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12/05/88

PREPARED BY: DIETZ AND ASSOCIATES, 4706 N. 31ST DRIVE  
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PRIMARY NAME: BRACAMONTE CLAIMS

ALTERNATE NAMES:

GILA COUNTY MILS NUMBER: 10C

LOCATION: TOWNSHIP 4 S RANGE 15 E SECTION 21 QUARTER C  
LATITUDE: N 33DEG 04MIN 14SEC LONGITUDE: W 110DEG 49MIN 05SEC  
TOPO MAP NAME: HAYDEN - 7.5 MIN

CURRENT STATUS: PAST PRODUCER

COMMODITY:

LEAD  
GOLD

BIBLIOGRAPHY:

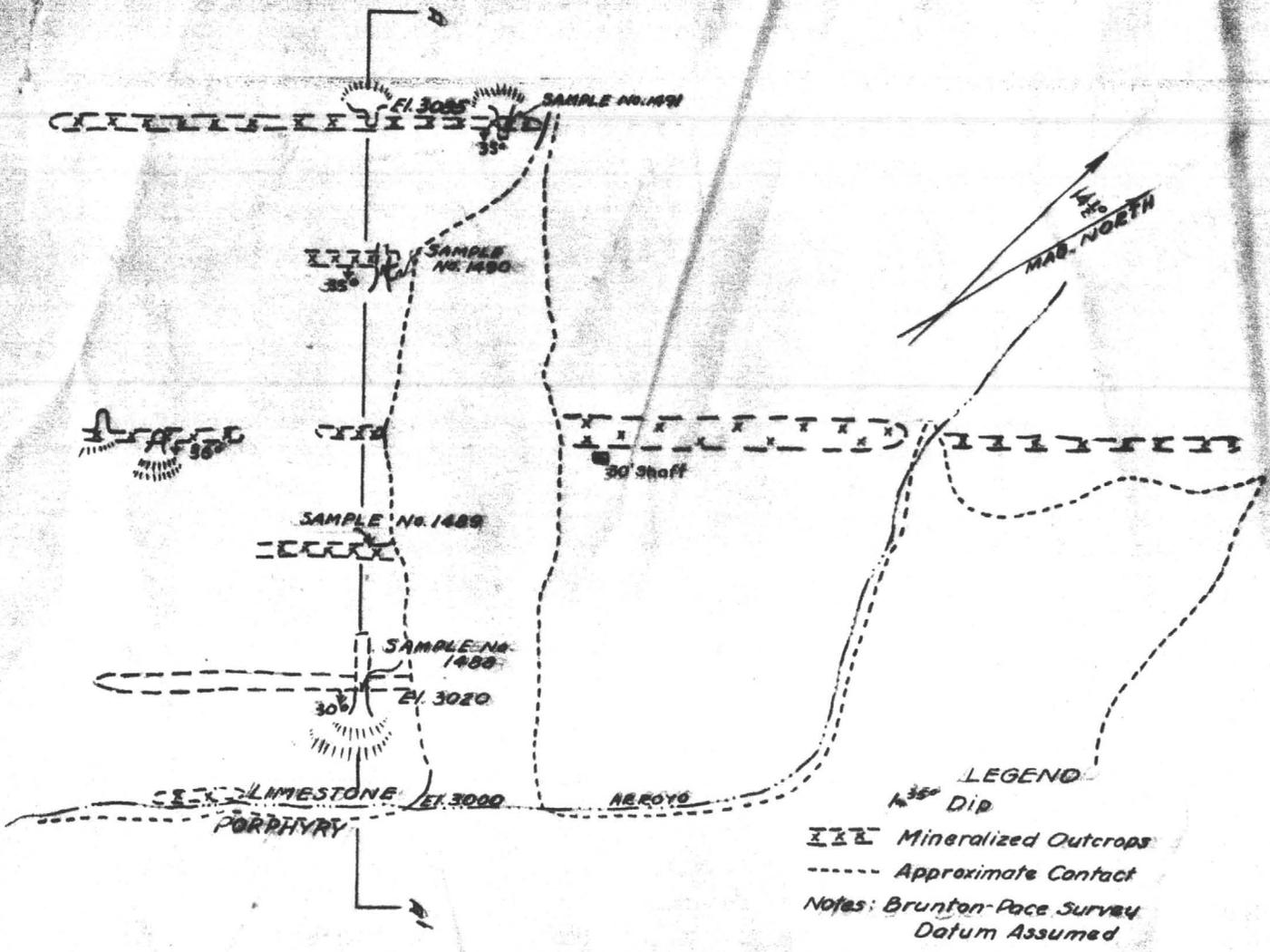
USGS HAYDEN QUAD

~~✓ ADMR KULLMAN-MCCOOD GROUP FILE~~

*London Arizona File*



1489	4.0	0.10	1.0	3.6	Tr.	0.25
1490	2.0	1.25	2.5	2.1	Tr.	0.10
1491	4.0	0.50	0.9	1.9	0.005	3.30



PLAN-SHOWING MINERALIZED OUTCROPS-BRICK No.3 CLAIM, KULLMAN-MCCOOL MINING CO., GILA CO., ARIZONA - Scale 1"=50'

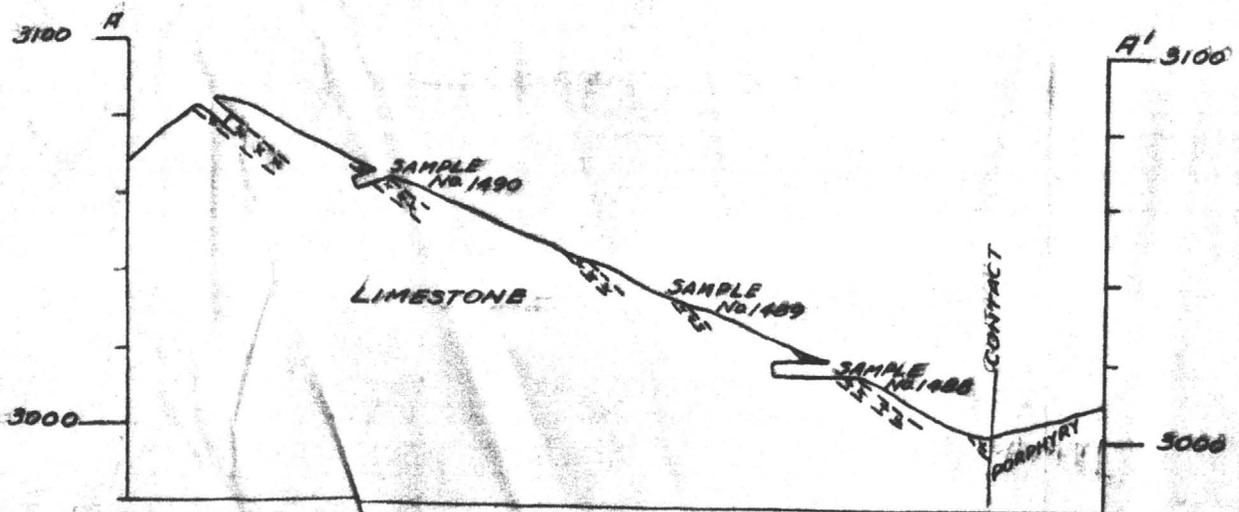


FIG.2- CROSS SECTION A-A'-BRICK No.3 CLAIM -Scale 1"=50' (Looking Northwest)

FISHBACK

to make possible a large circulating load in the mill, so that during the reduction process bulk concentrates are drawn off as coarse as possible and many passes over the saving devices are feasible.

