

## ECONOMIC CONDITIONS

The properties are located about seven miles from the town of Sumpter in Baker County, Oregon. A fair mountain road follows Cracker Creek from Sumpter to the properties.

Sumpter is on the Sumpter Valley (narrow gauge) Railroad, which connects with the Union Pacific Railroad at Baker, Oregon, 29 miles away. Baker has a population of about 7,000, carries large stocks of mining supplies and has well equipped foundry and machine shops.

The climate is equable, there being no extremes of heat or cold. The summers are dry with infrequent rains of short duration. Winter snows begin about the middle of November and lie on the ground from that date to April 1st, attaining a depth of 4 to 6 feet.

There is available ample water for all domestic mining and milling purposes. Considerable power can be developed as will be shown later. Upon the various properties there is sufficient timber for several years operation. Nearby areas in the Forest Reserve will afford an unlimited supply at a reasonable rate.

## WAGE SCHEDULE

Under the laws of Oregon, eight hours is a legal day's working time.

In the Eastern Oregon district the following wage schedule can be applied, using only men well trained for this particular district:

Miners	\$4.50
Luckers	4.00
Carman	4.00
Blacksmith	5.00
Machineist	5.50
Mill-men	4.00 - \$5.50

Following the general trend, there has been a reduction of wages at most of the western camps;

Economic conditions in the Cracker Creek district are such that on the scale given above, the unmarried man can do very well, and the man of family can, if he will, set aside a small reserve.

Barren areas of 100 to 200 feet in the downward extension of a formal vein are not uncommon, and the experience at several or indeed most of the important mines of the Mother Lode is to the effect that, so long as vein width has been maintained, deeper development there has met with new or recurring shoots.

That economic conditions determined cessation of operations on the North Pole-Columbia Lode is common knowledge.

That these conditions can rapidly be very favorably changed is shown in these pages but quite aside from the profit that may be won by working the ores above the present levels, it is, as has been stated above, entirely fair to expect not only continuity of depth but that with depth and the proper prospecting of both walls, recurrence of ore of bonanza value is to be expected.

Further, it may be said that the most productive portion of the Mother Lode, quoting Knopf, has been:

"In a ten mile stretch between Plymouth and Jackson. It has produced more than \$100,000,000.00 and is now yielding the bulk of the annual output. The depth reached is also greatest, two of the mines, the Kennedy and Argonaut, obtaining their ore from vertical depths of more than 4500 feet. - - - - The ores are of low or moderate grade; in recent years they have averaged \$7.00 a ton. The very low grade ores, between \$2.00 and \$3.00 a ton, that were formerly mined, no longer pay to work."

North Pole-Columbia Lode has had an output of \$8,000,000 in a length of about 2½ miles and at least 90 per cent of this has been gained in a length of not more than 10,000 feet and maximum depth under the outcrop of 1,200 feet, at Columbia Mine. (see Map, Exhibit 4)

To determine whether the gold of North Pole bonanza shoot is primary gold, a specimen was sent by the writer to Tomlinson Petrographic Laboratory, Swarthmore Pennsylvania.

This sample appears to have about 60 per cent gold in a quartz-pyrite matrix.

To the unaided eye the gold and pyrite appear to be intimately intermixed, though the specimen has a golden color.

Tomlinson's thin section analysis is as follows:

"In the sample of high grade, the native gold rests upon and may perhaps replace some of the pyrite. In a few cases it rests upon the arsenopyrite but apparently not as a replacement. Both Gold and Arsenopyrite rest upon Pyrite. This Gold is not of hydrothermal origin but I think it may be considered as primary gold that entered the rock after the pyrite. The pyrite is apparently older than the Arsenopyrite, Gold and some of the quartz."

To determine the relative amount of carbonaceous matter, a sample of argillite with quartz veinlets was submitted. Tomlinson's thin-section analysis follows:

"The sample of carbonaceous Slate is all broken up with quartz veins and is heavily charged with Pyrite. The Slate contains Sericite, Chlorite, Quartz, Pyrite, and Carbonaceous material. Other layers, especially those having much Chlorite, show very little organic material."

The effect of carbonaceous matter in precipitating gold in the high grade ore is an interesting question which at present must remain unanswered because of lack of data.

This carbonaceous matter is inherent with the slate, and an examination of ore on E. and E. dump from the 700 level shows apparently about the same content of the matter as the specimen submitted. That specimen came from the slope above No. 5 Level North Pole mine if I am properly informed.

No argument presents itself to dispute a better than reasonable expectation of ore at great depth of as good general tenor as has been mined above, nor is there any apparent reason why bonanza segregations may not be expected to recur as greater depths attained.

## GENERAL GEOLOGY

Waldemar Lindgren in his report on "The Gold Belt of the Blue Mountains of Oregon;" U. S. Geological Survey Twenty second Annual Report, 1901, covers the geology in considerable detail.. Extracts from his report are included in Exhibit A.

Arthur A. Swartley in his report on the "Ore Deposits of Northeastern Oregon," Oregon Bureau of Mines and Geology, December, 1914, covers the geology of the "Columbia North Pole Lode." This portion of his report is also copied in Exhibit A.

Oscar H. Hershey, consulting geologist of wide experience and reputation, made a study of this lode and a report for the Bourne Gold Mining Co. A copy of this geologic findings is also included in Exhibit A.

All these reports agree in the opinion that the sulphide ores are primary and that no reason exists for enrichment or impoverishment with depth; that all portions of the lode from northeast end of the North Pole holdings to the Colconda have a chance to be as productive as those portions already stoped; that the length and strength of this lode warrant the opinion that it will persist in depth. This subject is discussed further in the following chapter.

### ORE GENESIS AND EXPECTATION AT DEPTH

Exhibit A shows the geology and nature of the vein and habit of the ore in quite sufficient detail to justify no further reference by the writer.

In Lindgren's report comparison is made between this lode and the Mother Lode of California.

The distance which separates these two occurrences is so great as to make impossible the drawing of definite conclusions at one based on like conditions at both.

In a discussion under the above caption, it is nevertheless, pertinent to the subject to show the striking analogy that exists. Information as to the Mother Lode has been gained from the writer's work there and by reference to Professional Paper No. 157, U. A. Geol. Survey, by Adolph Knopf.

First: Both lodes are of Pre-Miocene Age.

Second: Several of the most productive shoots of the Mother Lode and all of those of the North Pole-Columbia Lode are in slate. Some of the productive area of the former and all of the latter have considerable arsenopyrite content, though percentage of that mineral is higher in proportion in the latter. Both have a considerable pyrite content.

Third: It is the consensus of geologic opinion that sulfide ores in both were formed by ascending hydrothermal solutions.

Fourth: At both occurrences ribbon vein structure is common; the ore shoots are sometimes narrow segregations in very wide veins and occur with irregularity as to position on or between the normal walls. They frequently cross from one wall to the other. In both, the massive and bold outcropping quartz veins, along which shoots may or may not be found, carry a weighable tenor of gold but are not pay ore.

Fifth: In neither is there any appreciable content of galena or

FORMER OPERATIONS

WHY WERE THEY STOPPED?

North Pole Mine

The North Pole mine ceased operations abruptly in 1908 because of lack of funds for deeper development and for cross-cutting from the various levels to develop the ore shoots where they had diverged from the line of drifting.

This is common knowledge and was caused by diversion of the reserve funds of the owning company to the prospecting of Guadalupe Mine at Inde, Durango, Mexico.

This stated in Mr. Melzer's report, Exhibit C, without reference to the location of the Guadalupe. The writer was operating at Sta. Barbara, some 80 miles from Inde during the period in question and was fully conversant with the facts of the case.

Pertinent to the subject in the following extract taken from the private files of Mr. Melzer, deceased in 1927, with permission of his attorney.

The letter was written July 7, 1908, and addressed to the principal owner of North Pole stock, who also was president of the company.

Mr. Melzer's letter may not properly be quoted in full. After a preamble, personal in effect, he wrote:

"True, I have used a little of the surplus, the amount is given below. Most of it, however, as you know, has gone into the insatiable maw of the Guadalupe. The amount spent on the various improvements are as follows:

For changes in concentrating plant (See March, April and May reports, 1908)	\$1,938.63
For power drills (See April and May reports)	473.40
For electrical equipment at mine (See Nov. 1907 and May 1908 reports)	<u>2,318.42</u>
-----	\$4,730.45

Let me remind you of the following:

----- there remains \$535,500.00 net which came from this mine into the treasury of the company in New York. Out of this sum of \$535,500.00 the stockholders received the following dividends - - - -

148 cents per share	Total	\$333,975.72
Difference between amount remitted and dividends paid		
\$201,524.28 with interest on \$200,000.00 for about three years at 3 per cent \$18,000.00 which makes about \$220,000.00 approximately representing the reserve fund of E. O. M. Co.		

While this is not new at all, it bears more or less on the case in hand, therefore I repeat it."

The carbon copy from which these extracts are made was initialed in ink by Mr. Melzer whose signature is known to the writer.

We will make no comments except to say that considering the high cost of operating with a saving of 75 per cent of values in a sixty ton mill, Mr. Melzer's was no mean achievement.

#### E. and E. Mine

The problem has, except for a short time, been one of ore treatment.

The saving made under E. and E. Gold Mining Company lease approximated 81 per cent in combined values, while subsequently the Blue Mountain Mines Company, to whom the E. and E. Gold Mining Company lease was assigned, made a saving of less than 65 percent. This was due to stupid change in metallurgical practice and incompetent management.

Since and before that date, title to the property has rested in a concern to whom it came in satisfaction of banking loans of years before.

The owners are not mining people, have never operated the property, and hence have not taken advantage of the changes in metallurgy which now will give a profit where none was possible in early day operations.

#### Taber Fraction Mine

This property can only be operated by or through one of the adjoining properties, and when they shut down, it does.

#### Columbia Mine

This property paid comfortable dividends for most of its operating life. Toward the end of the operating period the equipment was obsolete and should have been scrapped years before.

Net earnings were disbursed as dividends as fast as earned, and no surplus was set up. Finally as costs increased during war time stress, and plant renewals became imperative, no surplus being available for the purpose, operations ceased.

#### Golconda Mine

This is the one apparently worth while property along the major ore zone, that has been mishandled by promoters whose tactics were questionable.

The operating period was of no great length; the operators were not qualified miners; while shipments of ore of high grade were made, the ore milled was too low in grade to pay operating expenses and the problem of ore treatment was abortive.

