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The Boss Gold Mining Company

GOODSPRINGS, NEVADA

April 16th 1914

Mr. J. E. Spurr, Vice President.
The Tonopah Mining Company
572 Bullitt Bldg.
Philadelphia, Pa.

Dear Sir:-

Mr. William H. Sirdevan was recently a visitor in this district, and requested us to forward to you some data on our property together with a statement of the conditions under which we would dispose of the property. In consequence, please find enclosed my report on the property of the Boss Gold Mining Company, and under separate cover, we are forwarding copy of map of the underground workings, showing sampling, etc.

We have taken up the matter in a Directors Meeting and have decided to offer you the following terms for the aquisition of full title to the property:

> Sixty days will be allowed for the examination of the property with no further responsibillity on your part, during which time you will have a bond on the property for $100,000.00, payable in full one year from date of examination. After the sixty days allowed for examination, we shall expect that each month at least 150 shifts work be expended for development throughout the life of the bond or until such is forfeited. No ore can be treated or shipped from the property until total amount is paid, altho if you wished a test-plant erected, ore could be treated and gold recovered held in escrow until the expiration of the bond.

The Boss Gold Mining Company has recently been organized to develop this property, the officers being S. E. Yount, Pres., J. F. Kent, Vice Prest., F. A. Hale Jr. Sec.& Treas., O. J. Fisk, Mgr. and R. B. Chapman, additional director. All except Mr. Fisk are officials in the Yellow Pine Mining Co. The company is organized under the laws of Nevada, 1,000,000 shares at $1.00 each, of which less than 400,000 shares are issued.

It was not our intention to offer the property for sale at this time, and we will appreciate it if you will advise us of any action you may desire to take, at your earliest convenience, as we are at present engaged in active development of the property, and wish to make future plans according to your decision of the matter.

Very truly yours

Fred A. Hale Jr.
Secretary.

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REPORT ON PROPERTY

OF THE

BOSS GOLD MINING COMPANY.

YELLOW PINE MINING DISTRICT.

CLARK COUNTY, NEVADA.

PROPERTY AND TITLE.

The property of the Boss Gold Mining Co. is all situated in the Yellow Pine Mining District, Clark County, Nevada, of which the principal town is Goodsprings, situated eight miles west of Jean, a station on the S.P.,L.A. & S.L. Railroad.

The property holdings consist of eighty acres of land, situated at the town of Ripley, twelve miles west of Goodsprings comprising the N.W. ¼ of the S.W. ¼ of Section 4, and the S.E. ¼ of the N.E. ¼ of Section 5, T 25 S , R 57 E , Mount Diablo Base and Meridian; together with four mining claims, comprising approximately 82 acres, situated three miles northeasterly from Ripley. Of these claims, the Boss and Manse are surveyed and sufficient work accomplished thereon for a U. S. patent, but no patent has been applied for. The adjoining claims, Boss No. 3 and Boss No. 2, were recently located in the name of the company and are now held by right of location.

On the 80-acre tract at Ripley are numerous old buildings, including a store, boarding house, lodging house, saloon, stable, etc., all of which have been in disuse for several years but are in fairly good condition. There is also a well, 60 feet deep, equipped with a wind-mill and gasoline pump, with pipe-lines, etc, and the well has been demonstrated as having a large flow of water.

Title to the above property is guaranteed, the company being in possession of a deed from former owners to the Boss and Manse claims, a complete record of which claims appears in the records of the district; the deed also including one of the 40-acre tracts at Ripley. The company has a Bill of Sale to the remaining 40-acre tract and a deed will be forthcoming as soon as the affairs of the late J. C. McClanihan, a former owner, have been adjusted.

HISTORY.

