

REPORT

--ON THE--

THE SAN JUAN
SMELTING & REFINING
COMPANY

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MINE MANAGER'S REPORT PAGE 312, 1904

STATE BUREAU OF MINES

STATE OF COLORADO

THE SAN JUAN
SMELTING AND REFINING COMPANY

DESCRIPTION OF PROPERTIES

Silverton, Colo., January 2, 1905.

George Oliver, Esq., President The San Juan Smelting & Refining Co.:

Dear Sir: - In accordance with your request I beg to hand you herewith a complete list of the properties of The San Juan Smelting & Refining Company.

The properties comprise three large groups, as follows:

Mines in Prospect Basin on Cement Creek side of Red Mountain, San Juan County, Colorado.

Mines in Picayune Gulch, San Juan County, Colorado.

Mines in Burroughs Park, San Juan County, Colorado.

A smelter, 150 tons daily capacity, and 57 acres of ground at Silverton.

The Henrietta group in Prospect Basin contains the following mines:

Henrietta	Mineral Queen
Lizzie	Monday
Humboldt	Robin
Narrow Gauge	Benton
Home Run	Roadside
Hill Side	Duke
Orloff	Phoenix
Surprise	Genevieve
Surprise, Jr.	Coperepolis
Snow Drop	Mineral king (lease and option)
Little V.	Snow Bank
Mineral King	Gulch
Midnight (lease and option)	Teddy
Ohio	Jack-Pot
Ohio No. 1	Towne
Ohio No. 2	Henrietta Mill Site
Ohio No. 3	Del Mino Mill Site

Containing 281.05 acres.

The Picayune Gulch Group contains the

Annie D. Extension	Hill Top
Ideal	Forest Gr
Doubtful	Green Forest
Wasatch	

Containing 72 acres.

The Burroughs Park Group contains the

Success, $\frac{2}{3}$ int.	Colorado, $\frac{2}{3}$ int.
Josephine, $\frac{2}{3}$ in.	Kentucky, $\frac{2}{3}$ int.

Containing 39 acres.

The Group at Silverton consists of:

K. & G. Placer No. 1	K. & G. Placer No. 2
Humboldt Mill Site	Emily Mill Site
Lizzie Mill Site	Emily Lode

Containing 57 acres

Making a total acreage of 449.68 acres.

Also the Henrietta Tunnel Site, which contains 206 acres, a part of which is embraced in the claims in Prospect Basin Group.

The Henrietta group is situated on Cement Creek side of Red Mountain, between the Gold King, Yankee Girl, Guston and Genessee-Vanderbilt groups of mines, about seven miles from Silverton, the county seat of San Juan County, Colorado. This group consists of 271.65 acres of mining claims and 9.4 acres mill site and 206.6 acres tunnel site. The Silverton, Gladstone & Northerly railroad passes within one mile of the mines. An aerial tram-line connects the mines with the railroad. The completion of this tram-line gives excellent facilities for handling freight and ore at a nominal cost.

The railroad extends to Silverton and connects with the Denver & Rio Grande railroad to all points. Ample water requirements are derived from a good sized creek which flows down the Basin and empties into the main water way, Cement Creek. A heavy growth of timber on land owned by the Company at the foot of the Basin affords a large supply for all purposes.

The Henrietta Lode has been exploited by tunnels, levels, drifts, shafts and winze and through this development 350,000 tons of ore are exposed ready for shipment. Several thousand tons of smelting ore have been shipped to the smelters largely from development work. See report of superintendent accompanying.

The Henrietta ores are mineralogically termed chalcopyrite, the composition of which is gold, silver, copper and iron. The high state of development shows that the sanguine expectations of the company have been realized.

The 72 acres in Picayune comprise a series of lodes in between the Sunnyside mines and the Golden Fleece. The lodes are enormous in size and extent. Assays from surface and workings show rich gold and silver content. Ore shipped to the smelter gave high returns in the precious metals.

The Burroughs Park group contains 39 acres adjoining the famous Isolde group of mines, which is reported to carry as high as \$25,000 for one car load shipped while many car loads brought from \$3,000 to \$8,000 each. Gold is the predominating value in the ore and the results as shown in testing the various lodes are conclusive as to the probable large value of the property. The ores are of similar appearance to the ores of the Isolde.