Development was ill-directed, and it is a fair guess that had a sound miner been in charge of affairs a different story would have been written.

In the final analysis, then, the reasons for shut down at the Golconda were economic, though in a degree quite different from those that governed elsewhere along the belt.

TOTAL PRODUCTION OF EUREKA AND EXCELSIOR  
MINE AS SHOWN BY AVAILABLE DATA  
(See Exhibits D. E. and G)

Date and Name of Operator	Tons	Source of Information	Gross Val. Recovered
1891		U. S. Mint Report 1891	135,000.00
1894-98 Longmaid	80,282.00	Exhibit "D" Concentrating ore	469,278.89
	221.18	Exhibit "D" 1st class ore	25,324.60
	1,369.84	" "D" Cyanide ore	29,920.50
1903-05 Wyatt	818.70	" "E" Concentrates	67,976.77
	1,086.02	" "E" Shipping Ore	44,247.37
1920-1-2 Oregon Idaho Lease	Not given	" "G" Gross Value Products statement June 17, 1920.	14,528.41
	Ore milled 3,132	Exhibit "G" Gross Value Products statement Aug. 31, 1920	22,242.11
	5,926	Exhibit "G" Gross Value Products statement Jan. 14, 1921	82,173.17
	5,505	Exhibit "G" Gross Value Products statement April 22, 1921	51,197.20
	21,355	Exhibit "G" Gross Value Products statements ending March 15, 1922	<u>122,944.55</u>
			\$1,064,833.57

This record of production is probably not complete, but is reliable for the production shown. No data are available to show what net profits were made from these very considerable returns from operation.

PRODUCTION

District Gross, As Shown by Available Record

North Pole Mine	Exhibit C	\$2,485,006.96
Eureka and Excelsior	Page 30	1,064,833.57
Taber Fraction	Exhibit I	445,255.34
Columbia Mine	Exhibit H	3,638,959.60
Golconda Mine	1903-4 - Page 18	<u>147,949.54</u>
		\$7,782,005.01

MILLING

FORMER PRACTICE

E. & E. Mine

Waldemar Lindgren, in his report on the Blue Mountain Mining District of Oregon, dated 1900, stated that in 1889 a pan-amalgamation plant was installed on the property at a cost of \$200,000.00 and proved to be utterly unsuited for the treatment of the ores.

J. Henry Longmaid, in his operations of 1894, as shown in Exhibit B., treated 80,282 tons of ore, of which about one third came from the Eureka Mine. (See Exhibit D)

This ore was crushed with stamps and concentrated on Frue vanners.

Average heads value was	\$9,285
Average recovery	<u>5,845</u>
Average tails loss	\$3.440

Average percentage of saving 62.9 per cent.

Wyatt operations 1903-5, as shown in Exhibit E., treated 21,337 tons, which came from all parts of the mine above the shaft level. This ore was treated by the same process as Longmaid used, with no modification so far as the writer is informed.

Average Heads value was	\$7.15
Average Recovery	<u>3.27</u>
Average tails loss	\$3.88

Average percentage of saving 45.7 per cent.

A discussion of the Wyatt operations is warranted and will be found under Exhibit E.

The first rift in the perennial clouds of poor milling practice came under the earlier administration of the Oregon-Idaho lease, as shown in Exhibit G. Before beginning operations the mill was changed to a flotation plant at a total expense of \$50,188.15, as shown in the Exhibit at page 1.

In June, July and August, as shown at page 7 of the Exhibit, 3132 tons of ore was treated, having heads value of \$8.10 per ton with recovery of 75 per cent of the gold and 80 per cent of the silver. Of this ore 2133 tons came from stope fillings and 1000 tons was cobbings from shipping ore.

In September, October, November and December, 1920, as shown at page 9 of the exhibit 5926 tons of ore were treated from mine stopes, having value of \$13,867 per ton, with tailing value \$3.027 per ton, and actual recovery of 81.6 per cent of the gold and 90.5 per cent of the silver.

In the quarter ending March 31, 1921, as shown at page 10 of the exhibit, 5505 tons of ore were treated from the mine stopes, having heads value of \$13.06 with recovery of 80.8 per cent of gold and 81.8 per cent of silver.

On June 15, 1921, the lease and option of Oregon Idaho Company, after passing through the hands of two intermediate holders managed by John Arthur, was taken over by Blue Mountain Mines Company, and here a different story is told.



From June 16, 1921 to March 15, 1922, inclusive, as shown on page 11 of Exhibit G., 21,355 tons of ore was treated, coming, according to Mr. John Thomas, the owners' representative, from Eureka workings. I am not informed what, if any, changes were made in milling equipment which appears to have been precisely that which was used by the preceding management.

According to assays shown in report to owners

Average heads value was	\$10.85
Average Recovery	7.05
Average tails loss	\$ 3.80
Average percentage of saving 64.98 per cent.	

As noted in the exhibit, the actual recovery (based on correctness of assays of tails) was 60.24 per cent.

Using data that are available it is not practicable to arrive at the reason for the marked and vital discrepancy between the saving effected by Blue Mountain Mines Co., and their immediate predecessors, but it is a fair assumption that lack of proper knowledge of the science of ore treatment and amateur management were the important factors.

Referring again to recovery made under direction of John Arthur, a saving of nearly 81 per cent of gold value was attained.

In conversation with the writer, Mr. Arthur is authority for the statement that he would have made changes in the flow sheet that would have permitted a saving of 95 per cent of combined values (treating sulfide ores) but was stopped by the sale of lease to Blue Mountain Mines Company.

#### North Pole Mine

Enil Melzer, who was manager of the property for all of its operating life, in his report (Exhibit C) shows an average extraction of plate amalgamation, gravity concentration, roasting and cyanidation of crude ore.

In 1925 he forecast a total saving of 95 per cent of combined values.

#### Columbia Mine

This 60 ton plant treated ore by amalgamation gravity concentration and cyanidation of tailings. Saving was approximately 75 per cent so far as records show.

#### Taber Fraction Mine

No milling plant was put on this property and ore was treated in various mills in the district. Most of the ore milled was treated in Columbia Mine plant and savings at the property should apply at Taber Fraction.

#### Golconda Mine

No records of extraction are available. The ores of this district have been treated in plants having outgrown to obsolete equipment.

The saving has been from a minimum of about 45 per cent to maximum of about 80 per cent both at E. & E. Mine. To achieve the latter saving extensive alterations were made in the E. & E. Mill. Subsequently an operator with no knowledge pertaining to mining or milling, changed the arrangement of the equipment to suit his personal whims and the saving dropped to less than 65 percent. The increased saving was achieved under direction of the Eureka Mill operator who forecast a saving up to 95 percent thus agreeing

MILLING  
FUTURE PRACTICE

As shown on Exhibit B., Mr. Easton states that an extraction of 95 per cent may be expected in practice.

This assumes a combination ore treatment of flotation and cyanidation. Tests on several thousand tons of ore should be made before a new plant is constructed.

Meantime, E. & E. mill can very properly be increased to 150 tons capacity and used to treat all ores that will deliver by surface tram to that plant.

Sulfide ore is in sufficient quantity at and above that level to permit perfecting a treatment flow sheet for all ores below the collar of E. & E. shaft.

The cost of additions and rehabilitation to treat 150 tons of ore per day at E. & E. mill will be approximately \$45,000.00.

On the basis of 150 tons capacity, milling cost should not exceed \$1.60 per ton, including marketing of produce and, after 30 days operation, extraction should be from 90 to 95 per cent.

The subject of roasting and cyaniding flotation concentrates has not been studied so far as can be learned.

The roasting of crude ore is not justified, but the roasting of concentrates may be, and a study should be made to determine this.

When ores are opened at depth by the proposed working adit, a plant having capacity of 500 tons will be required.

The cost of such a plant cannot be determined until sufficient ore has been treated in a pilot plant to permit erecting a proper flow sheet.

For any new plant a considerable part of E. & E. present mill equipment can be used. The total cost of a new plant cannot be given but the tentative estimate of \$300,000.00 as shown under Proposed Development will apply for the present.

## CONCLUSION

In the following pages will be found a complete compilation of all available data covering the operations of the principal mines of Cracker Creek district, Baker County, Oregon.

These properties are North, Pole, Eureka, and Excelsior, Tabor Fraction, Columbia and Golconda, named in the order of their position from northeasterly to southwesterly.

They occupy about 11,000 feet along the great vein called North Pole Columbia Lode. This lode can be traced northeasterly from McCully Fork of Powder River to Rock Creek, on North Powder Water shed, a distance of six miles.

Relatively in the middle of the lode, these properties have exploited a shoot of ore which has been practically continuous for not less than 8000 feet.

The greatest depth reached in development is at Columbia shaft, which was sunk to a depth of 900 feet below the surface or 1500 feet below the highest outcrop, on Tabor Fraction- Eureka Summit.

The gross production of the mines has been not less than \$8,000,000.00, of which amount \$7,782,005.01 is shown in available records as copied in Exhibits in this report.

Savings in former milling operations have been about 75 per cent at the North Pole and Columbia, with very high costs attendant on equipment that was obsolete during the final years of operation. Savings of 45 to 80 per cent were made at Eureka and Excelsior mines, called E. & E. in this report, with an average saving of less than 60 per cent.

Only the E. and E. upper levels are open for inspection and they require rehabilitation before an examination can be made. The plant of that property stands in a well-constructed building now in good order with a watchman in constant attendance.

That plant can be increased to a capacity of 150 tons per day with no great expenditure of money. Available there, above the shaft workings, now, and for twenty years past, under water, there is shown to be available 75,071 tons of ore having value in gold of \$10.91 per ton and gross value of \$817, 918.00.

The workings of all of the other properties are caved and inaccessible. The North Pole property lying northwesterly from, and adjoining the E. and E., was prevented from deep development by the strategic position of its neighbor, i. e., without sinking or the construction of a 3000 foot tunnel.

The records of the North Pole company show that such a tunnel was planned, but as shown at page 26 of the present report, about \$2000,000.00 of the final reserve fund, was diverted to the development of a property in Mexico.

Operations ceased at North Pole without warning in 1908, at which time, due to lack of development funds consequent upon this diversion, development was not far enough ahead of extraction to permit of maintaining a grade of ore that would pay a profit when treated in the inadequate mill.

In the ground lying next to E. and E. there is an appreciable ore area, at least partly developed, in North Pole Claim. (See Exhibit 4.) This block of ground lies 210 feet above the elevation of T. and E. all

COSTS

FORMER MINING AND MILLING

There is entire lack of official detailed information as to costs of mining and milling at these properties.