The Boss Claim, on which the principal development work has been done, has been held in the family of Messrs. Yount and White for 30 years. The property was originally opened because of the copper content in the ore, its gold value not being recognized. In the 90s, the property was bonded to Samuel Godbe, who did considerable development work and built a road to the property, but owing to the fact that the nearest railroad station at that time was some fifty miles distant, the ore could not be handled at a profit and no shipments were made. A few years later, the property was bonded to the Hirsching interests, who constructed a leaching plant at Goodsprings to treat the copper carbonate ores from this and the Columbia claims, but the leaching process proved to be a failure and the property reverted to the original owners. The Walker Bros. later bonded the mine and drove the development tunnel with the idea of intersecting the vein at depth, but owing to the hard rock encountered in the tunnel and inefficient management, work was stopped with the face of the tunnel still several hundred feet [illegible] the mineralized zone. It was not until very recently that the

gold content of the ore was fully recognized, explicable by the fact that no visible gold can be obtained from the ore by panning even when it carries considerable value; but the recent owners, Messrs. Yount and White discovered by sampling and assaying that the gold content of the ore is such as to render it commercially profitable, and in consequence, the Boss Gold Mining Company was organized in March, 1914 to further develop the property.

GEOLOGY.

The country rock in the vicinity of the Boss property consists of thick-bedded limestones probably of upper Mississippian (Carboniferous) age, dipping about S.60° W, at an angle of 10 to 20° from the horizontal. The structure is probably monoclinal, but there is much evidence of local folding and faulting, the latter apparently being somewhat extensive.

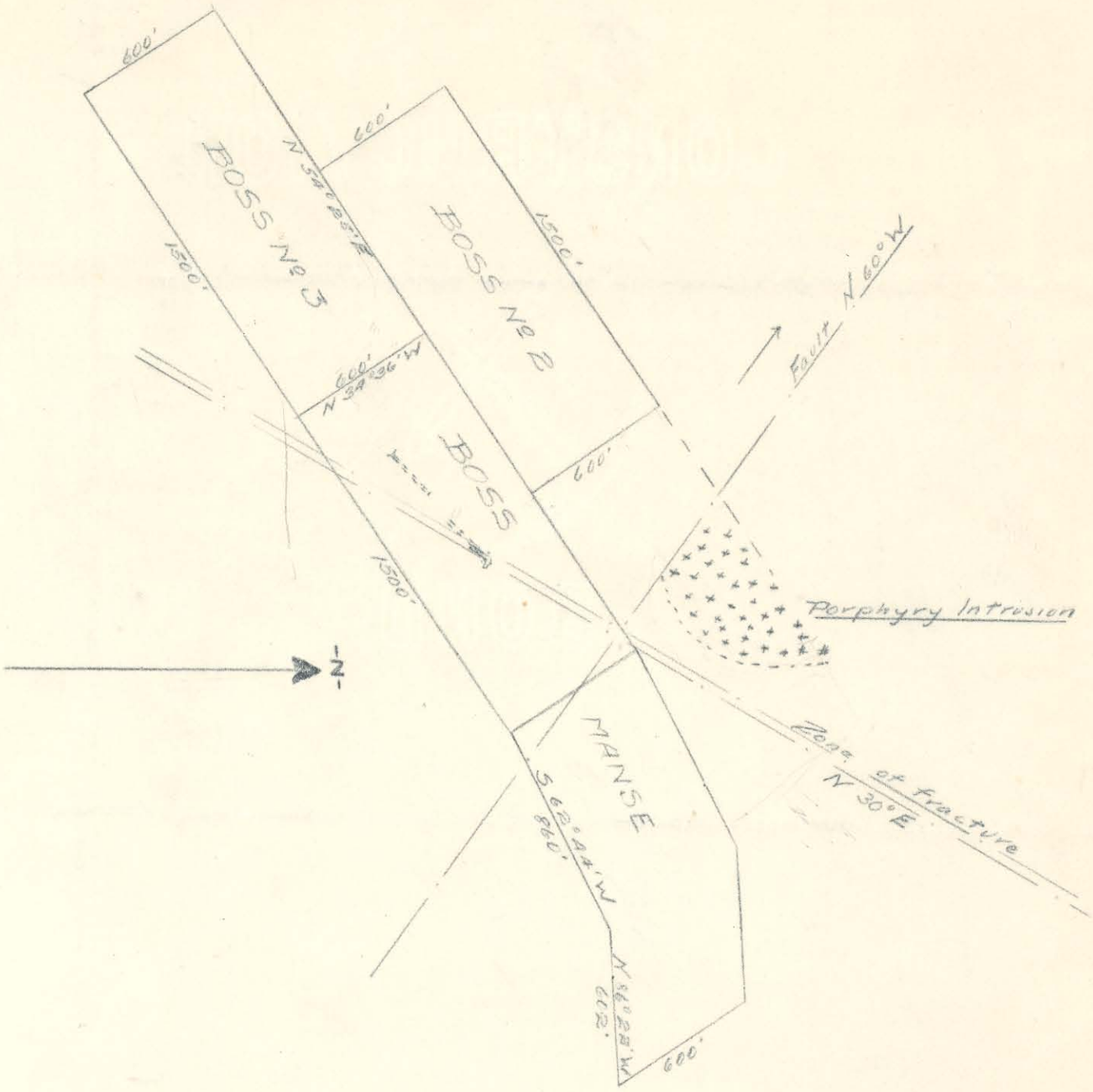
The main fault zone in the vicinity traverses the country in a direction about N 30° E, and passes through the main workings on the Boss Claim. This is not a single fault, but a series of small parallel faults in a zone from 20 to 30 feet in width, and is especially important in that the known ore-bodies on the Boss claim occur in this zone. Several of the faults are exposed in the Boss workings and all dip easterly at an angle of 70-80°. From the slickensides it is evident that the faulting was normal, the eastern block being down-thrown, but a horizontal displacement is also indicated, the eastern block having been displaced in a northerly direction. Another large fault was noted about 600 feet north of the Boss workings, traversing the country in a direction about N 60° W, or nearly at right angles to the fault zone above described. With this fault, it is also very evident that there has been a horizontal, as well as a vertical displacement, the south block having been thrown downward and several hundred feet to the west. Numerous other smaller faults were noticed in the vicinity, all of which apparently grouped themselves through their parallelism and direction of throw into one of the two classes: a series, striking about N 30° E, with the eastern block downthrown and a series striking N. 60° W with the south block downthrown.

