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ITEM 56

REPORT ON THE PROPERTY OF THE

NEVADA ALPINE MINING CO.

LONE MOUNTAIN DISTRICT, NEVADA

BY GEORGE H. GARREY

MAP OF STATE OF NEVADA

SHOWING LOCATION OF

ALPINE MINE

To accompany report by George H. Garrey

February, 1911

SPURR & COX
INCORPORATED
CONSULTING SPECIALISTS IN MINING
165 BROADWAY, NEW YORK
CABLE: SPURCOX CODE: BEDFORD McNEILL

SUMMARY

The Nevada-Alpine Mine is located in the Lone Mountain District, Esmeralda Co., Nevada. The wall rocks in the underground workings are chiefly white dolomitic limestone which is part of a series of metamorphosed Paleozoic limestones and shales or schists that overlie the basal slopes of the Lone Mountain granite peaks. Occasional diorite and andesite dikes occur cutting the older limestones and schists.

The ore which consists mainly of argentiferous lead carbonates associated with some zinc minerals, and a little quartz and calcite, has been secondarily derived from sulfide vein-material which probably originally consisted principally of slightly argentiferous galena with some zinc blende and quartz and rare specks of chalcopyrite.

The ore occurs in narrow flatly pitching shoots which are located along bedding planes of the limestone and are controlled by small vertical fractures. The ore bodies were on the whole comparatively small and if it had not been for the high grade character of the ores extracted the deposits would probably not have been of much importance.

Earth movements have resulted in considerable fracturing of the rock formations. In most instances where determinable, the displacement has been small but in a few instances marked faulting has occurred along slip lines. One of those lines, the

"Perseverance Fault" has caused a horizontal offset in the ore shoots of approximately 100 feet and a vertical displacement varying from 8 to 40 feet. Other fault planes occur in the east-north-east faces of the mine workings and probably also fault the ore bodies, but for unknown distances.

The general conclusions arrived at are, that, on account of the uncertainty as to the location and character of the extensions of the present ore shoots, and on account of the relatively high cost of exploratory work in comparison with the small size of ore bodies likely to be encountered, it is not good business to proceed with further exploration work on any basis except the leasing method.

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THE NEVADA ALPINE MINE

LOCATION

The Nevada Alpine mine is located in the Lone Mountain District some six or seven miles south-southeast of McLean station on the Tonopah and Goldfiedl Railroad.

The several tunnels by which the mine is developed open out upon the west face of a fairly steep mountain slope, almost devoid of vegetation.

Trails lead from the mine openings to the office and other mine buildings which are located about 1/2 mile distant, and then a rather "heavy" wagon road runs from these buildings to McLean station.

AREAL EXTENT

The Nevada Alpine property consists of the following mineral bearing claims and fractional claims.

1. Alpine Lad
2. Alpine City
3. Alpine Tavern
4. Alpine Lass
5. Ratler
6. Ratler No. 2
7. Ratler No. 3
8. Ratler No. 4 (fraction)
9. Serpentine Wedge (fraction)
10. Plomo
11. North Star
12. Perseverance
13. Evening Star
14. Hidden Treasure

15. Alpine King
16. Alpine Queen
17. Morning Star

and of the following claims denounced mainly for their water rights:

18. Crystal
19. Saratoga
20. White seal
21. Idanha

DEVELOPMENT

The vein is rather thoroughly developed by the Blacksmith, Midway, Plomo, Perseverance, and Gillespie tunnel levels and by the numerous short cross-cuts and drifts run to explore the vein leads. The tunnels and cross-cut drifts aggregate about 4000 feet of workings while the drifts along the vein and the drift stopes total about 5000 feet of workings. There are also numerous raises, winzes, and ore chutes which amount to several hundred feet more.

WATER

The mine workings are practically dry and all water is obtained through a 1/2-inch pipe line from springs located in the Lone Mountain granite area some 1 - 2 miles in an air-line to the east-southeast of the Blacksmith tunnel.

GENERAL GEOLOGY

GEOLOGICAL FORMATIONS

The Nevada Alpine Mine lies entirely within Paleozoic

formations some half mile distant from the contact of the Lone Mountain granite mass, with Paleozoic limestones and interbedded shales.

In the vicinity of the mine and between it and the large intrusive granite body forming the cores of the mountains, the limestones have become marbleized or changed to a dense to finely crystalline white dolomite, while the shales have been metamorphosed to crystalline micaceous schists. This metamorphism of the sedimentary rocks probably resulted from the action of the warm waters emanating from the large granite mass subsequent to the intrusion. No granite is known to occur in the immediate vicinity of the Alpine Mine itself, but a series of intrusive dikes and sheets of diorite and andesite cut both the dolomite and the schists and are undoubtedly of the same age as similar dikes which are known to cut the large granite mass of Lone Mountain. In general the metamorphosed sedimentary rocks dip away from the intrusive granite neck in all directions. At the Alpine Mine the strike of the bedding is in general about due east-west although it varies from northeasterly to southeasterly, with a flat but rolling 10° to 30° dip to the southward.