The only record for the entire operating period is that of North Pole, shown in Exhibit C.

Melzer's report, as follows:

Net output	\$2,022,705.29
Distributed as profit	<u>872,705.64</u>
Apparent cost of mining and milling	
158,917.4 tons - or at the rate of	
\$7.23 per ton	\$1,149,999.65

It is the opinion of the writer that costs at Columbia Mine were about \$8.00 per ton for the entire period of operation.

Expenditures at E. and E. resulted in extended development and no record of costs for mining and milling can be found.

COSTS

FUTURE MINING AND MILLING

In reopening the E. and E. adits to break known ore above those levels and to extend workings northerly into North Pole ground, all haulage should be with storage battery locomotives. With this type haulage, on basis of 150 tons per day, the following estimate of mining and milling costs should apply.

Labor and supervision-mining	\$2.24
Development, all costs	.70
Supplies, power and property taxes	.46
Milling	<u>1.60</u>
	\$5.00

The estimate anticipates the developing of power by use of water, the elimination of timbering by a type of stoping different from that practiced in times past and by careful and trained supervision.

For ores broken in the proposed drainage-working adit and treated in a 500 ton minimum capacity plant, the cost should not exceed \$4.25 per ton. For the same capacity plant, ores below the drainage adit can be mined and milled for \$4.50 per ton. Development is included in both cases. Capital expenditure for adit construction and pumping plant for lower levels is not included.

Referring to pumping plant it should be said here that the low season water handled at Columbia Mine was 350 gallons in 1912. This included water from E. and E. workings.

High stage flow is not known but would probably be twice that amount. It is common knowledge that water from Cracker Cr. flowed, and does now flow, into E. and E. shaft.

By diversion of water for power purpose and control of spring break-up over-flow it is entirely probable that the maximum flow for the belt will be 1,000 gallons per minute to be lifted by drainage adit.

## ORE RESERVE

It is regrettable that, except for the E. and E. reserves as discussed below, there are no data whatever to show even conjecturally what the reserves of these properties may be.

### E. and E. Reserves

Reference should be made to the findings of Oscar Harshey as shown in Exhibit A. Considering only the ore above shaft levels.

Mr. Hershey, as shown at page 21, in Exhibit A, gave his estimate of ore available as 75,071, tons having value of \$817,918.00.

As shown in the Hershey report his findings were of necessity based on Mr. Thomas's knowledge of the ore and values but were logically supported by deductions made after analysis of available data.

No dependable record of ore below the shaft collar is available. See under caption of Proposed Development.

### Reserves Elsewhere

There are no records or data available to the writer to show developed probable or possible ore in North Pole, Columbia, Taber Fraction or Colconda workings. Nor are there assay maps to show values found on the lower levels of those properties.

Melzer's report, Exhibit C, shows the following records of assays, taken on the lowest level, for a length of 70 feet, beginning 617 feet from the cross-cut.

617 feet in,	Width 3 feet	Gold	\$7.00 per ton	Silver	Ozs.
627 " "	" 3 "	"	4.40 " "	"	1.94
637 " "	" 3 "	"	8.40 " "	"	3.39
647 " "	" 4 "	"	1.80 " "	"	0.94
657 " "	" 4 "	"	9.20 " "	"	3.28
667 " "	" 3 "	"	18.20 " "	"	6.52
677 " "	" 6 "	"	10.20 " "	"	2.56
713 " "	" 3 "	"	7.20 " "	"	2.94
Average foot-ton content was				\$8.30	Gold
Ounces of silver				3.04	
Value with silver at 40 cents per ounce				9.51	

At the face of No. 1 Tunnel of Excelsior claim, which was driven into North Pole ground 210 feet below deepest North Pole workings, Mr. Melzer found the following:

10 - width 4 ft.	\$10.60 per ton
20 - " 1 ft. on hang-wall	22.75 gold per ton
30 - " 3 ft.	12.10 " " "

At page 5 of Exhibit C, Mr. Melzer is shown to have placed his expectation of values (below his lowest working to a depth of 1, 000 feet below Cracker Creek) to be \$9.00 per ton.

At page 7 of Exhibit A, Arthur Swartley, mining engineer for Oregon Bureau of Mines and Geology, is shown to have said:

"It is officially stated that there is 100,000 tons of \$10.00 ore blocked out on three or more sides at the Columbia Mine, and that the conditions with reference to ore on the 900 foot level are identical with those on 600, 700 and 800 foot levels."

Reference should be made to Exhibit 4, drawn by Jno. C. Semple, mining engineer in 1925. Analysis of all available data indicates that the average width of ore broken averaged 3.66 feet.

Assuming 50 per cent of the vein to contain ore there would be one ton of ore to 7.1 square feet of vein area. On this basis the possible ore has been calculated by Mr. Semple and shown on Exhibit 4.

Assuming a width of 3.66 feet, and ore content to make up one half of the vein area, there exists possible ore to a depth of 1,000 feet below Cracker Creek level, a total of 2,189,500 tons.

Of this tonnage 1,657,600 tons is available above Mr. Semple's proposed adit and 531,900 tons below that level of 1,000 feet depth below the collar of E. and E. shaft, at Cracker Creek elevation.

To set up definite calculations based on possible occurrence of ore is not the intention of this report but attention may be drawn to the fact that stoping areas were practically continuous in all operations along the lode except at Golconda, about which no information can be had.

As stated elsewhere in this report and shown in Exhibit A it is the consensus of opinion of geologists of repute that ore should be expected to great depths.

To define the lowest depth at which ore may be expected would be folly, because so far as we are informed there is good ore, though undeveloped, on the 900 level of Columbia shaft, and 700 level of E. and E. shaft.

As shown herein under caption of Expectations at Depth, the writer is unable to discern any sound reason why ore may not be expected at great depth nor why segregations of rich ore may not be found where conditions are similar to those that obtained in levels above.

With the factors given in this chapter the writer submits that any qualified reader can erect his own figures as well as can the writer.

If Melzer's estimate of \$9.00 be correct and the total tonnage to be expected is 2,000,000 tons, then the total gross value will be \$18,000,000.00 to a depth of 1,000 ft. below Cracker Creek.

It may be said (with a certainty which does not apply to any estimate of possible ore) that any sulfide ores found can be treated to give a minimum of 90 per cent of contained values at a maximum cost of \$5.00 per ton, capital expenditure and interest thereon not included. There would then result a net profit of \$6,200,000. neglecting capital expenditures and interest. This calculation can be carried forward indefinitely for there is no sensible reason why a depth of 1,000 feet or 2,000 below Cracker Creek should define the lower limits of ore bodies.

Finally, it is fair to say again that no human agency can determine the values now existing in this belt nor to forecast them until the ground is again opened for inspection and proper prospecting first, and examination later, but the calculations themselves may be considered correct as far as they go, and the reader can draw his own conclusions.

SURFACE IMPROVEMENTS

CONDITIONS AND PRESENT VALUE

With exception of E. and E. buildings and equipment, Golconda mill, and water power building and North Pole two buildings at old mill site, all surface equipment on the properties treated in this report has been destroyed by fire or obliterated by the passage of time. The Golconda mill building is in bad order. North Pole two buildings require repairs.

The E. and E. mill is substantially constructed, and with a new roof and other minor repairs will have ample space for equipment changes that will bring it up to 150 tons per day capacity.

The tunnel and shaft house are in good condition. The water power plant has been well cared for and is available for change to a different location. The pipe line and flume require repairs.

The replacement value of E. and E. mill, plant and general equipment would be more than \$250,000.00.

For use in any future work the value can properly be set at 40 per cent of that figure or \$100,000.00.

Exhibit K (inventory of John Thomas, agent for the owners) taken at end of final operations, shows the machinery and equipment of that date. Since then a watchman has been kept constantly on the ground and the writer is advised that there have been no sales made that affect the inventory.

## WATER POWER

Excepting only Taber Fraction, all of the properties discussed in this report owned and used water power.

The total actually generated and used throughout the year was as follows:

		H.P.
North Pole	3 Wheels, Actual	205
E. and E.	Low season, actual	178
Columbia	About	100
Golconda	About	<u>125</u>
	Total	608

If the available water is all run to one line and used with the minimum of friction, not less than 750 H. P. can be made available for low water season use.

For six months in the year 1200 H. P. can be generated and for four months probably 2000 H. P. would be available.

The cost of bringing the waters from the various creeks to a common point near the junction of Cracker and Silver Creeks cannot be stated with precision but an approximation is given below:

Cracker and Little Cracker waters diverted at the elevation of former North Pole high line	\$15,000.00
Silver and Fruit Creeks at same elevation	<u>15,000.00</u>
	\$30,000.00

To utilize that water, a motor generator direct connected to impulse or Pelton type wheels, having minimum capacity of 750 H.P., with buildings and equipment would cost, installed, within	<u>37,500.00</u>
	\$67,500.00

This would be at the rate of \$90.00 per H.P. for construction for minimum 750 H.P. The building should be so designed as to house compressors and machine shops. The crew to operate compressors and generator would be as follows:

	Per Month
Electrician, part time	\$125.00
3 Compressor-generator men	450.00
General ability man on pipe line, etc.	<u>135.00</u>
Total	\$710.00

Per year labor total	\$ 8,520.00
Assuming interest on investment, upkeep and replacement of 12 per cent per year on capital expenditure of \$67,500.00 charge would be	<u>8100.00</u>
	\$16620.00

On minimum of 750 H.P. the yearly cost per H. P. would be not more than \$25.00.

On a power use of 350 H.P. in the writer's present practice, the cost per H.P. year purchased from an Oregon Public Utility is approximately \$72.00 on long term contract.



Emil Melzer's notes, dated May 1905, show a yearly cost of \$21.44 per H. P. year for the three plants generating 205 H. P.

The country is favorable for cheap installations. Only simple diversion dams are required in the steep gulches. The major expense will be in fluming around rocky points and protecting flumes and ditches from the winter snows.

A minimum head of 650 feet can be gained without sacrifice of any appreciable volume of water.

In the event of a consolidation the initial work of adit construction can be done by using L. and E. power plant under a higher head.

The compressors at L. and E. plant are belt connected to Pelton wheels. If a generator were installed there to utilize about 450 H. P. and the compressors were belt driven from motors the L. and E. Mill could be operated and compressed air furnished by this power.

