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REPORT ON THE

NEVADA RAND MINE

SILVER-GOLD

By S. E. MONTGOMERY
U. S. Mineral Surveyor and Mining Engineer

May 16, 1925

Nevada Rand Mines Company,
11 Fordonia Building, Reno, Nevada.
P. O. Box 152.

Dear Sirs: As the result of several examinations of your property situated in the Rand Mining District, Mineral County, Nevada, I submit the following report, to date:

PRODUCTION AND PRESENT TONNAGE

There is 4,500 feet of underground workings, consisting of crosscuts, drifts and raises, including the shaft which is now 450 feet deep These workings have produced approximately $100,000 in high grade ore, that from time to time, was shipped to smelters or other reduction works. To reach the present stage of development, much of the exploration has been accomplished by the work and proceeds from these shipments. Few properties in their initial stage of development have shipping ore of a grade sufficient to stand the freight and treatment charges of this process. This record denotes a high type of mineralization for the ground under development. In the opening of an ore body it is not possible to block out ore in systematic manner for later milling tr atment on the ground, without the initial outlay of considerable working capital for such operations. Therefore, in many sections of this mine, where only the richest ore has been mined from the veins, only one wall is yet exposed. In other sections the drift faces are still in ore and the full lateral extent is not known. To make definite estimate of the ore tonnage under these conditions is not possible. However, judging from sections opened in width, as shown on the map, and considering the present exposed and broken ore in the mine, I would estimate that from 30,000 to 40,000 tons of good grade milling ore can be mined from the present workings. There is approximately 2,400 tons of milling ore on the dump, that on sampling assayed from $13.60 to $25.00 a ton.

The disclosure of the ore body on the 350 and 450 levels, an event now highly probable in the oxidized condition recently exposed there, would add from 100 to 200 feet of backs to your present opened ore. The most important work at present is to complete that part of the exploration. The intense oxidization now shown at these depths lends great promise to the possibility of finding richer ore on these levels than was predicted before this condition was exposed to sight. Pockets of rich ore, assaying from $700 to $9,000 a ton, have from time to time been encountered along the veins in the oxidized zone between the 150 and 250 foot levels, and the presence of oxide of manganese and iron now shown in the new drift on the 350 and 450 foot levels lends encouragement that concentrations of rich ore may be found at this depth also.

Company records show the shipment of 8 cars of ore extracted in development work principally from the 150 level. The average value of this 185.24 tons shipped being $57.92 per ton. The lowest car average was $34.80 per ton and the highest $105.44 per ton. Since these shipments one of the best shoots of ore ever found in the mine was discovered at a depth of 200 and 250 feet in position farther south and east than the former foot wall drift. Under leasing contracts there has been shipped 51.45 tons of ore of an average value of $188.92 per ton. The lowest lot running $115.12 per ton and the highest $791.83 per ton. In 1924 the company made 12 shipments of ore, netting $27,686.48, the lowest average being $41.49, the highest $213.52 per ton. Net receipts on high grade ore shipped by the company amount to $39,198.21 to date.

The results of exploration since my last report have confirmed my former advices as to the merit and value of this ground, and while the important thing at present is to finish the exploration for the vein at a depth of 350 and 450 feet, it is now evident that very profitable operations could be carried on by the installation of your own milling plant, making possible the reduction of a larger tonnage of average grade ore at the lowest possible cost of mining and treatment, as compared to the shipment and development methods that past conditions have made necessary.

DISTRICT

The mine is situated on the western slope of the Gabbs Valley mountain range, at an altitude of 5650 feet, in the Rand Mining District, Mineral County, Nevada. It is about 90 miles southeast of Reno and 17 miles northeast of Nolan, a station on the Tonopah-Goldfield branch of the S. P. R. R. At Nolan there is a Post Office known as Rand, a railroad siding, loading platforms, hotel and store. There is a good auto road connecting this shipping and supply station and the camp. The U. S. Mail route to Rawhide passes within a mile of the mine. The camp is about 19 miles south of Rawhide and may also be reached by the Rawhide-Luning auto road. Climatic conditions permit operations throughout the year. The District has produced considerable rich ore from the time of its discovery. A local milling plant or the operation of the smelter at Thompson would greatly faciliate operation.

