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REPORT

on the

L E N G E N D M I N E S G R O U P

comprising

Oro Blanco Mine
Dos Amigos Mine
Tres Amigos Mine

Santa Cruz County, Arizona

617 Subway Terminal Building
Los Angeles, California
June 1, 1935

John Daniell
Engineer of Mines

SANTA CRUZ COUNTY
ARIZONA

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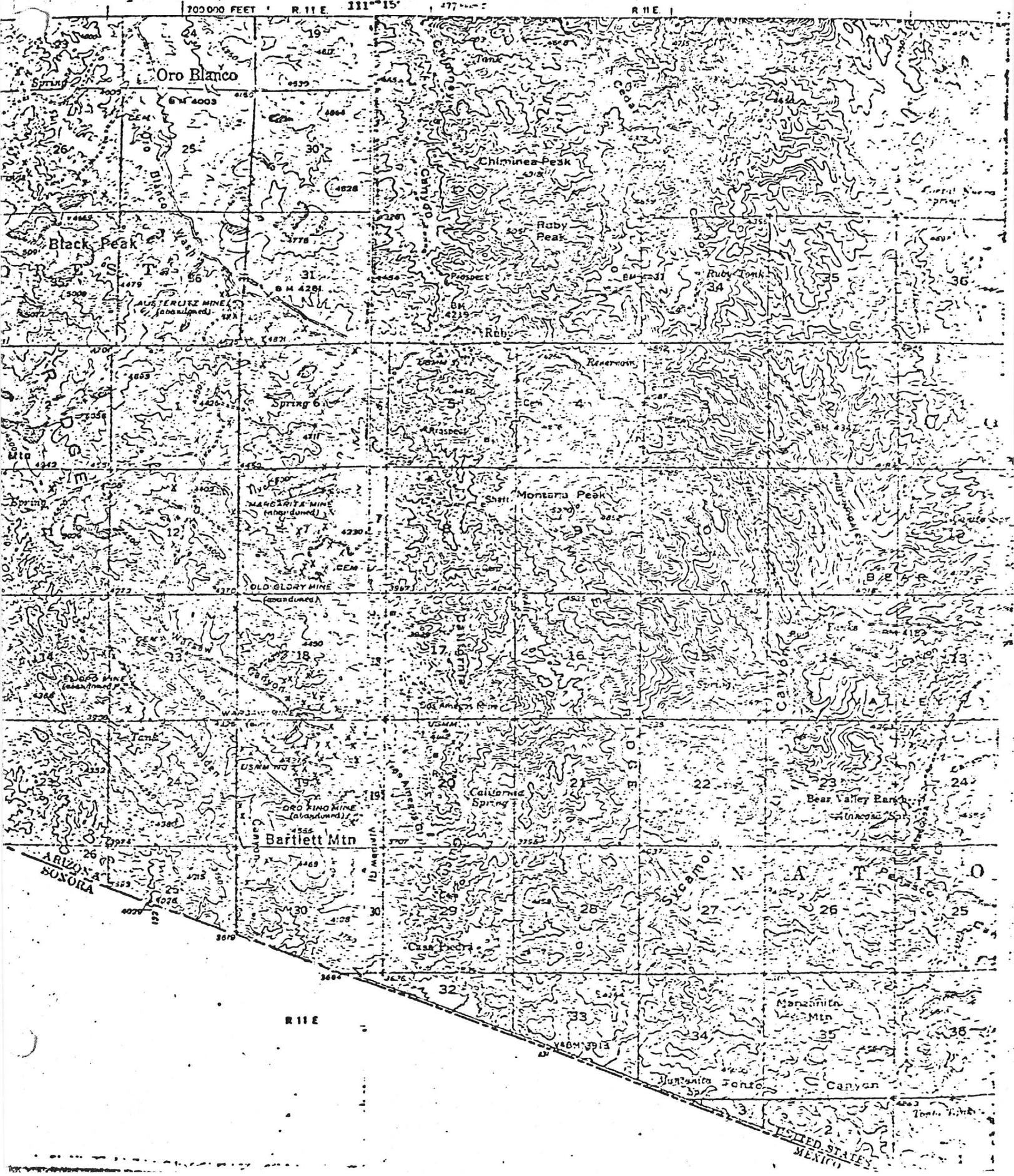
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ORO BLANCO MINES

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ARIZONA
ORO BLANCO QUADRANGLE
15-MINUTE SERIES

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY



L E G E N D M I N E S

FOREWARD:

Data on the Legend Mines was submitted which contained maps, reports, and statements of owners to the effect that the mines contained over 40,000 tons of well proven ore of a value in excess of \$10.00 per ton.

That a 75 ton mill was on the property and all facilities provided to start immediate production.

The object of the examination was to check data submitted and particularly the findings of William Watson, an engineer of standing, whose report accompanies this report, and instructions given were to analyze the present situation obtaining with a view of determining the commerciability of the proposition.

PROPERTY:

The property comprises approximately 180 acres.

The following claims are held by location

Bob Tail #1
Janalee
Two Friends #1
Two Friends #2
Two Friends #3
Two Friends #4
White Gold #1
White Gold #2
White Gold #3
White Gold #4
White Gold Mill Site
Titles have been passed on by Vernon Cruickshank.

GENERAL:

The property lies within the confines of the Coronado National Forest Reserv and in the Oro Blanco Mining District. Its

location is 75 miles south of Tucson, Arizona, the logical distributing center and in the county of Santa Cruz. The nearest post office is at Ruby, 7 miles distant by road. The nearest shipping railroad point is at Amado 27 miles northeast; a point on the Southern Pacific Railroad.

Nogales lies 32 miles to the southeast.

ROADS lead to all working points on the property. The main highway lies 5 miles distant and the connecting road is a fair automobile road. \$500.00 if spent upon the roads would have a beneficial effect but is not a necessity.

There is some TIMBER in the immediate neighborhood but is practically all of a deciduous character. It could be used for fuel and possibly for lagging but mining timber should be imported.

LABOR is abundant with a large element of Mexican and Indian men available. Current wages in the district range from \$2.75 to \$3.25 per day.

FREIGHT rates by truck to and from Tucson are \$4.00 per ton. Freight to Amado - \$3.00 per ton. Freight from Amado to El Paso \$1.50 per ton by rail.

There ^{seems} to be plentiful supply of WATER available. Rains are distributed throughout both summer and the winter seasons. Water runs in the creek in the gulch bottom practically throughout the year. Water stands at the 135 foot level of the Oro Blanco (white gold) mine and at about the same horizon in the Tres Amigos Mine. When operating, the mine furnished 75 gallons of water per

minute to the mill.

Springs supply domestic water and there is, a short distance below the mill, an admirable site for a dam which would insure water for larger operations. The dam would involve a very small outlay.

TOPOGRAPHY:

The district and the area comprising the claims is mountainous but is not particularly rough or rugged. Differences in elevation on the property do not exceed approximately 400 feet.

Elevation at the camp is 4050 feet. Coloration effects disclose the outcrops of veins as well as overlying rock formations.

The major breaks and gulches have a generally north-south trend and drainage is to the south.

GEOLOGY:

The geological situation in the Oro Blanco district is rather complex and varies a great deal at the different mines.

The district is very large being several miles in both length and width; at least over 40 square miles in area.

The Arizona geological survey assigns the sedimentary rocks to being a Cretaceous age. Prior to this period the land was evidently above sea level for a very long time. Following subsidence, it was elevated again to above sea level in late Cretaceous time by intrusions which raised the surface to a high plateau.

The intrusive rock is an acid rock with a porphyritic structure carrying quartz, plagioclase, orthoclase and hornblends together with appreciable amounts black minerals; largely iron,

manganese and titanium. The original hornblends has subsequently been altered to chlorite.

The rock varies considerably and ranges from andesitic to dioritic in character. Subsequent to the intrusion an extensive effusive ryolite poured out over the country. This rock takes on various phases.

Along the contact it picked up and partially absorbed other rocks and appears more or less as a ryolite - conglomerate. Where it cooled quickly its texture is felsitic and where it cooled slowly it appears porphyritic.

Subsequent erosion has been extensive and in places has reduced the surface to the original surface. Where fully protected from erosion the surface occupies a position 1500 feet higher than the old contours.

Dynamic forces were very active throughout the district.

Regional stresses were relieved by the creation of numerous sheer zones and several of these appear on the property. Faulting and long continued movement followed along the zones so that eventually well defined fissure veins resulted in several instances.

A great deal of brecciation throughout the country rock took place. This permitted some circulation of mineral bearing solutions but the greatest amount of mineral seems to have circulated along and was deposited in the veins.

Resilicification subsequently followed brecciation in the ryolite making if it a very hard tough rock in places.

In the mine one may find ryolite as one of the walls over 300 feet below surface. Adnesite seems to be more in evidence

underground and generally constitutes both walls.

The fact that the ryolite, supposed to be a surface flow, appears 300 feet below surface suggests that there has been a complicated system of faulting or that it found its way to surface along the line of weakness provided by the vein. Until opportunity for further study is afforded the writer feels that both conditions obtain. No major transverse movements along cross breaks or faulting across the vein shows in the underground workings. Movement along the plane of the vein, however, was very considerable and evidence of the same shows in heavy gouge along the walls, slicken-sides and alteration products. Evidence of repeated movement, apparently over a long period of time, may be construed as a favorable sign since it kept open paths for mineral bearing solutions.

The ores in the vein show somewhat the effect of alteration, much silica and quartz near ryolite. Near andesite there is less quartz and more talc and chlorite.

Coloration of iron and manganese stainings show and in some places are pronounced.

The gold is mostly free but some values are carried in the black minerals associated.

Where brecciation shows values follow cracks and crevices.

As a whole the ore is not hard but does show some druziness or small cavities.

Dissemination of values extends beyond the walls in places following seams and cracks and makes commercial ore.

The indications are that sulphides will be encountered and other indications point to the values extending to depth or that ores are deeply seated.

Appreciable amounts of tungsten and molybdenum show in the mill products particularly on ores of the Tres Amigos system of parallel veins.

No sulphides appear in the mine at present even at the present water level. This suggests gradual subsidence and sulphides should be encountered later and in all probability a more or less zone of enrichment.

The Ruby Mine of the Eagle Picher Company, $2\frac{1}{2}$ miles to the northeast is 1100 feet deep and it is operating in sulphide zones; the veins carrying lead, zinc, copper, gold and silver. One might reasonably infer a similar situation would obtain in the mines of Legend group at depth.

Taken as a whole the geological conditions are favorable; the intrusives are very large; the veins are traceable over long distances and there is evidence that dynamic forces operated for a long period as well as intensively.

A great deal of evidence shows relative to crushing and pressure. The ryolite has been more resistant than the andesite and a pebbly or bouldery conditions obtains sometimes in the vein or along the wall. In ^Wavering the intrusive Andesite, it is done so reservedly. Some phases of it appear more as a diorite, but its general appearance as a whole, is largely andesitic, and the term Andesite is used to represent the intrusive for convenience.

The Middle vein carries a considerable amount of manganese oxides, which lines cracks and fills in crevices.

Values appear very attractive in this vein and may reflect surficial influences but normal conditions should be found at water level

VEIN SYSTEM:

The following principal veins exist on the property:

Dos Amigos
Fifty Foot
East - (Oro Blanco)
Middle
West
Big
Parallel
Tres Amigos

Others are known and more are suspected.

A vein appears in the gulch west of Dos Amigos but no work seems to have been done on it.

The Branch Vein is cut underground in two places by the Tres Amigos. Considerable work has been done on this and is creditably reported has been a producer of good ore.

An unnamed vein lies between the Oro Blanco and the Tres Amigos and seems strong and promising. A tunnel 300 feet long has been driven on it.

The West, parallel and Big Veins are all closely related being in the same zone. Mineralization is practically continuous for 75 feet (50 feet at right angles to the dip), as indicated by sampling in crosscut on the 135 foot level of over \$9.00 per ton. Watson assigns a value of \$13.00 to this entire vein, ols price for gold.

The veins being in shear zones often show as parallel veins for short distances.

The Dos Amigos and the Oro Blanco veins are in the same zone, and are probably the same vein. The same applies to the Fifty Foot and the Big Vein.

Values are somewhat spotty although the principal veins have well indicated ore shoots. Values are not entirely confined^d to the ore shoots however.

The general characteristics of the veins throughout are quite similar (other than the middle vein, which has considerable manganese content.)

Widths vary up to 15 feet but will average between 4 and 5 feet. (excepting the Big Vein.)

Dips very ^A. The main veins are nearly vertical, dipping 75 to 80 degrees to the north east. In the Big Vein series, the dip is approximately 55 degrees to the north east. In the mine, the middle vein shows a reserve dip to the southeast in places. On surface it dips to the northeast.

Strikes show variations. The Dos Amigos - Oro Blanco series strike N. 55° W. The Tres Amigos series - S. 70° E. Two other veins on the Two Friends #2 and #4 have the same strike. The latter carry lead and molybdenum, but run much higher in silver.

All the above veins have surface openings indicative of ore shoots, most of which show or are developed in workings underground.

DEVELOPMENT:

The topography permitted tunnels to be driven on the Dos Amigos and Tres Amigos sections of the property.

Mine maps were furnished with data given which were checked but no complete survey of the mine or property was attempted.

At Dos Amigos a tunnel, 750 feet long and on the vein was driven clear through the mountain.

An ore shoot 110 feet long was cut and considerable stoping was done on it. A shaft, near the portal was sunk to cut the vein on a lower level. It is not in good condition and is partially filled with water. There is a 240 foot tunnel on another vein, presumably the middle vein near the Dos Amigos workings.

At Oro Blanco a shaft was sunk to the 235 foot level on the vein.

Water now stands at the 135 foot level. The lower level is 260 feet long.

Drifting on 125 level amount to	1025 feet.
Raising " " " "	237 feet.
Winzes " " " "	65 feet.
Crosscutting on 125 level amounts to	390 feet.

On the same level and in the crosscut the Middle vein has been drifted upon for 150 feet. West vein has been drifted upon for 80 feet, Parallel Vein has been drifted upon for 170 feet. Total Footage Oro Blano workings 2612 feet.

At the Tres Amigos Mine the main tunnel is 675 feet long.