At a later period a report on the treatment of the ores will be written as it will take considerable time and space not intended in this preliminary report and has also to do with present day markets for products produced.

The location of the property is excellent for obtaining cheap transportation, low mining and milling costs. These will of course be dependent on the scale of operation.

Ample water for a 50 ton per day plant can be had from the 225 foot water shaft on the Brick No. 1 claim. For larger scale operations the Gila River lies parallel to the railroad and is only three miles distance by gentle grades from the property.

#### CONCLUSION

In concluding, I wish to indicate a few points about this property that may help in giving a clearer conception of its possibilities while sizing it up in its present earlier development stages.

The formation is an excellent one for commercial ore bodies. The Pennsylvanian and Mississippian sedimentary rocks have proven among the most productive ore horizons in the southwest. This property situated upon these formations, apparently with a large vertical column in depth, assured of these sedimentary rocks, and with oxidized and leached mineral zones containing residual ores proven in many places on them, holds forth exceptional opportunities for developing large commercial ore bodies at greater depths from the surface.

For the amount of development work few properties give better promise, and I believe that, adequately financed and efficiently operated this property will successfully operate for many years.

C. L. OREM  
Mining & Metallurgical Engineer  
& Geologist

December 7, 1953

Drilling could be used to advantage and greatly speed up the development of this property. On account of the size of the property considerable footage would be required to outline the ores. Care should be taken to accurately map the structural conditions before placing the holes.

Successful development of this type of deposit requires the correct understanding of the ore occurrences, and preliminary detailed geological mapping, preceding detailed development and mining operation to clarify structural conditions and preclude unnecessary work. Such structural conditions become increasingly clear as additional information is obtained from advancing development.

#### MINING AND MILLING

Some of the rock cut in development work will be hard silicious limestone, while other portions will be very soft leached vein material and the cost of driving the development openings in the various classes of rock, will vary widely, but it should not average over fifteen dollars per foot total cost.

The costs of mining vary considerably depending not only on the size, shape, and nature of the ore bodies, and character of wall rock, but also upon the conditions under which the property is operated. Limestone walls stand well and often safely permit of mining in large open stopes with little or no timbering. Where fracture or fault conditions do not permit this, modified cut and fill, or timbering methods are applicable. Some of these stopes will permit of shrinkage methods. In general stoping and developing work will require a relatively small amount of timber.

Per ton milling costs, like those of mining, decrease as the tonnage per day increases, other factors remaining constant. Overhead and operating charges per ton ore treated are lower on the larger basis.

In general it would be preferable to open up the mineral zones at depth before milling as the sulfide zones will require different treatment than the oxidized ores. In the upper areas besides direct shipping ores, the concentration methods will involve dual methods such as concentration-flotation circuits in which it will be advisable to sulphidize the slimes. Considerable preliminary tests have been made upon different ores as well as observation of the results of milling of similar ores in the State. The concentration units should be in closed circuit with the grinding units and large classification capacity provided

While it is evident from a study of all of these croppings and workings that these ore zones have been broken and faulted in places, and structural conditions are of prime importance in deposits of this type, in general, careful mapping and well placed underground openings should solve most of such cases well ahead of mining operations. There are many thousands of feet of favorable mineralized areas on this property that I believe will yield good results from additional well directed development.

In addition to these mineral zones in the limestone there are several veins lying between the porphyries, and in fissures in and through the overlying andesite. Very little work has been done on them but good widths of leached ore are exposed by shallow surface workings. Indications are that further work on several of these will be productive of favorable results.

The property is situated in a proven district and adjoins on three sides mines that have produced large tonnages of shipping ore from identical mineral zones. I have had some experience on one of these (the old "79" Mine) in following just such ore on the dip of the veins for 300 to 500 feet, where they produced a far more compact, uniform, and higher grade ore (still thoroughly oxidized) than we had at depths nearer the surface. During this period several hundred car loads were shipped that yielded as high as \$3000.00 net smelter returns on a car load at prices from 5¢ to 7¢ per pound for lead.

The average elevation at the property is about 2500 feet, approximately 1000 feet lower than the "79" Mine, and is much more accessible. Due to dip slopes the stratigraphic horizon is approximately the same. In general, the limestone formations on the property dip southeast on the northwesterly half of the property and southwest on the northeasterly end, while the southeasterly section is covered by andesite. This dip of formations may place the main mine shaft for much deeper development on these ore zones, somewhere between the present lower drift tunnel in the gulch above camp and the main crosscuts on the same mineral zone on the Brick No. 2 and further to the east. After the structural conditions at depths are ascertained and the size and position of the largest tonnages on lower levels outlined by mine openings and drilling, a main vertical shaft can then be placed on the spot best suited to obtain the cheapest underground transportation.

these croppings about 1000 feet northeast from the two crosscut tunnels on the Brick No. 2 are approximately 900 feet of workings - these comprise two 80 foot prospect tunnels connected by a drift approximately 100 feet long, below which a 125 foot winze was sunk in the limestone at an angle of 55° away from the vertical fracture which showed the better ore. On the 100 foot level a 105 foot drift to the northeast with two 50 foot crosscuts northwesterly shows some lead-copper ore. Four horizontal drill holes, three to the overlying andesitic porphyry contact, showed leached conditions. One was in the limestone. On the 125 foot level a short drift was run in the limestone. One drill hole to the overlying contact showed a little galena in a leached clay, which they were unable to core. Several small tunnels, an incline shaft, a vertical shaft, and several surface cuts and prospect holes make up the balance of these workings.

The drift on the vertical vein between the tunnels run 7% lead and 1-1/2% copper and one copper car lot ran 4.4% copper. These upper workings show considerable mineralization and croppings reaching upwards of 20 feet wide. They show considerable disturbance and faulting with the lower extensions in a comparative unaltered block of limestone. Well directed lateral and deeper workings extended from these workings should open up good ore. All the mineralized material cut is extremely leached and oxidized.

The old workings in places are fluorescent under the ultra-violet-ray lamp and are very slightly reactive to the Geiger Counter in places. The greater part of this fluorescence is estimated, after spectographic testing, to be caused by zinc minerals in the presence of manganese. A very slight amount of scheelite is present in some places.