As shown under caption of Drainage Tunnel the use of Columbia and L. and E. shafts as entry-ways for utilization of water for power is considered entirely feasible.

This subject should be studied in detail before a decision is reached.

## DRAINAGE TUNNEL

A survey made by John C. Semple, mining engineer, of Spokane, Washington, in 1925, using the junction of Cracker and Silver Creeks as datum, showed that Columbia mine shaft collar and E. and A. shaft collar have elevations of 690 and 588 feet respectively above datum.

This survey was rerun by the writer during the current month, from the collar of E. and A. shaft to the junction, and a precise check was found.

Mr. Semple recommended the choice of the old North Pole mill site as the proper position for the portal of a drainage tunnel.

The position of this tunnel and portal is shown in plan on Exhibit 3 and in longitudinal projection, for a part of its length on Exhibit 4. On both of these maps the Semple tunnel is shown as Proposal No. 1.

Proposal No. 1 plans a tunnel having total length of 4,000 feet to cut the vein about 550 feet southwesterly from Columbia shaft at elevation of 120 feet above datum.

After a careful study of all of the conditions that govern, the writer is submitting proposal No. 2 as shown below with reasons.

Tunnel would be run in a direct line to cut Columbia shaft at 600 feet level floor.

Length of tunnel would be 5600 feet instead of 4000 feet.

Forty feet more ground would be drained for the entire length of the consolidated properties.

As soon as the old workings of Columbia were cut immediate entry would be afforded northeasterly for 1300 feet along 600 North level of Columbia into E. and A. virgin ground.

The difference of \$64,000.00 in cost of construction under No. 2 proposal would be entirely justified by the saving of 1850 feet of drifting to enter E. and A. ground and by the greatly increased ore reserves made available by the additional backs gained.

Either tunnel would intersect a number of veins as yet undeveloped. Precise surveys will show the position of the shaft and the final thirty days of construction should drain the old workings without danger to life or the workings.

This can be done with long-hole drill holes kept well in advance of the heading. A properly designed steel door should be set to control the flow when it is released.

The tunnel section should be 8 feet wide and  $10\frac{1}{2}$  feet high. The lower  $2\frac{1}{2}$  feet to be floored over and used as a ditch.

Either tunnel will cross the formation at an obtuse angle but it is probable that no timbering will be required except where veins or water courses are cut.

The cost of 5600 feet of opening will be \$168,000.00 or at the rate of \$30.00 per foot for the cross-section noted. This is exclusive of cost of power and equipment.

Haulage should be with trolley type locomotive.

When Columbia shaft is reached that shaft can probably be put in order. If cost of retimbering (which it is believed will be required for not more than 200 feet below the collar) is not too great, it can be rehabilitated and used as a way for entry of

When E. and F. shaft is reached by the northeasterly development, the waters of Cracker Creek can be utilized through that shaft in the same manner.

While cost of these installations cannot be given until the condition of the Columbia shaft is learned, it can be safely said that they will be materially less than the cost of an all surface construction with a like less cost for maintenance during the winter seasons.

When E. and F. southwesterly line is reached, raises should be started and a drift continued toward North Pole areas as rapidly as possible.

The development of Golconda ground at this elevation and of Columbia ground by winze sinking should await a later date.

The rate of progress in the drainage tunnel can and should be 600 feet per month. This would complete the opening in 10 months after actual construction begins. One month of this time will be required for organizing a crew and for final drainage of the old workings.

The drift in E. and F. ground should advance at the rate of 400 feet per month, timbering included, and the northerly end line of North Pole claim be reached in 12 months after drifting begins.

In two years from the date of appropriation of funds for the purpose, the objective mentioned should be reached.

The cost of drifting on this principal drift level could be \$20.00 per foot, including timbering and total cost \$90,000.00 to the point designated.

All of this, with initial equipment, should be covered in capital expenditure as is set forth under caption of Proposed Development.

PROPOSED DEVELOPMENT

TOTAL COSTS

On basis of 150 ton capacity of E. and E. mill to treat E. and E. and North Pole ores above E. and E. shaft level. Note that Hershey report (Exhibit A) shows in that area available ore in E. and E. as 75,071 tons having gross value of \$817,918.00.

Mining Equipment and improvement of water power	\$30,000.00
Open North Pole Tunnels Nos. 1, 3 and 5	15,000.00
2,500 feet of cross cut and raises North Pole	22,500.00
Extend Excelsior Tunnel No. 1 - 2,000 feet	24,000.00
Repair all E. and E. tunnels	10,000.00
Raise from Excelsior No. 1 to North Pole No. 1 - 210 feet	1,600.00
Increasing and remodeling mill, rebuilding surface tram, etc.	<u>55,000.00</u>
	<u>\$158,100.00</u>

Considering only E. and E. ore above shaft level, value per Hershey findings, costs from present report. Value of ore per ton - \$10.90.

90 per cent extraction      \$ 9.81

Estimated cost of mining  
and milling (see costs  
mining and milling, less  
development provided above) 4.30  
Profit per ton                      \$ 5.51

Total net profit on 75,071 tons - \$413,821.21.

This is without deduction for income tax and interest on capital expenditure.

It is in no sense debatable that ore in considerable quantity will be found in extension into North Pole ground. What that quantity may be is as yet unknown, hence is not discussed under this caption.

The net profit shown above can serve as a fund for constructing the proposed drainage tunnel and doing development therefrom.

The development noted below will reach the northerly end line of North Pole Claim with a drift, and connect that drift with the levels above, in order to block out ore and make it available for extraction within the cost limits noted in this report.

To Drive Drainage Tunnel

Water power not included above	\$ 57,500.00
Mining equipment including power shovel and locomotive	35,000.00
5600 feet of Drainage Tunnel	168,000.00
4500 feet of Northeasterly Drift	90,000.00
6000 feet of Raises	<u>54,000.00</u>
	\$404,500.00

With this work done, the proper size of milling plant to be placed near the drainage tunnel portal can be decided upon.

Assuming a minimum capacity of 500 tons per 24 hours, the cost will be approximately as shown below:

500 - Ton Mill, using part of E. and E. mill equipment, approximately	\$300,000.00
New Camp and Equipment	75,000.00
Working Fund	<u>75,000.00</u>
Total	\$450,000.00

several thousand feet of drifting, which is North Pole's deepest development.

The ore in this ground is available to E. and E. mill at a nominal expense for extension of Excelsior Adit No. 3.

After careful study of all data available and the conditions of topography and mine water flow, the decision has been reached by the writer that a working-unwatering adit or tunnel, having length of 5600 feet, is fully justified. This adit will unwater the entire area for a depth of about 500 feet below collar of E. and E. shaft and 600 feet below collar of Columbia shaft.

A very considerable vein area will be made available in ground now under water with a very appreciable reduction of costs of mining and milling these ores.

The reasons for cessation of operations at property were solely economic. These were finally the combination of raising water for the entire area through one shaft, the Columbia, the deterioration and obsolescence of milling equipment, and the low extraction attained.

In 1920-21, E. and E. mill was improved and for a short time achieved an extraction of 80 per cent of gold values. The lease under which these operations were conducted was sold to incompetent operators whose saving was less than 65 per cent, and the property closed.

The owners of the E. and E. are not now, nor ever have been, mining operators. The property came into their hands in liquidation of banking loans, and their sole activity has been as lessors.

A test on the ores of the E. and E. was made at Bunker Hill and Sullivan Mine, Kellogg, Idaho in 1922. This work was done by Roy Bandy, superintendent of the mills of that mine, a fully qualified metallurgist. These findings showed that an extraction of 95 per cent was attained by flotation, with cyaniation of the tailings, and there need be no question that 90 to 95 per cent extraction can be attained in practice. This extraction will cure the black beast of former operations, particularly those of the E. and E. where extraction has been consistently the lowest of the belt except for a short and happy interval where a qualified millman directed operations.

There is no question that there are large ore bodies along the lode as yet unworked and unknown both above and below the collar level of E. and E. shaft. What these bodies aggregate is unknown to the writer or to anyone else, but past history, the remarkable length of the ore shoot and geologic conditions permit the assertion that they are extensive, and that the expenditure of funds to permit exploration for new and exploitation of known ore, is entirely justified.

The combination of all of the mines named herein is recommended, together with the construction of the proposed adit.

This work should only be undertaken by competent mining men with adequate means. With these two factors cared for, no risk need be taken that is out of keeping with sound mining or business practice.

The information from which the above conclusions have been derived is clearly set forth in the following pages and accompanying exhibits.

Respectfully submitted,

(signed) William W. Elmer

Consulting Mining Engineer

## DERIVATION OF DATA

Data upon which this report is written have been gained as shown below:

**First:** From October, 1903, to March, 1907, the writer practiced in the Sumpter district as consulting engineer, with headquarters at Sumpter, Oregon. During this time, engineering work was done for Columbia, North Pole and Taber Fraction owning companies and a considerable part of the operating conditions and problems of these companies thus became a matter of personal knowledge.

**Second:** In 1925 a report was made by the writer covering the entire operating history of the E. and E. property, without sampling of underground workings. That report or compilation of data was written for the owners of the present date.

At the time the report was written the shaft was under water and about one-half of the surface workings were caved.

To have completely sampled the property at that time would have required a very considerable expenditure for retimbering and unwatering.

As quite complete records of former operations were in the files of the company, and as an examination probably would be made by the representative of a purchasing concern, the expense of rehabilitating for examination was not recommended. As part sampling would be of little value, no sampling was done.

All surface entryways of the North Pole, Columbia and Taber Fraction were caved and therefore inaccessible.

This compilation was completed and information gained thereby, wherever pertinent, has been included in the present report.

**Third:** So far as can be learned, all of the available records of the operating period of Columbia Mine and of North Pole mine have been examined in the present study.

Operating results at Taber Fraction are covered herein in part. These data have been taken from sources shown in the various Exhibits or in the text. Only the first operating period is not covered.

No records of Golconda Mine operations are available to the writer, and published data are used where reference is made to the history of operations there.

**Fourth:** Reports of other engineers who made examinations in the district have been studied with attention and the geologic findings of Lindgren, Hershey and Pardee have been freely cited herein.

**Fifth:** Maps submitted in this report are taken from the records of the various companies except Exhibits 1, 2 and 3. The first two show their origin as submitted.

Exhibit 3 is taken from the records of the U. S. Surveyor General, Portland, Ore., as drawn by John C. Semple, mining engineer, and checked by the writer, with additions for the purpose of the present report. This map is correct as to all patented claims.