PROPERTY

The present group of claims known as the Nevada Rand Mine, consists of 7 adjoining and abutting lode claims, approximately 110 acres in area, as follows: Last Hope Claim; Last Hope Fraction; Thomas Fraction; Last Hope Extention; Last Hope Extention No. 1; Hope Extention No 2 and Hope Extention No. 3.

The claims are held by the Company under the U. S. Mineral Laws. There are no conflicts. More than a sufficient amount of development work has annually been performed to obtain patent. Complete records of titles are on file with the County Recorder at Hawthorne, Mineral County, Nevada.

WORKINGS AND EQUIPMENT

The mine is worked by a vertical two compartment shaft, well timbered to a depth of 450 feet. An 18 H.P. Western gasoline hoist is used.

The main crosscuts are at depth of 50, 150, 250, 350 and 450 feet, all in the direction of the foot wall of the lode. The drifts parallel the foot wall side. Intermediate levels are now opened at depths of 180 and 200 feet and are reached from the winze from the 150 level or the raise from the 250 level. There is a narrow air raise from the 150 level to and through the 50 foot level to the surface. These connections giving excellent air circulation to the workings. The mine is entirely free from water and as the ground stands remarkably well, no timbering is required, excepting for an occasional stull, thus saving two items of operating expense that amount to considerable in most mining operations.

On the property are bunkhouses, dining quarters, garage, blacksmith shop and a complete assay equipment. Supplies are brought in from Nolan Station, an hour's run by auto from the mine. The camp is in excellent condition.

GEOLOGY

The District is a region of Tertiary volcanic rocks, the highest exposed section of which is about 2000 feet in thickness. These volcanic rocks are underlain by Triassic Limestone, which is exposed about 3 miles southeast of the mine and again about 5 miles to the north. A highly altered flow rhyolite predominates in the southerly part of the District. It slopes gently towards the mine and about ½ mile southwest of the shaft it disappears under the andesite in which the present workings are situated. From evidence obtained in a shaft sunk at a point between your mine and the point of surface contact of the andesite with rhyolite, it there takes an almost vertical dip to the northeast in contact with the andesite hills. The rhyolite is again exposed about a mile and a quarter to the north as Beacon Hill, where it also dips at high angles to the northeast in contact with the andesite range.

For a distance of about ½ mile in each direction from your shaft, a flow or flows of an andesite rock, intermediate in composition between andesite and trachyte, and termed a hornblende trachy-andesite, is the only rock type exposed. The shaft at the present depth of 450 feet is still in this trachy-andesite and is likely to continue so for a considerable depth. If the rhyolite shows at all below, it will probably be found farther to the south of the shaft in yet unexplored ground and at still greater depth.

The andesite on your property varies considerably in appearance. The fresher rock grades from a light, greenish, massive, porphyritic and often brecciated rock, to a darker green, closer grained variety containing more andesine and chlorite. The groundmass is glassy to felsitic and the predominant feldspar oligoclase, with hornblende, biotite, chlorite, apatite and occasional grains of quartz, occasional orthoclase feldspar, calcite, albite, muscovite and

magnetite. The rock is much altered in the vicinity of the veins. The alteration of this andesite by the hot solutions, has in part developed a propylitic phase, due to the introduction of chlorite and epidote; and in part to a silicified phase, in which the rock has largely been replaced by quartz and adularia; and again in part, to a soft porous rock, due to the introduction of sericite and chalcedony. The rocks often assume a tuffaceous phase, all much altered and replaced.

ORE ZONES AND MINERALIZATION

There are two main zones of hydrothermal alteration and fissuring on your claims, as shown on the map. The shaft is sunk on the hanging wall side of an altered zone; some 200 feet in width and several hundred feet in length, principally within the limits of the Last Hope claim. A much larger altered zone some 400 feet in width and over 1000 feet in length centers on the Extension No. 1 claim. This larger zone of alteration is 1700 feet northwest of the shaft. On the surface between these two zones there is a fresher, green porphyritic andesite. It is yet to be determined if this is later flow or cap rock covering an older andesite in which the veins occur. Crosscutting into the area south of the shaft will determine this. The main zones of alteration and mineralization have a general northwest-southeast trend.