Most of the old workings have been done as location and assessment work and a considerable part of the larger openings could have been much better located in regards to the mineralization showing and to structural conditions. However, well directed lateral and deeper openings should be productive and show up these conditions. Structural conditions are extremely important in a deposit of this type. By opening the larger areas of best mineralization at greater depth, a great increase in values should be realized, including the gold and silver values. Many of these ores should be of direct shipping grade and of comparatively high mill grades where necessary to separate products for marketing purposes.

6% lead, 1.5% zinc, 0.01 oz. gold.

2.6% lead, 0.2% copper, 3.1% zinc, 0.87 oz. silver, 0.01 oz. gold.

1.2% lead, 9.3% copper, 25.5% zinc, 0.03 oz. silver, 59.1% insoluble, 58.7% silica, 0.4% Al<sub>2</sub>O<sub>3</sub>.

5.2% lead, 3.24% copper, 24.4% zinc, 3.26 oz. silver, 0.14 oz. gold, 45.5 insoluble, 4.0% iron, 44.9% silica, 0.6% Al<sub>2</sub>O<sub>3</sub>.

2.0% lead, 1.10% copper.

3.4% lead, 19.0% copper.

1.9% lead, 0.5% copper.

1.2% lead, 9.3% copper, 0.03 oz. silver.

3.1% lead, 0.31% copper, 8.3% zinc, 0.91 oz. silver, 0.01 oz. gold, 50.6% insoluble, 7.8% iron, 45.9% silica, 8.4% CaO, 2.5% Al<sub>2</sub>O<sub>3</sub>.

0.4% lead, 0.65% copper, 20.1% zinc, 0.45 oz. silver, 0.01 oz. gold.

2.10% lead, 5.10% copper, 16.3% zinc, 0.3 oz. silver, 0.02 oz. gold, 48.9% silica, 8.8% iron, 0.6% Al<sub>2</sub>O<sub>3</sub>.

0.6% copper, 0.01 oz. gold.

0.8% lead, 0.1% copper, 0.01 oz. gold.

3.8% lead, 2.3% Copper, 11.5% zinc, 0.71 oz. silver, 0.01 oz. gold, 38.7% silica, 4.9% Al<sub>2</sub>O<sub>3</sub>.

2.9% lead, 11.4% copper, 10.8% zinc, 1.76 oz. silver, 0.04 oz. gold.

) On the Brick No. 2 claim the upper crosscut is 40 feet long with a drift on the vertical fissure, 40 feet northeast and 60 feet southwest. Fifty feet below this crosscut is a 200 foot crosscut with drift 15 feet northeast and 60 feet southwest on the vertical fracture at 80 feet in, and a short raise where the diorite was cut at 160 feet. 100 feet southwest of upper crosscut is a 25 foot shaft with drift 15 feet northeast and 30 feet southwest on the vertical fissure. 100 feet southwest of this 25 foot shaft is a 30 foot shaft with a drift 15 feet northeast and 30 feet southwest. From this latter shaft 100 feet of open cut follows the fissure. Further southwest are open cuts and 100 feet of drift on the vertical fissure. Beyond that, smaller cuts and open pits open the vein for more than 100 feet further southwest.

On the Lead-Silver No. 9 claim a short tunnel is run on fractured and altered limestone. In the widest croppings several open cuts and pits expose the mineralization on both sides of the vertical fissure. Further along

have carried up to as high as 40 & 50% lead. Several tons of these ores lie about the portals of the old tunnels and assays show about as follows: Lead 42.7%, copper 0.2%, insoluble 32.4%, iron 3.4% CaO 0.5%, sulphur 0.1%.

Some of these old workings show where, from 10 to 15 feet widths of material has been taken out, in producing these small lots. Many of the old workings were located where the molybdate crystals were very abundant and the ore hauled to the little tabling unit at the water shaft. Many of the smaller fissures in bedding planes in the oxidized gossan carried up to 16-26% lead. A 26-foot sample over the short crosscut portal showed 7% lead, 1-1/2% copper and a little silver and gold. Where this crosscut intersected the vertical fissure the walls are coated with lead-vanadate crystals along every fracture. These crystals are solid sometimes for a thickness up to two inches.

Much of the old data has been lost but from several shipments and many hand samples, analyses shows the residual minerals in many of these ore gossans to have carried considerable values.

5.7% lead, 1.52% copper, 6.7% zinc, 0.4 oz. silver.

3.4% lead, 1.5% copper, 7.9% zinc, 1.1 oz. silver, 0.005 oz. gold.

4.41% copper, 0.87 oz. silver, 0.007 oz. gold.

11.42% lead, 0.10% copper, 0.5 oz. silver.

7.7% lead, 0.16% copper, 0.45 oz. silver, 65.1% insoluble, 16.3% iron.

27.2% lead, 0.2% copper, 0.5 oz silver, 0.01 oz. gold, 50.0% insoluble, 7.5% iron, 12.10% MoO<sub>3</sub>.

5.1% lead, 10.04% copper, 2.39 oz. silver, 0.06 oz. gold, 52.8% insoluble, 8.4% iron, 4.8% zinc, 0.5% Al<sub>2</sub>O<sub>3</sub>, 8.22% MoO<sub>3</sub>.

Copper 10.5%, 0.3% lead, 0.2 oz. silver, 0.32 oz. gold.

2.2% lead, 2.3% copper, 3.2% zinc, 0.54 oz silver, 0.02 oz. gold.

4.8% lead, 1.0% copper, 5.5% zinc, 0.38 oz. silver, 0.02 oz. gold.

4.2% lead, 3.5% zinc, 0.79 oz. silver, 0.01 oz. gold.

6.1% lead, 2.3% copper, 6.7% zinc, 0.18 oz silver, 0.02 oz. gold.

4.0% lead, 1.2% copper, 6.2% zinc, 0.91 oz. silver, 0.01 oz. gold.

7.7% lead, 1.3% zinc, 0.9 oz. silver, 0.01 oz. gold.

24.1% lead, 1.4% zinc, 0.29 oz. silver, 0.01 oz. gold, 59.0% insoluble, 4.1% iron, 58.1% silica.

trates determined that can be obtained from them, more detailed figures can be obtained. It is evident that a considerable tonnage of this class of ore is indicated in this mineral zone.

During World War I, a small concentration table made molybdate and vanadate concentrates at the 225 foot water shaft on the Brick No. 1 claim, and small lots of sacked concentrates were sold. Many years later Lee Reagan put a small table at the water shaft to make a lead-molybdate and lead-vanadate concentrate which he sold at Tucson. Following are the results from some of these lots of concentrates, showing the assays and values per pound. More lots were marketed but the data is not now available. The price for the concentrates at that time was low.

May 16, 1934

1740 lbs. combined molybdenum and vanadium concentrates

Contents MoO <sub>3</sub>	24.39%	
V <sub>2</sub> O <sub>5</sub>	1.62	
	<u>26.01%</u>	25¢ per pound.

