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DeSoto Mine Drilling South Wire Co.

DATE: March 27, 1967

Page 1

HOLE NUMBER ONE BOXES 1-29

<u>Sample and Box No.</u>	<u>DEPTH</u>	<u>Percent Copper (Oxide)</u>	<u>Percent Copper (Total)</u>
1	10-17 Ft.	.68	.94
2	17-25 Ft.	.89	1.06
3	25-33 Ft.	.50	.52
4	33-40 Ft.	.74	.88
5	40-49 Ft.	.61	.63
6	49-57 Ft.	.58	.58
7	57-66 Ft.	.21	.49
8	66-74 Ft.	.59	.83
9	74-83 Ft.	.69	1.03
10	83-90 Ft.	.56	1.17
11	90-100 Ft.	.47	.92
12	100-107 Ft.	.50	.91
13	107-115 Ft.	.81	.96
14	115-122 Ft.	.68	1.39
15	122-132 Ft.	.32	.57
16	132-139 Ft.	.63	.92
17	139-149 Ft.	2.29	2.26
18	149-156 Ft.	2.80	2.90
19	156-166 Ft.	.64	.95
20	166-176 Ft.	.50	.54
21	176-184 Ft.	.27	.29
22	184-194 Ft.	.47	.44
23	194-204 Ft.	1.64	1.52
24	204-212 Ft.	5.73	5.53
25	212-222 Ft.	1.89	2.07
26	222-234 Ft.	.95	2.18
27	234-240 Ft.	.19	.18
28	240-249 Ft.	.134	.37
29	249-257 Ft.	.144	1.42

Continued.....

HOLE NUMBER TWO

<u>Sample and Box No.</u>	<u>DEPTH</u>	<u>Percent Copper (Oxide)</u>	<u>Percent Copper (Total)</u>
1	10-39 Ft.	.68	.95
2	39-50 Ft.	.53	.75
3	50-60 Ft.	.23	1.31
4	60-71 Ft.	1.05	1.24
5	71-81 Ft.	.23	1.09
6	81-96 Ft.	.82	.95
7	96-107 Ft.	.96	1.32
8	107-115 Ft.	.11	.57
9	115-124 Ft.	.24	.59
10	124-136 Ft.	.24	.63

HOLE NUMBER THREE

<u>Sample and Box No.</u>	<u>DEPTH</u>	<u>Percent Copper (Oxide)</u>	<u>Percent Copper (Total)</u>
1	10-19 Ft.	.32	.805
2	19-29 Ft.	1.67	1.83
3	29-38 Ft.	3.15	4.95
4	38-47 Ft.	1.74	2.02
5	47-55 Ft.	2.44	2.48
6	55-62 Ft.	2.15	2.53
7	62-71 Ft.	.29	.99
8	71-80 Ft.	.68	.92
9	80-89 Ft.	.18	2.22
10	89-98 Ft.	.19	.80
11	98-108 Ft.	.53	.77
12	108-116 Ft.	.22	.65
13	116-124 Ft.	.47	2.15
14	124-134 Ft.	1.1	2.78
15	134-143 Ft.	Non Detectable	.19
16	143-152 Ft.	.79	.79
17	152-161 Ft.	.26	.96
18	161-170 Ft.	.12	.31
19	170-178 Ft.	.27	.87
20	178-182 Ft.	.18	.75

Continued.....

HOLE NUMBER FOUR

<u>Box and Sample No.</u>	<u>DEPTH</u>
1	10-21 Ft.
2	21-31 Ft.
3	31-40 Ft.
4	40-48 Ft.
5	48-60 Ft.
6	60-68 Ft.
7	68-76 Ft.
8	76-89 Ft.
9	89-98 Ft.
10	98-106 Ft.
11	106-115 Ft.
12	115-124 Ft.
* 13	124-132 Ft.
15	132-140 Ft.
16	140-150 Ft.
17	150-160 Ft.
18	160-168 Ft.
19	168-176 Ft.
20	176-185 Ft.

HOLE NUMBER FIVE

<u>Box and Sample No.</u>	<u>DEPTH</u>
1	10-26 Ft.
2	26-35 Ft.
3	35-44 Ft.
4	44-53 Ft.
5	53-62 Ft.
6	62-70 Ft.
7	70-78 Ft.
8	78-87 Ft.
9	87-96 Ft.
10	96-106 Ft.
11	106-117 Ft.
12	117-127 Ft.
13	127-134 Ft.
14	134-140 Ft.
15	140-152 Ft.
16	152-160 Ft.
17	160-169 Ft.
18	169-178 Ft.
19	178-188 Ft.
20	188-192 Ft.

* Box No. 14 Was Skipped

NOTE: For analysis on Holes Four and Five see Leach processes 4-1, 4-2 and 5-1.

Continued.....

LEACH PROCESS WITH AGITATIONLeach Number 3-1Hole Number 1Composite Boxes 1 through 15.Grind: 190.21 grams retained on 4 seive.204.81 grams retained on 10 seive.117.45 grams retained on 40 seive.65.63 grams passed 40 seive.

Acid Volume 4000 Milliliters.

Acid Concentration Start 55%; end — %Sample Weight 239.73 grams.% Copper extracted from ore .20 15 Min..34 30 Min..40 45 Min.— 60 Min.— 75 Min.— 90 Min.Settling Rate — mm/Min. (for first 50mm of settling)*Note: Power shutdown - unable to finish Analysis.*

LEACH PROCESS WITH AGITATIONLeach Number 3-2Hole Number 1Composite Boxes 1 through 15.Grind: 190.21 grams retained on 4 seive.204.81 grams retained on 10 seive.117.45 grams retained on 40 seive.65.63 grams passed 40 seive.

Acid Volume 4000 Milliliters.

Acid Concentration Start 46%; end — %Sample Weight 297.67 grams.% Copper extracted from ore 39 15 Min.53 30 Min.58 45 Min.— 60 Min.— 75 Min.— 90 Min.Settling Rate — mm/Min. (for first 50mm of settling)*Note: Power failure unable to complete.*

LEACH PROCESS WITH AGITATIONLeach Number 1-1Hole Number 1Composite Boxes 1 through 15.Grind: 351.68 grams retained on 10 seive.201.74 grams retained on 40 seive.100.71 grams passed 40 seive.

Acid Volume 4000 Milliliters.

Acid Concentration Start 596 %; end 515 %Sample Weight 320.90 grams.% Copper extracted from ore .08 15 Min..22 30 Min..36 45 Min..37 60 Min..43 75 Min..44 90 Min.Settling Rate 2.3 mm/Min. (for first 50mm of settling)

LEACH PROCESS WITH AGITATIONLeach Number 1-2Hole Number 1Composite Boxes 1 through 15.Grind: 351.63 grams retained on 10 seive.201.74 grams retained on 40 seive.100.71 grams passed 40 seive.

Acid Volume 4000 Milliliters.

Acid Concentration Start 1.69%; end 1.55%Sample Weight 332.3 grams.% Copper extracted from ore .13 15 Min..22 30 Min..36 45 Min..37 60 Min..51 75 Min..57 90 Min.Settling Rate 2.2 mm/Min. (for first 50mm of settling)

cb

LEACH PROCESS WITH AGITATIONLeach Number 4-1Hole Number 1Composite Boxes 16 through 19.Grind: 151.87 grams retained on 4 seive.141.82 grams retained on 10 seive.114.04 grams retained on 40 seive.76.45 grams passed 40 seive.

Acid Volume 4000 Milliliters.

Acid Concentration Start .530%; end .500%Sample Weight 255.04 grams.% Copper extracted from ore .25 15 Min..38 30 Min..45 45 Min..46 60 Min..52 75 Min..60 90 Min.Settling Rate 3 mm/Min. (for first 50mm of settling)

LEACH PROCESS WITH AGITATIONLeach Number 4-2Hole Number 1Composite Boxes 16 through 29.Grind: 157.87 grams retained on 4 seive.141.82 grams retained on 10 seive.114.04 grams retained on 40 seive.76.45 grams passed 40 seive.

Acid Volume 4000 Milliliters.

Acid Concentration Start 1.63 %; end 1.56 %Sample Weight 227.30 grams.% Copper extracted from ore .33 15 Min..42 30 Min..56 45 Min..62 60 Min..63 75 Min..74 90 Min.Settling Rate 3 mm/Min. (for first 50mm of settling)

LEACH PROCESS WITH AGITATIONLeach Number 2-1Hole Number 1Composite Boxes 16 through 22.Grind: 242.03 grams retained on 10 seive.186.63 grams retained on 40 seive.97.05 grams passed 40 seive.

Acid Volume 4000 Milliliters.

Acid Concentration Start 55%; end 42%Sample Weight 292.54 grams.% Copper extracted from ore .20 15 Min..21 30 Min..57 45 Min..65 60 Min..68 75 Min..77 90 Min.Settling Rate 3 mm/Min. (for first 50mm of settling)

LEACH PROCESS WITH AGITATIONLeach Number 2-2Hole Number 1Composite Boxes 16 through 29.Grind: 242.03 grams retained on 10 seive.186.63 grams retained on 40 seive.97.05 grams passed 40 seive.

Acid Volume 4000 Milliliters.

Acid Concentration Start 1.64%; end 1.53%Sample Weight 232.75 grams.% Copper extracted from ore .29 15 Min..44 30 Min..69 45 Min..78 60 Min..92 75 Min.1.04 90 Min.Settling Rate 3 mm/Min. (for first 50mm of settling)4.16

LEACH PROCESS WITH AGITATION

Leach Number 1-1

Hole Number Two

Composite Boxes 1 through 10.

Grind: 122.85 grams retained on 4 seive.

119.95 grams retained on 10 seive.

77.33 grams retained on 40 seive.

65.68 grams passed 40 seive.

Acid Volume 4000 Milliliters.

Acid Concentration Start 47%; end 40.5%

Sample Weight 374.81 grams.

% Copper extracted from ore .50 15 Min.

.60 30 Min.

2.20 45 Min.

3.00 60 Min.

3.30 75 Min.

3.70 90 Min.

Settling Rate 4 mm/Min. (for first 50mm of settling)

LEACH PROCESS WITH AGITATIONLeach Number 1-2Hole Number 2Composite Boxes 1 through 10.Grind: 95.99 grams retained on 10 sieve.144.40 grams retained on 40 sieve.93.51 grams passed 40 sieve.

Acid Volume 4000 Milliliters.

Acid Concentration Start 1.42%; end 1.36%Sample Weight 33.90 grams.% Copper extracted from ore .05 15 Min..26 30 Min..35 45 Min..36 60 Min..42 75 Min..42 90 Min.Settling Rate 3.5 mm/Min. (for first 50mm of settling)

LEACH PROCESS WITH AGITATIONLeach Number 2-2Hole Number 3Composite Boxes 1 through 10.Grind: 105.58 grams retained on 4 seive.107.05 grams retained on 10 seive.119.39 grams retained on 40 seive.73.55 grams passed 40 seive.

Acid Volume 4000 Milliliters.

Acid Concentration Start 1.65%; end 1.53%Sample Weight 405.57 grams.% Copper extracted from ore .266 15 Min..407 30 Min..450 45 Min..573 60 Min..580 75 Min..670 90 Min.Settling Rate 4 mm/Min. (for first 50mm of settling)

LEACH PROCESS WITH AGITATIONLeach Number 2-1Hole Number 3Composite Boxes 1 through 10.Grind: 104.12 grams retained on 10 seive.158.04 grams retained on 40 seive.107.72 grams passed 40 seive.

Acid Volume 4000 Milliliters.

Acid Concentration Start 562 %; end 500 %Sample Weight 362.88 grams.% Copper extracted from ore .00 15 Min..18 30 Min..23 45 Min..30 60 Min..33 75 Min..50 90 Min.Settling Rate 4 mm/Min. (for first 50mm of settling)

LEACH PROCESS WITH AGITATIONLeach Number 3-2Hole Number 3Composite Boxes 11 through 20.Grind: 129.28 grams retained on 4 seive.120.37 grams retained on 10 seive.81.94 grams retained on 40 seive.57.91 grams passed 40 seive.390.00

Acid Volume 4000 Milliliters.

Acid Concentration Start 1.66 %; end 1.52 %Sample Weight 390.00 grams.% Copper extracted from ore .08 15 Min..17 30 Min..31 45 Min..35 60 Min..38 75 Min..37 90 Min.Settling Rate 3 mm/Min. (for first 50mm of settling)1.66

LEACH PROCESS WITH AGITATION

Leach Number 3-1Hole Number #3Composite Boxes 11 through 20.Grind: 194.58 grams retained on 10 seive.111.17 grams retained on 40 seive.91.47 grams passed 40 seive.Acid Volume 4000 Milliliters.Acid Concentration Start 56%; end 44.5%.Sample Weight 387.22 grams.% Copper extracted from ore .09 15 Min..14 30 Min..21 45 Min..26 60 Min..35 75 Min..36 90 Min.Settling Rate 4 mm/Min. (for first 50mm of settling)

LEACH PROCESS WITH AGITATIONLeach Number 04Hole Number 4Composite Boxes 1 through 10.Grind: 332.41 grams retained on 4 seive.184.79 grams retained on 10 seive.113.24 grams retained on 40 seive.72.09 grams passed 40 seive.705.13

Acid Volume 4000 Milliliters.

Acid Concentration. Start 1.53 %; end 1.45 %Sample Weight 216.10 grams.% Copper extracted from ore .03 15 Min..13 30 Min..21 45 Min..32 60 Min..37 75 Min..39 90 Min.Settling Rate 3 mm/Min. (for first 50mm of settling)

1.45

LEACH PROCESS WITH AGITATIONLeach Number 1Hole Number 4Composite Boxes 1 through 10.Grind: 375.39 grams retained on 10 seive.247.38 grams retained on 40 seive.134.58 grams passed 40 seive.Acid Volume 4000 Milliliters.Acid Concentration Start 1.66%; end 1.54% $\pm 1/2$ Sample Weight 360.83 grams.% Copper extracted from ore .11 15 Min..20 30 Min..25 45 Min..26 60 Min..45 75 Min..75 90 Min.Settling Rate 2 mm/Min. (for first 50mm of settling)

2.22

cb.

LEACH PROCESS WITH AGITATIONLeach Number 3Hole Number 41Composite Boxes 11 through 20.Grind: 201.79 grams retained on 4 seive.227.59 grams retained on 10 seive.130.85 grams retained on 40 seive.74.19 grams passed 40 seive.634.92

Acid Volume 4000 Milliliters.

Acid Concentration Start 1.56%; end 1.48%Sample Weight 634.92 grams.% Copper extracted from ore .049 15 Min..15 30 Min..19 45 Min..21 60 Min..25 75 Min..30 90 Min.Settling Rate 3 mm/Min. (for first 50mm of settling)

LEACH PROCESS WITH AGITATIONLeach Number 2Hole Number 4Composite Boxes 11 through 20.Grind: 415.87 grams retained on 10 seive.191.06 grams retained on 40 seive.107.37 grams passed 40 seive.Acid Volume 418.00 4000 Milliliters.Acid Concentration Start 1.72%; end 1.54%.Sample Weight 373.0 grams.% Copper extracted from ore 17 15 Min.19 30 Min.20 45 Min.32 60 Min.41 75 Min.46 90 Min.Settling Rate 3.1 mm/Min. (for first 50mm of settling)

DE SOTO MINE

REPORT

for

HOME STAKE PRODUCTION CO.

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Andrew J. Zinkl

REGISTERED MINING ENGINEER

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DE SOTO MINE

REPORT

for

HOME STAKE PRODUCTION CO.

SUMMARY -

Based on field examinations, plus the reference reports furnished by Home Stake Production Co., covering the geology and sample results at the De Soto mine, it was not difficult to come to the conclusion that this property has an excellent chance of becoming a medium-size mine.

Recommended in this report is a drilling and exploration program which calls for the expenditure of \$150,000.00 in stages. This program should be interpreted as being mostly a development project to block out ore, rather than a prospecting program.

It is targeted primarily as determining the size, shape and grade of the ore body which could be in the range of 7,000,000 tons of mixed oxide sulphide ore, with a copper content of one percent (1.0%) and with some minor value in precious metal content.

The production plans for this ore body indicate a leach-precipitation-flotation circuit at approximately 3000 tons per day. Eventual recovery of more than 125,000,000 pounds of copper could be anticipated.

A portion of the drilling will be exploration of a second ore zone with a million ton potential, and also the prospecting of the formation between the two zones. Geology and geophysics are suggested on two adjacent 'gossan' areas within these claims.

An initial six months option period is recommended for the drilling and also for metallurgical testing. A second six month option period should be sought to permit time for plant design and the other factors involved in planning for production.

Without hesitation I can state that the De Soto mine has a better chance of being a producer than the twenty or more properties I have examined during the past two years.

Andrew J. Zinkl

Andrew J. Zinkl
Registered Mining Engineer

September 29, 1970

REFERENCES -

The following reports were furnished by the Phoenix office of Home Stake Production Co. This information proved invaluable in helping come to the conclusions contained herein.

As these reports are available in your Phoenix office they are not included in the appendices here.

G. M. Colvocoresses Report, February, 1946

Still and Still Report, December, 1958

Richard Mieritz Report, March, 1970

Andrew J. Zinkel

REGISTERED MINING ENGINEER

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DE SOTO MINE

REPORT

for

HOME STAKE PRODUCTION CO.

SCOPE OF REPORT -

This report is based on this author's personal examination of this property on four separate examinations dating back to 1952. The most recent being in September, 1970, accompanied by Mr. Broyles.

Prior to the last field examination a consultation with Mr. Richard Mieritz, on the details in his report was most helpful in reaching my conclusions.

The Colvocoresses information was carefully studied and used on the last field work. The area covered by the Still and Still report was examined only briefly as a possible exploration venture.

Herein is recommended a drill program intended more as a means of developing this ore body than to explore its' potential. To determine its' shape, size and average grade than to determine whether or not an ore reserve exists.

Also in a general way other factors involved in a future operation are noted and recommended that some of the initially important ones be included in this project.

LOCATION - 1

The De Soto mine is located on the east flank of the Bradshaw Mountain range some 4 miles west of Cleator, Arizona off the Crown King road. It is reached by travel north from Phoenix about 60 miles to the Cordes turnoff, then travel by county maintained dirt road to Cleator, then onto the De Soto access road a distance of 3.5 miles.

FACILITIES - 2

No public utilities are available at the De Soto mine. The closest available connections to power, gas and telephone would be to Mayer, Arizona. This is a distance of approximately 10 miles, which would pass directly through the Blue Bell property which is being considered jointly with the De Soto.

One very questionable item is the water supply at or near the De Soto mine. Several creeks are suggested as possible sources, both Turkey Creek to the north, 3 miles distance, and Crazy Basin to the south. This problem must be resolved prior to any definite plans for a plant location, as well as plant capacity.

OWNERSHIP AND TITLES - 3

Sherwood Owens of Tucson, Arizona owns 18 patented and 14 unpatented mining claims which comprise the De Soto group.

TOPOGRAPHY AND CLIMATE -

The climate at the De Soto is near ideal, with some high Summer temperatures and cold Winter nights, but generally good weather conditions prevail with no reasons for shut down or seasonal operations. The elevation at the portal of the 600 level is approximately 5800 feet. Some Winter snow can be expected but very seldom lasts more than a day on the ground.

HISTORY AND PAST PRODUCTION -

The production record of this property dates back to 1890 and continues to 1931.

According to the record a total of 17,000,000 pounds of copper, 14,000 ounces of gold and 330,000 ounces of silver were produced from 280,000 tons of ore. Since that time leasers and one small leaching operation have produced additional copper, so that the total approaches 20,000,000 pounds of copper.

¹Richard Mieritz Map No. 1

²G. M. Colvocoresses Report

³Richard Mieritz Map #3

Again, like the neighboring Blue Bell mine the operating assay cut-off value was 3.0% copper ore, which was shipped to the smelter at Humboldt.

GEOLOGY AND MINERALIZATION -

Mineralization at the De Soto is the replacement type generally confined to the chloritic schist facie of the Yavapai schist. These are metamorphosed pre-Cambrian sediments striking N 20° E and dipping steeply, about 70°, to the west.

The ore occurs as lenses with a vertical depth of 3 to 4 times the strike length of each lense. Some echelon pattern is noted, and the lenses rake southerly at the De Soto.

The ore occurs as higher grade in these lenses, but grades out into both walls along the schistosity, particularly in the secondary ore environment.

At the De Soto the ore was mined to maintain a mill feed value of three percent (3.0%) copper with some value in gold and silver. Lesser grade ore was left as pillars and as low-grade lenses and walls between the lenses.

Migration of the secondary copper minerals is widespread, particularly along the schistosity between the lenses.

This downward percolation probably depleted the upper 50 feet of the mineralized zone of some of the copper and redeposited it from the 100 foot level to the 200 foot level.

From the data available from the S. W. series of holes it appears that about 65% of the copper occurs as oxides and carbonates, with some silicate of copper, the remaining 35% is as sulphides.

ORE RESERVES ⁴ & ⁵

Both the engineers who have estimated the potential ore body at the De Soto seem to be in general agreement. G. M. Colvocoresses looked at the entire mineralization from the 600 level to the surface, whereas Mieritz confined his estimates to the upper oxide portion of the ore body, this of course, is based on the data he had available for his report.

⁴G. M. Colvocoresses Report, pages 6, 7 & 8

⁵Richard Mieritz Report, pages 4 & 5

In analysing the Colvocoresses report he develops an irregularly shaped ore block, in the main or east ore zone, with greater depth, 550 feet, than length and width. This ore body is wider and longer on the surface and upper levels and tapers to lesser dimensions on the fourth and fifth levels, but expands again on the 600 level. These dimensions are interpreted as being the result of actual measurements of the ground opened on each level.

In any event this block would be averaged out as being 225 feet long along the strike, 160 feet wide across the schist formation and 550 feet in depth. By applying an average of 11 cu. ft. per ton, this calculates out to a block of 1,800,000 tons of ore to which he credits an average grade of slightly under two percent (2.0%) copper. Deducting approximately 300,000 tons of the ore which has been mined from the block reduces the tonnage to 1,500,000 tons, containing plus 50,000,000 pounds of copper, also containing some value in gold and silver with an estimate of \$0.70 per ton, (Probably \$1.00 at today's price for silver.)

He goes on to expand the possible ore potential to a strike length of 600 feet, a width of 300 feet and holds this block to the same depth of 550 feet.

These figures calculate to a block containing nine million (9,000,000) tons, he reduces this to a realistic figure of 7,000,000 tons which will contain one percent (1.0%) copper, or some 140,000,000 pounds of copper, again with some gold and silver value.

Colvocoresses also makes note of the 'West' ore zone on the 'Whale' claim. This is only suggested as a possibility that this zone could have one million tons of one percent (1.0%) copper content.

Mieritz confines his ore estimate to the upper portion of the mineralized area on the hanging wall side of the 'East' ore zone. He uses the results of 5 closely spaced drill holes to back up his estimate. This block is conservatively estimated at 500,000 tons of 1.2% copper or approximately 12,000,000 pounds.

With justification he expands this ore to the area southward from where a leaser shipped ore, thereby adding another 1,000,000 tons of ore to this block, still confining his depth to 150 feet. This inferred block of ore would add 24,000,000 pounds of copper to the estimate.

In looking at the overall possibility Mieritz feels that the mineralization could cover 600 feet along strike, by 600 feet across the width of the formation with a total depth of 600 feet, for a possible ore block in the range of 15,000,000 tons which would

approach one percent (1.0%) in grade. Included within these dimensions is the 'West' ore exposure.

EXPLORATION PROGRAM - 6

As a result of my field examination and a study of the data furnished in the reports I feel that the De Soto property will become a medium-size mining operation.

In a strict sense this is not just an exploration opportunity, but rather a development drill program with its' first objective being one to delineate the ore and to determine the size and shape, with its' irregularities, of this ore body.

The second phase would be to investigate by geology, geophysics and drilling the other possibilities within these claims, i.e., (1) the formation between the 'East' and 'West' zones, (2) the area southwest of the De Soto on the 'Favorite', etc., claims, and (3) the 'Iron Gossan' area.

DELIMITING ORE BODY -

This program should incorporate the use of underground drilling and also surface drilling.

The underground core drilling should be from all the levels which can be entered safely. The main objective would be to cross the formation at a normal angle to the strike and dip of the schistosity, into both the hanging and foot walls, with each hole going at least 50 feet beyond the indicated mineralized zone. This additional penetration may be needed later to help outline a mining procedure and to help determine stripping or waste removal ratios.

Without having entered all the workings it is difficult to outline a program excepting to state that holes should be positioned to penetrate this ore body on approximately 100 foot centers into both walls.

To generalize it can be assumed that 4 or 5 holes will be drilled on each level, out a distance averaging 200 feet in each direction, so that approximately 1500 to 2000 feet of drilling can be anticipated on the seven levels at the mine. This would total as a maximum some 12,000 foot of core drill hole.

⁶Still & Still 'Iron Gossan' Report

The surface core drilling should be used to delineate the strike length in both the northeasterly and southwesterly directions beyond the known workings.

Two geological facts are kept in mind in recommending surface drilling to extend the length of the ore body. First is that no known faults cut off the mineralization at either end of the presently explored zone, and secondly, the tenor of ore sought in this mine is considerable less than that needed during its' operating life.

I would position these surface holes not only to extend the length but at the same time cut across at least 300 feet of width while going to a depth of at least 600 feet. Considering the dip of the formation, these holes would be vertical holes.

At least five (5) holes need to be drilled to extend the length, one north and four south of the S. W. series at 100 foot centers. These holes will have a total depth of 700 feet, so that 3500 feet of drilling can be planned as a maximum from the surface in the 'East' ore area.

At least three surface holes should be located into the 'West' ore body, not only to penetrate this ore potential, but for at least one hole to continue through the formation that lies between the two ore zones. These holes would be flat, approximately -20° , to be normal to the dip and also directed normal to the strike.

The holes recommended in the 'West' ore exposure should be located to penetrate this narrow formation along strike and down dip.

The topography is such that supplemental drilling with a wagon drill is possible and would be used if the initial core drilling indicated a grade of ore that justified delineating this mineralization.

One hole, as previously mentioned, should penetrate the 'West' ore zone and be directed at the heart of the 'East' ore zone to drill through the formation between these zones.

The three holes here would reach a total of approximately 1000 feet of drilling. Supplemental percussion drilling would be second phase to block out the ore reserve in this exposure.

Geological, geophysical and possibly geochemical work should be carried on simultaneously with the drill program on the adjacent areas noted above.

COST ESTIMATE -

Based on the drill programs as outlined in the preceding section the cost of delimiting the ore body and carrying on the exploration to the outlying areas is estimated as follows:

1. Underground drilling		
Drill location preparations	\$	5,000.00
12,000 feet of BX core @ \$6.00		72,000.00
2. 'East' zone surface drilling		
Drill site preparations		3,000.00
3500 feet of NX core @ \$10.00		35,000.00
3. 'West' zone surface drilling		
Drill site preparation		2,000.00
1000 feet of NX core @ \$10.00		10,000.00
4. Geological investigation, etc.		
2 geologists, work for one month		4,000.00
Geophysical contracting		2,000.00
5. Engineer in charge, 3 months expenses, etc.		10,000.00
Assays, etc.		4,000.00
6. Administrative & miscellaneous		<u>3,000.00</u>
TOTAL		\$150,000.00

Most of the amount estimated above is, in my interpretation, being used to delimit and block out an ore body that will have a length of some 600 to 700 feet, a width of 250 to 300 feet, and an average depth of 450 to 500 feet, allowing for topography. This calculates to a target of 7,000,000 tons in the 'East' zone and possibly a million tons in the 'West' zone, with a copper content in excess of 125,000,000 pounds, with some precious metal content.

Should the ore body prove to have this amount of available copper the expenditure to prove it would be slightly over one-tenth of a cent 0.1¢ per pound of copper.

OPERATIONAL CONSIDERATIONS -

While proving the ore body, its' shape and the grade of ore is undoubtedly the first objective, other operational considerations should be sought from the drilling program, particularly a composite sample or samples prepared for metallurgical testing to determine the flow sheet of this oxide - sulphide mixture.

Some answers relative to the mining method should also be considered. Such as:

1. Can it be open pit mined? If so, what will be the stripping ratio?
2. Could it be mined by ripping, or will blasting be needed?
3. Would a transfer raise from 600 level to surface be practical for a mining method?
4. Could the deposit be block caved?
5. Should the upper oxide portion be mined, and the lower sulphide zone prepared for leaching-in-place?

METALLURGY -

A composite sample from the drill cuttings or split core rejects would furnish an excellent, large volume sample on which metallurgical testing should be programmed.

Considering the total mass of ore, I would estimate that 20% to 30% of the copper will occur as the oxide-carbonate minerals the balance as sulphides. This would indicate a leach-precipitation-flotation circuit, hopefully in the range of not less than 3000 tons per day.

Test work to determine the usual characteristics of this ore's amenability to processing would preliminarily include:

1. Acid consumption.
2. Leach time at various size ranges and by various leach methods.
3. Crushing and grinding pattern to reach optimum liberation of the minerals.
4. Flotation testing to determine ratio of concentrations, and recoveries of the copper along with the gold and silver.

5. Fresh water requirements.

The above enumerates some of the more basic facts that can be ascertained from the composite sample. I estimate an expenditure of at least \$5,000.00 for this test work.

GENERAL -

It would be premature to thoroughly investigate the other problems inherent in preparing a property for production, such as sale of concentrates, county and state taxes, mill site location, roads and transportation, electric power availability, telephone, etc., until the ore body and flow sheets are developed.

However one problem appears to be critical and warrants some investigation initially, this is the question of assuring a supply of water. The Colvocoresses report indicates this might be a problem and he makes several suggestions. My personal knowledge of the area leads me to believe that a local supply will be difficult to develop.

TIME FACTOR -

The drill program recommended in this report calls for the availability of at least three underground core drills and two surface drills with a minimum option time of at least six months, at as nominal a payment as can be obtained.

To complete this initial program in six months the drilling would have to proceed smoothly and the other initial engineering programs, i.e. the metallurgical testing could not be delayed.

A second six month option period would be needed to allow time for planning the mining method, designing the plant, determining location of water supply, road building, etc., before actual construction of plant could start. Therefore a second six month option should be obtained to allow time for this planning and design stage. Here again, as reasonable a payment as can be managed from the owner should be sought.

PRODUCTION POTENTIAL -

My interpretation of the opportunity for production would be to target at an operating rate of 3000 tons per day with a recoverable copper content of 17 to 18 pounds per ton as a concentrate resulting from a leach-precipitation-flotation flow sheet. Some gold and silver value should also be realized from the flotation circuit.

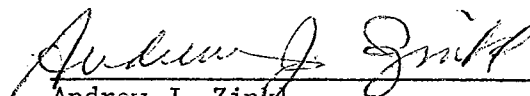
The direct operating cost, at this tonnage, should not exceed 30¢ to 33¢ per pound of copper. Deducting smelter and freight costs of 10¢ per pound would leave a direct operating profit of 17¢ to 20¢ per pound at the present price of copper.

On the basis of 50,000 pounds of copper per day, plus some profit from the precious metals, a daily operating profit of \$10,000.00 seems realistic.

RECOMMENDATION -

I suggest that drilling be started as soon as possible, that it be originated on the surface and underground in the readily assessable areas in the 'East' ore zone.

Continual assaying as the cores and slugdes are obtained will soon determine the average grade of ore. Should this prove disappointingly low, that is below an estimated operating grade of approximately six-tenth of one percent (0.6%) copper, the project could be terminated about half way through the drilling program.



Andrew J. Zinkl
Registered Mining Engineer

September 29, 1970

DE SOTO MINE
REPORT
for
HOME STAKE PRODUCTION CO.

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Andrew J. Zinkl

REGISTERED MINING ENGINEER

1602 N. CAMPBELL ST.
PRESCOTT, ARIZONA 86301
PHONE 445-5763

DE SOTO MINE

REPORT

for

HOME STAKE PRODUCTION CO.

SUMMARY -

Based on field examinations, plus the reference reports furnished by Home Stake Production Co., covering the geology and sample results at the De Soto mine, it was not difficult to come to the conclusion that this property has an excellent chance of becoming a medium-size mine.

Recommended in this report is a drilling and exploration program which calls for the expenditure of \$150,000.00 in stages. This program should be interpreted as being mostly a development project to block out ore, rather than a prospecting program.

It is targeted primarily as determining the size, shape and grade of the ore body which could be in the range of 7,000,000 tons of mixed oxide sulphide ore, with a copper content of one percent (1.0%) and with some minor value in precious metal content.

The production plans for this ore body indicate a leach-precipitation-flotation circuit at approximately 3000 tons per day. Eventual recovery of more than 125,000,000 pounds of copper could be anticipated.

A portion of the drilling will be exploration of a second ore zone with a million ton potential, and also the prospecting of the formation between the two zones. Geology and geophysics are suggested on two adjacent 'gossan' areas within these claims.

An initial six months option period is recommended for the drilling and also for metallurgical testing. A second six month option period should be sought to permit time for plant design and the other factors involved in planning for production.

Without hesitation I can state that the De Soto mine has a better chance of being a producer than the twenty or more properties I have examined during the past two years.

Andrew J. Zinkl

Andrew J. Zinkl
Registered Mining Engineer

September 29, 1970

REFERENCES -

The following reports were furnished by the Phoenix office of Home Stake Production Co. This information proved invaluable in helping come to the conclusions contained herein.

As these reports are available in your Phoenix office they are not included in the appendices here.

G. M. Colvocoresses Report, February, 1946

Still and Still Report, December, 1958

Richard Mieritz Report, March, 1970.

Andrew J. Zinkel

REGISTERED MINING ENGINEER

1602 N. CAMPBELL ST.
PRESCOTT, ARIZONA 86301
PHONE 445-5763

DE SOTO MINE

REPORT

for

HOME STAKE PRODUCTION CO.

SCOPE OF REPORT -

This report is based on this author's personal examination of this property on four separate examinations dating back to 1952. The most recent being in September, 1970, accompanied by Mr. Broyles.

Prior to the last field examination a consultation with Mr. Richard Mieritz, on the details in his report was most helpful in reaching my conclusions.

The Colvocoresses information was carefully studied and used on the last field work. The area covered by the Still and Still report was examined only briefly as a possible exploration venture.

Herein is recommended a drill program intended more as a means of developing this ore body than to explore its' potential. To determine its' shape, size and average grade than to determine whether or not an ore reserve exists.

Also in a general way other factors involved in a future operation are noted and recommended that some of the initially important ones be included in this project.

LOCATION - 1

The De Soto mine is located on the east flank of the Bradshaw Mountain range some 4 miles west of Cleator, Arizona off the Crown King road. It is reached by travel north from Phoenix about 60 miles to the Cordes turnoff, then travel by county maintained dirt road to Cleator, then onto the De Soto access road a distance of 3.5 miles.

FACILITIES - 2

No public utilities are available at the De Soto mine. The closest available connections to power, gas and telephone would be to Mayer, Arizona. This is a distance of approximately 10 miles, which would pass directly through the Blue Bell property which is being considered jointly with the De Soto.

One very questionable item is the water supply at or near the De Soto mine. Several creeks are suggested as possible sources, both Turkey Creek to the north, 3 miles distance, and Crazy Basin to the south. This problem must be resolved prior to any definite plans for a plant location, as well as plant capacity.

OWNERSHIP AND TITLES - 3

Sherwood Owens of Tucson, Arizona owns 18 patented and 14 unpatented mining claims which comprise the De Soto group.

TOPOGRAPHY AND CLIMATE -

The climate at the De Soto is near ideal, with some high Summer temperatures and cold Winter nights, but generally good weather conditions prevail with no reasons for shut down or seasonal operations. The elevation at the portal of the 600 level is approximately 5800 feet. Some Winter snow can be expected but very seldom lasts more than a day on the ground.

HISTORY AND PAST PRODUCTION -

The production record of this property dates back to 1890 and continues to 1931.

According to the record a total of 17,000,000 pounds of copper, 14,000 ounces of gold and 330,000 ounces of silver were produced from 280,000 tons of ore. Since that time leasers and one small leaching operation have produced additional copper, so that the total approaches 20,000,000 pounds of copper.

¹Richard Mieritz Map No. 1

²G. M. Colvocoresses Report

³Richard Mieritz Map #3

Again, like the neighboring Blue Bell mine the operating assay cut-off value was 3.0% copper ore, which was shipped to the smelter at Humboldt.

GEOLOGY AND MINERALIZATION -

Mineralization at the De Soto is the replacement type generally confined to the chloritic schist facie of the Yavapai schist. These are metamorphosed pre-Cambrian sediments striking N 20° E and dipping steeply, about 70°, to the west.

The ore occurs as lenses with a vertical depth of 3 to 4 times the strike length of each lense. Some echelon pattern is noted, and the lenses rake southerly at the De Soto.

The ore occurs as higher grade in these lenses, but grades out into both walls along the schistosity, particularly in the secondary ore environment.

At the De Soto the ore was mined to maintain a mill feed value of three percent (3.0%) copper with some value in gold and silver. Lesser grade ore was left as pillars and as low-grade lenses and walls between the lenses.

Migration of the secondary copper minerals is widespread, particularly along the schistosity between the lenses.

This downward percolation probably depleted the upper 50 feet of the mineralized zone of some of the copper and redeposited it from the 100 foot level to the 200 foot level.

From the data available from the S. W. series of holes it appears that about 65% of the copper occurs as oxides and carbonates, with some silicate of copper, the remaining 35% is as sulphides.

ORE RESERVES ⁴ & ⁵

Both the engineers who have estimated the potential ore body at the De Soto seem to be in general agreement. G. M. Colvocoresses looked at the entire mineralization from the 600 level to the surface, whereas Mieritz confined his estimates to the upper oxide portion of the ore body, this of course, is based on the data he had available for his report.

⁴G. M. Colvocoresses Report, pages 6, 7 & 8

⁵Richard Mieritz Report, pages 4 & 5

In analysing the Colvocoresses report he develops an irregularly shaped ore block, in the main or east ore zone, with greater depth, 550 feet, than length and width. This ore body is wider and longer on the surface and upper levels and tapers to lesser dimensions on the fourth and fifth levels, but expands again on the 600 level. These dimensions are interpreted as being the result of actual measurements of the ground opened on each level.

In any event this block would be averaged out as being 225 feet long along the strike, 160 feet wide across the schist formation and 550 feet in depth. By applying an average of 11 cu. ft. per ton, this calculates out to a block of 1,800,000 tons of ore to which he credits an average grade of slightly under two percent (2.0%) copper. Deducting approximately 300,000 tons of the ore which has been mined from the block reduces the tonnage to 1,500,000 tons, containing plus 50,000,000 pounds of copper, also containing some value in gold and silver with an estimate of \$0.70 per ton, (Probably \$1.00 at today's price for silver.)