The Intermediate level is 62 feet long.
The Lower level is 475 feet long.
The Intermediate #2 level is 242 feet long.
The Upper level is 162 feet long.
Raising amounts to 215 feet long.
Main shaft 125 feet long.
#2 shaft 125 feet long.
Winzes 75 feet long.
High Shaft 400 feet long.

Total Footage Tres Amigos 1834 feet.

In addition to the ^{above} ave there are numerous short tunnels and outs showing on surface aggregating probably 250 feet.

Workings Dos Amigos	940 feet
" Oro Blanco	2612 feet
" Tres Amigos	1834 Feet
" Supplemental & scatteres	600 feet
Total	<u>5986 feet</u>

Workings on the Bob Tail claim are limited to pits, trenches and a 110 foot tunnel. The workings are in ryolite and probably on the extension of the OroBlanco vein. The showings are promising.

Replacement value of the development work on the Legend Group of mines would amount to at least \$75,000.00

SAMPLING & ASSAYING:

Mine records and other data submitted showed a "Run of Mine" ore of over \$10.00 per ton and the particular object in sampling was to check these former samplings.

Ninety-three samples were taken and the following gives the results obtained.

PARALLEL VEIN:

No.	Width	Value	Foot - \$
3	2'	\$ 1.05	2.10
4	2'3"	18.40	41.40
5	2'	1.06	2.12
6	2'	1.40	2.80
7	3'	3.15	9.45
8	3'3"	1.40	4.55
9	4'	3.50	14.00

No Samples	7
Average Width	2' 6"
Average value per ton	\$4.13
Average value including silver	\$4.34

BIG VEIN:

11	10'	\$7.35	73.50
12	10'	4.55	45.50

BIG VEIN (continued)

No.	Width	Value	Foot - \$
13	10'	\$ 2.45	24.50
14	10'	1.75	17.50
15	10'	9.10	91.00
16	10'	8.75	87.50

No. Samples 6
Width of Mineralization 50'
Average Value per ton \$5.66
Average value including silver \$5.94

WEST VEIN:

17	5'	0.50	2.65
18	4'	1.75	7.00
19	4'	1.40	5.60
20	5'	6.30	31.50
21	2'	0.35	0.70
22	4'	0.70	2.80
23	6'	1.40	8.40
24	2' 6"	4.90	12.25

No Samples 8
Average Width 4'
Average value per ton \$2.18
Average value per ton including silver 2.28

MIDDLE VEIN:

25	3' 6"	4.55	15.92
26	5' 6"	2.80	15.40
27	4' 8"	9.80	45.08
28	3'	15.40	46.20
29	3'	17.55	51.45
30	3'	16.80	50.40
31	4'	27.30	109.20
32	4'	84.00	336.00

Map shows at end of
Vein going northerly

No. Samples 8
Average Width 3' 8"
Average Value per ton \$18.60
Average value per ton including silver \$19.53

Mineralization extends over a length of 160 feet.

ORO BLANCO VEIN :

<u>No.</u>	<u>Width</u>	<u>Values</u>	<u>Foot - \$</u>
33	4"	\$ 5.30	2.12
34	2' 6"	0.70	1.45
35	4' 3"	6.30	32.77
36	3' 6"	5.60	19.60
37	4"	2.10	8.40
38	2' 6"	3.85	9.62
39	3'	0.70	2.10
40	4"	1.05	4.20
41	4"	1.40	5.60
42	4"	0.00	0.00
43	4"	3.50	14.00
44	4' 6"	2.80	12.60
45	3' 6"	8.40	29.60
46	4"	11.20	44.80
47	4"	8.05	32.20
48	5'	6.30	31.50
49	8'	7.70	61.60
50	5'	19.95	99.75
51	8'	28.00	224.00
52	5'	3.85	19.25
53	3'	21.00	63.00
54	4' 6"	12.60	56.70
55	2'	2.45	4.90
56	3' 6"	4.55	15.92
57	4"	32.90	131.60

No Samples 25

Average Value per ton \$9.0s

Average Value per ton including silver \$9.51

155 feet ore shoot well indicated \$13.67

Average Width 5'3"

Average Value per ton including silver

TRES AMIGOS VEIN, Tunnel level:

58	3'	18.20	54.60
59	3'	1.40	4.20
60	5'	1.23	6.15
61 (F)	12'	4.20	50.04
62	3'	4.20	3.50
63	5'	0.70	3.50
64	4' 6"	3.15	14.17
65	2' 6"	2.45	6.12
66	4'	9.80	39.20
67	3'	7.00	21.00
68	12'		
69			
70	12'	21.35	256.20
71	3'	6.65	19.95
72	5'	4.90	24.50
73	4'	1.40	5.60
			(12)

No. Samples 14
 Average width 5'
 Average Value 37.51
 Average Value including silver 7.80

TRES AMIGOS 200 ft. level:

<u>No.</u>	<u>Width</u>	<u>Value</u>	<u>Foot - \$</u>
75	5'	47.60	238.00
76	4'	25.20	100.80
77	4'	19.60	78.40
78	4'	16.80	67.20
79	5'	4.20	21.00
80	6'	14.00	84.00
81	9'	5.25	47.25
82	4'	1.05	4.20
83	3'	18.90	56.70
84	4'	0.88	3.52
85	5'	21.70	108.50

No. Samples 12
 Average width 4' 8"
 Average value including silver \$11.42

200 Level - average width 4' 10" ; Average value \$16.02

Weel devloped ore shoot over 100 feet in length
 Average width 5' 3"; Average value \$18.03 per ton,
 including silver.

DOS AMIGOS VEIN:

86	4'	0.88	3.52
87	8'	0.70	5.60
88	4'	1.40	5.60
89	4'	1.05	4.20
90	4'	0.70	2.80
91	3'	15.75	47.25
92	3'	1.23	3.69
93	3'	1.40	4.20
94	8'	2.10	16.80
95	4'	2.45	9.80

No. Samples taken 10
 Average width 4' 6"
 Average value per ton including silver \$2.41

SUMMATION:

	<u>No.</u>	<u>Total Widths</u>	<u>Foot - \$</u>	<u>Average Gold value</u>
Parallel Vein	7	18.5	76.42	4.13
Big Vein	6	10.0	339.50	5.66
West Vein	8	32.5	70.90	2.18

SUMMATION - (continued)

	<u>No.</u>	<u>Total Widths</u>	<u>Foot - \$</u>	<u>Average gold value</u>
Middle Vein	8	30.5	669.65	18.60
Oro Blanco	25	103.75	940.33	9.06
Tres Amigos Tun	14	69.00	517.93	7.51
Tres Amigos 200 Lv.	11	53.00	809.57	15.27
Dos Amigos	10	45.00	103.46	2.30

No. Samples 89

Average width 4' 4"

Average Value per ton gold \$8.55

Average value per ton gold and silver \$8.97

In the above calculations are included many samples which were taken, not to determine values primarily but to determine limits of commercial ore, but are nevertheless included in the general average for all mines, veins and working sampled.

Eliminating, parallel, west and Dos Amigos veins, which, while showing some commercial ore are not wholly commercial.

	<u>No.</u>	<u>Total Widths</u>	<u>Foot - \$</u>
Tres Amigos	14	69	517.93
Tres Amigos, 200 Lv	11	53	809.57
Oro Blanco	25	103.75	940.33
Middle	8	30.5	669.65
Big Vein	6	50.0	300.00

No Samples 64

Average width 5'

Average value per ton gold \$10.57

Average value per ton gold and silver \$10.55

In like manner, Tres Amigos and ~~PRO~~ Amigos and Oro Blanco veins only give results of

No. Samples 50

Average width 4' 6"

Average value per ton gold \$10.04

Average value per ton gold and silver \$10.55

Including the veins showing the more extensive openings with commercial ore, ore Tres Amigos, Middle and Oro Blanco, the results are: -

No. Samples 58

Average width 4' 6"
Average value per ton gold \$11.46
Average value per ton gold and silver \$12.01

Several ore shoots show and are indicated in the mines.

By taking only widths and values of the ore shoots and eliminating the balance of the mine, much of the ore of which is commercial, the following results obtain; -

<u>Length</u>	<u>Vein</u>	<u>Average Value</u>	<u>Average Width</u>
160	Middle	\$ 18.60	3' 8"
100	Tres Amigos	17.18	5' 3"
155	Oro Blanco	13.02	5' 3"

Total Lengths 415 feet
Average width 4' 10"
Average Value per ton gold \$15.51
Average Value per ton gold and silver \$16.28

The sampling of Watson and the mill returns indicate that the ores carry about 10% of the values in silver. The samples I took and had run for silver are somewhat less, but indicate that 5% is a closer approximation.

To the above figures therefore should be added 5% for silver values, or:

All veins then average	\$ 8.55 per ton
Parallel Vein	4.34 " "
Bif Vein	5.94 " "
West Vein	2.28 " "
Middle Vein	19.53 " "
Oro Blanco	13.67 " "
Dos Amigos	2.41 " "
Tres Amigos	11.42 " "

The well-indicated oreshoots in Middle, Oro Blanco and Tres Amigos Veins show an average value of \$16.28 for 415 feet over an average width of 4' 10".

A noteworthy feature of the sampling is that for a width of 60 feet along the cross cut the Big Vein show values of \$5.94 per ton for a commercial product, and 20 feet shown values of \$9.36 per ton.

Watson shows a value of \$13.00 (\$22.75 new price) for a width of 50 feet (73 feet along the dip).

The sampling seems to bear out the results of Mr. Watson's work taking into consideration present values for gold and silver.

Assaying was done by Ed. Eisenhouer, Jr. of Los Angeles. Assays were run in duplicate and per instructions a double charge was used.

The price per ounce of gold for calculating values is \$35.00; For silver 75 cents per ounce.

ORE RESERVES:

In considering ore reserves it is well to remember that tonnages are often reflected in and by the strength of veins. In the present case the veins are proven over long distances and any vein, generally speaking, which had demonstrated length should extend to a similar or considerable depth.

The sampling indicated values are carried throughout the veins and taken as a whole and from all veins averaging, and weighing values, the ore appears commercial.

Where selective mining could be profitably followed it should be done and all non-commercial ore eliminated.

Except in the case of the Tres Amigos workings very little technically blocked out ore exists in the mines when the interpretation placed upon the term means exposure on four sides.

ORO BLANCO:

Twenty five samples taken along the 125 foot level give an average value of \$9.51 and an average width of 4' 2".

Were these values to continue to surface there would be a tonnage exposed on three sides of 53,000 tons. Deducting for stoping done etc., there remains 45,000 tons of well-indicated ore.

Mr. Watson, in his calculations, estimates 40,000 tons developed in the East vein (Oro Blanco) with an average grade of \$6.30 per ton (present price \$11.02) and an average width of 55 inches. These are better values and widths than my own. Watson reports values extending down in the shaft. If so, tonnage should be larger.

While several sections show good commercial ore there is indicated an ore shoot 155 feet long, 180 feet high and 5' 3" wide of \$13.67 ore. There should remain in this shoot 7500 tons. This is very well indicated ore.

Middle Vein:

The Middle Vein is opened by a 160 foot drift which averages 3' 8" wide and carries values of \$19.53 per ton. Workings from surface indicate the same ore shoot existing.

Presuming values continued through to the surface of 225 feet there would be a tonnage in the shoot of 8250 tons. This is very well indicated ore.

No tonnage for the Parallel, Big or West Veins can be estimated or calculated because these veins are only pierced at depth at one point. However, each of these veins show that considerable ore was taken from them in shallow workings.

There is however, a very potential possible tonnage in these veins and particularly the Big Vein.

Dos Amigos:

As a whole this does not show much commercial ore. One ore shoot is evident in the workings and is approximately 75 feet long and 4' 6" wide. Limited sampling gives values of \$15.74 per ton. No tonnage estimated.

Tres Amigos:

Sampling shows commercial ore scattered throughout the various sections of this mine. All the samples indicate an average value of \$11.42 over an average width of 4" 8".

Over a length of 700 feet: a width of 4" 8" and an average height of 225' there is indicated tonnage of 55,000 tons. Deducting for stoped areas 12,000 tons, there remains 43,000 tons which might be classified as very well indicated ore.

Between the tunnel and the 200 foot level, there is a block of 6725 tons of \$15.27 fully proven ore.

There is indicated an ore shoot 100 feet long raking N.W; 250' high and 5' 3" wide carrying \$17.18 per ton values.

This would contain 9000 tons of which 6500 tons remains after deducting stoped areas.

summation"

Oro Blanco Vein	45,000 tons	\$ 9.51 Well indicated
Oro Blanco Vein	7,000 "	13.67 Very Well indicated
Middle Vein	6,500 "	19.53 " " "
Tres Amigos Vein	43,000 "	11.42 Well indicated
" " "	6,725 "	15.27 Proven
" " "	6,500 "	17.18 Very Well indicated

COSTS:

The inspection of the property shows that the mines are fairly well opened up and that the ore is not hard and for the most part stands well.

The veins stand steeply to nearly vertical and the walls are generally very good and clearly defined. Under these conditions mining costs should be relatively low. The only timber required is for chutes and staging.

As mentioned before, a great deal of movement and crushing effects show in and along the vein, particularly where ryolite is present. This rock, being hard, has resisted alteration somewhat, as well as crushing, and appears often in pebbly or bouldery form in the vein.

These pebbles carry practically no values and should be discarded over grizzly's or trommels. This method would materially lessen milling costs by eliminating roughly 25% of the ore, without sacrificing values.

The mill is located approximatley $\frac{1}{4}$ mile from the Oro Blanco shaft and a mile from the Tres Amigos Tunnel so that an ore transportation charge is necessary, but will be small approximating 10¢ per ton.

Diesel engine oil costs 4.8¢ per gallon at Tucson and close to 7.5¢ delivered at the mine.

A great deal of Mexican and Indian labor is available in the district and miners and others can be had for \$2.75 to \$3.25 per day.

Bearing the above factors in mind as well as past performances in operation, it is believed that costs will be relativelt low.

The following costs should obtain and are based upon
(19)

experience and comparison with mines similarly situated. These are often better guides to costs than attempting estimates where unknown factors exist.

