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HUMBOLDT PROPERTY

CAIN SYNDICATE, AURORA, NEVADA

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SUMMARY OF REPORT

The Humboldt property consists of two full patented claims, belonging to the Cain Syndicate, and a small fraction between the two claims, located by Spurr & Co. in behalf of the Tonopah Mining Co., as a result of their surveys.

The mine was worked in the early days of the camp, especially around 1886, when ore averaging around \$18.00 was mined, and milled at the brick mill standing below Aurora. The ore was treated by pan-amalgamation, and the tails averaged around \$5.00. Development work was done on the 100, 200, 300 and 400-foot levels. Considerable water was encountered in the bottom, and eventually the mine was closed down, and has been abandoned for 25 years. The evidence is that under the then existing circumstances \$10.00 or \$12.00 ore (of which considerable still remains in the mine) could not be made to pay.

The Humboldt claims cover essentially one huge vein--the Humboldt--which is a fissure vein in andesite. About 1300 feet of the outcrop of this vein is comprised within the property. The vein is of dense white quartz, carrying finely disseminated gold. Silver occurs in the proportion Au : Ag :: 1 : 3 by weight. The vein runs into the Silver Lining property on the northeast, and is cut off by a heavy fault on the southwest, the faulted continuation being the Prospectus vein. The known extent

of the original vein along the strike was about a mile, and it is likely that it proceeds further beneath the capping.

For about 750 feet in the Humboldt property, the vein is from 20 to 70 feet wide and will probably average 40 feet in width.

The first level of the Humboldt shaft develops the vein for a length of about 147 feet, but only explores a portion of its width. The 200-foot level develops a length of 125 feet, and shows up a very wide vein; but it is doubtful if the total width has been developed at all points. Below the 200, the shaft and levels have been inaccessible, to date. The only other piece of work between the shaft workings and the Silver Lining ground is a shaft, about half way between. The shaft is about 40 feet deep, with a cross-cut through the vein, which is here about 25 feet wide, with 10 feet of \$3.00 ore. Near the Silver Lining boundary the vein is about 60 feet wide.

Workings on the Silver Lining, near the boundary, shows ore running \$7.00 to \$17.00, for a width of three or four feet; and this ore probably runs into the Humboldt property.

In sampling the Humboldt workings, 50-pound samples were taken, the cuts being about 3 to 4 feet long, and assays were made on each sample both in Tonopah and in Aurora.

On the 40-foot level, one cross-section (#2) shows $18\frac{1}{2}$ feet of quartz averaging \$9.20 per metric ton of 2204 pounds; another 9.8 feet averaging \$4.02. In neither case was the full width of the vein exposed.

On the 100-foot level section one shows 12 feet of

quartz averaging \$3.21; section two, 16.4 feet averaging \$5.30; section three, 9.4 feet averaging \$9.84; section four, 8.2 feet averaging \$7.18. The width of the vein is only partially developed on this level. The total average value on the 100-foot level is \$6.07.

On the 200-foot level section two shows 8.5 feet of ore averaging \$4.39; section three, 40 feet of ore averaging \$5.87; section four, 57 feet (width) of ore averaging \$5.78.

The width of vein on this level is not fully developed. The average value of ore on the 200-foot level is \$5.70, the average exposed width is 35 feet.

With the above data, the following tonnage and values have been calculated:

	Metric Tons of 2204 lbs	Total As- say Value per Metric Ton
Between 100-foot level and surface:		
Block 1-A, Highly Probable Ore - - -	11,812	\$6.93
Block 1-B, Probable Ore - - - - -	19,537	5.70
Between 100 and 200-foot levels:		
Block 2-A, Ore in Sight - - - - -	21,952	5.80
Block 2-B, Probable Ore - - - - -	9,765	5.70
Between 200 and 300-foot levels:		
Block 3, Probable Ore - - - - -	32,100	5.70
Total ore in sight and estimated as probable - - - - -	95,166	\$5.88

The Humboldt shaft workings ore-reserves may be summarized as follows:

	Metric Tons of 2204 lbs	Total Assay Value per Metric Ton
Ore in sight and highly probable ore	33,764	\$6.20
Probable Ore (above 300-foot level) and not extending lengthwise past existing development - - - - -	61,402	5.70
Dump Ores - - - - -	3,900	2.88

The Aurora ores have been hitherto treated by amalgamation (pan-amalgamation or plate-amalgamation) therefore the amount in the tailings was very great, the Humboldt tails from the Consolidated Esmeralda Mill in 1886, averaging around \$5.00. The last mill constructed (by Mr. Cain) had about \$10.00 tails, which have recently been treated by cyanide.