The smelter has a daily capacity of 150 tons and is modern and up-to-date in every department. The furnaces, made of steel water jackets, are 40x129 inches inside measurements. For power, there is one 80 horse power and one 50 horse power with 170 feet head which gives 300 horse power. The smelter is equipped with crushers, rolls and sampling room, general office, assay office and chemical laboratory, blacksmith shop, flue dust chamber, briquetting house and press and railroad track scales. There is about one-half mile of railway track in the yard leading to all storage bins for ore, coke and limestone.

The smelter is in perfect condition, ready to blow in on a day's notice. The new aerial tram has proved to be entirely successful, running very smoothly. The terminals and towers are massively constructed, great care having been given to both foundations and superstructures. The towers are of the new square pattern, instead of the pyramid, insuring greater safety, economy of operation and longer life. In fact, this tram is a model one in every particular.

I have taken numerous photographs of the towers and terminals while in process of construction, including the foundations. I hand you three half-tone reproductions, one of the lower terminal, one of number 4 tower with the men at work, and one of the upper terminal while in process of construction, showing the heavy timbers used. While these timbers look small in the photograph, they range from 8x8 to 12x14, with large trees used in the foundation, the largest tree being sixty-five feet in length and forty inches in diameter at the base--embedded in rock. Numerous large trees were used in this way. Some of the timbers are embedded in cement.

I also hand you a half-tone reproduction of a photograph of the Silver Lake and Iowa Tiger tramways, each about three miles in length, the former handling about 400 tons of ore from the mine per day, and carrying up all the coal, timbers and supplies for operating the same. Before building the tramways the ore could only be brought down a few months in the summer time on the backs of mules at an expense of four to six dollars per ton. With the tram line their ores are brought down the entire year, winter and summer, at an expense of but a few cents per ton.

The special object of this picture is to show by comparison the difference between the strong, square towers used in tram line from the Henrietta and those of the pyramid towers used in the Silver Lake and Iowa Tiger tram lines. The pyramid towers have to be built of select timbers, strongly bolted and braced and anchored to stand the strain, and carefully watched to be kept in good condition. The two lines mentioned in the big picture are ideal lines of this kind, being well built. Yet one can see by the photograph that the square tower is much more substantial.

The upraise from No. 7 to No. 3 level of the Henrietta is completed and struck the bottom of No. 3 winze almost exactly center to center. The upraise was made in continuous ore. The timber work, ore shoot, supply and ladder compartments are very substantial and convenient. The ore from all these workings is now sent down the upraise and out through No. 7 to tram line. The ventilation is now very strong and perfect, the passage of air through the different workings being regulated by the opening and closing of doors. Levels 5 and 6 are opened from the upraise. No. 7 is being extended south of the upraise in excellent ore.

The mine, smelter and tram are in first class condition. The ore in sight has been considerably increased since the last report by the development from the upraise and the extension of No. 7 and is in condition for rapid and economical mining.

Yours respectfully,

F.C. KEMBRICK,

Manager.

THE SAN JUAN
SMELTING AND REFINING COMPANY

Silverton, Colo., January 2, 1905.

George Oliver, President:

The San Juan Smelting & Refining Company's smelter utilizes pyritic smelting as the basis of operation. While this form of smelting is largely used in the West, it is particularly suitable for the copper and iron ores of the county, as amply demonstrated by the success of the company. The method of procedure is to mix the ores purchased from various sources along with the ores from the company's own mines in such a manner that one ore may contain the necessary constituents to aid or smelt another, thereby avoiding, as far as possible, the use of barren flux, to the great enhancement of profit. The sulphides in the ores, during the action of smelting, are oxidized by means of a large volume of heated blast, heat being derived through such oxidization to a degree allowing a large curtailment in the percentage of costly coke ordinarily required. This oxidized iron combines with the quartz, forming slag as waste, and the sulphur is volatilized as sulphuric acid gas.

The product produced is termed matte, which consists of the copper, gold and silver formerly contained in the ore. This matte represents a concentration of about 15 tons crude into 1 ton matte, and contains 50 per cent. and upwards copper, as well as high gold and silver values. This is shipped to New York for refining. Pyritic smelting is a simple, efficient method, amenable to a wide scope of ores, and can be conducted on lines far cheaper and more effective than any other; avoiding, as it does, the necessity of costly crushing and roasting plants, its installation and operation is cheaper and its tonnage capacity greater than ordinary.

