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REWARD MINE — file

Notes from Conference with Charles Davis of Phoenix, Phone 3-8673

2/11/42

Davis states that property is located in southwest section of Pinal County--some 2 miles west by south from Papago Village and a little south of the Christmas Gift Mine.

Road is good and claims lie just south of the line of the Papago Indian Reservation in the Bitter Wells Mountains.

Davis and associates secured on December 5th, 1941, a 10 year lease from the owners with royalty of 12½% on shipping ore and 10% milling ore. Purchase price not stated but terms and duration of lease might be modified if lessee guaranteed to erect a mill. Davis owns 75% of lease and says that he and his associates realize that they cannot operate themselves and will be very reasonable in dealing with a responsible assign.

Mine was worked extensively prior to 1886 and a small smelter once operated, but most of these workings were in the showings of copper with gold and silver where tonnage is limited and values erratic.

Main body is a zinc iron ~~iron~~ore as described by Richmond with carbonates and silicates near the surface and zinc blend coming in at 40' depth.

Davis says that the shaft mentioned by Richmond is open and that the levels at 200 and 300' depth show plenty of ore. There is also an adit tunnel some 1500' long which cuts through four veins in lime-stone and/recent shafts on which Davis is working has opened up some ore carrying 26% zn. mixed with iron sulfids.

Davis believes that there is a good chance to prove up an immense tonnage of 9% zinc ore which would justify a 500 ton mill and says that this opinion was also held by Richmond & Ettinger formerly with Magma Co.

whose report he ~~has promised to bring me~~ is attached and by Bill Gohring, Chas. Willis, and an engineer of the Denver Engineering Co. who recently examined the property. ~~Richmonds~~ Ettinger's report should be reliable and Davis says that Magma Co. tried to buy the property but could not agree with the owners on terms.

There is no equipment nor camp buildings, but a good well furnishes ample water supply. Some former operators had trouble separating the zinc from the iron which should not be difficult at present. Sample of ore which he brought in was nearly all sphalerite with gangues of limestone.

At distance of 1½ miles from the Reward is another showing of zinc which carries silver and 6½ miles southwest of the Reward is a prospect with some ore which carries 40% Pb and $12.00 value in gold. Davis does not have lease or option on either of the two last mentioned properties, but he can obtain these quite promptly.

The report by Ettinger, which unfortunately was not accompanied by his map--and the statement by Richmond, make it clear that no large tonnage of ore is actually developed or even indicated, but they seem to justify a further investigation of the possibilities.

Sam

Notes regarding the REWARD MINE Near Casa Grande
taken by conference with Richmond of the Magma Co., August 21, 1929.

There are three inclined veins with a dip of about 40 degrees. These have a width of 8', 12' and 22' and occurring in limestone formation. The gangue is crushed limestone, mineralized with iron pyrites, pyrhotite, and sphalerite. The ore will vary from 7 to 15% in zinc, average about 9%. A little copper is coming into the veins but there is very little lead or precious metals.

A shaft 300' in depth cuts through all these three veins and should be accessible. The mine is owned by Kimball Palmeroy and a doctor in Mesa. Practically no tonnage of ore can be considered as blocked out since the only development inside the shaft is a shallow tunnel which, however, looks very promising and if development were continued a very substantial tonnage might be indicated.

The owners have been asking the ridiculous price of $350,000.

The west end of the property has a fine showing of copper ore with carbonates and silicates on the surface and in places this ore runs 4% copper and may prove to be the makings of a fairly large mine.

This section of the property merits further development. The mine is located 28 miles from the railroad and a mill would have to be erected on the ground.

One and one-half miles to the west of this property is located the Republic Mine which may also be considered as promising from a development standpoint.

REWARD MINE

LOCATION & ACCESSIBILITY

The Reward Group of claims is located thirty miles south of Casa Grande, in the Casa Grande Mining District, Pinal County, Arizona. Casa Grande is situated on the main line of the Southern Pacific Railroad.

The claims are reached by a good wagon road across a very flat country. Freightingis done by wagon at a cost of six dollars per ton from Casa Grande. Auto trucks could cut this cost considerably.

CLAIMS.

The property consists of two patented claims, area approximately 26 acres and 29 unpatented, area approximately 406 acres. They are contiguous and cover all surface showings.

HISTORY OF PROPERTY:

The property was originally opened up nearly 30 years ago by an English Co. who sunk the zinc shaft on the Phonodoree claim 300' but did no lateral work and also drove the copper incline on the Reward Claim approximately 500'. They installed also a 30 ton circular Blast Furnace, which treated approximately 1,000 tons of ore.

