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ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES AZMILS DATA

PRIMARY NAME: KING HECLA GROUP

ALTERNATE NAMES:
SUE CLAIMS

GILA COUNTY MILS NUMBER: 166

LOCATION: TOWNSHIP 1 N RANGE 15.5E SECTION 1 QUARTER N2
LATITUDE: N 33DEG 27MIN 43SEC LONGITUDE: W 110DEG 43MIN 50SEC
TOPO MAP NAME: CAMMERMAN WASH - 7.5 MIN

CURRENT STATUS: PAST PRODUCER

COMMODITY:
SILVER
COPPER
MANGANESE

BIBLIOGRAPHY:
USGS CAMMERMAN WASH QUAD
ADMMR KING HECLA GROUP FILE
ADMMR "U" FILE Cu-33
BLM AMC FILE 110273
CLAIMS EXTEND INTO SEC 2

KING HECLA GROUP REFERENCES GILA COUNTY

USBM "U" File

Maps upstairs in flat storage - Drawer 2

MILS Sheets sequence numbers 0040070453 and 0040070454

Gila County — Arizona State — Chief Mineral Copper No. Cu 33
Accessory Minerals Silver-lead

Property Name: King Hecla Group

Location: About 5.5 airline miles northeast of Globe, Arizona

Owner: Name Address Date

Henry V. Smell, 4125 S. Figuero St., Los Angeles, Calif. 90037 July 1951

Operator:

Production:
Total Value $50-75.00 From 1916 to 1952 (Hearsay) Silver-lead
Present Rate _____ per _____. Date _____

Source of Information:

	Status	Date
USBM Report: File No. DMA 514	Idle	July 1951

Classification: Prospect

General Information: The principal vein, The Saddle Back, is a fault fissure trending about 30E dipping 55° southwesterly and having a length of about (?) 1,300 feet cutting Cambrian and pre-Cambrian sediments. Fissure filling is brecciated wall rock cemented by oxides of manganese and iron with calcite and minor amounts of quartz. 3 adits were driven into the hillside back of the Saddle Back vein but the protals of each had caved.

Character of Ore: Managanese and iron oxides, showing some copper and oxide lead minerals-prinicpal constituents of the gossan.

Equipment (Date 7/51): None

(C O P Y)

Mr. C. P. Thomas,

King Hecla Copper Company,

Globe, Arizona.

Mr. W. J. Shertleft,

Los Angeles,

California.

Gentlemen:-

We beg to submit herewith, for your consideration, our report covering the King Hecla Group of Mining Claims, situated in the Globe Mining District, Gila County, Arizona.

In this report reference to titles and ownership is omitted, inasmuch as this is fully understood by you and requires no further discussion here.

The purpose of this examination is purely geological, although the usual topics of interest will be briefly described in their proper places. A detailed survey of the surface geology of the entire seventeen claims and fractions of claims was made, and all underground workings were thoroughly examined. Sufficient samples were taken to satisfy us regarding the presence of valuable minerals.

Because of the complexity of the structural geology, an extra week was required to complete this examination.

Respectfully submitted,

W. PORRI,

CARL LAUSEN,

Geologists.

P. O. Box #693
Globe, Arizona,
June 24th, 1919.

LOCATION AND TOPOGRAPHY

(C O P Y)

LOCATION:

The King Hecla Group is located about three miles east of Copper Hill and consists of 17 claims and fractions. See Plate 1 for the names and relative position of the surveyed claims. The western half of the property consists of unsurveyed claims roughly monumented on the ground. The property is reached from Globe by an automobile road to Copper Hill, and thence by a fair wagon road directly to that portion of the property now being operated. With the exception of the last one half mile, material and supplies are easily transportated to the mine.

Water is obtainable by sinking a shallow well in the bottom of the deep canyon which passes through the Fame Extension Nos. 1, 4 and 6. At present water is obtained at a nearby ranch. A sufficient amount for domestic and mine usage is assured, and it is probable that enough to operate a small mill may be had. Mine workings below the elevation of the canyon will furnish adequate water for all purposes.

TOPOGRAPHY:

The King Hecla Group is situated in a rugged area characterized by even, smooth detrital-covered slopes to the west and south, due to the dip of all sedimentary rock formation in that direction, and abrupt, precipitous canyon walls to the east and north slopes. A deep gulch passes through the eastern portion of the group and drains the south-west side of the Apache Mountains.