**Sixth:** Maps of underground workings have been taken from the files of the various companies.

**Seventh:** Thin section slides & analyses were made by W. Harold Tomlinson Petrographic Laboratory, Swarthmore, Penna., from specimens furnished by the writer for this report.

**Eighth:** The survey for proposed unwatering and working adit was made under personal

LOCATION AND AREA OF PROPERTIES

The properties are located in what is known as the Cracker Creek Mining District in Townships 8 and 9 S., R. 37 E., W. M., Baker County, Oregon, as shown on Exhibits 1, 2, and 3.

COLUMBIA MINE - - all mining claims patented.

Columbia	M. S. 176	20.66 acres
Appomattox	M. S. 204	19.23 "
Cyclone Consolidated Old Middleman)	M. S. 366	25.45 "
Tin Horn )	M. S. 367 A	32.65 "
Tin Horn Mill site )	M. S. 367 B	5.79 "
		<u>103.78</u> "

Also four areas shown on the tax rolls as "Lyons Selections Nos. 362, 3521, 614 and 817". This presumably refers to certain lieu land selections in T. 8 S., Rs. 36 and 37 E., W.M., taken up as timber land. But the land office at The Dalles has no record of any such holdings.

TABER FRACTION MINE

Consolidated Fractional	M. S. 238	<u>2.30</u> acres
		2.30 "

E. & E. MINE

Eureka	M. S. 15 A	20.66 acres
Eureka Mill Site	M. S. 15 B	4.99 "
Excelsior	M. S. 16	20.66 "
Small Hope Placer	M. S. 189	20.00 "
Webfoot Placer	M. S. 190	16.70 "
Willamette Placer	M. S. 191	6.55 "
Excelsior No. 2	M. S. 244	17.38 "
Southern Consolidated Placer	M. S. 245	44.38 "
Afterthought	M. S. 298 A	20.05 "
Tamarack Placer	M. S. 303	160.00 "
Shyster Consolidated	M. S. 315 A	25.49 "
Shyster Mill Site	M. S. 315 B	<u>00.83</u> "
		357.69 "

The company also owns NE<sub>1</sub>, NE<sub>2</sub>, the NE<sub>1</sub>, NW<sub>1</sub>, NE<sub>1</sub> and the SE<sub>1</sub>, NW<sub>1</sub>, NE<sub>1</sub> of Section 29, T. 9 S., R. 37 E., W.M., a total of 60 acres, as described in Tax Receipts of 1924.

NORTH POLE MINE

North Pole	M. S. 181	20.35 acres
Williams	M. S. 182 A	3.60 "
Williams Mill Site	M. S. 182 B	4.97 "
North Star	M. S. 241	20.36 "
Raging Roland	M. S. 242	11.59 "
Central Placer	M. S. 256	39.95 "
Louise Consolidated Placer	M. S. 257	36.25 "
Baring Consolidated Placer	M. S. 259	205.00 "
Villard	M. S. 267	20.66 "
More or Less	M. S. 298	18.98 "
Blue Mountain	M. S. 265	7.56 "



Hydraulic Placer	M. S. 410	59.95 acres
South Pole and Evans	M. S. 422	37.52 "
Majestic	M. S. 423	19.58 "
Gold Dollar	M. S. 424	0.89 "
Bear Consolidated	M. S. 470	57.03 "
Bismark Consolidated	M. S. 471	32.15 "
Yankey Jack and South	M. S. 490	5.28 "
358.6 ft. of Yankey Jim		
Anniversary Consolidated	M. S. 494	52.72 "
North Star No. 2	M. S. 502	<u>19.91</u> "
		674.30 "

GLISAN AND DAVENPORT

Homestake and Golden Gate	M. S. 514	26.01 acres
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N. H., D. & S.

Eureka Consolidated )			
Placer less Bourne )	M. S. 194	App.	38.73 acres
Townsite )			
Hanover No. 1	Unpatented	"	15.53 "
Hanover No. 2	"	"	4.17 "
Hanover No. 3	"	"	14.89 "
Hanover No. 4	"	"	7.90 "
Hanover No. 5	"	"	20.50 "
Hanover No. 6	"	"	4.48 "
Hanover No. 7	"	"	20.00 "
Hanover No. 8	"	"	11.50 "
Hanover No. 9	"	"	<u>15.00</u> "
			152.70 "

GOLCONDA MINE

Golconda	M. S. 378	16.94 acres
Wide West	M. S. 378	20.00 "
Century	M. S. 378	17.30 "
Charleston	M. S. 378	14.32 "
Telephone	M. S. 378	<u>18.10</u> "
		86.66 "

Total area in mining claims 1,403.44 acres

Map exhibit 3 shows these claims with the groups of the different ownerships outlined in color.

## HISTORY

There is no record available of the early operations on this lode, other than that given by Waldemar Lindgren in the Twenty-second Annual Report of the U. S. Geological Survey, in which he states that sometime after the discovery of the E. and E. Mine in 1873, a 20 Ton pan-amalgamation mill was installed and proved unsatisfactory, the saving being only about 10%. Later the tailings were treated by cyanide and it was reported that \$21.00 per ton was recovered with a 93% extraction.

There is no record of production from the Columbia prior to 1896, and the E. and E. prior to 1894, and the North Pole prior to 1896.

### NORTH POLE MINE

The history of this mine is given in Exhibit C. No. operations since date of report.

### E. AND E. MINE

1894 - 1898, Leased by J. H. Longmaid, See Exhibit D.

1903 - 1906, Owned and operated by Bourne Gold Mining Co. See Exhibits E. and F.

Immediately following 1906 there were some small leasing operations having no large production. No record available.

September 1, 1919 to June 15, 1921, operated by E. and E. Gold Mining Co., under Oregon-Idaho Investment Co., lease from Bourne Gold Mining Co. See Exhibit G.

June 15, 1921 to March 15, 1922, operated by Blue Mountain Mines Co., under Oregon-Idaho Investment Co. lease. See Exhibit G.

No mining operations since March 15, 1922.

### TABER FRACTION MINE

All available record is shown in Exhibit I.

### COLUMBIA MINE

Operated 1897 - 1914 by the Columbia Gold Mining Company. See Exhibit H.

### GOLCONDA MINE

So far as the writer can determine, all of the company records of the operating life of Golconda have been lost or destroyed. At any rate, none is available to the writer.

Waldemar Lindgren, in the report already referred to, page 665, under sub-caption of Golconda Mine says:

"This part of the North Pole vein was located as the Golconda claim in 1887 and sold for a reported sum of \$24,000 in 1897, there being at that time only 250' of development. The Golconda Mining Company at present owns, besides this claim, 8 others adjacent, which are said to cover 2 parallel veins. The Golconda and the Wide West are located on the North Pole vein. In 1898 a large bromination plant, of a capacity of 100 tons per day, was erected but soon found unsuited to the character of the ores. A 20 stamp mill and a Bryan roller mill, together with 18 concentrators, were substituted, giving a total capacity of over 100 tons per day. Crushing was begun in January, 1900, and the mine was consequently not as yet any great production to its credit. In the fall of 1899 a rich ore shipment was struck, 20 tons of which yielded \$10,000 in the mill

## TITLES

Titles to the various properties have not been examined for this report. According to the owners or agents for the various groups, ownerships lie as follows:

Name of Group or Claim	Ownership
Columbia	Columbia Gold Mining Company Baker, Oregon
Taber Fraction Claim	Columbia Gold Mining Company Baker, Oregon
Eureka and Excelsior Group	Laurelhurst Construction Company (one of the subsidiary corporations of the Ladd Estate Company) Portland, Oregon
North Pole Group	Columbia Gold Mining Company Baker, Oregon
Glisen and Davenport Group	Columbia Gold Mining Company Baker, Oregon
Nichols Hallock and Donald	Nichols, Hallock and Donald Baker, Oregon
Golconda Group	C. S. Jackson Estate Portland, Oregon

Still richer ore was shipped to smelting works. In September, 1900, 15 stamps were running. At present there are 2,500 feet of developments, including a 400' double compartment perpendicular shaft and 4 levels, the opening of the fourth having just begun; also a 650' tunnel running southwest on the ledge.

The country rock is the usual black siliceous argillite, sometimes showing schistosity, but oftener massive. Occasionally this contains light gray, very much altered dikes of an igneous rock which originally may have been a diorite-porphry. The croppings of the main vein can be followed from the Columbia for at least part of the distance. A statement is made by some that there is a fault between the two mines; whether this is true is not certain; at any rate the vein holds its general direction well enough. The croppings are not very conspicuous except on the hill southwest from Golconda shaft, where they are marked by a very heavy mass of quartz similar to that above the North Pole. The outcrops carry low values throughout, rarely over \$1 per ton.

The developments in the shaft have shown the existence of a very wide mass of crushed argillite. The general trend of this is northeast, the dips in the upper levels are northwesterly at steep angles, while on the fourth level this is reversed to a southeasterly dip, similar to that of the Columbia and the North Pole. In places this crushed zone is 200' wide and traversed by several seams, running across the vein in a northwest-southeast direction, on some of which quartz veins carrying gold appear. The principal pay shoots are found as streaks 2 to 4 feet wide in this shattered argillite and pursue a rather irregular course. The ore carries but little quartz and is largely a replacement of argillite and some porphyry by finely divided pyrite, marcasite and arsenopyrite and a very little chalcopyrite and zinc blende. The average value is believed to be from \$8 to \$15 per ton. The ore is in part free milling containing from 40 to 50% of gold which can be caught on the plates. The sulphurets are stated to be of comparatively low value, the percentage contained in the ore being from 7 to 14.

On the second level the crushing and the irregularity seem to have reached a maximum. On the fourth level the lode contracts to less than 100' and the ultimate walls are fairly well defined. The whole mass between them consists of crushed argillite with replacing sulphides and traversed by small quartz veinlets. The pay streak is from 2 to 3 feet wide. It is to be expected that there will be more regularity found in depth and it may also be expected that there will be somewhat less free gold."

In the report of R. J. King, mining engineer, written December 21, 1912, for Tonapah-Belmont Company, the statement is made that the output from Golconda mine in 1903-1904 was 23,672 tons, total value \$147,949.54.

There have been no operations at the mine since 1904.