Since then the property has had a varied history. Hovaland and Smith interests, known as the Casa Grande Development Co., sunk the copper incline to the 80 level. Later the Reward Arizona Mining Co. was organized and now it is known as the Casa Grande Arizona Mining Co. The interests represented in the present company have sunk the vertical copper shaft 400' and done all the lateral work in the Zinc shaft and are now diamond drilling.

The development of the property seems, for the most part, ill-advised. Little or no attention was paid to the faults which opened the channels for the mineral bearing solutions.

DEVELOPMENTS OF THE DISTRICT: The Lake Shore Mine, six miles to the East, recently taken over by Hollis & Co. of Chicago, is shipping ore with Caterpillar equipment to the Sasco Smelter, 30 miles to the East. At Vekol the dumps of the old Vekol Silver Mine are being retreated. There are several prospects in the adjoining country which may possibly possess some merit.

GEOLOGY: A series of sedimentary beds consisting of shales, limestones, and quartzites, capped by igneous flows, are tilted up in easy slopes from the flat desert country. These sediments strike, for the most part, northeasterly and dip to the west from 25 to 35 degrees. Granite porphyry, andesite, and rhyolite dykes are intruded in the sediments. The sediments are folded and faulted very extensively. Two or possibly three large fault movements are of utmost structural importance as forming easy channels for transition of mineral solutions.

DEVELOPMENTS & ORE OCCURRENCE:

Two distinct ore bodies have been developed on the property namely: Zinc and Copper. The Zinc occurs mainly on the south end of the property in beds replacing garnetiferous limestone. These beds are cut in the workings of the Zinc shaft on the Phonodoree Claim and also in the long Zinc tunnel on the South Reward Claim.

In the Zinc Shaft three or possible four beds are cut. On the 80' level a short crosscut to the west passed thru a zinc bed from 6 to 8' thick containing oxidized zinc ore, also some zinc and iron sulphides and quite a little magnetite. A sample taken here assayed 13.7% Zn., 26.8% Fe., 0.20% Cu., tr. Ag., Nil Au., 1.1% Pb. and 12.6% Ins.

West from the shaft on the 160' level a short crosscut opened up a zinc bed 4 to 6 ft. thick. A sample taken here ran 7.8% Zn., 21.3% Fe., 0.20% Cu., 1.3% Pb., tr. ag., Nil Au., and 32.6 Insoluble. There was little or no oxidization here.

On the 200 level another bed of limestone and magnetite and zinc sulphide was cut. A small station was cut here. A sample taken here ran 12.3% Zn., 15.4% Fe., 0.11% Cu., Tr. Ag., Nil Au., 1.% Pb. and 36.2% Ins.

On the 300 level another bed dipping west, was cut and about 100' of drifting done. This drifting was done alongside of the ore. At the shaft a good cross section of the bed was exposed. Here a sample was taken six feet wide assaying 12.7% Zn., 22.1% Fe., 1.3% Pb., tr. Ag., Nil Au., 25.4% Ins. No oxidization was present here.

A general sample was taken of ore on the dump, which was taken from the 300 ft. level. Assayed--17.3% Zn., 22.5% Fe., 1.1% Pb., 0.17% Cu., Tr. Ag., Nil Au., 14.% Ins.

The 3 zinc beds cut in the tunnel on the South Reward Claim are all oxidized, being replacements of garnetiferous limestones same as in the zinc Shaft. These beds could probably be correlated with those in the zinc shaft. Bed No. 1 (See map. 6' wide, ran 17.9% Zn., Bed no. 2, 6' wide, ran 10.7% Zn., Bed No. 3 is a wide badly shattered area of which a 3.5' streak assayed 14.5% Zn.

The copper occurs in garnetiferous limestone beds overlying the quartzites adjacent to faults in the limestones. The copper incline (See Map) is driven within 100' south of the large East and West fault and approximately parallel to it. The copper mineralization is from one to two feet thick, being replacement of the limestone and extends about 75' south from the plane. The garnets are very greatly altered to hematite giving the country rock an excessive red coloration. In two places in the workings the fault plane was encountered and copper mineralization is present here. No work was ever done on these beds on the north side of the fault. The copper ore will run from 4% to 8%, carrying about 4/ounces in silver and one dollar in gold. There is no regular continuity of the

ore as it occurs in lenses. At the 6th level a north and south fault occurs which increases the dip of the beds to almost vertical. The copper mineralization on the 7th levelis smaller than on the 6th. The 8th level was under water and not open for inspection.