He goes on to expand the possible ore potential to a strike length of 600 feet, a width of 300 feet and holds this block to the same depth of 550 feet.

These figures calculate to a block containing nine million (9,000,000) tons, he reduces this to a realistic figure of 7,000,000 tons which will contain one percent (1.0%) copper, or some 140,000,000 pounds of copper, again with some gold and silver value.

Colvocoresses also makes note of the 'West' ore zone on the 'Whale' claim. This is only suggested as a possibility that this zone could have one million tons of one percent (1.0%) copper content.

Mieritz confines his ore estimate to the upper portion of the mineralized area on the hanging wall side of the 'East' ore zone. He uses the results of 5 closely spaced drill holes to back up his estimate. This block is conservatively estimated at 500,000 tons of 1.2% copper or approximately 12,000,000 pounds.

With justification he expands this ore to the area southward from where a leaser shipped ore, thereby adding another 1,000,000 tons of ore to this block, still confining his depth to 150 feet. This inferred block of ore would add 24,000,000 pounds of copper to the estimate.

In looking at the overall possibility Mieritz feels that the mineralization could cover 600 feet along strike, by 600 feet across the width of the formation with a total depth of 600 feet, for a possible ore block in the range of 15,000,000 tons which would

approach one percent (1.0%) in grade. Included within these dimensions is the 'West' ore exposure.

EXPLORATION PROGRAM - 6

As a result of my field examination and a study of the data furnished in the reports I feel that the De Soto property will become a medium-size mining operation.

In a strict sense this is not just an exploration opportunity, but rather a development drill program with its' first objective being one to delineate the ore and to determine the size and shape, with its' irregularities, of this ore body.

The second phase would be to investigate by geology, geophysics and drilling the other possibilities within these claims, i.e., (1) the formation between the 'East' and 'West' zones, (2) the area southwest of the De Soto on the 'Favorite', etc., claims, and (3) the 'Iron Gossan' area.

DELIMITING ORE BODY -

This program should incorporate the use of underground drilling and also surface drilling.

The underground core drilling should be from all the levels which can be entered safely. The main objective would be to cross the formation at a normal angle to the strike and dip of the schistosity, into both the hanging and foot walls, with each hole going at least 50 feet beyond the indicated mineralized zone. This additional penetration may be needed later to help outline a mining procedure and to help determine stripping or waste removal ratios.

Without having entered all the workings it is difficult to outline a program excepting to state that holes should be positioned to penetrate this ore body on approximately 100 foot centers into both walls.

To generalize it can be assumed that 4 or 5 holes will be drilled on each level, out a distance averaging 200 feet in each direction, so that approximately 1500 to 2000 feet of drilling can be anticipated on the seven levels at the mine. This would total as a maximum some 12,000 foot of core drill hole.

⁶Still & Still 'Iron Gossan' Report

The surface core drilling should be used to delineate the strike length in both the northeasterly and southwesterly directions beyond the known workings.

Two geological facts are kept in mind in recommending surface drilling to extend the length of the ore body. First is that no known faults cut off the mineralization at either end of the presently explored zone, and secondly, the tenor of ore sought in this mine is considerable less than that needed during its' operating life.

I would position these surface holes not only to extend the length but at the same time cut across at least 300 feet of width while going to a depth of at least 600 feet. Considering the dip of the formation, these holes would be vertical holes.

At least five (5) holes need to be drilled to extend the length, one north and four south of the S. W. series at 100 foot centers. These holes will have a total depth of 700 feet, so that 3500 feet of drilling can be planned as a maximum from the surface in the 'East' ore area.

At least three surface holes should be located into the 'West' ore body, not only to penetrate this ore potential, but for at least one hole to continue through the formation that lies between the two ore zones. These holes would be flat, approximately -20° , to be normal to the dip and also directed normal to the strike.

The holes recommended in the 'West' ore exposure should be located to penetrate this narrow formation along strike and down dip.

The topography is such that supplemental drilling with a wagon drill is possible and would be used if the initial core drilling indicated a grade of ore that justified delineating this mineralization.

One hole, as previously mentioned, should penetrate the 'West' ore zone and be directed at the heart of the 'East' ore zone to drill through the formation between these zones.

The three holes here would reach a total of approximately 1000 feet of drilling. Supplemental percussion drilling would be second phase to block out the ore reserve in this exposure.

Geological, geophysical and possibly geochemical work should be carried on simultaneously with the drill program on the adjacent areas noted above.

COST ESTIMATE -

Based on the drill programs as outlined in the preceding section the cost of delimiting the ore body and carrying on the exploration to the outlying areas is estimated as follows:

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Most of the amount estimated above is, in my interpretation, being used to delimit and block out an ore body that will have a length of some 600 to 700 feet, a width of 250 to 300 feet, and an average depth of 450 to 500 feet, allowing for topography. This calculates to a target of 7,000,000 tons in the 'East' zone and possibly a million tons in the 'West' zone, with a copper content in excess of 125,000,000 pounds, with some precious metal content.

Should the ore body prove to have this amount of available copper the expenditure to prove it would be slightly over one-tenth of a cent 0.1¢ per pound of copper.

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While proving the ore body, its' shape and the grade of ore is undoubtedly the first objective, other operational considerations should be sought from the drilling program, particularly a composite sample or samples prepared for metallurgical testing to determine the flow sheet of this oxide - sulphide mixture.

Some answers relative to the mining method should also be considered. Such as:

1. Can it be open pit mined? If so, what will be the stripping ratio?
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The above enumerates some of the more basic facts that can be ascertained from the composite sample. I estimate an expenditure of at least \$5,000.00 for this test work.

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A second six month option period would be needed to allow time for planning the mining method, designing the plant, determining location of water supply, road building, etc., before actual construction of plant could start. Therefore a second six month option should be obtained to allow time for this planning and design stage. Here again, as reasonable a payment as can be managed from the owner should be sought.

PRODUCTION POTENTIAL -

My interpretation of the opportunity for production would be to target at an operating rate of 3000 tons per day with a recoverable copper content of 17 to 18 pounds per ton as a concentrate resulting from a leach-precipitation-flotation flow sheet. Some gold and silver value should also be realized from the flotation circuit.

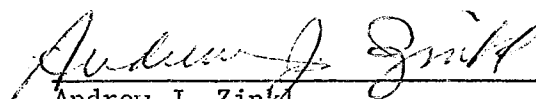
The direct operating cost, at this tonnage, should not exceed 30¢ to 33¢ per pound of copper. Deducting smelter and freight costs of 10¢ per pound would leave a direct operating profit of 17¢ to 20¢ per pound at the present price of copper.

On the basis of 50,000 pounds of copper per day, plus some profit from the precious metals, a daily operating profit of \$10,000.00 seems realistic.

RECOMMENDATION -

I suggest that drilling be started as soon as possible, that it be originated on the surface and underground in the readily assessable areas in the 'East' ore zone.

Continual assaying as the cores and sludges are obtained will soon determine the average grade of ore. Should this prove disappointingly low, that is below an estimated operating grade of approximately six-tenth of one percent (0.6%) copper, the project could be terminated about half way through the drilling program.


Andrew J. Zinkl
Registered Mining Engineer

September 29, 1970

DeSoto Mine Drilling
South Wire Co.

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copies included

DATE: March 27, 1967

Page 1

HOLE NUMBER ONE BOXES 1-29

<u>Sample and Box No.</u>	<u>DEPTH</u>	<u>Percent Copper (Oxide)</u>	<u>Percent Copper (Total)</u>
1	10-17 Ft.	.68	.54
2	17-25 Ft.	.89	1.06
3	25-33 Ft.	.50	.52
4	33-40 Ft.	.74	.88
5	40-49 Ft.	.61	.63
6	49-57 Ft.	.58	.58
7	57-66 Ft.	.21	.49
8	66-74 Ft.	.59	.83
9	74-83 Ft.	.69	1.03
10	83-90 Ft.	.56	1.17
11	90-100 Ft.	.47	.92
12	100-107 Ft.	.50	.91
13	107-115 Ft.	.81	.96
14	115-122 Ft.	.68	1.39
15	122-132 Ft.	.32	.57
16	132-139 Ft.	.63	.92
17	139-149 Ft.	2.29	2.26
18	149-156 Ft.	2.80	2.90
19	156-166 Ft.	.64	.95
20	166-176 Ft.	.50	.54
21	176-184 Ft.	.27	.29
22	184-194 Ft.	.47	.44
23	194-204 Ft.	1.64	1.52
24	204-212 Ft.	5.73	5.53
25	212-222 Ft.	1.89	2.07
26	222-234 Ft.	.95	2.18
27	234-240 Ft.	.19	.18
28	240-249 Ft.	.134	.37
29	249-257 Ft.	.144	1.42

Continued.....

HOLE NUMBER TWO

<u>Sample and Box No.</u>	<u>DEPTH</u>	<u>Percent Copper (Oxide)</u>	<u>Percent Copper (Total)</u>
1	10-39 Ft.	.68	.95
2	39-50 Ft.	.53	.75
3	50-60 Ft.	.23	1.31
4	60-71 Ft.	1.05	1.24
5	71-81 Ft.	.23	1.09
6	81-96 Ft.	.82	.95
7	96-107 Ft.	.96	1.32
8	107-115 Ft.	.11	.57
9	115-124 Ft.	.24	.59
10	124-136 Ft.	.24	.63

HOLE NUMBER THREE

<u>Sample and Box No.</u>	<u>DEPTH</u>	<u>Percent Copper (Oxide)</u>	<u>Percent Copper (Total)</u>
1	10-19 Ft.	.32	.805
2	19-29 Ft.	1.67	1.83
3	29-38 Ft.	3.15	4.95
4	38-47 Ft.	1.74	2.02
5	47-55 Ft.	2.44	2.48
6	55-62 Ft.	2.15	2.53
7	62-71 Ft.	.29	.99
8	71-80 Ft.	.68	.92
9	80-89 Ft.	.18	2.22
10	89-98 Ft.	.19	.80
11	98-108 Ft.	.53	.77
12	108-116 Ft.	.22	.65
13	116-124 Ft.	.47	2.15
14	124-134 Ft.	1.1	2.78
15	134-143 Ft.	Non Detectable	.19
16	143-152 Ft.	.79	.79
17	152-161 Ft.	.26	.96
18	161-170 Ft.	.12	.31
19	170-178 Ft.	.27	.87
20	178-182 Ft.	.18	.75

Continued.....

HOLE NUMBER FOUR

<u>Box and Sample No.</u>	<u>DEPTH</u>
1	10-21 Ft.
2	21-31 Ft.
3	31-40 Ft.
4	40-48 Ft.
5	48-60 Ft.
6	60-68 Ft.
7	68-76 Ft.
8	76-89 Ft.
9	89-98 Ft.
10	98-106 Ft.
11	106-115 Ft.
12	115-124 Ft.
13	124-132 Ft.
* 14	132-140 Ft.
15	140-150 Ft.
16	150-160 Ft.
17	160-168 Ft.
18	168-176 Ft.
19	176-185 Ft.
20	

HOLE NUMBER FIVE

<u>Box and Sample No.</u>	<u>DEPTH</u>
1	10-26 Ft.
2	26-35 Ft.
3	35-44 Ft.
4	44-53 Ft.
5	53-62 Ft.
6	62-70 Ft.
7	70-78 Ft.
8	78-87 Ft.
9	87-96 Ft.
10	96-106 Ft.
11	106-117 Ft.
12	117-127 Ft.
13	127-134 Ft.
14	134-140 Ft.
15	140-152 Ft.
16	152-160 Ft.
17	160-169 Ft.
18	169-178 Ft.
19	178-188 Ft.
20	188-192 Ft.

* Box No. 14 Was Skipped

NOTE: For analysis on Holes Four and Five see Leach processes 4-1, 4-2 and 5-1.

Continued.....

LEACH PROCESS WITH AGITATIONLeach Number 3-1Hole Number 1Composite Boxes 1 through 15.Grind: 190.21 grams retained on 4 seive.204.81 grams retained on 10 seive.117.45 grams retained on 40 seive.65.63 grams passed 40 seive.

Acid Volume 4000 Milliliters.

Acid Concentration Start 55%; end — %Sample Weight 289.73 grams.% Copper extracted from ore .20 15 Min..34 30 Min..40 45 Min.— 60 Min.— 75 Min.— 90 Min.Settling Rate — mm/Min. (for first 50mm of settling)*Note: Power shutdown - unable to finish Analysis.*

LEACH PROCESS WITH AGITATIONLeach Number 3-2Hole Number 1Composite Boxes 1 through 15.Grind: 190.21 grams retained on 4 seive.204.21 grams retained on 10 seive.117.45 grams retained on 40 seive.65.63 grams passed 40 seive.

Acid Volume 4000 Milliliters.

Acid Concentration Start 16.6 %; end — %Sample Weight 297.67 grams.% Copper extracted from ore 39 15 Min.53 30 Min.58 45 Min.— 60 Min.— 75 Min.— 90 Min.Settling Rate — mm/Min. (for first 50mm of settling)*Note: Power failure unable to complete.*

LEACH PROCESS WITH AGITATIONLeach Number 1-1Hole Number 1Composite Boxes 1 through 15.Grind: 351.68 grams retained on 10 seive.201.74 grams retained on 40 seive.100.71 grams passed 40 seive.

Acid Volume 4000 Milliliters.

Acid Concentration Start 596 %; end 515 %Sample Weight 320.90 grams.% Copper extracted from ore .08 15 Min..22 30 Min..34 45 Min..37 60 Min..43 75 Min..44 90 Min.Settling Rate 2.3 mm/Min. (for first 50mm of settling)

LEACH PROCESS WITH AGITATIONLeach Number 1-2Hole Number 1Composite Boxes 1 through 15.Grind: 351.43 grams retained on 10 seive.201.74 grams retained on 40 seive.100.71 grams passed 40 seive.

Acid Volume 4000 Milliliters.

Acid Concentration Start 1.67%; end 1.55%Sample Weight 332.2 grams.% Copper extracted from ore .13 15 Min..22 30 Min..36 45 Min..37 60 Min..51 75 Min..57 90 Min.Settling Rate 2.2 mm/Min. (for first 50mm of settling)

LEACH PROCESS WITH AGITATIONLeach Number 4-1Hole Number 1Composite Boxes 16 through 29.Grind: 151.87 grams retained on 4 seive.141.32 grams retained on 10 seive.114.04 grams retained on 40 seive.76.45 grams passed 40 seive.

Acid Volume 4000 Milliliters.

Acid Concentration Start .530%; end .500%Sample Weight 258.04 grams.% Copper extracted from ore .25 15 Min..37 30 Min..45 45 Min..46 60 Min..52 75 Min..60 90 Min.Settling Rate 3 mm/Min. (for first 50mm of settling)

LEACH PROCESS WITH AGITATIONLeach Number 4-5Hole Number 1Composite Boxes 16 through 29.Grind: 157.87 grams retained on 4 seive.141.82 grams retained on 10 seive.114.04 grams retained on 40 seive.76.45 grams passed 40 seive.

Acid Volume 4000 Milliliters.

Acid Concentration Start 16%; end 15%Sample Weight 227.30 grams.% Copper extracted from ore .33 15 Min..42 30 Min..56 45 Min..62 60 Min..63 75 Min..74 90 Min.Settling Rate 3 mm/Min. (for first 50mm of settling)

LEACH PROCESS WITH AGITATIONLeach Number 2-1Hole Number 1Composite Boxes 16 through 22.Grind: 242.03 grams retained on 10 seive.186.63 grams retained on 40 seive.97.05 grams passed 40 seive.

Acid Volume 4000 Milliliters.

Acid Concentration Start 55%; end 42%Sample Weight 292.54 grams.% Copper extracted from ore .20 15 Min..21 30 Min..57 45 Min..65 60 Min..68 75 Min..77 90 Min.Settling Rate 3 mm/Min. (for first 50mm of settling)

LEACH PROCESS WITH AGITATIONLeach Number 2-2Hole Number 1Composite Boxes 16 through 29.Grind: 242.03 grams retained on 10 seive.186.63 grams retained on 40 seive.97.05 grams passed 40 seive.

Acid Volume 4000 Milliliters.

Acid Concentration Start 1.44%; end 1.53%Sample Weight 282.3 grams.% Copper extracted from ore 29 15 Min..44 30 Min..69 45 Min..72 60 Min..92 75 Min.1.04 90 Min.Settling Rate 3 mm/Min. (for first 50mm of settling)4.16

LEACH PROCESS WITH AGITATIONLeach Number 1-1Hole Number TwoComposite Boxes 1 through 10.Grind: 123.25 grams retained on 4 seive.119.95 grams retained on 10 seive.77.33 grams retained on 40 seive.65.68 grams passed 40 seive.

Acid Volume 4000 Milliliters.

Acid Concentration Start 4.72%; end 4.05%Sample Weight 354.81 grams.% Copper extracted from ore .50 15 Min..60 30 Min.2.20 45 Min.3.00 60 Min.3.20 75 Min.3.70 90 Min.Settling Rate 4 mm/Min. (for first 50mm of settling)

LEACH PROCESS WITH AGITATIONLeach Number 1-2Hole Number 2Composite Boxes 1 through 10.Grind: 95.99 grams retained on 10 sieve.144.40 grams retained on 40 sieve.93.51 grams passed 40 sieve.

Acid Volume 4000 Milliliters.

Acid Concentration Start 1.46%; end 1.36%Sample Weight 333.30 grams.% Copper extracted from ore .05 15 Min..26 30 Min..35 45 Min..36 60 Min..42 75 Min..42 90 Min.Settling Rate 3.5 mm/Min. (for first 50mm of settling)

LEACH PROCESS WITH AGITATIONLeach Number 2-2Hole Number 3Composite Boxes 1 through 10.Grind: 105.58 grams retained on 4 seive.107.05 grams retained on 10 seive.119.39 grams retained on 40 seive.73.55 grams passed 40 seive.

Acid Volume 4000 Milliliters.

Acid Concentration Start 1.65%; end 1.53%Sample Weight 405.57 grams.% Copper extracted from ore .266 15 Min..407 30 Min..450 45 Min..573 60 Min..580 75 Min..670 90 Min.Settling Rate 4 mm/Min. (for first 50mm of settling)

LEACH PROCESS WITH AGITATIONLeach Number 2-1Hole Number 3Composite Boxes 1 through 10.Grind: 104.17 grams retained on 10 seive.158.04 grams retained on 40 seive.107.72 grams passed 40 seive.

Acid Volume 4000 Milliliters.

Acid Concentration Start 562%; end 500%Sample Weight 362.22 grams.% Copper extracted from ore .09 15 Min..19 30 Min..23 45 Min..30 60 Min..33 75 Min..50 90 Min.Settling Rate 4 mm/Min. (for first 50mm of settling)

LEACH PROCESS WITH AGITATIONLeach Number 3-2Hole Number 3Composite Boxes 11 through 20.Grind: 179.22 grams retained on 4 seive.170.27 grams retained on 10 seive.21.94 grams retained on 40 seive.57.91 grams passed 40 seive.98.00

Acid Volume 4000 Milliliters.

Acid Concentration Start 1.44 %; end 1.52 %Sample Weight 390.00 grams.% Copper extracted from ore .08 15 Min..17 30 Min..31 45 Min..35 60 Min..35 75 Min..37 90 Min.Settling Rate 3 mm/Min. (for first 50mm of settling)1.50

LEACH PROCESS WITH AGITATIONLeach Number 3-1Hole Number #3Composite Boxes 11 through 20.Grind: 124.58 grams retained on 10 seive.111.17 grams retained on 40 seive.21.47 grams passed 40 seive.Acid Volume 4000 Milliliters.Acid Concentration Start 54%; end 44.5%.Sample Weight 387.22 grams.% Copper extracted from ore .09 15 Min..14 30 Min..21 45 Min..26 60 Min..35 75 Min..36 90 Min.Settling Rate 4 mm/Min. (for first 50mm of settling)

LEACH PROCESS WITH AGITATIONLeach Number 64Hole Number 4Composite Boxes 1 through 10.Grind: 332.41 grams retained on 4 seive.124.79 grams retained on 10 seive.113.24 grams retained on 40 seive.72.09 grams passed 40 seive.103.13

Acid Volume 4000 Milliliters.

Acid Concentration. Start 1.53 %; end 1.45 %Sample Weight 216.10 grams.% Copper extracted from ore .05 15 Min..13 30 Min..21 45 Min..32 60 Min..37 75 Min..39 90 Min.Settling Rate 3 mm/Min. (for first 50mm of settling)1.45

LEACH PROCESS WITH AGITATIONLeach Number 1Hole Number 4Composite Boxes 1 through 10.Grind: 373.39 grams retained on 10 seive.247.30 grams retained on 40 seive.134.56 grams passed 40 seive.Acid Volume 4000 Milliliters.Acid Concentration Start 1.16%; end 1.54% $\pm 1/2$ Sample Weight 360.85 grams.% Copper extracted from ore .11 15 Min..20 30 Min..25 45 Min..26 60 Min..45 75 Min..75 90 Min.Settling Rate 2 mm/Min. (for first 50mm of settling)

6.22

cb.

LEACH PROCESS WITH AGITATIONLeach Number 3Hole Number 41Composite Boxes 11 through 20.Grind: 201.79 grams retained on 4 sieve.227.59 grams retained on 10 sieve.130.85 grams retained on 40 sieve.74.19 grams passed 40 sieve.66.92

Acid Volume 4000 Milliliters.

Acid Concentration Start 1.54%; end 1.48%Sample Weight 634.92 grams.% Copper extracted from ore .049 15 Min..15 30 Min..19 45 Min..21 60 Min..25 75 Min..30 90 Min.Settling Rate 3 mm/Min. (for first 50mm of settling)

LEACH PROCESS WITH AGITATIONLeach Number 2Hole Number 4Composite Boxes 11 through 20.Grind: 415.87 grams retained on 10 seive.121.06 grams retained on 40 seive.107.37 grams passed 40 seive.Acid Volume 4000 Milliliters.Acid Concentration Start 1.72%; end 1.54%.Sample Weight 373.0 grams.% Copper extracted from ore .17 15 Min..19 30 Min..20 45 Min..32 60 Min..41 75 Min..46 90 Min.Settling Rate 3.1 mm/Min. (for first 50mm of settling)

Telephone: Office 685-2914
Res. 224-7309

R. H. SERAPHIM ENGINEERING LIMITED
GEOLOGICAL ENGINEERING

316 — 470 GRANVILLE STREET
VANCOUVER 2, B.C.

THE DESOTO PROPERTY
YAVAPAI COUNTY, ARIZONA

by

R.H. Seraphim, Ph.D. P.Eng.

January 11, 1974.

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R. H. SERAPHIM ENGINEERING LIMITED
GEOLOGICAL ENGINEERING

316 - 470 GRANVILLE STREET
VANCOUVER 2, B.C.

THE DESOTO PROPERTY
YAVAPAI COUNTY, ARIZONA

SUMMARY AND CONCLUSIONS

The DeSoto property is reported to have produced 290,381 tons carrying 0.05 oz gold, 1.2 oz silver, and more than 3% copper. The ore was derived from the East Zone, where many large open stopes substantiate this reported production.

The recent surface percussion drilling completed by Cutlass and prior drilling completed by predecessors has indicated that copper oxides and sulfides remain in the outcrop of the East Zone and between the old stopes near surface. The weighted average of the pertinent intercepts in the 23 holes completed by Cutlass is 0.97% copper. The area of the mineralized outcrop is approximately 80,000 sq ft. The difficult topography would probably necessitate extraction by 'glory-holing' rather than open pitting on a zone of this size. A metallurgical process to concentrate the copper in the mixed oxide and sulfide material would have to be determined before its value can be established.

Fresh sulfides containing ore grade or close to ore grade copper values are exposed in the East Zone on the 600 Level near and between the old stopes. This mineralization does not appear to be explored to its limits on the level. Flooding of the levels below the 600 precludes their examination at present.

The West Zone is explored by two underground workings and twenty or more drill holes. Eight of these holes indicate a shoot of copper mineralization approximately 500 feet long, averaging approximately 80 feet in true width, and grading 0.68% copper. Further work to determine the full size and configuration of this zone, its amenability to open pitting, and the metallurgy of the oxide portion is necessary before its value can be defined.

RECOMMENDATIONS

STAGE I

(1) Mapping on surface should be completed to provide more information concerning the extent of mineralization in the West Zone. A bulldozer should be used to trench the pertinent areas obscured by overburden.

(2) At least several more surface drill holes may be justified when the mapping and bulldozing is completed.

(3) Mapping of the 600 Level underground could provide a reliable concept of the controls of the copper mineralization, and thus give a better basis for the underground drill program.

(4) Underground drilling on the 600 Level is recommended to determine the extent and configuration of the copper mineralization continuing beyond the old stopes in the East Zone, and in the walls of the drift along the West Zone.

STAGE II

(5) If this drilling indicates sufficient valuable mineralization in the East Zone, then the shaft should be dewatered, and the lower levels rehabilitated. A drill program should then be instigated if the examination discloses the possibility of a continuation of the valuable mineralization to depth.

COSTS

STAGE I

Geological Mapping, supervision, engineering, compilation of data	\$ 10,000.00
Further surface drilling, West Zone 1500 ft @ \$12.00	18,000.00
Underground drilling, East Zone 12 holes totalling 3000 ft @ \$12.00	36,000.00
Underground drilling, West Zone 12 holes totalling 1200 ft @ \$12.00	14,400.00
Communication, Travel, Lodging, Office Expenses and Overhead	<u>10,000.00</u>
	\$ 88,400.00
Contingency	<u>11,600.00</u>
	<u>\$ 100,000.00</u>

STAGE II

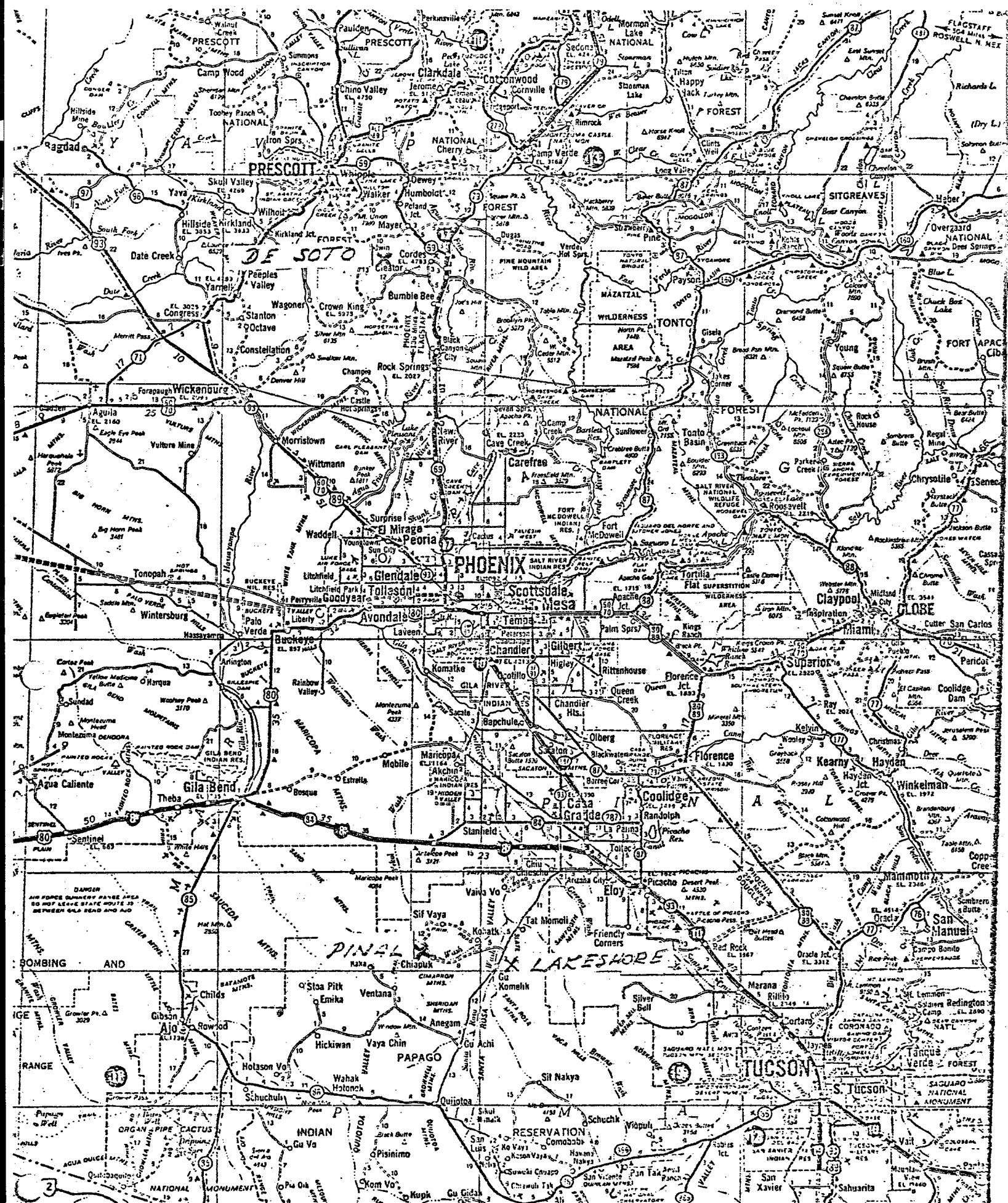
Dewatering and shaft rehabilitation 300 feet @ \$100.00	\$ 30,000.00
Mapping, Supervision, Engineering	10,000.00
Drilling on lower levels 2000 ft @ \$12.00	24,000.00
Communication, Travel, Office Expenses and Overhead	<u>6,000.00</u>
	\$ 70,000.00
Contingency	<u>10,000.00</u>
	<u>\$ 80,000.00</u>

INTRODUCTION

This property was examined on behalf of Cutlass Exploration Ltd on January 3 and 4, 1974. Mr. Jim Simpson provided competent guidance and supplied much of the technical information provided herein. The report of Richard E. Mieritz dated May 18, 1973 also provided much helpful information. The examination was concerned mostly with the compilation and correlation of the recent and continuing program of drilling and the relation of this program to the old workings on the property.

LOCATION, ACCESS, TOPOGRAPHY

The accompanying print of a road map shows the location of the property with respect to Prescott and Phoenix, Arizona. A rough gravel road provides access from the small settlements of Mayer and Cleator. The mineralized outcrops are on the crest and flanks of a steep northerly trending ridge. The topography makes it difficult to establish surface drill sites in all the desired locations.



CLAIMS

The title to the property was not checked during the examination and the writer is not aware of any title problems. The following claim data is an except from Mieritz' report:

"The DeSoto Mine property consists of 17 patented lode mining claims, a patented water claim, and a patented Millsite totalling 364.19 acres. In addition there are 24 standard 600 feet by 1500 feet unpatented lode mining claims in good legal standing. Following are the claims of the property:

Patented Claims:

Copper Link	Survey 1534, April 2, 1901	20.66 ac.
Washington	Survey 1462, May 18, 1900	20.66 "
Homestake	" " " " "	20.66 "
Anchor	" " " " "	20.66 "
Whale	" " " " "	20.66 "
Copper Bar	" " " " "	9.48 "
Hot Number	" " " " "	20.66 "
Grand View	" " " " "	20.66 "
Elephant	" " " " "	20.66 "
McKinley	" " " " "	20.66 "
Arizona Chief	" " " " "	20.66 "
Enterprise	Survey 1463, May 18, 1900	19.95 "
Garfield	" " " " "	19.95 "
Iron Clad	" " " " "	20.66 "
Favorite	" " " " "	20.66 "
Tidal Wave	" " " " "	20.66 "
Fortune	" " " " "	20.66 "
Water (Spring on claim)	" 2351, Sept. 15, 1906	20.58 "
Copper Link Millsite	Survey 3020B,	4.99 "
		<hr/> 364.19 "

Unpatented Claims:

Pen (a fraction)

Iron Chief

Extension No. 2

McKinley Extension No. 1 through 6

Owens Lode #1 through 15

Total, 24 claims, approximately 495 acres."

A map showing the location of the claims is also provided in Mieritz' report (Map No. 2). Most of the current work is on the Copper Link, Rem, Copper Bar, Whale, and Anchor claims. The Rem claim is not listed above but its omission may be inadvertent.

HISTORY

The mine produced, according to Mieritz, 290,381 tons of ore grading 0.05 oz gold, 1.20 oz silver, and 3.0% plus copper. (3.34% according to a calculation based on Mieritz' production statistics) This production was obtained between 1890 and 1931, with the larger portion coming between 1905 and 1920. The large open stopes leave no doubt that the above quoted tonnage is at least approximately if not precisely correct. Some attempts were made in later years to prove up and exploit the oxide copper mineralization remaining near surface. Little evidence exists that the fresh sulfides in the underground workings have been explored to the limits of the mineralized zones. The present program directed by Cutlass began with work on the oxide zone but is now progressing to the underground exploration of these limits.

MINE WORKINGS

Mieritz map 4 of the underground workings shows that most of the production was obtained above the 600 level. (which is 400 feet below the outcrops) Verbal information is that low copper prices were responsible for the mines' closure in the early 1930's. This closure could have occurred before the ore shoots were explored fully in the lower levels. These levels, the 700, 800, and 900 levels are flooded, and therefore not readily amenable to an examination and further exploration at present. The flooding also probably discouraged exploitation by leasers.

The distribution of the mine workings leaves no doubt that the east zone of copper mineralization plunged westerly. Although considerable exploratory drilling can be completed from the 600 Level, a thorough evaluation would involve dewatering and reclaiming the shaft and the lower levels.

The west zone is explored underground by only two entries, a crosscut at 5250 Elevation and a drift from the 600 level (4860 Elevation). The mineralized zone is well exposed in both of these entries.

GEOLOGY

The surface mapping completed by Jim Simpson showed that the rock types in the area are predominantly of volcanic origin, with perhaps some minor 'outwash' sedimentation. The rocks have been metamorphosed and are now chert, andesites, quartz chlorite schist, and biotite schist. These formations strike N 20° E and dip 60° to 70° westerly. The strata, particularly the rhyolites, are unusually lenticular. Some further detailed mapping both on surface and underground, and correlation of this mapping with the data available from drill holes could provide a reliable concept of the controls of mineralization.

MINERALIZATION

The mineralization appears to be associated with siliceous horizons in andesitic volcanics near the contacts of the rhyolites. The sulfides are chalcopyrite and pyrite with minor chalcocite and bornite. The writer identified sphalerite in a hand specimen collected at the property, therefore some rechecking of underground exposures and core for zinc content is recommended. Appreciable gold and silver values, (0.05 oz gold and 1.2 oz silver per ton) were recovered with the copper production.

A compilation of the results of the current drilling is provided on the accompanying map. The percussion drilling in the East zone (see map) intercepted mostly oxide mineralization in the upper parts of the holes. Mieritz reports that the transition to fresh sulfide occurs at approximately 200 feet depth. Completely fresh sulfides were found in the writers' examination of the 600 level.

TONNAGE AND GRADE

Mieritz gave some estimates of ore reserves in his report (Page 5). This reserve was based on the mixed oxide and sulfide near surface in the East Zone. The reserve is substantiated to some extent by Cutlass' recent percussion drilling. However, until metallurgical recoveries are determined, the tonnage and grade of this material necessary to qualify as ore must remain problematical. The reserve would be difficult to mine by conventional underground methods because the leasers left the access workings above the 600 Level in unusable condition. The alternative would be extraction by open pitting or glory-holing which would involve further feasibility studies.

An assay map of this East Zone at the 600 Level shows a crosscut which grades 0.64% copper for 130 feet of width. Another crosscut, 100 feet distant, grades 1.38% copper across 50 feet. This fresh sulfide mineralization left by the previous operators would certainly be mineable under today's economics if it were combined with the 3% plus copper extracted previously. Therefore if some extensions to the previously mined shoots or some new shoots of similar grade to the old production can be determined by the drill program, currently in progress, then some of these remnants can likely be included in an ore reserve.

Thus at least some of the reserve quoted by Mieritz, which is perhaps better classified as potential, might eventually be determined as ore. The writer would prefer at present to consider the East Zone a good target for further exploration on the 600 Level and at depth.

The tonnage and grade in the West Zone could be calculated on only a preliminary basis because the drill program is not yet completed. Almost no knowledge exists of the total width and grade of the copper mineralization exposed along most of the 600 Level drift on this zone.

Only one diamond drill hole, No. 7, has intercepted appreciable copper mineralization. The remaining intercepts were obtained in angle percussion holes. The pertinent holes are summarized below and are also shown on the accompanying plan and in part on the section.

<u>Hole</u>	<u>Intercept Ft</u>	<u>Copper %</u>
H 1	30	0.86
H 2	170	0.61
H 4	80	0.54
P 39	50	0.51
P 39A	90	0.49
H 8	140	0.73
DDH 7	152	0.86
H 7	70	0.83
Weighted Average		0.68

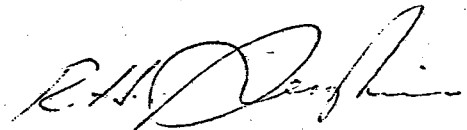
The amount of oxide copper and its metallurgy needs determination before an ore reserve calculation would be meaningful on this mineralization. Further drilling is necessary also to determine the configuration, including the rake or plunge if any, of this West Zone and its amenability to open pitting. A program of underground drilling on the 600 Level is recommended to obtain some of this information.

METALLURGY

There is no anticipation of metallurgical problems in the recovery of the copper values in the lower workings (6 Level and below) where fresh sulfides were observed. Mieritz' report does contain a paragraph which indicates that the metallurgy of the mixed oxide and sulfide mineralization near surface may not be easy.

"In year 1967, Southwire Company explored a small area by diamond drilling 5 holes from 136 to 257 feet deep to develop a reserve of oxide copper ore for leaching purposes to produce cement copper as a raw material for their own refining and use. The company determined the mixed oxide-sulphide copper mineralization developed by their drilling would not be amenable to their processes without considerable capital expense and process modification."

Respectfully submitted,



R.H. Seraphim, Ph.D. P.Eng.

January 11, 1974.

R. H. SERAPHIM ENGINEERING LIMITED
GEOLOGICAL ENGINEERING

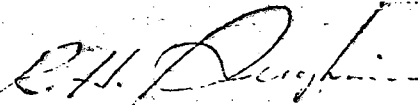
316 - 470 GRANVILLE STREET
VANCOUVER 2, B.C.

CERTIFICATION

I, Dr. R.H. Seraphim, of the City of Vancouver,
Province of British Columbia, hereby certify as follows:

1. I am a geological engineer residing at 4636 West 3rd Ave., Vancouver, B.C., and with office at 316-470 Granville St., Vancouver, B.C.
2. I am a registered Professional Engineer of British Columbia. I graduated from the University of British Columbia in 1947, and from Massachusetts Institute of Technology in 1951.
3. I have practiced my profession for 25 years.
4. I have no interest, direct or indirect, in the DeSoto group of claims, or in the securities of Cutlass Exploration Ltd., or its affiliates, nor do I expect to receive any.
5. The above report is based on a January 3 and 4, 1974 examination of the DeSoto claims, and on the available records and reports.
6. Several claim posts were observed during the examination and are believed to be in accordance with the appropriate regulations. No indication of any contravention was discovered during the examination.