COPY OF REPORT ON  
NORTH POLE-COLUMBIA LOSE  
BAKER COUNTY, OREGON

By William W. Elmer

June 30, 1930

*Reports*

North Pole-Columbia Lode

Gold

NAME			OLD NAMES	PRINCIPAL ORE	MINOR MINERALS
------	--	--	-----------	---------------	----------------

T9S	R37E	Sec. 4-5
T	R	S

PUBLISHED REFERENCES  
 Parks & Swartley 16:59  
 Ore. Metal Mines Handbook 14A pg38

..... Baker ..... COUNTY  
 ..... Cracker Creek ..... AREA  
 ..... about 5500 ..... ELEVATION  
 ..... ROAD OR HIGHWAY  
 7 mi. Sumpter, 36 mi. Baker .... DISTANCE TO SHIPPING POINT

MISCELLANEOUS RECORDS

PRESENT LEGAL OWNER (S) ... Ellis Mining Co. .... Address .. Sumpter, Ore. ....  
 .....  
 .....  
 .....

OPERATOR .....

Name of claims	Area	Pat.	Unpat.	Name of claims	Area	Pat.	Unpat.
Consolidation of many properties							

EQUIPMENT ON PROPERTY

*For reports see Baurne Dist. Listings in file of reports*

REPORTS

North Pole, Columbia Lode- Baker County, by Wm. W. Elmer 6/30/30	X		X
<i>ENG REPT BY E. T. KNIGHT &amp; J. B. PORTER</i>	X		
<i>Sampson Company Ltd. March 1, 1911</i>			X

LIST OF MAPS OF NORTH POLE-COLUMBIA LODE  
AND MINE REPORT OWNED BY REX ELLIS  
(Prints in Portland office)

- Engineers' Report of Ellis Mining Company, Baker, Oregon. By E. T. Knight and J. B. Porter.
- (3) Map of Property Columbia Gold Mining Company, 1899. (Orig.)
  - (4) Map of Property Columbia Gold Mining Company, 1903. (Orig.)
  - (8) Map of Sample Locations - Excelsior #1 Tunne, Intermediate into North Pole. (Print)
  - (10) Map of Hanging Wall Samples, Eureka Tunnel, Campbell Oregon Gold Mining Corp. (Print)
  - (11) Map of North Pole Mine #1 Tunnel Level. (Print)
  - (12) Map of Sectional Elevation of Columbia Mine Foot Wall. (Orig.)
  - (14) Map No. 8-A - Longitudinal Section Columbia Center Vein. (Print)
  - (15) Map No. 8 - Longitudinal Section and Part Plan, Columbia Hanging Wall. (Print)
  - (15-A) Map No. 8 - Longitudinal Section and Part Plan, Columbia Hanging Wall. (Print)
  - (16) Map No. 7 - Plan and Longitudinal Section Eureka and Tabor Fr. (Print)
  - (17) Map No. 6 - Plan and Longitudinal Section Excelsior Mine. (Print)
  - (18) Map No. 5 - Longitudinal Section North Pole, South Half. (Print)
  - (19) Map No. 4 - Longitudinal Section Columbia-North Pole Lode. (Print)

COLUMBIA MINE, ETC.

As the workings of the North Pole, Eureka-Excelsior, and Columbia mines are connected, it is clear that they exploit the same vein. This vein has assuredly been explored for a distance of 12,000 ft. and to a depth of 2500 ft. below the highest point on the outcrop. All the following statements concerning the features of the vein are based upon examinations made in 1908, 1914 and 1915, as the only workings now accessible are small parts of the North Pole and Eureka-Excelsior mines. The drifts from the Columbia and Eureka-Excelsior shafts are under water.

The composite character of this vein has been recognized by all who have described it. In a broad way, it is made up of four or more strands of quartz and silicified argillite, separated by strands of gouge or sheared argillite. In several places in the North Pole mine the width of the vein between the outer walls attains 100 ft. and in one place 150 ft. Between these walls much of the material is argillite breccia in several stages of silicification, cemented by white quartz. At one place, 1300 ft. from the mouth of No. 3 tunnel in the North Pole mine, there is a strand of 40 ft. of clear white vein quartz without residuals of argillite breccia. It is clear by inspection that sulfide minerals are sparse in most of the silicified breccia, and the records of mining and milling prove that such material is of very low grade--too low a grade, in fact, to be extracted with profit. The part of the vein that has been profitably mined in the past consists of one or two strands of quartz, distinctly separated from the rest of the vein by seams of gouge or by fractures. That part also contains more of the sulfide minerals, pyrite and arsenopyrite, than the other parts. So far as the evidence could be

(Cont.)



(Columbia Mine, Cont'd)

obtained, as late as 1915, this sulfide-bearing strand was the latest to be added to the vein.

Detailed examination of the part of the vein that has been mined shows that it also possesses a variety of complex structural features. In places, notably at the face of the Excelsior tunnel, 1550 ft. northeast of the shaft, an early white quartz has been thoroughly crushed, and the sulfide minerals, largely pyrite and arsenopyrite, have been deposited wholly in the finely crushed quartz. A much commoner kind of vein structure is found in the workings on the Excelsior and North Pole claims; in fact, so far as examinations since 1914 show, it appears to be characteristic of the part of the vein that lies northeast of the Eureka-Excelsior shaft, say 5000 ft. long. The peculiar features of this part of the vein are crusted layers of quartz,  $\frac{1}{4}$  to 1 in. thick, alternating here and there with layers of dolomite and minute grains of sulfide minerals. Locally these layered growths were broken before succeeding layers were deposited. The final material is a spongelike mass of quartz and sulfides in which the small aggregates of crystalline sulfides are dispersed unconnected. Almost uniformly the nuclear sulfides are embedded in fine equigranular quartz and outward from these nuclei much larger crystals of quartz extend radially. These seem to have grown until they interfered with similar coarse crystals growing outward from other sulfide nuclei near by. The crusts of quartz, dolomite and sulfides may be most readily explained as the materials successively laid down on free surfaces by solutions of changing character or concentration. It does not seem possible, however, to apply this explanation to the sponge-like mass of quartz and sulfides. If we dismiss the idea that the sulfides were laid down in a pre-existing rock which was later replaced by quartz, for this seems quite impossible, the most plausible explanation seems to be one that assumes the sudden cooling of a concentrated and slightly coherent solution of gel of sulfides and quartz, much as is contemplated by the hypothesis of ore magmas as proposed by Spurr. It should be noted here that material of this class uniformly contains much more gold than the rest of the vein--commonly \$50 to \$150 to the ton. The state of the gold in this material has not yet been determined; that it is free gold seems very doubtful.

*Spurr, 34-28*

Cracker Creek Gold Mining Co.

Gold

NAME OLD NAMES  
 Consolidation of Columbia Gold Mining Co.,  
 Tabor Fraction, E. and E., North Pole, Home Stake  
Golden Gate, and Hanover claims.

PRINCIPAL ORE

MINOR MINERALS

T R S

PUBLISHED REFERENCES

Lindgren 01:659-665  
 Swartley 14:146-159  
 Parks and Swartley, 16:59  
 Pardee and Hewett, 14:89  
 Hewett, 31:8, 10, 28, 32  
 Lornain, 38:19

MISCELLANEOUS RECORDS

Baker ..... COUNTY  
 Cracker Creek ..... AREA  
 ..... ELEVATION  
 ..... ROAD OR HIGHWAY  
 ..... DISTANCE TO  
 SHIPPING POINT

PRESENT LEGAL OWNER (S) .....  
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Address .....  
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 .....  
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OPERATOR .....  
 Name of claims Area Pat. Unpat.  
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 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Name of claims Area Pat. Unpat.  
 \_\_\_\_\_  
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 \_\_\_\_\_  
 \_\_\_\_\_

EQUIPMENT ON PROPERTY  
 \_\_\_\_\_  
 \_\_\_\_\_

Goldsend Consolidated Gold Mining Co. - See North Pole Columbia Lode

Gold

NAME

OLD NAMES

PRINCIPAL ORE

MINOR MINERALS

9 S      27 E      4-5  
T                      R                      S

PUBLISHED REFERENCES

Baker ..... COUNTY

Cracker Creek ..... AREA

..... ELEVATION

..... ROAD OR HIGHWAY

..... DISTANCE TO  
SHIPPING POINT

MISCELLANEOUS RECORDS

PRESENT LEGAL OWNER (S) ..... Jackson Estate

Address ..... Portland, Oregon

OPERATOR .....

Name of claims                      Area    Pat.    Unpat.

Name of claims                      Area    Pat.    Unpat.

EQUIPMENT ON PROPERTY

Golconda Mine

NAME			OLD NAMES	PRINCIPAL ORE	MINOR MINERALS
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8 S	37 E	31
T	R	S

PUBLISHED REFERENCES

... Baker..... COUNTY

... Cracker Creek..... AREA

..... ELEVATION

..... ROAD OR HIGHWAY

..... DISTANCE TO SHIPPING POINT

MISCELLANEOUS RECORDS

PRESENT LEGAL OWNER (S) .....

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Address .....

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OPERATOR .....

Name of claims	Area	Pat.	Unpat.

Name of claims	Area	Pat.	Unpat.

EQUIPMENT ON PROPERTY

Columbia

This report must be properly executed and filed with the Corporation Commissioner on or before July 1, 1930, in order to entitle a corporation mining for any of the precious metals, coal, or prospecting or operating for oil, or operating an oil well, to pay a license fee of only \$10. If not so filed, such corporation must pay the same license fees as are required to be paid by other corporations for gain.—Section 6890, Oregon Laws.

# Annual Report to the Corporation Department

FOR THE YEAR ENDING JUNE 30, ~~1930~~ 1937

Of COLUMBIA GOLD MINING COMPANY  
(Give legal name in full)

a corporation organized and existing under and pursuant to the laws of the State of Oregon.

The location of its principal office is at No. \_\_\_\_\_ Street,  
in the city of Sumpter, in the state of Oregon.

The names and addresses of principal officers, with the postoffice address of each, are as follows:

NAMES	OFFICE	BUSINESS ADDRESS
<u>none given</u>	President	<u>of James Donald Baker Co</u>
	Secretary	
	Treasurer	

The date of the annual election of officers is last Tuesday in January.

The date of the annual election of directors is do.