Mining	\$ 1.60 per ton
Transporting ore &	
Milling &	1.35 "
Refining & Assaying	.10
New Development	.50
Insurance, Taxes, etc.	.40
Overhead	.25
Depreciation &	
Replacement	.15
Freight per ton unit	.15
Total	<u>\$4.50</u>

EARNINGS:

Assuming operating and marketing costs of \$4.50 per ton
as indicated above:

The 45,000 tons of \$9.51 ore indicated in the Oro Blanco should yeild a profit of \$225,450.00
 The 6500 tons of \$19.50 ore indicated in the Middle Vein should yeild a profit of \$97,400.00
 The 43,000 tons of \$11.42 ore indicated in the Tres Amigos vein should yeild a profit of \$297,500.00

Profit from indicated ore:

Oro Blanco Vein	\$225,450.00
Middle Vein	97,400.00
Tres Amigos	<u>297,500.00</u>
Total operating profit	\$620,350.00
Deducting 20% for contingencies	<u>120,350.00</u>
	\$500,000.00
Allowing 10% loss in recovery	
Allowing 10% for royalty	<u>125,000.00</u>
Net Earnings ---	\$375,000.00

This from well indicated ore which might be classed as probable ore.

Considered from a most conservative basis and taking the very well indicated ore, which might be classed as Positive Ore, the following earnings will apply: -

Oro Blanco Vein 7500 tons,	\$13.67 ore	\$68,775.00
Middle Vein 6500 tons,	19.53 ore	97,400.00
Tres Amigos Vein 6500 Tons,	17.18 ore	81,400.00
Allowing for 10% recovery loss and 10% royalty a/c Purchase		<u>247,575.00</u> <u>47,475.00</u>
	Net Earnings	<u>\$200,000.00</u>

In operation it is more than probable that selective mining will be practiced wherein non-commercial and poorer grades of ore will be eliminated and the grade of ore reaching the mill will be of higher value.

Under such a policy a considerable advantage would follow and should be reflected materially upwards in earnings.

With the capacity of the mill at 75 tons per day of 24 hours, and assuming ore treated comes from several parts of the mine or well distributed sections and assuming there is a 10% loss in operating time, a 10% loss in recovery and deducting a further 10% for royalty, which strictly should be assigned to Real Estate-Purchase price, then daily earnings should approximate \$300.00 per day, or 7500.00 per month. Earnings are dependent somewhat upon good stable management.

Several years operation are indicated.

EQUIPMENT:

The mine is rather fully equipped and below is appended a full list of equipment. It is capable of operating almost immediately although some additional equipment could be advantageously provided and some modification of the mill would be advisable.

Machinery, equipment and tools have replacement value in the neighborhood of \$25,000.00, but costs considerably more.

BUILDINGS:

Besides the mill, there are the following buildings:
Assay laboratory, office, 5 cabins. cook house, 3 tent houses, warehouse, compressor house, and blacksmith shop.

All cabins are furnished and complete equipment in the cook house, laboratory and office.

Replacement value of buildings is approximately \$7,500.00.

METALLURGY:

The mine is equipped with a concentrating mill of nominal 75 ton capacity.

The flow sheet is as follows:

Course crushing :	9 X 15 whelling Jaw Crusher
Fine grinding:	75 ton Mary Ball Mill
Classification:	Dorr Simplex Classifier
Concentration:	6 Wilfley tables
Drying:	Furnace Dryer

The mill is well constructed, but lacks windows. The equipment is good.

The flow sheet and the method employed for concentration is not well suited for the type of ore. The largest proportion of values are in free gold and amalgamation should be employed, preferably, Gibson amalgamators.

The balance of the values is contained in hematite, magnetite, and illmanite, etc., as well as manganese. Wet concentration utilizing the Wilfley tables should make an effective recovery of the minerals, but secondary classifying is necessary.

This is not provided for in the present mill and the recovery of "middlings" from the tables and the retreatment of the same is likewise not provided for.

The sampling of the small tailings dump below the mill indicates a loss in recovery of \$1.55 per ton. This suggests an improvement might be effected through amalgamation, finner grinding and the taking off of a "middling" product. The present tables should be arranged in series, thus permitting retreatment.

The concentrates could be shipped to the smelter direct and the gold recovered by amalgamation to the mint. Later, or when advisable, the concentrates might be cyanided and gold and silver values recovered at the property without having to bear the losses imposed through smelting and freight.

An inspection of the mill and a study of operation suggests that :-

- I Finer primary crushing be done
- II Finer frinding be done
- III Wilfley tables be arranged in series to recover and retreat "Middlings"
- IV Secondary classifying be installed to permit better recoveries on the tables
- V Flotation tests be made

These things are recommended.

REQUIREMENTS:

The following things if installed, would be warranted and show a marked improvement in operation.

Amalgamators	\$ 600.00
Windows for mill	150.00
Alterations in flow sheet	400.00
Additional Classifier	400.00
3' Stoping drill outfits	750.00
Drill sharpener	400.00
Bins	500.00
Hoist	750.00
Headframe	400.00
Rope, Skip, Track, etc.	450.00
Repair roads	300.00
	<u> </u>
	\$5,050.00
Payroll	3,000.00
Supplies	1,500.00
Total	<u>\$9,550.00</u>
or	\$10,000.00

Considerable of this outlay could be deferred and paid out of earnings.

THE SITUATION:

The district in which the mines are located is an old one.

With lack of transportation, operations were carried on in the early days by principally Mexicans who worked the surface ores and treated them in arastras.

Later, the properties were absorbed by operating companies who did a great deal of development work.

Values were marginal under the old price for gold and with mounting costs, particularly during the World War, operations ceased.

With the revaluing of gold at its present price of \$35.00 per ounce the ores became commercial again.

In connection with the mines of the Legend Group. it would appear that they have been under-financed and worked under difficulties and embarrassments in no way due to the company itself.

which prevented regularity of operations. This enforced a cessation and that situation obtains at present.

Fairly good equipment has been provided throughout and operations could be started within a short time.

Considerable development has been done sufficient to insure a supply of ore for a few years.

The average grade of ore is commercial. For the most part conditions are very favorable for successful and sustained operation at normal costs.

The geology connected with the group is favorable and is indicative that ore values will extend downwards.

The veins are strong and the dips and widths are such that working conditions should be good.

Besides the Positive and Probable ore, there is a very large potential ore reserve in the several other known veins and their downward extension.

OPINION:

I look upon the Legend Mines Group in a very favorable light.

Certain additional equipment is warranted and a few alterations in the mill arrangement is advised.

Sufficient capital to place the properties upon a regular and sustained operation of 75 - 100 tons per day should be provided.

The acquirement of the mine is recommended.

617 Subway Terminal Building
Los Angeles, California
June 1, 1935

John Daniell, Engineer of Mine

SHIPMENTS

ORE FROM TRES AMIGOS MINE TO MAY 1, 1935

		Gold	Silver
March 20	3.75 tons	6.30	1.35
April 6	13.50 "	5.60	2.67
" 7	9.00 "	6.30	1.37
" 8	18.00 "	14.00	1.48
" 9	13.50 "	4.20	1.55
" 16	8.00 "	5.60	.97
" 17	25.00 "	5.60	.97
" 24	8.25 "	15.75	1.94
" 25	6.00 "	9.10	1.05
" 26	22.50 "	9.10	1.06
" 27	18.00 "	16.80	.25
" 28	11.25 "	.70	1.66
" 28	6.75 "	35.00	.84
" 27	4.50 "	8.40	1.29
" 29	17.25 "	8.40	1.91
" 30	18.00 "	7.00	1.61
 <hr/>			
TOTAL	203.75		

Mill heads average \$11.23 ton.

New York, August 20th, 1906

Wm. S. Thompson, Esq.,
28 Broad Street
New York City

Preliminary Report on the Oro Blanco Mine
Santa Cruz County, Arizona

Dear Sir:

As requested by you, I have made an examination of this mine and have ascertained the following:

SITUATION:

The Oro Blanco mine is situated in Santa Cruz County, Arizona, about two miles north of the Sonora border and about seventy-five miles south of Tucson. The nearest railway station is Calabasas which is about fifteen miles east of a branch of the Southern Pacific Railroad.

GEOLOGY:

No extended examination was made of the surrounding country, but in the neighborhood of the mine the country rock is almost entirely igneous. The veins, of which there are several, have a general strike of northwest and southeast and vary from standing nearly vertical to a dip of nearly 55 degrees. The values occur in rock which varies exceedingly in appearance. Sometimes it resembles a soft decomposed porphyry, at other times a hard porphyry, and at one important place in the mine, high valued were obtained in what I take to be dacite as pure a looking unaltered eruptive rock as one could wish to see. The deveopment has, as a rule, followed some wall, out of numerous points a new all comes in leaving one in doubt which to follow. As the values may be good in one instance as the other, and as the rock in the hanging and foot very often has the same appearance as that which the drift has been run, one has no guarantee that the values amy not be just as good for some distance in eather direction.

I think there is no doubt but that the source of the precious metals is deep seated, and one would have every confidence in finding them in greater depths than have as yet been explored.

(1)

C-O-P-Y

See Page 23

SAMPLING

Samples were taken every twenty feet throughout the development, across the width of the tunnel as a rule, cut but sometimes only to the limit of the walls where they were distinct. Samples could not be obtained at regular intervals in the shaft on account of heavy ground filling.

ASSAYING was done at the mine, and check samples were by Messrs. LeDoux & Co., of New York have verified the same.

THE EAST VEIN:

Number 2 shaft has been sunk on the vein to a depth of 235 feet. 125 feet down, a level has been run 720 feet to the west and 230 feet to the east. Short raises have been put up in several places, and one winze sunk. 240 feet west of No. 2 shaft, No. 1 shaft has been sunk on the vein but a depth of 120 feet a slip apparently cuts it off (see tracing No. 3). This shaft in conjunction with No. 3 raise I have figured as a continuous raise in estimating the tonnage, although the break may necessitate extra development. the east drift could not be sampled as it is used as a sump. I have given the mine the benefit of this drift in estimating tonnage, and have used the value obtained by Messrs. Tower and Parker in their sampling, discounting by 25% a figure obtained by comparative sampling on other parts of the mine. the 235 foot level has been driven out a short distance, but owing to a heavy rain it was drowned out and I was unable to obtain any samples. Between the two levels, the assays in the shaft show up well, which is a good indication for the lower level and the mine in general. I submit a longitudinal section of this vein, showing the development, assays and tonnage blooms. The tonnage that could be called "ore reserves" I figure at 41,500 tons at a total value in gold and silver per ton of \$6.30, gold figured at \$20.00 and silver at \$.60 per ounce. The average thickness of 55 inches.

This estimate of tonnage is, I think conservative. there is every probability of there being a large tonnage which at present lacks sufficient development to class as ore reserves. In figuring the two small blocks adjacent to that part of No. 2 shaft which is above the 125 foot level, I have reduced the assays in that part of the shaft, shown on the section, to an average of \$9.00 per ton, as those obtained are too much in excess of the average to place much dependence upon.

OTHER VEINS: On the 125 foot level, 320 feet west of No. 2 shaft is a cross-cut to the south exposing the Middle, West and Parallel Veins.

MIDDLE VEIN: 100 feet to the south of the East vein is the Middle Vein (see tracings No. 3). The development of this Vein consists os a drift of 160 feet long and a raise 35 feet high. The ground developed by this raise is practically stopeed out, and there are no ore reserves blocked out at present. Future development on this vein will undoubtedly show up more tonnage. The average thickness of this vein in the drift is 49 inches and the grade \$6.00. Two samples at the top of the raise (Nos. 66 and 67) average \$4.00.

WEST VEIN: 160 feet south of the Middle Vein is the West Vein A drift 200 feet long on the 125 foot level discloses an average value of \$4.25 to the ton over a width of 57 inches. As there are no raises or winzes, tonnage is merely indicated and not developed.

PARALLELED VEIN: 70 feet to the south of the West Vein on the 125 foot level is the Parallel Vein driven on for a distance of 90 feet. The average value is \$8.32 over a width of 25 inches, but as may be seen from the assay plan this average is derived largely from the one assay of \$25.76 and the probable grade of the drift is between \$2.00 and \$3.00. About 450 feet horizontally from the point on the 125 foot level where the Parallel Vein is exposed, there are some old workings on the same vein (see plan). They consist of the old Parallel Shaft which is about 135 feet deep on a 50 degree dip, and also three short levels. The average value obtained on the two upper levels is \$2.75 over a thickness of 52 inches. The bottom level on the West side crosscuts the formation for a distance of 26 feet and assays \$3.48 over that thickness. These values are so low, that the small tonnage developed has not been considered.in this report.

OTHER DEVELOPMENTS:

The most interesting feature in the whole mine is the cross-cut on the 125 foot level, between the West and Parallel Veins. This discloses a value of \$13.00 over a horizontal distance of 73 feet, which means a true thickness of over 50 feet on a 50-degree dip . This 73 feet was sampled in sections of 4 feet with the exception of the last sample "R" which was 6 feet long (see samples A-R). Sample No. 58 was also included. Unfortunately this is the only exposure between the Parallel and West Veins in the mine. The working shown at the west end of the West Vein drift is on a quartz vein and is not a true cross-cut. Part of the 73 feet cross-cut is in unaltered eruptive rock and shows no signs of mineralization, although a value as high as \$25.00 was obtained in it. The outcrop between the West Parallel Veins was sampled about 100

feet west of the old Parallel Shaft, for a horizontal distance of 160 feet at right angles to the strike. It averaged over that distance \$2.00 in gold and \$.30 in silver in order to avoid any chance of being salted by placer gold which is found on the surface, the samples were washed and only the large sized stuff was crushed and assayed. Possibly some gold was discarded which rightfully belonged in the sample.

RESUME OF PRESENT DEVELOPMENT:

To sum up, this preliminary sampling has shown in the neighborhood of 40,000 tons of ore developed in the East Vein, with a probability of there being a larger undeveloped tonnage. The grade of \$6.30 is approximately 90% gold and 10% silver, although no metallurgical experiments have been made, one can reasonably figure on 75% recovery, which would reduce the value recovered per ton to \$4.75. Given a large tonnage development and a large economical plant of say 100 stamp capacity, this grade of ore occurring over the average width of 55 inches, would probably only pay expenses, granting that the stoping width could be kept down to 55 inches. On the other hand, the character of the formation is such that I think the ground would break wider, and now the question resolves itself as to whether this excess of stoping width would carry values. This can only be determined by a series of cross-cuts which I think would possibly demonstrate that the values continue into the walls for some distance, in which case the cost of mining would be greatly reduced, the tonnage increased and there would be every chance of having a commercially paying proposition.

