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File-Pioneer Silver ✓ L&L

NUCLEAR DYNAMICS

Arizona
33-34
110-111

June 2, 1971

TO: Herb Miller

FROM: Francis Cannaday

RE: SUBMITTALS FROM BURNSIDE

1. "A Proposal to form a new company dealing in Minerals Exploration and Land Investment" with letter of transmittal by William F. Jud.

They do not own or control anything. Not of interest.

2. The Pioneer Silver Property.

Reports by OSO Exploration Services Ltd. and J.S. Compal. Of doubtful value. Not of interest.

3. The Taylor Mine property, Nevada County, California. Report by Ken McGriffin, July, 1969.

Could be of interest. I am studying the data furnished.

F. X. Cannaday

FXC/dmh

. F. X. Cannaday

c.c. Kelsey Boltz

We have made copies of (2) and (3)

OSO EXPLORATION SERVICES LTD.

REPORT ON

THE PIONEER SILVER PROPERTY

Globe, Arizona

By
R. G. Hawley

Aug. 1, 1968

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OSO EXPLORATION SERVICES LTD.

The Pioneer Silver Property, Globe, Arizona

CONCLUSIONS

1 - A tonnage on the Howard and Pioneer veins between the 200' and 450' levels of about 250,000 tons grading 25 oz. in silver with values in copper zinc, lead, and gold can reasonably be expected. Salvage ore from old stopes and ore from below the 450' level should add to this.

2 - Smaller veins between the Howard and the Pioneer have only partially been mined and should return considerable tonnage.

3 - The East Pioneer vein showed little high grade at surface and was thus ignored for the Howard and Pioneer which were more clearly defined, were more easily mined, and had high grade at or near surface. The East Pioneer however, shows much more alteration and much more potential for greater widths of ore along a greater strike length of nearly 6,000 ft.

4 - The dissemminated sulphides in the underlying monzonite indicate the possibility of a large low grade body of porphyry copper to depth, possibly amenable to open pit mining. Inspiration's interest in the adjoining ground makes this supposition stronger.

RECOMMENDATIONS

1 - An IP survey (induced potential) of at least 20 line miles should be carried out along the 6,000 ft. of the alteration zone to search for disseminated sulphide bodies.

2 - An EM survey (Electromagnetic) with the Ronka EM 16 instrument could be conducted to trace the high grade vein ores.

3 - Any target anomalies should be further tested after the surveys by diamond drilling, as well as testing below the present workings for ore to depth there. At least 10,000 ft. would probably be required.

4 - The surveys may indicate open pit mining, in which case underground development would be unnecessary. If underground mining is contemplated then the old workings should be cleaned out, dewatered, put in safe condition and mapped and sampled to determine the best place to begin mining the remnant ore.

5 - The East Pioneer vein should be explored with drilling and open cuts and/or adits to determine its value near surface.

Submitted by -

R. G. Hawley

R. G. Hawley
For Oso Exploration Services Ltd.

INTRODUCTION

The Pioneer silver property consists of 17 unpatented and one patented mining claim, located 12 miles south of Globe, Arizona. The area around Globe and that south of the property are noted for extensive large scale mining. One of the major mining companies, Inspiration, has claimed the ground along the south, east, and west of the Pioneer group, has cut drill sites and begun drilling, (reportedly on the basis of IP (induced potential) and other surveys.

Due to the fact of Inspiration's interest and the fact that many of the old mines are becoming productive again because of modern mining methods and higher metal prices, this mine was examined to decide its potential in silver ore and also the possibility of an economic underlying porphyry copper deposit.

Information in this report is based on several trips to the property by the writer and on a report by J. S. Compal dated September, 1927.

LOCATION AND ACCESS

The Pioneer property, consisting of 18 claims, covering about 370 acres, is located about 12 miles south of Globe, Arizona, on the south slope of the Pinal mountains, in Section 29, Range 15 East, Pioneer Mining District, Gila County.

Access is gained by a secondary road which connects with highway 77 about 14 miles to the southeast and with Globe about the same distance to the North.

About three miles of new road to the East would connect the property to State Highway 77 between Globe and Tucson.

CLIMATE AND TOPOGRAPHY

The Pioneer mine is at an elevation of about 4500 ft. above sea level, the valleys surrounded by steep ridges with a relief of several hundred feet. The slopes are covered in most places with brush, with frequent timber in the valleys.

Water is sufficiently available from springs, streams and flooded workings for drilling, milling and domestic use. The climate is good with mild winters and cool summers.

HISTORY

The district was opened in the early 1870's when the high grade ores near surface were mined and hauled by wagon to the Gulf of California, over 300 miles, then shipped to the smelter at San Francisco. Later stamp mills were installed to treat the high grade oxides down to water level.

The production was estimated at $1,000,000.00 from old company operations and an additional $300,000.00 from various lessors working the high grade veins up to 1927.

With the methods in use at that time recovery of values dropped when sulphides were met at depth. Lowering of the price of silver apparently suspended operations after 1927.

PROPERTY - CLAIM STATUS

The property consists of 17 unpatented claims known as the Fairview, Quartet, Jewel, West Republic, Delinquent, Challenge, East Pioneer, Junior Republic, California, Lucky Boy, Rough Neck, Ringneck, Quail, Argenta, Silverado, West Republic #2, and Florence; and one patented claim known as the Great Republic.

These claims adjoin, forming a compact group covering 4800 ft. along the strike of the major veins and 2600 ft. in width, covering the 3 parallel veins.

The claims are held in good standing by Lynn Sheppard of Globe, Arizona, presently under option to Lebern Cox of Tucson.