DATED at Vancouver, B.C. this 11th day of January, 1974.


R.H. Seraphim, Ph.D. P.Eng.

CUTLASS EXPLORATION LTD. (N.P.L.)
AND ITS WHOLLY-OWNED SUBSIDIARY CUTLASS EXPLORATION, INC.

CONSOLIDATED INTERIM BALANCE SHEET

AS AT DECEMBER 31, 1973

ASSETS

Current

Cash in Banks	\$ 26,076	
Term Deposit - Vancouver, B.C.	140,000	
Term Deposit - Prescott, Arizona	50,000	
Prepaid Exploration Expense	3,008	
Prepaid Administrative Expense	<u>1,640</u>	\$ 220,724

Fixed - at cost

Office Equipment	\$10	
Automobile	<u>4,809</u>	5,319

<u>Mineral Claims and Leases - at cost</u>		147,000
--	--	---------

Deferred Costs

Exploration and Administration	240,006	
Organization	<u>3,046</u>	<u>243,052</u>
		\$ 616,095

LIABILITIES AND SHAREHOLDERS' EQUITY

Current

Accounts Payable		\$ 7,954
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Shareholders' Equity

Share Capital

Authorized:

3,000,000 Common Shares, par value \$.50 each

Issued and Fully Paid:

1,700,002 Shares \$ 609,616

Deficit

Write off of costs on Properties abandoned	<u>1,475</u>	<u>608,141</u>
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APPROVED ON BEHALF OF THE BOARD:

William E. ... DIRECTOR

Elizabeth Cameron DIRECTOR

\$ 616,095

PREPARED WITHOUT AUDIT

LIVERANT, YIP & CO.
CHARTERED ACCOUNTANTS

CUTLASS EXPLORATION LTD. (N.P.L.)

AND ITS WHOLLY-OWNED SUBSIDIARY CUTLASS EXPLORATION, INC.

CONSOLIDATED INTERIM STATEMENT OF EXPLORATION AND ADMINISTRATIVE COSTS

FOR THE PERIOD SEPTEMBER 1, 1973 TO DECEMBER 31, 1973

	To Aug.31/73	Sept.1/73 To Dec.31/73	Total
<u>Exploration</u>			
Engineering and Consulting	\$ 2,963	\$ 16,467	\$ 19,430
Geochemical			
and Geophysical Survey	8,300	7,208	15,508
Assay .		3,118	3,118
Drilling		89,478	89,478
Camp Supplies and Expense		9,226	9,226
Trenching, Linecutting			
and Road Building	9,570	6,376	15,946
Field Wages	2,250	2,250	4,500
Water Haulage		5,756	5,756
Property Examination			
and Evaluation		3,944	3,944
Photo Reconnaissance		1,000	1,000
Recording and Title Fees	361	1,386	1,747
Travel and Automobile Lease	2,069	6,400	8,469
	<u>25,513</u>	<u>152,609</u>	<u>178,122</u>
<u>Administrative</u>			
Bank Charges and Exchange	408		408
Legal, Audit and Accounting	9,216	18,750	27,966
Licenses, Listing and Filing Fees	3,813	1,663	5,476
Office Rent, Telephone,			
Printing and Sundry	2,480	625	3,105
Commissions		3,000	3,000
Management Fees	4,100	1,000	5,100
Public Relations and			
Shareholders' Information	1,808	6,649	8,457
Transfer Fees	1,207	1,452	2,659
Travel	1,940		1,940
Wages and Assessments		3,292	3,292
Rent	700		700
	<u>25,672</u>	<u>36,431</u>	<u>62,103</u>
<u>Less: Interest Earned</u>		<u>219</u>	<u>219</u>
	<u>25,672</u>	<u>36,212</u>	<u>61,884</u>
<u>Total</u>	<u>\$ 51,185</u>	<u>\$ 188,821</u>	<u>\$ 240,006</u>

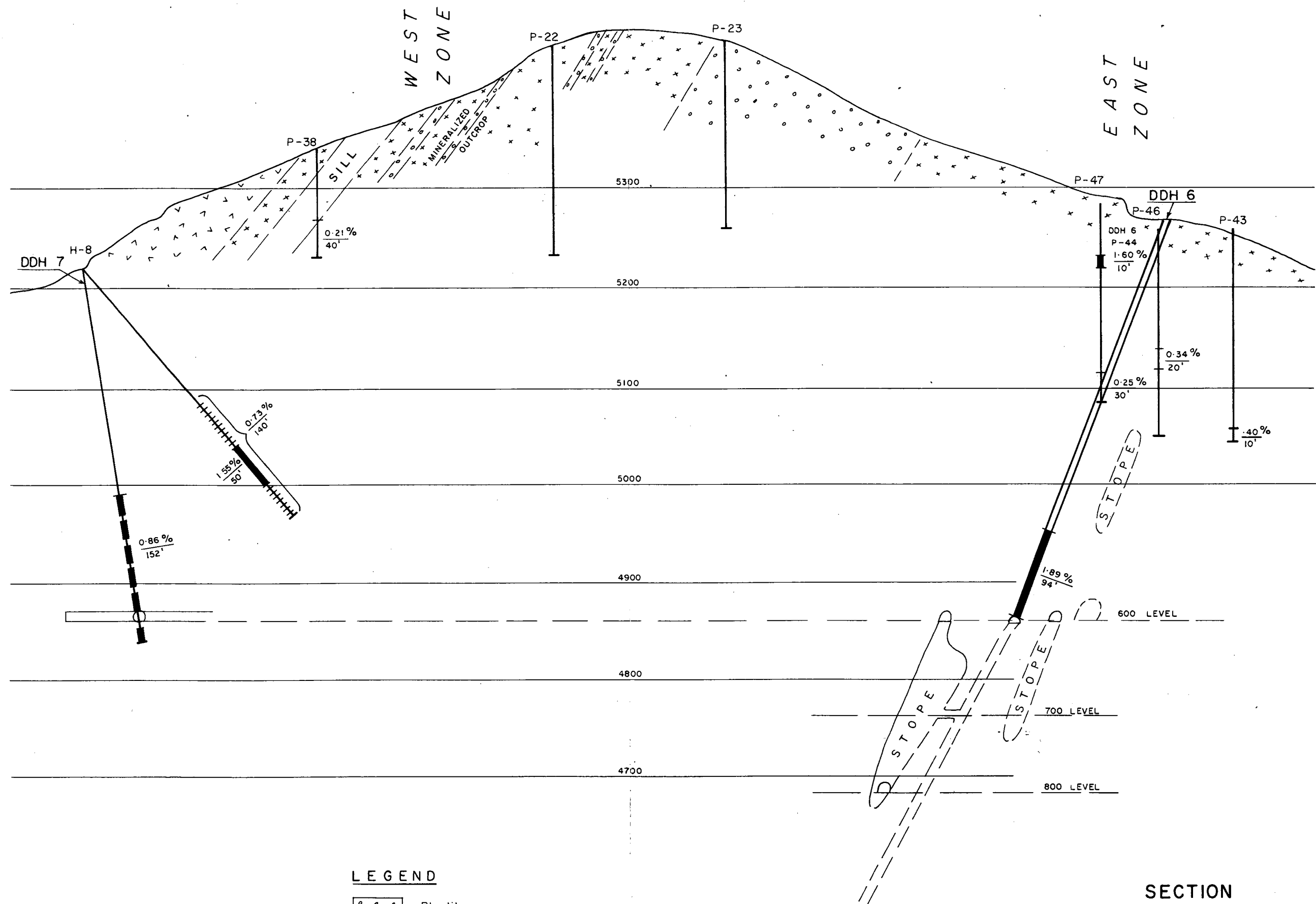
PREPARED WITHOUT AUDIT

LIVERANT, YIP & CO.
CHARTERED ACCOUNTANTS

Proceeds from Sale of Shares.
 510,000 Shares - March 24 - November 30/73
 100,000 Shares - December 1 - December 31/73

Application of Funds

Lease Payments on Mining Properties	30,000	30,000		60,000
Mining Properties	5,000	5,000		10,000
Purchase of Automobile			4,809	4,809
Purchase of Office Equipment	272			272
Organization Expense	2,092			2,092
Advances on Drilling, Engineering and Camp Expense	10,000		(10,000)	-
Engineering and Consulting	17,285	1,007	775	19,067
Geochemical and Geophysical Survey	13,084	(124)	2,548	15,508
Assay	2,045		1,073	3,118
Drilling	57,511	(45)	32,012	89,478
Camp Supplies and Expense	2,722		6,504	9,226
Trenching, Linecutting and Road Building	13,678		868	14,546
Field Wages	2,250		2,250	4,500
Water Haulage	3,732		2,024	5,756
Property Examination and Evaluation	3,069		875	3,944
Photo Reconnaissance	1,000			1,000
Recording and Title Fees	336		1,050	1,386
Travel and Auto Lease	4,504		5,089	9,593
Bank Charges and Exchange	408			408
Audit, Accounting and Legal	17,017		8,272	25,289
Licenses, Listing and Filing Fees	4,563	300	120	4,863
Office, Telephone and Sundry	2,495			2,615
Commissions		3,000		3,000
Public Relations and Shareholders' Information	6,550	881	976	8,407
Transfer Fees	2,263			2,263
Management Fees	2,500		1,000	3,500
Wages and Assessments	2,524		768	3,292
	206,900	40,019	61,013	307,932
	219			219
<u>Less: Interest Received</u>	<u>206,681</u>	<u>40,019</u>	<u>61,013</u>	<u>307,713</u>
<u>Increase (Decrease) in Working Capital</u>	<u>69,309</u>	<u>(40,019)</u>	<u>145,787</u>	<u>175,077</u>
Working Capital - Beginning of Period	37,693	107,002	66,983	37,693
<u>Working Capital - End of Period</u>	<u>\$ 107,002</u>	<u>\$ 66,983</u>	<u>\$ 212,770</u>	<u>\$ 212,770</u>



LEGEND

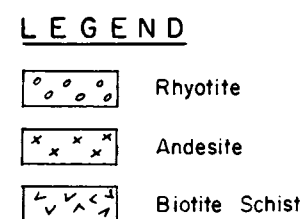
- Rhyotite
- Andesite
- Biotite Schist

SECTION
DE SOTO MINE
YAVAPAI COUNTY, ARIZONA

100 0 100 200 FEET

JAN. 1974

J.S. & R.H.S.



100 0 100 200 FEET
JAN. 1974 J.S. & R.H.S.

Scanned: 9/2008

Preliminary Production Evaluation
of the

DESOTO PROPERTY, YAVAPAI COUNTY, ARIZONA

for

CUTLASS EXPLORATION LIMITED
1606 - 1055 West Georgia Street
Vancouver, B.C.
V6E 3P3, Canada

by

C. M. Armstrong, P.Eng.
Consulting Engineer

4085 West 29th Avenue
Vancouver, B.C.
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September 18, 1974

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INTRODUCTION

On behalf of Cutlass Exploration Limited, the writer examined the DeSoto property on August 7, 1974, under the guidance of J.Simpson who supervised much of the recent work on the property.

The principal purpose of the examination was to assess the production potential of the oxidized portion of the East Zone, considering in situ leaching, or mining, preferably by open pit techniques, and processing by some other form of acid leaching.

The surface exposure of the East Zone and readily accessible workings on the 200 Level (5160 elevation) were examined. A small slide accumulation of silt and debris at the collar of the 600 Level adit dammed over 1 foot of water in the tunnel, preventing examination of that level. The West Zone was examined on surface outcrop and in the 5260 elevation adit (100 Level?).

Copies of plans and sections, assay details for some of the drill holes, and a recent report (May 17/74) by R.H.Seraphim, P.Eng. were made available to the writer to assist in the evaluation.

Details regarding physiography, vegetation, rock exposure, soil, water, power, climate, property and claims, history, regional geology, local geology and mineralization, etc., most of which have been documented in earlier reports, are not repeated here; but data of particular importance to this evaluation are presented in summary form.

GENERAL

As shown on Figure 1 the DeSoto property is approximately 68 road-miles north of Phoenix: 53 miles on paved Highway 17 to Bumble Bee, 10 miles on gravel road to the mine turn-off (Forestry road 259B) 1 mile west of Cleator, and 5 miles on a very rugged, circuitous "cat" road to the workings.

Phoenix is a major rail and highway terminus and distribution center.

Topography in the immediate mine area is moderately rugged, rising about 1500 feet from 4000 feet ASL on the Crown King/Cleator road 1 mile to the southeast to 5500 feet immediately west of the surface exposure of the East Zone. Selection of drill sites is limited by topography.

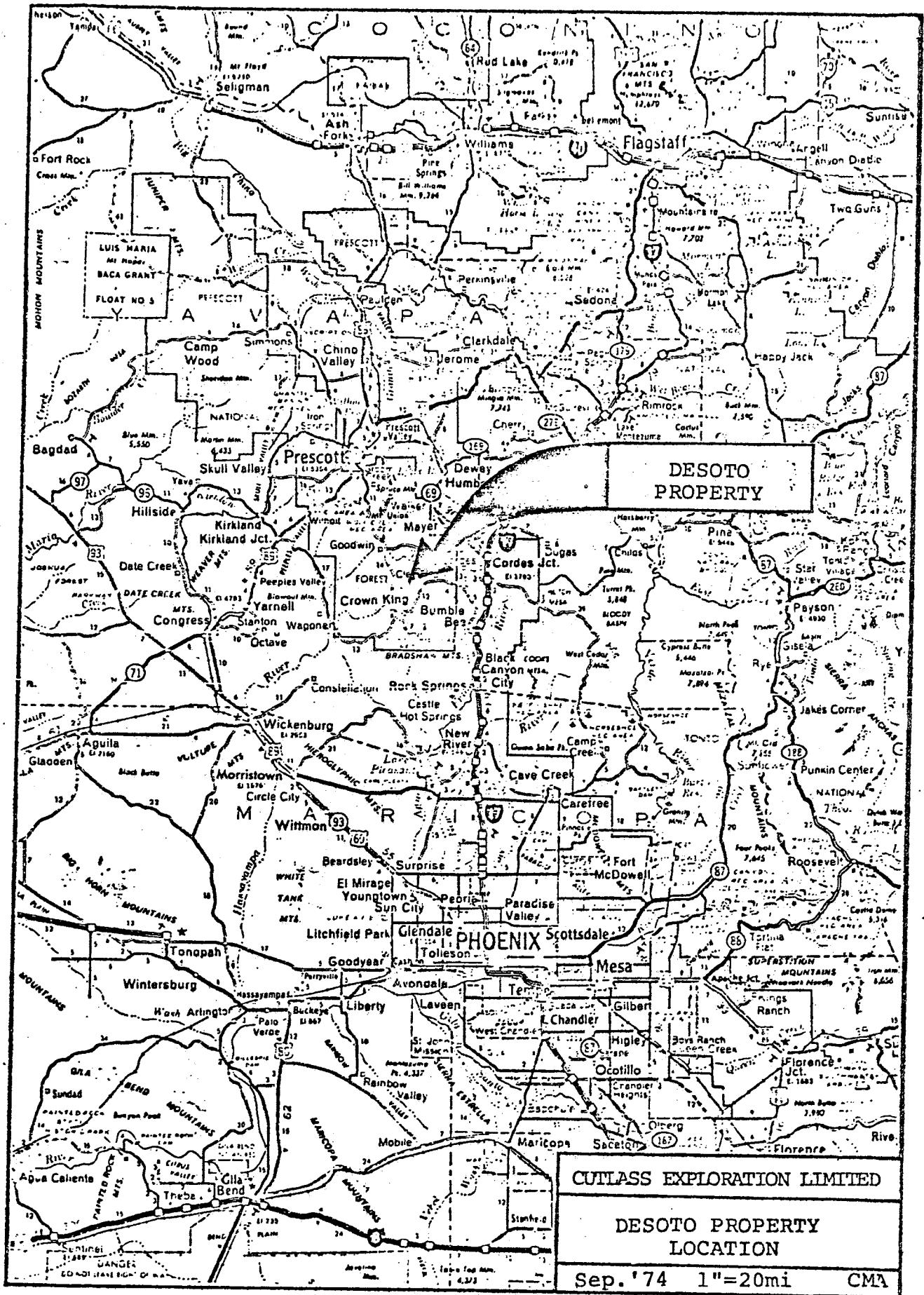
The mine area is underlain by Precambrian metavolcanic rocks referred to as the Yavapai Schist, striking about N30°E and dipping 60° to 70° westerly. Rhyolite, quartz-sericite schist, quartz-chlorite schist, and quartz-biotite schist predominate. The strongly foliated rocks are highly siliceous and competent, and provide unusually stable hangingwalls for the open stopes which were mined 40 to 80 years ago.

In the East Zone primary sulphide mineralization is principally pyrite and chalcopyrite, which occurs as small, semi-massive lenses, streaks and disseminations within fairly high grade (over 1% Cu) lenticular zones or shoots to 40 feet in width, 150 feet in strike length, and several hundred feet in plunge length. Quartz-chlorite schist is mapped as the principal host rock. Low grade pyrite/chalcopyrite mineralization in disseminations and streaks of uncertain continuity also occur in areas between the major shoots. Abundant fresh sulphides were observed on the 200 Level.

At surface, the copper mineralization has been oxidized principally to malachite with lesser azurite, chrysocolla, and other secondary copper minerals. High grade shoots are readily demarcated by sharp colour contrast. Leaching, downward migration, and redeposition of the copper values probably enlarged the primary shoots, and both diamond and percussion drilling indicate that low grade mineralization occurs between the major highgrade zones.

In the West Zone crosscut (5260 elevation), much of the mineralized zone containing both oxide and sulphide copper mineralization appeared to be quite intensely fractured with platy fractures at 4-inch spacings roughly paralleling the regional trend.

Plans, cross sections, and longitudinal projections at a scale of 1"=100' (reduced from 1"=50'), Figures 2 to 17, accompany this report.





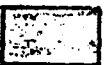
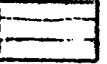
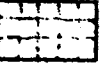

(from Arizona
Road Map 1974)

Fig. 1

RESERVES

East Zone

A preliminary calculation of mineral reserves in the East Zone from surface to the 200 Level (5160 elevation) was made by the writer based on cross sections G to O at 50-foot intervals. Detailed assay results were available for only 8 of the 25 vertical percussion holes within the zone, varying in length from 30' to 220' (total 3380'), and 2 of the 4 vertical diamond drill holes, varying in length from 170' to 510' (total 1240'). Reason for the short percussion holes, most of which stopped in good grade mineralization, is uncertain. Based on stope outlines, dip of the shoots was taken to be 70° westerly on cross section, and plunge 75° to 80° southerly on longitudinal projection. Strike continuity of the intersections was substantiated by constructing a plan at the 5300 elevation. Since only intersection averages were available for all of the holes, a true cut-off grade could not be employed; however, the lowest grade intersection within the zone was 0.28% Cu over 60 feet, and the next lowest 0.41% Cu over 50 feet. Basis for the mineral/mineable reserve calculation is as follows:

<u>Category</u>		<u>Description</u>	<u>Tonnage</u>	<u>%Cu_T[*]</u>
Drill proven I		Drill intersections projected down dip only through the vertical length of the intersection, and 25 feet on strike in two directions.	426,000	0.94
Drill probable II		Drill intersections projected 100 feet vertically down dip, and a maximum of 50 feet on strike in one direction (25 to 75 feet from the intersection).	317,000	0.97
Drill possible III		Drill intersections projected a further maximum 100 feet vertically down dip (to the 200 Level), and a maximum of 50 feet on strike (25 to 75 feet from the intersection).	66,000	1.57
Subtotal I+II+III			809,000	1.00
Possible IV		Internal area untested because of inaccessibility (topography).	545,000	0.90 (i)
V		Area between sections G and J (150') untested because of inaccessibility (topography and stoping).	143,000	0.65 (ii)
VI		Mineralization below the 200 Level requiring no further waste removal when the entire mineral reserve is mined by open pit to the 200 Level.	184,000	0.96 (iii)

* Cu_T = total copper.

<u>Category</u>	<u>Description</u>	<u>Tonnage</u>	<u>%Cu_T</u> [*]
Subtotal IV+V+VI		872,000	0.88
Total I+II+III+IV+V+VI		1,681,000	0.93
Less stoped tonnage (iv)		116,000	
Net mineable reserve		<u>1,565,000</u>	<u>0.93</u>

Waste	VII	Internal - less than 0.20% Cu _p . Interpretation of detailed assay data could indicate other internal segre- gateable waste zones.	73,000
	VIII	External - material removed when the entire mineral reserve (I to V, above) is mined by open pitting (steep, 55° final pit slope justified by the shallow depth of the pit and competent wall rocks).	1,722,000 (v)

Total VII+VIII 1,795,000

$$\text{Waste/Ore ratio } \frac{1,795,000}{1,565,000} = \underline{1.2/1}$$

Based on section L, a 50° final pit slope would result in an approximate 15% increase in external waste:

$$\frac{2,053,000}{1,565,000} = \underline{1.3/1}$$

- (i) The internal untested area, IV, occurs in the highest grade, partially stoped zone. The faces and walls of the stopes examined show that high grade oxidized copper mineralization remains behind. Two older cross sections in the stoped area (appendix i) show assays for 4 diamond drill holes, one of which (DDH#1, -15° easterly) crosses most of the above area, averaging 0.65% Cu over 59 feet; and underground sampling at the 100 Level on the same section shows 1.32% Cu over 47' horizontally (weighted horizontal average 0.93% Cu). This grade agrees with the 0.94% Cu in the proven category, I, above, and it is reasonable to apply a grade of 0.90% Cu to this block.
- (ii) Grade of the undefined mineralization southerly from section I, area V, should approximate the average 0.67% Cu on section I. Accordingly, it is reasonable to apply a grade of 0.65% Cu to this material.
- (iii) For mineralization below the 200 Level within the confines of the trial pit, block VI, the grade should be similar to

the average of categories I to IV, inclusive, namely 0.96% Cu.

- old Records* →
- (iv) Based on stope outlines on the cross sections, approximately 105,000 tons of ore appear to have been extracted by past producers from the above reserve. Mieritz reported a total production of approximately 290,000 tons averaging 3.34% Cu, of which the above tonnage represents 36%. This proportion is visually consistent with stope outlines above the 900 Level. Allow a total reserve reduction of 40% or 116,000 tons, with no change in resultant grade.

- AMK*
- (v) Calculations on the trial pit are approximate and preliminary, only, and were undertaken to provide a rough measure of the stripping ratio involved in extracting the total mineral reserve from surface to the 200 Level, so that preliminary calculations on production costs and profitability could be made. Detailed assay data, superior topographic and survey control, and additional fill-in drilling both for reserve and stope location purposes will be required for more advanced pit design. While the presence of underground stopes complicates the mining system, in the writer's opinion, it does not detract from the obvious merit of extracting the oxidized portion of the East Zone by open pit mining.

Additional reserves of sulphide copper unquestionably occur below the previously calculated pit: from section H to O (350'), no drill holes cross the zone; and from section A to H (350'), 16 intersections in 3 surface and 9 underground holes in the partially stoped area from the 600 Level to the 900 Level average 1.79% Cu_T over an average core length of 17 feet. Indicated true horizontal width of the intersections varies from 6 to 35 feet, averaging 19 feet, and at least 3 parallel high grade zones are indicated. Inadequate assay data is available on the inter-zone material to permit estimation of bulk grades over aggregate horizontal widths to 160 feet; however, one surface hole (DDH 11) averaged 0.78% Cu_T over 130 feet near the 900 Level. Much additional, costly, surface and/or underground diamond drilling, the latter requiring substantial underground development for drill sites, is required before a meaningful reserve can be calculated for the East Zone below the 200 Level. Certainly, it is both unrealistic and unsupported to project the 250-foot wide oxidized zone below the level.

West Zone

Because reserves in the West Zone could influence the selection of a production system, some preliminary calculations were made to provide an indication of the zone's reserve potential. On sections D to K, the weighted average grade of 16 drill holes (5 vertical percussion, 6 inclined hammer percussion, and 5 diamond) was 0.63% Cu_T; however, it is the writer's opinion that the true grade may be significantly higher. Average of the 5 percussion holes, only one of which cut the entire zone (at the south extremity), was 0.39% Cu_T; average of the 6 inclined hammer per-

cussion holes, most of which cut the entire zone, was 0.61% Cu_T; and average of the 5 diamond drill holes, most of which cut the entire zone, was 0.86% Cu_T. I believe the latter grade, which also must include some sludge losses, is probably more representative of the true grade of the West Zone. Any further drill testing of this zone should be with coring equipment using mud as the circulating medium.

On the same basis as the East Zone, mineable reserves in all categories to the 5160 elevation, plus that amount below the 5160 requiring no further stripping, is about 900,000 tons. With steep, 55° final pit slopes, the waste/ore ratio is slightly less than 1.4/1; and, based on section H, a 50° final pit slope would result in an approximate 25% increase in external waste removal, yielding a waste/ore ratio of 1.7/1. To the deepest intersection at about elevation 4800, a further 1,100,000 tons is indicated, and the zone is open to depth. Total reserve for the West Zone is approximately 2,000,000 tons averaging 0.6 to 0.9% Cu_T.

OXIDE/SULPHIDE RATIOS

East Zone

As previously mentioned, 4 diamond drill holes and 25 percussion holes were used in the reserve calculation. Although the writer has not examined sample rejects from the core or percussion holes, it appears from examination of fresh surface mineralization and underground specimens that, because of the competent nature of the host rock and the occurrence of oxidized copper minerals, chiefly malachite, as fine permeations rather than coarse fracture fillings, losses in the circulating medium (mud) with diamond drilling and in the dust in percussion drilling have not been excessive. Nevertheless, some loss of readily slimed or dusted oxidized copper, possibly 10%, is inevitable; and on that basis the reserve grade would be closer to 1.0% Cu_T. Similarly, based on comparison of the variation of individual sample grades with the two types of drilling, contamination of successive samples in the percussion drilling does not appear to be significant. Assay breakdowns were available for 4 older diamond drill holes (appendix i), below, which were not used in the reserve calculations since their location with respect to the current grid was not established.

<u>Hole</u>	<u>Dip</u>	<u>Intersection ft</u>	<u>%Cu_T</u>	<u>%Cu_{ox}*</u>	<u>Cu_{ox}/Cu_T %</u>
DDH#1	-15°	157	0.57	-	-
SW 1	-90°	247	1.21	0.94	78
SW 2	-90°	126	0.95	0.56	59
SW 3	-90°	172	1.50	0.84	56
Average			1.09		
			1.24	0.82	66

The overall average of 1.09% Cu_T is somewhat higher than the reserve average of 0.93% Cu_T, or the upgraded 1.0% Cu_T (due to losses).

Composite pulp samples from the recent vertical core and percussion drilling yielded the following results (appendix ii):

<u>Composite</u>	<u>Depth</u>	<u>%Cu_T</u>	<u>%Cu_{ox}</u>	<u>Cu_{ox}/Cu_T %</u>
DDH 1-4	0-50	0.34	0.30	88
	50-100	0.91	0.79	87
	100,plus	0.87	0.75	86
	Average	0.71	0.61	86
P 1-18, 29, 33, 34	0-50	0.42	0.37	88
	50-100	0.43	0.24	56
	100,plus	0.74	0.25	34
	Average	0.53	0.29	55

	$\%Cu_T$	$\%Cu_{ox}^*$	$\frac{Cu_{ox}}{Cu_T}$ %
Average	0.62	0.45	<u>73</u>
Average Old & recent	0.93	0.64	<u>69</u>

There are obvious anomalies in all of the above data, for which a multitude of explanations are possible; however, in the absence of definitive check data, it is reasonable for preliminary calculations to assume that 70% of the copper is acid soluble.

West Zone

Composite samples from 2 vertical percussion holes and 2 inclined hammer percussion holes above the 5160 elevation, averaged 0.46% Cu_T and 0.28% Cu_{ox} , equivalent to 61% "oxide" copper. An exceptionally long, 170-foot intersection in hole H-2 which extended well into the footwall of the main zone immediately above the 5160 elevation, contained only 27% "oxide" copper. This hole is not believed by the writer to be representative.

As previously discussed and demonstrated, it also is the writer's opinion that the significantly lower average values in the vertical percussion holes (0.39% Cu_T) and inclined hammer percussion holes (0.61% Cu_T), compared to the diamond drill holes (0.86% Cu_T), represent, at least partly, losses oxidized copper in the highly fractured host rock ($\frac{1}{2}$ " fracture spacings); and there is a reasonable possibility that the proportion of "oxide" copper will approximate that of the East Zone, namely 70%.

* Cu_{ox} = "oxide" copper (this value should be referred to more correctly as acid soluble copper, Cu_{AS} , the magnitude of which is dependent, in part, on the analytical technique employed - limiting mesh size, acid type, acid concentration, pulp density, and time).

ASSOCIATED VALUES

Values in gold, silver, and zinc accompany the primary copper mineralization in both the East and West Zones. While considerable recent analytical work has been done on intersections of sulphide copper, none has been done on copper mineralization from the shallow oxidized zones. Insoluble precious metal values (gold and silver) could be concentrated somewhat in the oxide zone, and readily soluble zinc values could be depleted. A summary of all recorded data (appendix iii) follows:

Zone	Metal	Source	Samples		Analyses		
			No.	Total length (ft)	Cu _T %	Metal	Ratio Metal/Cu _T
East	Au	Production (Mieritz)	290,000	tons	3.0	0.05 ozAu/T	0.017
		Underground drilling					
		Individual samples	19	190	1.41	0.059	0.042
		Composite samples	4	184	1.38	0.052	0.038
		Average	23	374	1.39	0.056	0.040
	Ag	Production (Mieritz)	290,000	tons	3.0	1.20 ozAg/T	0.40
		Underground drilling					
		Individual samples	19	190	1.41	0.52	0.37
		Composite samples	4	184	1.38	0.54	0.39
		Average	23	374	1.39	0.53	0.38
	Zn	Underground drilling					
		Individual samples	23	233	1.12	0.49 % Zn	0.43
West		Surface drilling					
	Au	Composites	15	1000	0.70	0.042 ozAu/T	0.060
	Ag		15	1000	0.70	0.25 ozAg/T	0.34
	Zn		12	926	0.67	0.26 % Zn	0.39

In the East Zone there is a substantial difference between the Au/Cu ratio from production statistics (0.017) and recent assaying (0.040); however, the writer is uncertain whether the production figure represents a "head" grade or a "recovered" or "paid for" grade, and about 40% of the production tonnage was from the oxidized zone above the 200 Level. Individual assay ratios in the sulphide zone varied from a low of 0.004 to a high of 0.254, and 0.03 is a reasonable average figure. It is not known whether this ratio will change significantly in the oxide zone. Good agreement was obtained for Ag/Cu ratios from production statistics and recent assaying, at about 0.4; and the Zn/Cu ratio, for which there is no production record, also is 0.4.

Mined from
stopes
JMM.

all
Production
Records
JMM
Head
Grade
JMM

East Zone metal ratios:

1.0% Cu_T, 0.03 ozAu/T, 0.4 ozAg/T, 0.4% Zn.

Since the reserve grade is approximately 1.0% Cu_T (including provision for a 10%, actually 7.5%, loss of copper values in the percussion drilling) the above Au, Ag, and Zn values may be representative.

No comparative production data is available for the West Zone, and, again, it is uncertain whether ratios in the primary sulphide zone will be the same as those in the oxide zone. The Au/Cu_T ratio appears to be somewhat higher in the West Zone than in the East, the Ag/Cu_T is marginally lower, and the Zn/Cu_T ratio is the same.

West Zone metal ratios:

1.0% Cu_T, 0.06 ozAu/T, 0.3 ozAg/T, 0.4% Zn.

Since the reserve grade is somewhere between 0.6 and 0.9% Cu_T, expectable associated values are as follows:

0.6% Cu_T, 0.04 ozAu/T, 0.2 ozAg/T, 0.2% Zn.

0.9% Cu_T, 0.05 ozAu/T, 0.3 ozAg/T, 0.4% Zn.

PRODUCTION SYSTEM

Discussion

The most readily accessible, best defined, and highest grade mineable copper reserve on the DeSoto property is that in the East Zone above the 200 Level (5160 elevation); approximately 1.5 million tons in all categories (27% drill proven), with a 1.2/1 stripping ratio (55° final pit slope), averaging about 1.0% Cu_T. Approximately 70% of the copper in this reserve is "oxide" in form and should be readily soluble in a sulphuric acid solvent. Test work is required to establish the leaching characteristics of the mineralization: acid consumption, optimum acid concentration(s), recovery, residence time, and fragment size(s).

Drill intersections in sulphide mineralization below the 200 Level generally show significantly narrower mineralized widths, and, with the obvious very large increase in waste removal required, it is doubtful that open pitting below the trial pit bottom (5035 elevation) will be feasible.

In the West Zone, a further mineable reserve of 0.9 million tons in all categories (no breakdown), is available to the same 5160 elevation, with a 1.4/1 stripping ratio (55° final pit slope), and an average grade somewhere between 0.6 and 0.9% Cu_T. At least 1.1 million tons of sulphide copper mineralization of comparable grade, mostly in the possible category, occur between the 5160 elevation and the deepest intersection at elevation 4800. Mining of the bulk of this reserve must be by underground techniques due to excessive stripping ratios; and the zone is open to depth below the 4800 elevation.

In general terms, consideration of the magnitude, grade, and probable net smelter value (copper only) of the combined reserve mineable by open pit techniques, 2.5 million tons of 0.9% Cu_T, dictates that only a production system of relatively modest capital cost, say \$2.0 million, maximum, be considered. Analytical and metallurgical testing of representative samples from the oxide zones of both deposits would be required both to establish associated values, particularly gold, and to determine whether any of the values were recoverable economically. It is equally apparent that the relatively low average copper grade (1.0% Cu_T and 0.7% Cu_{ox} in the East Zone) would require production at a daily rate of at least 1000 tpd in order to yield an acceptable cash flow. The indicated reserve is compatible with production at this rate, giving an open pit life expectancy of about 7 years (4 for the East Zone, and a 3 for the West Zone). No remotely "conventional" plant employing crushing, grinding, and processing with this daily throughput could be constructed for the allowable capital cost, and an alternative, lower capital cost system is required.

Clearly defined, high grade zones to 30 feet in width are evident at surface, in the underground workings, and in the percussion

and diamond drill hole intersections, and it is very likely that high grade and low grade products could be segregated readily in a small open pit. To provide estimates of the relative quantities and grades of such material, all drill hole intersections within the deposit were averaged separately using 1.0% Cu_T as the cut-off, as follows:

	<u>Total Intersection Length (feet)</u>	<u>Distribution %</u>	<u>Average Grade %Cu_T</u>
High grade	767	29	1.78
Low grade	<u>1918</u>	<u>71</u>	<u>0.65</u>
Combined	2685	100	0.97

Because no breakdown was available for some of the averaged intersections, it is very likely that a smaller proportion of higher grade material could be segregated. The overall average is in very close agreement with the reserve grade, and, through selective mining, it appears reasonable that either 30% of the reserve averaging 1.8% Cu_T and 70% averaging 0.65% Cu_T (total 1.0% Cu_T), or 25% averaging 2.0% Cu_T and 75% averaging 0.65% Cu_T (total 1.0% Cu_T), could be segregated and processed independently.

Because the material mined initially will contain oxidized copper minerals almost exclusively, acid leaching/cementation is the obvious processing technique to employ, and offers the greatest potential for meeting the financial constraint. In order of increasing capital and operating costs, and increasing recovery, in situ leaching, heap leaching, combination heap leaching/modified vat leaching, and possibly combination heap leaching/agitation leaching all have valid potential application. Test work is required to substantiate the applicability of acid leaching through establishment of the basic economic leaching parameters, namely, acid consumption and acid soluble copper.

In Situ Leaching

While the physical orientation of both oxidized zones is favourable for in situ leaching, the nature of the finely permeated oxidized copper mineralization in the East Zone, at least, is not. Expectable low recovery at 20 to 30% of the "oxide" copper (15 to 20% of the total copper) over 1 or 2 years, low production rates (about 3T Cu/day, pure basis), probable widely variable production rates, inflexibility of the system, the critical nature of each production blast (and disastrous consequences of error), and the relatively high cost of preparing the site for blasting, do not, in the writer's opinion, favour application of in situ leaching as the primary recovery system.

It is very important to appreciate, however, that once open pit mining for any of the other more costly production systems has commenced, it always is possible to fall back on in situ leaching as a salvage system without incurring the substantial site preparation costs, above, or any other plant costs. Engineering,

drilling, blasting, and application of solution sprays would be the only additional costs.

Heap Leaching

While the topography at the property is moderately rugged, a number of potential heap and dump sites were observed which may or may not have been solely on the DeSoto claim group. For site and production planning, it is essential that the property and adjacent areas be mapped topographically at a scale of 1"=200', and the immediate mine area at a scale of 1"=100' (plus enlargements to 1"=50 feet). Reservoir sites are at a premium on the property, and it may or may not be possible to utilize some of the underground workings for reservoirs. The winze from the 600 Level to the 900 Level is full of water, and the underground workings reportedly make a significant volume of water. An accurate measure of the inflow should be obtained, since additional wells would be required to make up the deficit. Depending on evaporation losses (15 to 20% is expectable) as well as on many other factors related to the leaching characteristics of the mineralization, process water requirements for the production of 5T Cu/day (pure basis) should be substantially less than 100 gpm.

Because malachite is the predominant oxidized copper mineral, leaching rates should be relatively rapid; however, the apparent fine permeation, as opposed to more typical fracture fillings which often may be exposed at relatively coarse fragment sizes, suggests that recovery will be directly related to fragmentation, and could be low. Short term test work on representative (physically and chemically) samples of low grade and high grade mineralization is required to determine if maximum recoveries from run-of-mine material under flooded conditions are acceptable. It is conceivable that single-stage crushing of the high grade mineralization, at least, might be necessary, in which case conveyor stacking of this product also might be advantageous. The highly siliceous mineralization should yield uniformly permeable heaps with minimal tendency for solution channeling.

Recovery of 40 to 50% of the "oxide" copper (30 to 35% of the total copper) in a 4-month leaching cycle is possible; and, under these conditions, production of 5T Cu/day would require continuous ore mining at a rate of about 1000 to 1250 tpd initially, with a 150,000-ton starting heap, increasing to 1500 to 1800 tpd as the proportion of sulphide copper increased to the East Zone average (0.3% Cu_S). With an overall waste/ore ratio of 1.2/1, continuous mining at 2500 to 4000 tpd is indicated.

