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07/20/88

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES FILE DATA

PRIMARY NAME: COPPER STANDARD

ALTERNATE NAMES:

CROWN
ESPERANZA
SUMMIT
COW BOY
BLACK CRATOR
LOSS BROS. CLAIMS
STANDARD COPPER CO.OF AZ GROUP
ST. LOUIS CLAIM
CHICAGO CLAIM

PINAL COUNTY MILS NUMBER: 658

LOCATION: TOWNSHIP 8 S RANGE 5 E SECTION 25 QUARTER W2
LATITUDE: N 32DEG 42MIN 20SEC LONGITUDE: W 111DEG 47MIN 49SEC
TOPO MAP NAME: SILVER REEF MTS - 15 MIN

CURRENT STATUS: PAST PRODUCER

COMMODITY:

COPPER
SILVER

BIBLIOGRAPHY:

ADMMR COPPER STANDARD FILE
BLM MINING DISTRICT SHEET 561 MS 1698
ADDITIONAL WORKINGS SECTION 24

JULY, 1958

✓
STANDARD GROUP

PINAL COUNTY

Mr. Wm. Hassard states that the DIE COPPER CORP.

516 Goodrich Bldg., Phoenix, has 7 patented

claims, 12 mi. SW of Casa Grande (known as

STANDARD GROUP., Survey 1698)

- ✓ Pres. - Wm. Hassard, 515 W. Lewis, Phoenix
- ✓ V.Pres.-George E. Harlan, 4129 N. 16th St. Phoenix
- ✓ Secy. - E. A. Borge, 1203 N. 1st St., "
- ✓ Treas.- Alfred J. Babineau, 3718 W. Latham, "

Standard Mining Co.

Standard Mine

Copper -

14 miles S of Camp Grande

Sydney Mowbray - Ph.D.

Patent and Claims

Bought for \$2500

Cross application being

referred for Mowbray

by A. L. Flagg

5-20-43

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



May 9, 1960

*Forwarded separately
I turned it down.
F.P.K.*

To: Mr. Frank P. Knight, Director
From: Travis P. Lane, Field Engineer
Subject: Weekly Report for week ending May 7, 1960.

Monday: 3 phone calls
Robert Langguth visited the office concerning iron deposits.
1 report
Office detail

Tuesday: 4 phone calls, including one regarding an old defunct property, another re availability of geological maps, and another re tin deposits and prices - world and domestic. Also W.H. Black, 415 Amherst Drive NE, Albuquerque, New Mexico, re U₃O₈ in Arizona, and re the Standard' group of 7 patented claims (~~immediately~~) east of the Silver Reef mine. He advised that he and his associates (which includes R. W. Gray) have recently optioned the claims from the owner and have employed Ken Gerard as consulting engineer. He also said that Walter Zabriskie, Chief Geologist of Three States Natural Gas Company would fly to Phoenix to gather information for his company re the U₃O₈ area centered around the Anderson (Uraniumaire) deposit west of Wickenburg.

C
O
P
Y

MEMO

December 2, 1960

STANDARD GROUP

Travis P. Lane

According to Ken Garard who made a recent examination of the property the owner is as follows:

J.A. Barnhard
1912 W. Holly
Phoenix

^{AL}
Phone 3-3683
^

*Al Stroull is now operating this prop. Leasing operation.
(went to office) 12-27-60*

U. S. Mineral Survey office advises that
M.S. 1698 for 7 claims is almost wholly
within Sec. 25, T. 8 S., R. 5 E. Parts
of the ^SDrown and Esperanza claims are in Sec.
24, T. 8 S., R. 5 E.