The veins are the typical silver-gold replacement veins common in Western Nevada. They vary in width in the mine from one and a half to fourteen feet. There has probably been two periods of fissuring, one before and one after the deposition of the primary mineralization. The ore bodies dip at high angles varying from 45 to 85 degrees both easterly and westerly. The main shoot appears to pitch to the south and east in the section opened from the present shaft.

There are no pronounced outcroppings of surface ore, and even on the 50 foot level the absence of high values is noticeable. Conditions are present on the 50 foot level that would naturally have held more ore than is shown, had the principal enrichment below this level been due to the erosion of any considerable portion of the lode above the present surface.

In the present workings values of good grade begin to appear at a depth of about 90 feet below the surface, and extend from there to the winze below the 250 foot level as now opened. Excepting for remnants of the primary ore type shown on the 200 and 250 foot levels, little is yet known of the primary or unaltered mineralization. Hard, siliceous, manganese stained ore found on these levels, showing values of from $300 to $2,300 per ton, and containing higher proportions of silver to gold than is usual, showed under microscopic examination to be a complete replacement of the andesite. Patches of adularia has been replaced by quartz, with unaltered or primary Argentite (silver sulphide) in these patches. The silver minerals were partly altered in situ to Cerargyrite (silver chloride), the latter occuring in cavities left by the Argentite. This was believed to be primary ore, partly oxidized and without much change in the percentage of silver.

The first solutions ascending the fissures probably deposited calcite, chlorite, sericite and pyrite. Later there was introduced silica, adularia and quartz, with the gold and silver, and other minerals composing the primary ore.

During the time that has elapsed since the primary deposition, secondary influences have acted upon the ore body. Surface waters containing free oxygen and chlorine took much of the original mineral into solution, again redistributing and re-depositing much of the silver as Cerargyrite. The gold occurs both Native and Electrum. The manganese carbonate in the rocks was changed to an oxide and this agent probably held the second solutions longer than is normally the case. The many slips dipping at high angles both easterly and westerly, have in part controlled the solutions causing them to concentrate in some sections, making the pockets of higher grade ores.

It is reasonable to suppose that much of the original silver sulphide (Argentite) has been converted to chloride of silver in close proximity to its original position, and that the primary ore body, when located below the fault zone and the zone of oxidization, will be of good quality and grade.

The silver and gold content per ton of ore in 6 shipments was as follows: 5.10 oz. gold, 192.8 oz. silver; 2.99 oz. gold, 83.70 oz. silver; 14.63 oz. gold, 503 oz. silver; 6.42 oz. gold, 210.20 oz. silver; 2.54 oz. gold, 69.60 oz. silver; 2.18 oz. gold, 73.60 oz. silver.

An average analysis of shipping and milling ore gave the following in addition to the silver

and gold content. Silica 82 per cent; iron 3 per cent; lime 2 per cent; alumina 6.3 per cent. The ore as now opened is a medium hard, brown, oxidized, highly siliceous material containing some pyrite, quartz, adularia, sericite, carbonates of lime, alumina, iron and manganese oxides, with Cerargyrite, Argentite and Native Gold. Hard core ore, 250 level shows calaverite associated with gold, with tetrahedrite polybasite and pyargyrite. Traces of lead, zinc, argentiferous cerusite and wulfenite have occasionally been noted, and in rare instances slight stains of copper.

Tests show that simple cyanidation is the best method of treating this ore, and that 96 per cent of the value was extracted with normal consumption of sodium cyanide and lime on 24 hours agitation. From a milling standpoint it is, therefore, an ideal cyaniding ore.

RECOMMENDATIONS

There are three sections on this property that should first be opened for the discovery of additional and important ore bodies:

(1) On the Extension No. 1 claim, at a distance of 1700 feet northwest of the shaft, there is a wide area showing hydrothermal alteration and surface indications with the probability of an ore body of considerable size at possibly less depth than in the section now opened. Surface cuts have disclosed considerable replacement quartz, of the quartz-adularia type. Samples running from $1.84 to $7.20 per ton in silver and gold have been obtained only a few feet from the surface. This zone is much larger than the one in which the present shaft is sunk, and the conditions favorable for the deposition of ore. I recommend the exploration.

(2) Owing to the presence of quartz and adularia in the highly oxidized trachy-andesite formation on the West side of the shaft at the 250 foot station, I recommend that a drift be extended into this yet unexplored ground in the hanging wall side of the lode. The trend of the ore, as shown only by recent work on the 150 and 200 levels, lends encouragement to the finding of an ore body in this ground.