A large north and south fault drops the sediments, exposed in the copper Incline, about 300'. These beds are all cut in the main copper vertical shaft on the George Claim 800' south of the Copper Incline. The shaft is 400' deep. The collar is apparently in the east and west fault plane. On the 165' level a bed of garnetiferous limestone, highly altered to hematite, was cut. Some drifting was done on this bed with a little stoping. The main east and west fault was encountered here and a little drifting done on it. Some copper mineralization is found. On the 250' level another bed was cut, which showed little copper mineralization. A small amount of drifting was done here but the fault plane was not opened up. Below the 250 level the shaft is in iron stained shales.

Diamond Drill Hole # 1 on the Copper Wede Claim was put down 500' at 60 degrees. At the 190' point it passed thru a garnetiferous limestone bed 5' thick carrying some oxidized copper. A small section of the core was assayed, giving 2.5% cu. and 0.9 oz. Ag. This hole is bottomed in an unaltered porphyry dyke carrying primary iron sulphide.

Hole No. 2 was put down north of the east and west fault at an inclination of 60° to a depth of 703'/ This hole was oxidized through out its entire length. The fault plane was encountered at the 480' point. From here to the bottom of the hole very small amount of the core was recovered. These pieces show altered beds of garnetiferous limestone.

Hole No. 3, was put down vertically on the south side of the east and west fault to a depth of 1400'. This hole was oxidized to the 1000' point. Series of limestone and quartzite beds were encountered. At the 475' point an unaltered porphyry dyke was cut for 75' along the hole. Diabase intrustions in the quartzite were found from the 800 to the

1000' point. From the 1000 to the bottom of the hole, it was in unaltered diabase, carrying some primary sulphides. A little native copper was said to have been encountered at the 90' point in an oxidized garnetiferous limestone bed. This diabase is said to carry 0.1% to 0.4% cu.

MINING EQUIPMENT. At the vertical copper shaft two 60 H.P. boilers, a steam hoist good for 500', a 300' air compressor and the necessary feed pumps are installed. This equipment is all too small for further work in this shaft.

Water is obtained for camp purposes from an 800' drilled well. Water rises to within 175' of the surface. It is pumped from here to a tank on the hill and distributed by gravity. Several other small boilers are on the ground but in poor condition. Wood is used for fuel and can be obtained for $3.00 per cord. The diamond drilling is being done by E. J. Longyear & Co. at a cost of about $4.00 per ft.

CONCLUSIONS:

No appreciable zinc tonnage has been developed. However, there are possibilities of developing a fair tonnage. This zinc ore is probably amenable to treatment according to the results of a selective flotation test shown me by Mr. Effinger and made by Atkins and McCrea 616 South Olive St., Los Angeles, California.

The results are as follows:

	% Zn.	% Fe.	% Cu.	% Ins.
Heads	21.3	25.9	0.12	10.0
Middlings	11.5			
Concentrates	51.1	11.3	0.15	2.0
Tails	4.1	34.7		13.2

The east and west fault plane which influences the copper mineralization shows no mineralization on surface. If commercial ore bodies of copper sulphides can be found at depth, it will be along the fault plane. In the mine workings, wherever the fault was opened up, copper

mineralization was found. Oxidization here extends to at least one thousand ft. so not much could be expected before this depth.

The north and south fault plane has never been prospected. A vertical diamond drill hole put down so that it would cut the east and west fault at or near its intersection with the north and south fault at a depth of 1100', ought to disclose the further value of the property. The porphyry dykes do not influence the copper mineralization for, wherever they are encountered in drill holes as well as on surface, they are fresh and unaltered, showing no copper mineralization.

If the property could be obtained on a long term option, I would recommend it for further consideration.

Respectfully submitted,

Dated March 5, 1917, Original signed, J. A. Ettinger

SUMMARY

The Reward Group consists of 31 claims in the Casa Grande Mining District, Pinal County, Arizona.

Ore bodies consist of three garnetiferous limestone beds, replaced with zinc sulphides ranging from 6 to 8 ft. wide and carry from 7 to 15% zinc. Copper ore body replacement of garnetiferous limestone superimposed on quartzite beds adjacent to fault planes.