The other development of importance is the cross-cut on the 125 foot level between the West and Parallel Veins, which discloses a true thickness of over 50 feet of value of \$13.00. This I may say is a extremely fine showing and should future development disclose any considerable tonnage of this, one would expect large profits.

RECOMMENDATIONS:

The East Vein should be carefully sampled every five feet throughout the development. Where there is any difference in appearance in different sections of the vein, these sections should be separately sampled. Cross-cuts should be put in at regular intervals and should the first few give any encouragement, this plan should be continued throughout the two levels. If these cross-cuts demonstrate profitable ore values, development should be systematically pushed both laterally and in depth.

(b) Either the West or Parallel Vein should be driven on at the 125 foot level and the formation cross-cut at regular intervals of say 100 feet to obtain further information about the values between these two veins. The outcrop should be carefully studied and large samples taken, provided the first few give any encouragement. An incline should be sunk on the parallel Vein from the surface to the 125 foot level. If extensive enough ore bodies are developed by this work on the scheme of mining in an open cut "Glory Hole" would then be considered as this method renders much lower grade of ore payable.

(c) Water: If a more extended examination and sampling give promising results, the question of water supply should be investigated. There are three gulches in the neighborhood through which large amounts of water flow directly after the rains. This could be conserved by the construction of dams. In addition to this source the mine is making about 50 gallons per minute and there is good reason to expect more as greater depth is attained. Wells should be sunk in the gulch nearest the mine, and if adequate supply is obtained this method would probably be cheaper than constructing dams.

(d) Power: Transportation of fuel to the mine would be out of the question on account of expense. The most feasible scheme would be an electric power station at Calabasas where oil could be delivered at reasonable rates. This expenditure would only be justified in the case of a large milling plant at the mine.

In conclusions, I wish to say that there is a chance of making this a big mine, and that it is well worth the cost of a more extended examination and further development.

Yours faithfully,

(signed) Wm. Watson

C O P Y

ORO BLANCO

PARALLEL VEIN

X Out at

125'

Level	Au oz	Ag oz	
A	.70	1.30	
B	.30	.96	
C	.12	.60	
D	.27	.68	
E	.24	.76	
F	.25	.82	
G	.47	.98	Distance 64 ft.
H	.24	.82	Av. Au equals .59 oz.
each J	1.14	1.65	11.80
sam- K	2.51	3.08	.66
ple L	.50	.98	
M	.46	.80	
N	.26	.68	
O	.40	.76	
P	1.21	1.68	
Q	.48	1.00	
	<u>9.52</u>	<u>17.55</u>	
6 Ft. R	1.16	1.72	Equals 23.20
			<u>1.02</u>
			<u>\$24.22</u>

A-Q	64 Ft. x 12.46 equals	797.44
R	6 x 24.22 equals	145.32
58	3.1 x 2.38 equals	7.38

73.1	\$250.14	equals \$13.01
	<u>73.1</u>	

	Gold oz	Silver oz	
Outcrop	.83	.56	
all	.69	.42	\$2.00 Au
20 ft	.90	.38	
	.91	.46	1.36 Ag
	.92	.65	
	.93	.82	\$2.36 total value
	.94	.80	
	.95	.75	across 180 ft right angles to stike

C-O-P-Y

STATE OF ARIZONA
DEPARTMENT OF MINERAL RESOURCES
MINERAL BUILDING, FAIRGROUNDS
PHOENIX, ARIZONA 85007

July 29, 1974

Mr. Ed Grasmoen
2009 Estrella Road
Prescott, Arizona 86301

Dear Mr. Grasmoen:

Enclosed are the reports you kindly left last week for us to copy. We are returning one copy each of the reports typed plus the originals.

We very much appreciate your generosity in allowing us to copy these reports for our files.

Very truly yours,

JOHN H. JETT, Director

by:

Adm. Assistant.

P
Encs

File # 1000000
Arrested Mfr

ARIZONA DEPARTMENT OF MINERAL RESOURCES
Mineral Building, Fairgrounds
Phoenix, Arizona

1. Information from: John W. Frye
- Address: P.O. Box 115, Sonita, AZ. 85637; Phone 455-5697
2. Mine: Sorrel Top 3. No. of Claims - Patented _____
 Unpatented _____ yes
4. Location: Approx. 5 miles SE of Arivaca - Ruby Rd. (Santa Cruz Co.)
5. Sec 19 Tp 23S Range 11E 6. Mining District _____
7. Owner: Harry J. Whittinghill
8. Address: P.O. BBox 91, Arivaca, AZ 85601 (Phone 398-2390)
9. Operating Co.: Grubstake Mining Development Co.
10. Address: P.O. Box 115, Sonita, AZ 85637
11. President: John W. Frye 12. Foreman: Harold Green
13. Principal Metals: Au 14. No. Employed: _____
15. Mill, Type & Capacity: _____
16. Present Operations: (a) Down (b) Assessment work (c) Exploration
(d) Production (e) Rate _____ tpd.
17. New Work Planned:

18. Miscl. Notes: The Sorrel Top underground mine is worked intermittantly to provide feed to the company-owned mill and refinery at the Grubstake mine.
Mr. Frye is generally contacted by mobile phone unit 624-6646, No. 0136.

Date: 1-29-81

(Signature)

W. Greeley (Field Engineer)

ARIZONA DEPARTMENT OF MINE. / RESOURCES
Mineral Building, Fairgrounds
Phoenix, Arizona

1. Information from: Ernest Hicks
Address: Box 644 Tombstone AZ 85638
2. Mine: Dos Amigos 3. No. of Claims - Patented _____
Unpatented 4
4. Location: _____
5. Sec 17 Tp 23 Range 11E 6. Mining District Oro Blanco
7. Owner: Ernest Hicks and Bert Walker
8. Address: Same
9. Operating Co.: None
10. Address: _____
11. President: None 12. Gen. Mgr.: _____
13. Principal Metals: gold & silver 14. No. Employed: _____
15. Mill, Type & Capacity: None
16. Present Operations: (a) Down (b) Assessment work (c) Exploration
(d) Production (e) Rate _____ tpd.
17. New Work Planned: Pending
18. Misc. Notes: Mr. Hicks provided a copy of Report on Resistivity & I.P. Measurements

Date: 2/25/75

(Signature)

JB Hale

(Field Engineer)

Aug. 3, 4, '74

REPORT
ON
APPARENT RESISTIVITY & INDUCED POLARIZATION
MEASUREMENTS
ON
DOS AMIGOS CLAIMS
IN THE
ORO BLANCO MINING DISTRICT
SANTA CRUZ COUNTY
ARIZONA
for
WALKER AND HICKS

REPORT ON RESISTIVITY AND I. P. MEASUREMENTS
FOR WALKER AND HICKS.

INTRODUCTION

Surface resistivity and I. P. measurements were made on the Dos Amigos claims group on August 3 and 4, 1974 at the direction of A. A. Walker. W. R. Ewing was in charge of the crew of Arizona Western Mines, Inc. personnel performing the measurements.

Weather conditions were ideal and telluric noise disturbance was at a minimum. Occasional cloud build-up offered no interference except in one instance possibly producing an erratic reading, but not while on the above mentioned claims.

PROCEDURE

Standard Wenner array was used with A-spacing of 200 feet with the maximum distance of 600 feet between electrodes. Transmitter currents ranged from 100 to 500 milliamperes. All data are represented in conventional profile form.

Instrument used was a Spectrum Research Time Domain type with a 12 volt power source, emitting pulses in a 2 second On, 2 second Off sequence, reversing polarity for each sequence and self-potential buck-out. Apparent mineralization information is derived directly from field data received at the stations. No laboratory work was involved in the determinations.

Interpretation is based on electro-chemical theory and data gathered from the field work.

I. P. chargeability is computed in milliamperes and resistivity in ohm feet.

INTERPRETATION

Data from 11 stations was taken along a line running generally from North to South cutting across the known mineralizing trending at approximately right angles.

As the profile indicates, the readings nearly double at three distinct points, the first one being the broadest and occurring on the main Oro Blanco East vein strike, about 200 ft. in an easterly direction from the Oro Blanco #1 validation drill hole.

Number "two" anomaly occurred about 300 ft. due West of an old shaft up on the hill to the East.

Number "three" anomaly shows a definite increase in polarizable host rock along the strike trend of the main tunnel vein, while the line left off on a high reading in line with the South vein structure.

Resistivity measurements are favorable to the I. P. data, although the big apparent drop at the North end of the line could be partially due to a change in sub-surface rock type from an andesite to a diorite.

Although no diorite was evident near the South end it is conceivable that the same condition exists at that point and will be partly responsible for the decline in resistivity readings.

CONCLUSIONS AND RECOMMENDATIONS

Even at the 200 ft. search depth, the results indicate a substantial volume of polarizable host rock for what are evidently vein structures.

This lessens the margin of error in pointing up a drill target.

Stratigraphy data shows along with major and local faulting in the area, that the once extremely high activity, resulted in steeply tilting volcanic flows which could easily account for alternating rich and barren zones with very little or no surface evidences of such occurrences.

At least one parallel line should be run about 300 ft. to the East and some detail work at 100 ft. search depth before a drill target is determined.

W. R. Ewing, Geo. chif -
W. R. Ewing

RESISTIVITY IN OHM/FT.

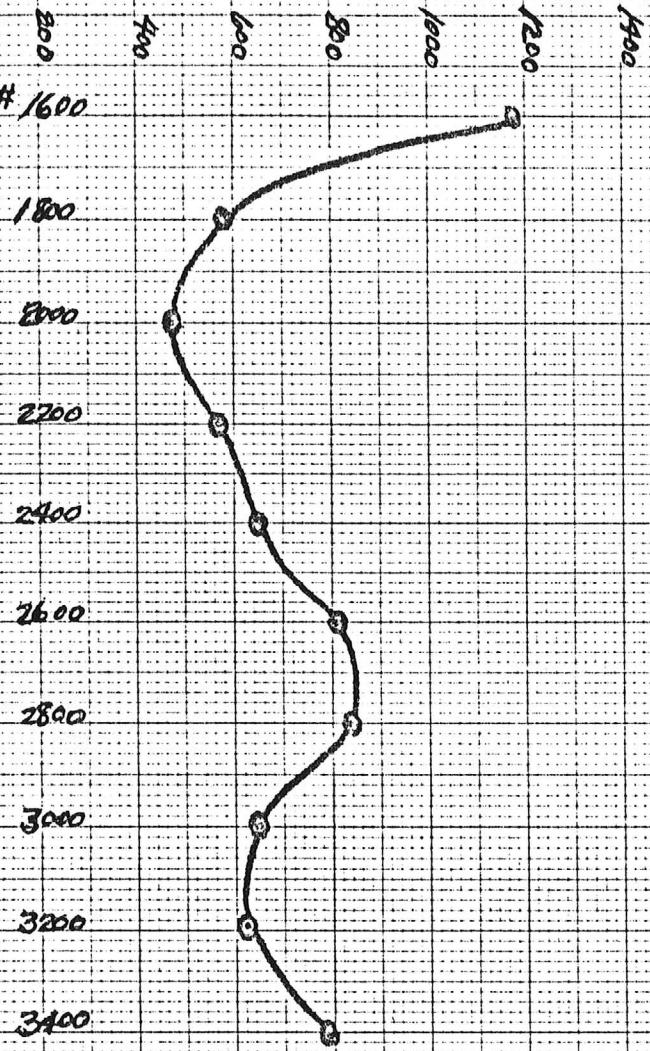
STATION # 1600

APPARENT RESISTIVITY MEASUREMENT PROFILE: LINE #1

RECEIVED: 5/00/00

ROOFWEINER BERRY (200 ft. STATIONS)

DOS ANGOS CLAIMS GROUP
FOR WACKER & HICKS



CHARGEABILITY IN MILLISECONDS

0 10 20 30 40 50 60

STATION # 1600

1800

2000

2200

2400

2600

2800

3000

3200

3400

200ft E. of DRILL HOLE
ON ORO BLANCO #1

300ft W. of SHAFT

CROSSES MAIN VEIN AREA
AS ROAD TURNS EAST

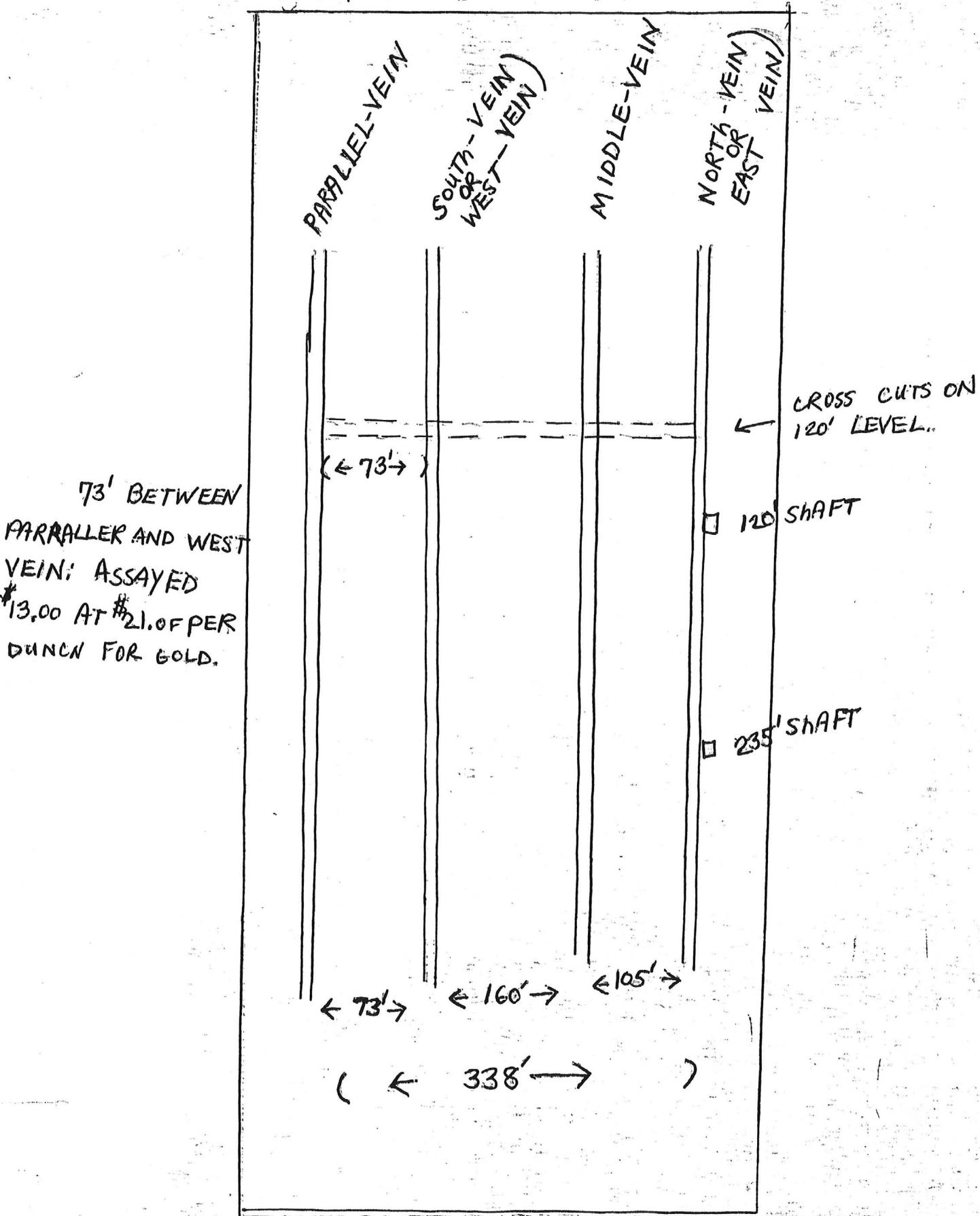
CROSSES SOUTH VEIN AREA

DIAZGEN BLANCO PROFILE: LINE #1
DIRECTION: SW-NE
20 ft. WHEELS, 500 ft. COFF. STATIONS

DOS AMIGOS CLAIMS GROUP
FOR WALKER & BLOKS

5 Aug '54 - F. C. G.

ORO-BLANCO-CLAIM



Mr. Stephen Monteleone,
806 Security Bldg.,
Los Angeles, California.