Passing across the Daisie, Little Johnnie, Saddle Back and Tom Boy is a high ridge, having a slight saddle on the Saddle Back claim. West from the Little Johnnie is a branch ridge forming a "T" with the main ridge. It passes gently out into a broad wash at the western end of the property.

GEOLOGY

STRATIGRAPHY:

of the various formations exposed in the Globe Mining District the following outcrop on the King Hecla Group of claims:

1. Alluvium and float.
2. Cambrian Upper Quartzite.
3. Cambrian Limestone.
4. Cambrian Lower Quartzite
5. Barnes Conglomerate.
6. Pioneer Shale.
7. Diabase.

1. The alluvium consists of well-rounded grains of sand and gravel, together with some rounded boulders. The pebbles and boulders are made up of fragments of all the formations enumerated above. It is confined entirely to the major stream valleys.

In mapping, no separation was made between the alluvium of the stream and float. The float consists of a layer of detrital rock covering the gentler slopes of the hills. It is, however, much more angular in nature and has suffered little or no transportation. Therefore, it represents the rock immediately beneath or slightly up the slope of the hillside. Inasmuch as neither the alluvium nor the float has any great thickness and has no bearing upon the origin or occurrence of the ore, they will be dismissed with this brief note. It must be borne in mind that in places it covers the possible extension of the surface outcrops of the veins.

2. The Cambrian Upper Quartzite consists of an unusually pure beach sand metamorphosed to a quartzite. The individual grains are of fairly uniform size, well-rounded, and consist almost entirely of vitreous quartz. A little of some iron-bearing mineral is present as the exposed surface weathers to a buff or brown color. The cement is secondary silicia.

It is a Cambrian age and represents a true beach sand formed on the floor of an enroaching sea. Where it occurs in the vein, it is usually heavily stained with iron and maganese oxides, indicating mineralization. It is the uppermost of the ore-bearing horizons. About 60 feet above its base is an intraformational conglomerate. The pebbles are well-rounded and consist chiefly of chert, jasper or vein quartz. It differs very much from the conglomerate occurring at the base of the Upper Cambrian Quartzite.

The basal conglomerate contains more or less angular fragments of the siliceous material of the underlying Cambrian limestone. It represents an erosional unconformity. A few miles to the west, in the vicinity of the Superior & Boston mine, a basalt lava flow separates the Cambrian Upper Quartzite from the underlying Cambrian limestone.

3. The Cambrian limestone in this vicinity has a thickness of 80 feet. It is a variable dolomitic limestone with nodules and bands of chert. On breaking off fragments of the outcrop one is astonished at the remarkable banding due to various imputities. Some are greenish; others brownish gray. The outcrop will often show a pitted structure, suggesting an amygdaloidal lava flow. This structure is due to the solution of the soluble lime leaving the insoluble silicia behind.

The variable nature and dolmitic character strongly suggest this to be a fresh water limestone.

In the large copper mines of the Globe district, this limestone is a very favorable horizon for the deposition of the copper ores, the ore occurring in replacement bodies. These bodies of primary ore attain a width, in some cases, of 60 feet. The ore is also usually of higher grade than in other formations, with the possible exception of the carboniferous limestones.

4. Lying conformably beneath the Cambrian limestone is the Cambrian Lower Quartzite. The weathering of this siliceous limestone made easy the mapping of the contact. It changes through shale to thin bedded fissile quartzite. This quartzite is also banded, and the stipes are usually reddish brown to buff. It is arkosic and was probably derived by the disintegration of a granite land-mass. The occurrence of mud-cracks and worm-trails suggests a fluviatile or delta origin.

In the copper mines of the Globe district, this formation has good ore bodies. The ore-bodies occur, as true fissure veins, with well defined hanging wall and footwall. A good grade of ore has been mined from this formation in the Arizona Commercial and Iron Cap mines. Thickness 575 feet.

5. The Barnes Conglomerate, while only a few feet in thickness, is the best horizon marker of the Globe District. It separates the Cambrian Lower Quartzite from the underlying Pioneer shale.

6. The Pioneer shale is a very fissile banded rock, generally of a red to purplish color. If examined closely, it is not likely to be confused with the shaly beds occurring in the Cambrian Upper or Lower Quartzites. Its most characteristic feature is the presence of small white or dark green spots indicating a local reduction of the iron. Where it occurs in the vein it may be expected to be mineralized. It has a thickness of 350 feet.