OCCURRENCE OF THE ORE

The ore so far developed in the mine has been confined in the main to two or possibly three, very flat ore shoots which in general followed the flat bedding planes in the dolomite and whose trend was controlled to a large extent by nearly vertical fractures which were mineral bearing to some extent although for

only short distances from the bedding plane leads.

The ore so far mined has been confined to a single comparatively narrow belt of bedding planes. These two or three bedding planes are only two to four feet apart and the ore in the main follows one of the stronger bedding planes but occasionally occurs as narrow streaks along two parallel ones or as larger and more solid bodies of ore replacing the dolomite between two or more closely spaced bedding planes.

ORE SHOOTS

The vertical fractures at right angles to the bedding in general strike E.N.E. and dip 60 to 75° northward. These, while they are ore bearing for but a short distance from the bedding planes, undoubtedly played an important part in controlling the circulation of the solutions from which the ores were deposited for the trend of the flat shoots which pitch with the bedding, corresponds to the strike of these vertical leads and furthermore the ore pinches rapidly to a mere bedding plane crack as soon as the zone of vertical fracturing is left.

The main shoots are the Midway, Plomo and Perseverance ore shoots, although the latter might be considered to be a part of the plomo ore body.

In general these flat ore shoots pitch with the bedding of the limestone, at a low angle to the E.N.E. but locally, where small folds or rolls occur, they may be practically horizontal or even dip to the northward.

The ore was rather erratically distributed even along the

pitch of the ore shoots due to the fact that the vein material varied from one or two inches to several feet in thickness, and resembled a series of flat lenticular ore bodies joined by films of ore.

The Plomo-Perseverance ore shoot has been faulted along a N.N.W. - S.S.E. line so that the west side has been dropped with reference to the east portion some 35 feet or more and has also been offset to the north for probably over 100 feet. The Midway ore shoot has also suffered a similar offset of about 100 feet, although the vertical displacement amounts to only ten or twelve feet. The Perseverance fault is probably the same one that faults the Midway ore shoot, in which case it is a fault which the vertical displacement increases towards the N.E.

THE ORES

The major portion of the ore shipped from the mine consisted chiefly of lead carbonates with nodules and residual streaks of somewhat argentiferous galena, a little porous quartz, smaller amounts of calcite and occasional carbonate and iron oxide stains. Near the margins of the ore shoots and also along leaner portions of the vein the quartz content in places becomes more pronounced and is often accompanied by galena which is usually of much lower grade in silver than the lead carbonate ores. Near the walls and margins of the ore bodies the zinc minerals are also more abundant and the zinc content of the ores rises.

The primary ore was probably chiefly galena carrying some silver values and associated with a little zinc blende, and

quartz and rare specks of chalcopyrite.

As a result of the action of surface waters and the agencies of weathering the galena of the primary ore was undoubtedly changed to lead carbonate and a considerable concentration of the silver values took place so that the carbonate ores carry much greater silver values than the original galena ores.

The average shipping ore was quite high grade as it usually averaged over 50% Pb and 100 ozs. of silver, and gave smelter returns of $100. to $150. per ton.

THE WALL ROCKS

In most instances the dolomite forms the wall rocks although small patches of schist also occur. The rather insoluble nature of the dolomite is probably responsible for the narrowness of the ore shoots as compared with replacement ore shoots in normal limestone.

In places in the neighborhood of ore shoots considerable gypsum has developed next the walls. Talc is also a characteristic alteration product of the dolomite near ore bodies. This talc where adjacent to altered diorite dikes was stained a dull green possibly as a result of the presence of serpentine from the alteration of the dike material. In other places a different greenish coloration of the talcose rock was probably due to copper stainings.

Where schist formed the wall rocks considerable iron staining was in evidence.

The diorite dikes, often very highly altered, occasionally

ran somewhat parallel to the vein material, and usually below, although occasionally they were found intruded along the same bedding plane which at other points was occupied by the ore lead. In every instance observed though, the vein material seemed to pinch out entirely as soon as the dike material came in and the dikes had the general appearance of having been intruded subsequent to the deposition of the vein material. However, due to the altered condition of the dikes and the softened condition of the adjacent rocks, the exact relations of the veins and dikes could not be determined. The almost entire lack of contact metamorphism and evidences of mineralization in connection with the diorite dikes both on surface and underground lead the writer to conclude that the ore deposits owe their origin to the Lone Mountain granite intrusion instead of to the intrusion of the diorite, for considerable lime silicate and quartz deposition occurs in the contact metamorphic zone in the schist adjacent to the large granite mass.