452.5 combined MoO <sub>3</sub> - V <sub>2</sub> O <sub>5</sub> equals	\$113.13
Sampling and assaying	7.00
	<u>\$106.13</u>

June 11, 1934

1166 combined molybdenum and vanadium concentrates

Molybdenum	24.98%
Vanadium	.90%
	<u>25.88%</u>

301.2 lbs. combined MoO <sub>3</sub> & V <sub>2</sub> O <sub>5</sub> at 25¢ per lb.	\$75.42
Sampling and assaying	6.50
	<u>\$68.92</u>

June 25, 1934

1869 lbs. combined molybdenum & vanadium Conc.

Molybdenum	24.21%
Vanadium	.90%
	<u>25.11%</u>

469.3 lbs. combined MoO <sub>3</sub> & V <sub>2</sub> O <sub>5</sub> at 25¢ per lb.	\$117.30
Sampling & assaying	7.00
	<u>\$110.30</u>

Other assays on such lots were as follows:

Molybdenum	27.04%	Vanadium	1.62%
"	22.12%	"	1.40%

Small residual lenses in the bedding planes showed lead-sulphate (anglesite) and lead-carbonate (Cerrusite) ore from which small lot shipments in the past

Over some 600 feet of strike above and just southeast of the present two crosscut tunnels on the Brick No. 2 claim, many faces and shallow workings show almost continuous lenses of ore in larger widths of mineralized material.

This area shows a highly mineralized, fractured, fissured, and altered limestone containing replaced beds of ore and a strong verticle fissure overlying a steeply dipping quartz-diorite contact fissure that contains ore.

On the lower crosscut tunnel the verticle fissure is 80 feet from the porphyry contact and this contact dips at about 50 degrees toward it. Southwest along this main mineralized zone for several hundreds of feet these two major structures gradually approach each other in strike as it is apparent they do with more depth--these conditions produce a long wedge of limestone above and adjoining this contact that has the indications of making a large ore body. The nearer they approach each other on the surface, the more intensely shattered and mineralized is the main mass between them and the larger, more numerous and higher grade are the lenses of high grade ore.

This is simply one area on the property where a comparatively small amount of well placed development from the present openings in it may outline a large ore body and where this development opens the intersections of these structures with the higher grade beds of ore, large high grade ore bodies can be expected. This area is all high in molybdates and vanadates and contains considerable lead.

While the occurrences of lead vanadate and molybdate ores in the oxidized portions of lead veins is not unusual in the southwest, the amounts occurring in these zones on this property are unusually high and will develop into valuable assets.

The lead molybdate and vanadate ores mixed occur through practically all the leached croppings of this large mineral zone. Many of these areas constitute a good grade of ore.

The percentages of these metals vary in every ore body and as these ores are blocked out and sampled and ore tests run on them and the exact grade of concen-

on the southwest end. All the mineral zones exposed at present are well leached, and in considerable portions of them oxidized ore minerals form commercial ores.

This main ore zone lies in the limestone and roughly follows the andesite porphyry contact which is a contact of considerable displacement. In places the contact runs straight for several hundreds of feet, the limestone dipping at about 50 degrees beneath it while in other places porphyry dips at a 40 degree angle beneath the limestone areas. In general the limestone beds dip rather gently downward toward the contact. The limestones are the grey and blue limestones of the Paleozoic Age probably being about upper Mississippian or Pennsylvanian in stratigraphic horizon.

✓ About 2000 feet of comparatively shallow surface workings have been done in and about these mineral zones. The ores exposed by these workings and the surface are: Lead molybdate and lead vanadate ores; oxidized lead ores carrying gold and silver; oxidized copper ores carrying gold and silver. The lead ores generally contain some copper and the copper ores some lead. Oxidized zinc minerals occur in many of the workings.

While many thousands of tons of commercial ores are exposed by these present surface workings, they are too insufficiently outlined at present by development openings to attempt any close estimate of tonnages and grades of ore. These zones are, however, sufficiently indicated by surface croppings and workings to warrant the assumption that they will be productive of fairly large commercial ore bodies. The type of mineralization, together with the ore exposed by erosional features and the present development openings on the above mentioned large mineral zones through a horizontal distance of over 4000 feet and a vertical range of better than 400 feet, are the strongest assurances that this property will be productive of a large tonnage of commercial ore. This main zone, although covered by surface debris for about 300 feet above the lowest drift tunnel in the gulch, shows continuous ore bodies wherever visible on the surface or underground through widths of from 2 to 50 feet. In some places the vein will be too low grade to class as ore and in others too well leached to obtain commercial ores close to the surface.

The formations are shown on a base map as approximate, from a reconnaissance trip over the ground, until detailed surveying outlines them more accurately.

A section of the U.S.G.S. Topographical sheet on Arizona, Ray Quadrangle, was enlarged from one mile to the inch to 400-feet to the inch (by photostat and pentograph), for a base map, showing the geological formations and the township, sections and claim lines. Individual claim areas were also enlarged for the purposes of putting on the croppings, workings, etc., for more detailed working plats, where the details of structure could be shown in sections.

Pertinent ties to claim and section corners have not been made enough to be sure of detailed accuracy, but are sufficiently closely identified to use for a prospective view of the property. These can later be 'tied in' so that detailed sections over any of the workings may show the true detail for actual future development as to the formations, structural geology and ore.

Camp, roads, mineralized croppings, and workings are shown on the base map as are the formations. Numbers in circles will be used to indicate positions of the workings, the detailed structure and geology of each can be shown on a larger scale separate plat.

The camp is a house and shed on a mesa above the arroyo. It is situated along the road to the mine as it enters the property from Hayden Junction. A tent or two was used at times and constituted the only camp on the property.

Every claim of the group shows surface outcrops of ore zones. Some of these are large and intensively mineralized. The largest and one of the best mineralized shows on the Lead-Silver No. 9, continues through the Brick No. 2, the Brick No. 3, and on to the Brick No. 4 and Lead-Silver No. 5; a large and prominent mineral zone cropping for at least 4000 feet lengthwise through the center of the property that is exposed by surface erosional features through a vertical range of better than 400 feet. I do not know how much further it extends as it passes under the Gila Conglomerate (a later formation) and surface debris

Northeast of the property lies the Hogwall Gold claims and Chileto, which has shipped rich copper ores over a period of many years. Further north and east lies the Laval and Dan O'Carroll Gold Mines and still further east, the Christmas Mine, which has produced many millions of pounds of copper from rich copper ores in the limestone, and later drilled a large area of copper ores in porphyry. Still further east, across the Gila River lie gold claims and silver claims, having produced many thousands of ounces of silver from numerous fissure veins in andesite and andesitic porphyries cut by quartz porphyries and probably overlain at considerable depth by limestones.

The above is cited briefly, only to show that this large group of claims lie in an area of well known mines, many of which have had considerable production records.

#### GEOLOGY AND MINERALIZATION

The property occupies a large and well mineralized area in the Paleozoic limestones, which are intruded by many dikes and irregular bodies of igneous rocks (porphyries).