On the Boss group, no outcrops of igneous rock were discovered, altho there are numerous indications of a possible igneous intrusion underlying the exposed limestones. In a number of the faults examined was a soft gouge, indicative of porphyry, and in numerous places it was noted that the limestone was marbelized as though by contact action. On the Sandy claim, adjoining the Boss to the Northwest, is a large batholithic intrusion of an acid porphyry, the nearest exposed contact of which is about 600 feet from the main Boss workings. This porphyry has been identified as a quartz monzonite, showing large phenocrysts of orthoclase feldspar and occasional quartz crystals in a fine-grained ground-mass, the whole presenting a facies identical with that of the Keystone porphyry about three miles north, and the Yellow Pine porphyry still farther north. Some development in this porphyry has exposed the contact, but no veins were opened, altho it is stated that material on the contact carries some gold value, indicating a relation between the intrusion and the ore. It was noted in several places that the porphyry was capped by only a few feet of lime, indicating that a similar condition may exist on the Boss Group.

The accompanying sketch gives an idea of the location of the main faults and porphyry intrusion with reference to the claims.

Development and Ore.

On the Manse claim, near the discovery, a fissure vein, three feet in width, striking N. 45° E, has been opened by a shaft 6 feet



SKETCH OF

BOSS GROUP OF CLAIMS

Yellow Pine Mining District.

Clark County, Nevada

Scale: 600 ft. = I" March, 1914.

FRED A. HALE, JR., MINING ENGINEER
GOOD SPRINGS, NEVADA.

deep and cross-cut 20 feet long. The ore exposed consists of an oxidized iron, showing incrustations of malachite and was evidently fed into the fissure from a fault, adjoining the workings, which strikes N 70° W. A sample taken across the vein assayed as follows:
No. I6 Gold: 0.04 oz.($o.80) Silver:0.86 oz. Copper: 2I.5%

It is on the Boss claim that the principal development has been accomplished, and the accompanying map is an accurate survey of the present workings. These consist of three main tunnels, called the Upper, Lower and Development Tunnels, with numerous winzes, drifts and cross-cuts as indicated. The original work was done in the upper tunnel, commencing on a large out-crop of ore and following the ore continuously for a distance of about I20 feet. The ore occurs in the crushed fault zone described above, and is apparently a true fissure filling, altho there is some evidence of replacement in the limestone beds adjacent to the fault zone. The ore consists of a granular quartz interspersed with large earthy masses of soft limonite, and streaks or incrustations of malachite, varying in thickness from an inch to several feet, and usually occurring on the hanging-wall of the vein. The entire tunnel is in ore with occasional horses of silicious limestone, and the walls wherever exposed, are a silicious limestone. The copper ore occurs in such form that it may largely be kept separate from the gold ore, in mining. A sample of the copper ore, taken across a 2-ft. streak near the face of the tunnel assayed as follows:
No. 2 Gold: 0.05 oz. ($I.00), Silver: 6.I oz., Copper: 37.4 %.