GEOLOGY - GENERAL

The Pinal Mountains are essentially a highly metamorphosed sedimentary unit called the Pinal Salient, consisting in this area mainly of quartzite and quartz pebble conglomerate of the Dripping Springs formation. The sediments have been altered by the intrusion of granite, diorite (or monzonite), and diabase.

The main intrusive mass is the coarse diorite or granite porphyry covering most of the area to the north. At the mine and closely associated with the mineralized veins is an underlying monzonite stock. At the south end of the property a large mass of diabase intrudes along the east side of the hydrothermal alteration zone of the East Pioneer vein.

ECONOMIC GEOLOGY AND MINERALIZATION

There are three major veins on these claims, the Howard vein, the Pioneer (or Challenge) vein, and the East Pioneer. These veins, particularly the East Pioneer, follow generally a zone of strong shearing which probably represents a main fault zone through the area, striking N20° E and dipping 60° to 80° to the West. The zone is indicated at surface along the strike of the East Pioneer by strongly sheared and weathered rock, and at the south end shows very strong hydrothermal alteration with limonite boxwork. Values are usually very low in the leached out surface material along the East Pioneer though silver values of up to 20 oz.'s have been reported from several points.

This East Pioneer zone, which seems to be the most persistent, was traced by altered surface outcrops for over 6,000 ft. At the South end it appears to be over 150 ft. in width, narrowing to about 50 ft. where it crosses the ridge to the north and disappears in overburden. Where the altered zone appears again to the North, east of the Pioneer shaft it widens to over 150 ft. again. Much of the length of this zone is covered by gravels where it follows the river bottom.

This appears to be the main zone of faulting or shearing through this area. There has been practically no development along it except for a few open cuts and short adits which indicated an 8' to 10' width of ore in a vein lying within the alteration zone near the main camp. The fact that little or no high grade ore was found in the highly altered surface accounts for its lack of development.

The Howard and the Pioneer veins to the NW were the most developed. Here the vein filling is mainly quartz with silver sulphides associated with varying amounts of lead, zinc and copper. The main value is in silver with sizeable gold values.

These veins vary from 3' to 10' in width and are clearly defined. They have both been traced for about 500' NE of the Pioneer and the Howard shafts to where they meet the East Pioneer zone. Some development work has indicated their extension beyond this point. They have apparently never been traced far SW of the shafts. Several narrow high grade veins are said to occur between the Howard and the Pioneer.

The quartzite and conglomerate is usually barren between the veins. However, at depth in the crosscuts, the underlying monzonite shows disseminated sulphides and gives assays for considerable widths between the veins of from 1/2 oz. to several ounces per ton.

UNDERGROUND DEVELOPMENT

Adit No. 1 was driven from the surface cutting the Pioneer vein and extending 550' to the NW to cut the Howard vein at a depth of 200' below surface.

Adit No. 2, begun on the Pioneer vein 400' NE of Adit No. 1, was extended 400 ft. NW to cut the Howard vein 170' below surface at a point 240' NE of adit 1. Two drifts were driven on veins between the Howard and Pioneer from adit No. 2.

The Pioneer shaft, 400' SW of the portal of adit No. 1, was sunk to a depth of 450'. Drifts were driven in ore from the 200 and 300 ft. levels. Above the 200' level the ore was stoped for a distance of 700' along the vein mainly to the NE. The main production came from this area.

The Howard shaft, 630 ft. NW of the Pioneer shaft and 150' higher in elevation, was sunk to a depth of 350'. Drifts were driven in ore on the 100, 200, and 300 ft. levels. The ore shoot was stoped for a distance of 750' in length above the 200' level.

A 75 ft. shaft was sunk on a vein between the Howard and the Pioneer shafts and most of the later ore was mined from here. The exact location of this shaft is unknown.

At least two short adits were driven to crosscut ore on the East Pioneer vein.

No stoping was done below the 200' level as lead and zinc sulphides made these ores difficult to treat with methods used at that time.

The above figures are from a report by J. S. Compal, 1927. Shafts and adits were inaccessible at the time of the writer's examination.

ESTIMATED TONNAGE POTENTIAL

The vein system has been proven to a depth of 450' and mined to a depth of only 200'. The length of the ore shoots on the two main veins is in excess of 700' and widths are from 3' to 10' or an average of 7'.

The probable ore remaining in the main stope on each vein from the 200' to the 450' level is a block about 250' x 7 x 700' or approximately 125,000 tons or 250,000 tons for both veins. Some ore may be salvaged from worked areas above this level. According to Compal the grade, deduced from old records, should be about 25 oz. per ton plus values increasing in depth in lead, zinc, copper, along with some gold.

A not inconsiderable amount of ore may be found in the smaller veins between the Howard and the Pioneer.

The extensions of the main veins NE and SW has been unexplored as well as below the 450' level.

The East Pioneer vein has been totally unexploited and should return considerable tonnage when opened up.

Dissemminated sulphides in the underlying monzonite offer the possibility of a larger low grade tonnage of ore perhaps in the form of porphyry copper.

X Blue Folder

COPY

REPORT ON WHITE METAL MINING COMPANY PROPERTY AT PIONEER - GILA COUNTY, ARIZONA

by J. S. Compal - Mining Engineer
Sept. 1927

* * * * * * * * * * * *

Property

The property of the WHITE METAL MINING COMPANY consists of 15 Mining Claims, two (2) of which are patented. The total area is approximately 370 acres. The claims all adjoin and form a compact group, covering 4800 feet in length along the strike of the major veins and 2600 feet in width, which covers the three more or less parallel vein systems.