(Copy in transit 1/2)

4-10-1907

Dear Sir:-

In compliance with your verbal request, I have made a careful investigation of the properties owned by the Oro Blanco Mining Company in Oro Blanco Mining District, Santa Cruz County, Arizona. The Company, I find, have claims located to cover a large vein which is traceable for several miles through this District, having a trend northwesterly and southeasterly. Development work on the property consists of shafts from ten to twenty feet in depth. In addition to this a tunnel has been started at the base of the mountain at the south end of this group of claims of which you have maps which also shows this work.

The tunnel has been driven with a view of intersecting the large vein referred to and which, at the surface, shows copper carbonates containing from one and one half to eight percent copper with occasional fragments of red oxide. General conditions indicate leaching of the oxidized copper-bearing sulphides and an enriched ore zone below. There are also numerous smaller veins on the property but the assay results from samples taken, which are hereto attached, show that the metal values are not sufficient to permit the ore to be mined and shipped to smelters at a profit. A number of the veins could however, be worked profitably with a modern well equipped mill operating in the district.

The property is wholly in a prospective state and from results obtained from adjoining properties, which you have under consideration, I would recommend the holding of this group

of claims together as they will undoubtedly, later on, be of large value.

As you are aware, while I was engaged on the examination of the Oro Blanco Company's property, I was very much interested with the mineral indications on the properties immediately south and adjoining this group of claims and found that this area was owned and controlled by two parties. One property known as the Ragnoroc Group consisting of three patented claims owned by a party at Buffalo, New York, and the adjoining property south of Ragnoroc Group consisting of five claims known as the Austerlitz Group. This property is owned by Dr. Noon of Nogales, Arizona.

On the Austerlitz Group a large amount of surface work has been prosecuted as well as under ground work by means of a tunnel. This work being in the oxidized zone and for some reason, probably lack of mining experience, this tunnel was driven away from the ore vein, having cut the vein at a point not heavily mineralized, they drove on not realizing that the vein had been intersected.

In 1912, Woodworth and Layne opened up a large body of sulphide ore by running a cross cut from this tunnel at the point the vein showed, and from the ore-they extracted, their report to the State Commissioner showed that they shipped in 1912, 1414.5 dry tons of ore and 180.4 dry tons of concentrates for which they received \$67,224.44. What they shipped in 1913 is not known as the shipments were reverted to Selby & Company, San Francisco, California, but it is estimated that over \$96,000.00 was shipped from this property during their term of lease, but due to the method of mining with lack of timber, etc., a cave occurred, at which time they ceased operations, and it will now require a shaft north of their workings to intersect this ore body at a lower depth. Maps accompanying this report will show

the proposed shaft.

The Austerlitz and adjoining claims show an oxidized surface ore zone. The ore of which will average well in gold and silver and often run to high grade. The sulphide ores opened up at greater depth are extensive, and as shown by smelter returns, of good commercial value.

I was fortunate enough to secure a report made by Mr. F. B. Schermerhorn which I hereby attach as it is very complete in detail, he having made a thorough and exhaustive examination, as careful reading of his report will show. His examination and also that of another Mining Engineer, Percy C. Sharp, made for another party, practically correspond, and it must be noted that both these reports were made before the sulphide zone and ore at greater depth were discovered or before the operation of Woodworth and Layne who extracted the \$96,000.00 from the property.

In addition shipments made latter by Dr. Noon and his son who extracted from the gold bearing oxidized zone in the Barkley tunnel, 5,300 pounds ore, sampled gold \$13.60 and silver 14 ounces per ton and from a point on the Fisher vein 5,100 pounds which ran \$38.86 gold and 18 ounces silver and from other points on the property 20,900 pounds of ore sampling gold \$30.00, silver 17 ounces.

In conclusion I will say while the Austerlitz property has considerable merit, present development work is not sufficient to place ore in sight for economical extraction, but I am led to believe, from my superficial examination and from the facts herein, that further exploration would result in the discovery of important ore bodies such as would place the

property in rank with many of the large paying mines of the southwest.

There are producing properties in the district which are operating night and day running their mills to full capacity. The Montana Mine, only a short distance from the Austerlitz, and on the same ore zone, is operating a mill of 200 tons per day capacity and I am reliably informed that these properties are now paying enormous dividends.

The Montana Mine, located on the same ore zone as the Austerlitz, is situated about eight thousand feet in a south-westerly direction from the Austerlitz property, and though a large daily production of commercial ore has been maintained for past years, the workings of the property have only been prosecuted to a depth of two hundred (200) feet, thus indicating that the vein has not only maintained a good average width, but also a uniform metal value. Operations are now under way to sink the present working shaft on this property, to a depth of five hundred (500) feet, from which stations will be cut and levels run every one hundred feet. Work will then be prosecuted to block out ore for economical extraction so that the present plant may be increased to handle one thousand tons or more of ore per day.

At the Yellow Jacket Mine which is also on the same ledge as the Austerlitz property, and which lies about 15000 feet in a northwesterly direction from the Austerlitz, operations are also under way for increased production. This mine, like the Montana, has been a large producer of gold and silver ore, and considering that its deepest workings are not more than one hundred and fifty feet, this property has made an unusual showing; and taking into consideration these developed mines on both ends of the Austerlitz property and which are located on the same ore zone as the Austerlitz, in connection with the unusual returns from the limited developments the Austerlitz has received, and the large quantity of ore showing on the surface, or in the

oxidized zone, and what has been mined and worked in mazstras by the Indians and Mexicans, (a primitive method which is sometimes employed to-day by the Indians and Mexicans in remote districts in the Republic of Mexico), as well as the large tonage which was bought and treated by the different small Mills operating in the earlier days in this District as shown by records, the Austerlitz Mine may be considered a proven property and not an undeveloped prospect, and will under careful management by experienced mining men, be developed into a very large and profitable producer of gold, silver and copper ores, from which large returns may be expected for many years to come, and taking into consideration the price and terms upon which this property has been acquired, I most earnestly recommend the development work as herein set forth.

Condition as to transportation in this district have been greatly improved upon within the last year. The Montana Mining Company having completed a good auto road from the district to Nogales, a distance of only twenty-three miles.

I enclose blue prints from maps made by engineers employed by the owners of the Austerlitz group, and while I have had no opportunity to make a survey of the property, I am of the opinion, from my personal observation of the workings on the property that these maps are correct. I have added, however, a proposed shaft which you will note to be sunk to a depth of 180 feet. This should intersect the ore vein which I called to your attention during our visit to the property.

Trusting that this report will give you a clear idea of conditions and awaiting your further instructions, I am,

Respectfully submitted,

J.W. Bille
Mining Engineer.

REPORT ON
THE AUSTERLITZ CONSOLIDATED MINING GROUP.

By F. B. Schermerhorn, M. E.

HISTORICAL:

The Austerlitz group of mines is situated in the Oro Blanco mining district, Santa Cruz County, Arizona. The early history of this district is lost in the mystic reaches of the past. It was probably placer mined by the Aztecs and later worked by the Spanish Friars. The Tumacacori Mission was established by the Spanish Friars about 1530 and is known to have been one of the wealthiest missions ever established in the present limits of the United States. They operated these mines until about 1830, when, because of differences with the Mexican Government, they dismantled and closed the mission and returned to Spain.

After the departure of the Spanish Fathers, the Mexicans began working in the district. There are still to be seen in a strip of territory about a mile wide and three miles long, the remains of seventy odd of the old arastres. In all this time that the district had been worked, from the time of the Aztecs down to the American occupation in 1849, nothing but the surface of the ores had been worked. No shafts had been sunk nor tunnels driven. The reason for this is that the surface ores were very rich on the divide and average about sixty feet in width. There are also two parallel ledges, one on either side, each about one hundred feet distant from the main ledge, each of these parallel ledges averaging about eight feet in width. At the time of the American occupation in 1849, the ores upon the surface still averaged about \$30.00 per ton gold and silver, but at this time the discovery of gold in California caused both the Americans and Mexicans to desert this district for the new eldorado.

About 1865 a man by the name of Clinton Thompson returned from California to the district. He located several claims, among them the Austerlitz, and began working the ores in arastras. Some two years later Thompson was killed by the Indians.

In 1869 Mr. Townsend of New York, having heard of the district from Thompson, sent a mining engineer from New York to re-locate the properties. The engineer sent out by Townsend located the Austerlitz Group and began development of the property.

Mr. Townsend for the purpose of better protecting his interests in the district, sent over from San Francisco a Doctor Noon, who is still residing in Santa Cruz County. Mr. Townsend got into financial difficulties and deeded all his right, title and interest in the Austerlitz Group to Dr. Noon, in whose possession the title has since remained. The Doctor has made several attempts to work the property, but has never made more than a trivial success of any of these attempts, because of lack of funds with which to properly equip the property as well as a lack of knowledge of mining operations. He has leased the property a number of times, as a matter of fact, all of the money that has ever been made out of the property has been made by the leasers. I succeeded in getting hold of the details of two lists of ores which were shipped to the Arivaca Mill.

	au	3.50	ozs	ag	12.00	value	\$76.00
1st.	"	.925	"	"	10.00	"	23.00
2nd.	"	9	"	"	8.00	"	22.00
3rd.	"	7	"	"	11.00	"	19.50
4 th.	"	65	"	"	12.20	"	18.60
5 th.	"	7	"	"	12.30	"	20.56
6 th.							
Average		<u>1.232</u>			<u>10.75</u>		<u>30.00</u>
Tails		<u>1.102</u>			<u>8.26</u>		<u>23.25</u>

Amt. saved or 92% . 82% . 98%

The next record of a mill run that I got hold of was 90 tons run at the same mill, July 19th to 25th.

BATTERY ASSAYS

1st.	day au	1.00	ag	13.00	value	26.50
2nd.	" "	.70	"	11.00	"	19.50
4th.	" "	1.00	"	11.00	"	25.50
5th.	" "	.75	"	10.25	"	20.12
		.55	"	8.00	"	15.00
Average		<u>80</u>		<u>10.65</u>		<u>21.37</u>
Tails		<u>12</u>		<u>2.60</u>		<u>3.70</u>
		68		8.05		17.67
Saved or		85%		80%		

The above is what the mill actually paid for the ores.

In 1894 a mining man by the name of Charles J. Barkley, who was from Gibbonsville, Idaho, entered into an agreement to purchase the property for \$40,000.00. While returning from Idaho to the property, he took pneumonia, which developed into quick consumption, and Mr. Barkley died at Indio, California a few weeks later. Mr. Barkley planned and began all the real developments that had ever been made on the property.

In 1902 Percy G. Sharp, a mining engineer from Los Angeles, sampled the property and from the 36 samples that he took, he got an average of 835 au. and ag. 6.21 oz., being gold \$16.70 and silver \$3.10 per ton.

In April of the present year, T. B. Wilde, a mining engineer from Goldfield, Nevada, took 26 samples from the dumps of the Austerlitz Group, from which he obtained an average of 6.12 gold and silver per ton. (Mr. Wilde made many subsequent assays, his total average was \$9.00 silver at 54 cents).

GEOLOGY.

The Geological history of this section has never as yet, so far as I am informed, been inquired into by the United States GEOLOGICAL SURVEY but inasmuch as the Tumacacori-Oro Blanca ranges of mountains are composed of rhyolites, andesites and dacite, these mountains are one of the results of the revolution which occurred at or near the close of the cretaceous period. The general course of the gold and silver bearing

veins also of the various dykes, is northwest and southeast trend, and the dip northeast. The mineral bearing zone or belt extends from the Austerlitz northwesterly into the desert and southeasterly into Mexico. The width of this particular belt is about 200 feet. The length, although undeveloped to any particular extent except a short distance both northwest and southeast of the Austerlitz, is probably 40 or 50 miles. Along this gold belt it is worked for the placer gold by both Mexicans and Indians.

WOOD, WATER, ETC.

This district is well watered. There are numerous springs in the various gulches of the range of mountains from which an abundant supply of water can be obtained. The rainfall in this section, I am informed, averages 18 inches a year. Timber consists wholly of live oak. A plentiful supply for fuel purposes can be obtained in the Austerlitz Group and purchases from the reserve, but all mining timbers and lumber for other purposes must be obtained elsewhere. There is an excellent wagon road from Tucson some 80 miles northeast, to the property. There is also a very good road from Nogales, some 45 miles to the eastward, but in its present condition, heavy loads of freight could not be brought over it.