	Common With Par Value	Common No Par Value	Preferred
Amount of authorized capital stock . . . . .	\$ 150,000.00	Shares	\$
Number of shares of authorized capital stock . . . . .	1,500		
Par value of each share . . . . .	\$ 100.00	x x x x x	\$
Amount of capital stock subscribed . . . . .	\$ 150,000.00	Shares	\$
Amount of capital stock issued . . . . .	\$ 150,000.00	Shares	\$
Amount of capital stock paid up . . . . .	\$ 150,000.00	Shares	\$
Price at which no par value stock issued . . . . .	x x x x x	\$	x x x x x

State amount of capital, represented by stock of no par value, with which  
the corporation began business . . . . . \$ none

Total amount of its properties in Oregon (name of claims, lodes, or placers) \_\_\_\_\_

Columbia Quartz Lode #40 . . . . . Protection #366

Cyclone Cons. #209 . . . . . Lieu Selections #362-3521-614-817

Appomattox #48 . . . . . Golden Gate

Middleman #367 . . . . . Homestake

Tin Horn & Cyclone & Millsite #367 . . . . . Tabor Fraction

The location of its properties Baker County, Oregon

The amount of work done thereon and improvements made thereon since the time of filing  
last report None

The amount of output or products of the mines or wells of such corporation from January 1,  
~~1929~~ <sup>1936</sup> to December 31, ~~1929~~ <sup>1936</sup> inclusive, None

The value of output or products of the mines or wells of such corporation from January 1,  
~~1929~~ <sup>1936</sup> to December 31, ~~1929~~ <sup>1936</sup> \$ None

IN WITNESS WHEREOF, I, \_\_\_\_\_

of said corporation, have signed this report, this  
14th day of June, A. D. 1937.  
(signed) E. H. Backus

[CORPORATE SEAL]

STATE OF ~~OREGON~~, MINNESOTA

County of HENNEPIN

} ss.

# State Department of Geology and Mineral Industries

1069 State Office Building  
Portland 1, Oregon

BOURNE MINES ( T. D. French Operations)

Baker County  
Cracker Creek District

The following report summarizes for our records the activities at the Bourne Mines during the past few months.

## Area and Ownership:

Holdings of the company consist of a consolidation of several contiguous patented mining properties distributed along the so called North Pole-Columbia lode in the vicinity of Bourne. Better known mines in the group which contributed to a total production of about \$9,000,000. in gold and silver prior to 1915 include the Columbia, E and E, Tabor Fraction and North Pole Mines. The mines have been held by the Cracker Creek Gold Mining Company since 1938. Franz Javne, Minneapolis, Minnesota is president of the company. Harold Banta, Baker attorney is local representative.

## Lessees:

Ward L. Hill, 204 Hillcrest Drive, Baker, holds a 99 year freely assignable lease on the mining properties.

In early 1959 T. D. French, Wallace Diamond Drilling Co., Wallace, Idaho contracted to purchase Hill's lease. Associated with French in the venture are Harold Franz and Henry Franz, of Ritzville, Washington.

General: Revamping of the E and E Mill, a flotation plant of approximately 100 tons per day capacity, was begun in July and operations were begun toward reopening some of the old workings of the North Pole Mine.

While the old workings were being reopened some waste dumps from previous operations at the old Columbia Mine were milled. The tonnage milled is unknown although rumor indicates that it was several hundred tons. According to the Democrat Herald (Oct. 20, 1959) the initial shipment of 5 tons of concentrates was trucked to Trail B. C. about Oct. 10. The concentrates were valued at about \$200. per ton. On October 10 three adits, the E and E or Clark tunnel and the No. 1 and No. 5 adits leading to the workings on North Pole ground had been reopened.

The mining is to be done on a sub-lease basis with the management furnishing the equipment. The mill is to be operated on contract. On Oct. 10 eleven sublessees including 3 who had contracted to operate the mill were engaged in getting the mine and mill back in production.

The attached account published by the Baker County Record Courier Oct. 29, 1959 is essentially correct.

Report by: Howard C. Brooks  
Dates of visit:

Nov. 2, 1959  
Aug. 27 and Oct. 10, 1959

Villiard Claim

NAME	OLD NAMES	PRINCIPAL ORE	MINOR MINERALS
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T	R	S
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PUBLISHED REFERENCES

Baker ..... COUNTY

Cracker Creek ..... AREA

..... ELEVATION

..... ROAD OR HIGHWAY

..... DISTANCE TO SHIPPING POINT

MISCELLANEOUS RECORDS

PRESENT LEGAL OWNER (S) .....

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Address .....

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OPERATOR .....

Name of claims	Area	Pat.	Unpat.

Name of claims	Area	Pat.	Unpat.

EQUIPMENT ON PROPERTY

# State Department of Geology and Mineral Industries

1069 State Office Building  
Portland 1, Oregon

NORTH POLE MINE (Au Ag)

Cracker Creek District  
Baker County

**Foreword:** This is operational status report #1 covering work currently being done by Dud Taylor and Gerald Whitney, co-partners and lessees.

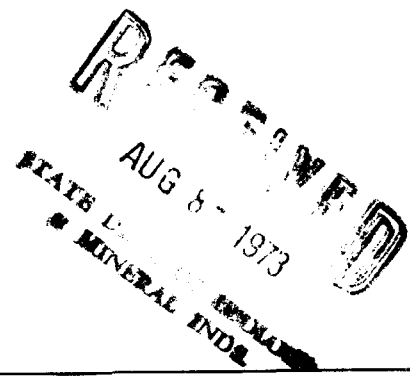
**General:** During the past couple years, Taylor, working on his own, sampled various of the dumps and started development work on the #5 level designed to intercept a known free gold-bearing ore shoot. The dump sampling included test shipments to the Tacoma Smelter and the #5 level development work included both rehabilitation of old workings and some driving of a new heading.

At present, and in conjunction with Whitney, the #3 level dump is being milled on a two shift basis at the rate of about 30 tons per 16 hours. The mill is a diesel electric powered unit consisting of an elemental grinding section with ground product being concentrated first on a table and the table concentrate then being further processed through an oscillating screen amalgamator.

The mill has as yet not been in operation long enough to establish parameters concerning the expectable average rate of recovery of free gold; however, the recovery of approximately three-quarters of a ton of mixed sulphide concentrates is being realized quite consistently per 16 hour shift and the assay value of this concentrate has been around two ounces per ton to date. As is Taylor reports that the dump contains an estimated 30,000 tons of reserves which average (by previous sampling) somewhat less than, but close to, one-half an ounce per ton; hence a couple more weeks of test mill-scale production should suffice to indicate whether or not the variable and highly un-predictable free gold content will prove sufficient in amount to render milling economically profitable at the present range of gold prices.

Another 5000 tons of potential ore from the development tunnel on the 500 level is stockpiled on that level and free gold-bearing ore is present in the face of the newly completed workings. Whether this is the target ore-shoot that this heading was run for, or an unrelated independent ore shoot in its own right, will be determined this fall when weather conditions force a shut-down of the #300 level dump milling operation.

Report by N.S. Wagner  
August 7, 1973





South Pole Mine

Gold

NAME

OLD NAMES

PRINCIPAL ORE

MINOR MINERALS

T R S

Baker

COUNTY

Cracker Creek

AREA

ELEVATION

ROAD OR HIGHWAY

DISTANCE TO SHIPPING POINT

PRESENT LEGAL OWNER(S)

Lester Hansen

Address

Baker, Oregon

OPERATOR

Name of claims

Area

Pat.

Unpat.

Name of claims

Area

Pat.

Unpat.

EQUIPMENT ON PROPERTY

PUBLISHED REFERENCES

See North Pole, Columbia Lode

MISCELLANEOUS RECORDS

Assorted records in possession of Lester Hansen, Baker, Oregon.

Climax Mine ✓

Gold

NAME	OLD NAMES	PRINCIPAL ORE	MINOR MINERALS
600-800' n. Columbia	Golconda Mines		

PUBLISHED REFERENCES

Ore. Metal Mines Handbook 14A pg.36  
 Lorain 38:20-21  
 Parks & Swartley 16:56  
 Swartley 14:159  
 Hewett 31:17

MISCELLANEOUS RECORDS

T	R	S
..... Baker .....		COUNTY
..... Cracker Creek .....		AREA
..... 5500 .....		ELEVATION
.....		ROAD OR HIGHWAY
..... about .6 $\frac{1}{2}$ mi. Sumpter .....		DISTANCE TO SHIPPING POINT

PRESENT LEGAL OWNER (S) . Grayson Hinchley .....

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Address .....

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OPERATOR .....

Name of claims	Area	Pat.	Unpat.

Name of claims	Area	Pat.	Unpat.

EQUIPMENT ON PROPERTY

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More or Less Claims

NAME			OLD NAMES	PRINCIPAL ORE	MINOR MINERALS
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6 S	45 E	21
T	R	S

PUBLISHED REFERENCES

... Baker..... COUNTY

... Cracker Creek..... AREA

..... ELEVATION

..... ROAD OR HIGHWAY

..... DISTANCE TO SHIPPING POINT

MISCELLANEOUS RECORDS

PRESENT LEGAL OWNER (S) .....

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*[Handwritten signature]*

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OPERATOR .....

T8S R37E

Name of claims	Area	Pat.	Unpat.
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Area	Pat.	Unpat.
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EQUIPMENT ON PROPERTY

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Appotomax See Columbia mine

NAME	OLD NAMES	PRINCIPAL ORE	MINOR MINERALS
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T	R	S
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... Baker ..... COUNTY

... Cracker Creek ..... AREA

..... ELEVATION

..... ROAD OR HIGHWAY

..... DISTANCE TO SHIPPING POINT

PUBLISHED REFERENCES

MISCELLANEOUS RECORDS

PRESENT LEGAL OWNER (S) .....

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Address .....

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OPERATOR .....

Name of claims	Area	Pat.	Unpat.

Name of claims	Area	Pat.	Unpat.

EQUIPMENT ON PROPERTY

6/46

Columbia Mine

NAME	OLD NAMES	PRINCIPAL ORE	MINOR MINERALS
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8 S	37 E	
T	R	S

PUBLISHED REFERENCES

Baker .....

Cracker Creek .....

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MISCELLANEOUS RECORDS

PRESENT LEGAL OWNER (S) .....

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Address .....

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OPERATOR .....

Name of claims	Area	Pat.	Unpat.

Name of claims	Area	Pat.	Unpat.

EQUIPMENT ON PROPERTY

## THE SOUTH POLE MINE

### BOURNE

DISTRICT: IS 10-1/2 miles from shipping point, Sumpter, on the Sumpter Valley Railway. Located about 50 years ago and consists of a group of unpatented claims, recorded in Baker county. Located in a high mountain area; country rock is slate; vein strata bearing northeast and southwest; width 50 feet, length 3000 feet. Minerals are gold and silver, assayed at \$10. Water is scarce; power is available from the Eastern Oregon Light & Power Company, nearby. Mine is idle, and there is no surface equipment. Developed with 2000 feet of tunnels and a 300-foot raise. Owner is R. P. Anderson, Baker, Oregon. (Prescott---6/1/37).