Samples of the gold ore, taken across the vein at IO-ft intervals assayed as follows:

No.	Width sampled	Gold oz. per T.	Gold $	Silver oz. per ton	Copper
I	3½ feet	0.64	$I2.80	4.9	
3	6 "	I.40	28.00	9.2	
4	5 "	0.78	I5.60	4.8	
5	I0 "	0.58	II.60	3.6	
6	4 "	0.98	I9.60	3.7	
7	3 "	I.62	32.40	I.2	
8	I2 "	2.02	40.40	8.8	
9	5 "	I.02	20.40	5.2	

This gives an average width of ore exposed of 6 feet of an average value of $22.60 in gold and 5.2 oz. silver per ton.

An average sample of the dump (about 500 tons) comprising all material taken from the tunnel, except about I25 tons of ore removed for shipment, and in which no effort was made to keep the copper ore and gold ore separate, assayed as follows:
No. I0 Gold: 0.34 oz. ($6.80), Silver: 3.0 oz., Copper: 7.I %.

The lower tunnel also started on a cropping of ore, which is on a parallel fault in the same zone, but leaves the ore and traverses the limestone, evidently in an effort to intersect the upper vein, which proved unsuccessful. A sample, taken across 7 feet of ore at the mouth of the tunnel assayed as follows:
No. I5 Gold: 3.I2 oz. ($62.40), Silver: II.2 oz. silver.

In driving the lower tunnel, numerous kidneys of soft iron ore were encountered, varying in thickness from a few inches to several feet, occurring in the crushed limestone. A sample of these kidneys gave the following results:
No. II Gold: 0.I0 oz. ($2.00) per ton, Silver: 2.8 oz.

A streak of gouge along a fault-plane exposed in the south crosscut from the tunnel was sampled and assayed as follows:
No. I2 Gold: 0.06 oz. ($I.20) per ton, Silver: 2.4 oz.

Another sample, taken along a fault plane near the mouth of the tunnel gave results as follows:

No. I4 Gold: 0.I6 oz ($3.20) Silver: 3.2 oz.

The latter two samples contained none of the vein material and showed no mineralization except silicification, but indicate that these faults served as channels for the ore solutions. At no place in the lower tunnel is the same vein exposed as was developed in the upper tunnel.

The development tunnel, several hundred feet below the workings above described, was driven through the limestone with the intention of eventually intersecting the vein, but as work was stopped before the tunnel reached the ore zone, no ore was exposed.

In addition to the tunnels described are three small openings, indicated on the map as Cuts A, B and C, which were all driven along small faults in the ore zone, where ore cropped at the surface. The faults observed in these cuts have a general strike of N 30° E and the ore exposed is similar in character to that in the main workings.

GENESIS.

That the northwesterly series of faults described above is older than the northeasterly series is very evident by the fact that the latter fault zone crosses the former without change of course. The former faulting was possibly contemporaneous with the original upheaval of the mountain range, occurring in post-Carboniferous and pre-Tertiary time. The north-easterly series is undoubtedly contemporaneous with the great faulting evident on the eastern side of the range, which has thrown the Jurassic sandstone in contact with the Carboniferous limestone and which is said to have occurred in Tertiary time. The porphyry intrusion probably followed immediately after the latter faulting, the igneous magma forcing its way through the weaker planes of the fractured limestone. Accompanying the intrusion were large quantities of steam and hot water, which made still further out into the crevices of the limestone, carrying the silica and metals in solution, until a limestone of sufficient solubillity was reached so that a replacement of the lime content by the metals could take place. If no such limestone was encountered in the course of the solutions, they on cooling, deposited their burden in the crevices as fissure veins. It is very probable that both the copper and iron were originally deposited in the form of sulphides, carrying the gold and silver values, but by the subsequent action of groundwaters percolating downward, the ore became oxidized and enriched to the form in which it now occurs.