5-10-60 1p



13

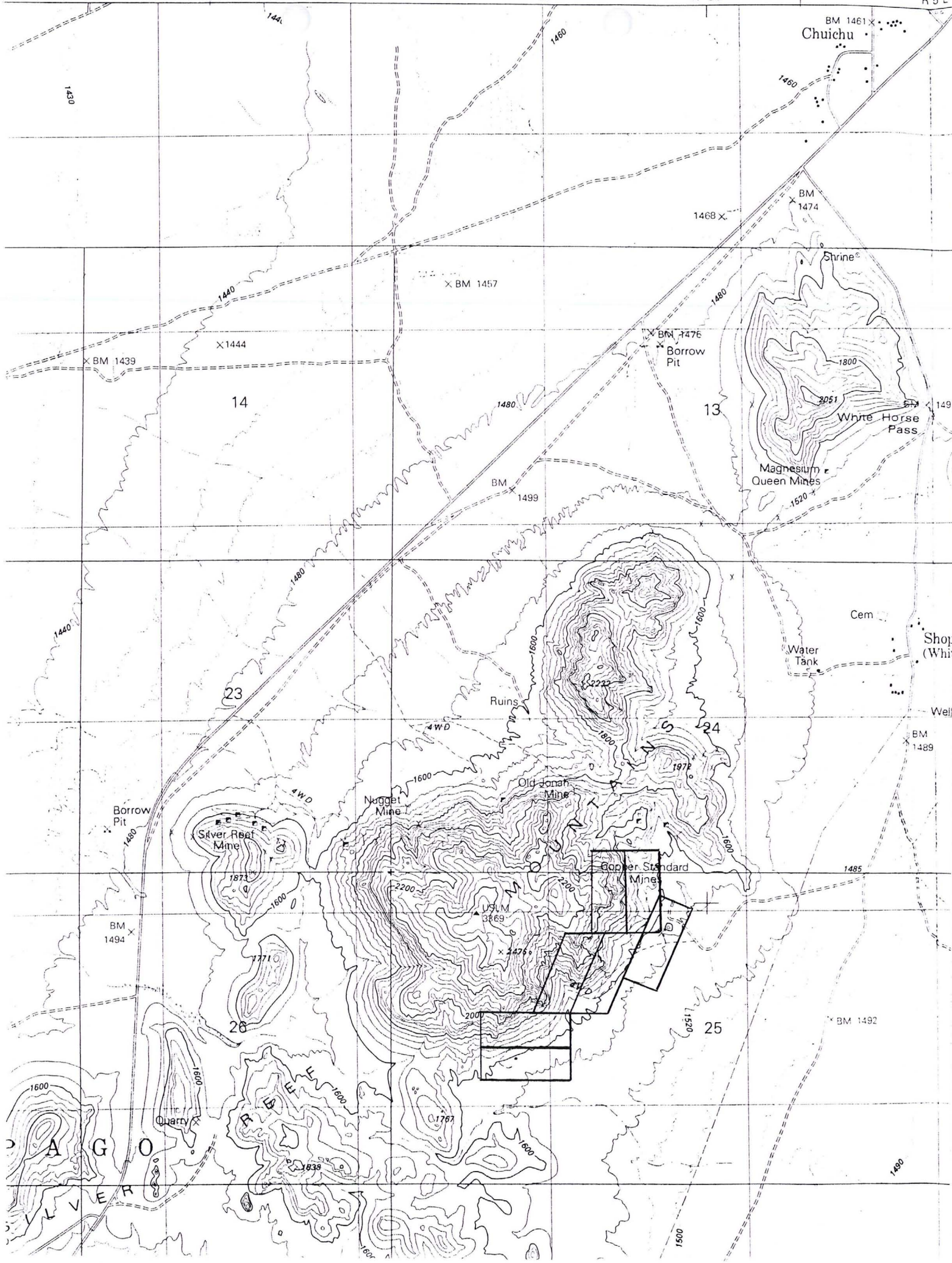
423

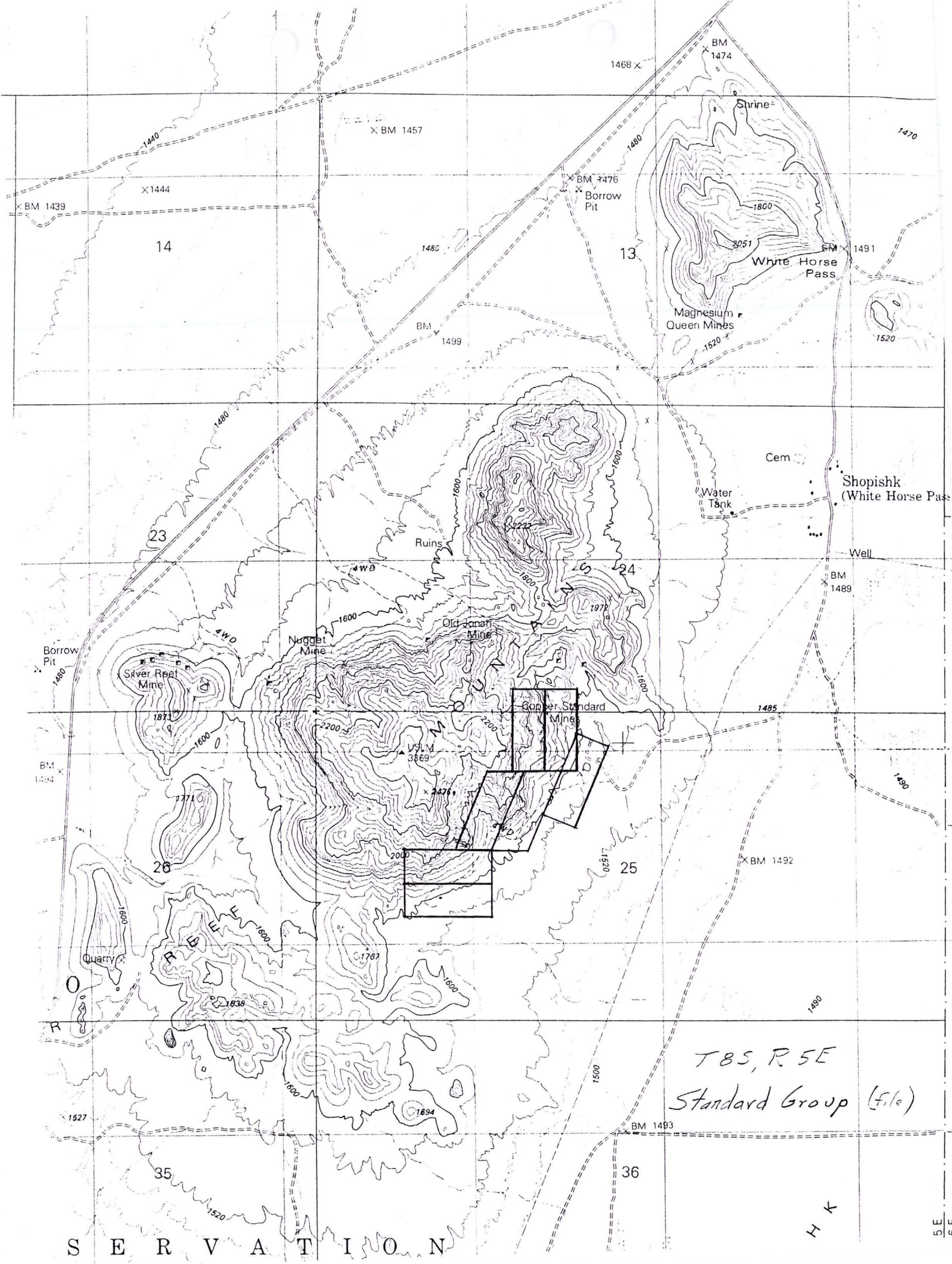
(CHUICHU)

425

47'30"

R 5 E





T85, R5E
Standard Group (file)

S E R V A T I O N

H K

SE
6 E

Sec. 25

SET
BYTON
389

MUGGET
SILVER
3369

LEAD SOLDER
3369

TRILLA
3369

U.S. P.M.
3369

SILVER
3369

MUGGET

CROWN
PAT.
1698

ESPERANZA
PAT.
1698

MILL SITE
PAT.
1698

CCW BOY
PAT.
1698

SUMMIT
PAT.
1698

CHICAGO
1698 PAT.

ST LOUIS
1698 PAT.

INSPIRATION CONSOLIDATED COPPER COMPANY

INSPIRATION, ARIZONA

July 16, 1962

Mr. J. A. Barnhard
1912 West Holly
Phoenix, Arizona

Dear Mr. Barnhard:

The assay results of the samples which I took from your Esperanza Mine claims, Silver Reef Mining District, Pinal County, Arizona, on January 25, 1962, are as follows:

#41404 - Tr. Au, 0.36 oz. Ag, 1.50% Cu, 58.0% SiO₂.
Sample of the main dump of a shaft 100 feet on the Esperanza claim.

#41405 - Tr. Au, 0.84 oz. Ag, 3.0% Cu, 67.4% SiO₂.
A chipped sample across a breccia-copper vein near the shaft on the Cowboy Claim.

#41406 - Tr. Au, 1.32 oz. Ag, 2.40% Cu, 54.5% SiO₂.
Sample from dump of small working for copper-gold about 1/2 mile north of the Esperanza Shaft and on top of a ridge.

#41407 - Tr. Au, 1.78 oz. Ag, 0.20% Pb, 0.30% Zn, 0.60% Cu, 53.0% CaO.
Sample from picked muck pile of calcite and siderite on top of hill about 1/2 mile north of the Esperanza Shaft.

Your property isn't the type of prospect we are seeking at this time. However, it has potential as a source of silica ore for a smelter. As you can note, the silica content is a little low for the ore to be classed as siliceous ore, but I think almost any smelter would seriously consider it.

I certainly do appreciate your taking me to the property, and your cooperation in this matter.

Please find enclosed the Mineral Survey Plat that you so kindly loaned to me. This material was originally mailed February 19, 1962, but returned for incorrect address. Please excuse the delay.

Sincerely yours,

Hugh W. Olmstead

Hugh W. Olmstead
Mining Geologist

HWO:lvs
Enclosure = 1

PC

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



December 2, 1960

MEMO

To: Al Stovall

STANDARD GROUP

Location: 1 1/2 miles south of Casa Grande, (and a short distance east of the Silver Reef mine).

Property: 7 patented claims

Owner: J. A. Barnhard, 1912 W. Holly St., Phoenix. Phone AL 3-3683

Our files contain a report by Arthur Flagg. He did some sampling and lists his 21 samples, and he attaches sketches showing the location of most of them. They are cut samples and the assays range from a low of 0.75% Cu to a high of 5.35% Cu with an average of about 2 1/2% (by visual scanning of the list). All the samples are in the upper workings of the mine.

Geo. Dillard told me he took a 50' (length) level sample which appeared to confirm the above average grade. He also took a dump sample which, as I recollect, ran around 2.5% Cu. He no doubt gave you firmer figures when you visited the mine with him recently. From what he told me I judge that if the dump and the material between the surface and the 100' level proves amenable to leaching a profitable small deal might be worked out here; as for the rest of the mine ???

Travis P. Lane

C
O
P
Y

next 2.35
Dump 2.72 275 3 to Assay

PC

COPY

COPY

LOUIS E. REBER, Jr.

COPY

MINING GEOLOGIST.

COPY

Bisbee, Ariz.
April 10, 1955.

Mr. Ira W. Wagon
Casa Grande, Ariz.

Dear Ira:

I do not believe that there is any question ^{but} that the Standard Mine and the surrounding area merit further investigation and that the information so far available points to extremely interesting possibilities.

Interest in the property depends very largely on the belief that the showings in the Esperenza workings suggest a volume of material that can be worked profitably with a small leaching plant. Unless there is an unsuspected joker in the test results and estimates supplied by Mr. Harlan, it would appear fairly certain that 100,000 tons of this material with an average copper content of no more than two (2%) per cent should suffice to justify a 100 ton treatment plant and form the basis of a profitable operation.

This would make it a fair bet that the showings merit further development even though the sample results now available are deemed somewhat unreliable.

However, it should be entirely feasible and desirable to play safe and keep commitments to a minimum until the results of a more complete and accurate sampling of the underground workings are available. It is understood that some expense may be required to maintain control of the Standard group of patented claims. Aside from this, the first step should be limited to the cost of actual sampling and the assaying of the Esperenza workings. Any serious construction of a pilot mill must await the results of the sampling and further development of the ore body.

Once it is proven that the material in the Esperenza claim can be worked profitably, the chance for the discovery of similar material elsewhere in the area may be deemed of great importance.

Very sincerely,

(Signed) Louis E. Reber, Jr.
Louis E. Reber, Jr.

