

REPORT ON THE PROPERTIES OF THE
HUMBOLDT KING MINING CO.

Lilly Report

Humboldt County, Nevada

The Bonanza King Mine, now called the Humboldt King, is situated in the southern part of Humboldt County, Nevada, about half a mile South of Fitting post office (now closed). From Imlay station, on the Southern Pacific Railway, the mine lies some 30 miles South, over a fair auto road. The station of Nixon, formerly Oreana, lies some 15 miles to the West of the mine, but the intervening Humboldt Range increases transportation difficulties to the point.

The writer was Manager of the Humboldt King mine from 1905 to 1910. During the latter year the mine was closed down in part on account of metallurgical difficulties and particularly on account of the coal famine of that year and consequent suspension of operations and flooding of the workings. It has not been reopened since. Since that time I have followed other lines of work and am not at this date actively engaged in mining.

Such maps and reports as were available have mostly been lost since operations were discontinued. Among my records, I have only some assay certificates and notes that were in my personal files.

The main value of the ore is in its gold, but most of the assays that I have available only give the total value of the gold and silver in the ore, in dollars. Silver was worth at that time from 50 to 65 cents per ounce and it is now down to 25 cents per ounce. Consequently it is necessary to make a correction in the total value of the ore per ton. By taking an average of such assay reports as I have giving gold and silver in ounces, I find that we had 22 ounces silver to one ounce of gold. To apply the corresponding correction to the values where expressed in dollars, I find it necessary to multiply these figures by 77 percent to get the present day value. This, while a rough and ready method, seems to be the only possible means under the circumstances. Therefore, the values of the ore as stated in this report are arrived at by taking 77 percent of the values as they appear in my old papers.

With gold at \$20.00 per ounce and silver at 25 cents per ounce, roughly 80 percent of the value of the ore is in gold.

The mine workings comprise a vertical shaft 300 feet deep, with lateral development on the vein showing an ore shoot 250 feet in length. Both ends of the ore are cut off by post-mineral faults and I am strongly of the opinion that a moderate amount of development will discover the continuation of the ore on both ends. There is no reason to apprehend that the ore will not continue to considerable depth, since the vein on the 300 foot level, the lowest, is strong, has good walls and the ore is of higher grade than on the 225 foot level.

Between surface and the 175 foot level the ore is mostly stoped out. Between 175 and the 225 foot levels 1,000 tons has been stoped. Between the 225 foot and the 300 foot levels the vein is virgin. The widths are from 1 foot to 10 feet.

The vein strikes generally East-West and is nearly vertical. It follows an altered diorite dike which is about 45 feet wide. The dike cuts the Koipato formation, represented, as developed here, by a porphyritic rhyolite.

The vein material is a fine-grained quartz and the vein is generally within the diorite, separated from the footwall of the dike by a thin slab of that rock. The old stopes are 5 to 6 feet wide, with smooth regular walls.

The vein is displaced by a series of normal faults which strike about North-South and dip to the East at about 45 degrees. These faults are clearly post-mineral. They cut the vein sharply and show drag of crushed vein material and ore.

That part of the vein exploited at surface is 150 feet in length and almost vertical. The East and West ends are cut off squarely by faults which pitch about 45 degrees to the East. This section was worked down to about 175 feet and at that depth the ore was considerably broken and water was encountered, making progress difficult and expensive. Later the shaft was sunk to the 225 foot level and the vein drifted on for 150 feet, disclosing the same faults as found in the upper workings. Further development on this level to the East resulted in the discovery of the vein beyond the fault in that direction. The throw was 20 feet to the North. This was developed for 102 feet where it was again cut off by a fault. On this, the 225 foot level, the ore extends from 20 feet West of the shaft to 232 feet East of the shaft, a total of 252 feet. The most westerly fault is called No. 1, the next to the East No. 2 and the next, No. 3. These faults are parallel and nearly straight across the ledge. The ore is full width right up to the faults showing that the ore continues beyond them. The portion of the vein between the No. 2 and No. 3 faults was not discovered in the old upper workings.

As to values on the 225 foot level, starting at the No. 1 fault and going East, the ore is broken in stringers, mixed with wall rock, for the first 40 feet. The values in this part are from \$3.08 to \$4.62 in gold and silver per ton. From this Easterly to the No. 2 fault, a distance of 110 feet, the vein is in a solid body, averaging 3 feet wide and the ore assays from \$3.73 to \$57.95 per ton, the higher values being in uniform streaks of sulphide ore in the main ledge. A general average of five samples taken assayed \$22.64 per ton.