## SOUTH POLE - NORTH POLE

New headwaters of Rock Creek, below Kelly, which joins Mountain View, on Crocker Creek side.

Elkhorn & E. Veins

BALD MT. - (See North Pole Mine)

ELKHORN R.

E. VEINS in ARG.

CRACKER CREEK

COLUMBIA MINE

BALD MT. -

See North Pole Mine

ELKHORN R.

E. VEINS in ARG.

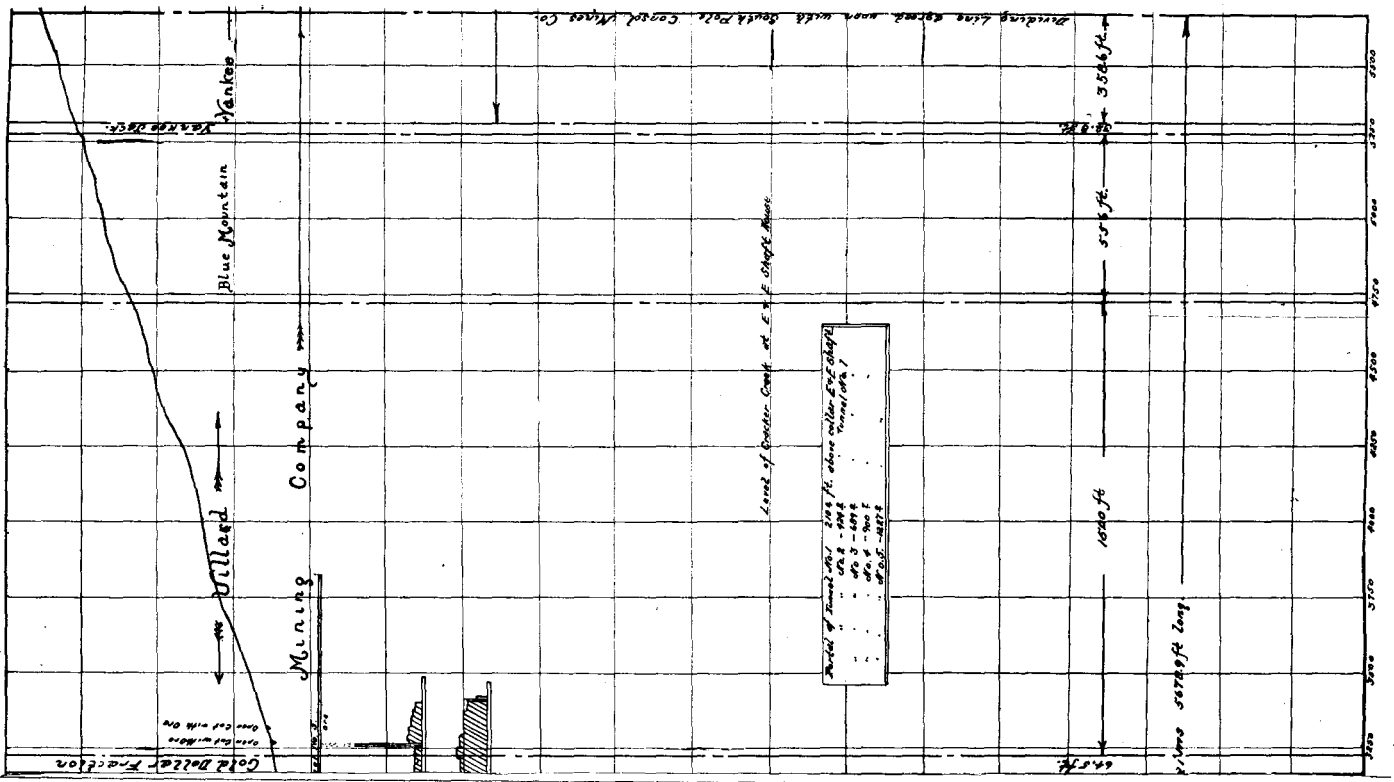


NORTH POLE MINE



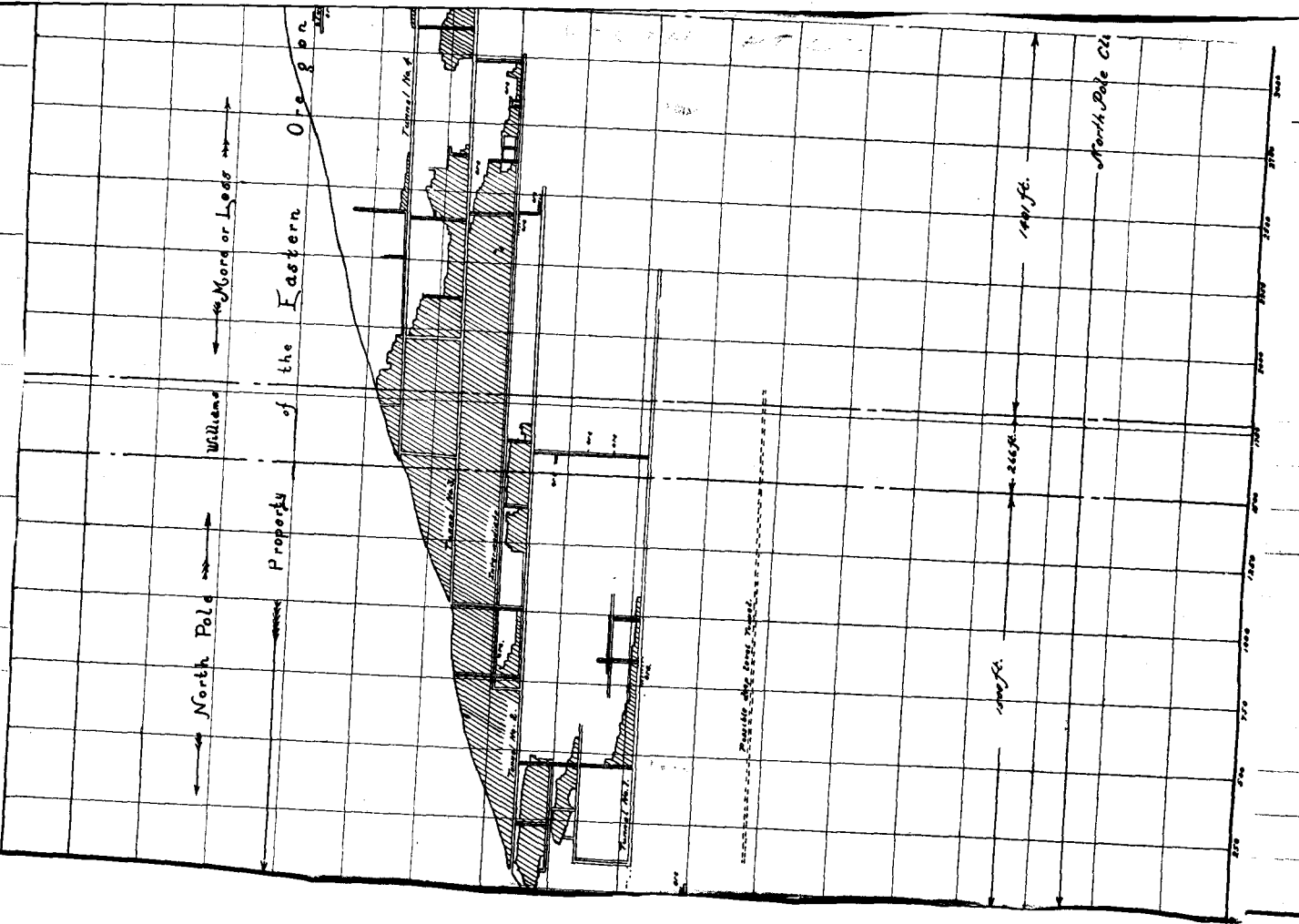


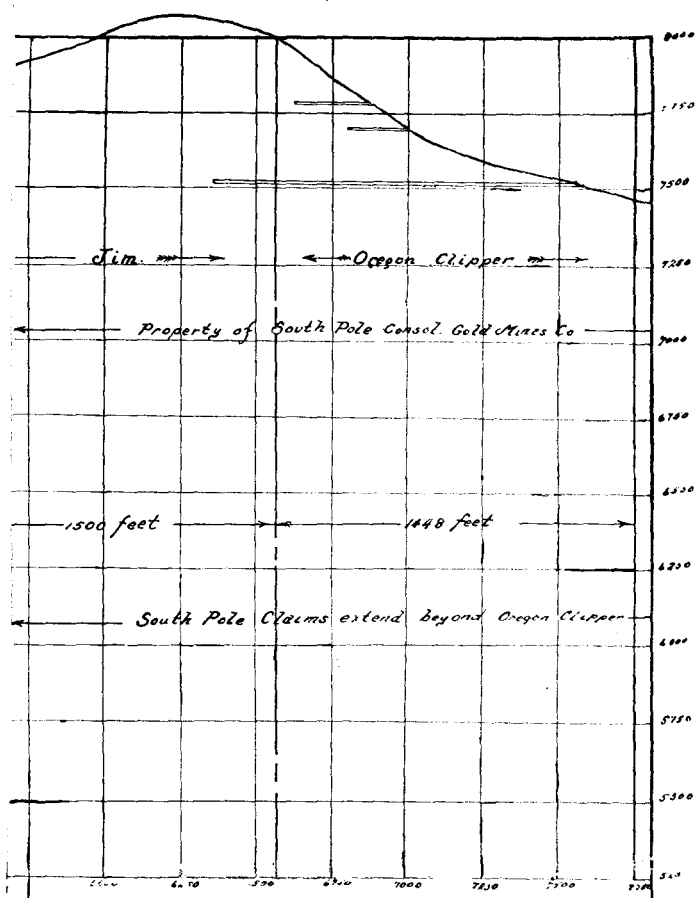
2



NOT TO SCALE

3





**NORTH POLE - COLUMBIA  
LODE**

DEVELOPED PORTION  
NEAR  
BOURNE, BAKER COUNTY OREGON

LONGITUDINAL SECTION IN PLANE OF LODE  
Scale = 1 inch = 250 feet.

Compiled from Official Sources.

NORTH POLE MINE

7