*

The Standard Group of claims in the Papago Indian Reservation near Chuichu which are now under lease by Powdered Metals Corp., have been in the process of further geological study and sampling to test and verify the ore reserves. Powdered Metals has announced its intention of building a \$4,000,000 processing plant to open within the year, using the Harlan electrolytic process to treat ores from this mine.

CLH Quarterly Report 4/1968 _____

MG WR 12/17/82: Mr. Sherwood Owens states that his report, dated 8/8/50 on file with the Department, referring to the Copper Stand Mine is probably referring to the Copper Standard Mine (MILS 658, Pinal County.)

NJN WR 11/22/85: Hale Tognoni (c) visited and reported that he is doing a report and evaluation of the Standard Group (f) Pinal County for a client. The client is owner of the property and is considering donating the 7 patented mining claims to the Papago Indian Tribe. The property is surrounded by the Papago Indian Reservation.

RRB WR 1/3/86: Visited the Copper Standard Mine (Standard Group - file) on the Papago Reservation, Pinal County. There are several workings and at least one deep shaft. The Shaft is sunk on a breccia zone about 50 feet wide with extensive copper oxide mineralization filling the cracks. Chrysocolla and malachite are the predominant minerals. There is a large building with good steel frame and roof but no walls on a concrete slab. Scotty Farmer was on the property harvesting saguaros and said that he understood that the property was to be donated to the Papago Tribe. He said that federal government surveyors were out to locate the boundaries of the claims.

DEPARTMENT OF MINERAL RESOURCES

STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine Standard Group

Date September 4, 1968

District Silver Reef, Pinal County

Engineer K.N. Garard

Subject: Examination of Powdered Metals Corporation Standard Group located in the Silver Reef Range.

Toured the entire suggested production area with the foreman. I understand Mr. Pennybaker is being used to plan and lay out the drilling and exploration program, therefore I consider that they are represented by a competent geologist and that Mr. Pennybaker, no doubt, has some theory to warrant present work.

I understand from the foreman that he was quite disappointed in the results of the drilling and stated as of to date they have not encountered any deposition of consequence. The present pit operation will be an area from approximately 500 ft. by 700 ft. and drilled to a depth of approximately 5 ft. Generally speaking the country rock is rhyolite with practically no intrusives, thereby eliminating the possibility of consequential copper depositions.

They were waiting for the Sundt Construction Company and their dozer to clean out the pit and at that time they will drill additional depth to determine the possibility of sulphide ore body at the permanent water table.

From all outward appearances the Powdered Metals Company are going to be considerably short in production and will have to locate additional potential reserves to operate their plant.

Arrived at Standard Metals - gate locked - walked into camp. The watchman, Don Scott escorted me to the main portal. The leaching pit (Earthen) is approximately 800 ft. long and 500 ft. wide, 10 ft. deep. Did not see any leaching equipment, milling or mining machinery. The watchman said Mr. Hatcher was coming out Saturday or Sunday Jan 25, 26th.

GBG WR 1/24/69

Standard Copper, Silver Reef Dist. - appears dead. GWI Note 1/19/70

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine STANDARD MINE Date 1/20/65
District SILVER REEF MOUNTAINS, PINAL COUNTY Engineer Lewis A. Smith
Subject: MINE VISIT and CONFERENCE with Joe Barnhart and George Freeman, in Casa Grande 1/20/65

Note; No one was at the mine at the time of visit.

PROPERTY: 7 Claims.

OWNER: J. A. (Joe) Barnhard, 1912 W. Holly Street, Phoenix (253-3683)

LESSEE: Charles Neil Holder, 5901 W. Flower, Phoenix (278-7987)

WORK: Esperanca Shaft 100' deep (all oxide ore) with drifts, in two directions. On the Cowboy claim, 1000 or so, feet NW of the shaft, a cut shows considerable oxidized copper staining along a narrow fracture. This mine was tested by Al. Stovall (who found that reserves were small and alumina high) so did not go ahead with it).

Note: Mr. Barnhard stated that he had reports on the property that we could see, but that Holder had them. A later telephone conference with Holder was held and he said that he will bring the reports in and discuss leaching with us.

J. A. Barnhard brought in a suite of specimens and a shipment by Charles Holder from the Standard Mine. (Charles Holder, Lessee) This was sorted from the open cut made by Al Stoval some time ago. It amounted to 12.2 tons that ran 3.35 percent copper, 0.64 oz. silver, 0.003 oz gold to the ton, 14.8 percent alumina, and 57.2 percent silica. The shipment netted only \$30. Following this, Holder withdrew from the lease. Barnhard owns the seven claims.

LAS WR 3/12/65

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INDUCED POLARIZATION SURVEY

**BARNHARD PROSPECT, SILVER REEF MINING DISTRICT
Pinal County, Arizona**

for

**C. C. HUSTON & ASSOCIATES
Toronto, Ontario, Canada**

January 1964

by

**HEINRICHS GEOEXPLORATION COMPANY
P. O. Box 5671 Tucson, Arizona**

*

INTRODUCTION

On January 27 and 28, 1964, at the request of Mr. George S. Dieler of C. C. Huston & Associates, Heinrichs Geoeexploration Company completed an induced polarization survey on the Barnhard Prospect in the Silver Reef Mountains in Pinal County, Arizona. This survey consisted of two spreads of 500-foot dipole spaced lines, giving a total of 11,500 feet of line surveyed and 6,500 feet of plotted data.

The data was obtained by the dual frequency mode induced polarization method with a dipole-dipole electrode configuration. A plan overlay of claim plat showing the line locations and two sectional data sheets are included.

Personnel involved were Chris S. Ludwig, geophysicist, and F. F. Hanly and R. Palmer, technical assistants.

CONCLUSIONS AND RECOMMENDATIONS

1. No indication of pervasive, porphyry-type sulfide mineralization was encountered in the vicinity of either line down to a depth of about 750 feet.
2. As there are good oxide copper surface exposures, it is quite possible that either the primary sulfide source (if present) was too deep, or was too narrow and weakly mineralized -- or both -- to have been detected with 500-foot dipole spacing.

*

3. A larger dipole spaced I. P. line for greater depth penetration may detect the sulfide source ^(the source) if it is large enough -- say having a minimum dimension of 1,000 feet and being no deeper than 1,000-1,500 feet below the surface.
4. Otherwise, unless deep drilling down the smaller exposed vein-like structures is considered, it is recommended that the property be dropped.

INTERPRETATION

Line 1: Only background-magnitude frequency effects and metallic conduction factors were noticed on this line.

Resistivities indicate a near vertical higher conductivity dike-like zone between 0.0N/S and 0.5S. A near vertical contact appears around 1.5N separating the better conducting rocks to the south from the poorer conductors to the north.

Line 2: Again, only background induced polarization effects were noted.

Resistivities indicate a high resistivity zone around 1.5SW, possibly a dike. Northeast of this zone, resistivities gradually attenuate, possibly from deepening alluvium.

*

Respectfully submitted,

HEINRICHS GEOEXPLORATION COMPANY

Chris S. Ludwig

Chris S. Ludwig
Geophysicist

Approved By:

Walter E. Heinrichs, Jr.

Walter E. Heinrichs, Jr.
President and General Manager

January 30, 1964
P. O. Box 5671
Tucson, Arizona 85703

BASIS OF I. P. METHOD

The induced polarization method is based on several related electrical properties such as overvoltage, etc., of sulfide or similar metallic lustred particles, especially those of iron, copper, lead, etc. Such particles react to electrical currents somewhat in the manner of miniature electrical capacitors. Thus a relatively non-conducting rock mass containing sulfide particles will "polarize" and offer a lower "impedance" to an alternating current than its equivalent resistance to a direct current. Hence when a so called "direct current" pulse is applied across a pair of current electrodes in the vicinity of a disseminated sulfide body a certain type of polarization will occur and the potential drop between two potential electrodes some given distance from the current electrodes will be greater than when a relatively faster pulse or "alternating current" is applied to the first two electrodes. These effects may be measured by relating to time, frequency or by actually observing or recording the pulse decay character.

This property of Induced Polarization is not entirely unique to sulfide particles, but with sufficient geological knowledge and/or type and amount of data, anomalism due to sulfides can be normally interpreted apart from that possibly due to graphite, magnetite, clay particles, etc.