(3) The work started by your Management on the 350 and 450 foot levels is quite the most important ever undertaken in the mine. The finding of ore bodies on these levels not only means much to the property, but to the entire District. The new drift recently started on the 450 foot level from a point 27 feet out in the crosscut and now pointed south 75 degrees east, is following a zone between a sulphide and oxidized belt. It passed through ground showing heavy slickensided kaolin, dipping at 65 degrees towards the shaft area, and is now in highly oxidized and siliceous andesite breccia. Oxides of iron and manganese on the 450 level together with seams and stringers of ore assaying from $8.00 to $56.00 a ton, have for the first time shown, and indicate the approach to an ore body. The condition is now similar to the oxidized formation in which the ore occurs on the levels above, and I believe that a continuation of this new work will open the ore body on this level. This would add over 200 feet of backs to your present ore and also prove your mine at this depth.

CONCLUSION

The production shown from the comparatively small area yet opened by present workings, added to the existing exposed ore, denotes a high degree of mineralization for the ground under exploration and development. This should lend encouragement to not only explore the larger virgin areas of promising ground as mentioned, but to complete the development work for the downward continuation of this ore body. The primary ores encountered were of good grade and were formed by deep seated solutions. Every effort should be made to explore the property on a more extensive scale.

S. E. MONTGOMERY,
U. S. Mineral Surveyor and Mining Engineer,
Reno, Nevada

Form 502 Ton. 1-25

COPY

THE TONOPAH MINING COMPANY OF NEVADA

PHILADELPHIA

38000027

August 25, 1925.

Mr. John A. Craig,
1704 N. Sydenham Street,
Philadelphia, Pa.

Dear Mr. Craig:

Referring again to the Nevada Rand Mine, in connection with which we have had more or less correspondence, I beg to advise you that all the data furnished by you was submitted to Mr. H. C. Carlisle, Engineer in charge of the Western Section of the United States. Mr. Carlisle has gone carefully over the data, as well as the reports of Mr. Blackburn and Mr. Black, two of our Engineers who reported on the property several years ago. Mr. Carlisle does not feel that the additional information furnished by you, contains any new features from the details outlined in the previous reports of our Engineers, and would, therefore, not be interested in making any further examination of the property.

I am returning to you herewith, the information which you left with us, as you may want to return it to Mr. Rudderrow.

Thanking you for bringing this matter to our attention, and regretting that in this instance we do not feel that the property is sufficiently attractive to warrant another examination, I remain

Yours very truly,

CHN.R

Assistant Treasurer.

Form 502 Ton. 5-22

COPY

THE TONOPAH MINING COMPANY OF NEVADA

PHILADELPHIA

July 8, 1922.

Captain W. A. Simonton,
c/o E. I. DuPont Company,
Wilmington, Delaware.

Dear Captain:

Mr. Thorp called and presented your letter of introduction, dated June 30th, in connection with the Rand Mining Company. I find that we made a very thorough examination of this some two years ago, and have kept in touch with the situation there since that time.

I regret to say that the property does not interest us, for the reasons which Mr. Huston explained to Mr. Thorp.

Thanking you for bringing this matter to our attention, and regretting that it does not contain more interest, I remain

Very cordially yours,

CRM.

Vice President.

J. H. WHITEMAN, PRESIDENT
C. R. MILLER, VICE-PRESIDENT
W. H. BLACKBURN, GENERAL SUPERINTENDENT
P. S. BICKMORE, SECRETARY & TREASURER

THE TONOPAH MINING COMPANY OF NEVADA

3800 0027

PLEASE ADDRESS ALL COMMUNICATIONS TO THE COMPANY, TONOPAH, NEVADA

EASTERN OFFICE
572 BULLITT BUILDING, PHILADELPHIA, PA.

REC'D
OCT 25 1921

SEEN J.H.W.

TONOPAH, NEVADA, October 17, 1921.

Mr. J. H. Whiteman, President
The Tonopah Mining Company of Nevada,
572 Bullitt Building, Philadelphia, Pa.

Dear Mr. Whiteman:

Yours of October 11th, inquiring about the Nevada Rand, has been received. Mr. Black examined this property in July, 1920, and reports it too small for our consideration.