DEVELOPMENT.

Most of the development of this property consists of open cuts exposing large bodies of ore lying blanket form on the eastern side of the mountain. These ore bodies are for the most part simply large fragments or bodies of ore, which have broken off from the ledges and slid down the mountain side. There is a shaft near the western side line of the Austerlitz, which has been sunk to a depth of 130 feet. The shaft was evidently for the purpose of catching various ledges from the

Austerlitz-Parrallel columns, this group consisting of five claims. The shaft should strike the east parallel vein at a depth of 230 feet. There is also a tunnel known as the Barkley tunnel, 461 feet in length, cutting clear through the mountain. Of this tunnel I will speak more fully later.

The silver in these ores is in the form of a chloride, and from long exposure, the dumps have been considerable leached by the action of the elements, the fine gold also being carried down to the bottom of the piles. Therefore, it is fair to conclude that all samples taken from the dumps are below the average value of the ore, the samples having been taken, in every instance, from the top of the dumps. I would expect that in these dumps the actual value recovered would be equal, if not in excess of, the values shown by the assays taken. I commenced sampling near the extreme south end of the Austerlitz Claim very near the top of the mountain.

Sample No. 1. Open cut in the blanket. Blanket about 12 feet thick, much ore exposed. Sample of ore pile of 12 tons.

Sample No. 2. Open cut in blanket. Thickness of blanket never determined. Large amount of ore in sight. Sample ore dump of 20 tons.

Sample No. 3. Opening on small spur vein. Vein 20 inches wide. Hole 4 feet square sunk to a depth of about 5 feet.

No. 6 shaft 35 feet deep, sunk on across vein or spur between the main ridge and the west parallel ridge, said shaft was sunk to depth of 35 feet. Sample of this dump and second class ore taken from shaft, all the first class ore having been removed. The first class ore in this vein, was worked in an araestra and the actual value of the ore from this shaft is unknown to the owner.

NO. 7. Over 50 feet open cut run in on the top of the ledge. Face cut 12 feet high. This cut was run so long ago

that its history is not known even to the oldest inhabitant. Took grab samples of the waste piled up along the side of the cut.

NO. 7A. Was taken from a small pile placed near the entrance of this cut.

NO. 8. Sample across the face of this cross ledge, ledge 3 feet wide.

NO. 10. Taken from same as No. 9. Over 400 tons second class ore. This ore has been carefully assorted, it is very high grade and was shipped to the smelters, some shipments running as high as \$158.00 per ton on gold and silver. Lower grade ores were shipped to Arivaca, one averaging \$26.75 gold and silver and another lot averaging \$17.67 gold and silver, received and paid for by the Arivaca Mill. This ore, I am informed, all came out of the 65 foot shaft before mentioned.

NO. 11. Sample taken from a mold pile of 10 tons. This place from which this ore was obtained, is unknown, but probably out of the cut before mentioned as Nos. 4 and 5.

NO. 12. A sample from a dump of 20 tons, place from which it was taken is unknown. At this there place are a dozen small piles or lots of ore, which were taken at the bottom of the 65 foot shaft by the present owners, the ore being closely associated, the first class being put into these small piles and the second class being thrown over the dump.

NO. 13. Open cut on blanket. Heavy body of sulphat showing underneath the ore. Sampled one pile of 35 tons of these heavy sulphates.

NO. 14. Sample pile of 60 tons of unsorted ore taken out above the body of sulphates before mentioned.

NO. 15. Open cut on claim known as the Addition. Goodly showing of ore. Sample 21 ton lot.

NO. 16. Sampled open cut on blanket. Pleanty of ore showing. Sampled pile of 10 tons.

NO. 17. Open cut blanket of milky white quartz.

Sampled lot of 25 tons. This work was done by Clinton Thompson. So far as the present owners know. This lot of ore has never been sampled.

NO. 18. In an open cut down on the Addition claim,, about 300 feet from the east side of the Austerlitz. Very large amount of ore showing. Sample lot of 100 tons of all second class ore. The ore from this cut was closely assorted, the first class ore being worked in an Arastra.

NO.19. An open cut in an alluvial deposit in the bottom of a little draw. In running this cut 50 tons of ore was taken out and piled up on the dump. Considerable ore still shows on the face and sides of the cut.

, NO. 20. A lot of 60 tons of ore and waste was taken out at point 12 on map of the Barkley tunnel.

NO. 21. Lot of 100 tons taken from point marked "Uprise" on map of Barkley tunnel.

NO. 22. In the summer of 1898, Charles J. Barkley, before mentioned as having made an agreement to purchase the property, started to run a cross-cut tunnel through the mountain. This tunnel, either fortunately or unfortunately, as you may wish, as soon as he cut through the surface soil or drift, struck a northeast, southwest fault line. There was both a vertical and lateral movement along this fault line. The fault line is badly broken for a distance of 50 feet. The lateral movement along this line turned the ore from the northwest, southwest course to a southwest northeast course. The bodies along this fault line considerably mixed up, being irregular in occurrence, but as a rule, not badly shattered or leached. The throw so far as I have been able to judge from the surface, is 80 feet. The foot wall side of the fault line seemingly

moved farther westward than the hanging wall side did eastward. The first ore struck in this tunnel was at a point 140 feet distant from the portal at the 249 foot station, an upraise was started.

NO. 23. Just beyond the upraise a cross-cut was run, intersecting the 65 foot shaft at the bottom, 30 feet distant from the tunnel. Two drifts I understand, are run out on the ore from the bottom of this shaft. Drifts and shafts are caved in so that it was impossible to get into them to examine them. At a point on this cross-cut, 12 feet from the tunnel, another drift has been driven a distance of 135 feet. This drift is very irregular in its course, and was evidently run for the purpose of striking a 3 foot ledge, which shows on the surface spoken of under Nos. 6, 7 & 8. If it was the intention of this cross-cut, it was not run far enough by about 50 or 60 feet. The drift was run during the past winter by T. B. Wilde of Goldfield, Nevada. Comming back to the tunnel, a distance of 30 feet further along the tunnel, Charles J. Barkley ran a cross-cut in the hanging wall of the fault, cutting the top of a very large ore shute. The appearance of the ore is the same as that which appears in the uprise and is evidently a part of the same ore body and separated from it during faulting which took place along the false fissure. Sample 23 was taken 18 feet in length across the top of this ore shute.

NO. 24. The tunnel had been driven 69 feet further at this time of Barkley's death. Later at this point a cross-cut had been run to the left into the footwall. The footwall of the fault is a dacite. Evidently the intrusion of this dacite dyke is the cause of the faulting. The width of the dacite dyke has as yet, not been determined. Its presence is only indicated on the surface by boulders lying in the soil. Going back to the point at which the Barkley work on the tunnel was stopped, a turn was made at nearly right angles to the course

of the drift at a point ten feet farther on the body is badly broken and mixed ore was encountered, which was continued for a distance of 11 feet. From this point, the drift is continued on as a cross-cut for 45 feet, usual signs of ore in the tunnel again appear all along the cross-cut. Going back again to the station 21 feet to the right of the face of the tunnel where Barkley stopped work, the general course of the tunnel was changed somewhat and driven forward to the surface on the western side of the hill. At a point marked 12 on the map, ore was struck on the right hand side of the tunnel, a drift was run off at an acute angle to the right for a distance of 25 feet all the way through. The large sample was taken from the side and top of the ore near the middle of the drift.

NO. 25. Commencing at the same point marked 12 on the plat another drift was run off at right angles from the tunnel for a distance of 15 feet, at which place it cut completely through the ore. A large sample from sides, top and bottom was taken in this drift 6 feet back from the face.

NO. 26. From point 12 on the plat the ore is exposed on the right side of the tunnel for a distance of 40 feet at a point midway between point 12 on the plat and the end of the ore chute, a large sample was taken. The tunnel has been driven ahead from point 12 on a map a distance of 140 feet, to day light on the western side of the hill.

NO. 27. Sampled 150 tons of ore lying on the hillside about 200 feet south of the north end land of the parallel plane.

NO. 28. Sampled 50 tons of refuse or waste, lying below an open cut upon the parallel near the north end centre.

NO. 29. Sampled second class ore and waste of 300 tons, taken from the open cut slightly east of the north end centre of the parallel claim.

NO. 30. Sampled 400 tons of second class ore and waste taken from east of No. 29.

NO. 31. Sampled 900 tons of second class ore and

waste taken from an open cut about 50 feet northeast from No. 30.

NO. 32. Sampled 300 tons of second class ore taken from the same open cut as No. 31.

NO. 33. Sampled 8 tons of ore taken from the bed immediately under or down the side of the hill from No. 31.

NO. 34. Sampled 50 tons of unassorted ore taken from the slide.

NO. 35. Open cut. Large amount of ore showing, being evidently in place. One wall showing cut. Sampled 25 ton lot of ore.

NO. 36. Large excavation. Thousand of tons of ore have been removed. Opened by the fathers for its rich gold and silver ores. The excavation has slid in so badly that the bottom of the work cannot be seen. There is still considerable ore left, showing above the debris which covers the bottom of this excavation. Sampled a 75 ton lot, evidently second class ore, which I found lying or piled near the outer edge of the dump.

NO. 37. Sampled another 100 ton lot lying near No. It is about the same character as No. 36.

NO. 38. Sampled another pile of 150 tons of the same character as Nos. 36 and 37. This excavation shows the vein to be very wide, how wide, it is not possible to determine at present. Only the hanging walls is exposed, vein evidently in place.

A deep gulch separates the Austerlitz from the Ragnaroc Mining Claim, which adjoins the Austerlitz upon its northwest end.

The ore of the Ragnaroc comes down the side of the gulch nearly to the Austerlitz and in fact the vein has been opened upon the line separating the two claims. Upon the Ragnaroc, the width and the dip of the vein can be easily taken. I found that upon the Ragnaroc the width of the vein or ledge taken at right angles to the foot wall is a little over

NO. 39. A cut 100 feet southeast of the large excavation before mentioned a ledge has been opened exposing a foot wall.

The ore here is apparently in place and evidently the foot wall of the ledge. Sampled lot of 25 tons.

NO. 40. Sampled lot of 60 tons which was picked up out of the creek below No. 33. Nothing is known as to whom or by whom this ore was piled. It was evidently put aside for the purpose of working it through an arastrum.

NO. 41. Sampled 25 tons taken from an open cut below No. 40.

NO. 42. Large excavation on the north bank of the gulch. Very large amount of ore shown in and around the opening. Sampled 400 ton lot second class ore.

NO. 43. Ore taken from the bottom of the gulch. The recent rains have stripped the bottom of the gulch at this place immediately below No. 42, exposing the ore along the bottom of the gulch for a distance of 75 feet. How much farther down the gulch it extends cannot be determined accurately, but it is probably less than 20 feet further. Near the lower side of this exposed ore body, Charles J. Barkley sunk a hole in the ore to a depth of ten feet. This exposure at the bottom of the gulch is very important, as it is the lowest point upon the Austerlitz of the Ragnoroc that can be seen. Sampled at lot of 115 tons taken from the bottom of the gulch.

NO. 45. Sampled at lot of 50 tons taken from an opening on the hillside immediately upon the line between the Austerlitz and Ragnoroc.

NO. 46. Sampled lot of 500 tons taken from an opening made on the ledge upon the Austerlitz just below the line

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between the two claims. This was done very long time ago.

NO. 47. Sampled a lot of 25 tons. This lot is a kind of land mark, it having been known to have been there at least 50 years ago. It was evidently taken out by the Spaniards who worked an arastrra. The place from which it was taken is unknown but it was probably taken from an opening in No. 46.

	OUNCES PER TON		VALUE PER TON OF 2000 POUNDS.		
	AU.	AG.	AU.	AG.	TOTAL.
1.	0.76	6.1	\$15.30	\$3.97	\$19.17
2.	0.28	5.4	5.60	3.57	9.11
3.	0.16	2.4	3.20	1.56	4.76
4.	0.18	3.3	3.60	2.80	5.40
5.	0.06	0.4	1.20	—	1.20
6.	0.08.	trace	1.60	—	1.60
7.	1.48	7.4	29.60	4.81	34.41
8.	0.16	2.3	3.20	1.50	4.70
9.	0.08	7.5	1.60	4.88	6.48
10.	0.68	3.6	13.60	2.34	15.94
11.	0.06	1.4	1.20	.91	2.11
12.	0.28	2.1	5.60	—	6.97
13.	0.18	3.6	3.60	2.34	5.94
14.	0.10	trace	2.00	—	2.00
15.	0.56	6.3	11.20	4.10	15.30
16.	0.12	1.5	2.40	.98	3.38
17.	0.24	1.7	4.80	.91	5.71
18.	0.18	0.7	3.60	—	3.60
19.	0.18	0.7	3.60	—	3.60
20.	1.76	6.3	35.20	4.10	39.30
21.	0.44	4.0	8.80	3.25	12.05
22.	0.16	1.2	3.20	.78	3.98
23.	0.07	0.8	1.41	—	1.41

	<u>OUNCES PER TON</u>		<u>VALUE PER TON OF 2000 POUNDS.</u>		
	au.	ag.	au.	ag.	total
24.	0.08	2.1	1.60	1.37	\$ 2.97
25.	0.64	11.6	12.80	7.54	20.34
26.	0.16	7.8	3.20	5.07	8.27
27.	0.38	trace	7.60	----	7.60
28.	0.24	trace	4.80	----	4.80
29.	0.20	trace	4.00	----	4.00
30.	0.14	trace	2.80	----	2.80
31.	0.04	trace	.80	----	.80
32.	0.16	trace	3.20	----	3.20
33.	0.16	5.8	3.77	3.77	6.97
34.	0.14	17.22	2.80	11.18	13.98
35.	0.28	3.9	5.60	2.54	8.14
36.	0.40	6.0	8.00	3.80	11.80
37.	0.32	8.4	6.40	5.46	11.86
38.	0.10	6.1	2.00	3.97	5.97
39.	0.08	2.0	1.60	1.30	2.90
40.	0.18	1.2	3.60	.72	4.38
41.	0.16	0.6	.20	----	3.20
42.	0.14	trace	2.80	trace	2.80
43.	0.17	1.5	3.40	.98	4.38
44.	0.22	4.0	4.40	2.80	7.00
45.	0.36	4.6	7.20	2.99	10.19
46.	0.16	3.2	3.20	2.08	5.28
47.	0.16	2.5	3.20	1.63	4.83

This table was compiled from lot of ores which according to assays are unmistakably ores.