7. The Diabase occurs as an intrusive sill injesctd between beds of the Pioneer shale and was the base of this formation. It probably has a thickness of from 300 to 1,000 feet. The few outcrops found occur in the creek bed to the north of the Fame and were exposed by a large fault trending lengthwise of this valley. The nearest measured thickness was in the Superior & Boston, where is is 300 feet.

It is a dark green rock, holocrystalline, and with the diabasic texture well developed. When exposed it easily weathers down to olive-drab soil, and is usually confined to the valleys.

The diabase is the least favorable rock for the deposition of ore, although ore has been found in it at the other mines of this district.

STRUCTURE:

The dominant structure of the region is due to normal faulting. Folding, if it occurs, is developed to such a minor degree as to be negligible.

Before describing the faulting, it might be well to define a few terms as they will be used in this report;

A fault is a fracture in the earth's crust and is generally caused by x tension stresses within the earths crust. A normal fault is one in which the hanging wall has gone down with respect to the footwall. Fig. 1 shows the block before faulting; Fig. 2, after faulting. The vertical distance the black band has moved down is called the throw.

A large fault trends up the valley across the Fame Extension claims and strikes about N. 45° W. The dip is to the north. It is normal and has an unknown throw. It brings Cambrian Upper Quartzite against diabase.

About 600 feet south-west of the saddle is another normal fault. It strikes about N. 75° W. and dips to the north. The block to the east has a down-throw of 400 feet. Cambrian Upper Quartzite is brought against Cambrian Lower Quartzite.

About 2500 feet south-west is another normal fault. The throw on this could not be determined because of the lack of good exposures. It probably has a throw of about 500 feet. The breccia is 50 feet wide.

These three faults are shown in section A-A'. It will be noticed the dip of the sediments is about 25° to the south-west. This dip is fairly constant over the whole property.

Section B-B shows one fault with a 375 foot throw. It is on this fault that the large vein occurs. The other small faults shown in the section are adjustment blocks, with only a minor movement.

The strike of the large fault is about N. 35° E., with a dip of 55° to the south-east. The extension of this fault could not be found on the opposite side of the draw and has been cut off by a cross-fault. A study of the topographic development leads us to believe it will be found in the main valley heading towards the Superior & Boston mine. The occurrence of different sediment on both sides of this valley also suggests this.

VEINS AND ORE * OCCURRENCE:

Minor Veins;

Running on a course of approximately N. 67° E. are six veins, --the Dasie, Little Johnnie, North and South Saddle Back Veins, Tom Boy and Wish-Bone Veins. These veins being of similar origin and mineralization, a general discussion will be common to the entire group.

These veins are no more than strong parallel sheeting planes, with vertical displacements of from 1 to 10 feet. Their origin is probably contemporaneous to the general north-east faulting which is common to the mineralized veins of this district. This faulting is observed from Pinal Creek at the Old Dominion Mine, eastward through the Arizona Commercial, Iron Cap and Superior & Boston mines, upon which last named property it is lost, being covered by the Gila Conglomerate, a formation of late origin. The Gila Conglomerate and recent alluvial deposits appear on the surface for a distance of about 1½ miles and no indication of veins or faulting is to be found. Eastward from this point the lower sedimentary rock appears on the surface and a general north-east faulting is again exposed.

The small sheeting fractures which form the minor veins on the King Hecla are probably sympathetic to this faulting and produced the necessary readjustment of the earth's crust after this great period of disturbance.

However, another origin for these minor fractures is very probable. The intrusion of the sill of diabase into the Cambrian Lower Quartzite may have fractured the overlying sedimentary rock and sedimentary rock and subsequent shrinkage, upon cooling of this igneous mass, made necessary a readjustment which was accomplished by slight movement upon fracture planes.

The intrusion of the diabase and the north-east faulting are very closely related, and it is therefore probable that a combination of the two activities working in conjunction is responsible for the origin of these strong sheeting veins.

A strong cross-fault, dipping to the east, out off the western extension of this group of veins, as well as the large Saddle Back fault. This faulting offsets the veins horizontally to the south, but because of the detrital material which covers the surface in this locality, the veins were never again identified.

