File No. 655

PROSPECT CARDS

Code No.

Property Name Oak Mine

Property Owner

Submitted by [redacted]

Location: State [redacted] Oregon

County Josephine

Mining D. Grants Pass

T 35S R 5W Sec. SW¼ 4

Followup Recom.

Later Review Recom.

Examined by

Company

Date

Where filed

Metals		Production Metal
Cu	✓	
Mo		
Pb	✓	
Zn	✓	
Ag	✓	
Au	✓	
Fe		
Mn		
Cr		
Ni		
W		
U		
Re		
P_2O_5		
K_2O		
Sn		
Be		
Coal		
Hg		
Other		

AMS Quad

Other Quad

Production

	None	10^2	10^3	10^4	10^5	50^5	10^6
TONS							

Geology

Host Rock meta volcanics

Mineralization

Type massive high grade sulfide pods

Trend ?

Ore py, cpy, sphal, pyrr, gal.

Gangue

Alteration

Type

Extent

Bibliography

USGS

USBM

Other Parks + Swartley 1916

Remarkes: presently held [redacted] for exploration but [redacted] should keep eye on it

Field Time

None

1 Day

1 Week

1 Mo

+1 Mo

Follow-up Recom.

QUARTZ PROPERTY JUL 1 1938 9/24/37

STA.

1. Name of property Oak Mine
Operating company (or individual) George A. Baker, Ben Baker and George
~~Address~~ Buell Route 1, Grants Pass, Oregon
Location of ~~property~~ Nine miles North of Grants Pass
Acreage of ~~holdings~~ four full claims containing 82.66 acres in
Josephine Co. S.W. 1/4 Sec. 4, T. 35 S., R. 5 W.

2. History of ~~property~~, past and recent:
Assessment work only since 1916 report.

3. ~~History of~~ production: No production

4. Development: Number of levels, lengths of drifts and cross-cuts, raises, etc.:
Two tunnels, upper one S. 40°E. 127 feet. Lower tunnel N. 43° E. 200 ft. cross cut to vein. Drift South 31° E. 262 ft (see back)

5. General description and equipment on hand, topography, ~~country rocks, elevation~~, timber, water, snow fall, climate, power, etc. No equipment; steep mountainous topography, greenstone country rock; elevation 1600 ft.; some good pine and fir timber suitable for mine timber; water for milling will have to be secured from Jumpoff Joe Creek or from wells; wonderful climate; work all year; little snow; road to property.

6. Geology - General and local. Ore geology - type of deposit, i.e., vein, mineralized zone, bed; contact relations, attitude and orientation, vein minerals, gangue, type of mineralization, alteration, enrichment, etc. A pronounced fracture in the greenstone (probably an altered andesite). A small gauge with quartz and limonite, with similar more or less parallel fractures in places. Veins maybe merely resilicified shear zones in the greenstone. Average length of lenses 50 to 60 feet undisclosed at widest part. A lense about 130' south of crosscut did not pinch but was about 5 feet wide. The vein in most places is tunnel width. A vein was cut by the crosscut tunnel 65 feet south west of main vein . The vein is sixteen feet wide in the corsscut and contains streaks of sulfides, oxides (see back)

7. Metallurgy - nature of ore, hard or soft, free-milling, base, direct shipping, etc. Kind of mill and equipment in use or planned, current daily tonnage of ore or concentrates, approximate value, freight rates to smelter, etc.
The ore is base and will have to be treated by selective flotation so as to separate the copper and zinc. No pay for copper at zinc smelter and penalized for zinc at copper smelter. An average of 63 samples was over 1% copper, .07 oz. gold and 16 oz. silver. The assays were run by C. L. Lull. The above 63 samples were taken at 10 foot intervals. Indicated tonnage above lower level is 10,200 tons. Outcrop has not been sampled. (see back)*

8. Remarks - economics: High or low cost, principal drawbacks, reasons for success or failure, apparent life of operation based on apparent quantity of ore available.

This mine is just a little too low grade to be worthwhile at the present prices of metals. It is too small a property for a large scale operation.

J. E. Morrison, Informant

4. continued-- North 312 feet meandering generally about N. 30 E. with a 65 ft. crosscut to East. One winze 50 feet deep just North of where crasscut tunnel cuts veins.

6. continued-- and greenstone.throughout its entire width. No work has been done on this vein. Minerals noted are chalcopyrite, sphalerite, pyrite, pyrrhotite, small amounts of galena and quartz. Strike Magnetic N. 25° to 30°W., dip 70 to 75° W. In the North drift about 222 feet from the cross cut tunnel a drift runs East 65 feet cutting a dike 35 feet wide which carries values. The intersection of this dike and the fracture causes enrichment at the winze.

7. continued--(~~The ore is base and will have to be treated by selective flotation~~)

The average value per ton would be $5.12 with copper at 10¢ a lb. and silver at 70¢ per ~~hundred~~ ounce. Zinc should increase the value per ton by about 60¢.

6/46

Oak Mine		Gold	Copper and Zinc
NAME	OLD NAMES	PRINCIPAL ORE	MINOR MINERALS

35 South	5 West	4
T	R	S

Josephine ... COUNTY

Grants Pass ... AREA

... ELEVATION

... ROAD OR HIGHWAY

9 miles north of Grants Pass DISTANCE TO SHIPPING POINT

PUBLISHED REFERENCES

Ore. Metal Mines Hdbk. 14-C Vol.II, Sec.1

Petrology and Mineral Resources of Jackson and Josephine Counties, Oregon; A.N. Winchell

MISCELLANEOUS RECORDS

Grants Pass Office file, DOGAMI

PRESENT LEGAL OWNER (S) George A. Baker and Ben Baker

Address Route #1 Grants Pass, Oregon

OPERATOR ...

Name of claims	Area	Pat.	Unpat.
Four full claims containing 82.66 acres			

Name of claims	Area	Pat.	Unpat.

EQUIPMENT ON PROPERTY No equipment

MI-21

OAKS MINE

Near Grants Pass, Oregon.

Location; The Oaks Mines is located in Section 4, T. 35 S., R. 5 W. about nine miles due north of Grants Pass, Josephine County, Oregon. It lies some seven miles east of the Portland-San Franciso line of the Southern Pacific connected therewith by a good county road. It is readily accessible by automobile from Grants Pass following the Pacific Highway for eleven miles and thence following the county road up Jumpoff Joe Creek some five miles to the property. A more direct road runs due north from Grants Pass but passes over a summit 2150 feet high and the road is narrow and crooked. The elevation at Grants Pass is 956 feet above sea level and the valley at the mine is about 1500 feet, so that there are no heavy grades to overcome in hauling.

Property; There are four claims in the group each a full 600 x 1500 feet. Two of these are located side by side running east and west and covering the SW¼ of SW¼ of Section 4 which is mostly a gently sloping bottom providing an excellent camp and millsite. The county road and the electric power transmission line cross this bottom as well as Jumpoff Joe Creek.

The other two claims lie end to end in a northwest and southeast direction covering the apex of the vein for 3000 feet in length, beginning at the south boundary of the NW¼ of Section 4 and overlapping into Section 9.

All the claims are held by the possessory right of location.

Facilities; There is some good pine and fir timber on the claims suitable for mine timbers and some scrub oak suitable for fire wood. Domestic water can be obtained from Jumpoff Joe Creek or from wells but the creek goes dry in August for three to four months. At other seasons it runs 4 to 5 second-feet of water. There are two good cabins on the bottom and some other buildings, and a blacksmith shop at the mouth of the tunnel. There is a car and track in the tunnel but no machinery on the property.

Vein; The vein strikes 25 to 30 degrees northwest and stands nearly vertical with local rolls that dip east and west. It has a pronounced vein fracture, a small gouge with quartz and limonite, with similar more or less parallel fractures in places. The ore occurs as lenses or shoots in swells in the vein itself. The values are in copper and zinc with small amounts of gold and silver present. Minerals noted are chalcopyrite, sphalerite, pyrite, pyrrhotite, small amounts of galena and quartz, in the main working tunnel, the width varying from three to twelve feet. On the surface where exposed the vein is quartz with limonite and varies from three to seven feet in width. The surface also shows a leached brown iron capping near the discoveries.

The vein was originally worked for gold, the surface being said to pan well, and the main tunnel has cut the vein some 200 feet lower in elevation probably near the top of the sulphide zone. The vein in the drift on the main tunnel between the shoots of sulphide ore is still highly oxidized so that it is probable that with greater depth a more continuous body of ore will be uncovered laterally along the vein.

A scond vein has been cut in the main crosscut tunnel 65 feet west of the principal vein. This vein has not been uncovered at the surface but is 16 feet wide in the crosscut with streaks of sulphide, oxides and country rock comprising the width of the vein. As this vein has been cut at less depth beneath the surface it will also probably increase in sulphides with depth.

Development;

The main development is a tunnel driven N. 65 deg. E. as a crosscut for 200 feet where it intersects the main vein. At 119 feet in it cuts the west vein but no drifting has been done on the west vein.

The main vein has been followed northwest for 250 feet and southeast for 266 feet, the vein fracture being practically continuous throughout. At the point where the croos cut intercepts the vein, a shaft has been sunk to a reported depth of 50 feet, now filled with water, and the vein is said to have been continuous downward in the shaft. Some stoping has been done over the shaft to a hei ht of some 35 feet and a length of 15 to 20 feet, the length of the shoot along the drift being some 60 feet, 30 feet each way from the crosscut. At 130 feet southeast of the crosscut another shoot opens up and was followed for 50 feet, the width being $5\frac{1}{2}$ feet at the south end but undisclosed at the widest part. The sulphides are apparent at places in the northwest drift but not in commercial quantities. The vein has a width of 12 feet where cut by the crosscut. At 130 feet southeast of the crosscut another shoot opens up and was followed for 50 feet, the width being $5\frac{1}{2}$ feet at the south end but undisclosed at the widest part. The sulphides are apparent at places in the northwest drift but not in commercial quantities. The vein has a width of 12 feet where cut by the crosscut. At 90 feet northwest of the crosscut an east and west vertical seam cuts the main vein but does not displace it.

On the surface a shaft has been sunk approximately over the south end of the main drift. It was said to have been 50 feet deep but the timbers have been burned out and it is caved in. The vein disclosed here is a quartz-limonite some seven feet in width with a leached brown iron capping showing scattered around the dumps. Going northwest along the outcrop and dropping down into the small gulch in which the main tunnel starts, are two short tunnels exposing the veins. Across the gulch the vein is again exposed in some cuts so that the vein was seen on the surface over a length of at least 600 feet and is said to be traceable for the full 3000 feet on the claims.

Sampling; The main drift was sampled by B. N. Barnett and Harold Hooper every ten feet and include a considerable portion of the vein that is not commercial and would not be mined.

Samples taken by myself are described below but the assay results have not yet been received.

#4190- Taken across 16 feet on the west vein as shown in the crosscut.

#4191- Taken across 5½ feet 180 feet southeast of the crosscut

#4192- Taken across 12 feet on main vein at the crosscut

S

Sixty pound sample for experimental tests is an average of the ore stored on the dump said to have been taken entirely from the shaft at the end of the crosscut tunnel.

It is my opinion that the values found in these samples will closely represent the commercial ore that can be mined on this horizon. As the vein contains considerable oxidized ore it is probable that the values will be found to increase down to the solid sulphides and as I stated above will probably be more continuous laterally along the vein.

Future Deveopments; No survey was made by me but I judge it to be entirely feasible to gain another 125 feet of depth below the present tunnel with a crosscut some 425 feet in length. For the reasons that this additional depth would enable one to obtain a much more satisfactory conclusion as to the extent, width and value of the sulphide ore and would provide a more satisfactory working tunnel than the present crosscut, I would favor this development rather than additional sinking of the shaft. Further depth will have to be obtained by shaft sinking from this proposed level, however, and as the shaft gets down to the creek level more water is liable to be encountered. The water in the present shaft is negligible.

The country rock is not difficult nor expensive to mine being what is known as greenstone, probably an altered andesite. The ore itself, however, uses up drill steel rapidly because of the iron present.

Conclusions; I believe that the prospect merits further development sufficient to reach a depth below the transition zone between the oxidized and sulphide ores in which the present workings lie.

I do not think that anything more than a nominal sum for payment toward the purchase of the property is justified until a reasonable time has been allowed to drive such a crosscut and do at least an equal amount of drifting on the vein as in the present working tunnel. Estimating this at 1000 feet of work at least one year should be allowed before any payments become due.

The conditions fround to exist at that time would necessarily determine whether or no the asked price were reasonable and further expenditures justifiable.

Contingent Fee; This examination has been made on a contingent fee basis in that I am to participate in a sales commission to an amount approximately equal to twice the cost of this report made on a per diem and expense basis.

(Signed) Fred W. Callaway

Mining Engineer

Spokane, Washington
February 14th, 1929

Examined February 11, 1929.

GOLD HILL TECHNICAL LABORATORY

Analytical-Consulting-Research
Chemists and Assayers
(COPY) E.Derwent, Chemical and Metallurgical
Engineer, Proprietor
Gold Hill, Oregon

Mr. George A. Baker,
LaFayette, Calif.

Oct 4, 1926.

Dear Sir:

I have taken samples from the Oak Mine in the Jump-off Joe Mining District, Jospehine County, Oregon, which property is owned by You, and I find the following results.

Sample # 1 Taken from 18 foot Dyke of Ore about Half way in Main Tunnel. Sample taken from both sides of tunnel.

Silica	74.50%
Alumina	4.80
Iron	10.40
Copper	Trace
Nickel	None
Cobolt	None
Zinc	None

Gold 0.18 Ozs $3.60 Per Ton.
Silver 0.20 Ozs $0.14 Per Ton.

Sample # 2 Taken from 35 feet on each side of Tunnel from Face in the East Cross Cut of the North Drift.

Silica	78.50%
Alumina	10.20
Iron	5.30
Copper	None
Nickel	None
Zinc	None

Gold 0.16 Ozs $3.20 Per Ton.
Silver 0.40 Ozs. $0.28 Per Ton.

Sample # 3 Taken from 40 feet each side of Tunnel from Face in South Drift.

Silica	70.80%	
Alumina	9.00	
Iron	5.60	
Copper	3.00	Value $8.40 Per Ton.
Nickel	None	
Zinc	2.80	Value 6.16 Per Ton.

Gold 0.52 Ozs $10.40 Per Ton.
Silver 4.00 Ozs $2.80 Per Ton.

Sample # 4 Taken from End of Main Tunnel. Solid Sulphide Ore.

Copper	9.00%	Value	$25.20 Per Ton
Zinc	18.00	Value	39.90 Per Ton

Gold	0.26 Ozs	$5.20 Per Ton.
Silver	3.00 Ozs	$2.10 Per Ton.

The Ore in this Mine is ammendable to Oil Flotation Concentration, and the Samples above mentioned give the following results.

Sample #1.

Concentrate 85 pounds to the ton of ore
Value in Gold and Silver $88.00 Per ton of Concentrate.

Sample #2.

Concentrate 80 Pounds to the Ton of Ore.
Value in Gold and Silver $87.00 Per Ton of Concentrate.

Sample #3.

Concentrate 200 Pounds Per Ton of Ore.
Value in Gold Silver Zinc and Copper $277.60 Per Ton of Concentrate.

These Metals can be separated from each other by using preferential flotation which means that a concentrate or even the ore direct the metals can be receevered in the following order.

Gold Silver Lead in First Concentrate. Machine # 1

Zinc Concentrate Second in Machine #2

Copper Third in Machine # 3

Iron Sulphides Fourth in Machine #4

Other Metals and Heavy Sulphides on Concentrating Tables or gravity Concentration.

I can highly recommend this Mining Property and with a Fifty Ton daily Capacity Preferential Oil Flotation Plant in operation on this property it will pay a good divident on the investment of $50,000.00.