<u>NO.</u>	<u>AMOUNT</u>	<u>VALUE PER TON</u>	<u>TOTAL VALUE</u>
1.	12	\$19.17	\$230.04
2.	20	9.11	182.20

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<u>NO.</u>	<u>AM.</u>	<u>T</u>	<u>VALUE PER TON</u>	<u>TOTAL VALUE</u>
4.		75	5.40	\$405.00
7.		50	34.41	1720.50
7A		150	4.70	705.00
9.		50	15.94	797.00
11		10	6.97	69.70
12.		20	5.94	118.80
14.		40	15.30	612.00
15.		20	3.38	67.60
16.		50	5.71	285.16
17.		25	3.60	90.00
18.		100	3.60	360.00
19.		50	39.30	1965.00
20.		60	12.05	732.00
21.		100	3.98	398.00
27.		150	8.60	1140.00
28.		50	4.80	240.00
29.		300	4.00	1200.00
32.		300	3.20	960.00
33.		8	6.97	56.76
34.		150	13.98	2097.00
35.		25	8.14	203.50
37.		100	11.86	1186.00
38.		150	5.97	895.50
40		60	4.38	262.80
41.		25	3.20	80.00
43.		115	4.38	503.70
44.		252	7.00	175.00
45.		50	10.19	509.50
46.		500	5.28	2640.00
47.		<u>25</u>	<u>4.83</u>	<u>120.75</u>

An average value per ton of ore on dumps ready for milling \$7.45.

Average of assays per ton, \$8.28 Lots Nos. 1, 7, 14, 19, 20, and 34, were unassorted ore. Average value per ton \$9.28 Lots of these unassorted ores \$20.32.

In case of lots Nos. 5 and 6, I was informed that the waste had been piled upon a lot of good ore. No. 31 is as shown by the assays, to be the only real waste dump of the property. Nos. 10, 13, 23, 30, 39 and 42, should be resampled, as I am of the opinion that they are real ores.

The showing made is really a remarkable one when we take into consideration the fact that with the exception of six lots, viz. Nos. 1, 7, 14, 19, 20 and 34 every lot sampled were thrown out for waste. Further you must remember that with the exception of the lots of unassorted ore, these dumps have been exposed to the elements for many years, some of them for more than half a century. From the creek bottom ten thousand or more tons (how much more cannot be determined just at present) that will according to the assay average over \$5.00 per ton. At least seven thousand tons of ore of an average value of \$4.00 per ton can be taken out from the above tunnel. On the eastern side of the hill some ten thousand or more tons of ore can be gotten off the surface that should average above \$10.00 per ton. Exploration alone can determine the tonnage to be gotten off from this property. Exploration will also show the real value of these ores, which will probably average considerably higher than the average shown by the samples which I have taken. Mr. Barkley who had the best opportunity to determine the true value of the property, as he spent a great deal more time taking his measurements to make his estimate of the tonnage and spent several months in sampling and testing the ores from the various showings placed the surface tonnage approximately at one hundred thousand tons, with the average of \$7.50. I am inclined to accept his

estimate as being more nearly accurate than my own.

In regard to the handling of this property, the deal for the property having been closed upon receipt of analysis and assays, depends a great deal upon the scale upon which it is desired to operate the property. It will take at least \$5000.00 to put the property in good working condition. It will take \$7500.00 more to put a 10 stamp mill upon the property. Would advise as soon as convenient to do so, the erection of a small cyanide plant for the purpose of handling the large amount of ores exposed at the bottom of gulch. This will cost about \$5000.00 or more. At least \$7500.00 more should be set aside as a kind of emergency fund. This amount \$25,000.00, I believe to be amply sufficient with which to commence operation. The entire plant should be enlarged owing to the profits obtained from the property. A deep tunnel should be commenced at a low point as practicable which will be down near the forks of the creek. A tunnel started at this point will encounter the eastern ledge at about one hundred and fifty feet distant from the portal.

The tunnel should be continued not only on to the main ledge, but to the western parallel ledge. It should also turn and follow the main ledge into the hill. A tunnel such as I have outlined, fifteen hundred feet in length would give vertical depth from the ledge of some five hundred feet. It would also have the advantage of being driven for at least 1200 feet of its length upon the main ledge. Such a tunnel would make it possible to handle all ores cheaply and rapidly. It would also develop the character of the ores upon depth and would decide the kind of a plant necessary to operate the property on a large scale. Of course if it should be desired to work this

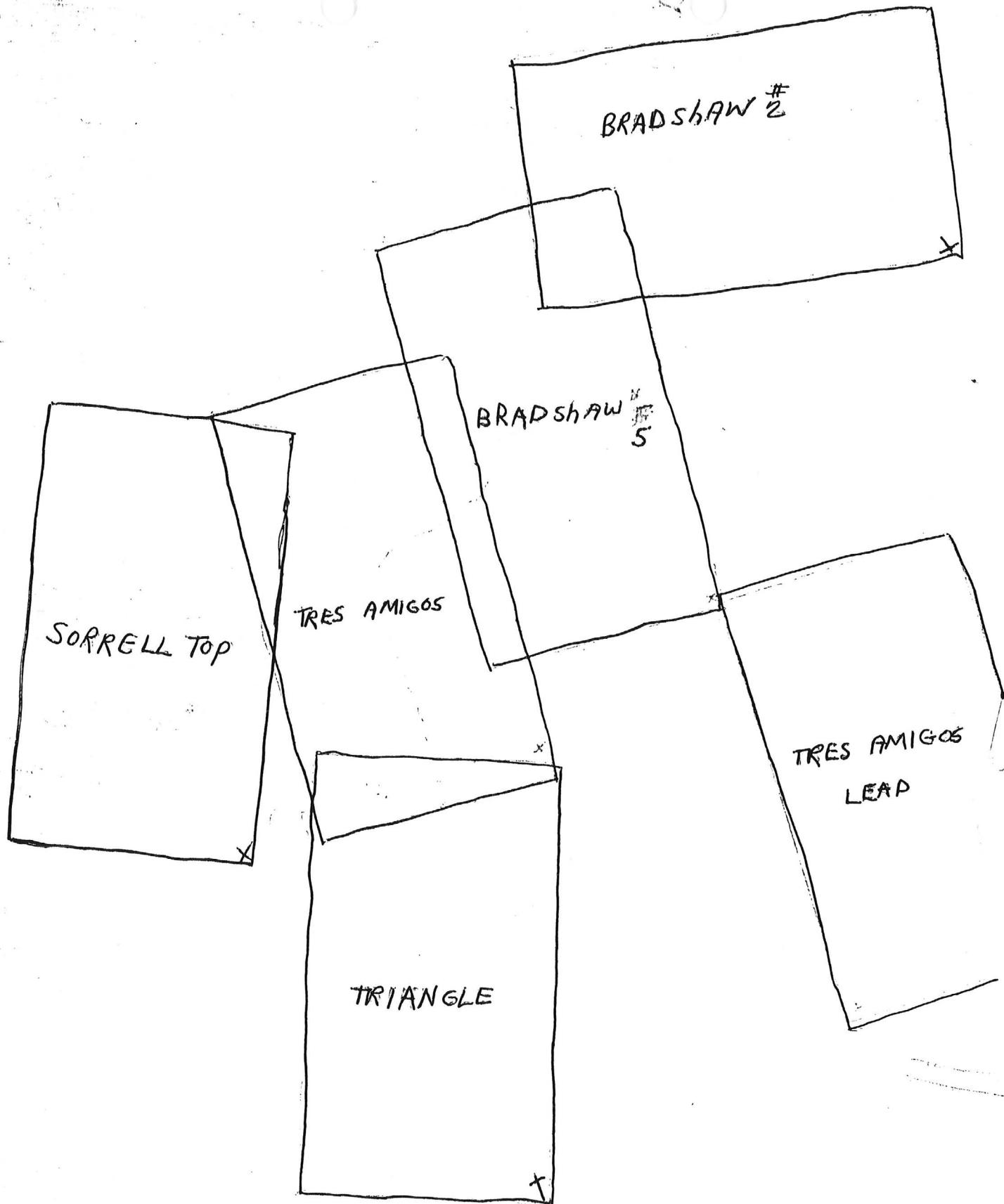
property upon a larger scale, these estimates would have to be proportionately increased. The deepest working is upon Tres Amigos or OLD ORO BLANCO property. A depth of 265 feet has been attained upon that property and the ores at the bottom of the shaft are still free milling and higher values than were obtained anywhere else on the property.

The ledge is also quite as strong upon the Oro Blanco as upon the Austerlitz.

With careful and intelligent management, the Austerlitz will make one of the large gold mines in the United States.

Signed F. B. Schermerborn, M.E.

El Paso, Texas.
Sept. 10th. 1907.



Oro Blanco group of claims

E.D. GRASMDEN

DEPARTMENT OF MINERAL RESOURCES

REPORT TO OPA ON ACTIVE MINING PROJECT

Date..... 6/30/45

Filing Information

File System.....

File No.....

This chart to be used for gallons of gasoline required per month.

Name of Mine..... Oro BlancoOwner or Operator..... Thos J. AndersonAddress..... 930 S. 9th Ave TucsonMine Location..... Rio Cruz Co

PRESENT OPERATIONS: (check X)

Production.....; Development.....; Financing.....; Sale of mine.....;

Experimental (sampling).....; Owner's occasional trip.....;

Other (specify).....

PRODUCTION: Past and Future.

Tons

Approx. tons last 3 months.....

Approx. present rate per 3 months.....

Anticipated rate next 3 months.....

If in distant future check (X) here.....

EQUIPMENT OPERATED:

Type	Quantity or Horse Power	Miles or Hours Per Month	Gallons Required Per Month
Personal Cars	<u>33 Ford</u>	<u>672</u>
Light or Service Trucks
Ore Hauling Trucks
Compressors
Other Mine or Mill Eqpt.

PRODUCT PRODUCED OR CONTEMPLATED: Name metals or minerals.

Lead Zinc

REMARKS:

ARIZONA DEPARTMENT OF MINERAL RESOURCES

By G. A. Billam

NAME OF MINE: ORO BLANCO
OWNER:

COUNTY: Santa Cruz
DISTRICT:
METALS: Au, Ag

OPERATOR AND ADDRESS		MINE STATUS	
DATE:		DATE:	
1/46	Fred Fickett, 38 West Pennington, Tucson	1/46	Developing & Shipping
2/47	Oro Blanco Mines, Box 2568 Tucson	1/47	
See ORO BLANCO - re gas application.		6-30-45	
See ORO BLANCO - re active mines survey		1-20-47	

Name of Mine ORO BLANCO

Location Oro Blanco Mining District, 4 miles sw of Ruby,
Santa Cruz county, Arizona
Operator ORO BLANCO MINES- a copartnership
Address Box 2568, Tucson, Az
Metals Produced Gold and silver at present

Devloping x Shipping x
Financing Planning Operations Soon
Idle

Name of Mine Oro Blanco Mine

Location 4 1/2 miles south of Ruby, AZ
Operator This J. Anderson
Address Ruby Star Route Box 66, Tucson, AZ
Metals Produced Gold and Silver

Developing x Shipping x milling
Financing Planning Operations Soon
Idle

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
OWNERS MINE REPORT

Date June 28, 1939

1. Mine **White Gold**
2. Mining District & County **Oro Blanco - Santa Cruz** 4. Location **6 mi SW from Ruby**
3. Former name **Dos Amigos (Old Oro Blanco)**
5. Owner **George E. Fernald, et al** 6. Address (Owner) **2535 N. Santa Rita, Tucson**
7. Operator **Albert Beck** 8. Address (Operator) **319 W. Palm Ave., Anaheim Calif.**
9. President **No corp.** 10. Gen. Mgr.
11. Mine Supt. 12. Mill Supt.
13. Principal Metals **Gold, silver (copper)** 14. Men Employed
15. Production Rate 16. Mill: Type & Cap.
17. Power: Amt. & Type
18. Operations: Present
19. Operations Planned
20. Number Claims, Title, etc. **4 not patented lode claims
Coronado National Forest**
21. Description: Topography & Geography
22. Mine Workings: Amt. & Condition **1 250' shaft**

New York, August 20th, 1906

Wm. B. Thompson, Esq.,
28 Broad Street
New York City

Preliminary Report on the Oro Blanco Mine
Santa Cruz County, Arizona

Dear Sir:

As requested by you, I have made an examination of this mine and have ascertained the following:

SITUATION:

The Oro Blanco Mine is situated in Santa Cruz County, Arizona, about two miles north of the Sonora border and about seventy-five miles south of Tucson. The nearest railway station is Calabasas which is about fifteen miles east on a branch of the Southern Pacific Railroad.

GEOLOGY:

No extended examination was made of the surrounding country, but in the neighborhood of the mine the country rock is almost entirely igneous. The veins, of which there are several, have a general strike of northwest and southeast and vary from standing nearly vertical to a dip of nearly 55 degrees. The values occur in rock which vary exceedingly in appearance. Sometimes it resembles a soft decomposed porphyry, at other times a hard porphyry, and at one important place in the mine, high values were obtained in what I take to be ^{as} pure a looking unaltered eruptive rock as one could wish to find. ^{see} The development was, as a rule, followed ^{out} wall, but at numerous points a new wall comes in leaving one in doubt which to follow. As the values may be as good in one instance as the other, and as the rock in the hanging and ^{foot} very often has the same appearance as that in which the drift has been run, one has no guarantee that the value may not be just as good for some distance in either direction.

I think there is no doubt but that the source of the metals is deep seated, but one would have every confidence in finding them at greater depth than have as yet been exposed.

SAMPLING

Samples were taken every twenty feet throughout the development, across the width of the tunnel as a rule, but sometimes only to the limit of the walls where they were distinct. Samples could not be obtained at regular intervals in the shaft on account of heavy ground and filling.

ASSAYING was done at the mine, and check samples by Messrs. LeBeaux & Co., of New York, have verified the same.