The ore is evidently an ideal cyaniding ore, being free from sulphides and impurities and with values mostly in gold. Various tests made under the direction of Mr. A. R. Parsons indicate a recovery of 95% of the gold and 60% of the silver, or 94.5% total recovery. The mill to treat these ores would be of simple construction, and would therefore be economically run.

Should development work prove that enough ore exists in the Humboldt vein to warrant systematic mining operations, the Prospectus Drain Tunnel would be extended to the Humboldt Shaft. This would connect at about the 400-foot level, and would give about 400 feet of backs on the vein. The ore in the blocks above the tunnel could then be mined very cheaply. Breaking and stoping, timbering, and development charges would all be small. The principal item of cost which requires careful consideration

is power, and it is essential that this should be supplied by the Pacific Power Co. at a low rate.

In seeking to arrive at an estimate of the cost of mining and milling ore, the method of comparison with known operating mines was used. The closest parallel which I know is the mines at Silver Peak, Nevada--not far from Tonopah. In several respects Aurora has a slight advantage in conditions over Silver Peak, in respect to dip of vein, tramming charges, wage scale, etc. The Silver Peak costs for the first quarter of 1911 were a total of \$2.719 per short ton. Taking the same basis, but modifying the figures for development, and deducting the Silver Peak aerial tramway charge, we get a total cost for the big Humboldt vein, of \$2.605. This would probably not be attained at first, on account of the time required to organize properly; but is deemed ultimately possible. Per metric ton (as our assay values are given) this figure should be increased 10%, to \$2.86. Where ore is already developed, the minimum assay value, whose recovery value would repay all costs, would be \$2.85.

The figure of \$2.86 has been arbitrarily raised to \$3.00, for calculating net profits, as follows:

<u>HUMBOLDT MINE</u>						
	Tons (metric)	Total Assay Value	Total Recovery Value	Esti- mated Cost	Esti- Profit Per Ton	Estimated Total Net Profit
Ore in Sight and Highly Probable	33,764	\$6.20	\$5.86	\$3.00	\$2.86	\$ 96,565.
Probable Ore Above the 300-foot level	61,402	5.70	5.39	3.00	2.39	146,751.
Dump	3,900	2.88	2.72	1.41	1.31	5,109.
	<u>99,066</u>					<u>\$248,425.</u>

In contemplating this possible profit we have to take into consideration the following outlay:

Mill and other installation - - - -	\$400,000.
Price of Property - - - - -	160,000.
Total - - - - -	<u>\$560,000.</u>
Net Profit - - - - -	248,425.
Difference - - - - -	<u>\$311,575.</u>

The present showing on the Humboldt would not, therefore, warrant the purchase of the Cain Syndicate property, which purchase I regard as altogether depending upon the Humboldt.

Under the circumstances I believe it would be good business to risk a certain sum of money in developing the Humboldt mine, to see whether or not there exists sufficient ore to warrant purchasing the property and building a mill. It is recommended that a "working bond" be secured for a period of one year after expiration of the present option; and that development work be done through the Humboldt shaft. It is probable that the Power Co. might furnish power free for the development work. It is estimated that the work would require two months time for installation and preparation after an agreement is reached, and instructions given; and six months active work, with a total cost of \$40,000. A total expense of \$50,000. should be contemplated, to be on the safe side. Should the work prove unfavorable, this amount or whatever part is expended before a decision is reached, would have to be written off against examination and prospecting work, and the project abandoned. Should it prove favorable, the money laid out would be recovered, as the ore developed would be subsequently mined without any development costs;

and this work would expose substantially the whole vein above the Prospectus Tunnel, and between the Humboldt shaft and Silver Lining. A total of about 725,000 tons of quartz would be exposed, the amount of ore in which could be determined only by assay.

The water flowing from the Prospectus Tunnel would probably be sufficient for the operation of the contemplated 500-ton mill. Water for domestic purposes could be obtained from a spring about a mile up the valley from the Prospectus Tunnel. The land between the spring and the tunnel is desirable for residence purposes, and I am now endeavoring to tie up both the spring and the land for the company, for should machinery be installed at the Humboldt Shaft, the values of property would certainly jump up.

SPURR & COMPANY

by *J. E. Spurr*

Aurora, Nevada, Aug. 17, 1911.