

John H. Marks  
J.H.M.  
2811 on  
Vindora

JOHN H. MARKS  
HYDRAULIC, MINING & CIVIL  
ENGINEER

504 BANK BLOCK  
PHONE MAIN 2470

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A BRIEF REVIEW, BY J. H. MARKS, OF REPORTS ON THE STAR GROUP OF MINES, GUNNISON COUNTY, COLORADO.

This property is located in the northern part of Gunnison County, Colorado, about 20 miles south from Aspen and 17 miles northeast from Glacier, a station on the D. & R. G. R. R. between Gunnison and Crested Butte.

According to maps submitted, the property consists of  $6\frac{1}{2}$  claims of 1500 X 300 feet equal to 10.33 acres per claim; approximately 67 acres. The names are Star, Snowbank, Snowbank No. 2, Independence, Colorado, X-10-U-8 and X-10-U-8 No. 2 claims. These claims are not patented, as found by examinations of records in the office of the United States Surveyor General in Denver, Colorado; - however, reliable information is to the effect that annual labor has been done, thus keeping a perfect possessory title. U. S. Mineral Survey #14937 Black Warrior lode is immediately northeast of X-10-U-8 and Colorado lodes. Survey #16461 Bull Domingo #2 lode joins the Star lode on the east. U. S. L. M. 5941 is about 2000 feet east from Star lode, in T. 12 S. R. 84 W. The Star lode was originally located in 1880, amended location being filed in 1900.

This mine is located at the foot of Italian Mountain, on its northeast slope at about 11,000 feet above sea level; - summit of Italian Peak is 13,225 feet. The Geological formation is blue lime-dolomite contact and carries silver, lead and a very small quantity of zinc. Ores are similar to Leadville deposits. Contact between blue and dolomite lime is well defined. Machinery and buildings on this property were valued at more than \$40,000; good timber near by; - also water and cheap water power; - wagon haul from mine to railroad 17 miles.; - 100 ton ore house at railroad; -  $7\frac{1}{2}$  miles from mine on road to Glacier is a cabin to house 15 men and stable to care for 40 horses; - all the property of the mine.

Development consists of the Star shaft 71 feet deep; - from bottom of shaft an incline at  $45^\circ$  for a distance of 93 feet. From bottom of ~~shaft~~ incline a drift was run northwest 300, feet, from which 915 pounds of ore gave returns of 531 ounces silver and 41% lead; - shipped in Nov. 1912.

In 1913 Independent shaft was sunk 144 feet. At bottom of shaft a  $45^\circ$  winze was sunk 85 feet, in ore all the way. High grade ore was shipped to smelters and \$15 to \$25 ore was piled on the dump where it still remains; - estimated to average \$20 per ton and that there is 5000 tons, or ore valued at \$100,000. On the Star dump there is 4,000 tons of \$10 ore having a value of \$40,000 or, \$140,000 in dumps. Smelter returns marked "Star on settlement sheets came from ore bodies now in sight above Star first level. Smelter returns marked "Independent" came from winze below bottom of Independent shaft. Smelter returns from ore from X-10-U-8 claims show \$50 to \$60 per ton. Independent ore is of same character as X-10-U-8 and drift extended through Colorado lode to X-10-U-8 would be approximately 2500 feet in length and 320 feet below surface ore on X-10-U-8.

Above from 1915 report of John M. Larson.

Mr. Larson makes a supplementary report Dec. 31, 1917 in which he says that since the R. A. Parker report of July 10, 1914 considerable work has been done on the Star property during 1915-16-17 and ore found and followed northwest for 60 feet on third level; - also that an ore body of undetermined extent was discovered on second level and ore developed on third level; - see assay map for extent and location of ore bodies and smelter returns for values. Mine was closed on account of being unable to get teams for hauling ore and trucks are to take their place; - which will cut cost of hauling from mine to railroad from \$12 to \$4 per ton; - estimates 150,000 tons of ore in sight. Larson appears from smelter records to have been in charge of ore shipments. These shipments were made at intervals from Jan. 24, 1912 to Jan 8, 1918, - 6 years.

Four maps or prints accompany these reports; - a blue print and a white print of the Star group of mining claims. These maps, by Henry P. Lowe, M. E. show in addition, a cross-section of proposed Italian Mountain tunnel and a key map of the location of the ground with relation to railroad etc.

A blue print map of vertical section of underground workings on Star and Independent mines;- made by Pick Drafting Co. of Denver.

An assay map, by H.P. Lowe, dated Aug. 12, 1919 shows plan of Star and Independent mine workings;- gives width of vein in feet and assays of silver, lead and show in a few samples a small quantity of zinc.

Star shaft, first level and stopes above, 25 samples show width of ore averages 5.6 feet;- average silver, 28.9 ounces;- average lead, 25.9%.

Second level and drifts;- 23 samples show following averages, width ore, 11.1 feet;- silver, 15.6 ounces;- lead 9.1%. Ten of these samples assayed for zinc show average of 5.3%.

Third level 7 samples, show following averages, width of ore, 2.2 feet;- silver 20.3 ounces;- lead 17.3%.

Independent incline and main stope between first and second levels;- 19 samples show width of ore averages 5.2 feet;- silver, 57.6 ounces;- lead 20.4%. Two samples assayed for zinc show average of 8.7%.