*

PROCEDURE AND INTERPRETATION USED

For routine reconnaissance work, we prefer and use the frequency system and most commonly compare 0.05 and 3.0 cycles per second respectively, our so called "D. C." and "A. C." modes. However, other frequencies are available and are occasionally used when needed.

In our standard field practice, five equally spaced co-linear current electrodes are set and observations are made in accordance with a symmetrical dipole-dipole or Eltran electrode configuration procedure. Distance between the receiver or potential electrodes is kept equal to the distance between each pair of current electrodes and the separation between the center of each potential electrode set-up from the center of each pair of current electrodes is at least one or some greater multiple of the electrode spacing.

Selection of a given electrode spacing is determined by the objectives to be reached in a given survey. This spacing will range from very small (50 ft. or less) for very detailed surveys, up to 1,000 ft., or occasionally more, for broad reconnaissance work. Other factors involved in the selection are concerned with the anticipated physical geometry of any possibly existing mineral occurrence which must include consideration of such factors as expected depth of burial to the top of the source, the dimensions of the source itself as well as of its electrical and other

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physical properties. In general the greater the spacing the greater the maximum penetration and the less the lateral definition. With this dipole-dipole (Eltran) electrode configuration, the maximum possible effective penetration is from 1.0 times the electrode spacing in the first separation to 3.5 times the spacing on the 6th separation. In other words, with theoretically IDEAL conditions of completely isotropic-homogeneous resistivity in every direction both lateral and vertical, (a situation we never have), using 1,000 ft. dipoles, the information obtained in the first dipole separation represents the average electrical composition of the materials from 0 to 1,000 ft; in the third separation from 0 to 2,000 ft; in the 6th separation from 0 to 3,500 ft. Actually, penetration is a function of the absolute resistivity distribution and magnitude which are most often rather complex. In practice, empirical results have shown that under average conditions the depth of penetration may vary from 0.2 to 2.0 times the electrode spacing from first to sixth dipole separation. The I. P. data obtained is plotted at a point that represents the geometric "bottom" of a hemisphere which has a radius equal to 1/2 the dipole separation, however, it must be emphasized that this value does not necessarily represent the electrical properties at that point, but actually the average of the properties of all the materials within the hemisphere. Furthermore, in the vicinity of sharply contrasting resistivity contacts the hemisphere

*

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will be greatly distorted often providing for lateral translation of maximums and minimums. Therefore, it is unrealistic to attempt interpretation to a degree of accuracy greater than a minimum of about half the distance between any two adjacent depth points. Fortunately geological (and therefore physical property) contacts are often sharp enough to create a pattern within the data that lends itself to more or less definite analysis within the limitations above described.

Since we usually only effectively collect data from the surface with essentially two dimensional coverage, the exact vertical aspects are often the most difficult to analyze. For example, it is very hard to detect the presence of a relatively poor conductor, or non-polarizing horizon, lying below a good conductor, or polarizing layer, and if the upper horizon were an especially good conductor there would be no indication whatsoever of the lower zone.

In the case of an alternating series of conducting and insulating horizons the effect is to average the electrical properties of the entire section with a somewhat more attenuated result than if the whole section were a uniform equivalent of the same averaged conditions from surface to the point of maximum penetration. In the more usual case of non-sulfides, less conducting material, overlying a conducting (sulfides) zone that extends beyond the depth of maximum penetration, the data will

*

show no more than background polarization of $\pm 5\%$ in separations that are smaller than the thickness of the overburden, with polarization uniformly increasing with depth until certain lateral and vertical limits related to the size, shape and position of the conducting horizon are exceeded. Normally PFE's of 0 +/- 5% are considered to be background, 5% to 10% plus as marginal, and 10% plus as definitely anomalous. However, this scaling of values will vary to some degree conditional upon areas and regions and variable geological (earth electrical) conditions. Occasionally negative PFE's are encountered and these may be explained by various rather technical situations, but generally they are not of serious consequence.

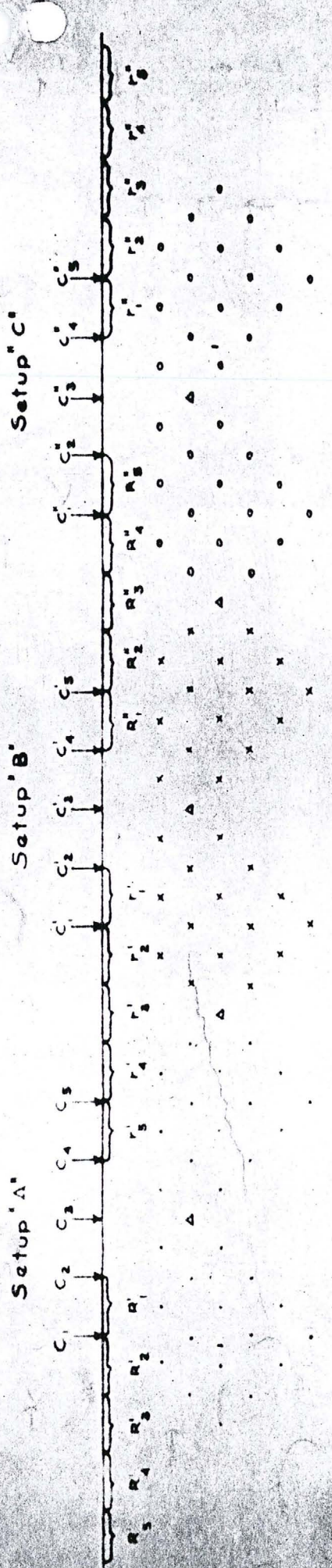
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PRESENTATION OF DATA

Four separate quantities are measured or computed from the data acquired in the field. The first is the D. C. resistivity. The second is the percent frequency effect. The third quantity is the so called "metallic conduction factor" which is simply the frequency effect divided by the D. C. resistivity times 1,000, and the fourth is self potential.

Sectional data sheets are usually the best composite method for plotting, presenting and interpreting results. The D. C. resistivity is plotted uppermost on the sheet, the percent frequency effect (PFE) is plotted directly below the resistivities and the metallic conduction factor (MCF) is plotted next below, leaving a space on the bottom of the sheet for self potential, topography and geology profiles. The sectional contouring is arbitrary and is either done somewhat schematically or on a semi-logarithmic basis. The above three I. P. parameters may also be presented in contour plan, profile form, or both for each "n" or separation level along with the S. P. data if the results and the situation encountered warrants.

*



- Setup "A"
- x Setup "B"
- o Setup "C"
- Δ Reciprocal values

*

MEMORANDUM

TO J. D. Mason
FROM G. A. Freeman

DATE September 8, 1961

SUBJECT: STANDARD MINE LEACHING

Attached is a diagramatic and written proposed flowsheet for a 100 ton/day Heap Leach operation at the Standard Mine.

The estimated costs and profit with a 1.9% Cu Head with 84% Cu recovery would be as follows:

Milling:

Scrap Iron (4800#/day) @ 50.00	\$120.00
Acid (10400#/day) @ 20.00	104.00
Milling and Crushing Labor:	
1 - Supt.	\$25.00
1 - Assayer	20.00
1 - Crusher Man & Maint.	18.00
3 - Helpers	<u>76.00</u>
	\$99.00

Mining & Hauling - 2 men (Crushing Labor in above)	110.00
Loader - \$20.00/day	20.00
Water & Power Plant - \$25.00/day	<u>25.00</u>
	\$278.00

TOTAL OPERATING COSTS - \$6.68 PER TON

Revenue:

3200# of Copper into 80% Conc. or
2 Tons Conc. per day.

* 310/1 Cu the net would be:

(1600# - 20)1580 x (31 - 3.50)	\$474.50
Treatment -	\$14.00
R. R. fgt. -	4.80
Penalty (Grade) -	1.50
Trucking -	<u>1.50</u>
	\$20.80

Less 5% Royalty

\$413.70
<u>20.80</u>
\$393.00

Net at mine would be:

2 Tons Conc. @ \$393.00 -	\$686.00
or \$6.86/ton Ore	
NET PROFIT per TON ORE (6.86 - 4.78)	2.08

NOTE: We would not have any mining costs on the
3000 - 4000 tons of Dump Ore.