Some strong mineralized sheeting was found west of the cross-fault which offset the outcrops, and again the detritus made their tracing impossible. Several minor fractures of this general strike outcrop near the western extremity of the property, but the exposures were never greater than 20 feet in length and could not be connected. The mineralization of the outcrops of these sheeting veins consist of pyrclusite (maganese dioxide), limonite (iron oxide), massicot (lead oxide or lead stain) and a leached honey-combed rusty quartz. Assays of all outcrops showed values in silver and copper, though minerals of these metals were not visible.

Underground workings were necessary to expose copper and silver minerals. Shallow cuts or tunnels in all cases show veins from 2 to 4 feet in width, consisting of brecciated fragments of quartzite or crushed limestone cemented loosely together with iron, maganese and lead oxides, and occasionally containing rich pockets of copper-silver ores. The copper minerals are chrysacolla and malachite, with occasionally some cuprite, and are characteristic of shallow copper deposits. They are of secondary origin and were deposited by the descension of surface waters containing copper in solution. Cerargyrite, horn silver, or chloride, is in all cases associated with the copper minerals, It occurs as a crust upon copper-stained fragments, or as small globules disseminated throughout the copper ores. Ores showing no signs of copper or horn silver but consisting of limonite and maganese assay low values in both copper and silver, while ores with much copper assay up to 4,000 oz. of silver, which shows the association of the two metals more definitely.

No sulphide minerals of either primary or secondary origin were seen. They are rarely encountered in shallow workings. The veins have the appearance of being leached.

of the sulphide minerals. This is a very favorable indication, as a greater part of the copper and some silver values will be encountered at the water table, in a highly concentrated form, where they are carried and redeposited by descending solutions. Cuprite and native silver should be found at the top of this zone of secondary enrichment. Below this the sulphide of copper and chalcocite will be encountered. It is at this elevation that the rich, uniform grade of ore is to be anticipated.

Below the zone of secondary enrichment the ores will contain increasing amount of pyrite (iron sulphide). Chalcopyrite will appear when a greater depth is attained, along with decreasing amounts of chalcocite and increasing pyrite, until the typical primary ore is reached.

The zone of secondary enrichment will at a depth of at least 300 feet below the collar of the proposed shaft, and though the prospects of opening up large bodies of ore above this level are not very encouraging, the veins should be tested at each 200 feet of depth.

Saddle Back Fault Veins:

This vein is one of the major north-east faults discussed previously. Its outcrop is traced from the wash in the bottom of the deep gulch westward for 1500 feet, where it is cross-faulted and thrown into the wash, east of the King Hecla property. Although the vein is not uncovered again, the difference in rock formation on either side of the wash proves conclusively the presence of a larger fault. (This ground is to be located immediately by the King Hecla Copper Company).

The outcrop of this large vein is covered with float over the greater portion of its course, but at the few exposures the usual minerals of maganese, iron and lead are present.

Tunnels have been driven into the vein and attain a maximum depth of 100 feet. A vein 20 feet wide, having strong slicken-side walls dipping 55° degrees to the south and striking N. 34°

E., was exposed. The vertical displacement of this fault vein is about 380 feet. Upon this vein the possibilities of the King Hecla Copper Company depends for its future success as a large mine.

The vein is composed of about 20 feet of brecciated quartzite, cemented with and containing streaks of limonite and pyrolusite. Copper minerals and silver were extracted from small pockets similar to these described in connection with the smaller veins.

The vein-matter is thoroughly leached. This is very favorable for the zone of secondary enrichment, and is the point upon which the property is recommended. A discussion of this enrichment is covered in the description of the other veins and will not be again taken up. The condition for such redeposition of the copper and silver values are better in the case of this vein because a much greater amount of ground has been leached; therefore the amount of copper and silver to be concentrated is many times greater than in the case of the other veins.

The wall rocks of the Saddle Back Fault are very favorable for a wide vein. Having a vertical displacement of nearly 400 feet, a great amount of material will have been crushed into vein material during the movement. The wall rock, quartzite and limestone are very favorable for replacement ore-bodies, and unless the thickness of the diabase sill exceeds the throw of the vein, the wall rocks will be a composition of at least one favorable formation. Two walls of diabase usually form a tight, lean vein, but it is improbable that this condition will exist as the lower sill of diabase encountered at the Superior & Boston mine, the nearest working in which it has been cut, is only 300 feet wide.