THE EAST VEIN:

Number 2 shaft has been sunk on the vein to a depth of 235 feet. 12⁹ feet down, a level has been run 720 feet to the west and 230 feet to the east. Short raises have been up in several places, and one winze sunk. 240 feet west of No. 2 shaft, No. 1 shaft has been sunk on the vein but a depth of 120 feet a slip apparently cuts it off (see tracing No. 3). This shaft is in conjunction with No. 3 raise I have figured as a continuous raise in estimating the tonnage, although the break may necessitate extra development. The east drift could not be sampled as it is used as a sump. I have given the mine the benefit of this drift in estimating tonnage, and have used the value obtained by Messrs. Tower and Parker in their sampling, discounting by 23% a figure obtained by comparative assaying on other parts of the mine. The 235 foot level has been driven ^{but} a short distance, but ^{out}

RESUME OF PRESENT DEVELOPMENT:

To sum up, this preliminary sampling has shown in the neighborhood of 40,000 tons of ore developed in the East Vein, with a probability of there being a larger undeveloped tonnage. The grade of \$6.30 is approximately 90% gold and 10% silver, although no metallurgical experiments have been made, one can reasonably figure on 70% recovery, which would reduce the value recovered per ton to \$4.75. Given a large tonnage development and a large economical plant of say 100 stamp capacity, this grade of ore occurring over the average width of 55 inches, would probably only pay expenses, granting that the stoping width could be kept down to 55 inches. On the other hand, the character of the formation is such that I think the ground would break wider, and now the question resolves itself as to whether this excess of stoping width would carry values. This can only be determined by a series of cross-cuts which I think would possibly demonstrate that the values continue into the walls for some distance, in which case the cost of mining would be greatly reduced, the tonnage increased and there would be every chance of having a commercially paying proposition.

The other development of importance is the cross-cut on the 125 level between the West and Parallel Veins, which discloses a true thickness of over 50 feet of a value of \$13.00. This I may say is an extremely fine showing and should future development disclose any considerable tonnage of this, one would expect large profits.

RECOMMENDATIONS:

The East Vein should be carefully sampled every five feet throughout the development. Where there is any difference in appearance in different sections of the vein, these sections should be separately sampled. Cross-cuts should be put in at regular intervals and should the first few give any encouragement, this then should be continued throughout the two levels. If these cross-cuts demonstrate profitable ore values, development should be systematically pushed both laterally and in depth.

(b) Either the West or Parallel Vein should be driven on at the 125 foot level and the formation cross-cut at regular intervals of say 100 feet to obtain further information about the values between these two veins. The outcrop should be carefully studied and large samples taken, provided the first few give any encouragement. An incline should be sunk on the parallel Vein from the surface to the 125 foot level. If extensive enough ore bodies are developed by this work the scheme of mining in an open cut or "Glory Hole" would then be considered as this method renders much lower grade of ore payable

(c) Water: If a more extended examination and sampling give promising results, the question of water supply should be investigated. There are three gulches in the neighborhood through which large amounts of water flow directly after the rains. This could be conserved by the construction of dams. In addition to this source, the mine is making about 50 gallons per minute and there is good reason to expect more as greater depth is attained. Walls should be sunk in the gulch nearest the mine, and if an adequate supply is obtained this method would probably be cheaper than constructing dams.

(d) Power: Transportation of fuel to the mine would be out of the question on account of expense. The most feasible scheme would be an electric power station at Calabasas where oil could be delivered at reasonable rates. This expenditure would only be justifiable in the case of a large milling plant at the mine

In conclusion, I wish to say that there is a chance of making this a big mine, and that it is well worth the cost of a more extended examination and further development

Yours faithfully,

(signed) Wm. Watson

owing to a heavy rain it was drowned out and I was unable to obtain any samples. Between the two levels, the assays in the shaft show up well, which is a good indication for the lower level and the mine in general. I submit a longitudinal section of this vein, showing the development, assays and tonnage blocks. The tonnage that one could call "ore reserves" I figure at 41,500 tons at a total value in gold and silver per ton of \$6.30, gold figured at \$20.00 and silver at \$.65 per ounce. The average thickness is 5¹/₂ inches.

5

This estimate of tonnage developed is, I think, conservative. There is every probability of there being a large tonnage which at present lacks sufficient development to class as ore reserves. In figuring the two small veins adjacent to that part of No. 2 shaft which is above the 125 foot level, I have reduced the assays in that part of the shaft, shown on the section, to an average of \$9.00 per ton, as those obtained are too much in excess of the average to place much importance upon.

OTHER VEINS: On the 125 foot level, 320 feet west of No. 2 shaft is a cross-cut to the south exposing the Middle, West and Parallel Veins.

MIDDLE VEIN:

MIDDLE VEIN: 100 feet to the south of the East vein is the Middle Vein (see tracing No. 3). The development of this Vein consists of a drift of 160 feet long and a raise 35 feet high. The ground developed by this raise is practically stopeed out, and there are no ore reserves blocked out at present. Future development on this vein will undoubtedly show up more tonnage. The average thickness of this vein in the drift is 49 inches and the grade \$6.00. Two samples at the top of the raise (Nos. 66 and 67) average \$4.00.

WEST VEIN: 160 feet south of the Middle Vein is the West Vein. A drift 200 feet long on the 125 foot level discloses an average value of \$4.25 to the ton over a width of 57 inches. As there are no raises or winzes, tonnage is merely indicated and not developed.

PARALLELED VEIN: 70 feet to the south of the West Vein on the 125 foot level is the Parallel Vein driven on for a distance of 90 feet. The average value is \$8.32 over a width of 25 inches, but as may be seen from the assay plan this average is derived largely from the one assay of \$25.75 and the probable grade of the drift is between \$2.00 and \$3.00. About 450 feet horizontally from the point on the 125 foot level where the parallel vein is exposed, there are some old workings on the same vein (see plan). They consist of the old Parallel Shaft which is about 135 feet deep on a 50 degree dip and also three short levels. The average value obtained on the two upper levels is \$2.75 over a thickness of 52 inches. The bottom level on the West side crosscuts the formation for a distance of 25 feet and assays \$3.40 over that thickness. These values are so low that the small tonnage developed has not been considered in this report.

OTHER DEVELOPMENTS: See PP 6, 8, 13 of Daniell's Report.

This was a trench 3' to 5' deep and still in evidence until '56 or '57. The most interesting feature in the whole mine is the crosscut on the 125 foot level, between the West and Parallel Veins. This discloses a value of \$13.00 over a horizontal distance of 73 feet, which means a true thickness of over 50 feet on a 50 degree dip. This 73 feet was sampled in sections of 4 feet with the exception of the last sample "R" which was 5 feet long (see samples A-R). Sample No. 58 was also included. Unfortunately this is the only exposure between the Parallel and West Veins in the mine. The working shown at the west end of the West Vein drift is on a quartz vein and is not a true cross-cut. Part of the 73 foot cross-cut is in unaltered eruptive rock and shows no signs of mineralization, although a value as high as \$25.00 was obtained in it. The outcrop between the West and Parallel Veins was sampled about 100 feet west of the old Parallel shaft, for a horizontal distance of 160 feet at right angles to the strike. It averaged over that distance \$2.00 in gold and \$.30 in silver in order to avoid any chance of being salted by placer gold which is found on the surface, the samples were washed and only the large sized stuff was crushed and assayed. Possibly some gold was discarded which rightfully belonged in the sample.

Report by Wm. Watson, mining engineer, made in 1906. 1906 prices for gold and silver u

ORO BLANCO

PARALLEL VEIN

X Cut at

125'

level

	Au oz.	Ag oz.
A	.70	1.30
B	.30	.96
C	.12	.60
D	.27	.68
E	.24	.76
F	.265	.82
G	.47	.98
4' in H	.24	.82
each J	1.14	1.635
sam- K	2.51	3.08
ple L	.50	.98
M	.46	.80
N	.26	.68
O	.40	.76
P	1.21	1.68
Q	.438	1.00
	<u>9.52</u>	<u>17.55</u>

Distance 64 ft.

Av. Au equals .59 oz.

11.80

Av. Ag equals 1.10

.66

\$12.46

(125' level - x cut)

6 Ft. (?)	1.16	1.72	equals 23.20
			<u>1.02</u> <u>\$24.22</u>

A-Q	64 ft. x 12.46	equals	797.44
R	6 x 24.22	equals	145.32
(?)	3.1 x 2.38	equals	7.38

73.1

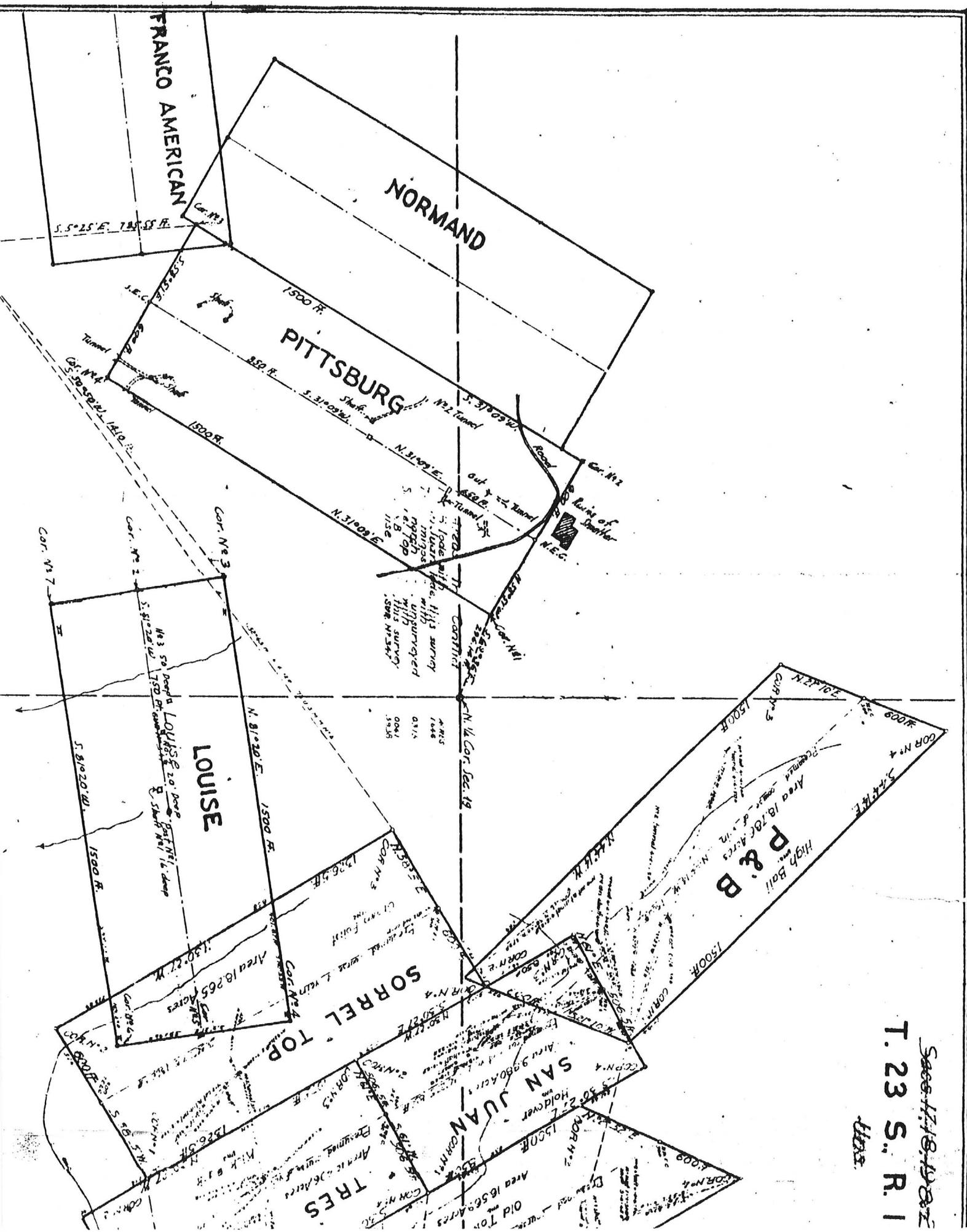
\$950.14 equals \$13.01
73.1

Outcrop all 20 ft. samples	Gold oz. 883 .11 689 .11 90 .10 91 .11 92 .07 93 .16 94 .07 95 .10	Silver oz. .56 .42 .38 .46 .65 .82 .80 .75
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\$2.00 Au
.35 Ag
\$2.35 total value

g
across 180 ft. right angles
to strike surface samples

Checked by mining engineer, John Daniel, in 1935 and found true.



T. 23 S. R. I.

**PORITION OF
DRO BLANCO DISTRICT**

**ARIZONA
MONTA CRUZ COUNTY,**

Scale ~ 1" = 300' Jan. 31, 1934

卷之三

ARIZONA

ARIZONA

Jan. 31, 1934

Scale ~ 1" = 300'

TWO REPUBLICS

AMIGOS

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
OWNERS MINE REPORT

Date June 28, 1939

1. Mine White Gold
2. Mining District & County Oro Blanco - Santa Cruz. 4. Location 6 mi SW from Ruby
3. Former name Dos Amigos (Old Oro Blanco)
5. Owner George E. Fernald, et al 6. Address (Owner) 2535 N. Santa Rita, Tucson
7. Operator Albert Beck 8. Address (Operator) 319 W. Palm Ave., Anaheim Calif.
9. President No corp. 10. Gen. Mgr.
11. Mine Supt. 12. Mill Supt.
13. Principal Metals Gold, silver (copper) 14. Men Employed
15. Production Rate 16. Mill: Type & Cap.
17. Power: Amt. & Type
18. Operations: Present
19. Operations Planned
20. Number Claims, Title, etc. 4 not patented lode claims
Coronado National Forest
21. Description: Topography & Geography
22. Mine Workings: Amt. & Condition 1 250' shaft

23. Geology & Mineralization

ANALYST TO STATE
PROPERTY OWNER

24. Ore: Positive & Probable, Ore Dumps, Tailings Best ore in quantity 1.80 oz/ton

24-A Vein Width, Length, Value, etc.

25. Mine, Mill Equipment & Flow Sheet

26. Road Conditions, Route

27. Water Supply 250' shaft has 100' water

28. Brief History

29. Special Problems, Reports Filed

30. Remarks

31. If property for sale: Price, terms and address to negotiate.

Property under lease and bond to operator

32. Signed.....George E. Fernald.....

33. Use additional sheets if necessary.