G. A. FREEMAN

STANDARD MINE-HEAP LEACHING

PRELIMINARY TESTS INDICATE 1" ORE CONTAINING 1.9% CU WILL LEACH IN 24 HOURS WITH 3% H_2SO_4 SOLUTION AND A RECOVERY OF 84.2%. ACID CONSUMPTION IS 3.24#/# OF COPPER RECOVERED AND DE-TINNED, SHREDDED IRON IS REPLACED AT THE RATE OF 1.5#/# OF RECOVERED CU. BULK DENSITY OF THE IRON IS 23#/CU. FT. AND EXPOSURE IS 125% OF CONSUMPTION. BULK DENSITY OF PRECIPITATION VAT RESIDUE IS 115#/CU. FT. AND BULK DENSITY OF THE SCREENED AND WASHED CEMENT CU IS 120#/CU. FT. AND CONTAINS 80% CU. THE FOLLOWING FIGURES ARE FOR A 100 TON/DAY LEACHING PLANT:

100 T OF ORE CONTAINS 3,800# OF CU, 3,200# OR 84.2% OF WHICH CAN BE RECOVERED BY LEACHING WITH 10,400# OF H_2SO_4 IN A SOLUTION AVERAGING 3%. THE ACID STRENGTH WILL DIMINISH AS THE ORE LEACHES - 6,000# OF IRON MUST BE EXPOSED TO THE PREGNATE SOLUTIONS, 4,800# OF WHICH WILL BE CONSUMED.

THE PRESENT PLATFORM WILL HOLD 2-100 T PILES OF ORE. BY CHANGING ONE PILE EACH DAY, A LEACH-WASH-DRAIN AND CHARGE CYCLE OF 48 HR. CAN BE USED AS FOLLOWS:

LOAD PILE 5' DEEP, 28' ACROSS AT BASE AND 18' IN DIAMETER AT CREST (100 T AT 90#/CU. FT.)	- 3 HRS.
LEACH WITH 41,000 GAL. OF H_2SO_4 SOLUTION AVERAGING 3% AT 26.5 GAL./MIN.	- 24
WASH WITH 2,400 GAL. OF STRIPPED SOLUTION AT 40 GAL./MIN.	- 1
DRAIN - ABOVE SOLUTIONS GO TO PRECIPITATING VATS	- 1
WASH WITH 2,400 GAL. OF STRIPPED SOLUTION AT 40 GAL./MIN.	- 1
DRAIN - TO PRECIPITATING VAT IF CU VALUES SUFFICIENT	- 1
WASH WITH 2,400 GAL. OF FRESH WATER	- 1
DRAIN - TO STRIPPED SOLUTION TANK FOR MAKE UP	- 12
UNLOAD AND CLEAN PLATFORM	- 4
TOTAL	48 HRS.

TWO PRECIPITATING VATS 5' x 25' x 30" - 42" WILL GIVE AMPLE CAPACITY FOR 3 DAYS OPERATION EACH AND TIME FOR CLEANING AND RELOADING. THE CEMENT CU WILL BE WASHED THROUGH A 10 MESH TROMMEL TO REMOVE COARSE IRON, ONTO A DRYING FLOOR WITH LOW WALLS AND SLOPING BOTTOM TO DRAIN AND DRY FOR SHIPMENT.

THE SECOND AND THIRD WASH SOLUTIONS, THE STRIPPED SOLUTION FROM THE PRECIPITATING VATS, AND THE WATER DRAINED FROM THE CONCENTRATE WILL FLOW BY GRAVITY TO A 2,500 GAL. ACID PROOF SUMP, IN WHICH IS LOCATED AN ACID PROOF 1-1/2" PUMP WHICH WILL LIFT IT TO A SIMILAR TANK AT HIGHER ELEVATION OR PUMP THE FIRST AND SECOND WASH SOLUTION TO THE LEACHING HEAPS. FROM THE UPPER TANK THE STRIPPED SOLUTION AND CONCENTRATED ACID WILL FLOW BY GRAVITY TO A MIXING TANK AND THEN BY AN IDENTICAL PUMP TO THE LEACH HEAPS.

THE SOLUTION LOSSES WILL BE BY EVAPORATION AND THE MOISTURE CONTENT OF THE LEACHED RESIDUE AND AND WILL BE COMPENSATED FOR BY THE 2,900 GAL./DAY OF FRESH WASH WATER USED ON THE THIRD WASH. THIS CAN BE VARIED WITHIN REASON TO SUIT THE CIRCUMSTANCES. THE CRUSHER WILL RUN 2 HOURS OR LESS PER DAY AND SHOULD BE POWERED BY AN INTERNAL COMBUSTION ENGINE. THE POWER FOR THE DEEP WELL PUMP WILL BE DETERMINED BY ITS LOCATION. 3,000 GAL./DAY OF FRESH WATER WOULD BE ABOUT THE MINIMUM. A 10 KW POWER UNIT WILL BE ADEQUATE FOR THE PUMPS, MIXER, TROMMEL AND LIGHTS.

A RUBBER-TIRED LOADER WILL BE NEEDED AND WILL OPERATE TWO SHIFTS A DAY, I.E., DAY SHIFT IN MINING AND SWING SHIFT CHANGING LEACH HEAPS.

IRON MAY BE STORED IN THE OPEN AND ADEQUATE SPACE IS AVAILABLE. ACID STORAGE CAPACITY WILL DEPEND ON THE MANNER IN WHICH IT IS SHIPPED. NARROW DRAINS IN THE CONCRETE, THAT THE LOADER CAN CROSS, AND PLASTIC PIPE WILL BE USED FOR ALL EXCEPT FRESH WATER. VALVES WILL BE HELD TO AN ABSOLUTE MINIMUM BY USING PLASTIC PLUGS AND PLASTIC PIPE THAT CAN BE MOVED FROM PLACE TO PLACE. SOLUTION ASSAYS FOR FE AND CU WILL BE BY TITRATION UNTIL ADEQUATE COLORIMETRIC STANDARDS CAN BE MADE. FREE ACID CAN BE ASSAYED BY DILUTING TO A KNOWN AMOUNT AND READING WITH A PH METER. ORE ASSAYS WILL PROBABLY HAVE TO BE BY STANDARD METHODS.

THE ONLY TIME TWO OPERATORS ARE NEEDED IS ON THE SWING SHIFT. THE SECOND OPERATOR ON THE MID. SHIFT COULD OPERATE THE CRUSHER AND SERVICE THE EQUIPMENT. THE SECOND OPERATOR ON THE DAY SHIFT COULD BE THE ASSAYER. SIX MEN/24 HRS. COULD PERFORM ALL THE MILLING OPERATION AND PRODUCE 3,200# Cu/DAY. THE DIRECT EXPENSES WOULD INCLUDE 4,800# IRON/DAY, 10,400# ACID/DAY, FUEL AND SERVICE FOR A LOADER 16 HRS./DAY, SAME FOR CRUSHER DRIVE 8 HR./DAY, FUEL AND SERVICE FOR 10 KW POWER UNIT 24 HRS./DAY AND DEEP WELL PUMP MAINTENANCE.

* GENERAL REFERENCES

REFERENCE 1 F1 < ABGMT CLIPPING - ES

REFERENCE 2 F2 < ABGMT - USBM FILE DATA

REFERENCE 3 F3 < ADMR FILE DATA

REFERENCE 4 F4 < BLM DISTRICT SHEET 561

M220 CONT < THERE ARE TWO OPENINGS: ONE OF WHICH IS A SHORT TUNNEL LEADING TO A SHALLOW SHAFT. >

F5 < ~~BLM~~ USGS MAP MF-934, 1978 >

N5 < NW-SE NORMAL FAULTS IN 2 MILE RADIUS BOTH NORTH AND WEST OF MINE >

U.S. CRIB-SITE FORM
RECORD IDENTIFICATION

RECORD NUMBER B10 < 12 >

REPORT DATE G1 < 8.2.03 >
YR. MO.