Heap Leaching/Modified Vat Leaching

As previously discussed, there is a good possibility that high grade oxidized copper mineralization can be segregated from low grade in a small East Zone pit yielding either a 30/70% combination grading 1.8/0.65% Cu_T or a 25/75% combination grading 2.0/0.65% Cu_T. Vat leaching of the high grade material, following

2-stage crushing, should yield at least 80% recovery of the "oxide" copper (55% of the total copper); and, with the readily acid soluble malachite, residence time should be relatively short, possibly only 2 days for the leaching cycle. Run-of-mine low grade material would be heap leached, as above, probably yielding 40% recovery in a 4-month leach cycle.

The modified vat leaching system referred to is a simple, continuous, countercurrent system requiring construction of only a single vat.

Segregating a much-reduced tonnage of high grade mineralization for independent processing enhances very substantially the probability of re-processing the tailings for recovery of associated values, particularly gold, as well as for recovery of sulphide copper, as the proportion increases with depth. Significantly reduced grinding costs for the highly siliceous material should result from pre-grind acid leaching.

For production of about 5T Cu/day, pure basis, continuous mining of high grade and low grade mineralization at 1000 tpd (250/750 or 300/700 tpd) is required, plus an additional 1200 tpd of waste (2200 tpd total). Overall recovery of the "oxide" copper should be at least 60%, equivalent to 42% of the total copper.

Heap Leaching/Agitation Leaching

Only through the treatment by agitation leaching of a relatively small tonnage of high grade oxidized copper mineralization, say 250 tpd averaging 2.0% Cu_T, and through judicious purchasing of second-hand equipment, could a maximum mine/plant capital cost of \$2.0 million be achieved. Even with a relatively coarse mesh-of-grind, say minus 10 mesh, comminution cost for the very siliceous ore is likely to be high. While it does not appear that a slime problem exists, this aspect requires close attention since a sophisticated solid/solution separation system could not be tolerated. Recovery of the "oxide" copper by agitation leaching should be at least 90%, equivalent to 46% of the total copper, including copper recovered from heaps (750 tpd averaging 0.65% Cu_T).

As the proportion of sulphide copper increases, flotation treatment of the leach tailings, with or without regrinding could be justified; and, when the oxidized ore is depleted, the possibility exists of expanding throughput substantially and changing over to a full flotation system.

Leach residues should be tested for possible recovery of associated values, particularly gold. If flotation were justified economically at some later stage, the associated values in gold, silver, and zinc could be particularly important, and their recovery probably would be simplified.

SUMMARY AND CONCLUSIONS

1. In the East Zone, the mineable reserve in all categories (27% drill proven) to the bottom of a trial open pit designed to extract all of the mineral reserve to the 200 Level (5160 elevation) is approximately 1.5 million tons averaging about 1.0% Cu_T and 0.7% Cu_{ox} . With steep, 55° pit slopes, justified, in the writer's opinion, by the shallow depth of the pit and the competent wall rocks, a 1.2/1 waste/ore ratio is indicated, increasing to about 1.4/1 with 50° pit slopes. The presence of open stopes in the pit area, possibly aggregating 116,000 tons, complicates, but does not preclude open pit mining.
2. Although partially stoped sulphide copper in highgrade shoots extends from the above pit floor to the 900 Level (4550 elevation), there is inadequate data on which to base a reserve calculation. However, all indications point to significantly narrower overall widths than the 200 to 300 feet in the expanded oxide zone, and it is doubtful that open pitting below the trial pit floor (5035 elevation) will be possible. Sixteen intersections in at least 3 parallel zones averaged 1.8% Cu_T over an average core length of 17 feet, and the indicated true horizontal width of the intersections varied from 6 to 35 feet, averaging 19 feet. Grade of the inter-zone material is uncertain, although one hole averaged 0.78% Cu_T over 130 feet near the 900 Level.
3. In the West Zone, the mineable reserve in all categories (not broken down) to the bottom of a similar trial open pit designed to extract all of the mineral reserve to the 200 Level (5160 elevation) is approximately 0.9 million tons averaging somewhere between 0.6 and 0.9% Cu_T . The average grade is uncertain because the vertical percussion holes averaged 0.39% Cu_T , the inclined hammer percussion holes averaged 0.61% Cu_T , and the diamond drill holes averaged 0.86% Cu_T . Losses in the highly fractured host rock could be responsible for the grade discrepancy, and the writer believes that 0.9% Cu_T probably is closer to the actual grade. The proportion of "oxide" copper probably is similar to, or slightly less than, the East Zone at about 70%. With 55° pit slopes the waste/ore ratio is 1.4/1, increasing to about 1.7/1 with 50° slopes.
4. A further 1.1 million tons of sulphide copper mineralization of comparable grade, mostly in the possible category, is available to the deepest intersection at the 4800 elevation, and the deposit is open to depth. Due to excessive open pit stripping ratios, it would be necessary to mine most of this material by underground techniques.
5. Associated values in gold, silver, and zinc accompany the copper in the sulphide zones, and it is warranted to establish the

- 1 -

associations in the oxide zones of both deposits.

East Zone	1.0% Cu _T , 0.02 to 0.04 ozAu/T, 0.4 ozAg/T, 0.4% Zn.
West Zone	0.9% Cu _T , 0.05 ozAu/T, 0.3 ozAg/T, 0.4% Zn.

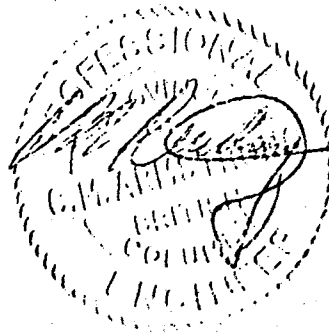
6. The high proportion of oxidized copper mineralization, principally malachite, in the highly siliceous oxidized zones of both deposits from surface to the 200 Level, readily extractable by open pit mining, indicates that processing by acid leaching/cementation could be viable. In the absence of data on the leachability of the mineralization, preliminary tests should be conducted to establish the basic leaching parameters, acid consumption and acid soluble copper, followed by bench-scale tests to define the best recovery system(s) and operating parameters.
7. In consideration of the total reserve mineable by open pit techniques, approximately 2.5 million tons averaging 0.9% Cu_T, maximum capital cost for a production system should be about \$2.0 million. In situ leaching, heap leaching, combination heap leaching/modified vat leaching, and possibly combination heap leaching/agitation leaching all have potential application. Production would be initiated on the East Zone.

In situ leaching. Because of the relatively high site preparation cost, expectable very low recovery (20 to 30% of the oxide copper in 1 or 2 years), low production rate (about 3T/day), etc., in situ leaching should not be employed as the primary recovery system, but could be employed as a backup salvage system, if required.

Heap leaching. Assuming 40 to 50% recovery of the oxide copper values in a 4-month leaching cycle, production of 5T Cu/day would require continuous ore mining at an initial rate of 1000 to 1250 tpd, with a 150,000-ton starting heap, increasing to 1500 to 1800 tpd as the proportion of sulphide copper increased. Total ore and waste mining would be at a rate of about 2500 to 4000 tpd.

Heap leaching/modified vat leaching. At an ore mining rate of 1000 tpd (2200 tpd ore and waste), it is possible that 250 tpd averaging 2.0% Cu_T and 750 tpd averaging 0.65% Cu_T could be segregated readily in a small East Zone pit, and processed independently by modified vat leaching, yielding 80% recovery of the oxide copper with a 2-day leaching cycle, and by heap leaching, as above, yielding a total recovery of 60% of the oxide copper, and producing 5T Cu/day. Re-processing the vat residue for gold and/or sulphide copper values might be feasible at some stage.

Heap leaching/agitation leaching. In the same manner as above, 90% recovery of the oxide copper would be expectable, yielding, with heap leaching, a total recovery of 65% of the oxide copper, and producing over 5T Cu/day. Integration with a flotation circuit as the proportion of sulphide copper and associated values increased, could be accomplished at less cost and with greater facility than with the other systems. However, even with the judicious purchase of second-hand process equipment, mine/plant capital costs could exceed \$2.0 million; and processing costs at the limited production rate could be prohibitive.



19
CERTIFICATION

I, CHRISTOPHER MACKENDRICK ARMSTRONG of the City of Vancouver, Province of British Columbia, do hereby certify:

THAT I am a practicing Geological Engineer residing at 4085 West 29th Avenue, Vancouver, British Columbia, V6S 1V4, Canada.

THAT I am a registered Professional Engineer in good standing in the Provinces of British Columbia and Ontario.

THAT I received the degree of B.Sc. in Geological Engineering from Queen's University, Kingston, Ontario in 1960, and practiced my profession continuously in the period between leaving university in 1959 and returning to university in 1966.

THAT I enrolled in the Department of Mineral Engineering at the University of British Columbia in 1966, and in the period to 1969 completed course work and research work requirements in an M.A.Sc. program, specializing in bacterial/acid leaching systems; thesis writing was not completed; post graduate courses in economic geology and North American geology also were taken and completed.

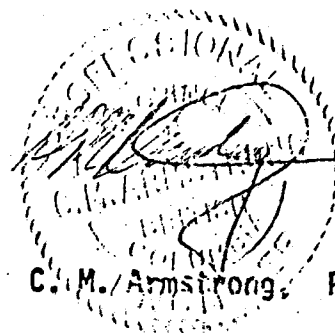
THAT since leaving university in 1969, I have practiced my profession both as a Geological Engineer and as a Specialist/Advisor in ambient temperature/pressure leaching systems.

THAT the following is a true record of my employment and experience:

1957	4 mos. Junior Geologist. Noranda Mines Ltd. Noranda, Quebec.
1958	4 mos. Party Chief. Hollinger North Shore Exploration Co. Ltd. New Quebec and Labrador.
1959-1961	27 mos. Assistant Geologist. Pickle Crow Gold Mines Ltd. Pickle Crow, Ontario. Teck Corporation Ltd.
1961-1962	9 mos. Assistant Geologist. Willroy Mines Ltd. Manitouwadge, Ont.
1962-1964	28 mos. Chief Geologist. Metal Mines Ltd. Werner Lake, Ontario. Consolidated Canadian Faraday.
1964-1966	24 mos. Chief Geologist. Tegren Goldfields Ltd. Kirkland Lake, Ontario. Teck Corporation Ltd.
1967	6 mos. Project Geologist. McLeese Lake property, B. C. Geophysical Engineering & Surveys Ltd. Teck Corporation Ltd.
1969-1970	13 mos. Laboratory Manager, Chief Geologist, and Consulting Engineer. S. M. Industries Ltd. Vancouver, B. C.
1970-1974	4 yrs. Independent Consulting Engineer.

THAT I do not have any interest, direct, indirect, or contingent, in the securities or properties of CUTLASS EXPLORATION LIMITED.

Dated at Vancouver this
18th Day of September, 1974


C. M. Armstrong, P.Eng.

Appendix i

DDH #1, SW 1, SW 2, SW 3

60' N of sect 1

W

E

Any W. ...
Ox. ... 0.64% - 56%
S. ... 0.66% - 44%
Total ... (1.50%) - 100%

0.001
SIV 3
16' N.

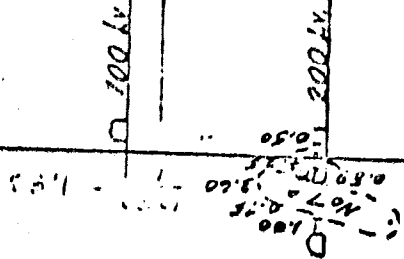
10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

No. 1 Stone
No. 2 Stone
No. 3 Stone
No. 4 Stone

1" = 60'

SECTION 1

View approx N 30° E



Appendix ii

Oxide-sulphide ratios & associated metal values

MEMO

Date: June 19, 1974
To: Steve Radvak
From: J. W. Simson
Re: Desoto Property - Recent Assays

(1) Oxide-Sulphide Ratios

The attached summaries of assays for the East Zone (Table 1) show that the copper values obtained from surface holes are primarily derived from oxides for the first 50 feet. Percussion hole results show a substantial drop in the oxide vs. sulphide abundance below 50 feet from surface and another drop below 100 feet. The consistency of this ratio in diamond drill holes is difficult to explain. It may be that, at depth, some copper oxides were not being recovered by percussion drilling.

Underground drilling values are virtually all from sulphide.

For the West Zone it can be seen from the attached assay summary at mineralized sections (Table 2) that below 200 feet from surface over 75% of the copper values are in sulphide. Above this level the oxide-sulphide ratio is almost 50% and unfortunately it is not possible to calculate this exactly with given data.

(2) Precious Metal Values

On the East Zone Composites, gold averaged 0.05 oz/ton and silver ran 0.20 oz/ton. If only one half of these values are recovered and paid for by the smelter then about \$4.50 (today's prices) can be added to copper returns.

S. Radvak

Page 2

Values on the East Zone drilling cannot be calculated with available data but I imagine values from surface drilling would be similar and those from underground drilling would be significantly higher.

(3) DDH-14 results were obtained after I left the property at the beginning of June and are herewith attached.

The zinc values are unusually high, averaging 0.53% over 121', from 283 to 404 feet.

From 323 to 393 feet (70') a composite sample averaged 1.08% Cu, 0.36% Zn, 0.02 oz Au per ton and 0.60 oz Ag per ton. An arithmetic average of the individual assays from this interval is 1.09% Cu which is excellent correlation. This is best grade intersection on the West Zone.

J. W. Simpson (lwr)

JWS:rr

cc: Murray Pezim

TABLE 1

East Zone Composites for Oxide-Sulphide Ratio Study

Diamond Drill Hole Composite
(DDH 1-4 incl.)

<u>Depth</u>	<u>Total Cu (%)</u>	<u>Oxide Cu (%)</u>	<u>Oxide Sulphide</u> <u>Ratio</u>
0-50'	0.34	0.30	88%
50-100'	0.91	0.79	87%
100'-plus	0.87	0.75	86%
	$2.12/3 = 0.71$	$1.84/3 = 0.61$	86

Percussion Hole Composite
(P 1-18 incl. and P 29, 33, 34)

0-50'	0.42	0.37	82% 88
50-100'	0.43	0.24	45% 56
100- plus	0.78	0.25	32% 34
	$1.59/3 = 0.53$	$0.86/3 = 0.29$	55
	$3.71/6 = 0.62$	$2.72/6 = 0.45$	73

DESOTO MINE CLEATOR, ARIZONA

WEST ZONE

COMPOSITES

OLE #	INTERVAL	Cu%	Zn%	oz/ton Au	oz/ton Ag	Oxide-Sulphide Ratio for Cu
P-39	170-220'	0.51	0.20	Tr	0.24	80% - 50' to 200' in
P-39A	70-160'	0.32	0.10	Tr	Tr	59% - 75' to 150' in
I-1	30-60'	0.71	0.42	.020	0.58	82% - 50' to 100' in
I-2	70-240'	0.56	0.30	- 0.10	0.39	27% - 70' to 500' in
I-4	100-180'	0.49	0.20	.005	0.20	41% - 50' to 500' in
I-7	140-210'	0.71	0.26	- 0.10	0.27	45% - 40' to 500' in
I-8	180-320'	0.76	0.24	- 0.10	0.19	25% -
I-11	230-250'	0.59	0.18	- .005	0.06	5% -
DH-7	234-386'	0.71	0.26	Tr	0.10	14% - 6
DH-8	314-317'	1.78		.005	0.22	1% -
DH-10	180-190'	1.29		.005	0.26	2% -
DH-12	407-431'	1.04	0.30	.010	0.25	1% -
DH-13	278-308'	1.04	0.38	.025	0.24	7% -
Total footage	869' ✓			Ave. Precious Metals		
				.05	.20	
		113.7	856	217.2	40.155	170.06
		0.29	0.25	0.046	0.22	
	(6) 490	0.53				
	Less H-2	93.4	0.52	0.046 = 0.076	0.22 = 0.39	45%
	(5) 320	0.51				
	Less H-7	71.5	0.52	0.046 = 0.076	0.22 = 0.39	57%
	(4) 250	0.51				
	869 Total	510.2	726	237.2	93.9	41.555
		0.68	0.21	0.044	0.25	
	323-398		0.39	0.045	0.37	

Appendix iii

Associated metal values

Assay Results - Desoto Mine - Cleator, Arizona

Hole #	Footage	Gold	Silver	%Pb	%Zn	%Cu	SUMMARY			
							%Cu	Au	Ag	Interval
U-1	1-1½ & 15-19					0.30				
	19-28					0.18				
	28-38					0.50				
	38-48					0.08				
	48-58					1.51	1.24			
	58-68					1.03				
	68-77					0.95				
U-2	0-12½					0.30				
	12½-23					0.73	.52			
	23-33					0.05				
	33-43					0.04				
	43-53					0.04				
	53-63					0.09				
	63-72					0.05				
	72-82					0.02				
	83-87					0.03				
U-3	7-16½	9.5	0.036	0.37	0.43	2.65	6.12			
	16½-20½	4.0	.54	2.38	0.83	.10	.12	73.00	3.42	41.42
	20½-26	5.5			0.08	.06	2.17	2.0	.09	1.09
	26-35	9.0			0	Tr.	.34			38'
	35-45	10.0			1.36	.45	.33	3.02	0.005	0.5
	45½-55½	10.0			(0.40)	0.15				0.50
	55½-66½					0.04				
	66½-77½					0.03				
	77½-88½					0.04				
	88½-98½					0.04				
	98½-109½					0.03				
	109½-120½					0.03				
	120½-131½					0.03				
	131½-141½					0.03				
	141½-151½					0.03				
	151½-153½					0.42				
U-4	2-11					0.04				
	11-21					0.06				
	21-31					0.08				
	31-41	10	.010	0.39	Tr	0.30	0.75			
	41-51	10			0.06	0.28	0.31			
	51-67					0.15		.54		
	67-77	10	.025	0.64	Tr	0.03	0.34			59'
	77-90	13	.010	0.29	0.04	1.76	1.20			
	90-100					0.15				
	100-110					0.04				
	110-120					0.18				
	120-130					0.03				
	130-140					0.03				
	140-152					0.04				
	152-162					0.21				
	162-172		.040	0.44	0.06	0.60	2.06			
	172-182					0.03				
	182-187			0.04	0.40	0.40				
	187-197					0.03				
	197-207					0.06				
	207-212					0.05				

Assay Results - Underground
Desoto Mine

Page 2

SUMMARY

Hole #	Footage	Gold	Silver	%Pb	%Zn	%Cu	%Cu	Au	Ag	Interval
U-5	7-17					0.24				
	17-27					0.21				
	27-41				0.34	0.37				
	41-51					0.06				
	51-61					0.04				
	61-78½				0.14	0.21				
	78½-87½	.165	1.80		1.24	4.94				
	87½-97½	.030	0.95		1.20	2.44				
	97½-103	.060	0.36		0.18	0.99	2.21			44½'
	103-113					0.29				
	113-123					2.12				
	123-133				0.20	0.11				
	133-143				0.14	0.19				
	143-158				0.16	0.25	0.30			65'
	158-168					0.64				
	168-178					0.24				
	178-188				0.22	0.39				
	188-198				0.10	0.03				
	198-208				0.10	0.04				
	208-218				0.20	0.06				
	218-228				0.30	0.08				
	228-238				0.32	0.13				
	238-248				0.26	0.03				
	248-264				0.26	0.03				
	264-274					0.17				
	274-284					0.98				
	284-294					0.76				
	294-304				0.20	0.79	1.1			56'
	304-314		0.14		0.22	1.68				
	314-330	.005	0.16		0.22	1.17				
	330-340				0.18	0.17				
	340-350	0.021	0.72		0.14	0.06				
	350-360	0.048	0.70		0.18	0.03				
	360-373				0.22	0.08				

Assay Results - Underground
Desoto Mine

Page 3

Hole #	Footage	Gold	Silver	%Pb	%Zn	%Cu	SUMMARY					
							%Cu	Au	Ag	Interv		
U-6	0-7	.285	0.98			1.12	1.90				17'	
	7-17	.025	1.04			2.44		.13	1.0			
	17-27	.010	0.29			0.15				17.00		
	27-37	.005	0.28			0.18						
	37-47	.005	0.28			0.20						
	47-57	.005	0.26			0.26	0.51				80'	
	57-67	.004	0.10			0.24						
	67-77	.005	0.20			0.21						
	77-87	Tr	Tr			0.06						
	87-97	.004	0.05			0.37						
	97-107	.005	0.12			0.25						
	107-117	.008	0.16			0.70			0.01	0.25		
	117-127	.012	0.15			0.67		0.51	0.01	0.13		
	127-137	.012	0.15			0.92						12.40
	137-147	.012	0.15			0.27						
	147-157	.010	0.15			0.29						
	157-167	.012	0.09			0.62						
	167-177	.012	Tr			0.10						
	177-187	.010	0.05			0.22						
	187-197	.015	0.25			0.09						
	197-211	.010	0.05			0.04						
			0.041	0.37			0.75					
			0.031	0.28								

Not fine enough - 100
 (ground)

3.5% 100 mesh

985-0681

DESOTO MINE

7606

1055 W. Georgia

Check Assay Samples Cleator, Arizona

all dup. ✓ - all 1 1/2 + 2 dup's.

HOLE#	INTERVAL	Cu		Au		Ag		Zn	
		Iron King	Bondar Clegg	Iron King	Bondar Clegg	Iron King	Bondar Clegg	Iron King	Bondar Clegg
U-1A 065 .61	48-58' ✓ 28-38' ✓ 38-48'	1.51 .50 .08	1.60 .54 .05						
U-4	162-172' ✓ 130-140'	2.06 .03	2.0 .01	.040 0.2	.05 0.025	.44 0.2	.44 0.22	.60 0.2	1.74 0.87
U-5	78 1/2-87 1/2' ✓ 113-123' ✓ 330-340' ✓	4.94 2.12 .17	4.75 2.10 .16	.165 1.265	.18 0.038	1.80 0.4	1.5 0.7	1.24 0.25 0.18	1.33 0.23 .03
H-4	150-160' 140-150' 70-80'	.92 .52 .02	.91 .50 .01	✓ ✓					
H-8	250-260' 270-280' 320-330'	3.37 1.02 .04	1.09 1.53 .28	✓ ✓					
H-12	230-240' 150-160' 60-70'	0.23 0.16 0.03	.22 .13 .01		.01	.22			
DDH-7	340-349' 285-294' 377-386'	1.92 .84 .05	1.9 .81 .03	✓ ✓					
DDH-8	314-317' 305-314' 295-305'	1.78 .22 .03	1.45 .30 .02	✓ ✓					

Ordinary

Notice is hereby given that the

undesignated, under the provisions of an act of Congress
of May, 10th 1892, do claim one claim of the date
of 1892-8-60th in title, commencing at
at monument on the rock, where a copy of the
Notice is posted, and running thence south 200 ft.

to a monument on the rock, thence east 300 ft. to a
monument, S. East corner, thence North 150 ft. to a
monument, N. East corner, thence West 100 ft. to a
monument, N. West corner, thence South 150 ft.
to a monument S. West corner, thence east 300 ft.

to monument on the rock. This shall be known
as the Owens mine, and is situated in Fort Dodge
County, State of Arizona, about three miles
west from Fort Huachuca, and about 200 yards from
Pringle's ranch, & on the west side of the Saguaro
Creek. Dated this 1st day of January 1883.

Wm. Owens
& J. L. Loomis.

Filed and recorded at recorder of Wm. Loomis.
January 2nd A.D. 1883. at 1:35 o'clock. Wm. Loomis
16 of mine. Page 576. Records of Arizona County
Arizona

Attest
County Recorder
By P. J. Bralitt.
Deputy

(Reads.)

Notice is hereby given that on the
undesignated, under the supervision of an act of Congress,
of May, 10th 1892, do declare one claim of the State
of 1500 feet by 600 ft in width, commencing at
N. 1/2 Section on the left, as far as a copy of the
Notice is posted, and running thence South 200 ft.
to a monument on the left, thence East 300 ft to a
monument, S. East corner, thence North 1500 ft to a
monument, N. East corner, thence West 600 ft to a
monument, N. West corner, thence South 1500 feet
to a monument S. West corner, thence East 300 feet
to monument on the left. This shall be known
as the Queens mine, and is situated in 'Prok. District
Harrison County, Sta. of Virginia, about three miles
South from Prok mine, and about 200 yards from
Prok's Ranch, & on the West side of War Eagle.
Dated this 10th day of January 1883.
Queen's Claim.
J. J. Harrison.

Filed and recorded at request of W. M. Briggs.
February 27th A.D. 1883. at 1:35 o'clock. W. M. Harrison
16 of mine. Pages 576. Records of Harrison County
Virginia.

Attest.
J. J. Harrison
By J. J. Harrison
Deputy

Owens.

Notice

Under the provisions of an Act of Congress of May 10th 1872, we the undersigned claim one claim of this lode of 1500 feet in length and six hundred ft in width bounded as follows, - commencing at a monument on lode being north line of Red Warrior mine and running thence along the lode 1500 ft north to a monument, thence East 300 ft to side line of Old Bourbon mine, thence South 1500 ft to a monument being North East corner of

Red Warrior mine, thence West 300 ft to monument first-mentioned on lode, thence West 300 ft to a monument. thence North 1500 ft to a monument being north west corner, thence East 300 ft to monument No 2, on lode. - This is claimed as a silver lode and shall be known as the Owens mine, and situated in Peck Mining District, County of Yavapai Arizona Terr. about 2 1/2 miles South from Peck mine, and near Dickeys ranch.

Date on the ground this the 14th day of October 1882.

Owens Owens.
J. J. Coover.

Filed and recorded at request of Josiah Dils.
November 8th A.D. 1882. At 2.35. O'clock P.M.
In Book 15 of Mines. Pages 55-56.
Records of Yavapai County, Arizona.

1882.

1882.

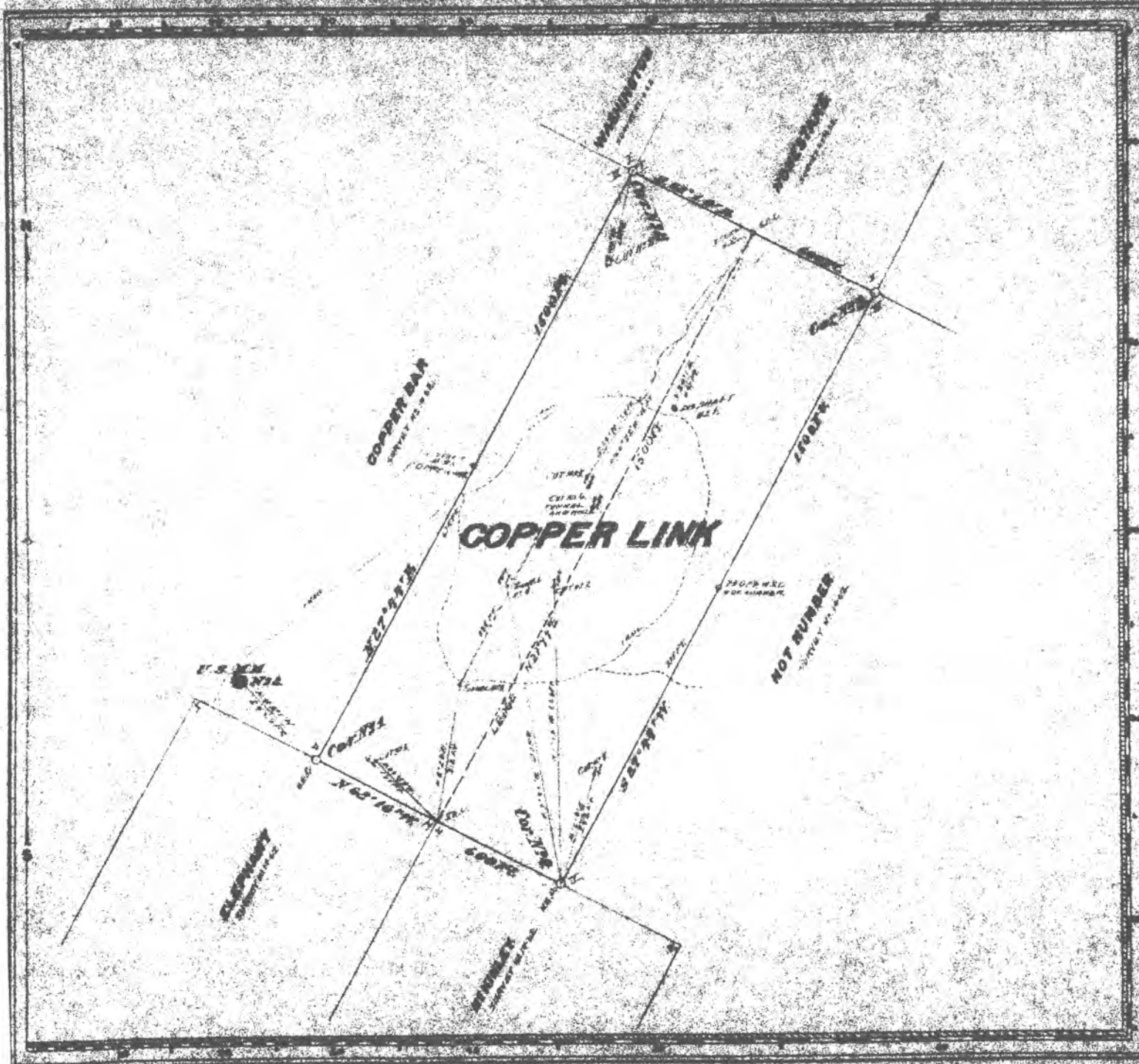
Under the guidance of our act of Congress.
of May 15, 1882, we the undersigned, about
one third of this order of 150 feet in length
and old monument of our width found as
follows - monument at a monument and side
being north line of Red River monument and
measuring thence along the side 150 ft north to a
monument, thence East 300 ft to side line of
Old Western river, thence South 150 ft
to a monument being North East corner of

Red River river, thence West 300 ft to monument
East mentioned on side, thence West 300 ft
to a monument. thence North 150 ft to a
monument being north west corner, thence East
300 ft to monument 1100 ft on side. - This is
claimed as a river side and shall be known
as the River, mine, and situated in Rock
Mining District, County of Garfield, Arizona, Terr.
about 2 1/2 miles South from Rock, mine, and
near Bridge north.
Date on the ground this the 14th day of October
1882.

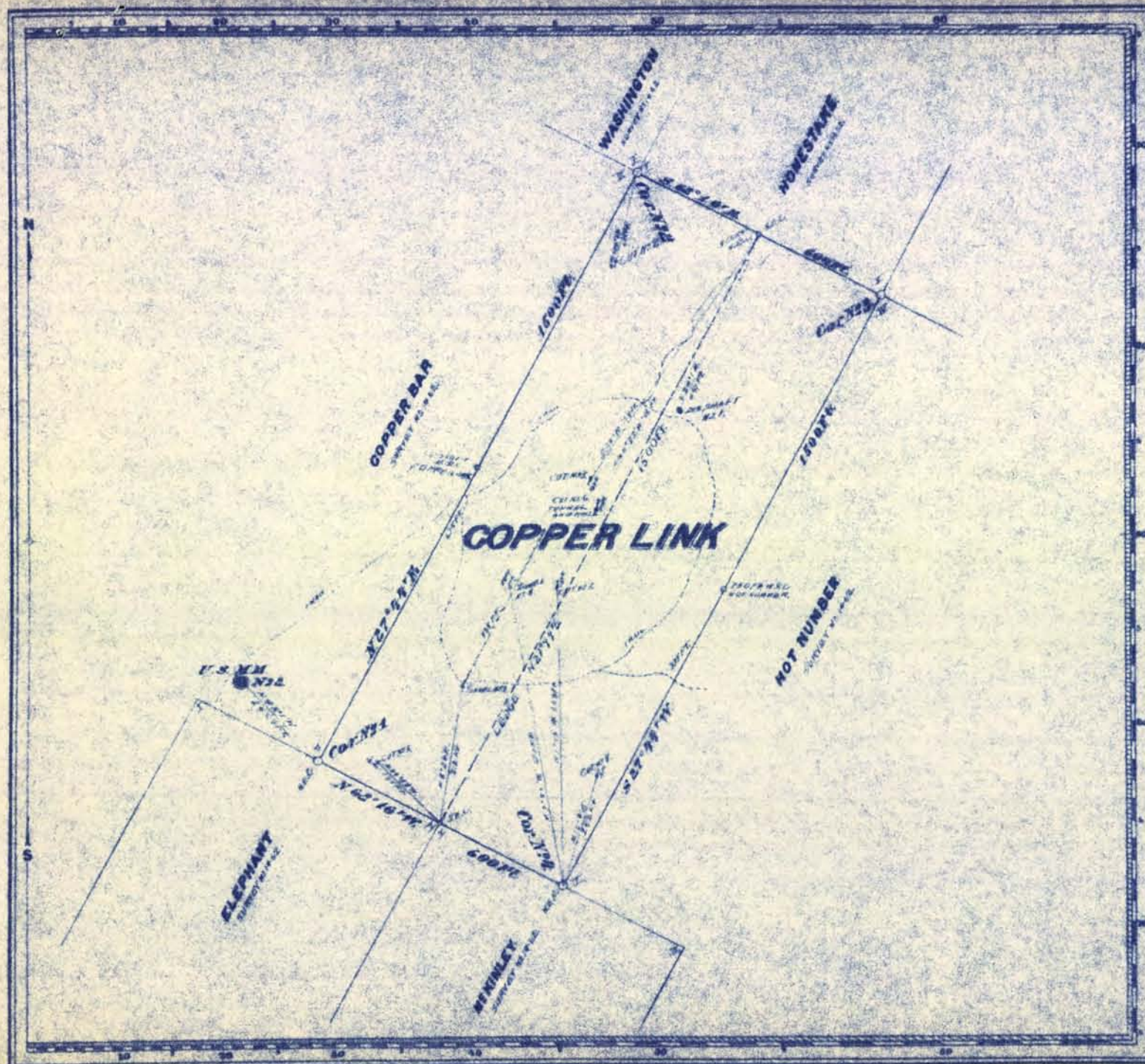
Wm. Davis.

J. J. Brown.

This and recorded at request of John D. Co.
Recorded 8th A. D. 1882. At 9.35. (Rock, mine)
Book 15 of Miners. Page 55-56.
Record of Garfield County, Arizona.



(State of Nevada) Sept. 1894
 Mineral Survey No. 1534
 Lot No. 1
 Land District
PLAT
 OF THE CLAIM OF
 J. L. Harris, J. D. Harris, & Co.
 KNOWN AS THE
COPPER LINK
 IN Arch. Mining District
 Nevada Co. N.Y. N. 10000
 Containing an area of 20.00 Acres
 Scale of 200 Feet to an inch
 Variation 15° 52' E.
 N.B.S.E.D. Feb. 18, 1901
 A. S. Hudson
 U.S. Deputy Mineral Surveyor
 The Original Field Notes of the Survey of the Mining Claim of
 J. L. Harris, J. D. Harris, & Co.
 known as the
COPPER LINK
 from which this plat has been made, under my direction
 have been examined and approved, and are on file in this office,
 and I hereby certify that they furnish such an accurate description
 of said Mining Claim as will, if incorporated into a plat,
 serve fully to identify the premises, and that such references
 is made therein to natural objects or permanent monuments
 as will perpetuate, and fix the location thereof.
 I further certify that Five Hundred Dollars worth of labor has
 been expended in improvements upon said Mining
 Claim by claimant or his grantor and that
 said improvements consist of 1 shaft, 6 cuts,
 5 tunnels, 10 mine, and drills.
 that the location of said improvements is correctly shown
 upon this plat, and that no portion of said labor or any
 premises has been included in the estimation of said
 labor upon any other claim.
 And I further certify that this is a correct plat of said Mining
 Claim made in conformity with said original field notes of the
 survey thereof, and the same is hereby approved.
 U.S. Deputy Mineral Surveyor George Whit
 J. L. Harris, J. D. Harris, & Co.
 (Signed and sealed)



Claim located Sept. 1891

Mineral Survey No. 1534

Lot No. Prescott Land District

PLAT

OF THE CLAIM OF

J. C. Harris, J. J. Harris & Co.
KNOWN AS THE

COPPER LINK

IN *Prescott* MINING DISTRICT

Yavapai County, Arizona

Containing an Area of 20.66 Acres

Scale of 200 Feet to the inch

Variation 18° 55' E

DATED Feb. 19 1901 BY

A. A. Hader

U.S. Deputy Mineral Surveyor

The Original Field Notes of the Survey of the Mining Claim of
J. C. Harris, J. J. Harris & Co.
known as the

COPPER LINK

from which this plat has been made under my direction, have been examined and approved, and are on file in this office, and I hereby certify that they furnish such an accurate description of said Mining Claim as will, if incorporated into a patent, serve fully to identify the premises, and that such reference is made therein to natural objects or permanent monuments as will perpetuate and fix the locus thereof.

I further certify that Five Hundred Dollars worth of labor has been expended or improvements made upon said Mining Claim by claimant or his grantors, and that said improvements consist of 1 shaft, 6 cuts, 5 tunnels, 1 winze, and drifts.

that the location of said improvements is correctly shown upon this plat, and that no portion of said labor or improvements has been included in the estimate of expenditures upon any other claim.

And I further certify that this is a correct plat of said Mining Claim made in conformity with said original field notes of the survey thereof, and the same is hereby approved.