Yours very respectfully,

(signed) E. Derwent

Chem. & Met. Eng.
Gold Hill Tech Lab.

1 Open cut on O. K. Claim ore 4½ ft. average. $118.92

2 Dump on Oak 1st grade 15.94

3 " " " 2nd grade. 7.24

4 East face lower drift 6.69

5 West " " " 8.29

6 Face of upper drift above talc. 6.90

7 Vein under talc 7.98

Gold and Silver 2/3 Gold 1/3 Silver

List of original samples taken by Mr. McKinney, Kansas City from the Oak Mine.

B. H + S M. + C Co - Mill Tests

Oak Mine

Preferential Flotation Test for zinc and copper with Associated Metals. Tested by [illegible] Hooper Sept 1-1928

		% Wt.	Assay Pb	Ag	Au	Zn	Cu	Units Ag	Au	Zn	Cu	% Ext. Zn	Cu
Feed	27.04			3.4	.45	10.58	2.3	[illegible]	[illegible]	10.58	2.30	1.46	[illegible]
Cu conc	2.21	8.17	2.44	15.5	6.20	12.0	22.6	12.66	1.70	.98	1.85	[illegible]	[illegible]
Zn con.	4.08	15.08		5.0	.40	53.2	1.3	754	6.00	8.02	.19		
Fe conc	.55	2.03		2.8	.40	3.0	.60	5.7	.80	.06	.01		
Cu Mid.	.52	1.92		54.0	5.60	18.7	3.00	.53	10.70	.36	.06		
Zn. Mid.	1.37	5.06		6.5	.60	14.5	.75	[illegible]	.10	.73	.04		
1st Tails	8.71	32.11		.00	.20	.3	.20	00	6.40	.09	.07		
2nd Tails	9.60	35.63		1.0	.10	.15	.22	356	3.50	.34	.08		

Remarks & Conclusions. Ore is readily flotable and a satisfactory separation of copper & zinc conc [illegible] made. Additional test should improve slightly the results obtained on this sample

STATE DEPARTMENT OF GEOLOGY AND
MINERAL INDUSTRIES
702 WOODLARK BUILDING
PORTLAND, OREGON

ASSAY REPORT

UNION ASSAY OFFICE, INC.

Salt Lake City 11, Utah

Hand Sample Serial 53265-7

Mine I.S.&R. Co. 386 December 2, 1948

No.	Gold ozs. per ton	Silver ozs. per ton	Lead percent wet	Copper percent	Zinc percent	
Victor						
1	0.020	2.3	none	4.08	31.9	
2	0.030	4.4	none	3.87	30.9	
3	0.040	5.8	none	5.20	21.7	Bottom of winze

	Sample No	Wall Hght.	Width Roof	Au	Ag	% Cu	Value	
	52	Winze		0.70	2.80	6.00	19.57	
East Adit	53	ft.	5	0.02	0.70	Tr.		2 Walls 15 ft long
	54	5	5	.02	0.10	.43	1.84	2 " 10 " "
	55	3	5	.06	0.40	0.60	3.31	2 " 10 " "
West Dike	56		5	.06	.40	.38	3.09	2 " 10" "
	57		5	.08	Tr	.51	3.83	2 " 10" "
Upper Tunnel	58	5.8	4.6	.05	.50	2.40	6.45	
" "	59	5.7	4.6	.08	.80	4.04	9.09	
" "	60	5.8	4.1	0.16	0.10	4.66	14.07	
" "	61	5.8	4.1	.04	tr.	3.83	8.29	
" "	62	5.1	5.	.30	.90	.82	12.67	
Taken in Drift 20' Above upper Tunnel and 30' beyond face	63	5.8	4.1	0.15	4.10	4.13	15.84	
S. Drift. 5.6-12	64		5.6-12'	.30	1.80	10.23	30.30	10-27 from vein only.
N Drift. 5.6-8'	65		5.6-8'	.20	1.60	3.40	14.85	40-51 " "
#2 - #10 shot down	66			.10	0.60	2.19	7.90	1500 lbs for conc Test.
E Drift. " "	67			.10	0.90	2.15	8.06	1200 " " " "

Sample No	Hgth Walls	Width Root.	Au	Ag	% Cu	Value	
28	6.5	4	0.04	0.80	0.66	3 19	Face of North Drift.
29	8.0	5.	0.04	0.60	0.30	2 40	
30	7.0	6.5	0.05	1.00	0.12	2 74	Av. Backs.
31	6.6	5.11	0.08	0.80	0.10	3 60	78 ft.
32	7.0	5.6	0.05	Tr	1.10	3 73	
33	6.5	4.4	0.04	0.70	0.20	2 30	Length of
34	6.6	4.10	0.04	0.50	Tr		Drift.
35	6.6	9.0	0.04	0.50	0.12	2 01	247 ft.
36	6.0	4.0	0.04	0.90	0.26	2 54	
37	7.0	4.0	0.05	0.60	0.96	3 94	
38	7.	5.5	0.06	0.70	0.13	2 98	
39	7.0	8.0	0.05	0.40	0.30	3 01	
40	6.2	5.3	0.08	0.70	0.53	4 30	
41	6.6	0.9	0.06	0.60	0.06	2 67	
42	8.0	10.3	0.20	0.40	1.55	10 10	
43	7.0	5.7	0.04	1.20	0.97	4 07	
44	6.6	7.8	0.05	0.90	0.80	3 83	
45	6.4	3.6	0.05	0.60	0.12	2 48	
46	6.0	5.0	0.08	1.30	1.47	7 16	
47	6.6	4.9	0.02	0.90	0.10	1 57	
48	7.0	4.3	0.10	0.80	0.87	5 69	
49	6.6	4.6	0.05	0.80	0.14	4 66	
50	6.6	8.	0.10	2.20	2.15	9 06	End of North Drift.
51	7.0	6.5	0.05	0.10	1.32	4 21	

No	Hgt. Walls	Width Roof	ozs Au	ozs Ag	% Cu.	Value	
1	6	4	0.65	0.40	0.50	$23 96	Face South Drift.
2	6.6	4.4	0.08	0.80	2.01	7 05	
3	6.6	5.1	0.08	0.10	0.10	3 06	
4	6.6	4.5	0.10	0.20	2.11	7 45	Average
5	6.6	5.10	0.05	0.25	0.35	2 56	Backs
6	7	5.	0.10	0.20	0.24	4 07	134 ft.
7	6.6	5	0.05	[illegible]	0.84	1 82	
8	6.6	5.2	0.04	0.20	0.20	1 91	Length of
9	10	6.2	0.05	0.20	1.16	3 49	Drift.
10	6.8	5.8	0.05	0.30	0.27	2 47	262 ft.
11	6.6	5.9	0.10	0.20	0.12	3 87	Av. Width
12	6.6	4.9	0.10	0.40	0.26	4 28	5.3 ft.
13	7	5.7	0.15	1.70	5.90	17 18	
14	6.6	4.5	0.14	0.80	0.50	6 12	12,405 tons
15	6.9	4.10	0.10	0.70	2.40	8 16	
16	6.6	4.9	0.20	0.50	0.10	7 57	
17	6.6	4.0	0.06	1.20	0.30	3 56	
18	6.6	5.0	0.08	0.80	0.10	3 65	
19	6.6	5.5	0.04	0.40	0.03	1 76	
20	6.6	5.3	0.08	0.50	0.39	3 91	
21	6.6	4.9	0.10	0.60	1.70	6 02	
22	7.6	5.11	0.05	0.50	0.20	2 50	
23	6.0	5.7	0.04	0.30	0.30	1 75	
24	6.	6.4	0.06	0.50	0.50	3 39	
25	6	4.0	0.06	0.90	0.60	3 87	
26	6	4.3	0.04	0.30	0.62	2 75	
27	6.6	12.3	0.06	0.50	3.40	8 25	End of South drift

27 | 14 28 (5.3
135
78

Analyses Smelting Grade of Ores.

No 1 Winze	No 2 - South Drift	No 3. North Drift
SiO_2 - 31%	SiO_2 45.20	SiO_2 - 47.50%
Al_2O_3 - 11	Al_2O_3 5.16	Al_2O_3 5.58
CaO - 5	CaO 5.16	CaO 5.80
Fe - 11	Fe 12.10	Fe 14.25
Zn - 8-10%	Zn 10.75	Zn 3.12
S - 8%	S. 7.04	S. 5.16
Cu. - 3%-6%	Cu 0.50 - 5%	Cu - .50 - 2.50%
Au - .20 oz	Au - 06 - .20 oz.	Au - .08 - .20 oz
Ag. - 3.50 oz.	Ag .30 - 1.5 oz.	Ag .50 - 2.0 oz.

Concentrating Grade Ore

for elimination of Silica Lime & Alumina etc.

South Drift Ore.

SiO_2, Al_2O_3, CaO } 63%

Fe - 10.70%

S. 6.54

Au - .10 - .20 oz

Ag - .20 - .60 "

Cu .50 - 1.00%

West Dike Ore.

SiO_2, Al_2O_3, CaO } 80%

Fe 10.50%

S 7.0%

Au - .10 - .20 oz

Ag .20 - .90 oz

Cu 0.50%

BONDAR-CLEGG & COMPANY LTD.
130 PEMBERTON AVENUE, NORTH VANCOUVER, B.C. (604) 985-0681 TLX: 04-352667

Geochemical Lab Report

FROM: Denison Mines

REPORT NUMBER: 21 - 9

PROJECT: R. C. PARKER

DATE: January 16, 1981

SAMPLE NUMBERS		As ppm
OM-2850E	1600N	< 2
	1700N	< 2
	1800N	< 2
	1900N	< 2
	2000N	2
	2100N	< 2
	2200N	< 2
	2300N	3
	2400N	2
	2500N	3
	2600N	2
	2700N	2
	2800N	2
	2900N	2
	3000N	< 2
OM-3150E	1600N	< 2
	1700N	3
	1800N	2
	1900N	2
	2000N	2
	2100N	2
	2200N	2
	2300N	< 2
	2400N	2
	2500N	< 2
	2600N	2
	2700N	< 2
	2800N	2
	2900N	< 2
	3000N	2
OM-3300E	1600N	< 2
	1700N	2
	1800N	< 2
	1900N	2
	2000N	2
	2100N	< 2
	2200N	< 2
	2300N	3
	2400N	2
	2500N	2

FOR METHOD, EXTRACTION AND FRACTION USED – SEE ATTACHED

BONDAR-CLEGG & COMPANY LTD.

Geochemical Lab Report

REPORT NUMBER: 21 - 9

SAMPLE NUMBERS		As ppm								
OM-3300E	2600N	3								
	2700N	3								
	2800N	3								
	2900N	< 2								
	3000N	2								
OM-3450E	1600N	2								
	1700N	2								
	1800N	2								
	1900N	2								
	2000N	2								
	2100N	2								
	2200N	2								
	2300N	< 2								
	2400N	2								
	2500N	2								
	2600N	3								
	2700N	2								
	2800N	2								
	2900N	3								
	3000N	2								

cc Mr. R. C. Parker

REPORT ON THE EXPLORATION PROGRAM ON THE OAK MINE, INC. GROUP OF CLAIMS IN SEC. 4 AND 9, TWP. 35S. R. 5 W.W.M., JOSEPHINE COUNTY, OREGON

by

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Geologist

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Report on the Exploration Program on the Oak Mine, Inc. Group of Claims
In Sec. 4 and 9, Twp. 35S. R. 5 W.W.M., Josephine County, Oregon

I INTRODUCTION

A. Purpose & Scope: The purpose of the exploration program on the Oak Mines group of claims was to determine if an economical mineral deposit is located on the claims.

The program consisted of:

(1) A review of the geological literature and old mine reports pertaining to the past exploration on the claims.
(2) The reopening, remapping and sampling the underground working on the 100 ft. level.
(3) Exploring two of the ore-shoots on the 100 ft. level by raising through the shoots.
(4) Drifting on the 100 ft. level to a point under a known ore-shoot on the surface, part of the original discovery.
(5) Geophysical surveys:
    (a) Induced Polarization and Resistivity Survey by McPhar Geophysical Company, Toronto, Ontario, Canada.
    (b) Self-Potential and Resistivity Survey by Gordon Hart, Eugene Oregon.
(6) Diamond drilling:
    (a) One of three definite anomalies. St. 00,3.5E. the anomaly was drilled from both the surface and underground.
    (b) Diamond drilling below the known ore shoots on the 100 ft. level from both the surface and underground.
(7) Cross-cut and drifting to explore the 200 ft. level below the ore-shoots on the 100 ft. level.

The exploration program was sufficient to determine the character of the ore-shoots and to determine that the high-grade masses of sphalerite and chalcopyrite can not be economically mined. The geophysical surveys and diamond drilling were employed to assist in detecting additional ore-reserves along the known mineralized shear, as well as to determine if additional mineralized areas exist on the claims.

B. Location and Accessibility:
The Oak Mines group of 14 claims (4 optioned), are located 12 miles northeast of Grants Pass, Oregon, at an elevation of 1600 ft. above sea-level. The claims are on B.L.M. land in Sec. 4 and 9, Twp. 35S., R. 5 W.W.M., Josephine County, Oregon.

Access to the claims is by hard-surfaced road. The claims can be reached from Grants Pass by taking Interstate #5 north from Grants Pass to the Hugo turn-off. Turn right or east at the Hugo turn-off and follow the Jump-off-Joe road 6 miles eastward, thence a mile southward across Jump-off-Joe Creek. The road connecting the mine workings to the hard-top road is marked by a yellow government sign 4-35A. This is known as the Orofino Mine road. Follow this road eastward approximately 1/8 mile, turn right or south onto the Oak Mine access road. The mine access road goes to both the upper and lower portals of the underground workings.

The mine area is readily accessible any time of the year, the claims lie well below the snow-level. The winters are mild and wet, the summers hot and dry. There is ample water on the property for mining purposes. Cove Creek flows across the claims from south to north, however, there is not enough water in Cove Creek in the summer for diamond drilling, but sufficient water is developed in the underground workings for both mining and diamond drilling purposes.

The main power transmission line crosses the claims as well as a smaller residential-industrial line. There is sufficient timber on the claims for mining purposes.

Transportation facilities are good. Grants Pass is on the Southern Pacific Railroad and in addition is serviced by four major truck lines. The closest copper smelter is Tacoma, Washington, a distance of 396 miles. The nearest zinc refinery is Kellogg, Idaho, a distance of 676 miles. Grants Pass is approximately 85 miles from the Pacific Ocean. The closest major sea-port is Coos Bay, Oregon, a distance of 150 miles.

II GEOLOGY

A. Areal Geology

The Oak Mines group of claims are located in and adjacent to the contact between metavolcanics of Triassic age and a complex gabbro-diorite stock of Jurassic or Lower Cretaceous Age. The metavolcanics consist primarily of andesites and basaltic flows with some intercalated beds of argillite (?) and chert. Metasediments make up an extremely small proportion of the formation. The mapping suggests that the volcanics maybe a very thin pad or large xenolith. The claim area is bounded on the east, west, and south side by the intrusive rocks which range from coarse-grained gabbro to fine grained quartz diorite. Several outcrops of light-grey colored porphyritic rock (dacite porphyry (?)) border the mine workings on the east.

Structural Features

The main valley of Cove Creek, 500 ft. west of the underground workings which are in the metavolcanics, appears to mark the western contact of the metavolcanics and granitic textured stock. The general shearing in the mine area appears to parallel the northwest trending valley floor of Cove Creek. The metavolcanics are terminated on the south by coarse grained gabbro that outcrop in the floor of an east-west striking valley. This same outcropping of gabbro-quartz diorite can be traced along the eastern contact of the metavolcanics to a point 600 ft. east of the mine workings. The eastern contact between the metavolcanics and the intrusive rock roughly parallels the contact west of the mine.