It is highly desirable for a company, owning large mines, to smelt its own ore, saving as it does the excessive freight charges on over 15 tons crude ore as well as the high cost of treatment as charged by custom plants on the same--besides obtaining the full value for the contents of the ore, which otherwise would go as profits to a purchasing smelter. The fact that the company smelts its own ore means a saving of upwards of \$15.00 per ton in their Henrietta ore alone, over and above what could be realized by shipping and selling crude ore. Also by purchasing ore a practically double profit is made by enabling easy smelting mixtures to be obtained, greatly reducing the cost of smelting both.

The following actual figures, compiled from the books of The San Juan Smelting & Refining Co., are instructive as to costs and profits:

Total cost of smelting, per 24 hours, 150 tons ore...\$298.00

Freight to New York refinery, 10 tons matte, at \$17.35 = 173.50

Total cost of smelting and disposing
of matte.....\$471.50

Or \$3.143 per ton ore

Average treatment charge received per ton
ore brought.....\$ 6.65

150 tons ore at \$6.65.....\$997.50

Cost of treating 150 tons ore..... 471.50

\$526.00 or \$3.50 per ton

Cost subdivided as follows:

Labor.....\$0.7266 per ton

Superintendent and office..... .1133

Unloading..... .1200

Supplies..... .0400

Lime..... .1866

Coke..... .8000

Actual cost of smelting, per ton.....\$1.9865

Disposition of matte..... 1.1566

Total cost per ton.....\$3.1431

The profit derived through disposing of the enriched matte at an increased price for the gold, silver and copper contents, above that paid for in the crude ore, amounts to a sum equal to the profits derived through the difference of treating ore as charged ore sillers and actual cost of smelting. That this may not appear strange, it might be well to explain that the great amount of this second profit is due to the difference in the price of copper as paid for in ores carrying only small percentages and the price received for same in form of the enriched matte where the contents are 50 per cent. and upwards in copper.

As the ores of the county all carry some copper, many with a percentage too small to pay for, which amount is, however, saved by smelting, and therefore all profit, it can be readily seen that this source for profit is very large. The smelting records of the company conclusively prove that this profit amounts to \$3.00 and upwards per ton, or a total profit per day on 150 tons of \$450.00

From the above figures it therefore follows that the smelter's daily profit in treating 150 tons ore amounts as follows:

Profit through smelting.....\$526.00

Profit through prices..... 450.00

Total daily profit.....\$976.00

While the above results may appear extraordinary, yet they are not uncommon in the smelting industry, such an enterprise being capable of great results and fully able to disburse large dividends.

The San Juan Smelting & Refining Co. is probably one of the most economical plants in the West. The plant is built on a terraced site, and every facility for inexpensive handling of ores is employed. The power for driving machinery, etc., is derived through the use of water power owned by your company. The slag or waste is granulated and swept away from the furnace by means of a strong stream of water, thereby avoiding the employment of men to draw same away in bowls. The plant is also supplied with a large briquetting plant, which is utilized for compressing fine pulverulent ores or concentrates into hard masses, or bricks, for smelting in the furnace. This method avoids the loss of the fine ores being blown out of the furnace by the blast. Complete in every detail, the plant will stand the most rigid comparison with any smelter in the West, not only as to simplicity and cheapness of operation, but also as to dividend-earning capacity.

The custom ore being offered for the year 1905 is larger than at any time in the past, due to the greater mine development, and hence the larger ore tonnage directly tributary to your smelter.

Prompt action should be taken to furnish a sufficient ore purchasing fund to buy all of this ore as it is offered, and to make contracts for it by the year, which with your ore, may insure the steady running of your smelter at large profit.

I remain yours truly,

E.W.WALTER,

Supt. and Metallurgist San Juan Smelting & Refining Co.'s Smelter.

THE SAN JUAN
SMELTING & REFINING COMPANY

Silverton, Colo., January 2, 1905.

Mr. George Oliver, President The San Juan Smelting & Refining Company,
Denver, Colorado:

My Dear Sir - In regard to the condition of the mines of your company, I am pleased to state that all of the workings of the Henrietta mine from No. 7 up to No. 1 and the surface are connected and in working order to handle everything through the timbered upraise, or rather down-take, connecting all the upper levels with No. 7, and then over the tramway to the railroad by gravity at probably as small expense per ton as any mine in the San Juan country. The heading or breast of each and every one of the seven levels is in ore ranging from 6 to 18 feet in width. In places where the vein is crosscut it shows as high as 28 feet in width of ore. Levels Nos. 5, 6 and 7 have been driven each way from the main connecting upraise so they have two headings, both in ore, so there are nine drifts or tunnel levels with headings in big bodies of ore, each one of which can be extended and increase the developed tonnage rapidly. I should say if the ore continues in new ground as it is where developed it would be little trouble to open up a thousand tons a day of new ore.