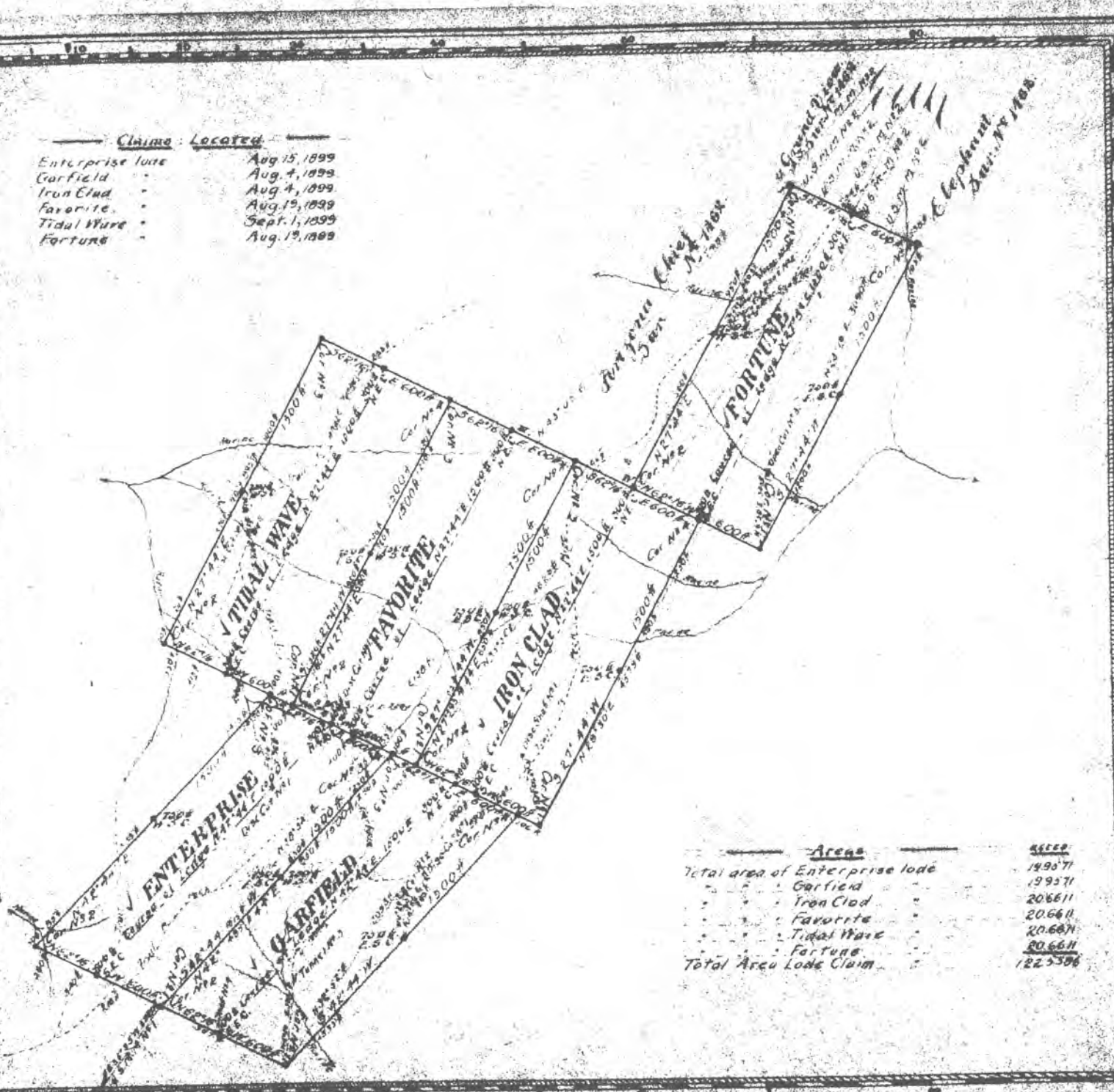
U.S. Surveyor General's Office *George Christ*

Prescott, Ariz. U.S. Survey General for

April 2 1901 Arizona

Claims Located

Enterprise lode	Aug. 15, 1899
Garfield	Aug. 4, 1899
Iron Clad	Aug. 4, 1899
Favorite	Aug. 19, 1899
Tidal Wave	Sept. 1, 1899
Fortune	Aug. 19, 1899



Area		ACRES
Total area of Enterprise lode		19.9571
Garfield		19.9571
Iron Clad		20.6611
Favorite		20.6611
Tidal Wave		20.6611
Fortune		20.6611
Total Area Lode Claim		122.5586

Claims Located

Mineral Survey No. 1463.

Lot No.
Prerott.

Land District

PLAT

OF THE CLAIM OF

C.O. Ellis, John Riley and John Pratt
KNOWN AS THE

Enterprise, Garfield, Favorite,
Iron Clad, Fortune and Tidal Wave

IN PEEDE COUNTY, ARIZONA

(Containing an Area of 122.5586 Acres)

Scale of 100 Feet to the inch

Variation 15° 33' E.

MINED March 25-31, 1900, by

A.B. Mader, U.S. Deputy Mineral Surveyor

The Original Field Notes of the Survey of the Mining Claim of
C.O. Ellis, John Riley and John Pratt
known as the

Enterprise, Garfield, Favorite,
Iron Clad, Fortune and Tidal Wave

from which this plat has been made under my direction, have been examined and approved, and are on file in this office, and I hereby certify that they furnish such an accurate description of said Mining Claim as will, if incorporated into a plat, serve fully to identify the premises, and that such reference as made therein to natural objects or permanent monuments as will perpetuate and fix the location thereof.

I further certify that the Hundred Dollars worth of labor has been expended or improvements made upon said Mining Claim by claimants, or their grantors, and that said improvements consist of shafts, adits, and other structures.

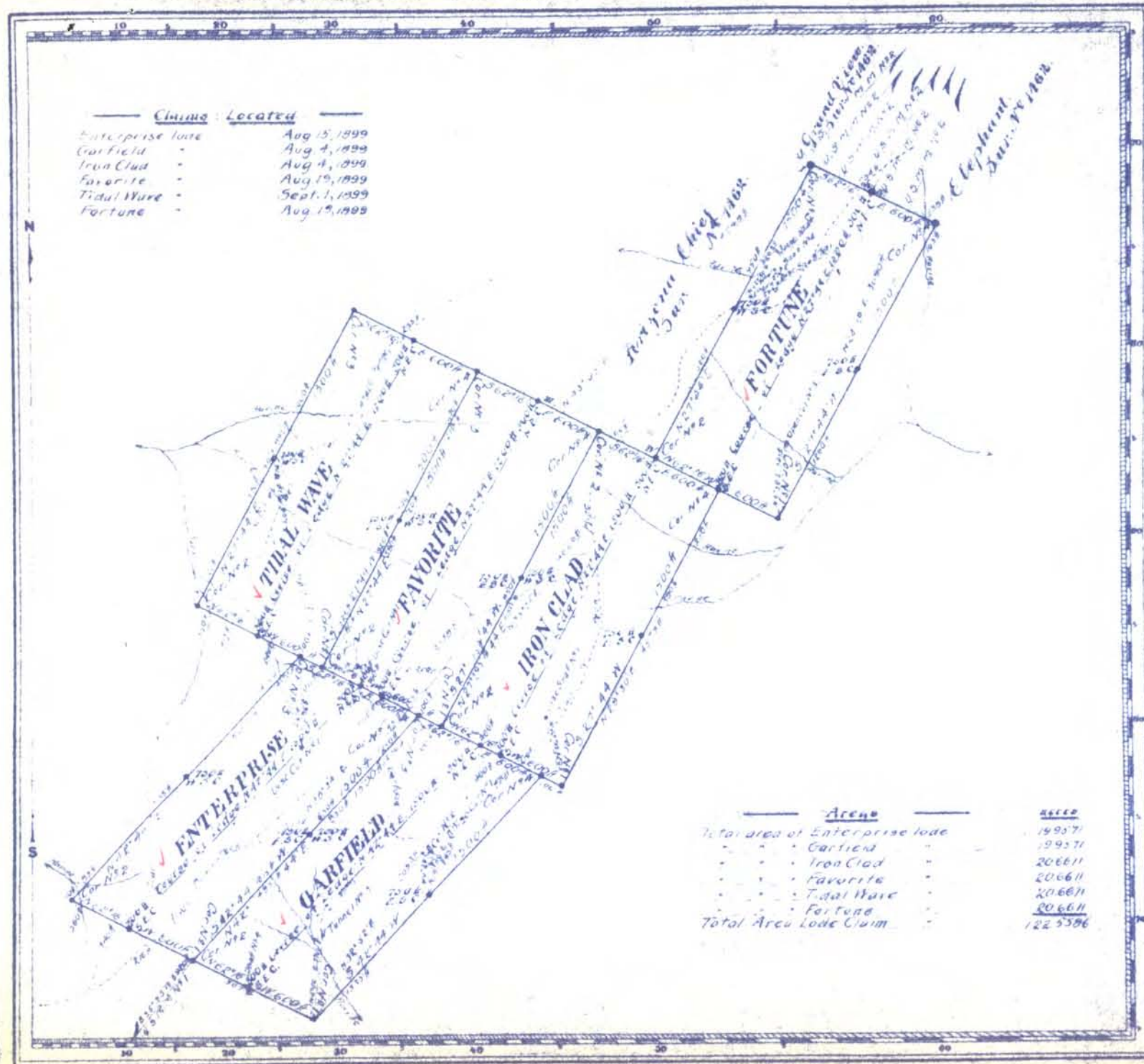
that the location of said improvements is correctly shown upon this plat, and that no portion of said labor or improvements has been included in the estimate of expenses upon any other claim.

And I further certify that this is a correct plat of said Mining Claim made in conformity with said original field notes of the survey thereof, and the same is hereby approved.

Witness my hand and seal, George L. Smith

Deputy, (Arizona) U.S. Deputy Mineral Surveyor

May 15, 1900 Arizona



Plat Located

Mineral Survey No 1403.

Lot No
Prescott.

Land District

PLAT OF THE CLAIM OF

C.O. Ellis, John Riley and John Pratt
KNOWN AS THE

**Enterprise, Garfield, Favorite,
Iron Clad, Fortune and Tidal Wave**

IN **PECK** MINING DISTRICT.

Navajuo COUNTY, **Arizona**.

Containing an Area of **122,5586** Acres.

Scale of **400** Feet to the inch

Variation **15° 53' E.**

MINED **March 25-31, 1900. 10'**

A.B. Mader. U.S. Deputy Mineral Surveyor.

The Original Field Notes of the Survey of the Mining Claim of
C.O. Ellis, John Riley and John Pratt
known as the

**Enterprise, Garfield, Favorite,
Iron Clad, Fortune and Tidal Wave**

from which this plat has been made under my direction, have been examined and approved, and are on file in this Office, and I hereby certify that they furnish such an accurate description of said Mining Claim as will, if incorporated into a patent, serve fully to identify the premises, and that such reference, as made therein to natural objects or permanent monuments as will perpetuate and fix the locus thereof.

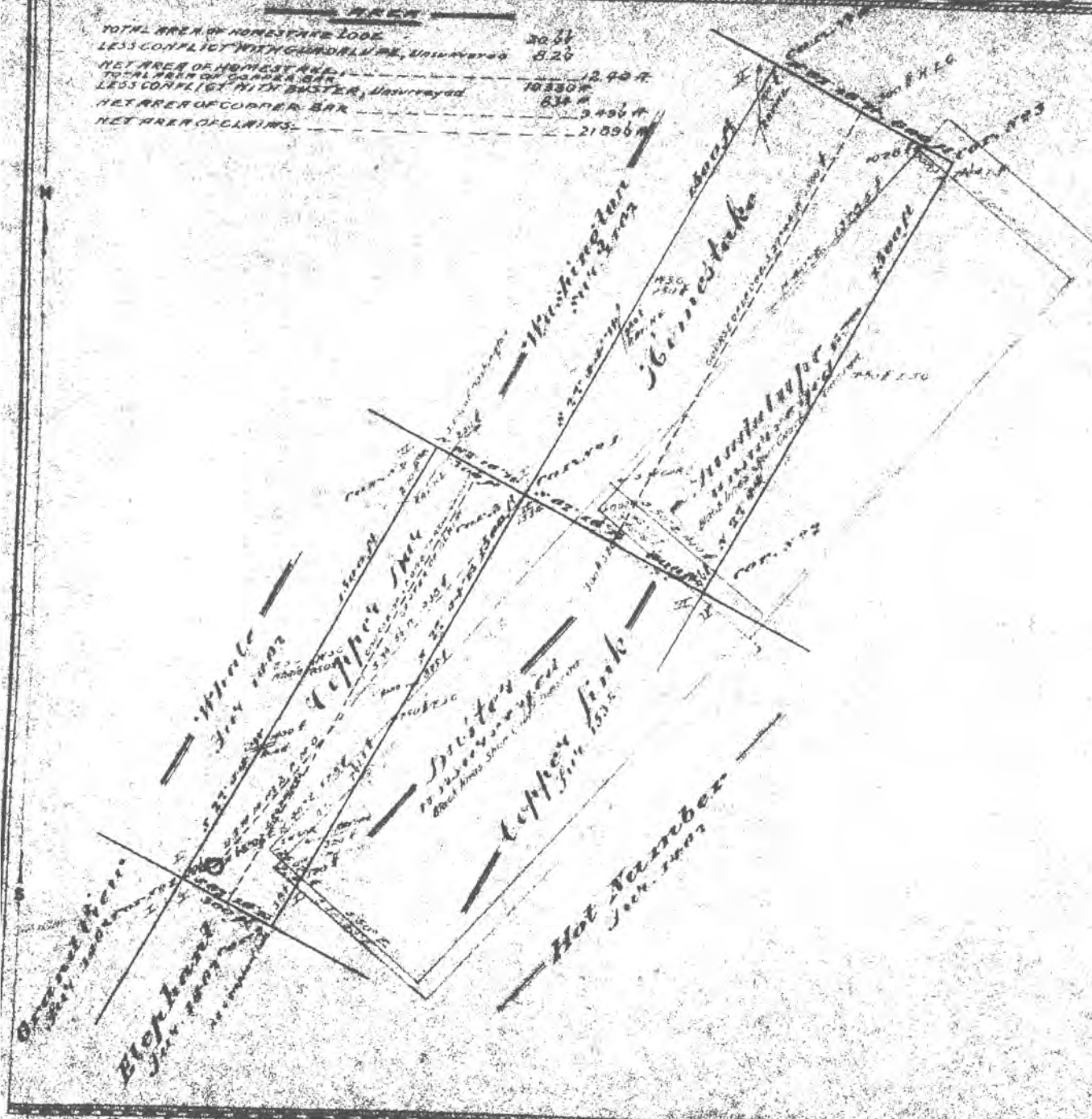
I further certify that Five Hundred Dollars worth of labor has been expended or improvements made upon said Mining Claim by claimants — or their grantors, and that said improvements consist of **Gravel, Ashfalls and 2 tunnels.**

that the location of said improvements is correctly shown upon this plat, and that no portion of said labor or improvements has been included in the estimate of expenditures upon any other claim.

And I further certify that this is a correct plat of said Mining Claim made in conformity with said original field notes of the survey thereof, and the same is hereby approved.

U.S. Surveyor General's Office, **George Gehring**
Tucson, Arizona. U.S. Surveyor General for
May 15, 1900 **Arizona.**

TOTAL AREA OF HOMESTEAD LODGE 30.51
 LESS CONFLICT WITH GARDEN LAKE, Unsurveyed 5.26
 NET AREA OF HOMESTEAD LODGE 25.25
 TOTAL AREA OF COPPER BAR 12.92 A.
 LESS CONFLICT WITH BUSTER, Unsurveyed 10.50 A.
 NET AREA OF COPPER BAR 2.42 A.
 NET AREA OF CLAIMS 27.67 A.



Mineral Survey No. 1000, Amended
 Lot No. 1000 Land District

PLAT
 OF THE CLAIM OF
 John Pratt, John Riley
 and C. D. Ellis
 KNOWN AS THE

Homestake
and
Copper Bar
 IN
 Yavapai (OR PINAL) COUNTY
 ARIZONA
 Containing an Area of 21.496 Acres
 Date of 300 Feet to the inch
 Variation 15 33 22
 SECTION 12 13 1901 M
 A. B. Mader

The Original Field Notes of the Mining Claim of
 John Pratt, John Riley
 and C. D. Ellis
Homestake
and
Copper Bar

from which this plat has been made under my direction
 have been examined and approved and upon file in this office
 and I hereby certify that they furnish such an accurate descrip-
 tion of said Mining Claim as will, if incorporated into a plat
 serve fully to identify the premises, and that such reference
 is made therein to natural objects or permanent monuments
 as will perpetuate and fix the location thereof.
 I further certify that two hundred dollars worth of labor has
 been expended in improvements made upon said Mining
 Claim, to-wit: (1) The signposts, and that
 said improvements consist of

Original Survey Notes
 that the location of said improvements is correctly shown
 upon this plat, and that no portion of said labor or im-
 provements has been included in the estimate of expenses
 incurred upon any other claim.
 And I further certify that this is a correct plat of said Mining
 Claim made in conformity with said original field notes of the
 parties claiming, and the same is hereby approved.
 J. H. Mader
 Surveyor General
 State of Arizona

Notice of Mining Location

LODE CLAIM

TO ALL WHOM IT MAY CONCERN:

This Mining Claim, the name of which is the CUPRITE NO. 7
Mining Claim, situate on land belonging to the United States of America, and in which there are valuable mineral deposits, was entered upon and located for the purpose of exploration and purchase by YAKASHEA PROPERTIES, INC., an Arizona Corporation

(Locator must insert either "A Citizen of the United States," or "Who has declared his intention to become a Citizen of the United States.")

the undersigned, on the 1st day of April, 1974

The length of this claim is 1500 feet and we claim 50 feet in a N 27° E direction and 1450 feet in a S 27° W direction from the center of the discovery shaft, at which this notice is posted, lengthwise of the claim together with 300 feet in width of the surface grounds, on each side of the center of said claim. The general course of the lode deposit and premises is from the northeast to the southwest

The claim is situated and located in the Peck Mining District, in Yavapai county, in the State of Arizona, about 3.1 miles in a northwesterly direction from Cleator; and approx. N 27° E, 8000 feet and then S 63° E, 1200 feet from the northeasterly corner of the Washington Claim, M.S. 1462, to the northerly end center of this claim.

The surface boundaries of the claim are marked upon the ground as follows:
Beginning at a four (4) foot wood post

at a point in a N 27° E direction 50 feet from the discovery shaft (at which this notice is posted), being in the center of the northerly end line of said claim; thence S 63° E 300 feet to a four (4) foot wood post being the northeasterly corner of said claim; thence S 27° W 1500 feet to a four (4) foot wood post being at the southeasterly corner of said claim; thence N 63° W 300 feet to a four (4) ft. wood post at the center of the southerly end of this claim; thence N 63° W 300 feet to a four (4) foot wood post being at the southwesterly corner of said claim; thence N 27° E 1500 feet to a four (4) foot wood post at the northwesterly corner of said claim; thence S 63° E 300 feet to the place of beginning.

Dated and posted on the ground this 1st day of April, 1974

Gordon C. Smith

Ray B. Collins
for YAKASHEA PROPERTIES, INC.

Witness

Locator(s)

STATE OF ARIZONA

COUNTY OF _____

ss.

Witness my hand and official seal the day and year aforesaid.

County Recorder.

I hereby certify that the within instrument was filed and recorded at request of _____

By _____

Deputy Recorder.

on _____ at _____

Fee \$1.00

Indexed	Photostat Compared	Blotted
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_____ M. Docket _____

Page _____

Jim —

Re Desk claims

Nobody seems to keep track of anything but patented mine claims).

There are "Notice of Mining Location" instruments for each Owens Lode #1-15 (They are 50¢ per copy)

The Recorder's Office says no one files maps except for patent purposes and the only way I can see to find other staked claims is

to go thru every page of every book and list everything in Peck Mining Dist.

I don't know if the 1882 & 1883 claims are the same as Owens 1972 claim and the girl told me there is almost no way to find out unless we can find some of the 1882-83 markers!

Reck

P.S. The searching is kind of fun though!

Just for fun I checked under De Soto as locator in each book (1882-1971) and found a few claims we don't seem to have a record of. It might be interesting to track them down.

Reck

Notice of Mining Location LODE CLAIM

TO ALL WHOM IT MAY CONCERN:

This Mining Claim, the name of which is the OWENS LODE #4
Mining Claim, situate on land belonging to the United States of America, and in which there are valuable mineral deposits, was entered upon and located for the purpose of exploration and purchase by SHERWOOD B. OWENS A CITIZEN
OF THE UNITED STATES
(Locator must insert either "A Citizen of the United States," or "Who has declared his intention to become a Citizen of the United States.")
the undersigned, on the 22ND day of SEPTEMBER, 1972
The length of this claim is 1500 feet and I claim 750 feet in
a NORTHERLY direction and 750 feet in a SOUTHERLY direction from
the center of the discovery shaft, at which this notice is posted, lengthwise of the claim together
with 300 feet in width of the surface grounds, on each side of the center of said
claim. The general course of the lode deposit and premises is from the NORTH
to the SOUTH

The claim is situated and located in the PECK Mining District, in
YAVAPAI county, in the State of Arizona, about 2250 FEET
in a NORTHERLY direction from WEST ORE ZONE
OF THE DE SOTO MINE AND HOLMS THE
NORTH END LINE OF PATENT CLAIM
HOMESTAKE 1462 AM.

The surface boundaries of the claim are marked upon the ground as follows:
Beginning at MONUMENT OF STONE

at a point in a SOUTHERLY direction 750 feet from
the discovery shaft (at which this notice is posted), being in the center of the SOUTH
end line of said claim; thence WESTARLY 300 feet to a MONUMENT
being the SOUTH WEST corner of said claim;
thence NORTHERLY 1500 feet to a MONUMENT being at the
NORTHWEST corner of said claim; thence EASTERLY 300 feet
to a MONUMENT at the center of the NORTH end of this claim;
thence EASTERLY 300 feet to a MONUMENT being at the
NORTHEAST corner of said claim; thence SOUTHERLY 1500 feet
to a MONUMENT at the SOUTHEAST corner of said claim;
thence WESTARLY 300 feet to the place of beginning.

Dated and posted on the ground this 22ND day of SEPTEMBER, 1972
William H. Brygger Sherwood B. Owens
Paul E. Stange Witness Locator(s)

STATE OF ARIZONA
COUNTY OF _____

ss. 782 P. 1

Witness my hand and official seal
the day and year aforesaid.

I hereby certify that the within in-
strument was filed and recorded at
request of _____

County Recorder.

By _____

Deputy Recorder.

on _____ at _____

Fee \$1.00

_____ M, Docket _____

Page _____

Indexed	Photostat Compared	Blotted
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Notice of Mining Location
LODE CLAIM

TO ALL WHOM IT MAY CONCERN:

This Mining Claim, the name of which is the *OWENS LODE #4*
Mining Claim, situate on land belonging to the United States of America, and in which there are valuable mineral deposits, was entered upon and located for the purpose of exploration and purchase by *SHERWOOD B. OWENS A CITIZEN OF THE UNITED STATES*
(Locator must insert either "A Citizen of the United States," or "Who has declared his intention to become a Citizen of the United States.")
the undersigned, on the *22ND* day of *SEPTEMBER* 19*72*
The length of this claim is *1500* feet and *I* claim *750* feet in a *NORTHERLY* direction and *750* feet in a *SOUTHERLY* direction from the center of the discovery shaft, at which this notice is posted, lengthwise of the claim together with *300* feet in width of the surface grounds, on each side of the center of said claim. The general course of the lode deposit and premises is from the *NORTH* to the *SOUTH*.

The claim is situated and located in the *PECK* Mining District, in *YAVAPAI* county, in the State of Arizona, about *2250 FEET* in a *NORTHERLY* direction from *WEST ORE ZONE OF THE DE SOTO MINE AND HOINS THE NORTH END LINE OF PATENT CLAIM HOMESTAKE 1462 AM.*

The surface boundaries of the claim are marked upon the ground as follows:
Beginning at *ADJUNCTION OF STONE*

at a point in a *SOUTHERLY* direction *750* feet from the discovery shaft (at which this notice is posted), being in the center of the *SOUTH*

end line of said claim; thence *WASTERLY 300* feet to a *MONUMENT*, being the *SOUTH WEST* corner of said claim; thence *NORTHERLY 1500* feet to a *MONUMENT* being at the *NORTHWEST* corner of said claim; thence *EASTERLY 300* feet to a *MONUMENT* at the center of the *NORTH* end of this claim; thence *EASTERLY 300* feet to a *MONUMENT* being at the *NORTHWEST* corner of said claim; thence *SOUTHERLY 1500* feet to a *MONUMENT* at the *SOUTHEAST* corner of said claim; thence *WASTERLY 300* feet to the place of beginning.

Dated and posted on the ground this *22ND* day of *SEPTEMBER* 19*72*
William H. Doyle *Sherwood B. Owens*
Paul Hines Witness Locator(s)

STATE OF ARIZONA
COUNTY OF *YAVAPAI*

ss. *782* *1*

Witness my hand and official seal the day and year aforesaid.

I hereby certify that the within instrument was filed and recorded at request of.....

County Recorder.

By..... Deputy Recorder.

on..... at

Fee \$1.00

....., Docket.....

Page.....

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<u>Claim</u>	<u>Locator</u>	<u>Dist.</u>	<u>Rec.</u>	<u>When Located</u>
Express	M.D.C. Putnam	Big Bug	Blk 57 / Pg 8	12/29/1900
Express	M.R. Parker et al	Big Bug	37/601	7/1/1897
→ Express #4 & 6 to 9	DeSoto Copper Corp.	Peck	98/154-158	3/13/1957

(Amended) Extension No. 1	DeSoto Mng Co.	Peck	74/290	3/3/1906
Extension No. 3	" " "	"	74/292	3/3/1906
Extension # 2	Sherwood B. Owens	Peck	139/348	10/23/1958

Acme	Patrick Markham	Peck	123/215	11/22/1923
Owens	Owen Owens	Peck	16/57.6.	1/1/1883
Owens	Owen Owens, et al	Peck	17/55	10/14/1882

Owens 7-11	Sherwood B Owens	Affidavit of Labor	1973
7-11	782/45,6,7,8	Book 859 Pg. 355	
(Mining Location Claims)			

<u>Locator</u>	<u>Claim</u>		<u>Recorded</u>	<u>When located</u>
De Soto -	Anchor	Peck	73/583	7/10/1905
"	Pen	"	75/209	1/25/1906
	Sylvia	"	75/210	1/25/1906
	Middleton #1 (Am.)	"	74/285	3/3/1906
	✓ #2 (")	"	74/287	3/3/1906
	✓ #3 "	"	74/288	3/3/1906
	R.E. M.	"	92/216	1/30/1957

Owens, Sherwood B.	Iron Chief	139/347	10/16/1958
	Extension #2	139/348	10/23/1958
	Pen	139/349	10/23/1958
	McKinley Ext. #1-6	139/350-355	10/10/1958

XXXXXXXXXXXXXXXXXXXX
* 16
2940 N. Casa Tomas

March 29, 1977

Mr. Steve Radvak
Radvak Engineering Ltd.
#514 - 850 W. Hastings
Vancouver, B. C., CANADA

Dear Steve:

Working further with the information Cutlass provided on the De Soto Project, I find a few more things missing which prevent me from completing the necessary drawings and which if provided would help solve some questions as to geologic interpretations on the sections.

First, did Cutlass ever map a Surface Geologic Map of the area?

As regards the Hammer Holes, all I can find are averages for the ore zone - no individual assays for the zone or for the balance of the hole, above or below the ore zones or for any blank holes. Could these individual assays be provided?

Are there ANY geologic notes as to the character or rock type for the samples taken from the percussion drill holes or the Hammer drill holes? If so, I would appreciate those also.

I do not have collar elevations for D.D.H. #'s 10, 12, 13 and 14. Scaling them off the Sections - if on the Sections - is not good enough because I have found some errors, thus, can not be sure.

From my standpoint, the negative information is as important, if not more so, in providing good interpretations of the situation, thus, I would be grateful to receive all the above information that I have requested.

I am sorry to have to bother you with these requests and perhaps you do not have this information in your files, but with your contacts up there, perhaps you could see to it that these requests and those of my March 26 letter get to the right person who could provide the requested information.

Best regards,

cc: S. B. Owens

R. E. Mieritz

XXXXXXXXXXXXXXXXXXXX
X16
2940 N. Casa Tomas

March 26, 1977

Mr. Steve Radvak
Radvak Engineering Ltd.
#514 - 850 W. Hastings
Vancouver, B. C., CANADA

Dear Steve:

It isn't often I ask a favor but when the factual data information on the DeSoto and the Carlotta were turned over to Sherwood Owens and return to myself and upon my review and study of same, I find that some information is missing. It is for that reason I write: to request of you the possibility of providing the missing information.

As regards the DeSoto, I have prepared some comprehensive Maps of Drill hole locations, Surface Geology, etc., all in preparation for deep drilling at selected spots. The following information is missing from all the records we had obtained from the Prescott Office (Don Heads Office).

- (1) - I need the hole locations by coordinates or some other means of location and reference for DDH 14 (surface) as well as underground drill holes U-1, U-5, U-6.
- (2) - Need copies of the Geologic Logs for surface DDH's #1, 2, 3, 4, 5, and 6. Also require the balance of Geologic Log for surface DDH #11 from 750 on to the total depth of 1150 feet, as well as assays for this hole from 989 to 1150 if there were any. Were there any assays for DDH #15? Lode
- (3) - Did Cutlass ever stake new claims East of the Owens/Claims and north of the Homestake-and southeast of the Homestake? Cutlass did construct a road on the east slope and northeast of the 600 Lv. Xout dump starting at the small pass or saddle below the dump. If they did, I would appreciate some information, particularly a Map of the claims.

As regards the Carlotta, we have no geologic Logs of the DDH's Sonesta drilled. I am in the process of designing a mining method to extract the structurally controlled mineralized breccia type pipe as determined by my recent study of the assay results of Sonesta and Homestake. Very, very interesting. It will make a mine, - without Cities Service or Miami. Did Sonesta by chance have Travis L. Gant & Associates (Engineers & Surveyors) of Globe complete a claim survey of the Carlotta claims and a small area around the claims? I ask this because I have a print of this survey and also one completed by the Arizona Surveying Service,

Steve Radvak

March 26, 1977

Page Two

Phoenix, for Homestake when they had the property, and there seems to be some discrepancies with regard the placement of some claims particularly the Clipper, Lad and the Dew. Do you by chance know anything about this?

It would be very helpful to receive the information I have requested which for the most part is all factual data and was to have been provided by Cutlass and Sonesta to Mr. Owens, I would be most grateful to receive same, in what ever form it may exist.

Hope you are making a lot of money. Finally got paid by Mr. Hofman close to the end of November, 1976.

Best Regards,

R. E. Mieritz,
Mining Consultant

cc: Mr. S. B. Owens

January 23, 1974

Steve Radvak
415-790 W. Hastings St.
Vancouver, B. C.

Dear Steve:

re: Proposed drill hole under the 900 level
at Desoto.

The shortest possible surface hole will be from the H-7 site. If H-7 can be used, that is if it hasn't deflected too much so that the target will be missed or if it isn't too crooked for casing, then only 760' of drilling need be done to intersect the target. On top of this will be 340' of casing for a total length of 1100'. Our water catchment area will have to be improved and a water truck will be required to supply the drill.

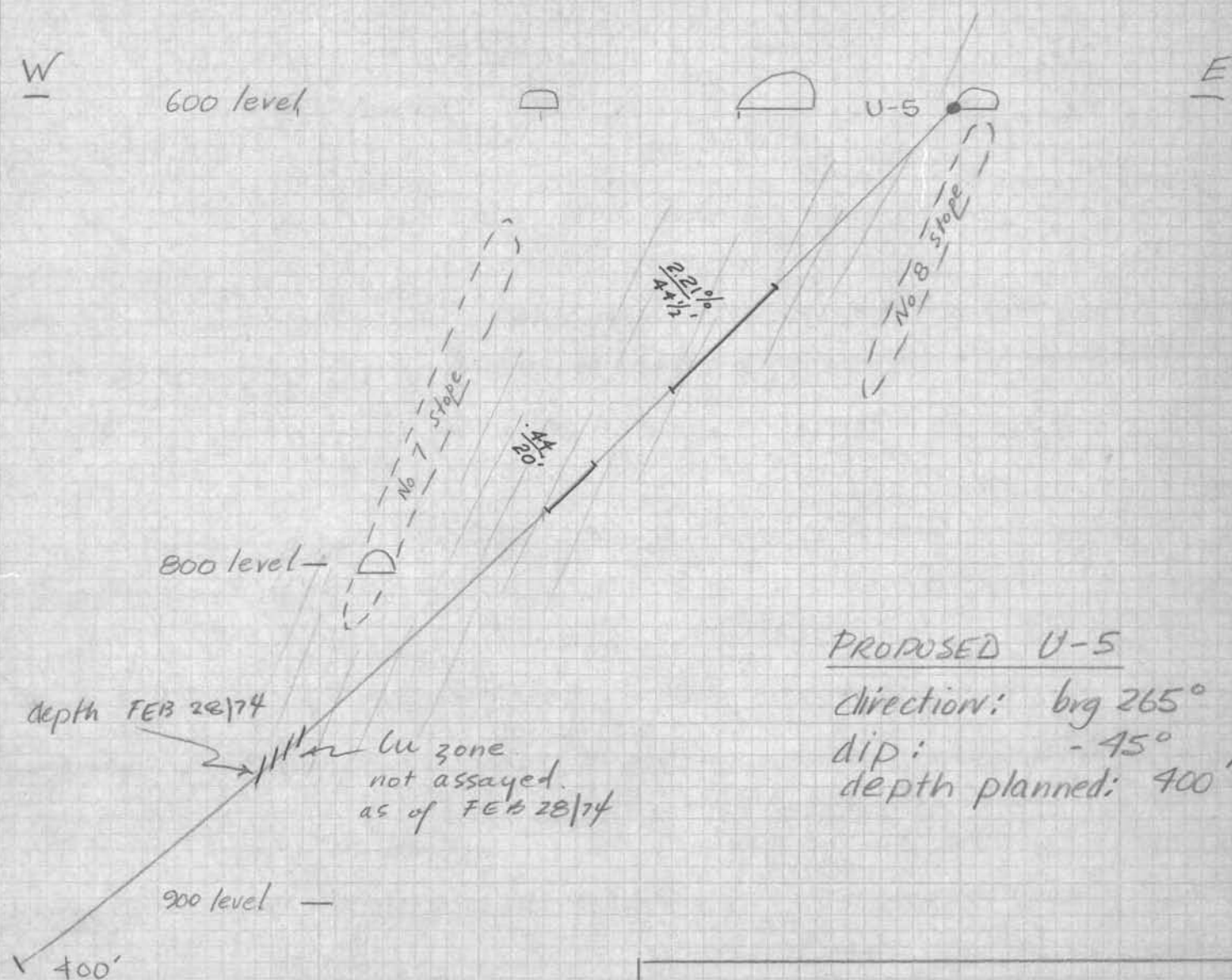
From the west drift, an underground hole of 900' will be required. Total new airline to be installed will be 1100' and water line for 1400'. We have 500' of 2" line on hand, thus an additional 600' will be needed. Some cleaning of the muck pile at the 1167' mark in the 600 crosscut will be necessary.

From a strictly physical point of view, drilling from underground would be preferable. No shut downs due to bad weather for instance. If you plan to put in air and water to the west drift to complete drilling off the west zone, then the underground hole will be less costly than a surface hole. I will arrange to have H-7 tested with a tropari if you wish to proceed with costing out the surface hole.

Sincerely,

Jim W. Simpson

JWS:bb



MEMO

January 30, 1974

TO: Steve Radvak
FROM: Jim W. Simpson
SUBJECT: Proposed underground hole from 600
level main crosscut.

The attached sketch shows a section along the hole and the proposed length. Other pertinent information is also on the section.

The 1" = 100' survey plan of roads and drill holes, ~~It~~ also shows this proposed hole.

As we discussed tonight, I will proceed immediately with preparations (air line, water line, drill hole set up, etc..) for this hole.



Jim W. Simpson

JWS:bb

1667' went in 600 feet
X-cut

-34°

1667' went
in 600 feet
depth 600'
bearing 160°
inclination -34° (-35°)

400 feet

60'

hole will be at 50° to
the schistosity strike
and at about 70°
to the dip

Jan 30/74
JMK

February 22, 1974

Mr. Murray Pezim
Cutlass Exploration Limited
315-543 Granville St.
Vancouver, B. C.

re: Weekly Progress Report Feb 9 - Feb 15/74

Dear Murray,

During the week the underground drilling was again resumed on a new hole, U-4, which is plotted on the attached section. Drill log and assays are also attached for your files.

The plan for further drilling at Desoto was summarized into a letter form and you should have this by now.

The surface drilling contract was signed near the end of the week with Roger Smith and he began mobilizing.

Our Fuel allocation was finally granted on Feb. 15 and now, assuming the general supply of fuel holds out, we will be assured of enough fuel to finish the proposed program.

Installation of airline and clearing the main crosscut for preparation of the U-7 drill set up is going well, if slowly.

In general the drilling operation is running smoothly and I do not for see any serious problems.

Yours truly,

J. W. Simpson

JWS:rr
Enclosures: Drill Logs U-3 & U-4

February 25, 1974

Mr. Murray Pezim
Cutlass Exploration Limited
315-543 Granville St.
Vancouver, B. C.

re: Weekly Progress Report Feb 16 - Feb 22/74

Dear Murray,

Two shifts began working underground on Saturday immediately after our fuel allocation was approved.

Drill hole U-4 was shut down at 213' on Sunday after passing through a 10' high grade section from 162-172'. It was gratifying to see that the drill was moved, set up and put into operation on Monday. Sections showing U-1 - U-4 are attached along with a table of complete assay information. A section of U-5 was sent with my letter of Feb 14/74 and you can use this to visualize assay information as I phone it to you.

Roger Smith was still experiencing problems getting set up but I now expect he will be drilling by the weekend.

Yours truly,



J. W. Simpson

JWS:rr

Enclosures: Sections E, F, G,
Table of Assays

February 28, 1974

Mr. Murray Pezim
Cutlass Exploration Ltd.
315-543 Granville St.
Vancouver, B. C.

re: Weekly Report February 23 - 28, 1974

SURFACE DRILLING:

Roger Smith finally started drilling on Sunday, Feb. 24 but he was not properly set up and the operation did not start running smoothly until Wednesday. A pump has been installed on the 600 level to supply water as required for the surface drill. This water is collected in a small catchment area near the 600 level portal where Roger can have easy access.

I expect the intersection of the west zone to begin at about 200' and this should be reached by the weekend.

UNDERGROUND DRILLING:

The attached section shows progress to date on U-5. Note the scale which has been corrected from the original section sent two weeks ago.

Drilling was interrupted as a result of an accident with one driller and illness with the other. Both shifts are now working again however. Diamond bit life is low in the very hard cupriferous sections but average in the schistose intervals.

GENERAL:

The 4" pipe has arrived which will service drill sites U-8 to U-12 and this will be installed by the middle of next week.

I've made tentative enquiries about the Iron King Mill which is for sale and will forward what data I can, along with my thoughts on the subject, in the near future.

A summary of underground assay results with cross sections showing the holes was forwarded to you recently and you should have this by now.

Yours truly,

J. W. Simpson

JWS:RR
Enclosure

cc: Steve Radvak
Don Head

March 7, 1974

Mr. Murray Pezim
Cutlass Exploration Ltd.
315-543 Granville St.
Vancouver, B. C.

re: Weekly Report March 1 - 7, 1974

SURFACE DRILLING:

DDH-10 was completed to a depth of 300' after cutting the West zone between 182' and 186'. The rig was moved and set up at DDH-11 on Monday and drilling is presently underway. I expect a fairly good intersection of the West zone in a few days and then it will be a week or so before the E zone is intersected about 150' below the 900 level.

UNDERGROUND DRILLING:

U-5 is still drilling at a depth of 363' this morning. Only one shift has been employed all week due to Norm Badger's accident. We decided he should be replaced and he left for Canada on Tuesday and another driller is being sought.