The claims are located as shown on the attached plan and are known and recorded as follows:-

Great Republic Lode, Survey #370 (patented)
Pioneer South Lode, Survey #374 (patented)

Fairview	Delinquent
Quartet	East Pioneer
Jewel	Challenge
West Republic	California
West Republic No. 2	Lucky Boy
Junior Republic	Rough Neck
North Republic	

Location and Physical Conditions

The property is located on the South slope of the Pinal Mountains, about 12 miles in an air line South of Globe. It is reached by a mountain road, about 14 miles in length which connects with the branch road of the Arizona Eastern Railroad at Christmas. The recently built State Highway from Globe to Winkleman passes within 3 miles of the property. A road has been surveyed from Pioneer to connect with the Globe Highway, which, when made, will greatly facilitate hauling to and from this mine.

The camp and mine is at an elevation of about 4500 feet above sea level. This gives a fine working climate - as the nights are cool, in the heat of the summer, and the winters very mild. Climatic conditions are most favorable for year round operations.

There are several mountain springs on the claims which furnish abundant water year round, both for domestic purposes, and for supply for mill use. Water is piped from two of the springs to supply tanks, and the supply is sufficient for all needs. Additional water can be developed and stored as needed for increased operations.

The surrounding mountains are heavily timbered, the property being right at the edge of the CROOK NATIONAL FOREST RESERVE. This timber is available for general mine use as stulls, etc., and at very low cost. As fuel for domestic use these claims furnish sufficient scrub growth for a supply for many years.

The location and living conditions at the camp are exceptionally good. Sufficient buildings are available for housing all the workmen needed. Telephone connections are maintained with the main telephone exchange at Ray. Supplies can be hauled in daily, if needed, either by the Globe road or from Winkleman by automobile or truck. These practices make it easy to keep a good class of men on the job, contented and compatible, which is an item of importance in operations of this size.

History

The district was opened up in the early seventies, when the high grade ores near the surface were mined and hauled by wagon to the Gulf of California, a distance of 300 miles, and then shipped to the smelter at San Francisco.

Later stamp mills were installed and the high grade oxidized ores, down to water level, were mined and treated by amalgamation, washing & settling.

The production has been estimated from what records are available, at about $1,000,000.00 from the old company operations and an additional $300,000.00 from the various Lessors who have worked in this narrow high grade veins.

The treatment of the ores became difficult and the recovery of values dropped when the Sulphide ores were met in depth. At about the same time a new mill was destroyed by fire and a drop

in the price of silver suspended all operations.

Three of the major ore shippings were held by different individuals, and litigation resulted from conflicting claims as to limits of the ore being mined. The claims were finally consolidated into one group and a new flotation mill erected, which can now effectively handle this Sulphide and low grade ores.

Geology

The Pinal Mountains are essentially a highly metamorphosed sedimentary called the Pinal Salient, which has been altered by an intrusion of Dionite. In the Pioneer camp, the main intrusion in a Dionite porphyry, which is closely associated with the veins and ore bodies.

The veins are roughly parallel with a strike of about North 30° East. They dip from 70 to 85° to the West.

The vein filling is mainly quartz with the Silver occuring as sulphides - associated with varying amounts of lead, zinc and copper sulphides. The main value is in Silver with a sizeable amount of Gold.

The veins follow the porphyry dikes - either in the foot or hanging. The veins vary from 3 to 10 feet in width and are clearly defined. The walls are firm and solid and hold with little or no timbering outside of occasional stulls.

Ore Development

There are three major veins on these claims, namely the Howard Vein, the Pioneer (or Challenge) vein and the East Pioneer. In addition to these major veins, there are several minor veins - which are narrow and high grade & from which most of the ore was produced by Lessors.

The main production was obtained from the Pioneer vein. The shaft is down 450 feet, across the gully and to the North. This vein was opened up by an adit level which was extended to cut the Howard vein. Above this level most of the oxidized ores have been

mined.

From the shaft drifts on the ore from the two and three hundred foot levels were driven. Above the 200 foot level the ore has been stoped for a distance of 700 foot in length. Little or no stoping has been done on the lower levels or from the bottom of the shaft, as these sulphides of lead and zinc made these ores difficult to treat.

The Howard shaft is 350 feet deep. Drifts on the 100, 200 and 300 foot levels were driven. Most of this production came from above the 200 foot level. The ore shoot showed a length of 750 feet as indicated by the stopes from the adit level.

The East Pioneer vein is practically all virgin ground. Open cuts show from 8 to 10 feet in width of ore. There is little or no high grade on this vein which accounts for its lack of development. The vein is of commercial milling value however and warrants active development.

The various shafts were inaccessible at the time of my examination, so that it was impossible to get at the deeper workings and make any estimate on ore actually in sight.

Equipment

The property is fully equipped and ready for immediate operation. Recommendations for additions and certain changes will follow:

The Pioneer shaft is equipped with a 40 H.P. hoist and a 600 foot compressor. There is a full equipment of machine drills, steels, small tools, blacksmith shop, tracks, mine cars etc., sufficient for a crew of from 30 to 50 men.

The mill is in first class operating condition, and was in operation during my visit to the property on ore which had accumulated during certain develop;ment work.