The north end of the claims are bounded by the main Jump-off-Joe Creek Valley. This valley trends east-west. There are no visible outcrops of the intrusive rock in Jump-off-Joe Creek Valley. The metavolcanics outcrop north across Jump-off-Joe Creek and continue northward beyond the valley for several miles as part of a major sheet of metavolcanics.

The field mapping indicates the claims to be underlain by a narrow neck (approximately 1700 ft. wide) of metavolcanics bounded on three sides by younger granitic-textured rocks. Shear zones have developed in a N.W. - S.E. direction running at right angles to the east-west valleys that border the claims of the north and south and parallel to the N.W. trending valley of Cove Creek.

The geophysical survey indicates five mineralized shear zones in the metavolcanic block. According to the geophysical survey, the shear zones will strike into a 1000 ft. long by 300 wide mineralized breccia zone near the southwest end of the claims. It is the writer's opinion that metavol-gabbro contact in the valley floor of Cove Creek and the breccia zone are the two most promising structures on the claims in which to find a sizeable ore deposit.

Geological Features of the Underground Workings

III DETAILED GEOLOGY

The original discovery of mineralization on the Oak claims was a surface outcropping of gossan carrying free gold (Station 00,00 on map). A shaft was sunk in the oxidized zone some 30 ft. deep. At this depth sulfide mineralization was encountered. The shaft has been sunk in the junction of two mineralized shears. The shears have the following attitudes of N 5° E/75°W/N 15° W/75° E. The sulfide mineralization was reported to be of two distinct types of sulfides. The east dipping vein carries a narrow - 6" to 2 ft. wide x 50 ft. long lens of massive sphalerite (ZnS) and chalcopyrite (Cu Fe S_2) with minor pyrite (Fe S_2). The west dipping vein is reported to carry massive Fe S_2 and minor chalcopyrite. Blue-grey fine grained silica formed the gangue on the west dipping vein. The gangue of the east dipping vein is sheared and altered wall rock. An adit was driven 40 ft. below the discovery shaft. The writer was able to examine a portion of the east dipping vein carrying the ZnS, Cu Fe S_2. The adit in the area of the west vein is caved and was not reopened.

A cross-cut (100 ft. level) was run (1902) at a point 300 ft. north and 300 ft. west of the discovery shaft on a bearing of N 62° E. for a 180 ft. in length. The x-cut intersected a mineralized shear zone containing lenses of massive ZnS and Cu Fe S_2. The shear zone at the intersection is 10 ft. wide and has a attitude of N 10° W/70° W. A drift was driven on this shear zone. The zinc-copper sulfide mineralization is exposed in the drift at the x-cut for 50 ft. in length. The sulfides have been raised on for 35 ft. and are continuous in the back of the raise. A 50 ft. shaft was sunk at the junction of the cross-cut and drift. The shaft is filled with water. The reports indicate the ZnS & Cu Fe S_2 were continuous in the shaft down to 35 ft. At this point they abruptly stopped. The shaft was sunk 15 ft. beyond the ore. A drift, 12 ft. long, was driven northward from the bottom of the 50 ft. shaft. The massive lenses of zinc-copper sulfide were exposed in the face of the drift. The massive sulfide zone is reported to be 5 ft. wide in the face. This ore shoot, however, was not intersected by the long hole drilling from the drift 85 ft. below (200 level).

The 100 ft. level drift was run 372 ft. southward and 247 ft. northward. This work exposed two additional mineralized zones containing massive ZnS & Cu Fe S_2, one 130 ft. south of the shaft, the other 100 ft. north of the x-cut.

The south zone is approximately 60 ft. long. A 3 set x 2 set (18'x12') raise was run through the center of the shoot. The ore-shoot containing the massive lenses of ZnS & Cu Fe S_2 terminated 50 ft. above the sill against a non-sheared blocky diorite (?) The lenses of massive ZnS & Cu Fe S_2 are very erratically distributed throughout the zone in the raise. The massive sulfides constitute approximately 1/3 of the zone which in places exceeds 10 ft. wide. The remainder of the zone is made up of fault gouge, pyritized sheared wall rock and pyritized blocks or "horses" of unsheared wall rock. (See plan map). The massive ZnS & Cu Fe S_2 mineralization is 12 ft. wide at the sill but narrows in places to 1" to 2" stringers. This pinching and swelling is noted both along strike and in a vertical plane.

Fifty feet above the sill, the point at which the ore terminates, a cross-cut was driven 30 ft. into the east wall. A 30 ft. wide sheared zone containing disseminated pyrite, sphalerite and veinlets of chalcopyrite was opened. This shear zone has an altitude of N 5° E/65° S.E. The south ore shoot appears to be formed at the junction of the N.W. - S.E. main shear and the large shear in the east wall.

The ore-zones are highly faulted. The massive sulfides are completely surrounded by fault gouge, but the sulfides themselves show very little evidence of shearing. This suggests that the sulfides were formed after the faulting took place. The banded nature of the ore indicates a replacement type deposition. The blocky diorite that terminates the ore is not sheared, and without the shearing no mineralization is present. Note: The diorite may not be intrusive, but rather the central portion of a thick andesite flow that has crystallized.

The south ore-shoot was diamond drilled from both underground and from the surface. Core recovery from underground was less than 5%. Sludge returns indicated that the massive ZnS & Cu Fe S_2 extends at least 45 ft. below the sill and 45 ft. southward from the raise. The surface diamond drilling indicates that the south ore-shoot terminates before it reaches the 100 ft. depth. No massive sulfides nor any extensive shear zone were encountered in the surface drill hole in the area of the south shoot. It is possible that the drill could have passed through an unsheared "horse" of wall rock within the shoot itself, giving an erroneous impression of the character of the south shoot; however, the 200 ft. level drift shows that the two ore shoots to the north do not extend downward 85 ft. and it is quite probable that the south shoot also terminates in less depth than the drill hole.

The north zone: A two set raise (12'x12') 120 ft. long was driven through the north shoot to the surface. The north mineralized zone is smaller than either the south shoot or the shoot at the intersection of the x-cut and 100 ft. level drift. The north shoot was approximately 4 ft. wide at the sill. Six feet up it widened to 10 ft. wide and 20 ft. up became a 2" stringer that disappeared 60 ft. above the sill in the oxidized zone. The north shoot is 30 ft. long. It was not intersected in the drift 85 ft. below. This raise was continued through to the surface 120 ft. to form an air raise.

The drift on the 100 ft. level was continued 109 ft. southward from the south raise to a point vertically below the massive ore shoot at the original discovery. A 40 ft. wide weakly mineralized shear zone was explored by a x-cut 20 ft. into both the foot and hanging walls. The shear zone contained numerous stringers of chalcopyrite and lenses of chert. The chalcopyrite veinlets are short, 2" - 6" long, 1/4" wide and are scattered throughout the shear zone, copper averages 0.25%. The walls and the face at the south end were longholed for 30 ft. but no massive sulfides were encountered. This sheared zone appears to be part of the same zone found 50 ft. up and 30 ft. into the east wall of the south raise.

One structural feature of the drift beyond the south ore-shoot must be pointed out. The altitude of the shear beyond the south raise changes strike from N 10° W to N 25° W, the dip of the vein is 65° to the east. Although this strike takes the drift vertically below the old original shaft, it does not conform with the strike and dip of the shear along which the massive ore-shoots are found. The end of the drift in the writer's opinion is actually 40 ft. out into the east wall. An E x - core drill hole was drilled into the west wall from the face of the west cross-cut at the end of the south drift. At 22 ft. into the wall a 2 ft. wide sheared and pyritized zone was intersected. The core recovered contained less than 10% pyrite. However, shortly after the hole was completed it started bleeding heavy iron oxide, far in excess of the amount that is indicated from the small percentage of pyrite in the core. There must be an oxidizing massive body of sulfides somewhere in the vicinity of the drill hole. It is the writer's opinion that the heavy iron oxide is coming from the ore-shoot at the original discovery some 200 ft. above. If so, this would prove that the south end of the 100 ft. level drift has been driven 40 ft. out into the east wall.

Character of the Sulfide Mineralization

The massive sulfides have a distinct banding with sphalerite making up the bulk of the mass. Chalcopyrite predominates over the pyrite. The chalcopyrite and pyrite form distinct separate bands.

The gangue mineral is a fine grained argillite (?) with minor amounts of blue-grey chert? It is the writer's opinion that the massive lenses of sulfides were formed by selective replacement of the sedimentary rock. The mineralizing solution entered into the fault zone and selectively replaced the sediments. This maybe one reason why the ore masses are so small, the amount of sedimentary rock found along the main shear zone is very limited.

A second type of non-commercial sulfide mineralization exists in the east wall of the main shear zone. Disseminated pyrite and sphalerite with small lenticular veinlets of pyrite and chalcopyrite in a highly sheared fine grained, volcanic rock intersect the main shear. This type of mineralization has been explored in two places in the east wall on the 100 ft. level. One area exposed is 50 ft. above the sill and 30 ft. into the east wall of the south ore-shoot, the other area is in the 40 ft. wide x-cut at the face of the south drift. Neither of these zones contain economic values; however, there may be a direct relationship between the massive ore and the disseminated ore. The massive sulfides maybe the result of the junctioning of the main N.W. - S.E. shear with the large shear containing the disseminated sulfides. If the junctioning of the shears occurs in the area containing the sedimentary rocks, an ore-shoot of massive sulfides results. If all three conditions are not met, no ore-shoot is formed.

The diamond drilling revealed a third type of mineralization to exist in the east wall of the 100 ft. level. Several zones up to 30 ft. wide of disseminated pyrite and minor chalcopyrite were intersected in the underground drill hole that tested the I.P. anomaly at 00,3.5 E. The main zone of interest is a 6 ft. wide zone 311 ft. in the east wall containing 11% Sulfur, 1.25% Zn, 0.25% Cu. This amount of mineralization is not exciting in itself but the zone maybe. The core showed the gangue to be non sheared, purplish color - altered volcanic rock with a high percentage of silica. The absence of the shearing, and the replacement of the volcanic rock by silica and sulfides indicates that a second type of replacement deposit may exist on the claims. One drill hole was not sufficient to ascertain the true character of the mineralization in this zone.

A similar type of mineralization as above was also observed in the core from 80 ft. east and 192 ft. below the south ore-shoot in the surface diamond drill hole that was collared at St. 3N, 3.35 W - 26° S, 80° E. The mineralization drilled was only 6" wide but consisted of highly siliceous purplish colored volcanic rock with 1/4" wide bands of solid sphalerite and chalcopyrite. The core was not sheared; the quartz and sulfides appear to be replacing the vol. rock.

Extremely small amounts of a brittle dark grey mineral (tetrahedrite) are found in the south ore-shoot. Galena (PbS) is reported to have been found in the shaft below the 100 ft. level.

Ore Reserves

The following ore-reserves are indicated from the exploration drifts and raises:

(1) Proven ore:

Fifteen hundred tons of approximately $22.00 per ton ore is calculated on the basis of the assaying of several hundred cars of ore from both the south and north raises. Because of the high cost of freight and smelting charges on Zn concentrates, the Zn evaluation is based on

Zn = $ 0.07 per lb.
Cu = $ 0.30 per lb.
Ag = $ 1.00 per oz.
Au = $30.00 per oz.

The 1500 tons of stockpiled ore =

Zn = 6% =	$ 8.40
Cu = 1.75% =	$ 10.50
Ag = 2.5 oz. per ton =	$ 2.50
Au = 0.02 oz. per ton =	$ .60
Total =	$ 22.00 per ton

Gross Value of stockpile = $33,000.00

Due to the erratic distribution of the massive ore, the only proven ore at the Oak is that which is mined.

(2) Probable Ore:

This is ore blocked out to a high degree of certainty either by drifts, raises or good core rec. In calculating the dollar value of the probable ore reserves, it must be considered that the ore mined from the exploration raises was not selectively mined. When the massive ore didn't extend the full width of the raise, the mined material was sampled and stockpiled. Selective mining of the ore would raise its gross value from $22.00 to approximately $35.00 per ton, but it would also raise the cost of mining. Using the $35.00 per ton figure, the probable ore reserves are as follows:

North Ore Shoot - Below sill only as ore above sill is mined out.
30 ft. long x 5 ft. wide x 20 ft. deep
10 cu. ft./per ton = 300 tons @ $35.00 = $10,500.00

Ore shoot at x-cut - 100 level
50 ft. long x 5 ft. wide x 85 ft. vert. section
10 cu. ft./per ton = 2165 tons
--- Approximately 500 tons have been mined from this shoot and removed in past years from the property.
1665 tons x $35.00 = $48,275.00

South Ore Shoot
60 ft. long x 5 ft. wide x 100 ft. vert. section
10 cu. ft./per ton = 3000 tons
---1000 tons of this shoot are stockpiled
2000 tons x $35.00 per ton = $70,000.00

Ore-Shoot - at the original discovery shaft
50 ft. long x 5 ft. wide x 50 ft. vert. section
10 cu. ft./per ton = 1250 tons
---approximately 250 tons of this has been mined and removed.
1000 tons x $35.00 per ton = $35,000.00

Total probable reserves = 4965 tons with an estimated gross value = $173,875.00

Most of the probable ore reserves lie below the sill. This means that before the ore can be removed, raises from the 200 ft. level or lower drift would be required at the north shoot and the x-cut shoots. The lower drift would have to be extended at least 200 ft. southwest to arrive below the south shoot.

Selective mining costs per ton of the ore in the shoots equals $10.00 per ton, to this must be added an equal cost for developing the drifts and raises. Mining cost will equal $20.00 per ton. Milling costs would add at least $5.00 per ton more.

Cost of mining and milling 4965 tons @ $25.00 per ton =	$124,125.00
Probable ore reserve =	$206,875.00
Cost of Mining and Milling =	$124,125.00
Difference	$ 82,750.00

This type of ore must be milled. An efficient, modern selective floation mill will cost approximately $1500.00 per ton of ore treated in a 24 hour period, e.g. 100 ton mill cost $150,000.00. If a small tonnage mill is built, then the unit cost per ton of ore milled becomes excessive. At present there is not enough ore developed at the Oak to justify a mill. The probable ore reserve does not represent a profit.

Possible Ore Reserves:

Possible ore reserves are calculated on geological evidence and in some cases geophysical data. The vein system at the Oak cannot be traced on the surface, even in the area directly above the mine working. There is no surface evidence that the vein system continues along strike away from the mine area. Conversely, there are no visible geological feature that would tend to stop or cut-off the vein system along strike. The writer thinks that the vein system will extend from Jump-off-Joe Creek to the east-west valley of Cove Creek. If the shear does continue, then it is quite possible that more ore shoots will occur along the structure; however, it is beyond the ability of the writer to predict where the next ore shoot will be. The most concrete evidence that the sulfide masses do occur along the main shear zone are the I.P. anomalies at St. 00,3S and St. 6N - 3-2W. The problem with any I.P. anomaly is that the cause of the anomaly may be a barren pyrite. However, the writer thinks that the anomaly at 6N, 3-2W must be of sufficient size to warrant checking, but until such time as the anomalies are tested, no additional ore-reserves can be calculated at the Oak.

The possibility exists that some of the larger geophysical anomalies, especially those to the west of the mine workings will have large reserves of ore in them. The west side anomalies coupled with the evidence of a large breccia zone (itself anomalous) seem the most likely place on the claim to find a large ore-reserve. Again the writer is fully aware that the odds are greater that the I.P. anomalies may be barren pyrite or so low grade in copper and zinc as not to be commercial.

Geophysical Surveys

I.P. & Resistivity Survey - by McPhar Geophysical Co., Toronto, Ontario, Canada.