Considerable development work thru a vertical shaft has been done with levels at 50, 150, 250 and 450 feet deep. About 2000 feet of drifts, crosscuts and raises. All surface and underground work indicates the presence of but one ore shoot and that small. Under "Possibilities" he says limited. The development indicates that there is but one small ore shoot of oxidized ore.

The property is located about seventeen miles from Nolan Siding on the Southern Pacific, on the east side of Walker Lake. You will find Mr. Black's report in the Philadelphia Office files, but we consider it unworthy of further consideration.

Yours very truly,

W H Blackburn

General Superintendent.

WHB-HS

Form 502 Tom 6-20

COPY

THE TONOPAH MINING COMPANY OF NEVADA

PHILADELPHIA

October 11, 1921.

Mr. W. H. Blackburn, Supt.,
Tonopah,
Nevada.

Dear Mr. Blackburn:

I have had inquiry made of me regarding a mine called Nevada Rand, which is located in the Rand Mining District, Mineral County, Nevada, ninety (90) miles south-east of Reno, east of Walker Lake, and is reached from Nolan Station, going in a north easterly direction.

If you have ever heard of this, and have any knowledge of it, I would thank you to advise me about it.

Yours very truly,

ORIGINAL SIGNED
J. H. WHITEMAN
President.

JHW.

NEVADA RAND MINES CO. in Rand Min. Dist. Mineral County (Nevada)
17 mi. from Nolan Siding
99 mi. from Tonopah via Luning
Summit

Au Ag

PRELIMINARY REPORT ON

Name and Owner. NEVADA RAND MINES CO., control owned by W.V.Rudderow, Reno, Nevada.

Location and Holdings. Seven lode mining claims, held by location only, in the Rand Mining District, Mineral Co., Nev.

Accessibility and Transportation. Fair auto roads. 17 mi. from Nolan siding on T. & G. 99 mi. from Tonopah, via Luning summit. Haul from Nolan $ 6.00 per ton.

Geology. Rocks entirely volcanic. As in the adjoining Lone Star property, all drifts and x-cuts are in a lighter colored andesite. Here the 450 ft. vertical shaft on the F.W. side failed to strike the rhyolite found on the adjoining property.

Veins or Ore Bodies. " Vein " consists of shear zone in the andesite. Zone 20 to 40 ft. wide, often largely kaolinized, with quartz lenses carrying gold and silver. Zone apparently wedges out about 500 ft. north of shaft. Ores very similar to those on the Lone Star - oxidized, high in manganese and silica, with a total value in gold and silver of $ 50 to $ 75. Some small lenses of high grade.

Samples and Assays. As we had a fairly complete assay plan made by the owner's engineer, the time was spent in an inspection of the workings. Two samples were taken on the 50 ft. level where the assay plan was blank.

#12	4.0 ft.	.05 oz.gold	1.65 oz.silver	N. face, 50 ft. level, Showed 2" quartz.
#13	5.0 ft.	.12 " "	5.48 " "	Quartz at bottom of air raise to surface.

Developement. 450 ft. vertical shaft, with levels at 50,150, 250 and 450 ft. and intermediate levels at 180 and 200 ft.
About 2000 ft. of drifts, x-cuts and raises.
All surface and underground work indicates the presence of but one ore-shoot.

Present Equipment. 18 H.P. Western hoist, 30 ft. head frame, blacksmith shop, assay office, ore bin to hold about 25 tons and camp to accomodate 10 men.

Metallurgy. No data, but probably will cyanide as indicated by tests on ore from the Lone Star.

Wood, Water and Power. No timber. Water hauled 10 miles from Dead Horse wells on Rawhide flat. Nevada-California Power Co. pole line one mile away, but wires being removed.

Price and Terms. No definite price set, but will not consider a bond.

Possibilities. Limited. All development indicates but one small ore shoot of oxidized ore.

Miscellaneous. Adjoins the Lone Star property on the north. Conditions on the two properties seem identical. The ore-shoots are only 1200 ft. apart.

Conclusions. Too small for this Company.
Owner can still make some profit by shipping the remainder of his ore.

Date. 5/25/20 **Report for** Tonopah Mining Co. **By** H. Black.
Report 5/28/20 of Nevada.