The flow sheet of the mill is as follows: Crude ore bin - to a 150 ton (capacity 24 hours), Telsmith crusher - to a 100 ton circular ore bin; Challenge ore feeder to belt conveyor for feeding

ore to a 5-1/2 ft. Harding Ball Mill; 4' x 6" x 14' x 6" Dorr Classifier in close circuit with ball mill; overflow from classifier to a 12' x 12' K & K Flotation Machine; Froth from flotation machine to a 7' K&K Flotation Machine - as finishing cell - in close circuit with the 12' roughing cell; Underflow from the 12' K&K to 2 Plato-Concentrating tables; Concentrates to a 10 foot Dorr thickener(also the finished flotation concentrates), a settling tank, filter and dryer; t tailings from the Plato tables to waste.

The mill is driven by a 60 H.P. Western Gas Engine, and the crusher by a 20 H.P.

The mill is efficiently layed out and is in first class operating condition. It has a daily capacity of from 50 to 60 tons per 24 hours. By the addition of a fine grinder, or ball mill or a pebble mill, to take the oversize from the classifier instead of returning the oversize to the Harding Mill to be reground and by putting the classifier in close circuit with the fine grinding mill, the capacity can be brought up to 100 tons per day. The balance of the equipment in this mill has capacity to handle this additional tonnage.

The mill is so erected that another 100 ton unit can be add added to it at small cost. The recovery made is from 90 to 95% of the value.

Recommendations

The present mill was erected and installed to operate on the ore from the old workings. No new ore was developed and the deeper workings were not unwatered. The ore in the upper workings and the stope fills were all oxidized ores on which a fair survey was made but not as large a percentage of recovery as can be made in fresh ore. The workings from which this ore was obtained were scattered and isolated and as a result maximum capacity was not obtained.

Before attempting to start milling again, new ore should be developed and the capacity of the mill stepped up to 100 tons per day.

The stope fills and ore remaining in this upper workings can be handled but the major supply should come from the newly opened up stopes.

There are two main developments advised:

First, extending the cross cut on the 200 foot level of the Pioneer Shaft - West, a distance of 380 feet at which point it should cut the Howard vein and shaft 350 feet below the surface;

Second, the 300 foot level on the Pioneer Shaft should be driven North along the vein and open up the downward extension of the main Pioneer ore shoot.

The Pioneer shaft is down to a depth of 450 feet. The old shaft timbers are in bad condition below the 100 foot level and will have to be replaced and the shaft retimbered, before active mining can be safely carried on. The shaft has been unwatered to this 300 foot level and good ore is now in the breast of the drift at that point.

From the 200 foot level in the Pioneer vein a crosscut and raise should be driven to connect with the 75 foot shaft sunk in an intermediate vein. This new, prospecting shaft has been sunk on ore and from it most of the crude ore shipped during the past year was mined.

These three developments will open up three proven ore shoots from which a tonnage of at least 100 tons per day can be had and maintained.

The East Pioneer vein should furnish a large tonnage of good mill ore. The surface shows a wide fissure vein. Development work can be best done by means of a prospecting shaft from the surface. After a depth of 300 feet is made a crosscut can be driven from the Pioneer shaft - a distance of 600 feet to connect with the new work in the East Pioneer vein.

Levels on the 100 and 200 foot level from the East Pioneer vein could be started and mining of ore carried on from the shaft until this connection is made. The development shaft would have to

be driven in order to provide an emergency exit and air connection in order to comply with Arizona Mining Laws - even though the ore was first opened up by a crosscut tunnel; so that it is most advisable to sink first and stay with the ore, until sufficient depth is obtained before crosscutting.

The development work outlined and retimbering of the shaft would take from 5 to 6 months to complete.

It would probably be possible to start milling on a 100 ton basis within 4 months time. The development work should then continue and as four separate and distinct ore bodies will be under development, the property should be able to supply at least 200 tons per day within a year's time, when the milling capacity should be increased.

The present road is rough and has many steep grades in it. The upkeep on the road is high and hauling is difficult and expensive. As the new Globe Highway is completed it is most advisable to make the 3-mile connection with it. The County will aid to almost one-half the expenses on this new road. This road should be started and completed as early as possible.

The present power consists of several independent oil and gasoline engines. The fuel cost is high and the hauling in of fuel over the present road expensive. New power will have to be added to bring up the mill capacity to 100 tons.

The present equipment is sufficient, however, to handle the development work. Provision should be made to install a central power plant with motor driven equipment at the various workings. A substantial saving, both in fuel cost and in attendance and maintenance of the equipment will be made if a full Diesel oil engine with generator and motor driven is installed.

Summary

The work as outlined will cost from $75,000.00 to $100,000.00, and will take from 5 to 6 months to complete and put in full operation.

The property will then be in position to mine and mill a tonnage of 100 tons per day.

The two major veins have produced a large tonnage of high grade ore from above the 200 foot levels and the ore has been cut and proven at depths of 350 feet in the Howard and 450 feet in the Pioneer. From the old records and the returns from ore already mined and milled, an average of over 25 ounces per ton in Silver can be reasonably expected.

By the addition of one or two new flotation cells to this present flow sheet, a selection flotation of the Zinc and Lead can be made. In depth both Lead and Zinc ore are coming in stronger than in the upper levels. The separation of these two metals can be made and a substantial profit made on the Zinc and Lead in addition to the Silver values.

I recommend that development work be started with the present equipment; that the road connection with the Globe Highway be completed at an early date and as soon as the road is in, that provisions be made to step the mill up to 100 tons capacity, and install the central power plant.

Sufficient ore should be available within a year to a year and a half to warrant a 200 ton daily capacity.

Respectfully submitted,

s/ J. S. Compal

OSO EXPLORATION SERVICES LTD.

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Aug. 1, 1968

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Submitted by -

R. G. Hawley

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For Oso Exploration Services Ltd.