The major portion of the Dripping Spring Range in which this property is situated, is composed of very large fault blocks of limestones that have been tilted at various angles by igneous intrusions and subsidences. These limestones have been mineralized in places on the contacts of the porphyries, in fractures and fissures, and along favorable bedding planes. Extensive faulting has again occurred later than the mineralization.

This group of claims comprises an area of approximately a mile in length by one-half mile in width. The formations exposed on this group are large sections of limestones, sections of which are overlain and/or abutted by large blocks of andesites and andesitic porphyries. These two formations cover most of the surface of the claims with the exception that on the northeast claims adjoining, such as the Spring and Ethel claims, a large block of quartzite shows and a large intrusion of diabase occurs. Beyond the exposure of andesite to the north a large hill is apparently composed of garnet on the surface.

PRELIMINARY GENERAL REPORT ON KULLMAN-MCCOOL MINING CLAIMS

This property lies on the southerly slope of the Dripping Springs Range at an elevation of between 2500 and 3500 feet above sea level and has a dry mild warm climate the year around. Seldom during the winter months is any snow encountered. Due to good 'air drainage' conditions from the valley below to the higher parts of the range above, the summer heat reached in the lower broad flat valleys of Arizona, such as Phoenix and Yuma, is not experienced here. The conditions are good for economical operations of mines and plants.

The Dripping Springs Range of Mountains extends northwesterly and southeasterly for a long distance through south central Arizona. Just east of Hayden, the San Pedro River joins the Gila River. A branch line of the Southern Pacific Railway extends from Florence to Christmas, eight miles east of Hayden. In the past this range has produced many well known mines. Some were rich silver mines; others of good gold content; many were of copper and quite a few produced lead.

The property consists of twenty-one (21) unpatented mining claims (approximately 420 acres), situated in the Banner Mining District, about three (3) miles northerly from Hayden Junction, Arizona, where the Hayden copper smelter of the American Smelting and Refining Company is located.

The property adjoins the "79" Mine on the southeast. The "79" produced many hundreds of car loads of lead ores and many thousands of tons of lead-zinc-copper and copper ores. These ores in general carried small amounts of silver and gold per ton.

Northwest of the "79" lies the Bracamonte claims which produced quite a few car loads of lead ores carrying relatively high gold content. This range for many miles is almost a contiguous area of mining claims. Further west and north lies Troy, the old Ray Lead and Silver Mine, the famous Sufren-Haley Silver Mine, many smaller groups and the Ray Copper Mines which ship by rail to their Hayden Plant, a mill that had reached 17,000 tons per day during World War I.

In this preliminary report on this property consideration is given only to metasomatically replaced beds and fissure deposits in the limestones. In general one well mineralized bed or fissure may produce a good high grade ore body. However, the better opportunities are considered to be where the fractures and fissures are multiple and closely spaced and the favorable replaced bedding planes are more than one and especially where the replaced ones are thick bedded.

Intersections of fissures, beds, and contact areas are important. Where development discloses that structure conditions have disrupted any chance for a large ore body, adjacent more favorable areas not subjected to the same features should be explored.

While the deposits are in many instances hidden or partially hidden by cover rocks (such as flows and different stratigraphic horizons) and surface alteration and leaching, the areas herein considered for immediate exploration are immediately in or are closely adjoining positions now exposed on the property.

Probably the most effective development method is to outline the more intense fractured and fissured sections that are well mineralized and then to prospect stratigraphically, for the thicker and more numerous, replaced bed horizons.

CLARENCE L. OREM  
Mining & Metallurgical Engineer &  
Geologist

April 14, 1954

At the "79 Mine" in the early 20's the writer did the early engineering work and we followed metasomatically replaced beds for 300 to 500 feet on the dip. No heavy contact silicates were in evidence. There were 7 replaced beds (3 of which produced the bulk of the ore) and where these intersected an intense vertical fracture zone large lead carbonate ore bodies for widths up to 60 feet wide and stopes up to 100 feet high, extended over 850 feet on the strike.

If present prices for lead ore are considered, at least 15 million dollars in lead ores was produced. Many hundreds of car loads were shipped then on 4-1/2¢ to 7¢ lead. On the surface I can remember a 4 foot bed of high grade lead showing considerable bunches of galena. We thought we would be in sulfides in a short distance. However, at 600 and 700 feet on the dip the ores were higher grade than the surface ores and were pure sand carbonates or massive carbonates and sulfates, although a good portion of these distances were on the dip slopes and the actual vertical distances were not great. No heavy silicates were in evidence and the porosity of the limestones were much greater than in dealing with garnet zones.

Many of the deposits in this area are fissures in the limestone and portions of replaced beds. At one place against a steeply inclined porphyry contact two of the beds made together producing 8 to 12 feet of massive cerrusite, almost crystal pure.

The Miami Copper Company expects to spend a couple hundred thousand dollars in drilling at Chileto (adjoining just northeast of this property). They will drill a disseminated copper showing in the diabase and generally require under present conditions a probability for 30 million tons or more.

Bodies of disseminated ore in the Ray District to the southwest may be characterized in general terms as undulating, flat lying masses of irregular horizontal outline and of variable thicknesses. They generally lack definite boundaries and grade inceptably to country rock.

In places the dikes show a porphyritic texture of almost entirely macroscopic crystals and are heavy in quartz and would be classed as quartz porphyry. In other places the quartz is not so evident. In places light colored acid porphyries are shown although this coloring may be due to some extent to alteration and weathering.

The andesitic material is composed of in general, poorly bedded andesite, andesitic tuffs, breccias and flows and the contact with the sediments does not appear to have any great discordance.

The southeastern part of the claim area covered by these andesites appears to have been depressed and is sheared at intervals by strong east-west fissuring and faulting. To the south they show increasing thicknesses while to the north and east they thin out to nothing as erosion has exposed the contacts.

In general over a considerable area in a portion of this part of Arizona, fissuring and intruding porphyries in andesitic breccias, tuffs, conglomerates and flows, offer opportunities to develop larger base metal deposits in sedimentary areas below, where the covering rocks are not too thick a series, as apparently the covering cretaceous formations lie directly on the Paleozoic limestones. In other sections, many thousands of feet of Mesozoic (formations not as favorable as a host rock as the Paleozoic limestones) occupy this position. The mineralization is basically, probably, contact-metamorphic in origin.

Christmas lying several miles to the northeast has a large quartz diorite dike and an ore body in the adjacent Paleozoic limestones. There the mineralization shows typical heavy contact silicates and the tabular beds are garnetized in proximity to the igneous dike. There approximately a dozen beds in 3 or 4 hundred feet of upper Paleozoic limestone have produced the ore to date. Most of these beds are fairly thin, but 3 or 4 have been massive beds in a series, producing ore up to 60 feet in thicknesses and have been mined extensively. Little or no leaching of the sulfides were possible.

may be shown up with comparatively little work. Much further to the north and east large diabase sills are exposed and copper, gold and silver ores have been mined along both upper and lower boundaries and in connection with tongues of dikes and accompanying fractures (also in fissures in the Diabase).