A very good intersection was made in U-5 between 314' and 332' and this will be assayed soon. I consider this discovery significant in that it is now proven that mineralization exists beneath the deepest stopes.

GENERAL:

On Monday I spent the day with Archie Bell and Bryne Brynelson touring the Desoto Mine. They both seemed impressed with what we have outlined to date. Archie recognized the environment and its exploration potential. He suggested doing a VLF-EM survey to test the favourable horizons where no outcrop can be mapped and this is a good idea in my opinion. I will arrange for this survey as time permits. My highest priority is ensuring that the drilling program is completed as quickly as possible.

Yours truly,

J. W. Simpson

JWS:rr

cc: Steve Radvak
Don Head

March 18, 1974

Mr. Murray Pezim
Cutlass Exploration Ltd.
1055 W. Georgia Suite 1606
Vancouver, B. C.

re: Weekly Report March 8 - 15, 1974

SURFACE DRILLING:

Several days were lost due to a fairly severe snow storm over the weekend. Very slippery conditions made it almost impossible to negotiate the road with a 4 wheel drive vehicle and so obviously the water truck was inoperative.

When the drilling was resumed on DDH-11 good progress was made and the hole was at almost 600' by the weekend.

The west zone, where intersected by this hole, was much thinner and lower grade than expected. From 170-200' should run about 0.5% Cu.

UNDERGROUND DRILLING:

Bill Cowie brought a diamond driller back from Vancouver and drilling resumed underground. The drill was moved to U-6 on Friday. A copy of the plan showing underground hole locations is enclosed with this letter.

GENERAL:

Considerable mineral claim research was done in an effort to determine if favourable ground was open to the north of our claim and if so, if it would be to our advantage to stake them now or after we have done some preliminary work. I believe that it would be wise to wait until we have proven

the existence of a mineral showing in the area before we spend the money for surveyors, etc. necessary to locate the claims.

Yours truly,

J. W. Simpson

JWS:rr

cc; Steve Radvak
Don Head

March 22, 1974

Mr. Murray Pezim
Cutlass Exploration Ltd.
1055 W. Georgia Suite 1606
Vancouver, B. C.

Dear Murray,

re: Weekly Report March 16 - 22/74

SURFACE DRILLING:

Very little progress was made during the week due to bad weather and poor ground conditions. The hole has been cemented several times and water pressure is still almost non existent. Drilling mud and lost circulation additives are now being used to try to seal off the small fissures that seem to be siphoning the water.

UNDERGROUND DRILLING:

Good mineralization was cut for the first 17' and moderate copper values persist till about 40'. At about 95' a second zone of mineralization was intersected and values continue to 155' where drilling was advancing last night. I expect the hole to be completed today and the drill will be moved to a new set-up half way between the East and West zones on the main 600 level crosscut. This will be a long hole (about 600') and will cut the structure at about 45°.

GENERAL:

I examined the Rio Sierra property (Copper Creek) and laid out a small exploration program which should be completed prior to spotting of drill holes.

A drill should be on the Sonesta Resources property (New Strike) by about the middle of next week. Drill hole sites have been located there for the first stage of drilling.

Yours truly,

J. W. Simpson

JWS:rr

cc: Steve Radvak
Don Head

April 1, 1974

Mr. Murray Pezim
Cutlass Exploration Ltd.
1055 W. Georgia Suite 1606
Vancouver, B. C.

Dear Murray,

re: Weekly Report March 23 - March 29, 1974

SURFACE DRILLING:

The lost circulation problem still persists in our deep hole but drilling can continue if sufficient water is trucked to the drill. For this purpose, two shifts of drivers are required so that drilling can be continuous. The hole was at 850' late Friday after intersecting a 10' zone of about 1.5% Cu between 829' and 839'. This is a true width intersection and is encouraging in light of my projections which show the down dip extension of previously mined material would not be cut until 900'.

UNDERGROUND DRILLING:

A very long move was made to our present setup in the main 600 level crosscut. The hole was at 94' on Friday and had intersected traces of chalcopryite in the clorite schists. This was unexpected and will be assayed.

GENERAL:

Claim staking was done on the northern extension of the property to cover favourable geological horizons. I plan to build a road to this area in the near future and do a little trenching, geochemistry and possibly EM surveying

to gain some idea of the potential of the new claim group.

Several samples from previous drilling have been selected for check assaying in Canada and I will write a short report on the results of this checking as soon as they are available. In addition tests are being run on the oxide-sulphide ratio in samples from the West zone. This will assist in determination of the economics of mining this zone.

Yours truly,


J. W. Simpson

JWS:rr

cc: Steve Radvak
Don Head

CUTLASS EXPLORATION, INC.

April 19, 1974

Mr. Murray Pezim
Cutlass Exploration Ltd.
1055 W. Georgia Suite 1606
Vancouver, B. C.

Dear Murray,

re: Progress Report March 30 - April 19, 1974

SURFACE DRILLING:

The deep hole, DDH-11, through the West zone and into the East zone below the 900' level was completed to a depth of 1150'. The main zone of mineralization was intersected, as expected at 900' and persisted to 960'. A previously reported high grade zone from 829-839' was followed by moderately mineralized material which graded 0.49%. Thus the complete section from 829-959' (130') averages 0.78%. The higher grade section within this zone from 899-949' (50') grades 0.96%. It should be remembered that this is a true width intersection and indicates a substantial tonnage could be developed.

DDH-12 was drilled at Steve Radvak's request to test the down dip extension of one of the better mineralized sections on the West zone. A zone from 407-431' (24') graded 1.1% and this was the only intersection of interest.

A cross section with the new surface holes is included with this report.

DDH-13 is now drilling at a point 35' East of the West end of cross section H-H'. The hole dips at -55° and will test the West zone in a relatively unknown area.

Received from Mr. Murray Pezim

UNDERGROUND DRILLING:

Hole U-7 is presently at 450' and has intersected several mineralized zones, none of which are high enough grade or wide enough to be considered economically interesting. The planned depth of the hole is 600' and drilling is continuing in spite of some labour problems.

GENERAL:

Dr. Gross of Pure Silver Mines (Toronto) was given a complete tour of the Desoto Property and left me with the impression that he thought the situation was not large enough to warrant his involvement.

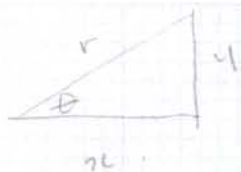
Dr. Seraphim was also given a tour to update him on recent progress. As usual, he gave me considerable help and suggested some possible exploration targets.

Yours truly,

J. W. Simpson

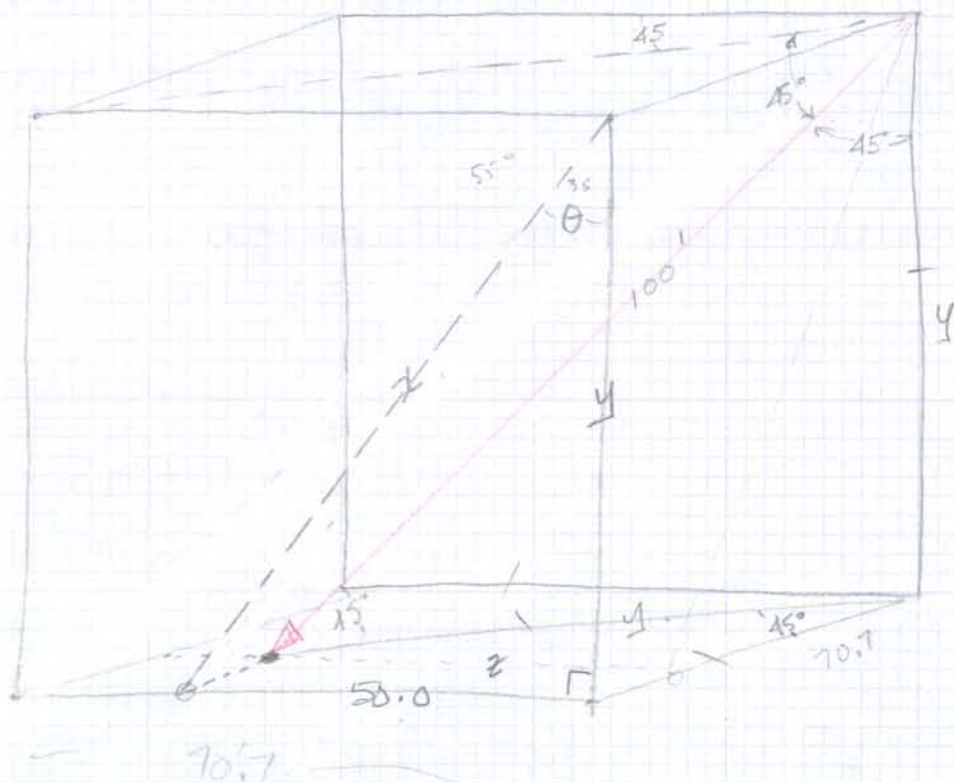
JWS:rr

cc: Steve Radvak
Don Head



$$\begin{aligned} \sin \theta &= y/r & \cot \theta &= x/y \\ \cos \theta &= x/r & \sec \theta &= r/x \\ \tan \theta &= y/x & \csc \theta &= r/y \end{aligned}$$

V-6



10.7 horizontal
→ 87.1 on section
∴ 50' → 62'

70.7 hor → 100' hole
50' " → 70.7 hole

$$\begin{aligned} y &= 100 \sin 45^\circ \\ &= 70.7 \end{aligned}$$

$$\begin{aligned} z &= 70.7 \sin 45^\circ \\ &= 50.0 \end{aligned}$$

$$\begin{aligned} \therefore x &= \frac{50}{\sin 35^\circ} \\ &= \frac{50}{.574} \\ &= 87.1 \end{aligned}$$

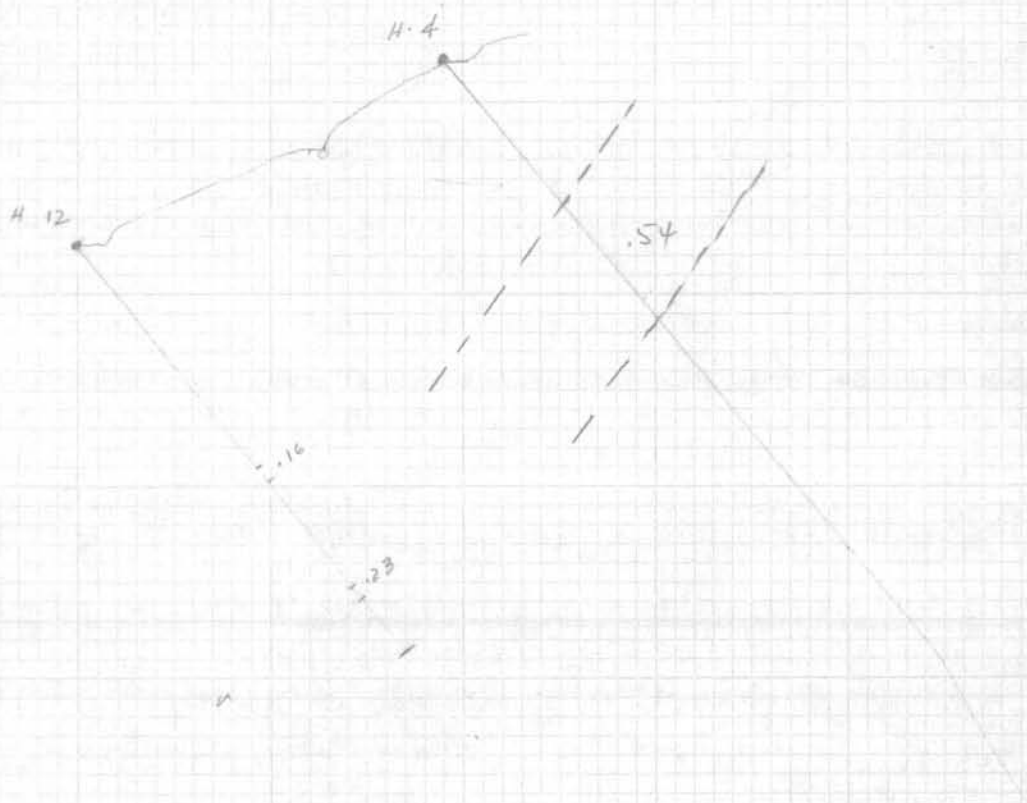
$$\begin{aligned} \theta &= \arctan \frac{z}{y} \\ &= \arctan \frac{50}{70.7} \\ &= \arctan 70.7 \\ \therefore \theta &= 35^\circ \end{aligned}$$

∴ 100' of drill hole
= 87.1' on section.
k of dip = -55°
on section

5400

5300

5200



Radrak Eng. Ltd.

850 W. Hastings 681-4020

3161 Westminster Pl. Wn 926-3986

Meredith & Co. Barrister, & Solicitor
777 Hamby - 682-7731

Hafman - Fid. S.

4050 Bayridge Wn - 922-7001

777 Hamby 685-4261

Faulkner - 922-7128 Maryc
3751 Bayridge Wn

3267 E Broadway - 253-8896 off

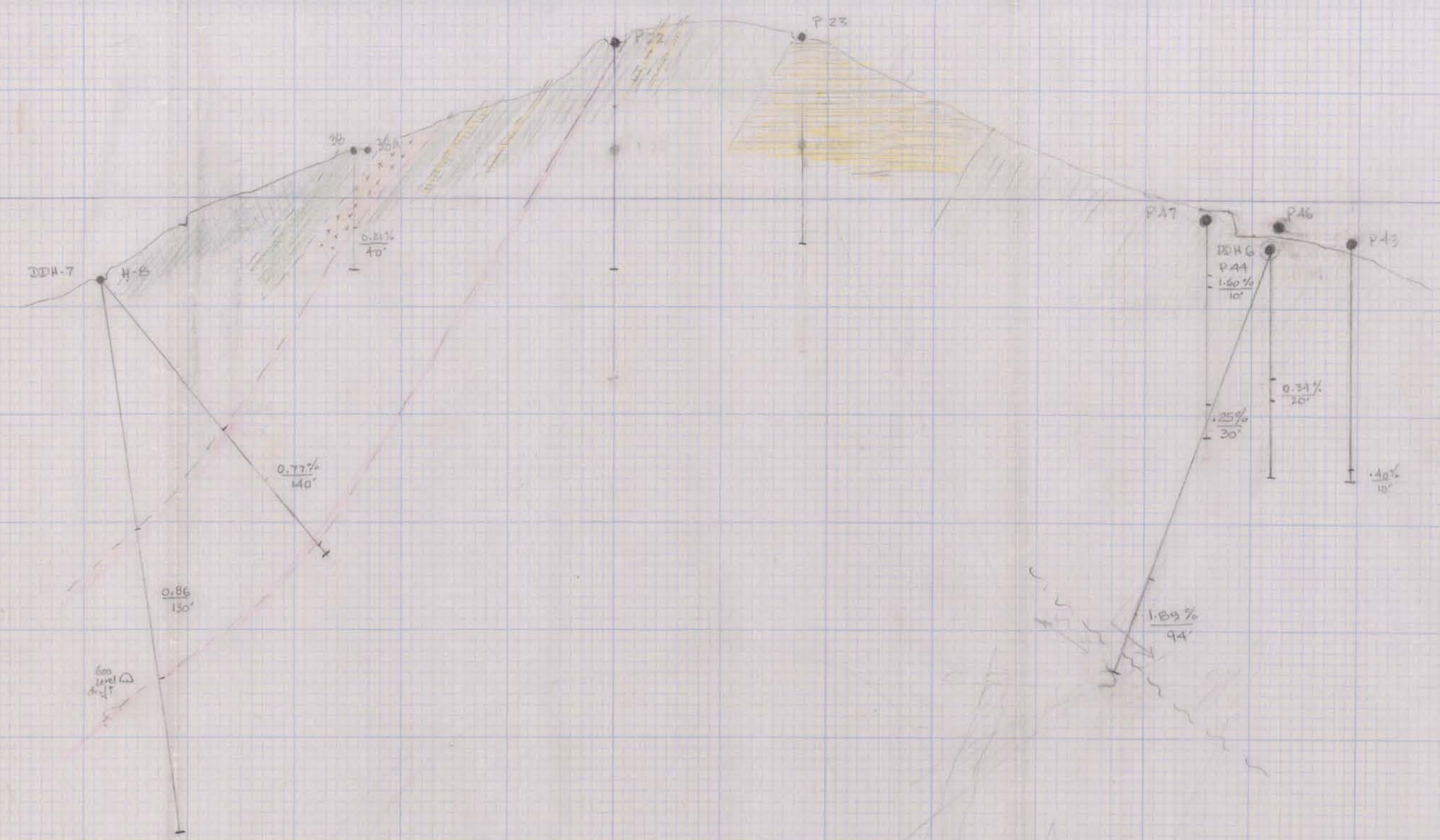
Addison R.A.

9636 Bow Bby 434-6972

Seraphim R. H. - Eng. hxd.
470 Glenville 685-2914

M

5600
5500
5400
5300
5200
5100
5000
4900
4800



February 14, 1974

TO: Murray Pezim
FROM: J. W. Simpson
SUBJECT: Proposed drilling program Desoto Property

The enclosed plan and cross sections illustrate what I believe to be a comprehensive drilling program which, when completed will form the basis for a preliminary feasibility study. Attached is a tabulation of the proposed holes with pertinent parameters defined and reasons for the holes.

In the table a total of 1700' of underground drilling and 2200' of surface drilling is proposed. If a factor of \$12.00 per foot is used this drilling will cost about \$50,000. The \$12.00 factor should include direct drilling costs, camp costs and field supervision but no overhead costs.

Given reasonable luck with fuel supplies, personnel, equipment and weather the entire program could be complete in 6 weeks.

I will proceed with this proposed plan unless given different instructions.

J. W. Simpson

JWS:rr

cc; Steve Radvak
Don Head

Enclosed: Section of U-5

<u>Hole Number</u>	<u>Bearing</u>	<u>Dip</u>	<u>Planned Depth</u>	<u>Purpose of hole</u>
U-5	265°	-45°	400'	Mineralization is known to occur between #7 & #8 stopes as well as west of the #7 stope on the 600' level. This hole is somewhat down dip and along the strike but is placed at the only available set up which will test the area between these stopes without undue risk of hitting old workings before the hole is complete.
U-6	300°	+30°	200'	This hole will test mineralization known to occur west of the #7 stope.
U-7	120°	-45°	200'	To test strike length of the ore zone to the north.
U-8	160°	-34°	600'	The possibility of mineralization below the 900' level will be explored by this hole.
U-9	120°	-20°	100'	These holes explore the west zone at greater depth than any previous holes and will be important for tonnage calculations.
U-10	300°	+20°	50'	
U-11	120°	-20°	100'	
U-12	300°	-20°	50'	
DDH-10	120°	-30°	300'	Will check extension of west zone to north under P41 which was not deep enough.
DDH-11	120°	-53°	1100'	This hole will pass through the west zone under the rhyolite beds which outcrop on surface & into east zone below 900' level. A possibility exists that an entirely new zone could lie beneath the rhyolite & this will be tested while both east & west zones are intersected.
DDH-12	120°	-60°	400'	To give needed reference intersection on west zone.
DDH-13	120°	-50°	100'	Hole H-12 was possibly stopped too short, it should be deepened.
DDH-14		-90°	300'	This hole will test the most northerly known showing on the west zone near an old shaft which has some very high grade material on the dump.

REPORT ON PERCUSSION DRILLING, JANUARY, 1974

MOND-TEL PROPERTY
PIMA COUNTY, ARIZONA

SUMMARY

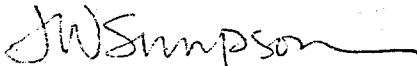
A total of 1610' of percussion drilling in 11 holes was completed on the Mond-Tel property following the general recommendations of Mieritz, 1973. Attached are a table summarizing results of the drilling (Table 1) and a plan (Fig. 1) showing the drill hole locations.

Assay values from the percussion samples indicate the average copper content, over a 700' strike length of the zone, is of the order 0.2% Cu.

CONCLUSION

The zone of primary interest on the property has been tested with a reasonable density of drill holes and the average grade is sub-economic at present prices for Cu.

It does not therefore appear prudent to continue the exploration effort on this portion of the property. Areas of less obvious potential will have to be surveyed in detail prior to drilling.


J. W. Simpson
March 13, 1974

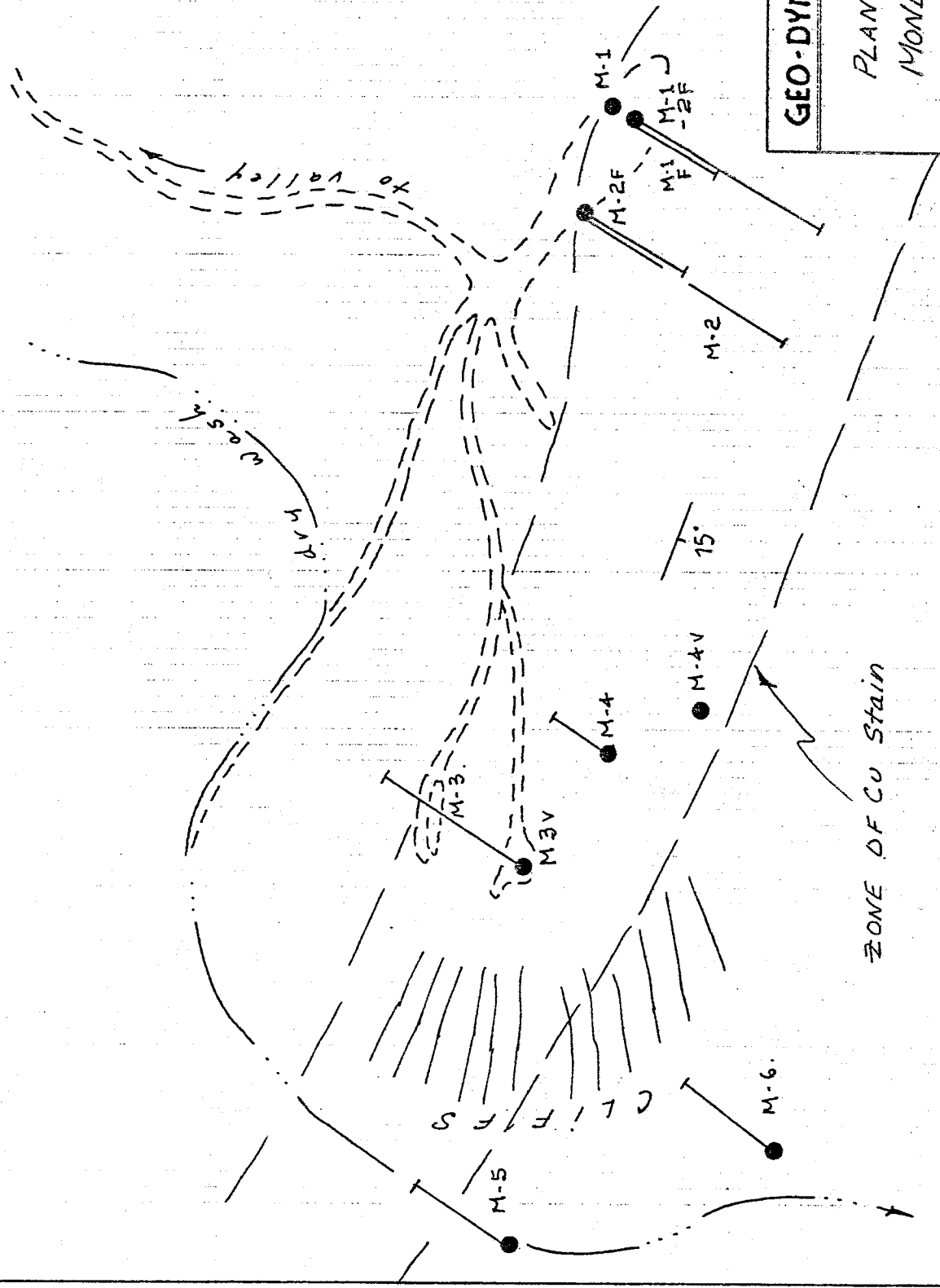
JWS:rr
Enclosures

cc: S. Radvak

TABLE 1

SUMMARY OF DRILLING
PROGRAM WITH ASSAYS

HOLE #	DIRECTION	DIP	DEPTH	ASSAYS	
				INTERVAL	%Cu
M-1	----	-90°	60'	0-10'	.20
M-1F	S20°W	0	60'	0-60'	.20
M-1-2F	"	-30°	150'	0-130'	.22
M-2	"	-30°	170'	0-170'	.33
M-2F	"	0	70'	0-70'	.40
M-3	N20°E	-50°	150'	0-150'	.22
M-3V	----	-90°	200'	0-200'	.22
M-4	N20°E	-70°	130'	0-130'	.13
M-4V	----	-90°	220'	0-220'	.08
M-5	N20°E	-70°	200'	0-200'	.08
M-6	"	-70°	200'	0-200'	.18



GEO-DYNE RESOURCES LTD.

PLAN OF DRILL HOLES
MOND-TEL PROPERTY

SCALE: - 1" = 100'

DATE: - MARCH 1974

DRAWN BY: - J.W. SIMPSON.

3-23-79

from the desk of

Larry E. Dietz

Coe & Van Loo Consulting Engineers, Inc.
4550 North 12th Street
Phoenix, Arizona 85014
264-6831

Dear Dick,

I did not separate the material
after it came back from the
Printers.

Once again thanks,

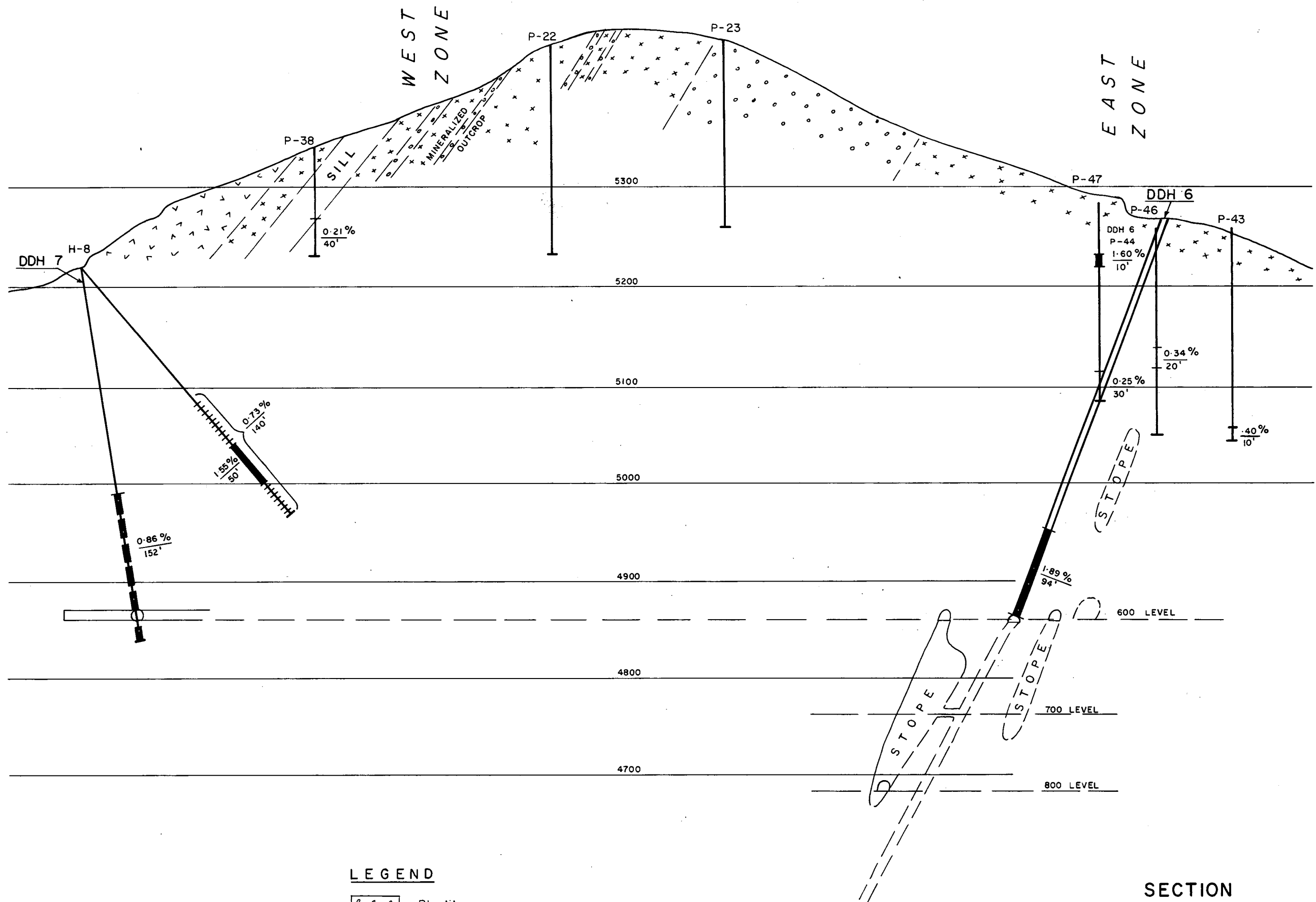
Larry E. Dietz
EVL

DDH #	33704	3320	3270	3220	3170	3120	3070	3020	29703	2920	28704	28205	
4 ^(354.9) 3688	X	none below											3233
5 ³⁷¹³ (181.0)	X	X	X	X	X	X	X	X	X	X			2982
7 3701	none	3520											3520
9 ^(329.4) 3630	X	X	X	X	X	X	X	X	X	X	X	X	3290
10 3654	none	3423											3423
11 ³⁵⁰⁵	X	X	X	X	X	X	X	X	X	X	X	X	2783
13 ³⁵²⁹	X	X	X	X	X	X	X	X	X	X	X	X	X 278
14 ³⁵⁷⁶	X	X	X	X	X	X	X	X	X	X	X	X	2811
15 ³⁵⁷⁶	X	X	X	X	X	X	X	X	X	X	X	X	2816
16 ³⁶⁰⁰	X	X	X	X	X	X	X	X	X	X	X	X	2818
18 ³⁶³⁵	X	X	X	X	X	X	X	X	X	X	X		2895
19 ³⁶⁶⁵	X	X	X	X	X	X	X	X	X	X			2893
20 ³⁶⁷⁴	X	X	X	X	X	X	X	X	X	X	X	X	2708
1 ³⁶⁴²	X	X	X	X	X	X	X	X	X	X	X	X	2771
2 ³⁶²⁷	X	X	X	X	X	X	X	X	X	X	X	X	2700
3 ³⁶⁸⁰	X	X	X	X	X	X	X	X	X	X	X	X	2827
4 ³⁶⁶⁰	X	X	X	X	X	X	X	X	X	X	X		2867
5 ³⁶²⁷	X	X	X	X	X	X	X	X	X	X	X	X	2682
6 ³⁶¹⁹	X	X	X	X	X	X	X	X	X	X	X	X	2647
7 ³⁶⁶³	X	X	X	X	X	X	X	X	X	X	X		2887
8 ³⁵⁸³	X	X	X	X	X	X	X	X	X	X	X	X	2661
9 3701	X	X	X	X	X	X	X						3065
10 3738	X	X	X	X	X	(X)	X	X					3123
11 ³⁵²⁸	X	X	X	X	X	X	X	X	X	X	X	X	2675
12 ³⁶⁸⁰	X	X	X	X	X	X	X	X	X				2998
13 ³⁶⁴⁰	X	X	X	X	X	X	X	X	X				2944
14 ²⁶⁶⁹	X	X	X	X	X	X	X	X	X	X	(X)		2872
	① 25	② 25	23	23	23	23	22	27	① 19	18	15	13	9

3370
3420
3470
3520

nr

nr



LEGEND

- Rhyotite
- Andesite
- Biotite Schist

SECTION DE SOTO MINE YAVAPAI COUNTY, ARIZONA

100 0 100 200 FEET

JAN. 1974

J.S. & R.H.S.

Sheet II of II - February 26, 1979
To John Hadd - Superior Oil Co. as per Feb. 23
Phone call to Mr. R.E. Meritz

- 1- ~~longitudinal Projection of Desoto Stages. Print.~~ (Map)
- 1 ~~Set sections T-T' thru N-N' - Outcrop Tracings + Plan,~~
~~showing sections and Open Pit. 4 (6 tracings)~~
- 1- ~~Section T-T' - R.E. Meritz Tracing paper -~~
- 1- ~~Plan Map Drill Hole locations - S.W. Cloth Tracing~~
- 1 ~~Set of Diamond Drill Hole logs - Outcrop~~
~~UG-1 thru UG-7, 13 pages~~
~~DDH 7 thru DDH 15, 19 pages.~~
- 1- ~~Print-colored - Surface Geol. - Desoto 1" = 50 ft.~~

John H. Hadd
2/26/79

John H. Hadd
2/26/79

February 21, 1979

Reports, Factual Data and Maps (Prints and/or
Tracings) given to Lynne Velpi, Superior Oil Co.

- 1 - ~~Claim Map~~ ~~Spica DeSoto~~ ~~1" = 800'~~ ~~1957~~
- 1 - ~~Claim Map~~ ~~Blue Bell Tracing~~ ~~1" = 600'~~ ~~19~~
- 1 - ~~Surface Seal~~ ~~Blue Bell Tracing~~ ~~1" = 500'~~ ~~1969~~
- 1 - ~~Composite 200 ft. 900 ft. DeSoto~~ ~~1" = 30'~~ ~~1957~~
- 1 - ~~Drill hole locations DeSoto (Map)~~ ~~1-50, 1977~~ ~~Spica~~
- 1 - ~~Surface Seal DeSoto (Map)~~ ~~1" = 50'~~ ~~1977~~ ~~"~~
- 1 - ~~Set Cutlass Cross sections, prints~~ ~~15 - A-A to O-O~~ ~~1-50'~~

1974 -

- 1 - ~~Map~~ ~~Trinurse~~ ~~showing Cutlass sections~~ ~~1" = 50'~~
- 1 - ~~Surface Seal~~ ~~Print colored~~ ~~DeSoto~~ ~~1" = 50'~~ ~~1977~~ ~~Working Map~~
- 1 - ~~Tracing~~ ~~Blue Bell shaft~~ ~~also colored print~~ ~~1977~~
- ~~No Title - 7th date. (Working Maps)~~
- 1 - ~~Blue Bell Mine~~ ~~Longitudinal section~~ ~~(Army 1" = 50', 1973)~~
- 1 - ~~Geology Tracing~~ ~~handed~~ ~~1" = 30'~~ ~~1957~~
- 1 - ~~Print Amoco Seal~~ ~~Blue Bell & Cedar Creek~~ ~~Print~~ ~~Colored~~ ~~12-15-76~~
- 1 - ~~Print Amoco Seal~~ ~~Mayer Green King~~ ~~2-15-77~~ ~~Not Colored~~
- ~~Set of 5 Drill Logs Amoco holes, Mar thru May, 1976.~~
- 1 - ~~Folder of 11 pieces of literature, Maps - Geophysical Work~~ ~~by Amoco.~~
- 1 - ~~Report, 1970 & 1973 S.P.O. & Steve Traczak~~ ~~DeSoto, &~~ ~~Blue Bell Potentials.~~

mm

W. J. Velpi
Superior Oil Co.
Sheet one

SHEET I of II

X Transit of Releto - 1" = 100' Apr. 1974 Print Atlas,

X Sect. J-J' N-N' 1" = 100" Atlas, & Plan
Proposed Pit. Oxide-zone Tracings.

X Drill Holes Logs - Atlas. U-1 thru U-7 - 13 pgs
DDH-1 - DDH-15 - 19 pgs

X Chilson Vale - My Section J-Tracing, Plan Map of DDH.
SW - Tracing cloth.

Report =

Geophysics & Ground pulse to M. Gurney, over
Iron-Releto, Fairbairns.

John

27V-4382 - Cord Edwards

OF

SHEET NO
JOB NO.