No appreciable tonnage of either ores developed. Possibly a fair tonnage of zinc ores could be developed. If property could be obtained on long term option, I would recommend for further consideration.

February 19th, 1942

Mr. E. D. Morton
Eagle-Picher Mining & Smelting Co.
Box 1268
Tucson, Arizona

Re: Reward Mine

Dear Mr. Morton:

In further reference to above property. I mentioned this mine to our mutual friend, Forbach, yesterday as I knew that he had worked in that section of the state for a long time.

Forbach said that he knew the mine quite well and that several people who had investigated believed that there might be a chance of developing a large body of zinc ore, but he said that concentration of this ore had always proved a stumbling block.

Apparently most of the iron sulphide which is mixed with the zinc Sulphide is in the form of a pyrrhotite and it appears that the A. S. & R. made quite extensive tests with selective flotation but were not able to effect a good separation or produce a high grade concentrate.

Perhaps other metallurgists might be able to do somewhat better and I assume that any new production of zinc from this mine would be entitled to receive the bonus price of eleven cents a pound.

Shall be back from Tumco Sunday and will communicate with you again early next week. Am leaving office before this letter is transcribed.

Sincerely,

GMC:DF

February 19th, 1942

Mr. E. D. Morton
Eagle-Picher Mining & Smelting Co.
Box 1268
Tucson, Arizona

Re: Reward Mine

Dear Morton:

I received your letter of the 16th on the above subject and after some difficulty was able to get in touch with Davis on the telephone. He told me that he had a firm lease signed by both Pomeroy and Dr. Shornick, the other owner of the Reward property, but apparently this lease only covers fourteen of the mining claims in the Reward Group and there are seventeen other claims which, if I understand correctly, contain the showings of the gold and copper. Davis says that the ground which he has under lease includes all of the important showings of zinc ore and that he, Davis, has some men working on the property and does not know of any recent discovery excepting those which have been made by his employees. He offered to show me his lease, but I am obliged to leave Phoenix this morning for the Reymert Mine and early tomorrow morning am going over to Tumco from which I shall not return until Saturday evening. Am glad to say that the rods have finally been recovered from Hole No. 4 and I hope to be able to report progress during the next few days.

Referring back to the Reward, I believe that Davis' statement can be accepted as true and very likely Pomeroy was trying to interest your company and others in the seventeen claims which are not under lease to Davis.

As to the real value of the property I have no information beyond that which was contained in my previous letter and in all probability you are correct in assuming that the occurrences of ore are somewhat erratic and that it does not appear likely to develop into any large and profitable operation. Davis admits that the ore contains a great deal of iron pyrite mixed with a zinc blende, but I should think that selective flotation would permit making a fairly rich concentrate and since the side trip would be a comparatively short one it might be worth your while to run over that way some time when you are driving between Tucson and Phoenix. That, of course, is a matter for you to decide and I will merely tell Davis that he will hear from me later if the parties to whose attention I brought the Reward Mine are in any way interested. Will write you concerning Tumco the first of next week, and I am obliged to leave the office this morning before this letter is transcribed.

Yours very truly,

GMC:DF

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NOTES REGARDING THE REWARD MINE NEAR CASA GRANDE

taken by conference with Richmand of the Magma Co. August 21st, 1929

There are three inclined veins with a dip of about 40 degrees. These have a width of 8', 12' and 22' and occurring in lime stone formation. The gangue is crushed limestone, mineralized with iron pyrites, pyrrhotite, and sphalerite. The ore will vary from 7 to 15% in zinc, average about 9%. A little copper is coming into the veins but there is very little lead or precious metals.

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One and one-half miles to the west of this property is located the Republic Mine which may also be considered as promising from a development standpoint.

(Never examined by our Engineer
As expense of proper investigation
would be very considerable)

Tunnels on 200 & 300' [illegible] 1.40 [illegible]

Copy

REWARD MINE

LOCATION & ACCESSIBILITY

The Reward Group of claims is located thirty miles south of Casa Grande, in the Casa Grande Mining District, Pinal County, Arizona. Casa Grande is situated on the main line of the Southern Pacific Railroad.

The claims are reached by a good wagon road across a very flat country. Freightingis done by wagon at a cost of six dollars per ton from Casa Grande. Auto trucks could cut this cost considerably.

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The property consists of two patented claims, area approximately 26 acres and 29 unpatented, area approximately 406 acres. They are contiguous and cover all surface showings.

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Respectfully submitted,

Dated March 5, 1917, Original signed, J. A. Ettinger

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