ECONOMIC FEATURES.

At present, there are about 20 tons of copper ore, averaging at least 25 % copper, broken in the chutes at the Boss mine, and considerably more could be obtained from the ore in sight. The dump of about 500 tons, above mentioned, could be made a shipping product by screening and sorting the waste. It would be economical to ship all of this material in the crude state. Haulage to the railroad would cost $6.00 per ton, railroad freight about $5.00 per ton , and smelter charges not in excess of $4.00 per ton. In the opinion of the writer, at least $3000 net could be obtained from the copper ore now developed and broken, and it would be advisable to proceed forthwith with the shipment of this ore.

With the present development, it is impossible to ascertain the amount of gold ore that may be obtained, because, while there is a large exposure, it is only developed on one side, and its depth

and lateral extent are questionable. However, it is the opinion of the writer that development will soon demonstrate a sufficient tonnage of ore to justify the erection of a small plant for the treatment of the ore at the mine. Experiments have been performed, showing that the ore is very readily amenable to treatment by the cyanide process. With an average ore from the Boss mine, assaying $26.20 in gold and $I.8I in silver, Mr. H. K. Riddall obtained the following results, the ore being previously ground to pass a 40-mesh sieve:

Test I. The ore was left in contact with a 3-lb. per ton cyanide solution, in the ratio of I½ solution to I of ore, by weight, without agitation, for 24 hours, the ore having been previously mixed with lime in the ratio of 3½ lbs. lime per ton of ore. After this treatment, the tailings assayed $.I.60 in gold and $I.37 in silver, and it was found that 93.8 % of the gold had been extracted and 23.7% of the silver, with a cyanide consumption of 0.80 lbs. per ton of ore

Test II. Under exactly the same conditions, the ore was left in contact with the solution for 48 hours, but it was found that the extraction was not greatly improved. With the same consumption of cyanide and lime, the gold extraction was 94.6 % and the silver extraction 24.I %

The above tests prove that a process for working the ore can be easily developed. Using a stronger cyanide solution would greatly increase the extraction of silver, and agitation would cut down the time of treatment to six hours or less. Finer grinding would undoubtedly increase the extraction, but it is the opinion of the writer that neither finer grinding nor agitation would prove economical in the operation of a small plant to treat this particular ore; since the ore responds so readily to simple treatment, the more elaborate plant required by fine grinding and agitation would not be justified. It is quite likely that a simple decantation plant would be ample to the reqirements for some time, and such a plant to treat 25 tons per day would not cost in excess of $4000.00. If an extraction is obtained similar to that indicated by the above tests, such a plant would yield an excellent profit, since the entire cost of mining and milling should not exceed $5.00 per ton of ore.

RECOMMENDATIONS.

The writer is of the opinion that the workings in the upper tunnel of the Boss mine have not followed the true strike of the vein. The general course of the workings is about N 60° E, whereas the vein apparently strikes about N 30° E, and further development should be prosecuted in that direction. The end of the upper tunnel is on the hanging wall of the ore zone, and consequently a course nearly north should be pursued in development in order to reach the center of the ore-zone, and the writer advises that this be the first step in the development of the property. Between the upper and lower tunnels there has been considerable lateral movement along the bedding planes that apparently have displaced the ore-body, so that it would appear advisable to pursue the ore from the upper level, following it with a winze to whatever depth it may make, from which point it will probably be possible to ascertain the direction of movement, and then develop from the lower level. At one point in the lower tunnel, there is evidence of a porphyry gouge along a fault plane, where drifting may prove advantageous in the hope of opening a porphyry contact, but the writer is of the opinion that greater depth will have to be obtained before the porphyry is encountered.

While the above development is being prosecuted, the dump can be screened and sorted in order to produce a shipping product, and whatever copper ore is available can be mined and shipped, as it would prove a disadvantage in the treatment of the gold ore and would be well out of the way. The location of the workings is such that an aerial tramway about 600 ft. long could be constructed to advantage, and the roads will require some little repair for haulage.