REPORTER (SUPERVISOR) G2 < ROTH, FRANCES A. > (G. EST, Don
(last, first, middle initial)

REPORTER AFFILIATION G5 < ABGMT >

SYNONYMS A11 < STANDARD COPPER, STANDARD GROUP, ESPERANZA COWBOY MINE, BLACK CRATOR (?) >

RECORD TYPE B20 < X.I.M. >

INFORMATION SOURCE B30 < 1.2 >

DEPOSIT NUMBER B40 < >

FILE LINK IDENT. B50 < USBM 004 021 0264 >

SITE NAME A10 < COPPER STANDARD MINE >

LOCATION

MINING DISTRICT/AREA A30 < SILVER REEF DISTRICT >

COUNTY A60 < PINAL >

PHYSIOGRAPHIC PROV A63 < 1.2.B. >

DRAINAGE AREA A62 < 1.5.0.5.0.3.0.3.B. >

QUADRANGLE NAME A90 < SILVER REEF >

SECOND QUAD NAME A92 < >

ELEVATION A107 < 1.17.0.0.H.F.T. >

STATE A50 < AZ >

COUNTRY A40 < U.S. >

LAND STATUS A64 < 0.1.B. >

QUADRANGLE SCALE A100 < 6.2.5.00. >

SECOND QUAD SCALE A91 < >

UTM

NORTHING A120 < 3.6.19.0.0.0 >

EASTING A130 < 4.2.5.5.0. >

ZONE NUMBER A110 < 1.2 >

ACCURACY

ACCURATE ACC (circle)

ESTIMATED EST < >

GEODETIC

LATITUDE A70 < > N

LONGITUDE A80 < > W

CADASTRAL

TOWNSHIP(S) A77 < 0.0.8.5. >

SECTION(S) A79 < 2.5 >

SECTION FRACTION(S) A76 < W2 >

MERIDIAN(S) A81 < GILA AND SALT RIVER >

RANGE(S) A78 < 0.0.5.E. >

POSITION FROM NEAREST PROMINENT LOCALITY A82 < ABOUT 1.5 MILES SOUTH SOUTHWEST OF WHITE HORSE PASS >

LOCATION COMMENTS A83 < CLAIMS LOCATED ALONG SOUTH EAST SLOPE OF SILVER REEF MOUNTAINS FOR THE UPPER TWO THIRDS OF SECTION 2.5 AND EXTEND SLIGHTLY INTO SECTION 24 >

* ESSENTIAL INFORMATION
* ESSENTIAL SOMETIMES OR HIGHLY RECOMMENDED

COMMODITY INFORMATION

*COMMODITIES PRESENT C10 < C, U, A, G, >
 *ORE MINERALS C30 < COPPER SILICATES, CHRYSOCOLLA, FREE SILVER >
 *COMMODITY SUBTYPES C41 < >
 *GEN. ANALYTICAL DATA C43 < >
 *COM. INFO. COMMENTS C50 < >

* SIGNIFICANCE

		PRODUCER				NON-PRODUCER	
MAJOR PRODUCTS	MAJOR	< C, U, >		MAIN COMMODITIES PRESENT	C11	< >	
MINOR PRODUCTS	MINOR	< A, G, >		MINOR COMMODITIES PRESENT	C12	< >	
POTENTIAL PRODUCTS	POTEN	< A, U, >					
OCCURRENCES	OCCUR	< >		OCCURRENCES	OCCUR	< >	

*PRODUCTION

		PRODUCER				NON-PRODUCER	
PRODUCTION	YES	(circle)	*PRODUCTION SIZE	SM	MED	LGE	(circle one)
							PRODUCTION
							UND
							NO
							(circle one)

*STATUS

EXPLORATION OR DEVELOPMENT

		PRODUCER				NON-PRODUCER	
			STATUS AND ACTIVITY	A20	< 4 >		
							STATUS AND ACTIVITY
							A20
							< >

*DISCOVERER L20 < LOSS BROTHERS (?) >
 *YEAR OF DISCOVERY L10 < 1890'S > *NATURE OF DISCOVERY L30 < > *YEAR OF FIRST PRODUCTION L40 < > *YEAR OF LAST PRODUCTION L45 < 1965 >
 *PRESENT/LAST OWNER A12 < J. A. BARNHARD (1960) >
 *PRESENT/LAST OPERATOR A13 < POWDERED METALS CORP. (1968) >
 *EXPL./DEV. COMMENTS L110 < CLAIMS INCLUDE CHICAGO, ST LOUIS, SUMMIT, COWBOY, CROWN, ESPERANZA AND MILLSITE ALL PATENTED CLAIMS (1698) >

DESCRIPTION OF DEPOSIT

DEPOSIT TYPE(S) C40 < VEIN / SHEAR ZONE >
 DEPOSIT FORM/SHAPE M10 < >
 DEPTH TO TOP M20 < > *UNITS M21 < > *MAXIMUM LENGTH M40 < 4000 > *UNITS M41 < FT >
 DEPTH TO BOTTOM M30 < > *UNITS M31 < > *MAXIMUM WIDTH M50 < > *UNITS M51 < >
 DEPOSIT SIZE M15 < SMALL > M15 < MEDIUM > M15 < LARGE > (circle one) *MAXIMUM THICKNESS M60 < 30 > *UNITS M61 < FT >
 STRIKE M70 < NE > *DIP M80 < >
 DIRECTION OF PLUNGE M100 < > *PLUNGE M90 < >
 REP. DESC. COMMENTS M110 < >

DESCRIPTION OF WORKINGS

Workings are: SURFACE M120 UNDERGROUND M130 BOTH M140 (circle one) *OVERALL LENGTH M190 < > *UNITS M191 < >
 DEPTH BELOW SURFACE M160 < 250 > *UNITS M161 < FT > *OVERALL WIDTH M200 < > *UNITS M201 < >
 LENGTH OF WORKINGS M170 < 370 1000 > *UNITS M171 < FT > *OVERALL AREA M210 < > *UNITS M211 < >
 DESC. OF WORK. COM. M220 < WORKING LIMITED TO ESPERANZA AND COWBOY CLAIMS; ON ESPERANZA CLAIM THERE IS A PERPENDICULAR SHAFT OF 165 FT AND A 250 FT SHAFT WITH VERTICAL AND INCLINED SECTIONS; THE LONGER SHAFT HAS DRIFTS AT 100 FT LEVEL, 200 FT LEVEL AND 250 FT LEVEL; ON THE COWBOY CLAIM >

GEOLOGY

*AGE OF HOST ROCK(S) K1 < TERT. >
 *HOST ROCK TYPE(S) K1A < VESICULAR ANDESITE >
 *AGE OF IGNEOUS ROCK(S) K2 < TERT. >
 *IGNEOUS ROCK TYPE(S) K2A < VESICULAR ANDESITE >
 *AGE OF MINERALIZATION K3 < TERT. >
 *PERT. MINERALS (NOT ORE) K4 < QUARTZ >
 *ORE CONTROL/LOCUS K5 < FRACTURES IN ANDESITE >
 *MAJ. REG. TRENDS/STRUCT. N5 < IN TECTONIC VOLCANIC FIELD, WITH BLOCKS FAULTED AGAINST PREC. ORACLE GRANITE, EW AND >
 *TECTONIC SETTING N15 < >
 *SIGNIFICANT LOCAL STRUCT. N70 < NNE STRIKE AND ALMOST VERTICAL E DIP, SHOWN ON MF-934, FOR ANDESITE BEDDING >
 *SIGNIFICANT ALTERATION N75 < >
 *PROCESS OF CONC./ENRICH. N80 < HYDROTHERMAL ALTERATION >
 *FORMATION AGE N30 < >
 *FORMATION NAME N30A < >
 *SECOND FM AGE N35 < >
 *SECOND FM NAME N35A < >
 *IGNEOUS UNIT AGE N50 < >
 *IGNEOUS UNIT NAME N50A < >
 *SECOND IG. UNIT AGE N55 < >
 *SECOND IG. UNIT NAME N55A < >
 *GEOLOGY COMMENTS N85 < >

GENERAL COMMENTS

GENERAL COMMENTS GEN < >

STANDARD MINE

PINAL COUNTY
SILVER REEF DIST.

Interview with G. H. Perevill, Benson, April 6, 1965.