INTRODUCTION

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The main intrusive mass is the coarse diorite or granite porphyry covering most of the area to the north. At the mine and closely associated with the mineralized veins is an underlying monzonite stock. At the south end of the property a large mass of diabase intrudes along the east side of the hydrothermal alteration zone of the East Pioneer vein.

ECONOMIC GEOLOGY AND MINERALIZATION

There are three major veins on these claims, the Howard vein, the Pioneer (or Challenge) vein, and the East Pioneer. These veins, particularly the East Pioneer, follow generally a zone of strong shearing which probably represents a main fault zone through the area, striking N20° E and dipping 60° to 80° to the West. The zone is indicated at surface along the strike of the East Pioneer by strongly sheared and weathered rock, and at the south end shows very strong hydrothermal alteration with limonite boxwork. Values are usually very low in the leached out surface material along the East Pioneer though silver values of up to 20 oz.'s have been reported from several points.

This East Pioneer zone, which seems to be the most persistent, was traced by altered surface outcrops for over 6,000 ft. At the South end it appears to be over 150 ft. in width, narrowing to about 50 ft. where it crosses the ridge to the north and disappears in overburden. Where the altered zone appears again to the North, east of the Pioneer shaft it widens to over 150 ft. again. Much of the length of this zone is covered by gravels where it follows the river bottom.

This appears to be the main zone of faulting or shearing through this area. There has been practically no development along it except for a few open cuts and short adits which indicated an 8' to 10' width of ore in a vein lying within the alteration zone near the main camp. The fact that little or no high grade ore was found in the highly altered surface accounts for its lack of development.

The Howard and the Pioneer veins to the NW were the most developed. Here the vein filling is mainly quartz with silver sulphides associated with varying amounts of lead, zinc and copper. The main value is in silver with sizeable gold values.

These veins vary from 3' to 10' in width and are clearly defined. They have both been traced for about 500' NE of the Pioneer and the Howard shafts to where they meet the East Pioneer zone. Some development work has indicated their extension beyond this point. They have apparently never been traced far SW of the shafts. Several narrow high grade veins are said to occur between the Howard and the Pioneer.

The quartzite and conglomerate is usually barren between the veins. However, at depth in the crosscuts, the underlying monzonite shows disseminated sulphides and gives assays for considerable widths between the veins of from 1/2 oz. to several ounces per ton.

UNDERGROUND DEVELOPMENT

Adit No. 1 was driven from the surface cutting the Pioneer vein and extending 550' to the NW to cut the Howard vein at a depth of 200' below surface.

Adit No. 2, begun on the Pioneer vein 400' NE of Adit No. 1, was extended 400 ft. NW to cut the Howard vein 170' below surface at a point 240' NE of adit 1. Two drifts were driven on veins between the Howard and Pioneer from adit No. 2.

The Pioneer shaft, 400' SW of the portal of adit No. 1, was sunk to a depth of 450'. Drifts were driven in ore from the 200 and 300 ft. levels. Above the 200' level the ore was stoped for a distance of 700' along the vein mainly to the NE. The main production came from this area.

The Howard shaft, 630 ft. NW of the Pioneer shaft and 150' higher in elevation, was sunk to a depth of 350'. Drifts were driven in ore on the 100, 200, and 300 ft. levels. The ore shoot was stoped for a distance of 750' in length above the 200' level.

A 75 ft. shaft was sunk on a vein between the Howard and the Pioneer shafts and most of the later ore was mined from here. The exact location of this shaft is unknown.

At least two short adits were driven to crosscut ore on the East Pioneer vein.

No stoping was done below the 200' level as lead and zinc sulphides made these ores difficult to treat with methods used at that time.

The above figures are from a report by J. S. Compal, 1927. Shafts and adits were inaccessible at the time of the writer's examination.

ESTIMATED TONNAGE POTENTIAL

The vein system has been proven to a depth of 450' and mined to a depth of only 200'. The length of the ore shoots on the two main veins is in excess of 700' and widths are from 3' to 10' or an average of 7'.

The probable ore remaining in the main stope on each vein from the 200' to the 450' level is a block about 250' x 7 x 700' or approximately 125,000 tons or 250,000 tons for both veins. Some ore may be salvaged from worked areas above this level. According to Compal the grade, deduced from old records, should be about 25 oz. per ton plus values increasing in depth in lead, zinc, copper, along with some gold.

A not inconsiderable amount of ore may be found in the smaller veins between the Howard and the Pioneer.

The extensions of the main veins NE and SW has been unexplored as well as below the 450' level.

The East Pioneer vein has been totally unexploited and should return considerable tonnage when opened up.

Dissemminated sulphides in the underlying monzonite offer the possibility of a larger low grade tonnage of ore perhaps in the form of porphyry copper.

COPY

REPORT ON WHITE METAL MINING COMPANY PROPERTY AT PIONEER - GILA COUNTY, ARIZONA

by J. S. Compal - Mining Engineer
Sept. 1927

* * * * * * * * * * * *

Property

The property of the WHITE METAL MINING COMPANY consists of 15 Mining Claims, two (2) of which are patented. The total area is approximately 370 acres. The claims all adjoin and form a compact group, covering 4800 feet in length along the strike of the major veins and 2600 feet in width, which covers the three more or less parallel vein systems.