The I.P. and Resistivity survey was run using a dipole-dipole configuration using first 300 ft. spreads and then detailing with 100 ft. spreads. (See map) One definite anomaly (100 ft. spread) was found along the strike of the underground workings at a point 330 ft. beyond the face of the 100 ft. level drift.

One possible anomaly was found in the immediate area of the underground workings at 6N, 3-2W. This possible anomaly was picked up on the 300 ft. spreads, but unfortunately at the time of the survey the anomaly was not detailed. This mineralized zone must be larger and more highly mineralized than any of the known ore-shoot in the 100 ft. level. However, the mineralization may be only pyrite. Neither the anomalies at 3S,00 or 6N, 2W have been tested.

I.P. lines were run with 100 ft. spreads across the known ore shoots underground and across the area of the old original shaft. None of these areas gave any anomalous readings.

The definite anomaly at St. 00,3.5 E was diamond drilled. Very minor amounts of mineralization of pyrite (1-2%) plus traces of chalcopyrite were found at 178 ft. to 212 ft. in a vertical hole from the surface drill station. (See map of diamond drilling program). The same anomaly was then diamond drilled from underground (See map). The anomalous zone was proven to consist of a series of pyritized zones and major water faults. At a point 311 ft. in the east wall a 6 ft. wide zone of 22% sulfides was intersected in the drill hole. The core consisted of purplish-colored highly siliceous rock containing pyrite (98%), chalcopyrite (.75%), and sphalerite (2.5%). The core showed very little shearing.

The other definite anomaly is located 1500 ft. north and 600 ft. east of the original shaft (00,00). This anomaly is centered near the contact of the porphyritic rock and volcanics. This anomaly has not been drilled.

The pattern of probable anomalies was found west of the underground workings. The indications are that at least two mineralized shear zones parallel the underground workings. The strongest of the two parallel zones is in the valley floor along the contact between the metavolcanics and the granitic stock. The two zones in the west block are of sufficient size and character to be detected by both the 300 and 100 ft. spreads. The apparent metal factors are not high and probably the metallic content is not great. The parallel zones west of the mine workings appear to be continuous for at least 3100 ft. in length.

A breccia area 300 ft. wide by 1000 ft. long at the south end of the property gives possible and probable anomalies, with some of the highest metal factors recorded in the survey occuring in this breccia zone.

Neither the anomalies west of the mine working nor south in the breccia zone were drilled.
NOTE: Special equipment and care was used to make certain the anomalies in the valley floor were not caused by the power line.

Self Potential and Resistivity Survey by G. Hart of Eugene, Oregon

The self potential unit was employed in the hopes of obtaining a cheap way to detail the I.P. anomalies. In most cases around the mine workings the S.P. corresponded with the I.P. anomalies, but no additional detail was obtained from the S.P. survey.

A resistivity probe of the underground diamond drill hole into the east wall was made. The resistivity probe indicated the area of least resistivity was at a point 151 ft.-160 ft. The core from this area was only weakly pyritized. The resistivity probe did not give any additional data from which to draw any conclusions about the character of the mineralization in the east wall.

Diamond Drill Program (See Maps)

Ax diamond drill coring was used on the surface using a Longyear "24" truck mounted rig. The I.P. anomaly St. 00,3.5 E was drilled. The anomalous zone was drilled using - 45° holes from both sides of the anomaly plus a series of vertical holes within the anomaly.

The upper 45 ft. of the zone was a soft, iron stained, altered volcanic rx. requiring casing to 45 ft. of depth. Below this was fresh volcanics (andesite). No sulfides were observed until a depth of 175 ft. This did not correspond with the I.P. survey which indicated that sulfides would be approximately 50 ft. below the surface. The surface drilling was costly, the unaltered volcanics were brecciated and fractured, with quartz rehealing the fractured zones. It was extremely difficult to make footage, 10-15 ft. per shift, and was very hard on bits. (10-15 ft. per bit) Part of the difficulty, especially at the start of the drilling program was that the crew were inexperienced. Blocking of the core-barrel was a problem, also it was difficult to maintain circulations.

Generally, surface diamond drilling costs in the Grants Pass area for Ax size drilling is approximately $7.00 per ft. - the cost at the Oak Mine was $15.00 per ft.

This same anomalous zone was drilled with E - X from underground, using a Chicago Pneumatic 55 and a 310 cu. ft. compressor. The hole was collared in the east cross cut of the face of the south drift (100 ft. level). The underground drilling was less expensive, as the advance per foot was double the surface, and the bit cost was less than half the surface cost. Underground drilling costs were approximately $4.00 per ft.

A 460 ft. Ax drill hole was drilled from the surface, the hole was collared at 3N, 3.35 W. The purpose of the hole was to explore the south ore shoot at 100 ft. below the level. No massive ore was cored in the area of the south ore shoot. The hole was continued into the east wall and at a point 190 ft. below the level and 80 ft. into the east wall a 6" zone of purplish colored highly siliceous rock containing massive chalcopyrite and sphalerite was cored.

A 120 ft. long E - X size hole was drilled into the west wall from the face of the west x-cut in the south drift of the 100 ft. level. Two zones of pyrite were intersected, one zone at 22 ft. and a broad weakly mineralized zone 90 ft. - 120 ft. The pyrite zone at 22 ft. contained 5-10% pyrites. Two long holes were drilled into this zone. Shortly after the holes were drilled, heavy iron oxide started bleeding out of the holes. This condition continued to date with the amount of iron oxide becoming heavier. The amount of sulfide in the core does not appear sufficient to cause the heavy iron oxide. Apparently a more massive body of sulfides must be present above the hole. This zone may be part of or related to the ore-shoot at the old original shaft.

An attempt was made to drill the south ore shoot from the sill level, along strike using the E - X underground drill. Core recovery was almost nil. It was extremely difficult to pull the core-barrel from even 40 ft. deep. The sludge, when circulation of the fluids could be maintained showed massive sphalerite and chalcopyrite to be present to a depth of 65 ft. (-45°) in two holes drilled along the strike of the ore-shoot.

An E - X -45° hole was drilled under the ore-shoot at the intersection of the 100 ft. level x-cut with the drift. The hole was collared in the east wall and drilled to intersect the shoot 25 ft. north of the shaft and at a depth of 45 ft. Upon entering the sheared zone circulation was lost. Coring was continued, a 20 ft. section contained buttons and chips of massive chalcopyrite sphalerite. Core recovery was less than 5%.

Diamond drilling in the areas of the massive sulfides is not a very useful tool. The zone around the ore is so highly faulted that both core and sludge results are poor. Another factor that renders the diamond drill ineffective is the large unmineralized blocks of wall rock that are found within the ore-shoots. These blocks of unmineralized rock will core but are misleading information, as the drill may well be passing right through an ore-shoot, yet the core indicates no ore to be present.

Pattern drilling from underground, across the apparent strike will probably give the character of the zone, however, numerous holes are required for the pattern and the cost therefore is quite high.

Lower Cross-Cut and Drift 200 ft. level

Following the diamond drilling, a 6 ft. x 8 ft. cross-cut was driven from station 610 ft. N and 550 ft. west north of the original shaft and 86 ft. below the 100 level. The cross cut intersected the shear zone at 355 ft. from the portal and approximately 60 ft. north of the north ore-shoot. The shear has an attitude of N 20° W/70° W. The shear contained clay gouge and heavily oxidized iron-stained sheared country rock. At a point 38 ft. south-east of the x-cut, a major fault with an attitude of N 65° E/65° S.E. cut the N.W. - S.E. shear but does not displace it laterally. The fault gouge is approximately 2 ft. wide consisting of a heavy clay. The character of the main N.W. - S.E. shear zone changes at this fault. The south side of the N 65° E. fault changes from oxidized to non-oxidized, the main shear no longer makes water and minor amounts of fresh pyrite appear in the shear zone. This suggests that the N 65° E/65° S.E. is a reverse fault. The foot-wall block or the north side of the fault has dropped down relative to the south side. This means that the north side of the fault represents a block of rock that is vertically higher in the structure or further removed from the basement rocks. This may be an important feature as both the north ore-shoot and the ore-shoot at the intersection of the cross-cut in the upper level appear to terminate before reaching the lower drift. The indications are that the ore-shoots of massive sulfides in the upper level are the roots of the ore-shoots that were formed in the main shear zone in a select sedimentary rock. The south block appears to have very little thickness above the basement rock. Therefore, if a larger ore-shoot is to be found along the main shears, it will probably be in the footwall block north of the N 65° E/65° S.E. fault. A dyke of very fine-grained dark grey rock (fine grained gabbro ?) was cut in the drift 85 ft. below the ore shoots in the upper level. (See map) These dykes may represent the upper portion of the basement rocks. The lower drift has been terminated 112 ft. south of the x-cut. The east walls and face of the drift were long-holed with a pattern of 15 ft. - 45 ft. holes. (See map) This drilling tested the area under the ore shoot at the x-cut in the 100 level. The indications are that neither the north ore shoot nor the shoot at the x-cut extend downward into the lower level.

The I.P. survey indicates a mineralized zone of sufficient size and character to be present 118 ft. north of the N 65° E/65° S.E. fault. This possible anomaly was large enough to be picked up on the 300 ft. spreads; however, there is no way of knowing from the I.P. survey itself what type of sulfide mineral is causing the anomaly.

SUMMARY

The exploration program on the Oak Mines group of claims in Sections 4 and 9, Twp. 35S, R. 5W. W.M. in Josephine County, Oregon, was conducted from June 1965 to August 1967.

The Oak Mines group of claims consist of four unpatended mining claims and a 5 acre millsite under option (approximately 80 acres) and 10 claims held by location. The claims are located on a narrow embayment triassic metavolcanics (andesites and basalt flows) surrounded on three sides by intrusive gabbro qt. diorite of Lower Cretaceous age.

A series of N.W. - S.E. trending mineralized faults have developed in the metavolcanic block. The underground workings of the Oak Mine are located along one of the N.W. - S.E. trending faults. The fault system in the underground workings has been opened for 600 ft. in length and 200 ft. in depth by approximately 1000 ft. of underground workings.

Four ore-shoots of massive ZnS & Cu Fe S_2 have been found in the mine area. The exploration work indicates that a probable ore-reserve of approximately 5000 tons of $35.00 ore is present in the four ore shoots. The ore if mined 5 ft. wide will average 9% Zn, 3% Cu, 3.0 oz. Ag per ton and 0.05 oz. Au per ton. The exploration work indicates that mining and milling costs would be approximately $25.00 per ton. The mining costs are high because the ore-shoots are small, requiring excessive development work per ton of ore mined. Also the ore-shoots are extremely faulted, requiring timbering even in areas where the ground is opened for only a small distance.

The faulting and erratic distribution of the massive ore make the exploration costs high. Diamond drilling of the ore shoot is not a particularly effective tool. No systematic pattern or set of geological conditions were found from which to predict where new ore shoots will occur. Two of the known ore shoots on the 100 ft. level of the mine do not continue into the 200 ft. level. Because the ore-shoots are so small and difficult and costly to find the exploration work was terminated in the 200 ft. level after 138 ft. of drift did not disclose any ore.

The exploration program to evaluate the economic potential of the mineralization at the Oak Mine consisted of the following:

(1) 687 ft. of cross-cut and drifts on two levels.
(2) (a) 70 ft. 18'x12' raise was driven on the south ore-shoot from the 100 ft. level.
    (b) 120 ft. 12'x12' raise (air raise) explored the massive lenses of sphalerite and chalcopyrite in the north ore shoot.
(3) 1,843 ft. of diamond drilling, both surface and underground.
(4) Approximately 600 ft. long-hole drilling.
(5) Induced Polarization and Resistivity Survey by McPhar Geophysical Co.

(6) Self-Potential and Resistivity Survey by G. Hart.
(7) 1500 - 1 ton cars of ore were sampled and stockpiled from the raises.

Average of the 1500 cars. Assays by Colorado Assay Co., Denver, Colorado is:

Zn - 6% @ .07 per lb. =	$ 8.40
Cu - $1.75 @ .30 per lb. =	$ 10.60
Ag - .02 oz. per ton @ $1.00 per oz. =	$ 2.00
Au - .02 oz. per ton @ $30.00 per oz. =	$ .60
Total gross value $22.00 per ton =	$33,000.00

This ore was mined the full width of the raises. The ore shoots are narrower than the raises.

The geological and geophysical surveys indicate 6 areas that have merit as exploration targets. These areas are:

(1) St's 6N, 2.5N, and 00, 3S. along the strike of the fault that carries the four known ore-shoots underground.
(2) The two parallel shears west of the underground workings at 600 ft. and 1000 ft. west.
(3) The breccia zone at the south end of the claims.
(4) The mineralized zone 300 ft. east of the mine workings.

The Induced Polarization survey over the known ore-shoots in the mine did not indicate the shoots to be anomalous. This is probably because the ore-mass is not large enough to be detected. However, at St. 00,3S or 330 ft. south of the face of the 100 ft. level drift, a definite anomalous zone is indicated. This zone was detected using 100 ft. spreads. A possible anomaly using 300 ft. spreads is indicated 80 ft. north of the 200 ft. level x-cut. The fact that the known ore shoots could not be detected, indicates that these anomalies along strike must be one of two things: (a) either the zones are larger than any of the known ore shoots or (b) the zones contain a larger percentage of a better conductor (pyrite) than the ore-shoots. If (b) is the case, no new ore-reserves are likely to be found.

The anomaly at St. 00,3.5 E. was detected as one single high reading on the 300 ft. spread. The 100 ft. spread gave a definite anomaly. This anomaly was diamond drilled, first from the surface and then from underground. No reason for the anomaly could be found with the surface drilling. A Self-Potential and Resistivity unit was employed to check the I.P. The SP&R survey confirmed the I.P. that a conductor was present in the zone but that it was at a depth much greater than what the I.P. indicated. The diamond drilling was shifted to the 100 ft. level. The underground drilling greatly improved the drilling conditions. The surface area above the anomaly was extremely difficult and costly to core. The underground drilling indicated the anomaly to be caused by a series of three disseminated pyrite zones and a major water fault plus one 6 ft. wide zone of massive pyrite containing 1.25% Zn and 0.25% Cu. The massive pyrite is in a gangue of highly siliceous purplish colored volcanic rock that did not appear to be sheared in the core. This mineralization is in a much different rock type than the massive ZnS & Cu FeS_2 in the underground workings.

The geophysical survey indicates that the zones west of the underground workings have a strike length of over 3000 ft. The anomalous zone in the valley floor is located in the contact between the metavolcanics and the intrusive stock. The west zones are both detectable on the 300 ft. spreads; however, the apparent metal content appeared to be quite low in these zones.

The surface mapping on the claims shows that a large breccia zone has developed in the metavolcanics at the southwest end of the claim. The breccia zone is 1000 ft. long by 300 ft. wide. Float with minor amounts of ZnS & Cu Fe S_2 has been found in the area of the breccia. The I.P. Survey showed a probable anomaly with a complex pattern of high and low metal factors within the breccia zone. Some of the highest metal factors obtained on the survey are recorded below the breccia.

Conclusions and Recommendations

The exploration data indicates that the known ore-reserves on the Oak Mine are not of sufficient size or grade to constitute an economical mineral deposit. The indicated tonnage is too small to warrant building a mill. The high cost of exploration and development does not justify further expenditure of capital to develop the known shoots. The mining claims cannot be patented on the basis of the economic worth of the known ore-reserves.

If a commercial mineral deposit exists on the claim, it must be found elsewhere other than in the immediate area of the known ore-shoots. There are four possible areas indicated.

(1) A possible area of massive ZnS & Cu Fe S_2 similar to the known ore-shoots is located at St. 6N, 2.5 W.
(2) A possible area of large volume disseminated mineralization is on the contact between the metavolcanic and the intrusive rock in the valley floor.
(3) A second area that may possibly contain a large volume of disseminated mineralization is the breccia zone at the south end of the claims.
(4) The mineralized zone 300 ft. in the east wall should be further explored.