FAULTING AND FRACTURING

The rock formations of the mine since their deposition or intrusion have undergone considerable strain and fracturing. The chief evidence of this is in numerous joint fractures and parallel sets of fractures forming sheeted zones which in general probably have been accompanied by but slight movements .

Other fracture lines occur which show marked evidence of movement in the crushed rock and clay gouge which are associated with them. Along some of these the movement has been differential and more or less compensating, while along others definite dis-

placement has taken place, although the amount has not been demonstrated except in a few cases.

The strongest known fault line so far exposed in the mine is the Perseverance fault which offsets the east portions of both the Perseverance and Midway stopes some 100 feet to the south with a vertical displacement of 35 to 40 feet in the Perseverance ore shoot but of only 8 or 10 feet in the Midway shoot. Several slips and possible faults occur near the eastern faces of the workings. The exposures of these latter are so poor that the mapping does not reveal their true relations to the vein leads and in consequence their effect on the veins could not be determined, although the vein leads seemed to diminish greatly in strength before the fault leads were encountered.

Subsequent to the deposition of the ore some slight movement also took place along some of the vertical fractures which probably controlled to a large extent the lines of ore deposition along the bedding planes. These movements resulted in displacements of only a few inches to 3 feet.

CONCLUSIONS

A careful geological examination of the property has convinced the writer that while further exploratory work might possibly result in the encountering of some ore, yet the chances for finding large new ore bodies are so poor that the mine is not considered even a fair gamble. Consequently it is recommended that if further work be done, an attempt be made to have it done on a leasing basis.

SUGGESTIONS FOR DEVELOPMENT

The following general remarks and suggestions are added so that they may possibly be of assistance in case the Company decides to do any further work.

MIDWAY WORKINGS

The West Midway stopes probably bear the same relation to the East Midway stopes that the Plomo and Perseverance stopes near surface do to those to the east of the Perseverance Fault, that is they have probably been faulted so that the east portion has been offset some 100 to 140 feet to the south.

At N 760 - E 1095 raise up on an incline following south-southeast the 20° to 30° vein lead which here enters back of drift. Also at N 740 - E 1120 follow S.S.E. on the 25° dipping stope lead which enters floor. These recommendations are made with a view to determining if there is ore along the strike of the main Upper Midway stope between these points and the Perseverance Fault extension.

N 655 - E 1380: Sink a winze on and prospect thoroughly the N E - 40° S E dipping stringer of vein material near floor in the short drift between the chute in the extreme east breast of the Midway Stope workings and the ladderway down to the Blacksmith tunnel level. The importance of this lead is that it lies on the east or foot-wall side of the strong 62° to 75° West dipping fault lead.

PERSEVERANCE WORKINGS

N 1012 - E 1207: Raise on vein and slip lead, which here strikes about N 55° W and dips 35° to the southwest, to see if the stope lead has been faulted up to the east.

The stope just southwest of this point may be a fault block offset to the southeast and the continuation of the Plomo-Perseverance shoot to the northeast may be found by raising along the slip at N 1012 - E 1207 and drifting northward along the foot-wall side of slip to a position in line with the original stope.

Extend all west faces of the stope between points N 1050 - E 1135 and N 985 - E 1200 as far as the rolling vein leads can be traced in an endeavor to see if the limits of the present ore-body can be increased.

SURFACE

The fact that both the main ore shoots outcropped strongly on surface lends weight to the conclusion that it is inadvisable to explore for new ore bodies on the property unless the exploration work starts on good vein material outcrops on surface or else is directed for some definite point which is known to have ore possibilities.

No detailed surface examination was made but as shown by the surface reconnoitering trip the scarcity or lack of the evidences of mineralization which are usually characteristic of well mineralized limestone areas, indicate that the expense of

making a detailed geological surface map is not warranted.

A fairly strong quartz vein outcrops on surface about 700 or 800 feet south or S.S.W. of the Midway Tunnel mouth. This vein which strikes about N 19° E and dips 48° West seems to represent a breccia slip lead in white dolomite which has been cemented by a coarse to apalescent quartz that is characterized by iron oxide stained vugs.

Prospect this lead near the upper part of the hill slope to determine whether it carries either gold or silver values.