The claims are located as shown on the attached plan and are known and recorded as follows:-

Great Republic Lode, Survey #370 (patented)
Pioneer South Lode, Survey #374 (patented)

Fairview	Delinquent
Quartet	East Pioneer
Jewel	Challenge
West Republic	California
West Republic No. 2	Lucky Boy
Junior Republic	Rough Neck
North Republic	

Location and Physical Conditions

The property is located on the South slope of the Pinal Mountains, about 12 miles in an air line South of Globe. It is reached by a mountain road, about 14 miles in length which connects with the branch road of the Arizona Eastern Railroad at Christmas. The recently built State Highway from Globe to Winkleman passes within 3 miles of the property. A road has been surveyed from Pioneer to connect with the Globe Highway, which, when made, will greatly facilitate hauling to and from this mine.

The camp and mine is at an elevation of about 4500 feet above sea level. This gives a fine working climate - as the nights are cool, in the heat of the summer, and the winters very mild. Climatic conditions are most favorable for year round operations.

There are several mountain springs on the claims which furnish abundant water year round, both for domestic purposes, and for supply for mill use. Water is piped from two of the springs to supply tanks, and the supply is sufficient for all needs. Additional water can be developed and stored as needed for increased operations.

The surrounding mountains are heavily timbered, the property being right at the edge of the CROOK NATIONAL FOREST RESERVE. This timber is available for general mine use as stulls, etc., and at very low cost. As fuel for domestic use these claims furnish sufficient scrub growth for a supply for many years.

The location and living conditions at the camp are exceptionally good. Sufficient buildings are available for housing all the workmen needed. Telephone connections are maintained with the main telephone exchange at Ray. Supplies can be hauled in daily, if needed, either by the Globe road or from Winkleman by automobile or truck. These practices make it easy to keep a good class of men on the job, contented and compatible, which is an item of importance in operations of this size.

History

The district was opened up in the early seventies, when the high grade ores near the surface were mined and hauled by wagon to the Gulf of California, a distance of 300 miles, and then shipped to the smelter at San Francisco.

Later stamp mills were installed and the high grade oxidized ores, down to water level, were mined and treated by amalgamation, washing & settling.

The production has been estimated from what records are available, at about $1,000,000.00 from the old company operations and an additional $300,000.00 from the various Lessors who have worked in this narrow high grade veins.

The treatment of the ores became difficult and the recovery of values dropped when the Sulphide ores were met in depth. At about the same time a new mill was destroyed by fire and a drop

in the price of silver suspended all operations.

Three of the major ore shippings were held by different individuals, and litigation resulted from conflicting claims as to limits of the ore being mined. The claims were finally consolidated into one group and a new flotation mill erected, which can now effectively handle this Sulphide and low grade ores.

Geology

The Pinal Mountains are essentially a highly metamorphosed sedimentary called the Pinal Salient, which has been altered by an intrusion of Dionite. In the Pioneer camp, the main intrusion in a Dionite porphyry, which is closely associated with the veins and ore bodies.

The veins are roughly parallel with a strike of about North 30° East. They dip from 70 to 85° to the West.

The vein filling is mainly quartz with the Silver occuring as sulphides - associated with varying amounts of lead, zinc and copper sulphides. The main value is in Silver with a sizeable amount of Gold.

The veins follow the porphyry dikes - either in the foot or hanging. The veins vary from 3 to 10 feet in width and are clearly defined. The walls are firm and solid and hold with little or no timbering outside of occasional stulls.

Ore Development

There are three major veins on these claims, namely the Howard Vein, the Pioneer (or Challenge) vein and the East Pioneer. In addition to these major veins, there are several minor veins - which are narrow and high grade & from which most of the ore was produced by Lessors.

The main production was obtained from the Pioneer vein. The shaft is down 450 feet, across the gully and to the North. This vein was opened up by an adit level which was extended to cut the Howard vein. Above this level most of the oxidized ores have been

mined.

From the shaft drifts on the ore from the two and three hundred foot levels were driven. Above the 200 foot level the ore has been stoped for a distance of 700 foot in length. Little or no stoping has been done on the lower levels or from the bottom of the shaft, as these sulphides of lead and zinc made these ores difficult to treat.

The Howard shaft is 350 feet deep. Drifts on the 100, 200 and 300 foot levels were driven. Most of this production came from above the 200 foot level. The ore shoot showed a length of 750 feet as indicated by the stopes from the adit level.

The East Pioneer vein is practically all virgin ground. Open cuts show from 8 to 10 feet in width of ore. There is little or no high grade on this vein which accounts for its lack of development. The vein is of commercial milling value however and warrants active development.

The various shafts were inaccessible at the time of my examination, so that it was impossible to get at the deeper workings and make any estimate on ore actually in sight.

Equipment

The property is fully equipped and ready for immediate operation. Recommendations for additions and certain changes will follow:

The Pioneer shaft is equipped with a 40 H.P. hoist and a 600 foot compressor. There is a full equipment of machine drills, steels, small tools, blacksmith shop, tracks, mine cars etc., sufficient for a crew of from 30 to 50 men.

The mill is in first class operating condition, and was in operation during my visit to the property on ore which had accumulated during certain develop;ment work.

The flow sheet of the mill is as follows: Crude ore bin - to a 150 ton (capacity 24 hours), Telsmith crusher - to a 100 ton circular ore bin; Challenge ore feeder to belt conveyor for feeding

ore to a 5-1/2 ft. Harding Ball Mill; 4' x 6" x 14' x 6" Dorr Classifier in close circuit with ball mill; overflow from classifier to a 12' x 12' K & K Flotation Machine; Froth from flotation machine to a 7' K&K Flotation Machine - as finishing cell - in close circuit with the 12' roughing cell; Underflow from the 12' K&K to 2 Plato-Concentrating tables; Concentrates to a 10 foot Dorr thickener(also the finished flotation concentrates), a settling tank, filter and dryer; t tailings from the Plato tables to waste.