It is recommended that the exploration targets be explored by diamond drilling in the order as listed above. The area at 6N, 2.5 W should be drilled with a series of drill holes from underground. Enough holes should be drilled so as to compensate for the erratic distribution of the massive sulfides and to compensate for any "horses" of wall rock that may be present. Some of the holes should be drilled below the x-cut level to allow for any misinterpretation of the depth from the I.P. data. The I.P. indicates that the top portion of the ore zone should be exposed in the 200 ft. level. The diamond drill station should be cut in the x-cut so as to allow the drill to cross cut the zone. The drill holes could be very short, 100 ft. to 150 ft. in length to begin with. The pattern can be established on the results of the first two holes. The drill station should be relatively inexpensive to cut. AX or BX size core should be used. The larger core would give better recovery and better results. The cost may be no more than for the smaller EX core.

The anomaly west of the mine and the breccia zone should be drilled from the surface. From the experience gained in the past, good core results can be obtained from the surface if surface casing is properly set and a large core size (NX) is used to start the holes. Both the west zone anomalies and the breccia zone should have a minimum of 3-350 ft. holes.

If the drilling of these three areas does not indicate the presence of commercial grade ore, then target (4) in the east wall and entire claims should be abandoned as mining claims.

This report is dated this 17th day of August in Grants Pass, Oregon, and is respectfully submitted by

Lloyd E. Frizzell BSc.
Geologist

OUR MOTTO: — WHAT THERE IS IN IT, NO MORE NO LESS.

EDMUND F. PHILLIPS, VICE-PRES.—GEN. MGR. M. E. PHILLIPS, SECRETARY

THE COLORADO ASSAYING COMPANY

(INCORPORATED)

ASSAYERS AND CHEMISTS

2244 BROADWAY

DENVER 1, COLORADO November 24, 1965

REPORT ON DETERMINATIONS MADE FOR— Oak Mines, Inc.,
Grants Pass, Oregon

SAMPLE MARKS		METALS	Amount per Ton Ozs. Hds.	PER CENT	Value per Ton Dollars Cents	
North Drift	Cars 101-151	Gold	.01		.35	
		Silver	.40		.52	
		Copper		0.70	4.20	
		Zinc		1.5	2.25	7.3
"	Cars 152-202	Gold	.02		.70	
		Silver	.60		.78	
		Copper		0.60	3.60	
		Zinc		3.3	4.95	10.
"	Cars 203-223	Gold	.01		.35	
		Silver	.30		.39	
		Copper		0.30	1.80	
		Zinc		0.7	1.05	3.5
North Stope	Cars 224-274	Gold	.03		1.05	
		Silver	2.60		3.38	
		Copper		2.85	17.10	
		Zinc		11.4	17.10	38
South Stope	Cars 447-490	Gold	.01		.35	
		Silver	.30		.39	
		Copper		0.35	2.10	
		Zinc		1.8	2.70	5.
"	Cars 491-541	Gold	.03		1.05	
		Silver	1.40		1.82	
		Copper		1.40	8.40	
		Zinc		10.2	15.30	26.5
"	Cars 542-592	Gold	.03		1.05	
		Silver	1.50		1.95	
		Copper		1.40	8.40	
		Zinc		5.9	8.85	20.
"	Cars 593-643	Gold	.03		1.05	
		Silver	2.00		2.60	
		Copper		1.75	10.50	
		Zinc		8.5	12.75	26.

GOLD AT $35. PER OUNCE SILVER AT $1.30 PER OUNCE
LEAD AT ______ PER UNIT COPPER AT $6.00 PER UNIT

Zinc at $1.50 per unit.

THE COLORADO ASSAYING COMPANY

By Ed Phillips

796
447

OUR MOTTO: — WHAT THERE IS IN IT, NO MORE NO LESS.

EDMUND E. PHILLIPS, VICE-PRES.—GEN. MGR. M. E. PHILLIPS, SECRETARY

THE COLORADO ASSAYING COMPANY

(INCORPORATED)

ASSAYERS AND CHEMISTS

2244 BROADWAY

DENVER 1, COLORADO November 24, 1965

REPORT ON DETERMINATIONS MADE FOR— Oak Mines, Inc.,
Grants Pass, Oregon.

SAMPLE MARKS	METALS	Amount per Ton Ozs. Hds.	PER CENT	Value per Ton Dollars Cents	
South Stope Cars 644-694	Gold	.01		.35	
	Silver	1.20		1.56	
	Copper		1.20	7.20	
	Zinc		6.3	9.45	18.5
" Cars 695-745	Gold	.02		.70	
	Silver	2.00		2.60	
	Copper		1.60	9.60	
	Zinc		8.8	13.20	26.1
" Cars 746-796	Gold	.03		1.05	
	Silver	1.60		2.08	
	Copper		1.40	8.40	
	Zinc		6.2	9.30	20.8

GOLD AT $35. PER OUNCE SILVER AT $1.30 PER OUNCE

LEAD AT ____ PER UNIT COPPER AT $6.00 PER UNIT

THE COLORADO ASSAYING COMPANY

By Ed Phillips

Zinc at $1.50 per unit.

REPORT OF PROPERTY EXAMINATION

AMERICAN SELCO INCORPORATED

Date Visited: November 21, 1974

Date Written: December 23, 1974

By: J. Prochnau

Prospect Name and Commodity: Oak Mine - Cu-Zn-Ag-Au

County and State: Josephine County, Oregon

Latitude and Longitude: Approximately 42°33'11"N and 123°18'01"W to Oak Mine workings.

Location and Means of Access: The Oak prospect is located 12 miles northeast of Grants Pass and one mile southeast of the confluence of Jumpoff Joe and Cove Creeks. Specifically the key parcels of land lie within Sections 4 and 9, T34S, R5W, WB&M (Figures 1 & 2).

The area is readily accessible from Grants Pass via Interstate 5 about eight miles to the Hugo Interchange. From here follow a hard surfaced road for 6 miles easterly along Jumpoff Joe Creek, then one mile south across the creek to the Orofino road (marked 4-35A) which leads the remaining quarter mile to the two lower adits at the Oak mine.

Topography: The Oak claims occupy the lower slopes of a northwest spur ridge of Elk Mountain. Terrain is moderate for southwest Oregon with elevations ranging from 1400' in Jumpoff Joe Creek to about 2650'. The area is essentially free of snow throughout the year and can easily be worked in winter.

The property has not been logged and is free of the dense underbrush normally found in the Klamath Mountains.

Map Coverage and References:

Glendale, Oregon 15' Topographic Quadrangle - 1:62,500

Medford 1°x2° (AMS) Sheet - 1:250,000

Oregon Metal Mines Handbook (1952) Bulletin No. 14-C, Volume II, Section I - "Josephine County" pp. 88-89

Private Reports and Maps by L. Frizzell and St. Joe Minerals Corporation.

Ownership: Four unpatented, fractional mining claims (Victor 1 & 2, Portland 1 & 2), covering the Oak mine workings, owned by Robert F. Barger and Roland Johnson (185 N.E. Scenic, Grants Pass, Oregon - Telephone Number (503)-479-5183).

Twenty one unpatented mining claims (Hope 1-21) covering the coincident geochem/Turam anomaly, south of the Oak mine, owned by St. Joe Minerals Corporation. These are to be quit claimed to Lloyd Frizzell (720 N.E. Madrone, Grants Pass, Oregon 97526

Telephone Number (503)-479-4116) and Spalding and Son Lumber Company of Grants Pass.

80 acres of deeded land, with mineral rights, covering the south tip of the geochem/Turam anomaly, owned by Sterling Foreman (1211 Minnesota Avenue, San Jose, CA. 95125); Spalding is currently looking into the outright purchase of this property.

Previous Production, Development, or Exploration: The Oak Cu-Zn-Ag deposit was discovered and developed in the early part of the century. Intermittent periods of activity subsequently extended the shallow upper workings and the main adit crosscut and drifts to near their present extent. A few tons of gossan were mined and cyanided for gold shortly before World War II but, apart from that, there has been no production.

Spalding and Son Lumber Company of Grants Pass acquired the property in 1965 and conducted an underground and surface exploration program, under the supervision of Frizzell, intermittently until 1968. Spalding's work included driving the lower adit cross-cut 350' to the vein and drifting 100' south, advancing the drift at the main level 100' to the south, raising on the "North" and "South" oreshoots, 1097' of surface core drilling, limited underground core and percussion drilling, and IP surveys in the immediate mine area. Cost of the program was reportedly \$250,000. Approximately 1500 tons of ore are stockpiled at the main adit portal.

The only other modern exploration work was carried out by St. Joe Minerals Corporation last summer. Their work consisted of soils geochemical, magnetic, and limited Turam surveys, and was successful in defining a coincident Cu-Zn geochem/Turam anomaly about ½ mile south of the Oak mine workings. Following recent changes in management, St. Joe abruptly closed their Oregon office and dropped their option on the Barger-Johnson claims without testing the anomaly. St. Joe claims, covering the anomaly, are presently being transferred to Frizzell and Spalding.

Recommendations or Disposition: The Oak mine contains three small lenses of massive Cu-Zn-Ag-Au mineralization in a favorable geologic setting. Although these deposits have been thoroughly tested and are of little interest in themselves, the coincident geochem/Turam anomaly, outlined by St. Joe shortly before terminating their Oregon program, warrants investigation. It represents a clearly defined target which can be immediately tested by trenching or drilling without costly and time-consuming first stage surveys. Due to its low elevation, exploration at Oak can be carried out at any time of the year.

Key ground is being quit-claimed to Spalding and Frizzell who are open to an easy deal requiring little front money and a minimal first year commitment. I have suggested perhaps \$1000 down and a \$5000 work commitment, for the first 6-12 months, toward an end price of \$250,000. This is generally acceptable to Frizzell.

The Barger-Johnson claims should be acquired if we can do so with only token front money. They are not critical to the immediate target but obviously would have to be acquired if we were successful on the Hope claim anomaly. I believe a down payment of $250, plus a guarantee of assessment work, toward an end price of $25,000-50,000 would be acceptable.

The Foreman property, containing the "tail" of the geochemical anomaly, would also have to be acquired eventually. These people have not yet been approached and should not be until we have reached agreement with Spalding and Frizzell on the key claims.

Should an exploration option be successfully negotiated with Spalding/Frizzell, a minimal effort would be required as an initial test of the anomaly. Cost of the first stage program is estimated to be $15,000, distributed as follows:

Option Payments	$ 2000.00
$1000 Spalding/Frizzell	
$ 250 Barger-Johnson	
$ 750 Foreman	
Legal Costs	1000.00
Labor	
Re-establishment of grid across the anomaly area - Two miles of grid, minimal cutting - 5 days @ $100/day	500.00
Assay - 120 check soil samples @ $2.50	300.00
Road & Trenches	2000.00
Supervision, Limited Geology, (Trenches & underground) Geophysics 1 man - 1 month	2000.00
	$ 7800.00
w/10% contingency	8500.00
Optional Drilling, conditional on trenching etc. - 300' @ $20/ft	6000.00
	$14,500.00
or TOTAL	$15,000.00

Geology: The Oak mine area has been mapped on a regional scale as part of U.S.G.S. Folio 218 (Riddle). The mine and vicinity are underlain entirely by intermediate volcanic rocks of the Triassic Applegate Formation. Although irregular masses of serpentinized ultramafics are common to the area, none are known to occur near the property. Granite plutons of Nevadan age intrude the Applegate several miles east and west of Oak. The stratified rocks have a dominant north to northeast grain. Areal geologic relationships near the Oak mine are illustrated by Figure 2.

There is little outcrop on the immediate property. However, the two adit crosscuts are driven entirely within structureless, fine-grained, pale green, intermediate volcanics. Occasional outcrops and float, found elsewhere on the property, are montonously similar and it is my impression that surface mapping would add little to our present understanding of the geology. Frizzell mentions intercalated thin beds of argillite and dacite porphyry dikes east of the mine workings, but I did not identify these rocks during my brief examination.

Medium to coarse-grained gabbro/diorite intrusions limit the Oak volcanic sequence on the east, west and south. However, the volcanics, only 3/4 mile wide at the Oak property, are known to continue an undetermined distance north of Jumpoff Joe Creek. Size and structure of the enclosing gabbro intrusions have not been determined. If the Oak volcanics are a roof pendant in the gabbro mass, this could be a problem with depth extent of any volcanogenic ores.

The Cu-Zn-Ag-Au deposits consist of small massive sulfide lenses localized along a strong, persistant shear zone striking N20°W and dipping 80-90° westerly. The shear has been traced for a strike length of 650' and through a vertical range of about 300'. Average width is 3-5'.

Within a 300' length of the shear at the main adit level three massive sulfide lenses have been developed. A fourth is indicated by the gossan at surface above the upper workings. The lenses are 30-60' long, inches to 20' wide, and 25-100' in vertical extent. Limits of the lenses are well defined by the workings and short drilling from underground and surface. Each contains 500-2000 tons of ore grading about 1.75% Cu, 6% Zn, 2.5 oz. Ag and 0.02 oz. Au. In detail the lenses trend near north-south, slightly oblique to the strike of the enclosing shear zone, and rake directly down the dip. Frizzell believes that the ore shoots are localized at the junction of the main northwest shear zone, north-trending fractures and replaceable sedimentary rocks in the plane of the shear zone. I could not recognize sedimentary rocks, nor any lithologic variation, in the mine and would classify the ores as probably volcanogenic. A more detailed study of the relationship of the deposits to structure and lithology should be a part of any investigation of the geochemical anomaly at the south end of the property.

The massive sulfide lenses are extremely erratic and pinch out in a matter of a few feet. Irregular nature of the lenses is at least in part due to segmentation by post mineralization movement along the shear and subsidiary fractures (Photo 2).

The Oak mineralization consists of fine grained, banded, massive sulfide with minor amounts of sheared country rock and bluish, cherty quartz (Photos 2 & 3). Dark sphalerite and pyrite are dominant with lesser amounts of chalcopyrite, galena and possible tetrahedrite.

Despite considerable expenditure, the Spalding-Frizzell effort in 1965-68 did little to enhance ore possibilities in the immediate Oak mine area. Rather, it appears to have limited the known occurrence to what can be seen and measured in the existing workings. Several drill holes intercepted narrow bands or stringers of semi-massive to massive pyrite-chalcopyrite and pyrite-sphalerite-chalcopyrite mineralization east of the mine shear, but none appear to represent potentially important targets. Best intersection was 1.25% Zn and 0.25% Cu along 6'.

The geochemical and geophysical work completed by St. Joe last summer outlined a coincident soils geochem/Turam anomaly ½ mile south of the Oak copper-zinc deposits. The anomaly, or series of anomalies, trend ENE'ly for a strike length of about 1500'. The strike direction, at roughly right angles to the grain of the rocks and trend of the known mineralization, is a bit perplexing and might be suggestive of a well defined E-W shear system with which most of the area's gold deposits are associated. However, coincidence of the geophysical and geochemical responses, and a magnitude of three to four times that defined over the known mineralization, combine to make it an attractive target. A south trending tail to the geochemical anomaly may be hydromorphic, or simply mechanical down slope drape.

My brief examination of the anomaly area failed to indicate an obvious source. There is no outcrop and float consists entirely of unaltered intermediate volcanics identical to the country rock at the Oak mine. The area can be trenched without difficulty.

Attached Figures 3 and 3A illustrate position of the anomalies with respect to land status and the Oak mineralization. Also attached are Mr. Reed's comments on the Turam anomalies.

CRIB MINERAL RESOURCES FILE 12

RECORD IDENTIFICATION
RECORD NO............ M061404
RECORD TYPE.......... X1M
COUNTRY/ORGANIZATION. USGS
DEPOSIT NO........... DDGMI 100-162
MAP CODE NO. OF REC..