I have driven the development of this property for the past four years with the one idea of handling it to the best advantage, at the least expense and for the largest profits on the completion of your big concentrating plant. There is now developed, blocked out and measured up between three hundred fifty thousand (350,000) and four hundred thousand (400,000) tons of milling and smelting ore in the Henrietta vein, that can be mined and delivered at the railroad and to the concentrating mill, when completed, at a cost of between 50 and 75 cents per ton. The tramway is in condition to handle 500 tons of ore per day, which capacity can be doubled when needed. The mine and tramway are in good order, ready to be worked to their capacity at any time.

The Henrietta vein is one of large proportions, as already stated. The ore bodies are of great width, and it will only cost a few cents per ton to take out the smelting and milling ore at the same time, and in mining it this way it will cost comparatively little to do the timber work to hold the rock in place while the ore is being extracted. The smelting ore in the mine comprises, on an average, about one-tenth of the total width and tonnage of the vein, and in taking out the smelting ore alone solid and heavy timber work is required to hold the mass of milling ore in place. In my reports to your office during the past three years you will notice that in regard to the mining of the ores of the Henrietta mine I have always advised the taking out of both the smelting and milling ore at the same time on account of economy in mining, timbering and handling, this necessitating a large concentrating or reduction works for concentrating the milling ore, similar to those that other large mines of the San Juan country are using.

The Surprise vein, which is also cut by No. 7 tunnel, is one of the largest veins in the San Juan country. Where cresscut, it is 110 feet in width, mostly of a milling or concentrating ore. In drifting in the ore we find it continues of similar character. I recommended the driving of No. 10 tunnel. This would cut the Henrietta and Surprise veins at 300 feet greater depth, and if found to continue so large as where opened it would assure hundreds of tons a day for many years. I still believe that at the intersection or crossing of the Henrietta and Surprise veins an enormous ore chute of great value will be encountered, and No. 10 level will intersect the two veins at or near this junction or crossing. It will take but a few thousand dollars to explore this from No. 10. Again, No. 10 level is getting nearer the depth at which the rich ore chutes of the Yankee Girl, Guston and Genessee-Vanderbilt were found, from which so many millions have been taken. These mines are on the same mountain and were worked by shafts when a heavy flow of mineralized water was struck, causing the mines to be abandoned for several years. They have been purchased by The Red Mountain Railroad, Mining and Tunnel Company, and long tunnels are being driven to drain them. Their grounds extend to within a few hundred feet of the lines of the property of your company. I feel that No. 10 level is likely to open similar extremely rich ore; at the time, it will open up great additional tonnage, both in the Henrietta and the Surprise vein, sufficient to furnish a mill with a thousand tons or more per day.

There is no need of doing any other development work on your property until your concentrating mill is completed to handle the material already opened. Thousands of tons of milling ore have already been taken out in development work that had to be thrown on the dumps. Your property is proven to be one of great tonnage and magnitude.

The values of all ore measures vary considerably, and even change from a predominance of one metal to another; in other words, one part of an ore body may carry high silver content with no gold, and in another part the conditions may be actually reversed. While the ore bodies of the Henrietta mine are uniformly quite regular, not only in a physical way, but also as regards metal content, still to sample such large ore bodies in any other way than to ship lots representing tonnage would be erroneous and result in a misconception one way or the other in the value of the property. I therefore quote results obtained from actual shipments made under commercial conditions.

In mining the smelting ore, which occurs from one to seven feet in width, the ore is stripped by taking out in drifting several feet of the milling ore, then blasting down the smelting ore separate. The ore thus obtained is shipped without any sorting whatsoever. The solid and richer ore is termed smelting ore, the leaner and more silicious, milling ore.

The milling ore was shipped to the company's smelter as tests to demonstrate the value of such ores on a large scale, thereby eliminating as far as possible any error which would occur through any other method of determination. These results show conclusively the great value of the property and will stand comparison with almost any copper mine.

The ore as shipped to the company's smelter, where it was crushed, sampled and smelted, gave the following returns:

Forty-one separate lots of smelting ore aggregating 2,768.9 tons averaged 0.05 oz. gold, 7.5 oz. silver, 7% copper.