On the northeasterly end of this group the paleozoic (probably fairly high in the Pennsylvania limestone), the nose of a diorite dyke, and a block of quartzite (stratigraphically much lower in the sedimentary series than the limestones) abutt the diabase and a half mile width of limestones are exposed. When mapping of the structures are well along and stratigraphic horizons are outlined this may prove a good section for testing by deeper drilling.

Other deposits near this area have been developed as fissure veins and in places considerable production has been made in gold and silver.

To the southward in the andesites (these are underlain by limestones and/or intrusives) and at different intervals extend persistent fault fissures trending easterly and westerly. They carry intermittently small lenses of ore some of which have good gold values. These dip steeply northward and are very large fault blocks in places - 500 to 1000 feet apart. The trend of the closest of these is approaching in strike and dip (as is the diorite dike in the contact in Position (2) as described above) to the strong vertical fissure mentioned in Positions (2), (3) and (4) and may be responsible for the more intense alteration to the southwestward along this fissure.

The area shown as andesite on the surface on the general geological and topographical sketch map of the claims is probably underlain (very shallowly in places to quite a thickness on the down dip side to the southeast) by a thick series of Paleozoic limestones dipping, in general, gently to the southeast; diorite or quartz diorite in dyke and sill form with tips or points making across the limestone or shoulders (in the case of sills) showing a decided change in strike of contact. Sills in the area may range from very narrow lenses to laccolithic proportions.

are evident. These show as large croppings of silica breccia well mineralized on the surface that stand up 20 feet above the surface and in a couple of instances are 30 feet across. These factors with the attendant weathering produce a hillside that is covered with gossan float. In a similar way one well mineralized and replaced bed may cover an entire hillside with large manganese and iron stained silica breccias as residual float.

This hillside is also the focal point of considerable faulting that shows in the limestone as a block faulting to the southwest (not quite at right angles to the bedding planes) and is accompanied by twisted limestone beds in the fault planes.

This segment along the saddle therefore has two sets of divergent fracture planes crossing a third set of parallel fissuring in the strike of the limestone blocks.

Unfortunately the operator decided to do the only short horizontal drilling on the property in comparatively unaltered limestone segments away from the divergent fracturing above mentioned and in almost blank spaces on the vertical fractures.

To the northeast a very short distance are several closely spaced northeasterly parallel trending fissures cropping on the strike of the limestone and separated by altered limestone and following this mineralization southerly along the same fractured zone on the northeasterly end, mentioned in describing the structures of the workings above, continuous mineralization is visible (except where covered by andesite) for several hundred feet laterally. Following this southerly trending cross-fracturing for a couple of hundred feet, the tip of a quartz-diorite-porphyry dike is seen in a shallow arroyo, partially covered by surface debris. On the southwesterly side of this porphyry and alongside it, is a 30 foot width or better of gossan, with heavy iron and manganese oxides showing. There is no work done here and this area across 150 feet or better

(1). Position on Base Map: This shows two approximately 80 foot shallow tunnels connected with a 100 foot drift near the faces. This drift was on a nearly vertical fracture in the limestone. It dips slightly to the north and carries leached ores that average about 7% lead and 1-1/2% copper with considerable zinc showing in places over a maximum width of 10 to 12 feet. One car load shipped ran 4.4% copper with assays as high as 20% copper. In places oxidized lead ore ran 15 to 20%, but did not average nearly this high.

Both tunnels showed wide alteration but the southwesterly tunnel showed the more intense mineralization, the assays showing several percent in sections. Near this crosscut tunnel the cross fracturing dips to the southwest while at the northeasterly end of the connecting drift the fracturing is to the east.

A 155 foot winze was sunk 55° to the south on what was thought to be the dip of the drift fissure (mineralization was wide here, everything assaying low grade). Actually this winze to the south near the southwesterly crosscut tunnel was away from the fissure of the drift which dips slightly northward. At the 125 foot level a fissure, parallel to the one in the connecting drift above, was drifted on for 105 feet. This also showed ore in places.

Two crosscuts above 50 feet in length were run to the north toward the northerly fissure, but neither extends far enough to reach this fissure.

About 30 feet below this level a third parallel fracture was located and drifted on for about 40 feet.

The surface north above these workings is a flat saddle along the crest of a hogback ridge. It shows a small depressed residual triangular segment of andesite with short inclined cuts or shafts on its northerly and southerly boundaries that show 8 to 10 feet of leached copper ores.

The parallel short slightly northerly dipping fissures exposed by the workings are sparsely mineralized in general, but where the cross fracturing (to the southerly on the southwesterly and to the southeasterly direction on the northeasterly side of the workings) intersects them, thicker lenses of ore

The diorite contains little or no quartz here and the mineralization shown on the surface is about the narrowest, being much wider for many hundreds of feet both to the southwest and northeast.

This would be a good place for a prospect winze, vertically down on the fissure from the lower crosscut to explore the approach of this fissure to the diorite contact, and to open replaced beds, and to drift northeast and southwest near the contact when reached. It can be done with less work from this deepest point. The portal of the lower crosscut near the bottom of the arroyo does not allow for dump room, but this could be allowed for by building a short light trestle for mine cars and placing the dump on the opposite hillside to the southwest. Such a winze would allow needed depth before doing lateral work to the southwest and northeast along these important mineral showings. Immediately to the southwest, parallel and branching fissures and replaced and altered bedding planes, upwards of 50 feet in thickness, are exposed by the surface and old workings for several hundred feet along the strike.

(4), Position on Base Map: Along this same fissure to the southwest is a 25 foot shaft with drifts along the fissure and on a branching fissure to the south. Here the limestone is altered over a thickness of over 20 feet. It shows mineralization and alteration between parallel and branching fractures and in the bedding planes and is much wider on the surface than at Positions (2) and (3) and is still widening to the southwest. The porphyry shown in Position (2) may "finger out" in dike form in this direction. This would be a better place to sink a prospect opening than at Position (2), but would require about 50 feet more of work to reach the same depth.

(5), Position on Base Map: This shows replaced bedding planes dipping into the hill near the same fissure. There may be considerable thicknesses of these beds as they intersect the fractures with more depth.

Adequate engineering data on the property should include:

1. The base map showing outline of the claims and workings, topography and general geology.

2. Sections:

a. Cross-sections of the formations and openings.

b. Longitudinal sections.

c. Sections necessary to show the structure and its deformations.

d. Sections necessary to clearly show up the mode of occurrence and shape of the ore lenses and mineralized areas.

3. After these are made perspective views can be drawn in the form of stereograms that will give a correct picture of the various mineralized areas occurring on the property, at least to certain depths, which may later be extended and corrected as development proceeds.

4. A correlation of the limestone beds should then be made showing the stratigraphic horizons and the thicknesses of each which are more apt to make high grade ore in the segments that are favorably situated in regard to the mineralized fractures, fissures and dike contacts.