According to Perevill, ^CR. L. Whitelock, et al, of Payson, Utah have taken a option on the Standard Claims as of April 1, 1965. Whitelock is sending a geologist in to map the mine area as of the 10th or 11th. Whitelock wants to leach the ore. The shipment, previously made by CHARLES Holder, ran 14.8 percent alumina and 57.2 percent SiO₂. According to Perevill, Walt Heinrich, of Tucson, ran geophysical tests on the mine area and reported no sulphide indications down to 600 feet. Since the mine and other mineralized spots are in andesitic flows the ore potential could easily be confined to these andesitic flows. To the north, next to the Silver Reef mine, granite underlies the flows, so that detailed data on the pitch of this contact could be used to determine the possible depth of the andesite flows to the SE and thus broadly project the possible andesite depth at the Standard Group. However, a well placed hole on the Standard Group SW of the main shaft might better accomplish this, in addition to obtaining the grade of the mineralized material. A new well was recently sunk at the Indian Village a mile east of the property and this reportedly struck a good flow of water. Since the 75-foot level of the mine is open a drill site in this drift near its SE end could be such a site to serve several holes in different directions, both horizontally or vertically. A fault crosses the saddle to the north and forms the Silver Reef vein which is offset at two places by transverse faults.

LAS MEMO 4/6/65

7/15/65 - Mr. C. L. Whitelock (note correct initials) 494 S. Main, Payson, Utah, says he has optioned this property, also the Saddle Mountain Mine and the Adjust Group all in Pinal County. Mr. Whitelock visited the office to check files on these properties. Says he will send his engineer and geologist in to look at them also. ms.

Mr. Steve E. Tima, 2409 W. Orangewood, Apt. E, Phoenix, Arizona - visited office 8/10/66 and said that Powdered Metals Corporation has leased this property. (See Powdered Metals file)

8/10/66 ms

*Copy made from Mr. Tima's file
8/10/66
copy of Benson's memo to mine
premises regarding lease*

9-20-67 Location: 10 $\frac{1}{2}$ miles S of Casa Grande on road to Quijotoa and Sells, thence 3 miles southeast to property.

* Admission to the property was barred by a padlocked gate about 1/4 mile from the mine buildings. From that gate no evidence of activity at the time was visible. A drill rig is mounted on the side of the hill, but it was not running and no men were around it.

Memo - RFP

A Z A DEPARTMENT OF MINERAL RESOURCES
Mineral Building, Fairgrounds
Phoenix, Arizona

1. Information from: G. W. Irvin, Field Engineer
Address: _____
(Standard Group)
2. Mine: Powdered Metals Corp. 3. No. of Claims - Patented _____
Unpatented _____
4. Location: _____
5. Sec. _____ Tp. _____ Range _____ 6. Mining District _____
7. Owner: _____
8. Address: _____
9. Operating Co.: _____
10. Address: _____
11. President: _____ 12. Gen. Mgr.: _____
13. Principal Metals: _____ 14. No. Employed: _____
15. Mill, Type & Capacity: _____
16. Present Operations: (a) Down (b) Assessment work (c) Exploration
(d) Production (e) Rate _____ tpd.
17. New Work Planned: _____

18. Misc. Notes: Visited property - Gate locked. On Jan. 29, 1968
they are going to have a program at the Desert Sun Motel at which
Norman Hatcher will describe the process and have a guided tour through
the plant.

Date: 1/17/68

G. W. Irvin
(Signature) G. W. Irvin (Field Engineer)

STANDARD MINE

PINAL COUNTY
SILVER REEF MOUNTAINSCOMPOSITE GROUP OF ASSAYS

	<u>Ag. Oz.</u>	<u>Au. Oz.</u>	<u>Cu</u>		<u>Cowboy Claim</u>
1.	2.03	0.02	9.24	Below Cliff on Cowboy Claim	"
2.	0.80	0.01	6.75	Dump Sample	"
3. (1)			7.10	Cowboy ore sample	"
4. (2)			2.35	Dump	"
5. (1)			3.00	Tunnel	"
6. (2)			5.96	Ore pile	"
7. (3)			2.02	Dump (dirt)	"
8. (41404)			3.05	Cut across breccia (Outcrop)	"
9. (6)			5.50	General	"
10 (7)			13.30	Cowboy Tunnel at shaft intersection	"
11 (2)			4.25	Outcrop 300' W of Tunnel	"
12 (3)			3.84	Ore pile	"
					Esperanza Claims
13. (1)			1.15		"
14. (2)			4.50	45 Ft Between shaft & Y	"
15. (3)			1.45	At Esperanza Shaft	"
16. (4)			3.25	Crosscut W of Y	"
17. (5)			0.50	Cut in Capping E of Y	"
18. (44333)			1.25	Face of N. Drift at shaft	"
19. (2)			4.30	Roof of drift-shaft at Y (see No. 2 above)	"
20. (3)			0.35	Cut in capping East of Y	"
21. (4)			12.15	Face of cut 30' above shaft	"
22. (371 Flagg)			2.70	W. Crosscut from Esperanza	"
23. (372 Flagg)			2.25	" " " "	"
24. (373 Flagg)			5.35	Face SW drift on 100 level	"
25. (274 Flagg)			5.25	1st Section of crosscut W of Y	"
26. (375 Flagg)			2.20	20 ft. back of section of same	"
27. (44335)			4.55	Face above Esperanza Shaft	"
28.			9.12	Assay from International Smelter	"
29. (1)			3.32	Gen'l Cut 30' above shaft	"
30. (4)			2.02	Low grade Dump Esperanza	"
31. (5)			3.31	Back 20' of crosscut W of Y	"
32. (6)			3.57	15' Face of " " " Y	"
33. (7)			1.35	Dump of Millsite Claim 300' E.	"
34. (8)			2.42	Large sample from Esperanza Dump	"
35. (1)			1.94	Smelter Assay - Hayden	"
36. (2)			4.18	" " "	"
37. (91772)			6.75	No designation	"
38. (41404)			1.50	Esperanza Dump	"
39. (6)			2.40	Deep incline $\frac{1}{2}$ mile N of Esperanza Shaft.	"
40. (A)			1.95	New Outcrop (By Barnhard)	"
41. (B)			7.70	Special (By Barnhard)	"
* 42. (1) Large (Frank Free)			6.53	W. Tunnel Esperanza	"
42. (2) Small (" ")			2.10	" " "	"
43.			3.00	" " "	"

	oz. Ag.	Au. Oz.	Cu	
44. (2)	(Frank Free)			5.96 "High grade" Esperanza
45. (3)	"			2.02 Low grade "
46. (1)	0.01	0.15		1.94 Sample (Sydney B. Moeur)
47. (2)	(Frank Free)			4.18 (58% SiO ₂) " " "
48.	(Frank Free)	0.39		7.10 Frank Free (gen'l)
49.	(Frank Free)			2.35 Frank Free Cowboy

LAS - 2-65



Pay Dirt 11/17/67

*

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



December 2, 1960

MEMO

To: Al Stovall

STANDARD GROUP

Location: 1 1/4 miles south of Casa Grande, (and a short distance east of the Silver Reef mine).

Property: 7 patented claims

Owner: J. A. Barnhard, 1912 W. Holly St., Phoenix. Phone AL 3-3683

Our files contain a report by Arthur Flagg. He did some sampling and lists his 21 samples, and he attaches sketches showing the location of most of them. They are cut samples and the assays range from a low of 0.75% Cu to a high of 5.35% Cu with an average of about 2 1/2% (by visual scanning of the list). All the samples are in the upper workings of the mine.

Geo. Dillard told me he took a 50' (length) level sample which appeared to confirm the above average grade. He also took a dump sample which, as I recollect, ran around 2.5% Cu. He no doubt gave you firmer figures when you visited the mine with him recently. From what he told me I judge that if the dump and the material between the surface and the 100' level proves amenable to leaching a profitable small deal might be worked out here; as for the rest of the mine ???

Travis P. Lane

*

MEMO

December 2, 1960

STANDARD GROUP

Travis P. Lane

According to Ken Garard who made a recent examination of the property the owner is as follows:

J.A. Barnhard

1912 W. Holly

Phoenix

Phone 3-3683

253-3683

*

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



STANDARD GROUP

PINAL COUNTY
SILVER REEF DIST.

May 4, 1960

To: Frank P. Knight, Director
From: Travis P. Lane, Field Engineer
Subject: Weekly Report for week ending April 30, 1960

C

April 25 3 phone calls including Clausen re property, the Standard group of claims, east of his Silver Reef property.