Total averages of 74 samples from assay map show width of ore 6 feet;- silver 30.6 ounces;- lead 18.2%.

Assay map also estimates 50 tons of ore on Independent dump has a value of 29.2 ounces silver and 15.7% lead.

Assay map also estimates 5000 tons of ore on dump at Star shaft has a value of 15.6 ounces silver and 12.7% lead.

Early shipments from Star claim show for 192 tons gross, an average of silver 33 ounces, - lead 17%. Last shipments from Star claim show for 147 tons an average of silver 27 ounces, - lead 37%, a decrease in silver and an increase of more than double in lead;- or for 339 tons from the Star claim an average of 30 ounces silver and 27% lead.

Early shipments from Independent claim show for 339 tons an average of 108 ounces silver and 10% lead. Last shipments from Independent claim show for 595 tons, 51 ounces silver and 20% lead;- a decrease of more than one half in silver and an increase of double the amount of lead.

35 shipments of ore from this mine show a net value of \$47,448.52 after deducting all charges for treatment, freight etc, but now allowing for cost of mining and transportation to railroad. Prices for silver and lead were approximately as follows from smelter settlement sheets.

20 shipments,	1912,	silver, 60 cents,	lead, 4.30
10 shipments,	1913,	silver, 59 cents,	lead, 4.20
13 shipments,	1914,	silver, 57 cents,	lead, 4.00
9 shipments,	1917,	silver, 87 cents,	lead, 6.50
52 shipments, average silver,		66 cents	lead, 4.75

Combining shipments from Star and Independent claims we have a total shipped of 1263 tons of ore showing an average content of 54 ounces silver and 21% lead, - having a present value, (1925) of approximately \$74.52 per ton, figuring silver at 66 cents and lead at \$9 per 100 pounds.

Mr. Frank Bulkley a well known mining engineer, writing to Mr. H.E. McIlwain of Denver Colorado, under date of Nov. 16, 1914 reports on Star group of mines.

In July, 1914 he spent a few hours underground in a cursory examination of the mine workings;- found a large and continuous ore shoot developed downward for 1000 feet more or less;- ore occurs between dissimilar strata of limestone having a dip of 46° to westward;- ore is silver, lead and a small quantity of gold;- mostly oxidized;- width of ore shoot measured laterally in vein from 100 to 300 feet;- thickness of ore measured at right angles to walls from 6 to 40 or 50 feet;- considerable tonnage shipped from this shoot;- large amount of low grade ore in stopes and if nearer market could be shipped at a profit;- gangue/silica, lime, iron and baryta. Much ore in sight could be profitably milled by gravity concentration. Many tons of ore run into hundreds of ounces silver and small bunches or packets in the vein containing one to three tons each have produced several thousand ounces of silver per ton.

General character of ore and geological features are similar to Aspen district, which is about 20 miles north and is probably a continuation of said district. Mr. Bulkley is of opinion that Italian Mountain district may prove as good as Aspen. He refers to R.A. Parker's letter of July 10, 1914;- quotes from and endorses it. Property is 17 miles from railroad. If cost of transportation could be reduced, much of the ore now developed could be shipped at a profit.

*John H. Marks*

Mr. R.A. Parker a well known mining engineer, has written three letters or reports on the Star property, under dates of Jan. 22, 1914; - Feb. 2, 1914 and July 10, 1914.

Among other things he reports (1-22-14) development while meager indicates a pay mine; - underground work is crude, attention only being given to extraction of high grade ore without reference to future operations; - work hampered by distance from market, climatic conditions and limited resources.

Work has been confined to search for high grade shipping ore. First level 164 feet from surface at Star shaft and 144 feet from surface at Independent shaft, from which 85 foot winze sunk at angle of 45°. Describes in some detail ore conditions; - refers to ore shipped; - thinks bottom of winze near point where oxidized changes to sulphide ore.

Ore is silver bearing galena in a limestone belt, upon a granite base.

Examination made in winter; - could not see surface; - believes in possibilities of a big mine; - could not make estimate of tonnage; - sees evidence of low grade concentrating ore, 6 feet wide and 200 feet long. Concludes property worthy of development.

In letter of Feb. 2, 1914 Mr. Parker states in reference to these mines "The showing made by them is the best I seen in this state for some years"; - sees promise of ore, 6 feet or more; - good indications that it will continue with depth and additional ore bodies be found. Ore occurs in limestone formation; - irregular in outline; - tonnage large; - large reserves of medium, and some high grade ore.

In letter of July 10, 1914, Mr. Parker advises payment of \$12,000 due on July 15; - describes in detail the mine workings, ore etc; - has favorable opinion of the property.

Says "In Leadville the mine would be favorably considered on a basis of \$1,000,000."

Estimates roughly 90,000 tons of ore in sight with a gross value of more than \$10 per ton, net including ore below that which is developed.

J. S. Healy, M. E. writes Mr. H. R. Ramsey under date of Dec. 1, 1917.

Says he visited the property; - found good water power; - plenty of timber; - saw mill at mine; - mines better than reported; - after two days underground concludes 200,000 to 300,000 tons of ore in sight; - enough ore blocked out to run mill for many years; - tunnel development to cut present workings 800 feet deep would make one of the largest producers of lead-silver ore in the United States.

John H. Marks  
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