GENERAL SUGGESTIONS

In this type of deposits ore shoots as a rule only occur at intervals along the lead and in consequence barren portions or "pinched" portions of the vein are likely to occur. In the unexplored ground between the Midway and Plomo ore shoots this is probably the condition of affairs, because the vein lead where it outcrops on surface shows no strength between the two shoots and therefore the lead underground will probably also not be much more than a bedding plane crack.

If any development work is undertaken it should consist of carefully following vein leads wherever they go until the lead pinches to a mere unmineralized crack, or, to driving a cross-cut or drift to reach some point or block of ground which has known ore possibilities.

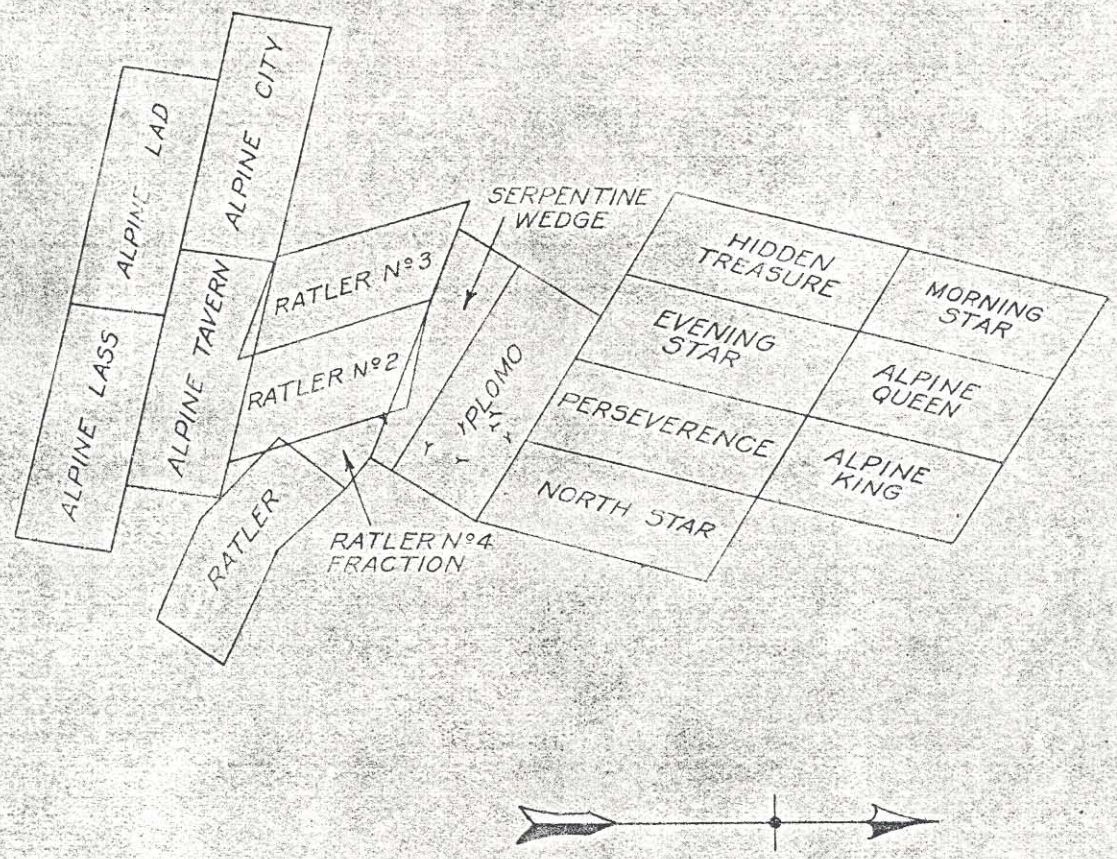
Respectfully submitted:

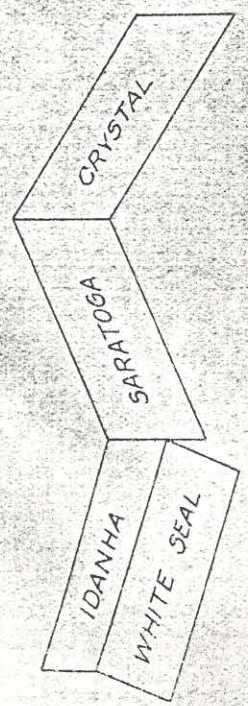
SPURR & COX (INC.)

Tonopah, Nevada, February 1911.

by ORIGINAL SIGNED GEORGE H. GARREY

Fig. 2





NEVADA-ALPINE MINING CO.

LONE MOUNTAIN DISTRICT, NEVADA

CLAIM MAP

To accompany report by George H. Garrey
February, 1911

Scale
300 0 1500
Feet