Geologically, the Saddle Back Vein is ideal for the deposition of large copper ore-bodies. The minor fractures are not so good, and by themselves would not warrant the expenditure necessary to explore them at depth. However, as the main vein warrants deep exploration, prospection of the smaller veins from the work proposed upon the large vein would be comparatively inexpensive and should be undertaken subsequently.

CONCLUSION:

A careful consideration of all the facts available at the present time bear upon the future of the property, strongly indicates that the Saddle Back Vein is one of merit and warrants such reasonable expenditures as will be required to determine its value. That is, the sinking of a shaft below the ground water level into the zone of secondary enrichment and then the necessary lateral drifting in that zone.

With operations on the smaller silver veins to carry a part of the development cost for deep exploration, this property has indeed an encouraging outlook. However, efficient management and well-directed development work are essential to guide the expenditure of available funds into the proper channels.

We are strongly of the opinion that the King Hecla Copper Company is destined to become a producting copper mine when its property is thoroughly prospected at depth.

PRESENT AND PREVIOUS MINING OPERATIONS:

DAISIE:

About 1,000 tons of silver ore were extracted from the stopes on the Daisie vein. This ore was bunchy in value and pockety, occurring near the surface. A tunnel about 250 feet long on the vein is in good condition. A cross-cut from this tunnel cut another parallel vein about ten feet south of the Daisie vein.

LITTLE JOHNNIE:

A location cut about 6 feet deep is the only work on this vein. The showing in this cut warrants more work, as the outcrop is strong and contains good values in copper and silver.

SADDLE BACK:

NORTH SILVER VEIN: An incline shaft 60 feet deep is the only development on this vein. Good values of silver can be obtained from this shaft and copper stain is frequently visible.

SOUTH SILVER VEIN: Two incline shafts, 60 and 90 feet deep, is the only development work on this vein. The shafts were recently put down and about 40 tons of high grade ($300.00 per ton) silver-copper ore was shipped.

MAIN SADDLE BACK FAULT VEIN:

Three tunnels, only partly accessible, now enter this vein on the steep eastern hillside. Small amounts of high grade silver-copper ore were mined in past years from these tunnels. A shaft was sunk from the saddle but judging from the dump its depth was not in excess of 100 feet. It is now caved. The tunnel work of which there is about 500 feet, is confined to the leached portion of the vein near the surface.

TOM BOY:

Two tunnels enter this vein from the east slopes of the ridge. One was near the crest of the hill. The other, though about 100 feet lower, was inadequate to develop the vein. Several hundred tons of silver ore were mined from these tunnels.

WISHBONE VEIN:

No work was done on this vein on the east side of the ridge where it is strongest.

FAME EXTENSION:

The six Fame Extension claims are undeveloped and unprospected. The surface of these are covered with float and will claim the east extension of all the above mentioned veins and the possible extension of the three Fame veins which were, in the early days of the camp, the district's most famous silver producers.

SUN RISE:

A shaft about 100 feet deep, with about 100 feet of drifting on the vein, is accessible in part. Ore was also extracted here in the earlier years and some has been mined recently. On the north slope of the ridge are several short tunnels and a shallow shaft. Although some ore has been mined from these, they are all upon small sheeting veins.

RECOMMENDATION

Regarding future mining operations, the following recommendations are made:

1. That shallow mining operations and development be undertaken through a tunnel located on the Saddle Back vault vein at a point in the draw to the west of the saddle. A depth of 150 feet below the saddle is thus obtained, which is a favorable depth to prospect, by means of cross-cuts to the north and south, all of the smaller silver-producing veins.

2. That a shaft be sunk to a depth of at least 600 feet. This shaft should be located at the saddle, or near the portal of the tunnel described in No. 1.

3. That levels be spaced at 100 foot intervals and be driven on or parallel to the main fault vein.

4. That cross-cuts be driven, cutting all parallel veins on one of the lower levels. This by all means should be done on the Tom Boy vein.

5. That the drifting on both small veins to the north of the fault vein and mining of the ore found thereon be carried on during the period of development. Production from this work would carry a large portion of the development cost.

6. That recommendations Nos. 1 and 5 be undertaken at once and that the sinking of the shaft be deferred until sufficient funds are at hand to carry on the work in an efficient, systematic manner.