Eighteen lots milling ore aggregating 885.1 tons averaged 0.03 oz. gold, 5.0 oz. silver, 3.3% copper.

At the present prices of these metals, the value per ton of Henrietta smelting ore would be:

Gold, 0.05 oz. at \$20.00.....	\$ 1.00
Silver, 7.50 oz. at 0.50.....	3.75
Copper, 7.00% at 0.15.....	21.00
	\$25.75

The approximate value per ton of milling ore:

Gold, 0.03 oz. at \$20.00.....	\$ 0.60
Silver, 5.00 oz. at .50.....	2.50
Copper, 3.30% at .15.....	9.85
	\$12.95

With the milling ore the values of course vary somewhat in the different chutes and are affected by the closeness of breaking the smelting ore. While the value of the milling ore as derived through shipment in tonnage is given above as \$12.95, for safety in estimates a deduction of 33 per cent. is taken from the above valuation, which would leave the value of the milling ore \$8.70 per ton.

We have always estimated from measurements while work was progressing that the proportion of smelting ore to milling ore is as 1 is to 10. Taking this as a basis, the estimated 348,000 tons of ore blocked out shows:

31,637 tons smelting ore at \$25.75.....	\$ 814,652.00
316,363 tons milling ore at 8.70.....	2,752,358.10
	\$3,567,010.10
A total blocked ready for shipment of	

This is in itself most gratifying, yet from our results in raising from the No. 7 level to No. 3 the ore body as followed gave returns from the smelting ore better in value than as specified in the shipments from the upper levels.

The following list of assays taken at different points on the upraise will clearly show this:

From raise 33 feet above track, Gold, 0.02 oz.; 8.74; Copper, 9.46%
From raise 45 feet above track, Gold, 0.03 oz.; 9.94; Copper, 10.50%
From raise 75 feet above track, Gold, 0.02 oz.; 60.93; Copper, 22.00%
From raise 110 feet above track, Gold, 0.08 oz.; 27.60; Copper, 10.16%
From raise 120 feet above track, Gold, 0.02 oz.; 27.38; Copper, 12.00%
From raise 140 feet above track, Gold, 0.02 oz.; 9.48; Copper, 4.8 %
From raise 150 feet above track, Gold, 0.02 oz.; 29.00; Copper, 14.3 %

The above statement of value in the ore blocked ready for extraction, relates to the gross valuation. It therefore becomes necessary to compute as closely as possible what the net returns will be, because from such result knowledge can be obtained regarding the probable and possible profits and dividends. It is known that the company intends to construct a mill at the base of the mountain on a site admirably located. This site has a gentle slope, allowing terraces to be formed, attaining thereby a 45 degree grade from the crusher at the top of the mill to the bins at the bottom, where the concentrates will be loaded on railroad cars for shipment to the smelter. A mill built on such principles allows of a minimum of labor because the ore requires no handling, gravity being utilized to carry the ore from one floor to another. The mill site is connected with the mine by an aerial gravity tram-line, nearly one mile in length and of 500 tons capacity per day, over which the ore laden buckets pass, delivering the ore at a very low figure per ton, and allowing such work to be pursued, independent of weather, winter or summer. The ore, from the time broken in the mine to the time the concentrates from the same containing the gold, silver and copper values are loaded on the railroad cars, is not touched, gravity taking the place of all labor to the greatest possible extent. From the actual practice obtained from other tram-lines and mills adjoining the company's property, kindly given by the management, the figures as tabulated below are taken, consequently they are as nearly correct as possible.

It is estimated that four tons milling ore will be concentrated into one ton of concentrates carrying the gold, silver and copper values. As there is always a loss in concentration, varying generally from 10 to 15 per cent., we have allowed a wide margin, viz.: 20 per cent., to insure results as given.

The net profits to be anticipated from the smelting ore are as follows:

SMELTING ORE.

Cost of mining 31,637 tons at 75 cents per ton.....	\$23,727.75
Cost of delivering same by tram to railroad cars at 10¢ per ton.....	3,163.70
Cost of R. R. freight from mill bin to smelter at \$1.25.....	39,546.25
Delivered at the smelter.....	\$ 66,437.70
Cost of smelting, etc., 31,637 tons at not to exceed \$3.50.....	110,729.50
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Total cost of mining, tram-transportation, railroad freight, smelting, etc.	\$177,167.20

Actual value received from gold, silver and copper contents of ore in matte. The concentration of the smelting ore, in smelting same along with other ores, is 15 tons into 1 ton matte. The refining of the matte is charged by a deduction of 2½ cents per pound of copper from the New York quotation for electrolytic brand copper.