The mill is driven by a 60 H.P. Western Gas Engine, and the crusher by a 20 H.P.

The mill is efficiently layed out and is in first class operating condition. It has a daily capacity of from 50 to 60 tons per 24 hours. By the addition of a fine grinder, or ball mill or a pebble mill, to take the oversize from the classifier instead of returning the oversize to the Harding Mill to be reground and by putting the classifier in close circuit with the fine grinding mill, the capacity can be brought up to 100 tons per day. The balance of the equipment in this mill has capacity to handle this additional tonnage.

The mill is so erected that another 100 ton unit can be add added to it at small cost. The recovery made is from 90 to 95% of the value.

Recommendations

The present mill was erected and installed to operate on the ore from the old workings. No new ore was developed and the deeper workings were not unwatered. The ore in the upper workings and the stope fills were all oxidized ores on which a fair survey was made but not as large a percentage of recovery as can be made in fresh ore. The workings from which this ore was obtained were scattered and isolated and as a result maximum capacity was not obtained.

Before attempting to start milling again, new ore should be developed and the capacity of the mill stepped up to 100 tons per day.

The stope fills and ore remaining in this upper workings can be handled but the major supply should come from the newly opened up stopes.

There are two main developments advised:

First, extending the cross cut on the 200 foot level of the Pioneer Shaft - West, a distance of 380 feet at which point it should cut the Howard vein and shaft 350 feet below the surface;

Second, the 300 foot level on the Pioneer Shaft should be driven North along the vein and open up the downward extension of the main Pioneer ore shoot.

The Pioneer shaft is down to a depth of 450 feet. The old shaft timbers are in bad condition below the 100 foot level and will have to be replaced and the shaft retimbered, before active mining can be safely carried on. The shaft has been unwatered to this 300 foot level and good ore is now in the breast of the drift at that point.

From the 200 foot level in the Pioneer vein a crosscut and raise should be driven to connect with the 75 foot shaft sunk in an intermediate vein. This new, prospecting shaft has been sunk on ore and from it most of the crude ore shipped during the past year was mined.

These three developments will open up three proven ore shoots from which a tonnage of at least 100 tons per day can be had and maintained.

The East Pioneer vein should furnish a large tonnage of good mill ore. The surface shows a wide fissure vein. Development work can be best done by means of a prospecting shaft from the surface. After a depth of 300 feet is made a crosscut can be driven from the Pioneer shaft - a distance of 600 feet to connect with the new work in the East Pioneer vein.

Levels on the 100 and 200 foot level from the East Pioneer vein could be started and mining of ore carried on from the shaft until this connection is made. The development shaft would have to

be driven in order to provide an emergency exit and air connection in order to comply with Arizona Mining Laws - even though the ore was first opened up by a crosscut tunnel; so that it is most advisable to sink first and stay with the ore, until sufficient depth is obtained before crosscutting.

The development work outlined and retimbering of the shaft would take from 5 to 6 months to complete.

It would probably be possible to start milling on a 100 ton basis within 4 months time. The development work should then continue and as four separate and distinct ore bodies will be under development, the property should be able to supply at least 200 tons per day within a year's time, when the milling capacity should be increased.

The present road is rough and has many steep grades in it. The upkeep on the road is high and hauling is difficult and expensive. As the new Globe Highway is completed it is most advisable to make the 3-mile connection with it. The County will aid to almost one-half the expenses on this new road. This road should be started and completed as early as possible.

The present power consists of several independent oil and gasoline engines. The fuel cost is high and the hauling in of fuel over the present road expensive. New power will have to be added to bring up the mill capacity to 100 tons.

The present equipment is sufficient, however, to handle the development work. Provision should be made to install a central power plant with motor driven equipment at the various workings. A substantial saving, both in fuel cost and in attendance and maintenance of the equipment will be made if a full Diesel oil engine with generator and motor driven is installed.

Summary

The work as outlined will cost from $75,000.00 to $100,000.00, and will take from 5 to 6 months to complete and put in full operation.

The property will then be in position to mine and mill a tonnage of 100 tons per day.

The two major veins have produced a large tonnage of high grade ore from above the 200 foot levels and the ore has been cut and proven at depths of 350 feet in the Howard and 450 feet in the Pioneer. From the old records and the returns from ore already mined and milled, an average of over 25 ounces per ton in Silver can be reasonably expected.