Most of the ore between faults 1 and 2 is of a free milling character, although, somewhat refractory. Between faults 2 and 3 the ore carries more silver and base sulphides and is much more refractory. Assays have shown as high as 506 ounces of silver, with but little gold and others have shown \$117.11 in gold, with but little silver. A series of 25 samples taken along this part of the vein averaged \$20.63 per ton. Another set of five samples averaged \$23.41 per ton. One thousand tons of ore was stoped from this part of the mine, the vein showing up well in the stopes but giving poor recovery in the mill. The refractory nature of this ore is such that amalgamation and concentration are entirely insufficient to save the values.

The continuation of the ore going West from fault No. 1 has not yet been discovered. Neither has the East end, from fault No. 3, but it is an absolute certainty that they do exist and will be discovered.

The North wall between faults 2 and 3 is a soft, crushed rhyolite, which caves readily when unsupported. In going into this, large boulders or kidneys of high grade ore were found. Development proved the existence of a ledge of high-grade ore running nearly parallel with the main ledge, which we call the North Vein.

This North Vein was opened 80 feet in length and ranged from 1 to 7 feet in width. The rounded corners of the boulders indicated considerable movement. It was developed to 35 feet above the 225 foot level and like the main ledge beside it goes down. Some of the boulders in the North Vein were three to four tons in weight and showed that they came from a good-sized ledge. There is no poor ore in it, the lowest assay going \$20.02 per ton. One carload of this ore shipped to the United States Smelter at Bingham Junction averaged \$65.63 per ton. It is an entirely different ore from the main ledge and comes from another distinct ore body.

Later the shaft was sunk to the 300 foot level. Between the 225 and 300 foot levels the shaft passed into the footwall of the No. 1 fault, but a drift to the East picked up the vein in good values at about 50 feet from the shaft. This level proved the downward continuation of the two faulted blocks developed on the 225 foot level and the length of ore discovered here is 250 feet, from the No. 1 to the No. 3 fault. The vein on this level is three feet in width as an average, with good walls and the ore shows more sulphides than on the 225 foot level. The values also, are higher, the average of 11 samples giving \$24.53 per ton. Free gold is visible in this ore. The vein is strong, with good walls and there is every indication of persistence to greater depth.

Between the 225 and the 300 foot levels the ore is virgin. The average grade for the 252 feet developed on the 225 foot level is \$21.67 per ton taking gold at \$20.00 per ounce and silver at 25 cents per ounce. The width is at least three feet.

The same block of ore where exposed on the 300 foot level is 250 feet in length, 3 feet in width and the average value is \$24.53 per ton.

At 12 cubic feet per ton therefore, we have here a block of ore containing 4,688 tons, of an average value at present metal prices (January, 1933), of \$23.10 per ton. The total gross value of this block of ore is \$118,000. While raises are lacking to qualify this block of ore as "positive", its regularity and the similarity in appearance and values on the 225 foot and the 300 foot levels is such that no reasonable doubt can exist.

I consider the following a reasonable estimate of "Probable Ore".

Between the 175 and the 225 foot levels	2125 tons
North Vein	933
100 feet below the 300 foot level	6250
Total	9308 tons

Applying to this the average values as shown on the 225 foot level, \$21.67 per ton, we get a gross value for the 9,308 tons of ore of \$201,704.

As to possible ore, the chances for locating further tonnage laterally and in depth are excellent. There are also attractive possibilities for large tonnages on further exploration of the North Vein.

CONCLUSIONS

The Humboldt King vein does not outcrop boldly and the surface exposures are not imposing. The old open cut where ore was extracted between the No. 1 and No. 2 faults is about 150 feet long. Development on the 225 and the 300 foot levels has picked up a second faulted block of the vein making a total length of developed ore of 250 feet. The 300 foot level, the lowest in the mine, shows the same width and a better grade of ore than the 225 foot level and there is no sign as yet of a bottoming of the orebody. I consider the chances for the discovery of the continuations of the ore East and West excellent.

Since the date that operations on the mine were discontinued the development of the flotation process has made it possible to treat successfully ore of the class found in the Humboldt King mine.

The mine is full of water, having been so since about 1910. It is possibly caved in part and certainly the shaft would require extensive repairs before resampling and continuation of development of the mine could be started. The head-frame, hoist, mill and all other equipment is no doubt either gone, or depreciated beyond repair. The mill in any case, was unsuitable for the treatment of the ore.

With its high gold values and the 4,688 tons of ore blocked out between the 225 and the 300 foot levels and the excellent chances for discovery of additional tonnages, the Humboldt King stands almost in a class by itself among such mines as are still available for investment.

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