REPORTER
NAME.......................... JOHNSON, MAUREEN G.
DATE.......................... 74 05
UPDATED....................... 81 03
BY............................ SMITH, ROSCOE M.
FERNS, MARK L. (BROOKS, HOWARD C.)
FERNS, MARK L. (BROOKS, HOWARD C.)

NAME AND LOCATION
DEPOSIT NAME.................. OAK MINE

MINING DISTRICT/AREA/SUBDIST. GRANTS PASS

COUNTRY CODE.................. US
COUNTRY NAME: UNITED STATES

STATE CODE................ OR
STATE NAME: OREGON

COUNTY.................... JOSEPHINE
DRAINAGE AREA............. 17100310 PACIFIC NORTHWEST
PHYSIOGRAPHIC PROV........ 13 KLAMATH MOUNTAINS
LAND CLASSIFICATION....... 49

QUAD SCALE	QUAD NO OR NAME
1: 62500	GLENDALE

LATITUDE	LONGITUDE
42-33-02N	123-18-25W

UTM NORTHING	UTM EASTING	UTM ZONE NO
4710750.	474800.	+10

TWP...... 35S
RANGE.... 05W
SECTION.. 04
MERIDIAN. W.M.

ALTITUDE.. 1600

POSITION FROM NEAREST PROMINENT LOCALITY: ADJACENT TO COVE CREEK

COMMODITY INFORMATION
COMMODITIES PRESENT.......... CU ZN PB AU AG

PRODUCER(PAST OR PRESENT):
MAJOR PRODUCTS..
MINOR PRODUCTS.. AU AG

OCCURRENCE(S) OR POTENTIAL PRODUCT(S):
POTENTIAL.......
OCCURRENCE...... PB CU ZN

ORE MATERIALS (MINERALS,ROCKS,ETC.):
CHALCOPYRITE, SPHALERITE, PYRITE, PYRRHOTITE; GALENA; MALACHITE, PYROLUSITE

COMMODITY SUBTYPES OR USE CATEGORIES:
1.644 AU:AG; 0.116 AU:AG (FROM ASSAYS)

ANALYTICAL DATA(GENERAL)
OLD ASSAYS ON 53 SAMPLES (CIRCA 1938) GAVE OVER 1% CU, .07 OZ AU &.6 OZ AG

MINERAL ECONOMICS FACTORS

ECONOMIC COMMENTS:
EXPLORED & DEVELOPED BY OAK MINING CO. (1965-1967)

EXPLORATION AND DEVELOPMENT
STATUS OF EXPLOR. OR DEV. 5
PROPERTY IS ACTIVE
YEAR OF DISCOVERY......... PRIOR 1916
PRESENT/LAST OWNER....... OAK MINING CO. (1967)

DESCRIPTION OF DEPOSIT

DEPOSIT TYPES:
MASSIVE SULFIDE
FORM/SHAPE OF DEPOSIT: LENS

SIZE/DIRECTIONAL DATA
SIZE OF DEPOSIT...... SMALL
DEPTH TO TOP .... 50 FT
MAX LENGTH........... 60 FT
MAX WIDTH............ 12 FT
STRIKE OF OREBODY.... N25W
DIP OF OREBODY....... 70W
COMMENTS(DESCRIPTION OF DEPOSIT):
DEPOSIT ALSO REFERRED TO AS REPLACEMENT, ORE PENETRATES COUNTRY ROCK

DESCRIPTION OF WORKINGS
UNDERGROUND

COMMENTS(DESCRIP. OF WORKINGS).
TWO ADITS TOTAL 800, WINZE 50

PRODUCTION
YES
SMALL PRODUCTION

ANNUAL PRODUCTION (ORE,COMMOD.,CONC.,OVERBURD.)

ITEM		ACC	AMOUNT	THOUS.UNITS	YEAR	GRADE,REMARKS
1	ORE	SML		.030 TONS		
2	AU	SML		.013 OZ		.439 OZ/T
3	AG	SML		.008 OZ		.267 OZ/T
23	ORE,	SML	FEW HUNDRED	TONS	1932-1933	0.07 AU, 0.6 AG

PRODUCTION YEARS....... 1932-1933

SOURCE OF INFORMATION (PRODUCTION).. USBM

RESERVES AND POTENTIAL RESOURCES

ITEM		ACC	AMOUNT	THOUS.UNITS	YEAR	GRADE OR USE
1	SULFIDES	EST	10.200	TONS		

COMMENTS (RESERVES/POT RESOURCES).. THIS WAS ESTIMATED FOR ORE ABOVE LOWER LEVEL CIRCA 1938 -NO INFORMATION YET
ON 1960'S RESULTS.

RESERVES ONLY

ITEM	ACC	AMOUNT	THOUS.UNITS	YEAR	GRADE OR USE
1		10.200	TONS	1952	IND

GEOLOGY AND MINERALOGY

AGE OF HOST ROCKS............. PERM-TRI
HOST ROCK TYPES............... METABASALT
IGNEOUS ROCK TYPES............ MALACHITE, PYROLUSITE

IMPORTANT ORE CONTROL/LOCUS.. SHEAR ZONE

GEOLOGY (SUPPLEMENTARY INFORMATION)
REGIONAL GEOLOGY
TECTONIC SETTING........... OPHIOLITE?

LOCAL GEOLOGY
NAMES/AGE OF FORMATIONS,UNITS,OR ROCK TYPES
1) NAME: APPLEGATE GROUP

SIGNIFICANT LOCAL STRUCTURES:
FAULT PARALLELS MINERALIZED ZONE, PROBABLY PRE ORE

SIGNIFICANT ALTERATION:
LIMONITE, GOSSAN

COMMENTS (GEOLOGY AND MINERALOGY):
ASSOCIATED WITH METAGABBROS AND ULTRAMAFICS

GENERAL COMMENTS
RECORD NUMBERS (M013460) AND (M015225) HAVE BEEN MERGED WITH THIS RECORD AND DELETED FROM THE OREGON FILE.

GENERAL REFERENCES
1) RAMP, L. AND PETERSON, N.V., 1979, GEOLOGY AND MINERAL RESOURCES OF JOSEPHINE COUNTY, OREGON; DOGMI BULL. 100, 45P
2) BROOKS, H.C. AND RAMP, L., 1968, GOLD AND SILVER IN OREGON; DOGMI BULL. 61, P.231
3) OREGON METAL MINES HANDBOOK, 1942, DOGMI BULL. 14-C, VOL. 2, SEC. 1, P.88

From Flora Baker's handwritten sheet Nov. 20, 1975.

(Oro Fina)
"George worked in several local mines; the Hammersley, Greenback, Orphena, Granite Hill, _________ About one million was taken from Greenback mine working a 20-ton stamp mill. George boasted this tunnel was the straightest tunnel in the valley (The Granite Hill Mine). The family moved there, the children going to school three miles distant. Had a twenty stamp mill.

Ben went high climbing working on a ranch below. Graves Community Hall built in 1910 was 40 x 60 , one long building on lot farmer gave-------------

Mr. Buell, farmer bought stock in Oak Mine to the amount of ten thousand. Moved to Grants Pass, brought his family and in future years moved to California. Had staked four claims on the Oak Mine.

Summary Report

on the

1975 Exploration Program

Hope (Oak) Prospect

Josephine County, Oregon

The Hope property, and nearby Oak mine, are located 12 miles north of Grants Pass, Josephine County, Oregon (Figure 1). Specifically the claims lie within Sections 4 & 9, T34S, R5W, WB&M (Figures 2, 3 & 3A). 3

The property, consisting of 21 unpatented lode claims (Hope Nos. 1 - 21), was acquired from Lloyd Frizzell (720 N.E. Madrone, Grants Pass, Oregon 97526 - Telephone number 503-479-4116) under terms of an option purchase agreement dated April 21, 1975. Claims covering the actual Oak prospect, a small, high-grade, copper-zinc occurrence in intermediate volcanics of the Jurassic Applegate formation, were previously explored through underground development and drilling by Spalding & Son Lumber Company. They were not acquired. Details of geology and former work in the area are contained in an earlier report (JFP, 12/74).

Target of the 1975 American Selco program was a coincident Turam EM-copper geochemical anomaly approximately ½ mile southeast of the Oak prospect (Figure 3). The anomaly, identified through previous work by St. Joe Minerals in 1974, is 1600' long, 600' wide and contains copper values in soil up to 550 ppm. Although the anomaly is several orders of magnitude greater than a similar one reflecting the Oak deposit, St. Joe dropped interest without investigating its source.

The American Selco program was carried out during the summer and fall of 1975 under the supervision of Les Bradshaw. Work consisted of the following phases:

1) Resampling of the soil anomaly. A total of 56 soil samples were collected at 100 X 300' intervals across the St. Joe anomaly area and analyzed for Cu and Zn (Figures 4 & 4A). Configuration and intensity of the copper anomaly obtained is nearly identical to that previously indicated by St. Joe (LWB memo, 6/29/75).

2) Test mercury survey. An additional 45 soil samples were collected in the Oak area and analyzed for mercury using the Selco detector. A distinct high was outlined 500' northwest of the workings (RNP memo, 8/8/75; Figure 5) but source was not investigated.

3) Geological examination and rock geochemical sampling. Volcanic units in the anomaly area were found to be a

monotonous sequence of "greenstones" containing weak, disseminated pyrite ($< 1\%$). Geochemical analyses of these rocks returned values ranging from 100-500 ppm Cu, similar to those in soil overlying the anomaly area (Figure 3).

4) IP/Resistivity Survey. Two lines, 600' apart, were run by Van Blaricom Geophysical Surveys in early June. Results suggest a northeasterly-trending zone of low chargeability and high resistivity corresponding with the soil geochemical and Turam anomalies. Details of the survey are included in Van Blaricom's report of 6/29/75. Profiles are attached as Figures 6 & 7.

5) Trenching. Eleven hundred feet of trenching, along the IP survey lines, was completed in November. The trenches uncover weathered and fresh "greenstone" containing weak disseminated pyrite but no evidence of massive sulfide mineralization of the "Oak-type". Geochemical values in rock exposed by trenching in the anomaly area range up to 750 ppm Cu (Figure 8).

* * * * * * * * * * *

Trace copper values, related to weakly disseminated pyrite in the Applegate "greenstones", explain the coincident geophysical-geochemical anomalies on the Hope claims. No evidence for massive copper-zinc mineralization was found and additional work cannot be justified. It is recommended that the property be returned to the owner.

Les Bradshaw
John F. Prochnau
March 11, 1976

State Department of Geology and Mineral Industries

702 Woodlark Building
Portland, Oregon

Josephine County
Grants Pass Mining Dist
February 3, 1949

VICTOR MINE

	Orebody - South Drift		Orebody at Crosscut	Orebody North Drift
	Massive Sulphide Zone	Disseminated Sulphide Zone		
Minimum expected tonnage	500 T	500 T	300 T	200 T
Probable tonnage	1000 T	1000 T	500 T	300 T
Possible tonnage	2500 T	-	-	-
Quality	See average of JG-22 and JG-23	See JG-24	See JG-25	See JG-26

CONFIDENTIAL

H. D. Wolfe

OAKS MINE

Near Grants Pass, Oregon

Location: The Oaks mine is located in Section 4, T. 35 S., R. 5 W. about nine miles due north of Grants Pass, Josephine County, Oregon. It lies some seven miles east of the Portland-San Francisco line of the Southern Pacific connected therewith by a good county road. It is readily accessible by automobile from Grants Pass following the Pacific Highway for eleven miles and thence following the county road up Jumpoff Joe Creek some five miles to the property. A more direct road runs due north from Grants Pass but passes over a summit 2150 feet high and the road is narrow and crooked. The elevation at Grants Pass is 956 feet above sea level and the valley at the mine is about 1500 feet, so that there are no heavy grades to overcome in hauling.

Property: There are four claims in the group each a full 600 x 1500 feet. Two of these are located side-by-side running east and west and covering the SW¼ of SW¼ of Section 4 which is mostly a gently sloping bottom providing an excellent camp and millsite. The county road and the electric power transmission line cross this bottom as well as Jumpoff Joe Creek.

The other two claims lie end to end in a northwest and southeast direction covering the apex of the vein for 3000 feet in length, beginning at the south boundary of the NW¼ of Section 4 and overlapping into Section 9.

All the claims are held by the possessory right of location.

Facilities: There is some good pine and fir timber on the claims suitable for mine timbers and some scrub oak suitable for fire wood. Domestic water can be obtained from Jumpoff Joe Creek or from wells but the creek goes dry in August for three to four months. At other seasons it runs 4 to 5 second-feet of water. There are two good cabins on the bottom and some other buildings, and a blacksmith shop at the mouth of the tunnel. There is a car and track in the tunnel but no machinery on the property.

Vein: The vein strikes 25 to 30 degrees northwest and stands nearly vertical with local rolls that dip east and west. It has a pronounced vein fracture, a small gouge with quartz and limonite, with similar more or less parallel fractures in places. The ore occurs as lenses or shoots in swells in the vein itself. The values are in copper and zinc with small amounts of gold and silver present. Minerals noted are chalcopyrite, sphalerite, pyrite, pyrrhotite, small amounts of galena and quartz, in the main working tunnel, the width varying from three to twelve feet. On the surface where exposed the vein is quartz with limonite and varies from three to seven feet in width. The surface also shows a leached brown iron capping near the discoveries.

The vein was originally worked for gold, the surface being said to pan well, and the main tunnel has cut the vein some 200 feet lower in elevation probably near the top of the sulphide zone. The vein in the drift on the main tunnel between the shoots of sulphide ore is still highly oxidized so that it is probable that with greater depth a more continuous body of ore will be uncovered laterally along the vein.

A second vein has been cut in the main crosscut tunnel 65 feet west of the principal vein. This vein has not been uncovered at the surface but is 16 feet wide in the crosscut with streaks of sulphide, oxides and country rock comprising the width of the vein. As this vein has been cut at less depth beneath the surface it will also probably increase in sulphides with depth.

Development: The main development is a tunnel driven N. 65° E. as a crosscut for 200 feet where it intersects the main vein. At 119 feet in it cuts the west vein but no drifting has been done on the west vein.

The main vein has been followed northwest for 250 feet and southeast for 266 feet, the vein fracture being practically continuous throughout. At the point where the crosscut intercepts the vein, a shaft has been sunk to a reported depth of 50 feet, now filled with water, and the vein is said to have been continuous downward in the shaft. Some stoping has been done over the shaft to a height of some 35 feet and a length of 15 to 20 feet, the length of the shoot along the drift being some 60 feet, 30 feet each way from the crosscut. At 130 feet southeast of the crosscut another shoot opens up and was followed for 50 feet, the width being 5½ feet at the south end but undisclosed at the widest part. The sulphides are apparent at places in the northwest drift but not in commercial quantities. The vein has a width of 12 feet where cut by the crosscut. At 90 feet northwest of the crosscut an east and west vertical seam cuts the main vein but does not displace it.

On the surface a shaft has been sunk approximately over the south end of the main drift. It was said to have been 50 feet deep but the timbers have been burned out and it is caved in. The vein disclosed here is a quartz-limonite some seven feet in width with a leached brown iron capping showing scattered around the dump. Going northwest along the outcrop and dropping down into the small gulch in which the main tunnel starts, are two short tunnels exposing the vein. Across the gulch the vein is again exposed in some cuts so that the vein was seen on the surface over a length of at least 600 feet and is said to be traceable for the full 3000 feet on the claims.

Sampling: The main drift was sampled by B. N. Barnett and Harold Hooper every ten feet and include a considerable portion of the vein that is not commercial and would not be mined.

Samples taken by myself are described below but the assay results have not been received yet.