Assuming that a $15.00 value in gold can be maintained in the mill ore, with an extraction of 90%, after deducting total cost of mining and milling, a net profit of at least $8.00 per ton would be obtained, so that the development of 1000 tons of positive ore in the mine would be ample justification for the erection of a small plant such as above described; and it is the opinion of the writer that this tonnage can be developed at very little expense. The plant should be erected at the mine, and water obtained from the company well at Ripley. This could be hauled for the present, with the idea of eventually installing a pumping plant, and in the latter event, it is probably that water could be developed much nearer to the mine.

There is considerable lumber in the old buildings at Ripley, which can be used in the construction of the mill and camp buildings; but it would not be advisable to tear down the main buildings as yet. Ripley is the natural center for a large area of mineral country, and with the renewed activity evident in that vicinity at this time, it is quite possible that in the future these buildings can be utilized to better advantage by the company.

CONCLUSION.

That the development already performed on the Boss claims demonstrates the possibillity of its becoming a highly profitable mine is without question. Much of the work done has not been to the full advantage of the property, but the size and character of the ore-bodies demonstrated indicate that, with little expense, large and profitable ore-bodies may be opened by intelligent development. The ore occurs in a form rendering mining very simple and inexpensive, and there is no water with which to contend; which, taken with the fact that the precious metal content may be recovered by very simple means, are strong factors in the economic development of the property.

The similarity between conditions at this property and at the Keystone, three miles northwest of the Boss, is very marked. The Keystone is credited with a gold production in excess of $1,000,000. Undoubtedly the two properties are situated on the same zone of fracture, and the porphyry intrusions at both places are identical in character, probably being part of the same general intrusion, a fact especially important since the porphyry in both cases is unquestionably the ultimate source of the ore. The ore at the Keystone was similar in character to that at the Boss, being largely a soft iron ore, frequently showing specks of malachite. However, the ore at the Keystone occurred on the porphyry contact, not making out into the lime to any extent; which would indicate that at the Boss, ore-bodies, and probably a stronger mineralization, can be expected when the porphyry contact is reached. The exact location of the porphyry at the Boss workings is of course problematical, but it unquestionably underlies the lime at some depth in the zone of fracture, and the fissure will probably lead to this contact. The fact that copper ore is more abundant in the Boss vein than at the Keystone would indicate that even stronger mineralization had occurred in the vicinity of the Boss.

Respectfully submitted.

Fred A. Hale Jr.

March 12th, 1914.

FRED A. HALE, JR., MINING ENGINEER
GOOD SPRINGS, NEVADA.

THE TONOPAH MINING COMPANY OF NEVADA

EASTERN OFFICE
572 BULLITT BUILDING, PHILADELPHIA, PA.

TONOPAH, NEVADA, April 7,1914.

Mr.J.E.Spurr,Vice-Pres.,
The Tonopah Mining Company of Nevada
Bullitt Building,Philadelphia Pa.

Dear Sir:

I am mailing you today some brief notes on properties near Goodsprings,Clark County,Nevada.

On March eighteenth I left Tonopah by auto for the southern part of the state returning April second. I spent two days at Goodsprings,one day at Pioche,and one day at Osceola.

At Goodsprings I found but few gold-silver properties.The Boss Mine located near The Keystone property examined by Peterson last summer- appears to be worth further investigation. I was shown a report on the property by Fred A. Hale,Asst.Supt. of the Yellow Pine Mine,and would have made an examination had the owners given me definate terms. However,I gave Mr.Yount your address and asked him to send you a copy of this report as soon as he could decide his terms.

There was very little activity at or near Pioche and no properties were examined.

The trip from Pioche to Osceola was for the purpose of investigating a new strike at The Valentine property,near Bassett Creek 30 miles northeast from Osceola. I found two large boulders of high-grade gold-silver-copper ore about which a discovery monument had been erected. $1000 cash was asked before any work could be done on the property. The ore assayed about $1000 per ton.

I expected to examine a large low-grade gold property at Atlanta - 55 miles south east from Osceola, and a lead-silver mine about twenty miles south of the same place. There is still some snow on the ground at these places, and since the automobile was in need of some repairs these examinations were deferred until a later date.

I have a letter from Fred C. Schaff of Rawhide dated April first which states that the crosscut on the 250' level at the Last Hope mine has cut the vein and that the ore is of the same grade as that worked above. Drifting is now going on and another examination is asked.

Very truly yours,

J. E. Sirdevan