Taking up the sketches made of some of the openings on the property:

(I have done no surveying on the property except brief reconnaissance trips over portions of it) (many contact placements and strikes and dips are needed). Detailed reconnaissance trips should be made in all directions far beyond the limits of the property to give a better perspective for detailed mapping.

(2) and (3), Positions on the base map: These positions are shown on a 50 scale in plan and transverse section. These consist of about 400 feet of old openings, described fairly accurately in Mr. Reagan's description of 1941. They show a strong vertical fissure in the limestone from 3 to 10 feet in thickness and a contact with a diorite dike.

A series of limestones comprise the country rock on the northern portion of the property while the southern portion shows predominating areas of dioritic porphyry. A series of veins, Geology & Mineralization up to 9 or 10 in number cut both the limestone and porphyry areas. These veins strike EW and NS-SW and range in width from 3 in. to over 16 ft. Most of the development has been along a mineralized fault in the limestone. This fracture roughly parallels a diorite contact which is 50 ft. or more distant. Stoping has been done at shallow depths along the vein, up to a width of 16 ft. at one point. Mineralization consists of a hematite and calcite gangue with considerable amounts of jasper in places. Wulfenite and vanadinite crystals occur throughout Ore: Positive & Probable. Ore Dumps, Tailings all openings, and in places are concentrated in rich streaks and pockets. Anglesite and cerussite are also present, appearing as a higher grade streak near the center of the vein. Copper carbonates were observed at a few points, but in minor amounts. The owners estimate that this vein will average from 2% up in combined MoO3 and V2O5 and their estimate appears sound. The vein can be traced for a distance of approximately 3000 ft. on surface, although actual development is limited to a much shorter length. Mr. Kullman Mine, Mill Equipment & Flow Sheet states that all of the ore thus far exposed shows gold values ranging from 70 cents to \$6 per ton in addition to the lead, silver, molybdenum and vanadium contained. The lack of sufficient development work makes any estimate of possible tonnage or grade of ore impossible. A small amount of ore (few carloads) is contained in various dumps on property.

There is no equipment of any sort on property. Road Conditions, Route Take county highway west from Hayden Junction and turn north at sign which is marked "79 Mine". Approximately 2 miles up this road turn right at sign marked "Reagan Camp". 1/2 mile to camp buildings. The owners have built an excellent road approximately another 1/2 mile from here which reaches the main workings. Inquire at Hayden Junction for route if not sure of directions.

Water Supply Domestic water has been hauled recently for camp purposes. The owners state however that a flow of approximately 50 gallons per minute can be obtained from the 240 ft. shaft, and when freshly pumped this water may be used for both domestic and milling purposes. No attempt has been made to develop any other supply but if such attempts were unsuccessful, there is always water in the Gila River approximately 3 miles distant.

Brief History Mr. Kullman one of the present owners has been on the property for 14 years. He states that they made an abortive attempt to mill some of their ore several years ago; but were unable to prevent extremely high tailings losses, due to poor equipment and lack of knowledge as to proper milling procedure. The effort was finally abandoned and the equipment removed. There has been no work other than development since then.

Special Problems, Reports Filed Mr. C. L. Orem examined this property at one time; but his report is not available. The owners lack the necessary capital to finance deeper development metallurgical tests and a possible mill installation.

Remarks In addition to carrying the present workings to greater depth along the vein in the limestone, there are other veins toward the southern portion of the property which appear to be worthy of investigation. One of these in particular an apparent extension of the Hogwall vein is reported to show interesting gold values at the surface where it has been barely exposed by a shallow cut. This vein is in the diorite.

If property for sale: Price, terms and address to negotiate. The property is for sale or lease on reasonable terms to financially responsible parties. Communicate with the owners.

Signed Newton Wolcott

Use additional sheets if necessary. Separate sheets on each problem.

DEPARTMENT OF MINERAL RESOURCES  
STATE OF ARIZONA

FIELD ENGINEERS REPORT

Date, **March 5, 1941.**

Mine **Kullman-McCool Group**

Engineer **Newton Wolcott**

District **Banner Mining Dist., Gila County.**

Location **3 1/2 miles W of Hayden Junction**

Former name **(Sometimes called Brick Group)**

Owner **Lee Reagan or Redgan Group.**

Address **Hayden Junction, Arizona**

Operator **C. F. Kullman**

Address

Operator

President

Gen. Mgr.

Mine Supt.

Mill Supt.

Principal Metals **Molybdenum, vanadium, lead, gold and silver. Copper minor.**

Men Employed

Production Rate **Not in production**

Mill: Type & Cap.

Power: Amt. & Type **None**

Operations: Present **Annual assessment work. One of owners working alone is taking out a small quantity of high grade lead-silver ore.**

Operations Planned **Owners wish to carry development to greater depth. Also to finance for installation of small plant for concentrating ores now exposed.**

Number Claims, Title, etc. **19 unpatented claims on public domain. Title said to be absolutely clear.**

Description: Topog. & Geog. **The property is located on the lower slopes of the Dripping Springs Range at an elevation ranging from 2500 to 3000 feet above sea level. Drainage is toward the Gila River which is approximately 3 miles south. Hayden Junction, the nearest railroad shipping point, lies a little over three miles eastward. The topography is moderately rough. The hills, although not very high, are cut by sharp canyons with steeply sloping sides. Climate is arid, and vegetation very sparse, consisting entirely of low brush.**

Mine Workings: Amt. & Condition **1 two compartment vertical shaft. Depth 240 feet. 1 vertical shaft (depth unknown) inaccessible. 1 forty foot vertical shaft, accessible. 1 crosscut 160 feet in length with 60 feet of drift along vein. 300 feet of shallow drifts and tunnels. Also various stopes and miscellaneous surface cuts. The 240 feet shaft is reported to be filled to within 100 feet of the collar with water. Condition of shaft is now known. All of the shallower workings are open and accessible.**

**Geology & Mineralization** - A series of limestones underlain by shale, sandstone and quartzite make up the predominating country rock in this area. These sedimentaries are cut in places by long and narrow dykes of diorite with the typical contact mineralization evident along both margins. The limestones are highly altered for varying distances from the contacts, and garnet is much in evidence. The ore minerals are largely of the oxidized types, consisting of copper carbonate cerussite, anglesite and zinc oxides, together with some galena and chalcocite in places. Replacement at certain horizons in the limestones has formed irregular ore bodies which extend out to varying distances from the porphyry contact. Recent development along fissures in the limestone at the north end of the property has disclosed high gold values in a gangue of rotten quartz, hematite and limonite. Assays here have run from a value of \$38.50 in gold and silver to as high as 11.9 ozs. gold and 31.5 ozs. silver. Development is insufficient as yet to determine the extent of this ore.

**Ore: Positive & Probable, Ore Dumps, Tailings** - At many points, both on the surface and underground, ore of the various types may be seen, but no estimate of tonnage or grade is possible without further development.