SUBJECT

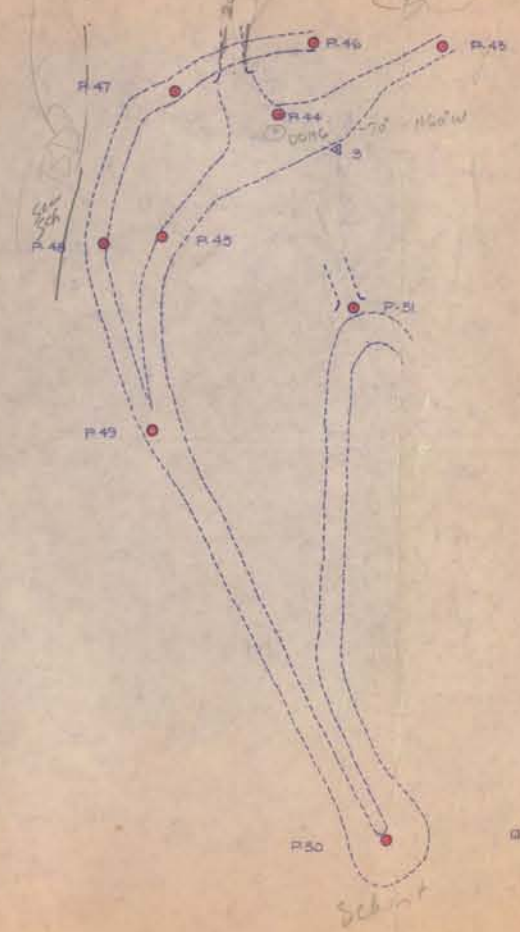
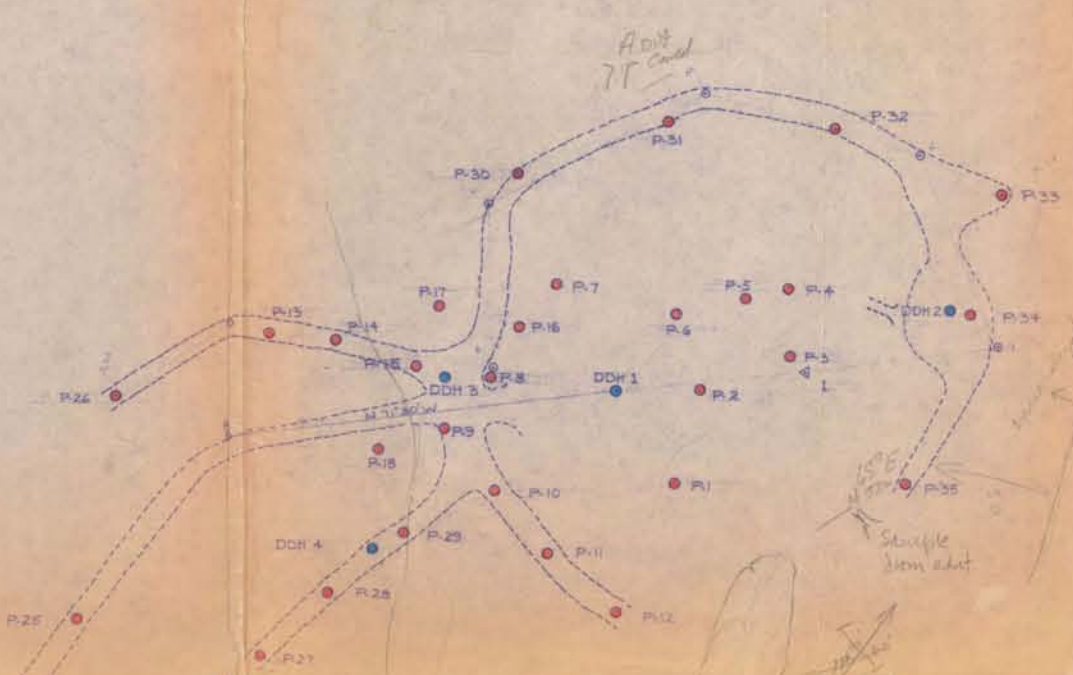
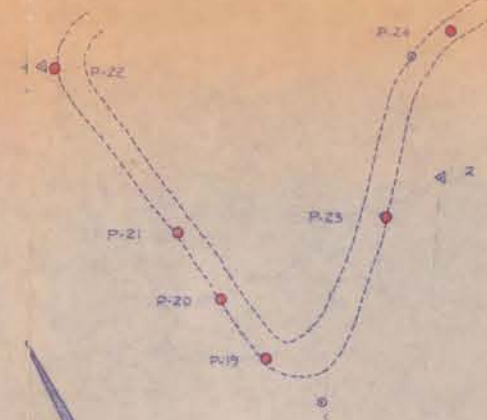
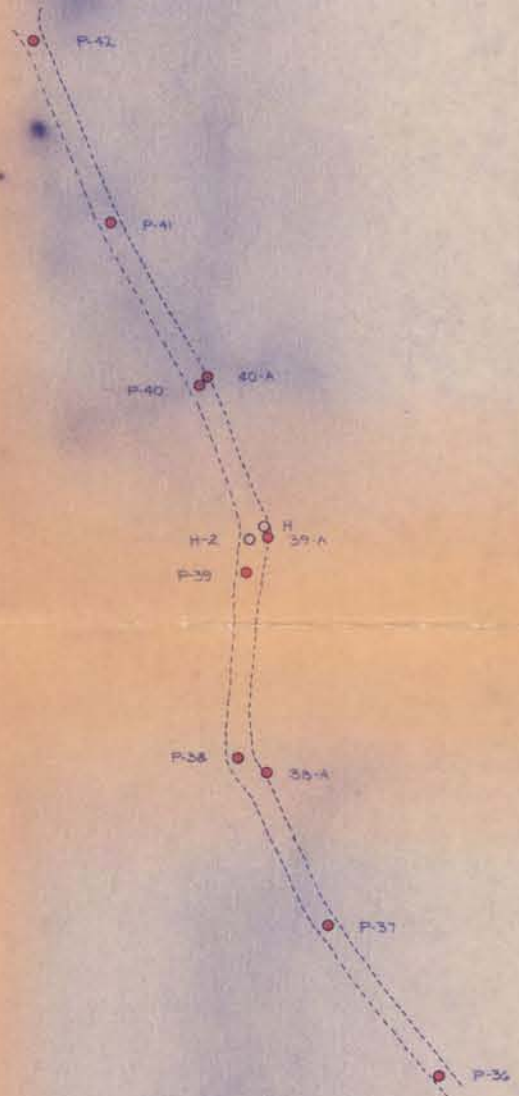
DATE
DATE

BY
CHKD BY



SEP 6 1974

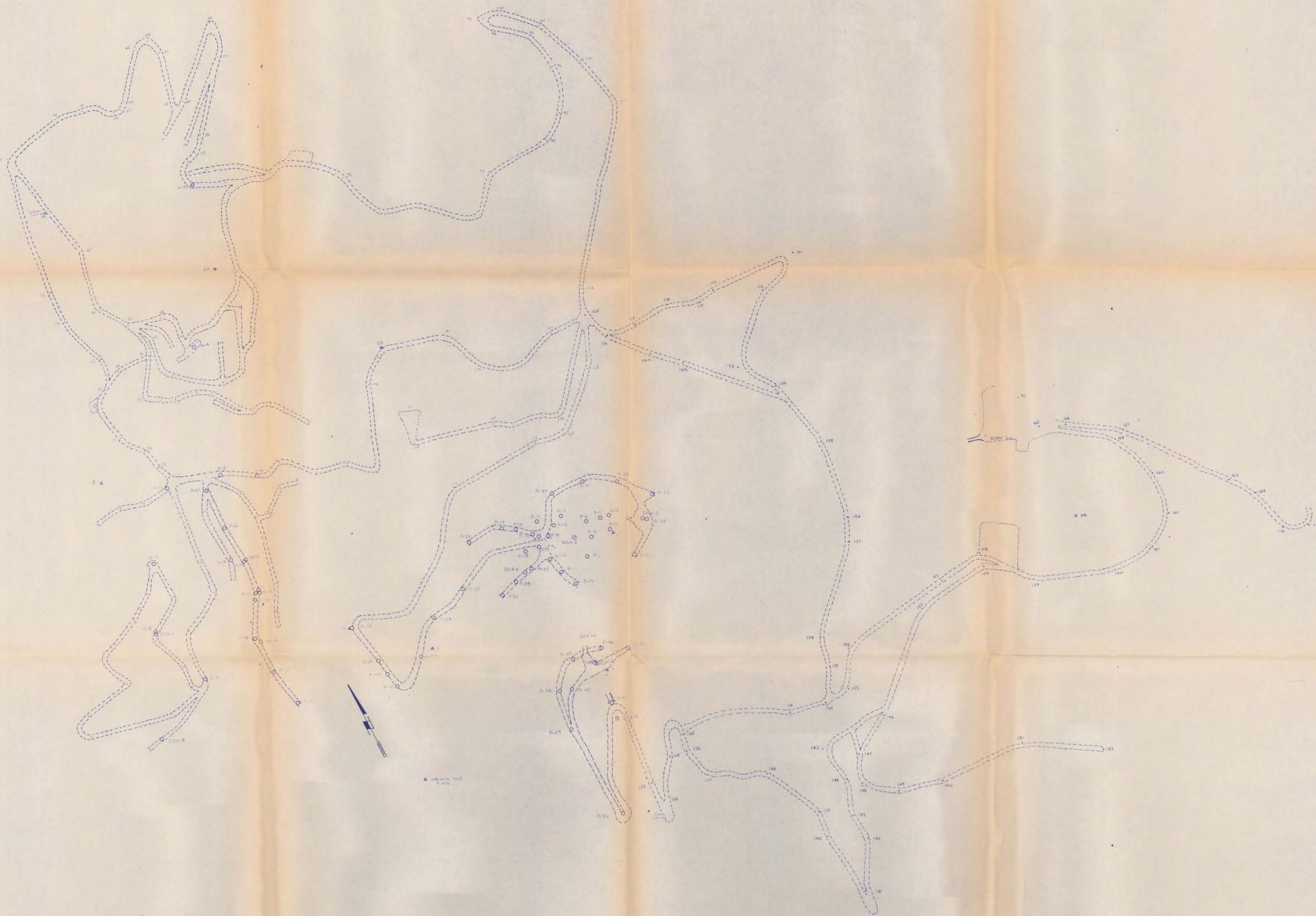
5300 Level
1" = 50'
100'

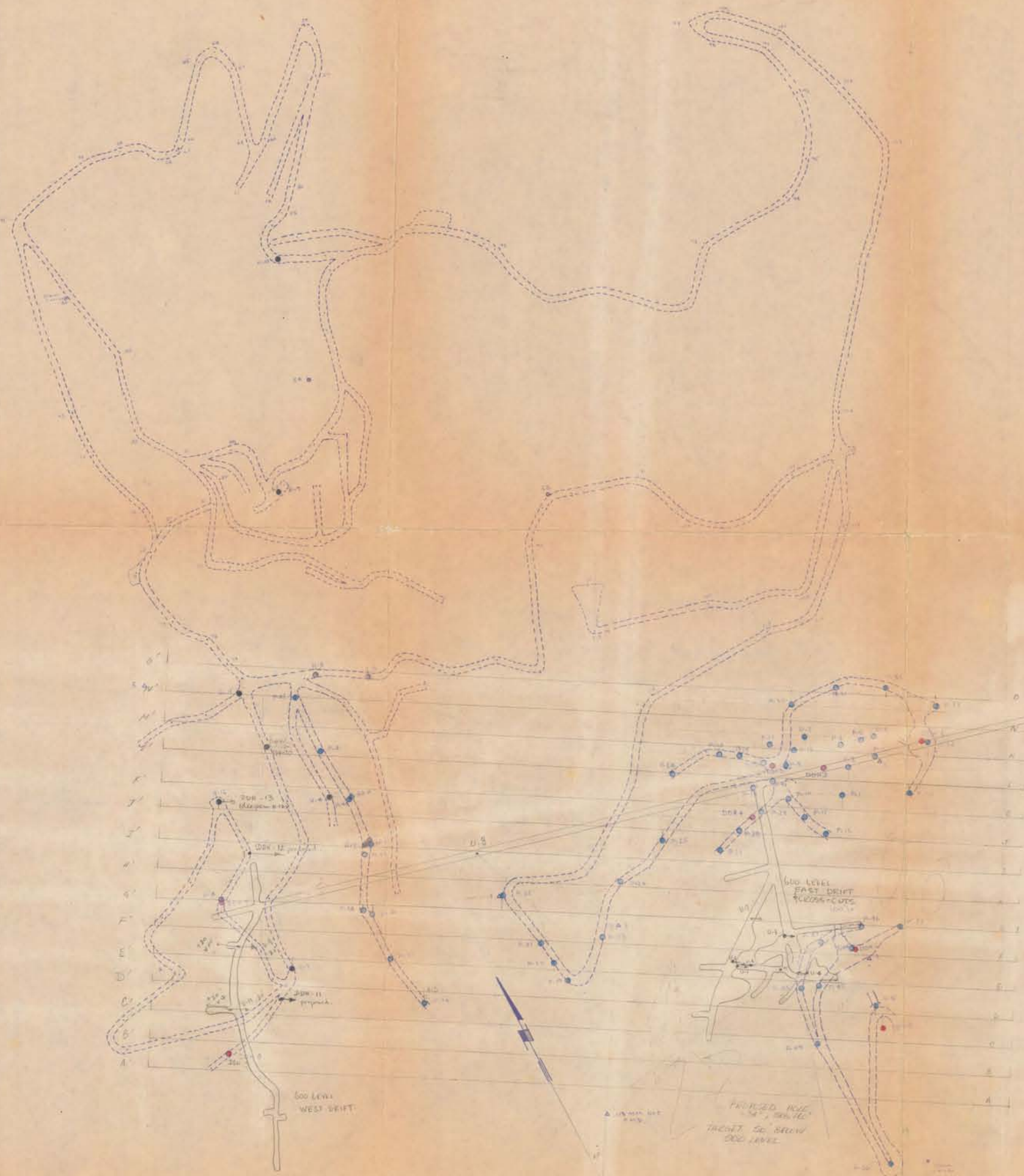


Δ U.S.M.M. No. 2. PMD

□ Claim Corridor

Hydrite





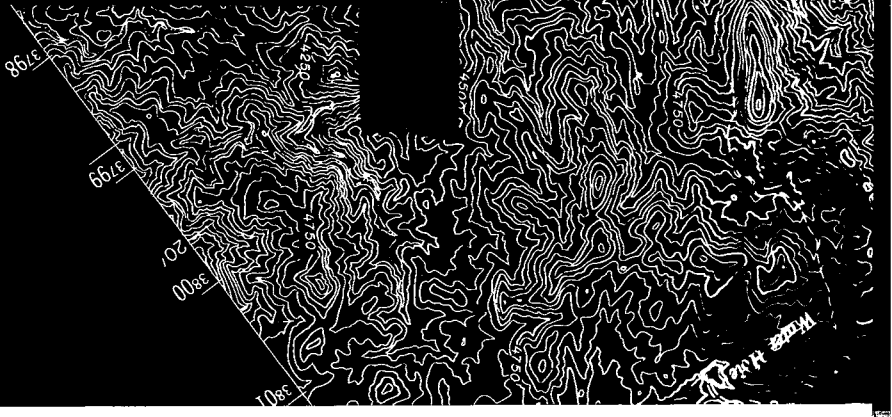
LEGEND

- Existing Roads, positions approximate, not surveyed.
- Drill access roads to be constructed.
- Proposed Drill Holes on Grid intersections (Percussion) and sequence number.
- Proposed Drill Holes on Grid lines but not at intersections.
- Proposed Drill Holes, no sequence number, Requires other drill hole results.
- Percussion Drill Holes.
- Diamond Drill Holes.
- Existing Diamond Drill Holes.
- Cutlast Exploration Co. Diamond Drill Holes.

SURFACE MAP
PROPOSED DRILL HOLES
(Percussion & Diamond Core)
DE SOTO MINE
Yavapai County, Arizona

Scale: 1" = 50'
30° 190°
Sept., 1973 R.E. Martin
Map N^o 2





MILES

47

Potentials
No. 3 & 4

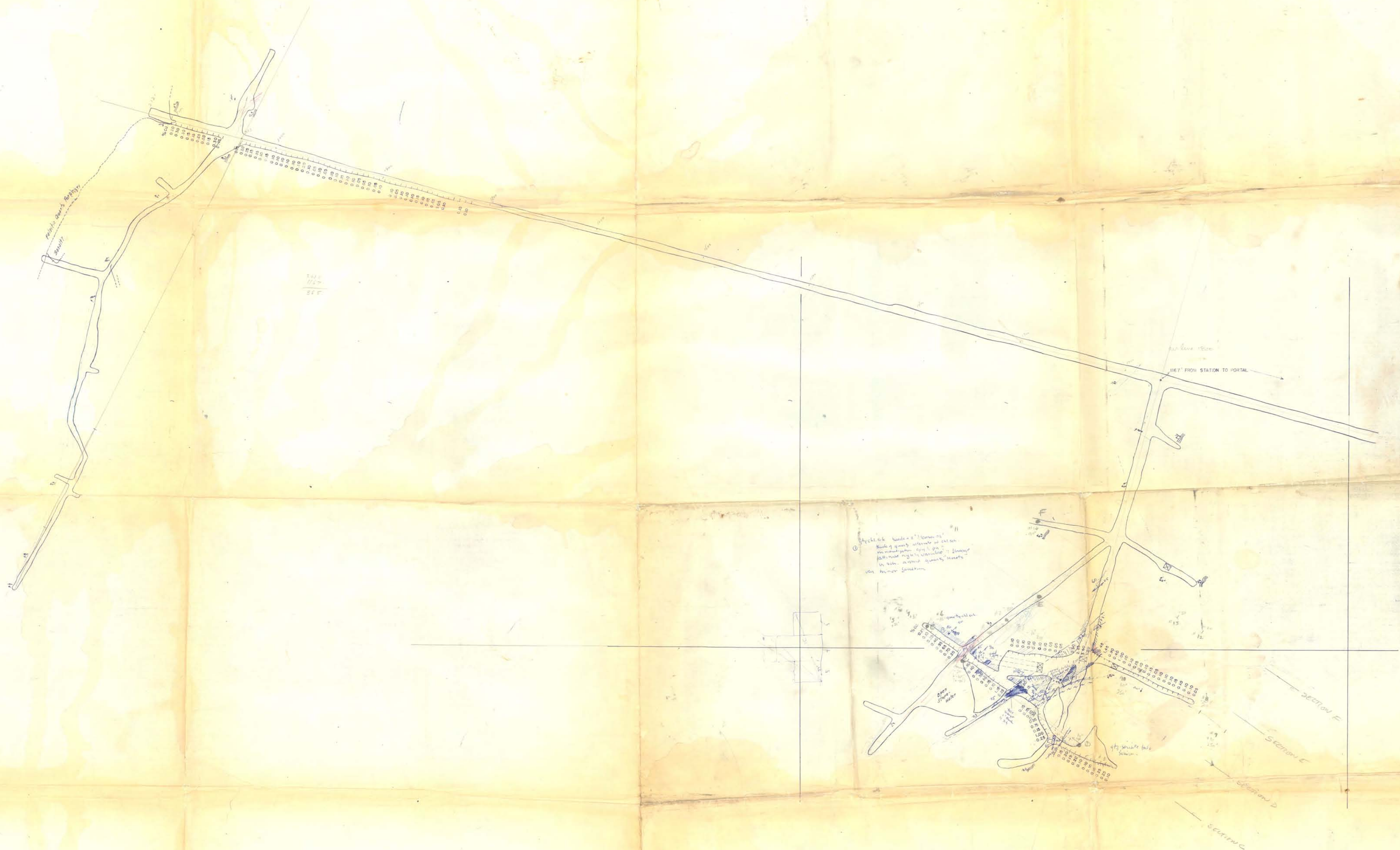
Blue Bucket
Shaft

Main
shaft

Copper
oxide

Pot





1944 1/4 SECTION DE SOTO MINE

SET	UPS	NO. OF	INCLINATION	DEPTH	DIRECTION
"A"	1	10'	-20°	10'	N 125° E
"B"	2	20'	-20°	20'	N 125° E
"C"	3	20'	-20°	20'	N 125° E
"D"	4	20'	-20°	20'	N 125° E
"E"	5	20'	-20°	20'	N 125° E
"F"	6	20'	-20°	20'	N 125° E
"G"	7	20'	-20°	20'	N 125° E
"H"	8	20'	-20°	20'	N 125° E
"I"	9	20'	-20°	20'	N 125° E
"J"	10	20'	-20°	20'	N 125° E
"K"	11	20'	-20°	20'	N 125° E
"L"	12	20'	-20°	20'	N 125° E
"M"	13	20'	-20°	20'	N 125° E
"N"	14	20'	-20°	20'	N 125° E

Samples

Wil Wright
11:00 am

Mon
Jul. 24/74

BL Suck Co.

Jul. 11 - 2 sacks

✓ C-31 258-260 ✓ <0.01

9

C-32 346-350 -

345 - 0.04 var <0.01

Jul. 13 - 3 sacks

✓ C-33 261-267 ✓
0.05 0.11 0.34 0.50 0.66 2.56 2.67
2.72 1.45 0.22

C-34 351-359

0.13 0.77 0.88
17
0.60 0.68

Jul. 15 - 1 sack

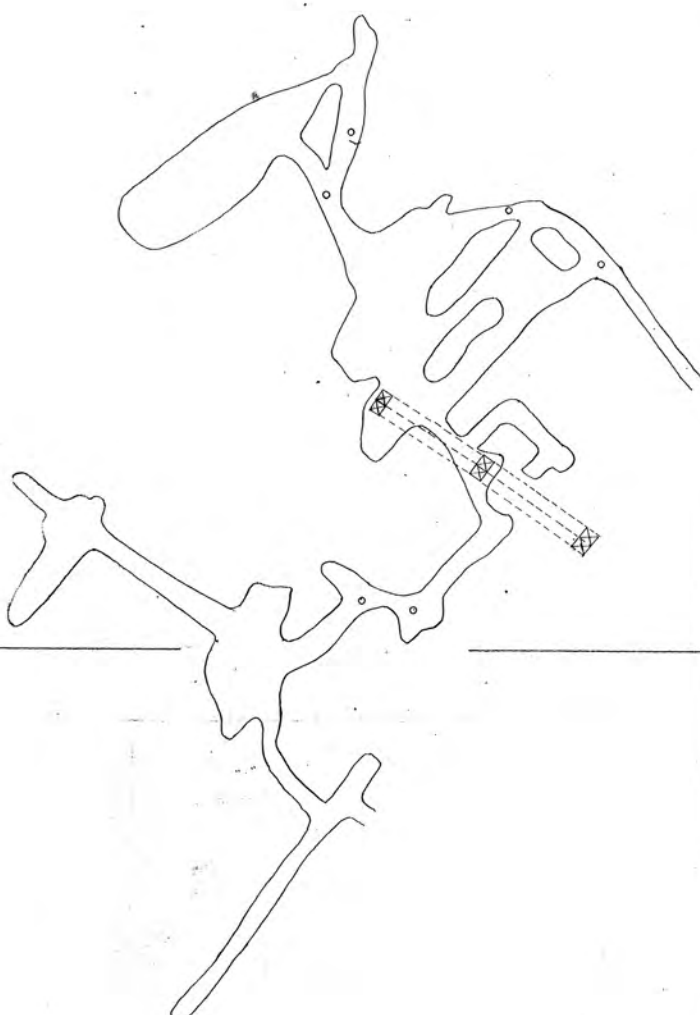
✓ C-37 270-275 ✓

6

32

0.01 0.12 0.00 0.13 0.56 0.45 2.80

0.23 0.23 0.07



LINE "X"

LINE "Y"

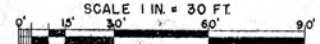
DE SOTO COPPER CORP.

"300" LEVEL

DE SOTO MINE

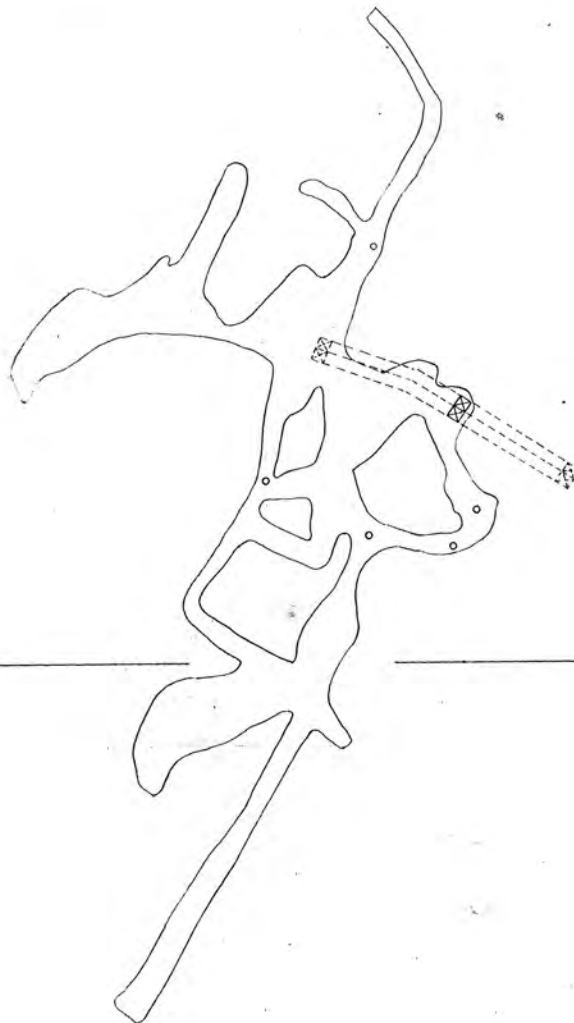
YAVAPAI COUNTY, ARIZONA

SCALE 1 IN. = 30 FT.



FEB. 1957

R. E. MERITZ



LINE "X"

LINE "Y"

DE SOTO COPPER CORP

"400" LEVEL

DE SOTO MINE

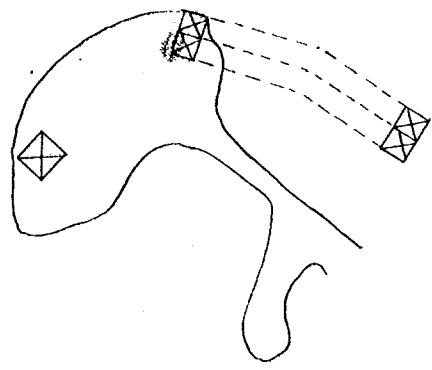
YAVAPAI COUNTY,

ARIZONA

SCALE 1 IN = 30 FT

FEB. 1957

R.E. MERITZ



LINE "X"

LINE "Y"

DE SOTO COPPER CORP.

"500" LEVEL
DE SOTO MINE

YAVAPAI COUNTY,

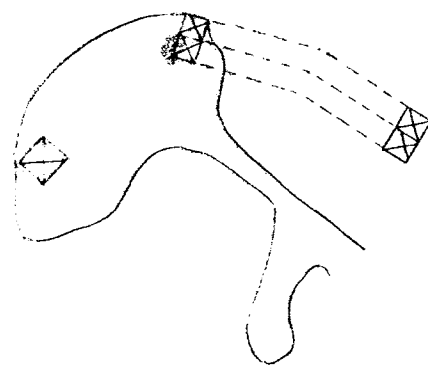
ARIZONA

SCALE 1 IN. = 30 FT.



FEB. 1957

R. E. MIERITZ



LINE "X"

LINE "Y"

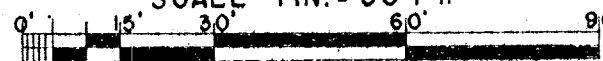
DE SOTO COPPER CORP.

"500" LEVEL
DE SOTO MINE

YAVAPAI COUNTY,

ARIZONA

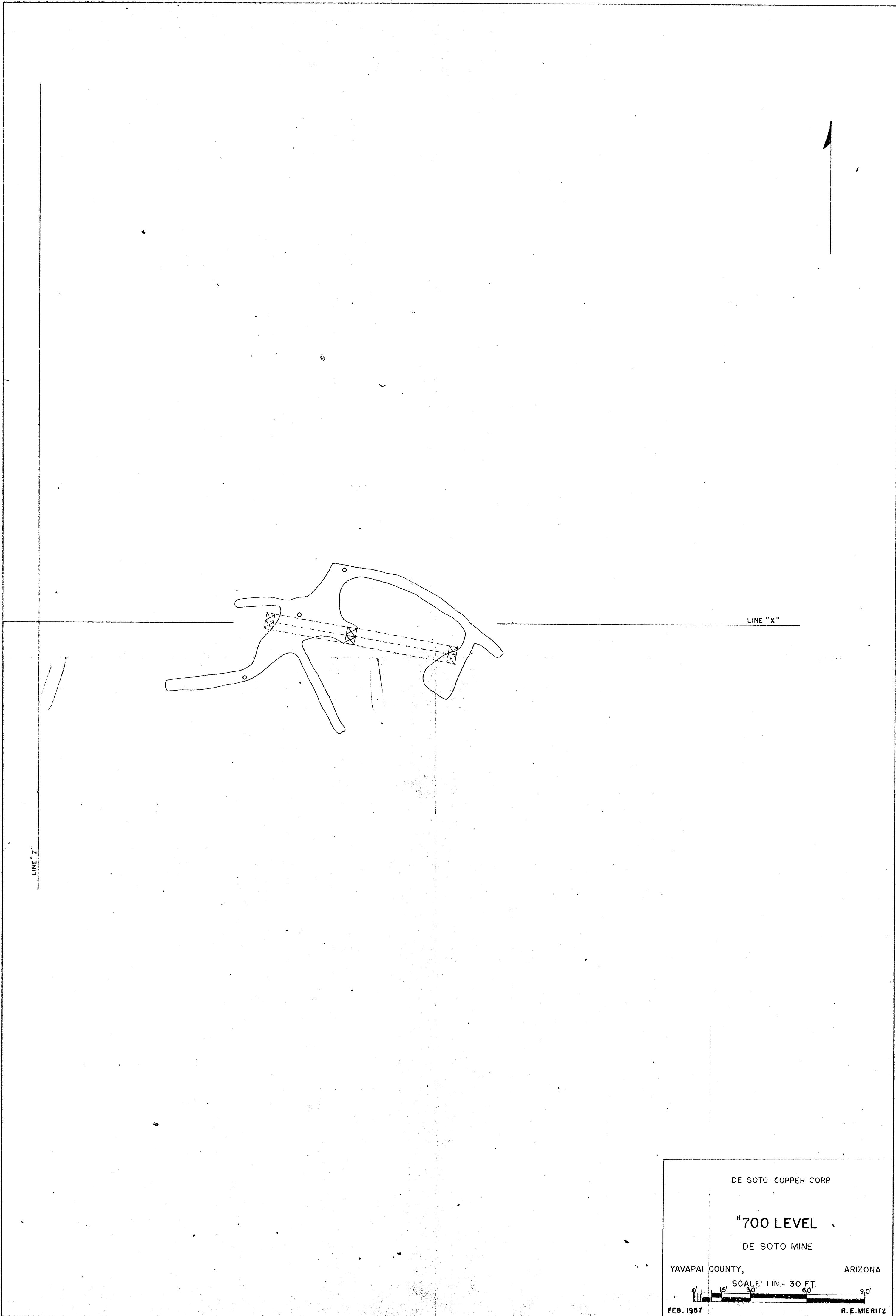
SCALE 1 IN. = 30 FT.



FEB. 1957

R. E. MIERITZ

DS



DE SOTO COPPER CORP

"700 LEVEL"

DE SOTO MINE

YAVAPAI COUNTY,

ARIZONA

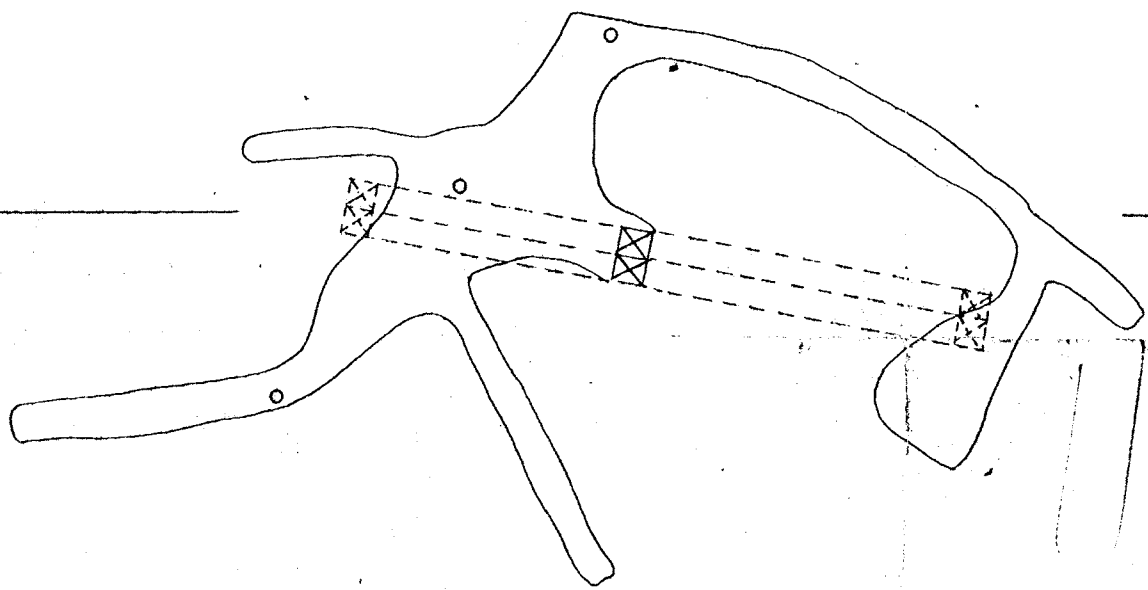
SCALE: 1 IN. = 30 FT.

FEB. 1957

R. E. MIERITZ



LINE "X"



LINE "Z"

DE SOTO COPPER CORP

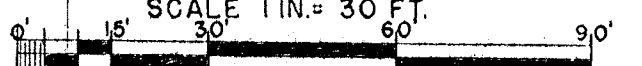
"700 LEVEL"

DE SOTO MINE

YAVAPAI COUNTY,

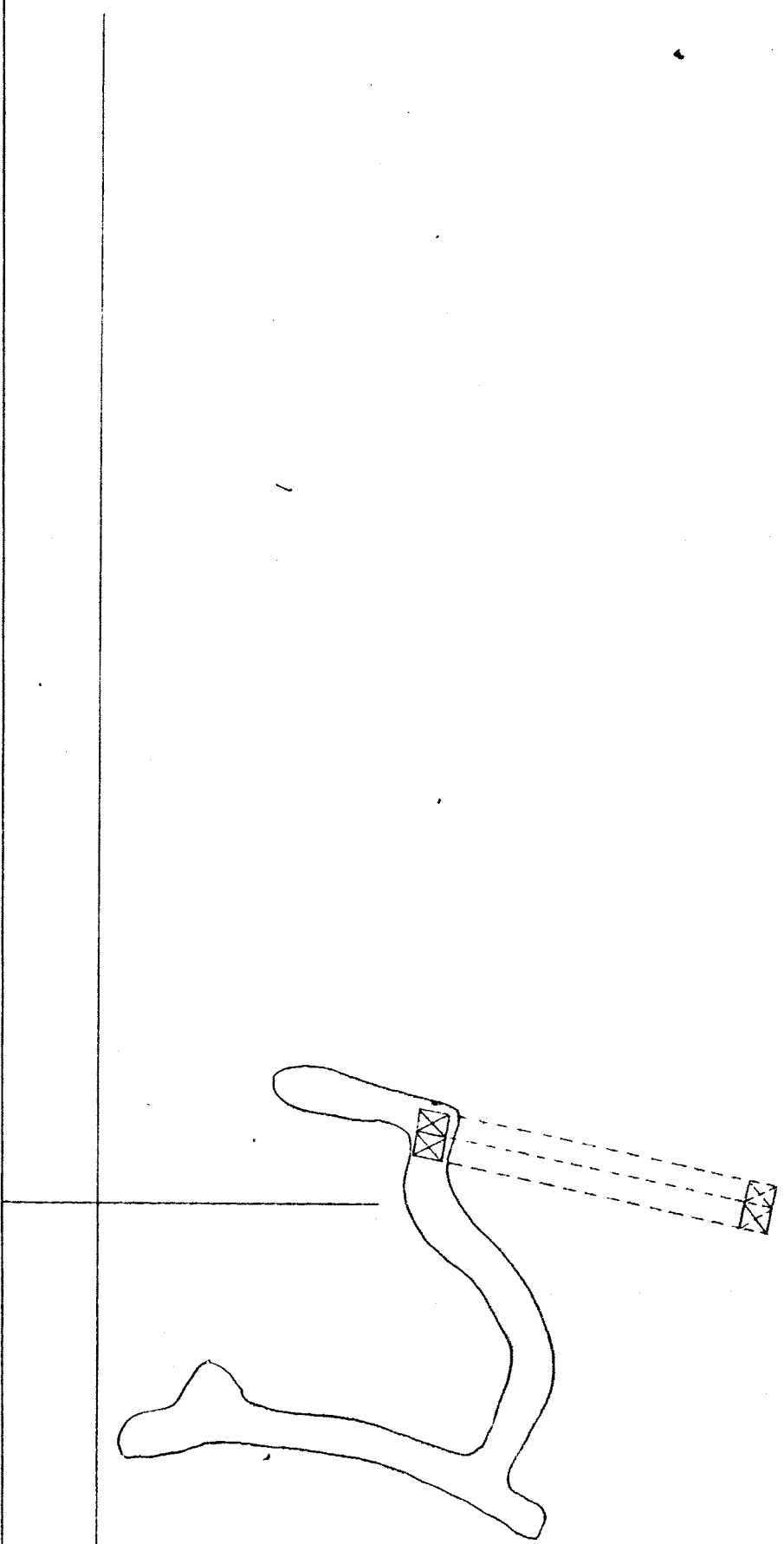
ARIZONA

SCALE 1 IN. = 30 FT.



FEB. 1957

R. E. MIERITZ



LINE "X"

LINE "Z"

DE SOTO COPPE CORP.

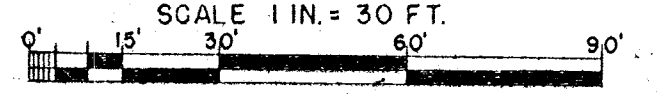
"900" LEVEL

DE SOTO MINE

YAVAPAI COUNTY,

ARIZONA

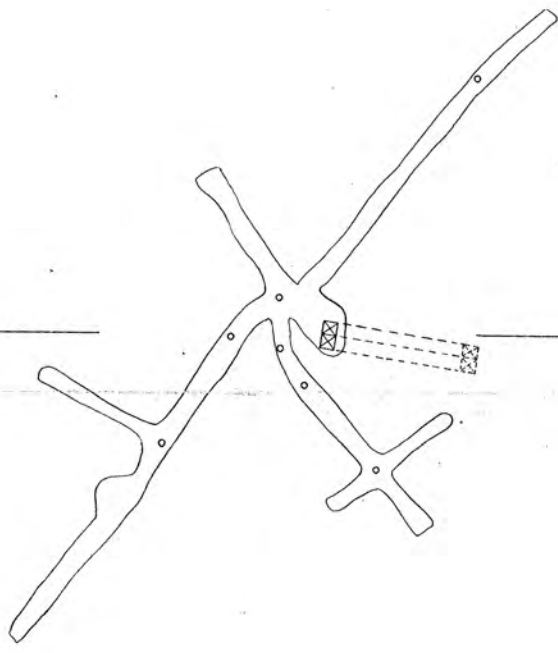
SCALE 1 IN. = 30 FT.



