowing for 90 per cent, extraction would yield a profit of \$4.00 per ton or \$13.50 at present price of silver.

CONCLUSION AND RECOMMENDATIONS:

Summing up my observations, I come to the conclusion that there exists at Ash Peak a great possibility for the making of a big mine of cheaply treatable ore, and that, should this possibility be realized, the conditions for economic mining and milling operations are very favorable.

The first step to be taken should be the further development of the Shamrock ore shoot below the 500 foot level; plans for the milling of the ore must necessarily be reserved for later consideration.

According to all indications this 500 foot level is practically on the apex of the ore body, and applied theory together with inferences drawn from other analogous cases of ore occurrence point to the continuation of this ore in depth.

If this proves to be correct, -- even without further increase in value of the ore, -- there should not be less than 20,000 tons of profitable milling ore developed on this shoot alone for every 100 feet of further depth.

With a good ore reserve once assured on the Shamrock shoot, more extensive exploration can be undertaken along the course of the vein. Judging from surface indications, there are strong probabilities for the existence of at least one more shoot between the Shamrock and the Commerce shafts, and another shoot east of the Commerce ore body.

The present hoisting equipment at the Shamrock shaft, is used for purely development work, will suffice for another 200 feet, but an air compressor and machine drills will have to be added to assure speedy and economical work.

No other machinery is needed to commence work.

Respectfully submitted,

(signed) HERMAN J. WENDLER, E.M.

*The figures in brackets showing
present value must have been inserted
in 1935-*

ASH PEAK

Note by G. M. Colvocoresses
October, 1937.

This mine was taken over by a Colorado Company in 1936 and is now being operated with a mill. I understand that the results to date are quite satisfactory. The bracketed figures in the report indicating present values appear to have been inserted in 1935.

Manager is Seares

Co is known as the Ace King Co. (3)

NOTE RE ASH PEAK MINE

12/8/39

Veta Mines has quit and closed down. The recovery of their flotation mill was only 68%. and they evidently did not think that the ore reserves justified a change to cyanide altho tests have shown that a recovery of over 90% can be made by that method.

Arthur Murphy has resumed control or ownership of the mine and intends to fix up a cheap plant to cyanide the tailings as he thinks that he can recover 70% of the values without regrinding.

There are available 140,000 tons of tailings with value \$3.00 per ton (Mostly in silver.).

G.M.C.

NOTE RE ASH PEAK TAILINGS

3/21/40

Arthur Murphy has told B. B. Shimmel that the Veta Mines have left 150,000 tons of flotation tailings in which the gold and silver values will average \$2.00 per ton and he proposes to put up a 200 ton cyanide plant for their treatment which he estimates will cost \$30,000.

I told Shimmel that plant would probably cost \$50,000 but even so that the project might be a good one if over 80% of the values or say \$250,000 could be recovered at a working cost of 80¢ per ton as seems likely which would leave a net profit of \$80,000 from 2½ years operations plus the scrap value of the mill which might have some value for treating ore from the mine or custom material.

Told Shimmel that proper pipe sampling of the tails would probably cost \$1000 and metallurgical tests including tests of the water from the mine might add another \$500.00 and I thought that the project well justified the gamble of \$1500 - \$2500 for proper preliminary investigation which should reduce the problem to one of mathematics except for the risk of reduced prices for gold and silver, the latter to be discounted in advance.

Shimmel may advise in this regard during April or May.

LAW OFFICE
BLAINE B. SHIMMEL
TITLE & TRUST BUILDING
PHOENIX, ARIZONA

Ash Peak
file

AIR MAIL

March 26, 1940

Mr. George M. Colvocoresses,
Yale Club,
50 Vanderbilt Avenue,
New York City, N. Y.

Dear Colvo:

I called your office yesterday just after you had left. Sorry I did not get to talk to you before you left.

The Ash Peak situation is still so indefinite that I have not written to Lewis Douglas. In fact, I would hesitate to disturb him at this time; certainly not without exhausting other possibilities. It will be fine if you can see him, and be sure to give him my regards, but don't say anything about the local matter for the present.

I have made some recommendations to Murphy, but you know that he is somewhat difficult to advise. There are one or two possible sources of the necessary money for this project, and if I have any control over them, the first step will be a comprehensive report, which I will try to steer your way. Let me repeat that the whole matter is quite intangible, and considerable of a long shot.

I note your transaction with Bullard Gold Mines, Inc., and will keep it in mind in my contacts with any of that crowd, particularly if bankruptcy or receivership ensues.

Please give my regards to Broadway, and have a good time.

Best regards,

Blaine B. Shimmel

BBS:AC