**Mine, Mill Equipment & Flow Sheet** - The hoist and compressor equipment housed at the 300 ft. shaft show evidence of having been tampered with, although it probably would not cost a great deal to put them into operating condition again. There is no other equipment on the property.

**Road Conditions, Route** - The road from Winkelman to the higher portion of the property was extremely rough at the time of visit and practically impassable for modern cars. Could be made passable at little expense. Another road from Hayden to the lower portion of the group is in much better condition and can be easily negotiated. Inquire from owners as to route.

**Water Supply** - No attempt has been made to develop any water supply for industrial purposes, but there is water developed on the lower claims which is now being used for stock and domestic purposes.

**Brief History** - This property was located in 1880 and owned for many years by Dan O'Carroll. It is reported to have been sold by him at one time for \$300,000. Various operators have worked the property at different times, and records now available show shipments of 15,443 tons of copper ore with an approximate average of 4.5% copper. Grades varied from 2.75% to 18% Cu. There has also been shipped over 1000 tons of lead ore and one shipment of zinc.

**Special Problems, Reports Filed** - Present owners are up against the usual problem of capital for financing development work. This property is briefly described in U. S. Geological Survey Bulletin No. 771.

**Remarks** - Due to the character and large area of ground covered by this group, it was impossible to cover it all in the time available. The copper claims where most of the stoping has been done were not visited at all. Enough showings were seen however to warrant the conclusion that this property should justify a careful and complete examination by anyone looking for a mine of this type.

**If property for sale: Price, terms and address to negotiate** - The property is for sale. Communicate with owners for price and terms.

**SIGNED - Newton Wolcott**

DEPARTMENT OF MINERAL RESOURCES  
STATE OF ARIZONA  
FIELD ENGINEERS REPORT

Date March 20, 1941

Mine London-Arizona Group

Engineer Newton Wolcott

District - Banner Mining District

Location Approximately 6 miles north of Winkelman.

Gila County

Former Name - Sometimes known as the

O'Carroll property.

Owners - Burns, Giffen

James Douglas

A. C. Carriger

Orson Branch

Address - Superior, Arizona

Superior, Arizona

Winkelman, Arizona

Winkelman, Arizona

Operator

Address

President

Gen. Mgr.

Mine Supt.

Mill Supt.

Principal Metals - Copper, lead, zinc, gold  
and silver.

Men Employed

Production Rate - Not in production

Mill: Type & Cap.

Power: Amt. & Type

Operations: Present - Development incidental to annual assessment work.

Operations: Planned - Present plans are to open up recent discovery of high-grade gold-silver ore, shipping if results warrant. No definite plans stated as to work on the copper and lead-zinc ores.

Number Claims, Title, etc. - 36 unpatented claims, all on public domain. Title has recently been firmly established by court action.

Description: Topography & Geography - This group of claims is situated in the mountainous country which lies along the crest of the Dripping Springs range at an elevation of between 3500 and 4000 feet above sea level. Slopes vary from gentle to very recipitous. Drainage is toward the Gila river which is approximately 6 miles to the south. Vegetation is sparse, consisting almost entirely of low brush and cactus.

Mine Workings: Amt. & Condition - 1 vertical shaft, 2 compartments, 300 ft. deep (caved at 75 ft. below collar and inaccessible below that point). 1 winze, 50 ft. in depth, open and accessible. 1 winze, 35 ft. deep, inaccessible. Over 1500 ft. of drifts, tunnels, and crosscuts, part of which are open and part inaccessible. Also numerous stopes and many surface pits and cuts. Sufficient workings are open to enable at least a fair preliminary examination.

8-39-6  
902

11.0 x 7.0 x 6.0 cm

K-163

MINERAL SPECIMEN FOR DEPARTMENT OF LIBRARY AND ARCHIVES

(Do not write in this space)

(Wrap each specimen separately, or place it in a substantial bag, by itself, with a number attached, identical with the number on this card.)

Ore \_\_\_\_\_

Cabinet \_\_\_\_\_

No. \_\_\_\_\_

Specimen No. 10-2, collected by Newton Wolcott Field Engineer

Name of ore Gold-silver

Operator Carriger and Branch

Minerals contained Carargyrite, gold

Mine active or inactive Active

If inactive, when operated \_\_\_\_\_

Gangue Quartz

Specimen presented by Orson Branch

Depth at which taken 15 feet below surface

Date 9/25/40

Approximate mineral content (in terms of average per ton) Over 3 ozs. gold and

Notes (Any general information regarding the history of the property.)

about 30 ozs. silver per ton

This ore is from a new discovery on the

Name of mine or claim Not known

London-Arizona Group. Other samples from

Group London-Arizona Group

the same tunnel have assayed approximately

District Banner Mining District

12 ounces in gold.

Location (distance and direction by highway from what town) 8 mi. north of Winkelman

If more space is desired for notes, use other side.

Owner of property Carriger & Branch  
Winkelman, Arizona.

This specimen is now in the ADMR Museum (see K number)

DEPARTMENT OF MINERAL RESOURCES  
STATE OF ARIZONA  
FIELD ENGINEERS REPORT

Mine Kuhlman-McCool Mine (formerly Regan Mine) Date June 19, 1953

District Banner District --- Gila County Engineer Axel L. Johnson

Subject: Mine Report ---- Information from Martin Fishback, Lessee.

Location Approximately Sec. 27 -- T 4 S -- R 15 E

Go out on Winkelman-Ray Highway north-west from Winkelman. Turn right about 3 1/2 miles north-west of Winkelman on private mine road, leading to the 79 mine. Drive about 3 1/2 miles north-north-east on this road, turning to the right about 1/2 mile before reaching the 79 mine, and continuing another 1/2 mile on private road. Road good.

Former Name Regan Mine

Owners Kuhlman-McCool Co. (a closed corporation), Kelvin, Arizona.

Lessees Mr. Martin Fishback and associates  
Address Mr. Martin Fishback, Kelvin, Ariz.

Principal Minerals Lead, with small pockets of Copper, and some Vanadium.

Number of Men Employed Not in operation. Closed down March 13, 1953 on account of the low price of Lead, and also on account of disagreement between the Lessees (Mr. Fishback and 2 others)

Production Rate None at present.

Geology Reported by Mr. Fishback to be the same as the 79 Mine. (Replacements in the limestone formation along faults and fissures, near the contact with the andesite porphyry)  
Mine adjoins the 79 mine.

Ore Values Mr. Fishback reports 6 to 7 % Lead, with up to 3 % of Vanadium. Zinc negligible. Copper in scattered small pockets.

Mine Workings 6 tunnels with drifts from same.  
1 winze --- 125 ft. deep

Proposed Plans Mr. Fishback and associates have made no definite plans for resuming mining operations. Some exploration and diamond drilling has been considered.

Remarks Due to the fact, that Mr. Fishback is very hard of hearing, it was very difficult to get information from him in regard to this mine. Consequently, this report is very incomplete.