#4190- Taken across 16 feet on the west vein as shown in the crosscut.

#4191- Taken across 5½ feet 180 feet southeast of the crosscut.

#4192- Taken across 12 feet on main vein at the crosscut.

Sixty pound sample for experimental tests is an average of the ore stored on the dump said to have been taken entirely from the shaft at the end of the crosscut tunnel.

It is my opinion that the values found in these samples will closely represent the commercial ore that can be mined on this horizon. As the vein contains considerable oxidized ore it is probable that the values will be found to increase down to the solid sulphides and as I stated above will probably be more continuous laterally along the vein.

Future Development: No survey was made by me but I judge it to be entirely feasible to gain another 125 feet of depth below the present tunnel with a crosscut some 425 feet in length. For the reasons that this additional depth would enable one to obtain a much more satisfactory conclusion as to the extent, width and value of the sulphide ore and would provide a more satisfactory working tunnel than the present crosscut, I would favor this development rather than additional sinking of the shaft. Further depth will have to be obtained by shaft sinking from this proposed level, however, and as the shaft gets down to the creek level more water is liable to be encountered. The water in the present shaft is negligible.

The country rock is not difficult nor expensive to mine being what is known as greenstone, probably an altered andesite. The ore itself, however, uses up drill steel rapidly because of the iron present.

Conclusions: I believe that the prospect merits further development sufficient to reach a depth below the transition zone between the oxidized and sulphide ores in which the present workings lie.

I do not think that anything more than a nominal sum for payment toward the purchase of the property is justified until a reasonable time has been allowed to drive such a crosscut and do at least an equal amount of drifting on the vein as in the present working tunnel. Estimating this at 1000 feet of work at least one year should be allowed before any payments become due.

The conditions found to exist at that time would necessarily determine whether or no the asked price were reasonable and further expenditures justifiable.

Contingent Fee: This examination has been made on a contingent fee basis in that I am to participate in a sales commission to an amount approximately equal to twice the cost of this report made on a per diem and expense basis.

Signed: Fred W. Callaway
Mining Engineer

Spokane, Washington
February 14, 1929

Examined February 11, 1929.

FINAL REPORT

OAK (0204) PROJECT

JOSEPHINE COUNTY, OREGON

Final report on Oak Project by Hart Baitis (Noranda Exploration) located directly behind Josephine County file in this drawer.

By

Hart W. Baitis
Noranda Exploration, Inc.
Northwest District
2436 West Central
Missoula, Montana 59801

August 7, 1978

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CONCLUSIONS

During the summer and fall of 1977, Noranda Exploration, Inc. conducted an exploration program at the Oak property in the Klamath Mountains region of southwestern Oregon. Exploration was directed at evaluation of the property for massive sulfide mineralization.

The Oak prospect lies within a series of northeast-trending greenstone-gabbro belts of probable Triassic age which were later intruded by ultramafic and diorite bodies. The greenstone-gabbro sequence is bounded to the west by a series of ultramafic intrusions. The overall sequence from west to east conforms to that typical of an ophiolite sequence, including ultramafics, gabbros, interlayered gabbros and basalts, and abundant sedimentary rocks interbedded with lavas to the east.

Mineralization exposed in the underground workings at the Oak consists of massive sulfide pods (sphalerite, chalcopyrite, and pyrite) that exhibit fine-scale layering and lamination. The massive sulfide pods occur along a northwesterly-trending, steeply-dipping shear zone developed in a fine-grained greenstone (basalt) host. The sulfides and cherty and calcareous material in the shear zone may represent the exhalitive processes which gave rise to the sulfide bodies. Whether the massive sulfide bodies were emplaced along shear zones or whether some of the pods may be in depositional contact with the enclosing greenstones is unclear.

Three holes totalling 1,221 feet of diamond drilling tested the down-dip extension of known orebodies and/or for the existence of further massive sulfide mineralization. Lithologies intercepted in the three holes include massive fine-grained flows, flows with conspicuous albite-epidote-chlorite-quartz mottling, vesicular lavas, brecciated and sheared horizons, and thin epiclastic horizons. Mineralization encountered in two holes consists of minor amounts of chalcopyrite and sphalerite found in thin epiclastic horizons within the greenstone flow units. These horizons are characterized by shear foliation and commonly contain both vesicular and non-vesicular greenstone fragments, chert fragments, and occasional mineralized clasts. Chlorite minerals and fault gouge occur in the horizons, and it is postulated that much shearing and post-mineralization movement took place along these zones of less competent rocks. The mineralized intercepts probably correspond to the down-dip extensions of massive sulfide mineralization exposed along shears in the workings.

Although minor Cu and Zn was intercepted in two of the drill holes, the information gained gave little encouragement for further drilling of the prospect. Noranda's option on the Oak property was dropped during June, 1978.

INTRODUCTION

During the summer and fall of 1977, Noranda Exploration, Inc. conducted an exploration program at the Oak property in the Klamath Mountains region of southwestern Oregon. The objective of the program was to test the extent of massive sulfide mineralization found on the Oak property. The following report summarizes the exploration data, results, and conclusions.

Location

The Oak property is located approximately 15 kilometers northeast of Grants Pass, Josephine County, Oregon (Figure 1). The property encompasses four unpatented, fractional mining claims which cover the Oak Mine workings owned by Robert F. Barger and Roland Johnson, and twenty-two unpatented mining claims covering ground mainly to the east and south of the Oak Mine workings owned by Lloyd Frizzel (Figure 3).

Geologic Setting

The Oak Mine area has been mapped on a regional scale as part of the Triassic Applegate Group (U.S. Geol. Survey Misc. Geol. Invest. Map I-325, Wells and Peck (1961). The Applegate Group includes a large area of interbedded meta-volcanic and meta-sedimentary rocks, and is one of a series of metamorphic belts in the Klamath Mountains of southwestern Oregon having a northeasterly strike and generally dipping steeply to the southeast. Areal geologic relationships near the Oak Mine are illustrated in Figure 1.

Exploration History

Gossans representing the Oak Cu-Zn-Ag mineralization were discovered and developed in the early part of the century. Intermittent periods of activity subsequently extended the upper workings and the main adit and drifts to near their present extent. Aside from a few tons of gossan which were mined and cyanided for gold shortly before World War II, there has been no further production from the Oak Mine.

Between 1965 and 1968, Spalding and Son Lumber Company of Grants Pass, Oregon, conducted an underground and surface exploration program at the Oak (Frizzel, 1968). Their work resulted in 1,097 feet of surface core drilling, some underground drilling, IP surveys in the mine area, and further development of the existing workings. Approximately 1,500 tons of massive sulfides were stockpiled at the main adit portal as a result of their work.

St. Joe Minerals Corporation conducted soils geochemical, magnetic, and limited Turam surveys on the Oak property during the summer of 1973. After delineating and staking a coincident geochem/Turam anomaly approximately one kilometer southeast of the Oak workings, St. Joe terminated their option on the claims and quit-claimed their new claims to Frizzel and Spalding.

During the spring of 1975, American Selco optioned Frizzel's claims and carried out further work on the property during that summer and fall. Although they conducted a test mercury survey in the vicinity of the Oak workings, most of their work was conducted in the vicinity of the Turam/soil anomaly to the southeast. Trenching, rock-chip geochem, soil sampling, and IP/resistivity surveys were done in the vicinity of the soil anomaly. Their option on the property was dropped in 1976.

Noranda's initial interest in the property resulted from observation of massive sulfide mineralization on the Oak Mine dump during a general reconnaissance of prospects in the area in December, 1976. During late June and early July, 1977, Noranda entered into option agreements with Frizzel (1332 NW Conklin, Grants Pass, Oregon), and with Barger and Johnson (Grants Pass, Oregon, and 1146 Rimrock Road, Prineville, Oregon), owners of claims including and in the vicinity of the Oak workings. Regional stream-sediment sampling was conducted in the Oak Mine area prior to negotiating an agreement with the property owners.

Regional geologic mapping in the Oak Mine area was conducted July through September, 1977. Detailed mapping and rock-chip sampling of the underground workings was also completed during this time. Workings, roads, and control points in the Oak Mine area were surveyed during the early part of September in order to locate drill sites.

Roads and drill sites were completed during early October, and on the 17th of October the first of three holes was collared. A total of 1,221 feet of diamond drilling was completed before being halted in late November.

The compilation of the Oak data was completed during the month of April, 1978. In early June, 1978, Noranda dropped their option of the Oak claims.

Expenditures

Exploration and capital costs attributed to the Oak (0204) project during Noranda's six-month exploration period totaled $45,617 (to December 31, 1977) as summarized in Table 1.

Work at the property during this period included drilling a total of 1,221 feet in three surface holes. Additional work included surface and underground geologic mapping, and geochemical sampling.

OAK PROJECT

TABLE 1

Expenditures incurred by Noranda Exploration, Inc.
through December 31, 1977

Type of Expenditure	Amount
Salaries	$ 10,896.79
Property Payments	6,500.00
Taxes	307.10
Core Drilling	20,979.00
Road and Drill Site Preparation	1,151.00
Surveying	755.75
Assays, Geochemistry	461.40
Miscellaneous**	4,565.95
Total	$ 45,616.99

**Miscellaneous expenditures include supplies for office and field, and transportation.

REGIONAL GEOLOGY

Mapping of the greenstone-gabbro sequence which hosts the Oak mineralization was carried out during the summer of 1977. Extensive soils, poor outcrop, dense vegetation, and the lack of significant marker units made mapping progress extremely slow and difficult. An area of approximately 36 square kilometer was mapped, mostly to the north and south of the Oak workings. The regional mapping was carried out both to test for further possible mineralized horizons in the greenstone-gabbro sequence and to better understand the regional setting in order to develop geologic models to aid in locating drill targets on the Oak claims.

Figure 2 presents the geology of the area mapped in the vicinity of the Oak claims. Mapping indicates the Oak mineralization lies within a series of greenstone-gabbro belts which were later intruded by ultramafic and diorite bodies. Only minor amounts of sedimentary rocks were found within the greenstone belts.

Greenstones in the area are monotonously similar. Petrographically, the greenstones consist of an epidote-albite-chlorite assemblage. The only variation in the unit consists of occasional recognizable vesicular horizons, some local areas of brecciation (flow breccias), and variations in grain size. Such variations were not found to be mappable.

The presence of occasional thin sequences of sedimentary rocks within the greenstone flows was noted in several localities. Within Section 34 in the Water Branch Creek drainage (see Figure 2), at least three thin zones of fine-grained sedimentary rocks were found. Bedding was only discernible in one of the shale units, owing to deep weathering, shearing, metamorphism, and generally poor exposure. These units are poorly exposed, and are generally traceable for less than a few tens of meters.

Two zones of hematite-magnetite-rich jaspery chert are exposed in the easternmost greenstone belt mapped. Isolated outcrops of these units occur in Sections 15 and 22 (Figure 2) in the southern extreme of the area mapped. It is likely that the isolated outcrops found in Section 22 may represent the continuation of the same pair of beds found in Section 15. If this is true, the cherty horizons are conformable with the regional north-northeasterly trend of the greenstone belts. Zones of red jaspery chert are associated with mineralization at the Oak, and it is possible that such cherty horizons reflect the existence of hydrothermal systems that were associated with mafic volcanism. Other silicified zones occur east of the Oak workings. These cherty horizons are pyritic and have associated base metal values.

Sedimentary rocks, including some epiclastic rocks, are also well exposed along Jumpoff Joe Creek in Section 3, within the eastern greenstone belt and near its contact with younger diorite intrusives. Here, differential weathering shows poorly sorted coarse-grained (approaching conglomeratic) clastic rocks with both greenstone and gabbro fragments. The rock fragments appear identical to, and were probably derived from, greenstones and gabbros.

The locally crosscutting nature of the gabbros indicates that these bodies were probably largely intruded into the fine-grained flows. However, in many cases the gabbros may represent locally thicker, and hence more slowly cooled and coarser-grained flows or portions of flows. The presence of gabbro and greenstone fragments within coarse clastics exposed in the Jumpoff Joe Creek drainage indicates that the greenstones and gabbros were exposed contemporaneously, and suggests that the rocks may have been comagmatic. The elongate north-northeasterly trend of the gabbroic rocks suggests that some of the gabbros were intruded as sill-like masses.

Thin, irregular zones and slices of serpentinite in numerous localities intrude both the greenstones and gabbros, and locally, intruded near contacts between different lithologic units. The serpentinites are generally concordant with regional trends and clearly postdate the volcanic-sedimentary rocks of the Applegate Group, but predate later intrusions of diorite. The only exposures of diorite noted occur in the eastern portions of the mapped area (Figure 2).

The greenstone-gabbro sequence is bounded to the west by a series of ultramafic intrusions (Figure 1). The overall sequence from west to east conforms to that typical of an ophiolite sequence, including ultramafics, gabbros, interlayered gabbros and basalts, and abundant sedimentary rocks interbedded with lavas to the east. South of Grants Pass (Figure 1), the Applegate Group is composed dominantly of mafic lavas and fine-grained clastic rocks, and also contains minor carbonate and manganese-rich beds. The overall nature of the Applegate Group contrasts sharply with rocks typical of continental margin (arc-type) volcanism, where lavas are commonly more siliceous (andesitic to rhyolitic) in composition, and much of the sequence is represented by coarse volcanic-derived clastics which were shed from local volcanic highs. The overall lithologic sequence at the Oak Mine is similar to those typical of ocean-floor tectonic settings.

THE GEOLOGY OF THE OAK CLAIMS

Rock Types

Knowledge gained from surface mapping in the Oak Mine area was extremely limited because of poor exposure (<2%) in the area of the claim group. As a result, no detailed surface geologic map is presented for the claim area. However, geologic data from the underground mapping and the surface drill program are presented in Figures 4 and 8.

Mapping of float and the few outcrops found on the claim group indicates that, with the exception of the western-most portions of the claim group and a thin slice of serpentine exposed in the northeastern corner of Section 9, the underlying geology consists of macroscopically similar, fine-grained greenstones. The only distinguishing features found included occasional amygdule-bearing float and occasional brecciated zones (probable flow breccias) within the greenstones. The gabbro body shown on the western portion of the claim group (Figure 2) is part of a large intrusive body which continues to the north and south of the claims.

The geology of the underground workings is presented in Figure 4. With the exception of rocks in the immediate vicinity of the mineralized horizon, all rocks underground consist of macroscopically-similar fine-grained greenstones. Petrographic examination indicates the only variations in the flows consist of zones of vesicularity, zones of shear, and variations in grain size. The flows consist of an albite-epidote-chlorite assemblage. Vesicles, when present, are defined by amygdules which are commonly filled by epidote and/or quartz. Although no pillow features were observed, it is highly probable that the flows were erupted in a submarine environment, and, as pointed out by Moore and others (1971), submarine flows do not always form pillows. Pillow structures may also have been obliterated by the pervasive metamorphism which has affected these rocks.

Structure

No structural interpretations or conclusions could be made by examination of the limited surface exposures. Underground mapping indicated numerous shear zones and fractures, with a major zone of shear paralleling the drift on both the 100-level and 200-level. A major shear zone which strikes northwest and dips steeply to the southwest is well defined in the 100-level and can be traced over a distance of at least 150 meters in the workings (Figure 4). It is along this shear zone that several massive sulfide lenses were developed during exploration efforts by Frizzel. Generally the shear zone is defined by a sheared chloritic horizon, with occasional thin zones of fault gouge. Although numerous minor shears are exposed in the underground workings, none were seen that definitely post-date the major shear.

Numerous minor shears are also well-defined by chlorite-rich zones. No regular pattern to these shears was found (Figure 4), and their random orientations suggest they may have formed due to minor movement along small fractures. Minor amounts of disseminated pyrite occur along some of the shears, and near the surface, shears are often recognizable by a distinctive zone of iron-staining. Lack of marker horizons precludes determination of direction of displacement along the known structures.