FEB. 1957

R.E. MIERITZ

D-8



LINE "X"

LINE "Z"

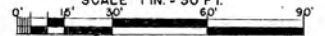
DE SOTO COPPER CORP

"800" LEVEL
DE SOTO MINE

YAVAPAI COUNTY,

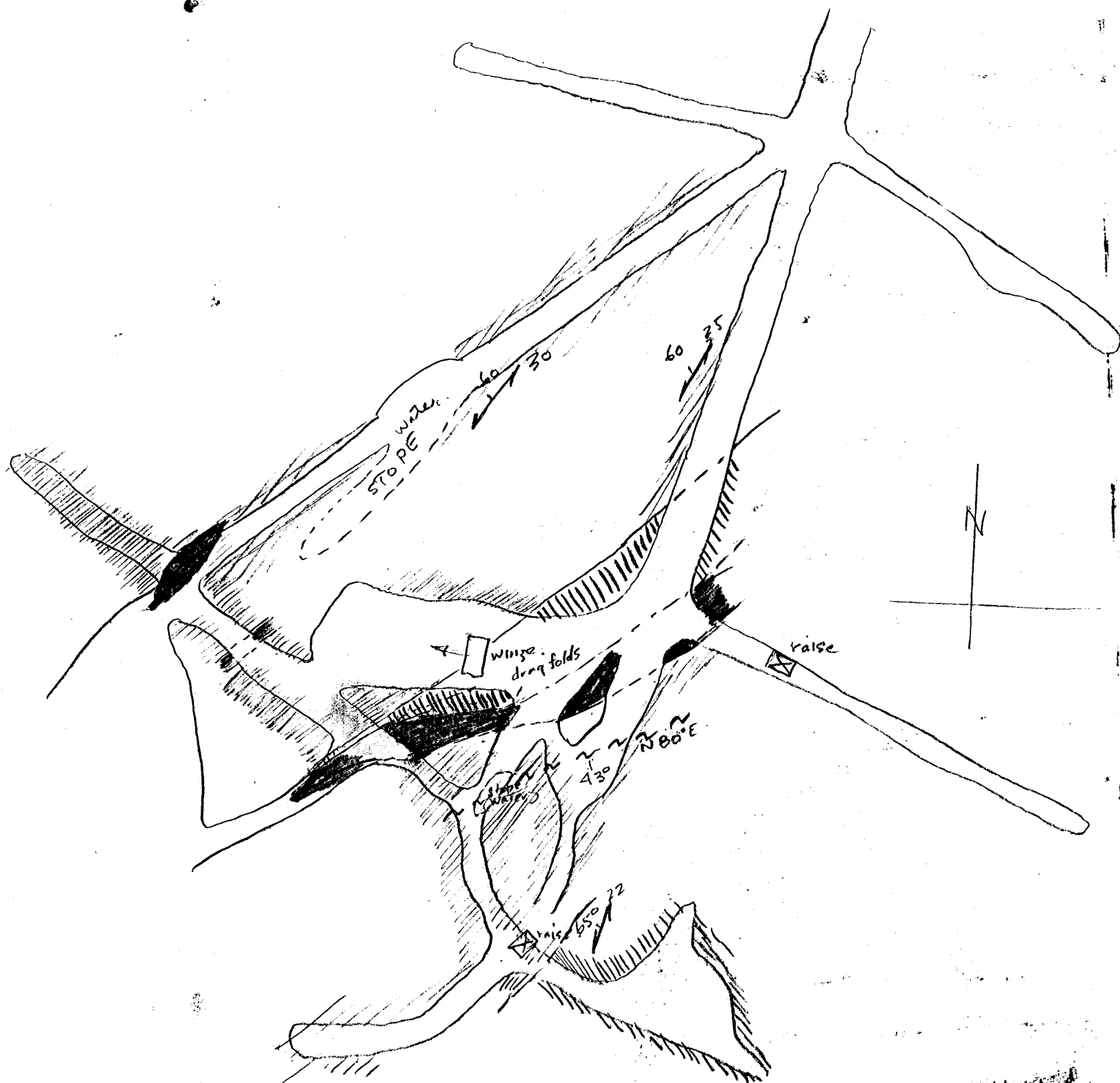
ARIZONA

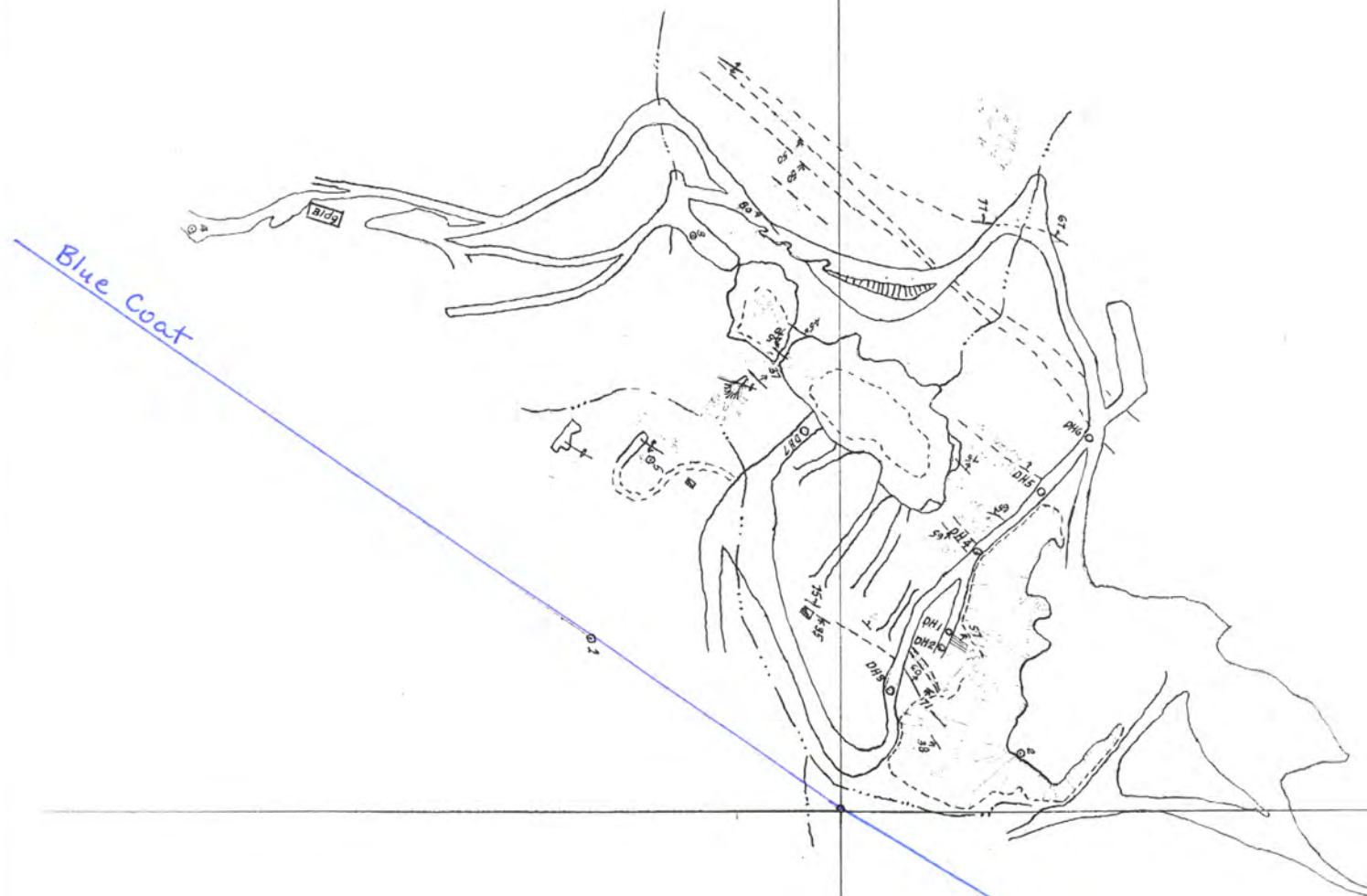
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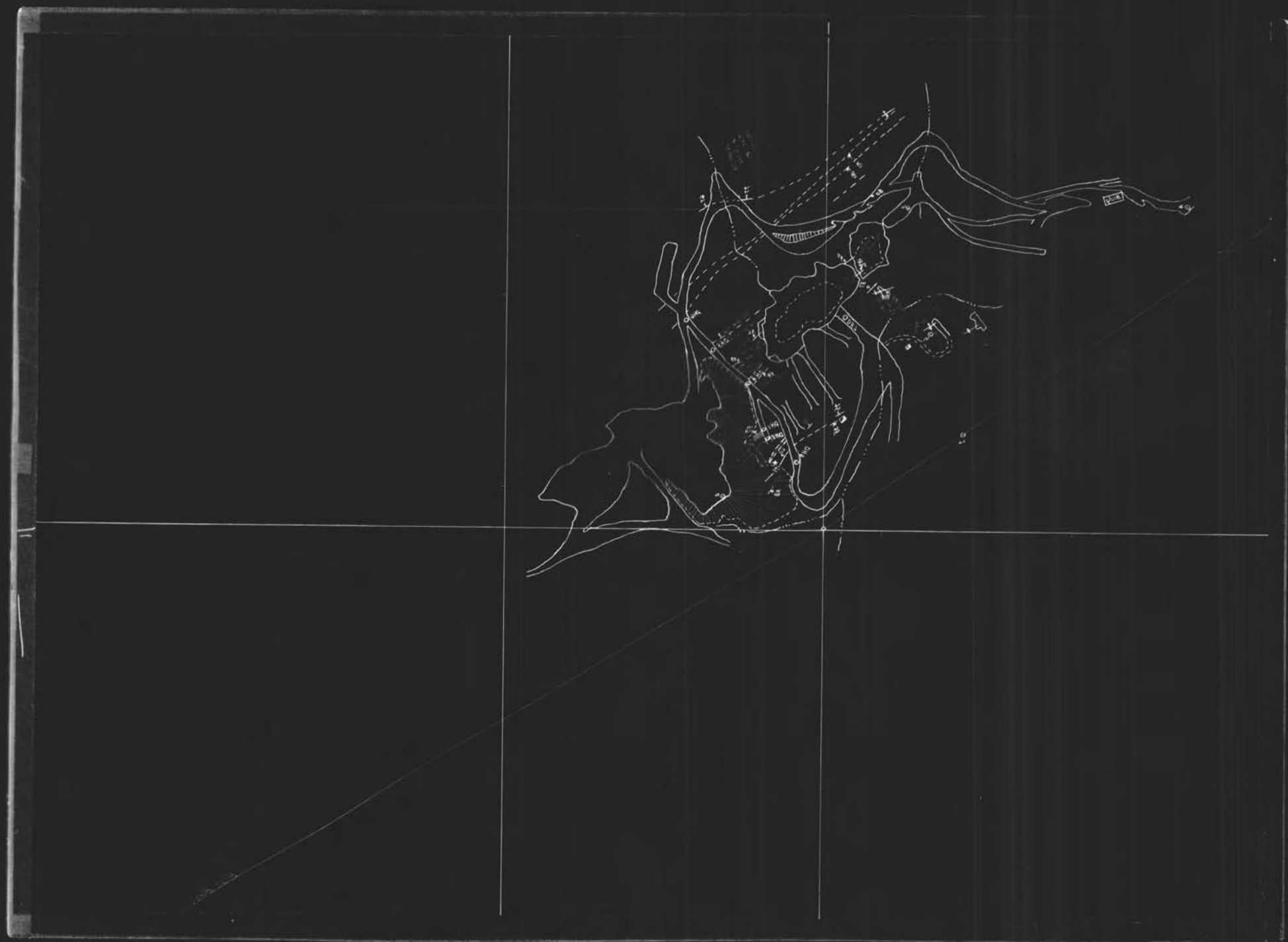


FEB. 1957

R.E. MIERITZ

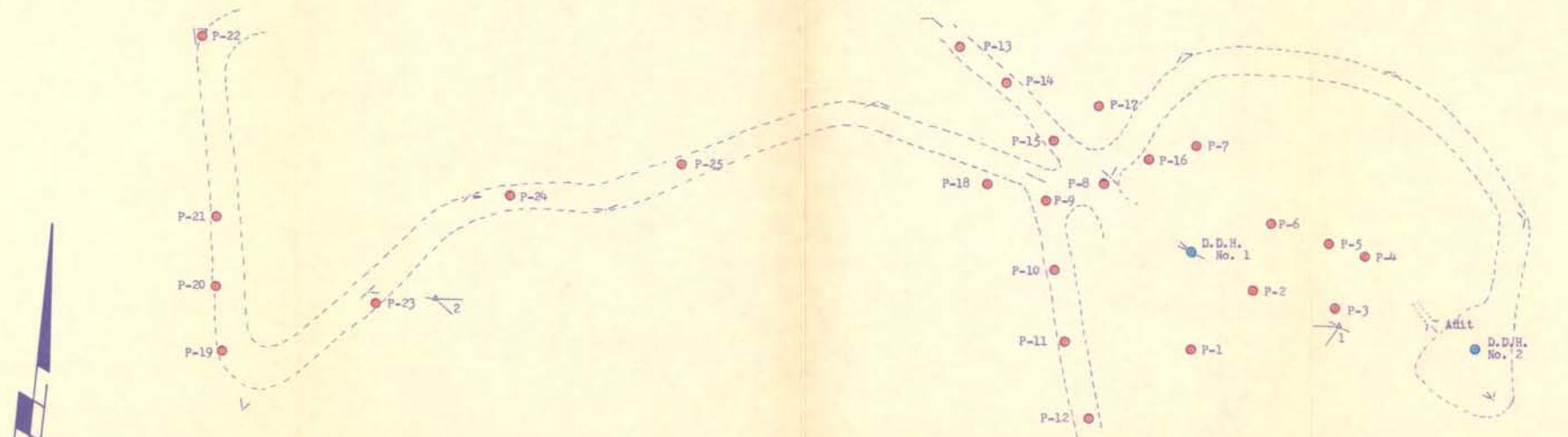






Desoto Mine Drill Holes
Scanned: 9/08





Percussion Hole Number	Coordinates		Elevation
	North	East	
P-1	9,942.3	10,006.8	5456.5
P-2	9,981.9	10,039.2	5456.5
P-3	9,977.8	10,089.6	5461.5
P-4	10,010.1	10,103.5	5460.7
P-5	10,014.5	10,080.6	5454.6
P-6	10,022.2	10,045.0	5457.6
P-7	10,062.6	9,995.3	5450.1
P-8	10,033.4	9,943.7	5450.0
P-9	10,020.3	9,910.5	5450.5
P-10	9,980.0	9,920.4	5439.0
P-11	9,938.4	9,931.7	5429.4
P-12	9,895.5	9,950.6	5427.7
P-13	10,103.9	9,847.3	5452.8
P-14	10,085.9	9,876.9	5453.3
P-15	10,055.6	9,909.8	5451.6
P-16	10,051.7	9,968.4	5449.7
P-17	10,079.1	9,935.0	5442.6
P-18	10,025.5	9,874.7	5453.7
P-19	9,870.4	9,432.6	5497.7
P-20	9,908.4	9,424.7	5491.3
P-21	9,948.8	9,420.3	5487.4
P-22	10,053.8	9,397.4	5486.5
P-23	9,910.7	9,521.1	5499.2
P-24	9,983.5	9,592.6	5485.5
P-25	10,014.7	9,691.6	5473.3

Diamond Drill Holes			
1	10,000.00	10,000.00	5455.87
2	9,964.7	10,175.3	5395.9

Adit near Diamond Drill Hole No. 2			
	9,975.54	10,147.29	5401.16

H.W. No. 1 Adit 100' Lx.			
	9,728.32	9,889.69	5257.8

Triangulation Stations			
1	9,968.08	10,093.15	5463.54
2	9,917.20	9,555.21	5501.29
3	9,669.34	9,921.68	5255.63

H.W. No. 1 Adit
100' Lx.

LEGEND:

- Existing roads
- Percussion drill hole
- Cutlass Exploration Co. Diamond Drill Holes
- X Triangulation station

This plat correctly represents a survey made by me at the request of Steve Radvak in October, 1973.

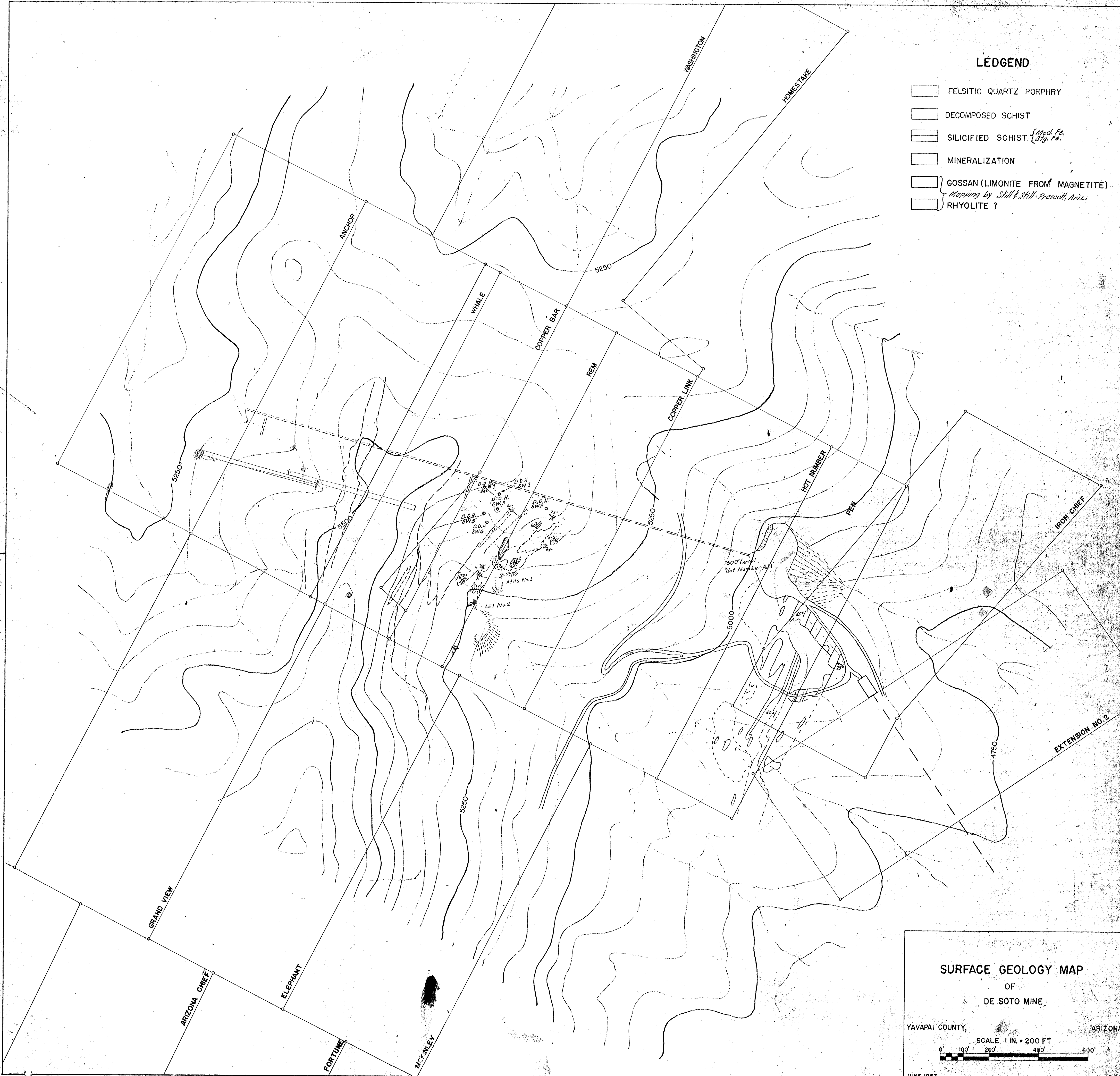
Gary B. Collins
Gary B. Collins, Registered Land Surveyor

SURFACE MAP OF EXISTING DRILL HOLES
(Percussion & Diamond Core)
DE SOTO MINE, Yavapai County, Arizona

SCALE: 1" = 50'	APPROVED BY:	DRAWN BY: GBC
DATE: 10/10/73		REVISED:
Prepared for: CUTLASS EXPLORATION COMPANY, VANCOUVER, B.C.		
DRAWING NUMBER		73-204

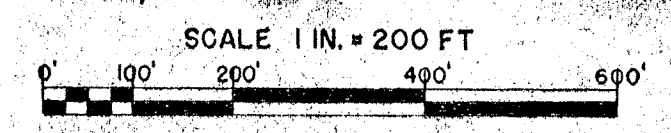
LEDGEND

- FELSITIC QUARTZ PORPHYRY
- DECOMPOSED SCHIST
- SILICIFIED SCHIST *{ Mod. Fe. / Stg. Fe. }*
- MINERALIZATION
- GOSSAN (LIMONITE FROM MAGNETITE)
- RHYOLITE ?



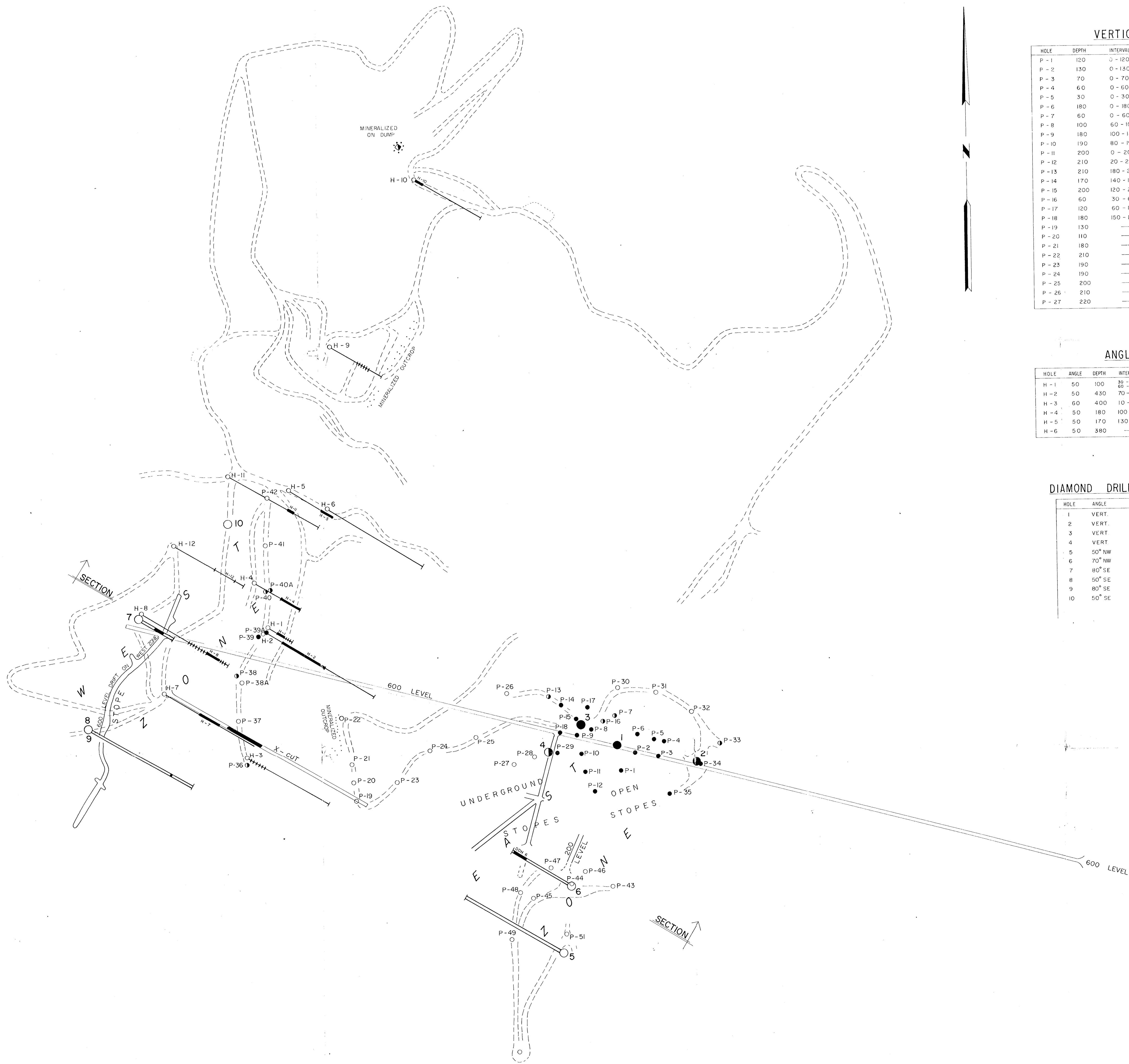
SURFACE GEOLOGY MAP OF DE SOTO MINE

YAVAPAI COUNTY, ARIZONA



JUNE 1957

Scanned: 9/08 Map No. _____



VERTICAL PERCUSSION HOLES

HOLE	DEPTH	INTERVAL	COPPER %	HOLE	DEPTH	INTERVAL	COPPER %
P-1	120	0-120	0.52	P-28	220	180-220	0.15
P-2	130	0-130	0.93	P-29	220	110-170	0.52
P-3	70	0-70	1.18	P-30	220	10-60	0.25
P-4	60	0-60	2.29	P-31	130	—	LOW
P-5	30	0-30	1.20	P-32	220	—	LOW
P-6	180	0-180	0.70	P-33	30	10-30	0.32
P-7	60	0-60	0.28	P-34	40	10-40	0.67
P-8	100	60-100	0.64	P-35	50	10-50	2.02
P-9	180	100-180	0.62	P-36	210	50-90	0.35
P-10	190	80-190	0.81	P-37	70	—	LOW
P-11	200	0-200	0.66	P-38	110	70-110	0.21
P-12	210	20-210	0.71	P-39	220	170-220	0.51
P-13	210	180-210	0.37	P-39A	180	70-160	0.49
P-14	170	140-170	0.55	P-40	220	140-170	0.27
P-15	200	120-200	1.42	P-40A	130	70-130	0.37
P-16	60	30-60	0.41	P-41	160	—	LOW
P-17	120	60-120	0.75	P-42	230	—	LOW
P-18	180	150-180	4.04	P-43	220	210-220	0.40
P-19	130	—	LOW	P-44	210	—	LOW
P-20	110	—	LOW	P-45	220	—	LOW
P-21	180	—	LOW	P-46	120	—	LOW
P-22	210	—	LOW	P-47	200+	170-200	0.25
P-23	190	—	LOW	P-48	190	—	LOW
P-24	190	—	LOW	P-49	50	—	LOW
P-25	200	—	LOW	P-50	220	—	LOW
P-26	210	—	LOW	P-51	180	—	LOW
P-27	220	—	LOW				

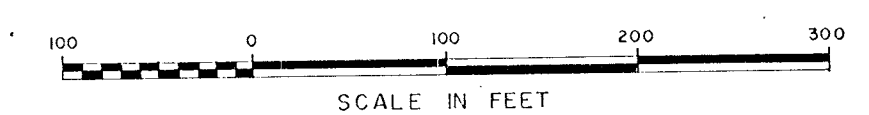
ANGLE PERCUSSION HOLES

HOLE	ANGLE	DEPTH	INTERVAL	COPPER %	HOLE	ANGLE	DEPTH	INTERVAL	COPPER %
H-1	50	100	30-60	0.86	H-7	50	340	140-210	0.83
H-2	50	430	70-240	0.61	H-8	50	330	240-290	1.55
H-3	60	400	10-90	0.21	H-9	50	200	110-150	0.21
H-4	50	180	100-180	0.54	H-10	50	260	10-30	0.82
H-5	50	170	130-170	0.41	H-11	50	345	230-250	0.83
H-6	50	380	—	LOW	H-12	50	270	—	LOW

DIAMOND DRILL HOLES (SURFACE)

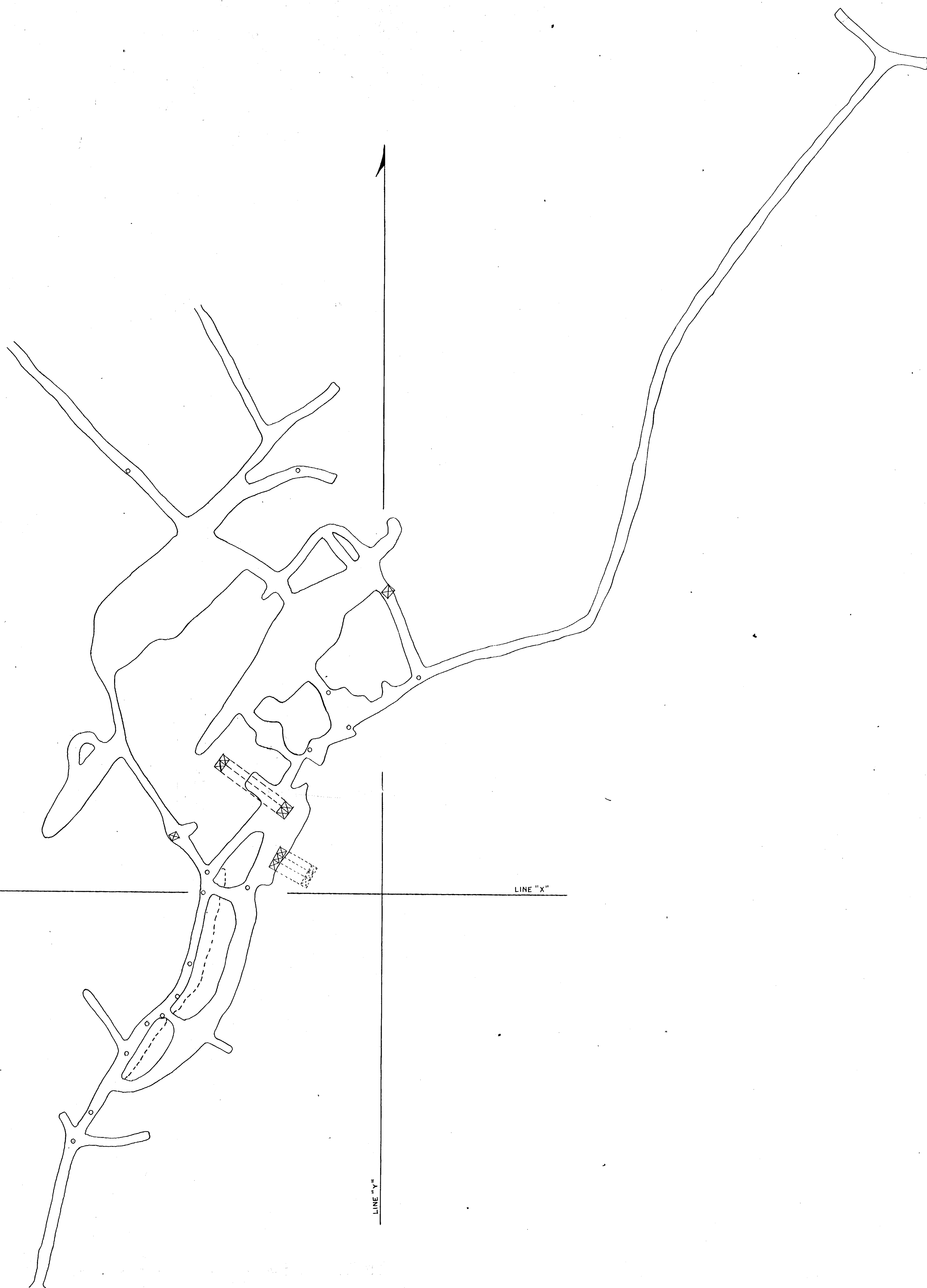
HOLE	ANGLE	DEPTH	INTERVAL	COPPER %
1	VERT.	168	11-168	1.73
2	VERT.	360	11-140	1.0
3	VERT.	503	479-489	0.59
4	VERT.	284	155-205	0.19
5	50° NW	374	205-280	0.45
6	70° NW	420	323-417	1.89
7	80° SE	517	234-386	0.86
8	50° SE	404	313-318	—
9	80° SE	(Abandoned)	—	—
10	50° SE	—	—	—

PLAN OF DRILLING
DE SOTO MINE
YAVAPAI COUNTY, ARIZONA



JAN. 1974

R.H.S.



DE SOTO COPPER CORP.

"200" LEVEL

DE SOTO MINE

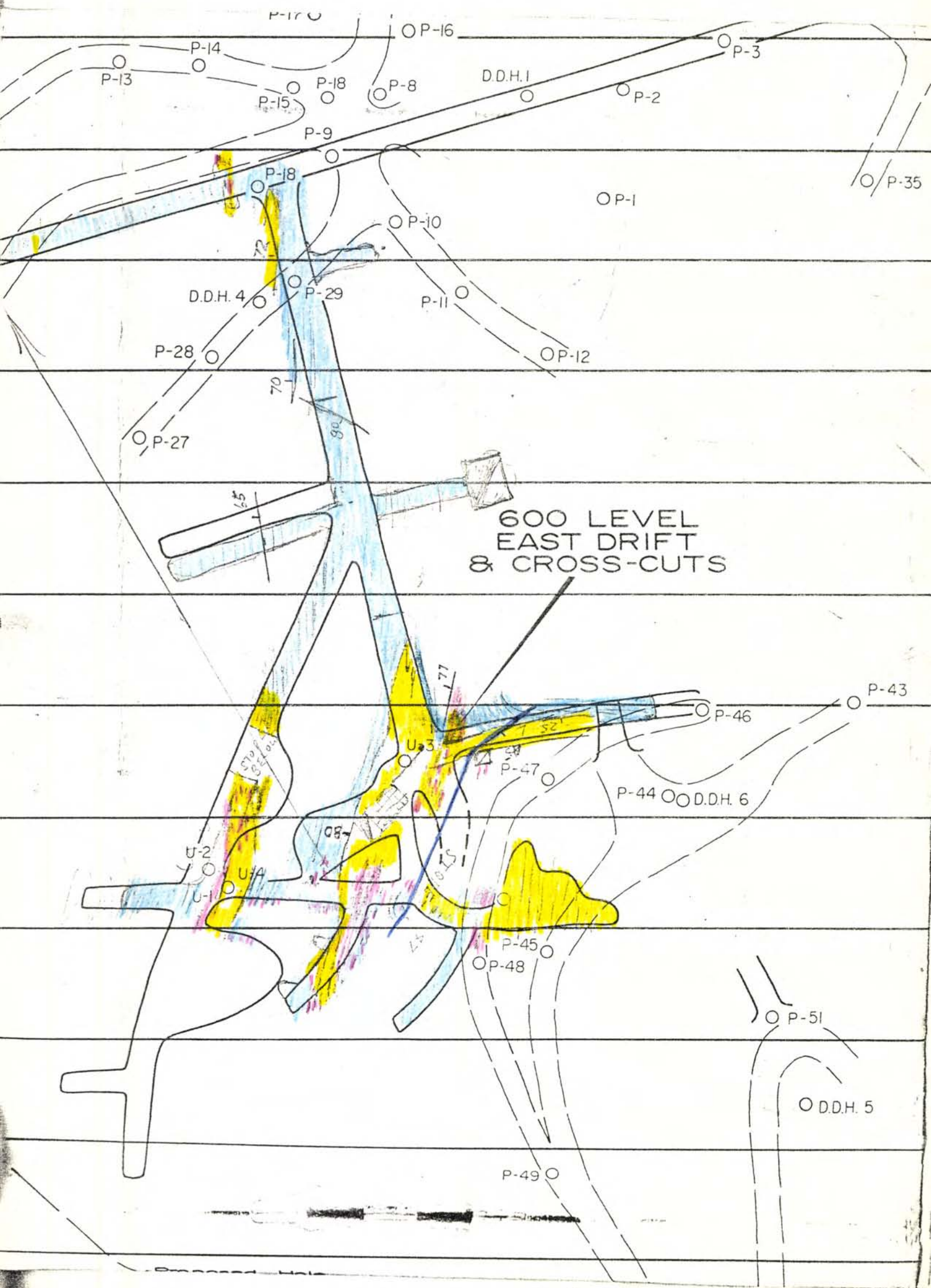
YAVAPAI COUNTY, ARIZONA

SCALE 1 IN. = 30 FT.

0' 15' 30' 60' 90'

FEB. 1957 R.E. MIERITZ

Scanned: 9/08



Scanned: 9/2008
or



EXISTING DRILL HOLE ELEVATIONS AND COORDINATES
at
DeSoto Mine, Yavapai County, Arizona
for
Cutlass Exploration Company, Vancouver, B.C.

Percussion Hole Number	Coordinates		Elevation
	North	East	
P- 1	9,942.3	10,006.8	5456.5
P- 2	9,981.9	10,039.2	5456.5
P- 3	9,977.8	10,089.6	5461.5
P- 4	10,010.1	10,103.5	5460.7
P- 5	10,014.5	10,080.6	5454.6
P- 6	10,022.2	10,045.0	5457.6
P- 7	10,062.6	9,995.3	5450.1
P- 8	10,033.4	9,943.7	5450.0
P- 9	10,020.3	9,910.5	5450.5
P-10	9,980.0	9,920.4	5439.0
P-11	9,938.4	9,931.7	5429.4
P-12	9,895.5	9,950.6	5427.7
P-13	10,103.9	9,847.3	5452.8
P-14	10,085.9	9,876.9	5453.3
P-15	10,055.6	9,909.8	5451.6
P-16	10,051.7	9,968.4	5449.7
P-17	10,079.1	9,935.0	5442.6
P-18	10,025.5	9,874.7	5453.7
P-19	9,870.4	9,432.6	5497.7
P-20	9,908.4	9,424.7	5491.3
P-21	9,948.8	9,420.3	5487.4
P-22	10,053.8	9,397.4	5486.5
P-23	9,910.7	9,521.1	5499.2
P-24	9,983.5	9,592.6	5485.5
P-25	10,014.7	9,691.6	5473.3
P-26	10,108.8	9,758.5	5450.3
P-27	9,955.0	9,773.1	5434.6
P-28	9,969.5	9,819.6	5437.0
P-29	9,981.1	9,868.4	5436.1
P-30	10,124.7	10,000.5	5423.1
P-31	10,116.2	10,082.9	5409.2
P-32	10,075.8	10,160.4	5403.6
P-33	10,008.1	10,224.7	5401.0
P-34	9,958.0	10,184.1	5395.3
P-35	9,893.0	10,117.2	5380.5
P-36	9,947.9	9,190.9	5352.8
P-37	10,043.6	9,173.0	5345.8
P-38	10,142.2	9,167.5	5342.2
38-A	10,129.3	9,177.3	5343.2
P-39	10,228.9	9,213.0	5350.8
39-A	10,242.4	9,232.1	5350.4
H	10,246.7	9,231.8	5349.8
H-2	10,244.4	9,222.3	5349.7

Percussion Hole Number	Coordinates		Elevation
	North	East	
P-40	10,326.6	9,232.2	5341.3
40-A	10,328.5	9,237.7	5340.9
P-41	10,423.1	9,226.9	5327.5
P-42	10,525.5	9,230.6	5318.3
P-43	9,695.1	9,994.8	5257.3
P-44	9,698.3	9,902.4	5256.8
P-45	9,666.5	9,820.9	5252.5
P-46	9,724.7	9,933.9	5275.2
P-47	9,732.3	9,858.8	5283.5
P-48	9,675.7	9,791.4	5271.2
P-49	9,577.6	9,773.9	5255.4
P-50	9,332.4	9,794.8	5222.2
P-51	9,590.5	9,895.6	5190.9

Diamond Drill Holes	Coordinates		Elevation
	North	East	
1	10,000.00	10,000.00	5455.87
2	9,964.7	10,175.3	5395.9
3	10,043.9	9,922.7	5450.8
4	9,980.5	9,849.9	5435.3
Adit near Diamond Drill Hole No. 2	9,975.54	10,147.29	5401.16
Claim Corner	9,306.6	9,856.5	
H.W. No. 1 Adit 100' Lv.	9,728.32	9,889.69	5257.8
Triangulation Stations			
1	9,968.08	10,093.15	5463.54
2	9,917.20	9,555.21	5501.29
3	9,669.34	9,921.68	5255.63
4	10,057.23	9,392.46	5487.90
5	10,661.04	9,004.05	5323.20
U.S.M.M. No. 2 P.M.D.	9,630.29	9,389.45	5549.20

NOTE:

Basis of bearing is N 71°30' W (magnetic) between Cutlass DDH No. 1 and point "B".

Elevations are based on an assumed elevation of 5450.00 at Chilson DDH No. 1 as derived from Surface Map dated September, 1973 prepared by R. E. Mieritz, Registered Professional Engineer (Mining).