Gold, 0.05 oz. at \$20.00.....	\$ 1.00
Silver, 7.50 oz., less 5%, at 50¢..	3.56
Copper, 7.00%, less 0.10% deduction at 12½¢ per pound.....	16.90

Value of ore as sold in matte. \$	21.46
Value of 31,637 tons smelting ore at \$21.46.....	\$678,930.02
Cost of mining, etc., etc.....	177,167.20

Net profit on 31,637 tons smelting ore.....	\$501,762.82
Or \$15.86 per ton ore.	

MILLING ORE.

Cost of mining 316,363 tons milling ore
at 75 cents per ton.....\$237,272.25

Cost of delivering same by tram from
mine to mill at 10¢ per ton..... 31,636.30

Cost of milling 316,363 tons of ore,
concentration 4 into 1 at 75¢ per ton..... 237,272.25

Cost of freight from mill to smelter,
63,272 tons concentrates at \$1.25
(20% allowed for loss in milling)..... 79,090.00

\$585,270.80

Delivered at the smelter..... \$585,270.80

Cost of briquetting concentrates for
smelting 63,272 tons at 50¢.....\$ 31,636.00

Cost of smelting, etc., 63,272 tons bricked
concentrates at not to exceed \$3.50..... 221,450.00

Cost of briquetting and smelting..... 253,086.00

Total cost of mining, concentrating,
shipping, milling, etc..... \$838,356.80

Actual value received from the gold, silver and copper con-
tents of the milling ore in matte, as per above, allowing 33 per
cent. less than the average value of the milling ore as shown in
tonnage shipments:

Gold, 0.02 oz. at \$20.00.....\$0.40

Silver, 3.35 oz., less 5%, at 50¢.... 1.59

Copper, 2.21%, less 0.10%, at
0.12½ per pound..... 5.17

Value of milling ore as
sold in matte.....\$7.16

As there is a concentration by the mill of four tons ore into one concentrates containing the gold, silver and copper contents of the ore, which would therefore result in 79,091 tons concentrates, we have, to still further assure safety, deducted 20 per cent. of this tonnage as a possible loss in milling, feeling that this amount will more than cover any loss through such operation. This will leave 63,272 tons concentrates of a value in gold, silver and copper of \$28.64.

63,272 tons concentrates at \$28.64.....\$1,812,110.08

Less cost of mining, milling,
smelting, etc..... 838,356.80

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Profit on the milling ore.....\$ 973,753.28

Or \$3.07 per ton profit.

Net profit on smelting ore.....\$ 501,762.82

Net profit on milling ore..... 973,753.28

Total net profit of ore blocked.....\$1,475,516.10

A careful survey of the estimates will show that precaution has been exercised in obtaining actual data, something tangible, devoid of speculative features and based entirely on business lines. In the estimate 348,000 tons of ore is taken, because this amount is blocked out ready for extraction and delivery to mill or smelter. We could have taken twice or three times this tonnage as a basis for calculation, because all the breasts of Nos. 1, 2, 3, 4, 5, 6 and 7 levels are in ore, and such a tonnage could be speedily developed by driving these levels ahead, but to avoid any chance of estimating something which, while certainly there, still is not blocked ore, we have restricted the estimate to only the ore opened up to the breast of the levels. By simply extending these levels a much greater tonnage in addition can be speedily developed.

In addition to augmenting the already blocked ore reserves by extension of the levels, No. 10 level is being driven lower down the mountain side and the ore measures again intersected 300 feet below the present workings, again opening up this remarkable ore zone.

It can be seen from the above that the valuation of the Henrietta is based upon solid data. The question of personal equation has been entirely avoided. The assays of content taken from large tonnage shipments are above criticism. Small possible errors have been lost in the large aggregate, so that this valuation stands out on a solid actual business basis. Far beyond the work of any expert, this tonnage of both smelting and milling ore proves stronger than any other means the worth of the Henrietta mine.

I have always worked faithfully and made honest statements to you of the property, and have put the property in the best shape I could for economic working, and I should be pleased to have it compared with any mine in the San Juan country or in the West.

I have the honor to be,

D. UMBELL,

Supt. of Mines, The San Juan Smelting & Refining Co.

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