Alteration

Distinctive features related to hydrothermal alteration were not apparent. A possible exception may be the chlorite found in rocks near massive sulfide lenses, but our work indicates the chloritization is due to post-mineral shearing and does not reflect the effects of a hydrothermal system. There are at least three possible explanations for the lack of hydrothermal alteration. They are: 1) a distal environment for the sulfide mineralization, 2) a displacement (faulting) of the massive sulfide bodies from their source area, and 3) obliteration of alteration due to pervasive metamorphism.

Mineralization

The surface expression of mineralization on the Oak claims consists of several prospect pits and two short adits which expose thin zones of gossan bounded by fine-grained greenstones. Available data on the now-caved upper workings indicate that the zone of oxidation probably extended to a depth of 5-10 meters from the surface, although some fresh pyrite was found in two of the prospect pits.

Soil geochemical data from a sampling program conducted by St. Joe Minerals in 1973 outlined at least two areas of anomalous soils in the Oak claims. Their findings are summarized in Figure 3. The soil anomaly outlined by St. Joe Minerals to the southeast of the Oak workings is anomalous in Cu, but has rather low associated Zn. Examination of bedrock exposed by American Selco's trenching of the anomalous soil zones indicates no gossans exist in the area. Disseminated chalcopyrite occurs in fine-grained greenstones in the northeastern corner of Section 9, and our sampling here and in the vicinity of the trenches indicates that the high soil values reflect high backgrounds in the greenstones underlying the anomalies. No further work was recommended for this area.

The massive sulfide mineralization exposed in the Oak workings is well-defined by a north-northwesterly trending zone of anomalous Cu and Zn which has a strike length of approximately 200 meters and parallels the gossans exposed by prospect pits (Figure 3). The presence of anomalous Cu and Zn in the soils is consistent with the mineralogy of massive sulfides exposed in the 100-level.

At least three small massive sulfide lenses occur on the 100-level along a strong, steeply-dipping shear zone that strikes approximately N20°W (Figure 4). The podiform massive sulfide lenses have dimensions ranging from 5-15 meters in length, centimeters to over 5 meters in width, and 8-30 meters in vertical extent.

Sulfides are fine-grained ($<$1 mm diameter) and the lenses exhibit fine-scale layering and lamination defined by mineralogic and grain-size variation (Figure 5). Sphalerite, chalcopyrite, and pyrite are the dominant minerals, although the presence of tetrahedrite is also suggested by assays (Table 2). At least one of the massive sulfide pods appears to have a crudely-developed mineralogic zonation, with chalcopyrite being more abundant to the west and sphalerite being more abundant to the east. The mineralization, however, appears to be enclosed within sheared wall rocks, and any conventional top-bottom metal zonation criterion may not apply.

Earlier work by Frizzel (1968) indicates that each massive sulfide pod contains from 500-2000 tons of ore grading about 1.75% Cu, 6% Zn, 2.5 opt Ag, and 0.02 opt Au. These results, however, must reflect a substantial amount of country rock in the sample, as assays of massive mineralization collected from the dump and from the massive sulfide bodies underground indicate grades from 10% to over 30% Zn and up to 3.8% Cu (Table 2).

OAK PROJECT

TABLE 2

Assay and geochem results for selected underground chip and channel samples (see Figure 4 for underground sample localities) and mineralized drill intercepts.

Sample #		Au	Ag	Pb	Zn	Cu
4126	100-level-Massive sulfide stringer	Tr	0.10 oz.	.012%	9.7%	.16%
4127	100-level-Channel sample across mineralized shear zone	Tr	Nil	.009%	.64%	.048%
4128	100-level-Channel sample across massive sulfide lens	0.01 oz.	3.54 oz.	.32%	28.1%	3.8%
4132	100-level-Channel sample across south lens of massive sulfide Pod B	0.02 oz.	1.98 oz.	.03%	30.8%	2.1%
4140	100-level-Sample of massive sulfide-north end of Pod C	0.01 oz.	1.83 oz.	.11%	16.8%	1.2%
3061	Massive sulfide from dump	<.1 ppm	96 ppm	.63%	36%	1.3%

TABLE 2 (Cont'd)

Assays of Drill Hole Intercepts

Hole #	Footage Intercept Assayed	Au	Ag	Pb	Zn	Cu
0-1	197' - 202.6'	Nil	Nil	.004%	.029%	.006%
0-1	349.5' - 354'	Nil	0.01 oz.	.004%	.027%	.014%
0-1	403' - 405'	Nil	0.02 oz.	.012%	.13%	.013%
0-2	265' - 267.5'	Nil	Nil	.003%	.047%	.008%
0-2	299' - 301.3'	Nil	Nil	.003%	.013%	.007%
0-2	305' - 311.5'	Nil	Nil	.004%	.017%	.006%

As suggested by underground exposures, the massive sulfide lenses are extremely erratic and often pinch out in a matter of a few meters. Irregular nature of the lenses is at least in part due to segmentation by post-mineralization movement along the major shear zone and subsidiary fractures. Shear and deformational features are exhibited in many of the massive sulfide bodies (Figure 6), although some of the folds observed may be related to soft-sediment deformation (Figure 5). Generally, the massive sulfide lenses strike roughly north-south, and appear to rake directly down dip. In at least one locality, a massive sulfide pod appears to be in depositional contact with greenstones to the west. Other massive sulfide bodies are entirely surrounded by shears. Small discontinuous massive sulfide stringers within the main shear zone commonly extend from a few meters to tens of meters from some of the larger massive sulfide lenses (Figure 4).

The presence of cherty material associated with massive sulfide mineralization was noted on the dump but is only seen in one locality underground (sulfide pod C, Figure 4). The occurrence of siliceous ore was also described by Frizzel (personal communication) as occurring locally in other massive sulfide pods. A separate stockpile of ore, mined from the winze which explored the downdip extension of pod B (Figure 4), consists predominantly of mineralized chert.

Figure 5: Fine scale layering in massive sulfide. Dark layers are of fine-grained sphalerite and lighter layers consist of pyrite-chalcopyrite. Folding may be due either to soft sediment deposition or to shearing. (Scale is in centimeters.)

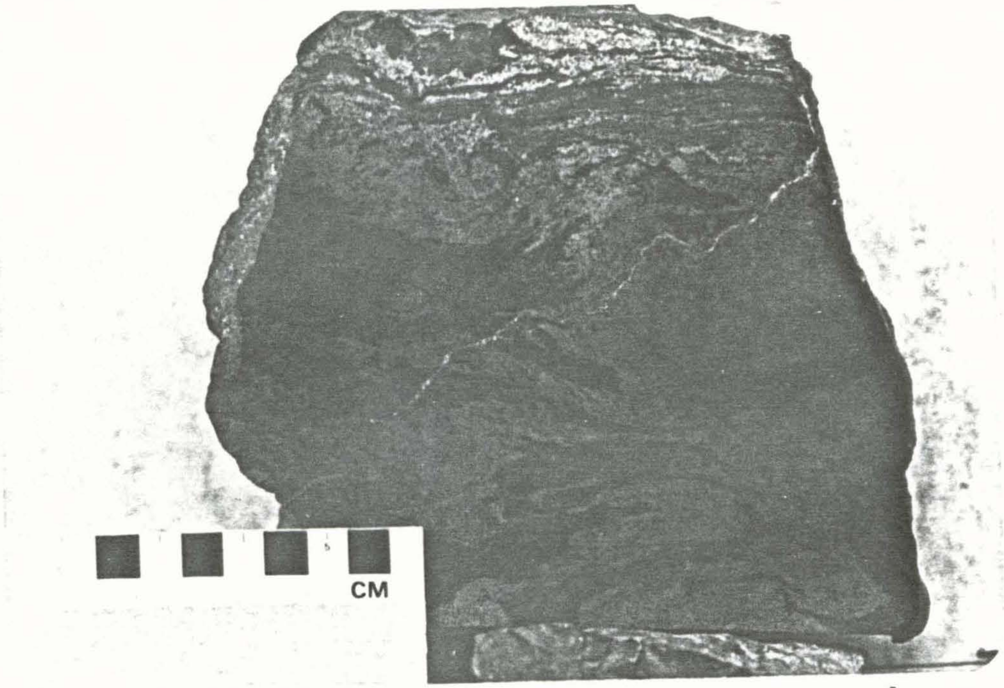

Figure 6: Shear and deformational features in massive sulfide. Dark areas are fine-grained sphalerite. Lighter areas consist of pyrite-chalcopyrite.

Variable amounts of silica and calcium carbonate occur in the zone of sheared chloritic rock along which the massive sulfide pods are localized. Locally, the zone contains numerous sulfide stringers which are subparallel to the main shear zone, and at the south end of the 100-level drift, semi-concordant lenses of pyrite-chalcopyrite-sphalerite are very abundant. Although the relict features of the rocks have been masked by shearing, it is possible that such zones may represent clastic horizons within the volcanic sequence. If so, the entire shear zone may have been localized along a less competent horizon that may represent a depositional hiatus between fine-grained basalt flows. The sulfides and possibly the cherty and calcareous material in this zone may represent the exhalitive processes which gave rise to the sulfide bodies. Whether the massive sulfide bodies were emplaced along shear zones or whether some of the bodies may be in depositional contact with the enclosing greenstones is unclear.

TARGET EVALUATION

Surface and underground mapping, and geochemical and geophysical data give little insight as to the location of potential targets on the Oak claims. As the main Oak shear zone contains all the presently developed massive sulfide bodies, it was decided that the best possible exploration targets would lie somewhere along the strike of the shear. Three drill sites were selected to test the down-dip extension of known orebodies and/or for the existence of further massive sulfide mineralization. The locations of drill holes relative to the 100-level are shown in Figure 7.

Figure 8 summarizes the results of logging for each hole. There is extreme difficulty in correlating individual units from hole to hole. Despite this, the intersection of two mineralized horizons appears in holes 0-1 and 0-2; however, no definite intersection of the mineralized horizon is found in 0-3 (Figure 8).

Lithologies intercepted in the three holes include massive fine-grained flows, flows with conspicuous albite-epidote-chlorite-quartz mottling, vesicular lavas, brecciated and sheared horizons, and epiclastic rocks. Although these rock types were observed locally underground, they were not as easily distinguishable.

Mineralization encountered in holes 0-1 and 0-2 consists of minor amounts of chalcopyrite and sphalerite found in thin epiclastic horizons within the greenstone flow units. The epiclastic rocks contain angular to subrounded clasts that range from less than a millimeter to over centimeters in diameter. Vesicular and non-vesicular greenstone fragments, chert fragments, and occasional mineralized clasts are found in these horizons. Commonly, the epiclastic horizons are characterized by shear foliation. Chlorite minerals and fault gouge occur in the horizons, and it is postulated that much shearing and post-mineralization movement took place along these zones of less competent rocks. Such a hypothesis is in accord with observations of the massive sulfide pods and shear zones on the 100-level.

Table 2 presents assay results for splits of significant intercepts selected for analysis. Although minor Cu and Zn is reflected in these results, the information gained gives little encouragement for further drilling of the prospect.

The inability to correlate individual units, and even packages of lithologies, suggests that the Oak mineralization formed in an environment that involved a diverse and complex interplay of volcanic and sedimentary processes. Later metamorphic and tectonic events further complicate understanding the genesis of Oak mineralization. The variations encountered in the drill holes are not unusual, but are to be an expected result of a complex interplay of tectonic, volcanic, and sedimentary processes.

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Oak. Mine.
Sec 4 SW 1/4
T35S. R5W

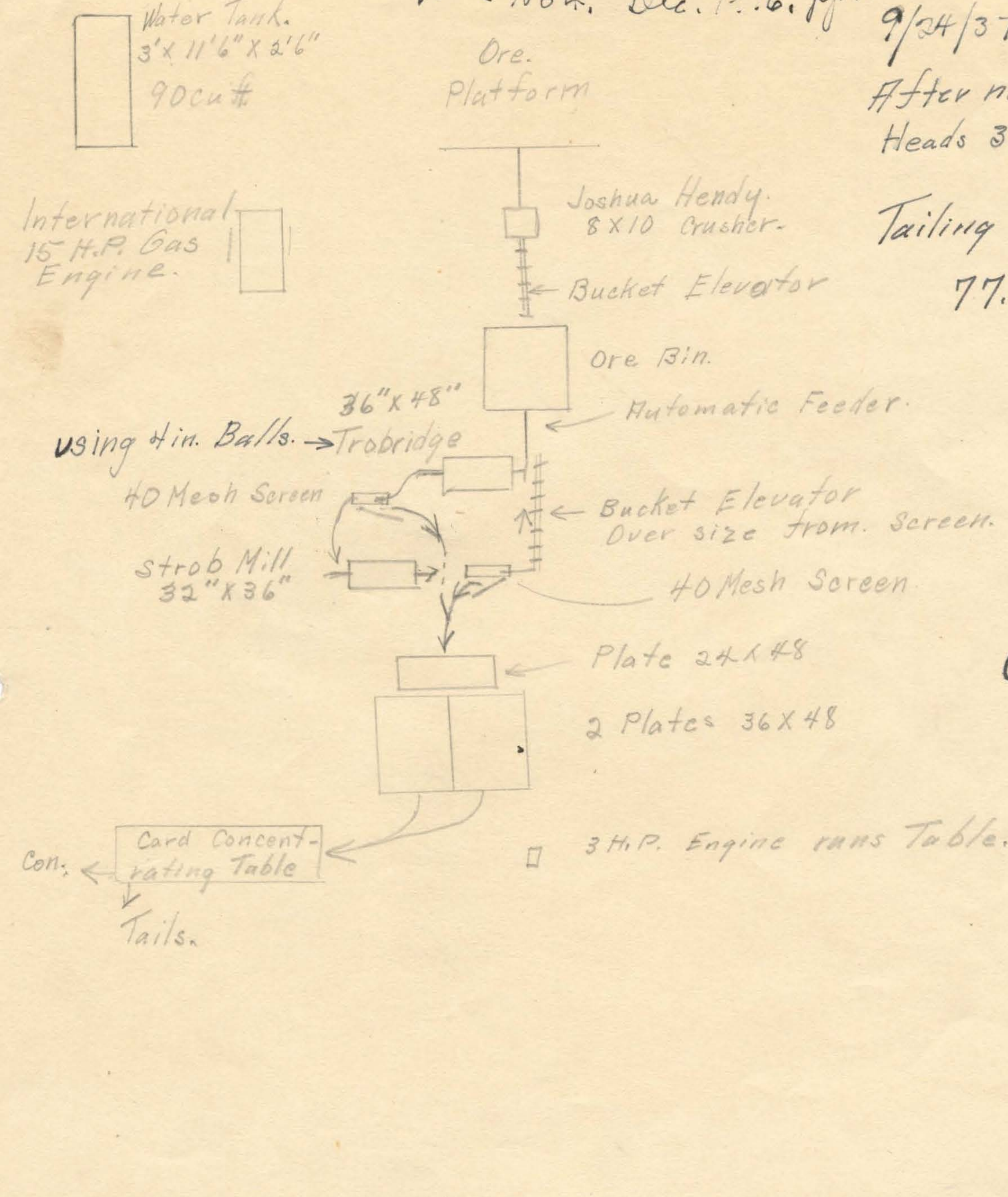
– Report by. Fred W. Callaway
Map of. Property.
Not ~~listed in any reports~~.

Owners
George Baker
Blu Baker
Baker

Gold. Copper. Zinc
Vo 2 No 4. Dec. 12:16. pp 165

9/24/37.

After noon Run.
Heads 33.60 gold. 12 Silver. (276)
Tailing 7.70 gold. (277)
77.1 % recovery.



G. A. Baker
Rl. Grants Pass.
Ore.