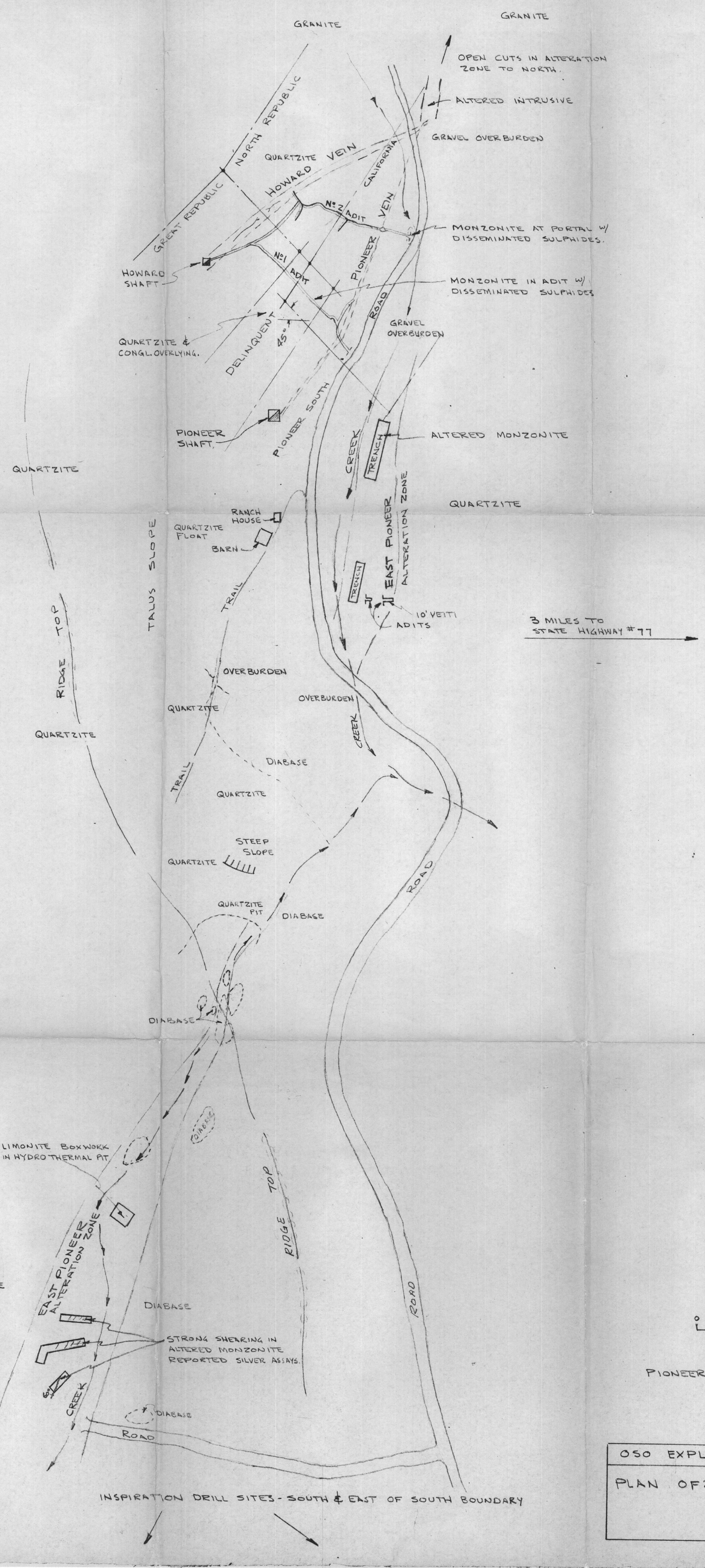
By the addition of one or two new flotation cells to this present flow sheet, a selection flotation of the Zinc and Lead can be made. In depth both Lead and Zinc ore are coming in stronger than in the upper levels. The separation of these two metals can be made and a substantial profit made on the Zinc and Lead in addition to the Silver values.

I recommend that development work be started with the present equipment; that the road connection with the Globe Highway be completed at an early date and as soon as the road is in, that provisions be made to step the mill up to 100 tons capacity, and install the central power plant.

Sufficient ore should be available within a year to a year and a half to warrant a 200 ton daily capacity.

Respectfully submitted,

s/ J. S. Compal



NORTH

SCALE 1" = 200'

0 100 200 300 400 500

PIONEER MINING DISTRICT SECT. 29S, R.15E

OSO EXPLORATION SERVICES LTD.

PLAN OF: PIONEER SILVER PROPERTY
GILA COUNTY, ARIZONA

GRANITE

GRANITE

OPEN CUTS IN ALTERATION ZONE TO NORTH.

ALTERED INTRUSIVE

GRAVEL OVERBURDEN

NORTH REPUBLIC

GREAT REPUBLIC

QUARTZITE VEIN

HOWARD

CALIFORNIA

No. 2 ADIT

PIONEER VEIN

MONZONITE AT PORTAL W/ DISSEMINATED SULPHIDES.

HOWARD SHAFT

No. 1 ADIT

MONZONITE IN ADIT W/ DISSEMINATED SULPHIDES

PIONEER ROAD

GRAVEL OVERBURDEN

QUARTZITE & CONGL. OVERLYING.

DELINQUENT

45°

PIONEER SHAFT,

PIONEER SOUTH

CREEK

TRENCH

ALTERED MONZONITE

QUARTZITE

QUARTZITE

RANCH HOUSE

QUARTZITE FLOAT

BARN

TALUS SLOPE

TRAIL

TRENCH

EAST PIONEER ALTERATION ZONE

10' VEIN ADITS

3 MILES TO STATE HIGHWAY #77

RIDGE TOP

OVERBURDEN

OVERBURDEN

QUARTZITE

CREEK

QUARTZITE

DIABASE

TRAIL

QUARTZITE

STEEP SLOPE

QUARTZITE

ROAD

QUARTZITE PIT

DIABASE

DIABASE

LIMONITE BOXWORK IN HYDROTHERMAL PIT

DIABASE

TOP

RIDGE

EAST PIONEER ALTERATION ZONE

ROAD

QUARTZITE

RIDGE TOP

DIABASE

STRONG SHEARING IN ALTERED MONZONITE REPORTED SILVER ASSAYS.

6°

CREEK

DIABASE

ROAD

INSPIRATION DRILL SITES - SOUTH & EAST OF SOUTH BOUNDARY

NORTH

SCALE 1" = 200'

0 100 200 300 400 500

T2S, R.15E

PIONEER MINING DISTRICT SECT. 29

OSO EXPLORATION SERVICES LTD.

PLAN OF: PIONEER SILVER PROPERTY
GILA COUNTY, ARIZONA