O

4 visitors including Walter and Nick Hughes of Mammoth re land regulations, also gold deposits. Also R.W. Gray and W. H. Black (415 Amherst Drive NE, Albuquerque) re claims east of the Silver Reef, also re the Anderson (Uraniumaire) uranium mine and others in the vicinity. They came into the office principally to run down the ownership of a group of patented claims east of the Silver Reef mine. By phone to the Bureau of Land Management the claims were identified as the Esperanza, Chicago, Cowboy, Crown, Mill'site, St. Louis and Sunset owned by a Mr. Bernhard (?) of Salt Lake City.

D

STANDARD GROUP

PINAL COUNTY
SILVER REEF DIST.

This property was referred to as "STANDARD COPPER " or "COPPER STANDARD" by party inquiring about property over phone.

5-9-60 - TRAVIS P. LANE

July 25, 1962 - Telephone call-FPK- R. W. Gray, 2815 Joe Sanchez Rd., S. W.
(Re coal bibliography) Albuquerque, New Mexico.

*

pc

STATUS OF DORMANT MINES

MINE NAME: Silver Bell Leases and ^{Copper Standard} Copper Stand Mine

LOCATION: Silver Bell District - Casa Grande District

OWNER AND/OR LEASEE: Sherwood B. Owens

ADDRESS: P. O. Box 769 Tucson, Arizona

APPROXIMATE PRODUCTION (Year of 1945):

COPPER 2,160,000 Lbs. LEAD _____ Lbs.
 ZINC _____ Lbs. (OTHER) _____

CHECK THE CHIEF CAUSE OF YOUR DISCONTINUED PRODUCTION:

- (A) Easily available ore worked out.
- X (B) Increased costs, but have quantity similar to past grade of ore.
- X (C) Too close a margin to develop more ore.
- (D) _____

If you have ore ready to mine please give your estimate of the amount of metal (name each metal) that you could produce in one year (after allowing 60 days to get started) if there were premiums above present market prices. Name amount with a low premium, and amount at a high premium; such as:

Copper at 22½¢ plus 5¢ premium.....	1,000,000 Lbs.
Copper at 22½¢ plus 10¢ premium.....	1,500,000 Lbs.
Present <u>Price plus a 5¢ premium</u>	<u>2,500,000 lbs</u>
Present <u>Price plus a 10¢ premium</u>	<u>3,500,000 lbs</u>

If you do not have ore ready to mine please discuss the following:

- (A) Do you think a reasonable development program would produce a justified tonnage of commercial ore at above mine?

The above ore is ready to mine but development would unquestionably open up new areas or extend old ones

- (B) With a premium price (guaranteed for one year) could you carry out such a development program yourself? What premium?

A premium price for one year would be worthless to most operators as regards development. It would take them that long to get underway and actually produce in any volume. In our particular case we could be in quantity production within 60 days but the average small mine is not in that condition with proven reserves. Premiums should be for minimum of three years.

- (C) If you could not do this yourself, would a quick drilling program by some government agency (at government expense) be sufficient?
-
-

- (D) Or would you prefer a loan plan similar to the arrangements during World War II?
-
-

How about a combination plan in two stages such as follows?

Stage 1: Government engineers review project and, if a little drilling appears to be justified and a preliminary key to the situation, such drilling program to be agreed upon by owner and government engineer, paid for by the government, but let by contract.

Stage 2: If results of drilling (or without drilling) justify underground development and/or production equipment, same to be obtainable via a mortgage loan on property.

Please discuss the above: I have conducted exploration and development work in so far as I have been financially able and do have considerable ore blocked out ready to go. As an example, we have 200,000 tons to average 2.5% cu at Silver Bell and have 60,000 tons to average 3.0% cu at Copper Stand. Since this has been developed with our own resources, it is certainly reasonable to suppose that additional drilling and/or exploration would result in proving larger reserves. I feel that in the case of properties such as the ones I have, where the owner has definitely made large expenditures of time and money in development, a drilling program at government expense is not only justified but is indicated. On properties which are unproven as to ore, and on which the owners have done nothing but file intentions to hold all these years, any development or drilling should be done via mortgage on the property. In other words, help the operators who are really operating and
SUGGESTIONS: have some accomplishments to their credit.

In the case of the ores we mention in this questionnaire, you can readily see that a small amount of premium assistance would bring forth a great deal of copper. The reason is obvious - with marginal ore you simply have to receive enough price to cover production costs or you can't produce. Unfortunately the great amount of low grade we have proven at the moment (for a small operator) is just a little too low to produce at present prices. Since we have this much proven and blocked, I feel confident we could develop several times this amount of ore - IF - we had a market and guaranteed price.

DATE 8/8/50

SIGNATURE

Herwood B. Owens

STANDARD GROUP

The Standard Group, consisting of seven patented claims, is in the Silver Reef mining district, Pinal County, Arizona, fourteen miles by road south of Casa Grande. The claims were located in the '90s and patented in 1902 under U. S. Mineral Survey No. 1698.

Approximately half the area covered by these claims lies along the eastern slope of a very rugged range of hills. Steep cliffs along this slope are a conspicuous feature. The other half of the area covers the cliffs and crests westward. The claims flanking the range on the east are easily reached by a good road but those higher up can be reached only by steep trails. The claims on the higher elevations were not visited at this time.

The range is composed of late volcanics, considerably disturbed and more or less altered. The mineralization occurs along a slightly curving belt from the southwest to the northeast over a width varying from two feet to a maximum of over thirty feet. This belt roughly parallels the cliff base. There are three places where the mineralization can be traced on the surface for distances of about one hundred feet. The intervals between are covered by a heavy overburden of large boulders, talus and scant soil, which may cover other outcrops. The length of this ~~xxx~~ arc on the property is about four thousand feet. It continues to the north, beyond the limits of these claims at least five hundred feet.

The principal development work is on the Esperanza claim. These workings are easily reached by a good road. On the northern end of the Cow Boy Claim, which adjoins the Esperanza on the south, are other but less extensive workings, A and B on the claim map. There are neither buildings nor equipment on the claims.

A perpendicular shaft (C on the claim map) on the Esperanza claim, no doubt sunk as a working shaft, cannot be entered as the timbering consists of only a few very old sets near the top. From the notes of the U. S. Deputy Mineral Surveyor it is learned that the depth of this shaft is one hundred sixty-five feet. No mention is made of any lateral workings off this shaft. The shaft through which the property has been explored (D on the claim map) is two hundred and fifty feet deep, according to the survey notes. For the first one hundred feet the shaft is perpendicular. From the bottom of the perpendicular section the remaining one hundred and fifty feet is on an incline of fifty-six degrees to the west. New straight ladders have been installed recently in a portion (75 feet) of the perpendicular shaft. Some timbers are in place in the incline but there are so many bats in the incline that a lamp cannot be kept burning. The first twenty-five feet of the perpendicular shaft is without timbering of any sort. The top of the seventy-five foot section is reached through an adit from the south. The relation of these approaches is indicated on the attached mine plan.

In the field notes of the U. S. Mineral Survey 1698 it is stated that there is a crosscut of twenty-five feet to the east at two hundred feet, and two crosscuts off the bottom of the deep shaft. One of these is driven west for twenty-five feet; the other to the east for fifteen feet. A "sump 4 x 7 feet, twenty feet deep" at the face of the north drift on the 100-ft level was not found. It is likely that this refers to a winze in the south drift which is now deeper than twenty-five feet.

* The workings on the one hundred foot level consist of drifts, crosscuts, one raise and the winze mentioned above. The north drift is seventy-five feet in length. The south drift is one hundred sixteen feet. A crosscut is driven west from the top of the inclined portion of the shaft for forty-eight feet. Twelve feet beyond the shaft, in this crosscut, is a drift to the north for twenty feet. From the south drift a crosscut is driven west for thirty-three feet, beginning almost at the winze. Above the winze a short raise was begun.

Along the fracture zones in the andesitic country rock hydrothermal alteration has taken place. These mineralized zones have not been fully explored as yet and the inter-relationships are not entirely clear. The copper deposited by the mineralizing solutions remains as a silicate, which is quite generally disseminated through these zones. To a limited extent concentrations on irregularly spaced, more or less open, fractures has taken place but such occurrences are neither abundant or especially important. Chalcocite was found very sparingly.

The two hundred fifty foot shaft followed a mineralized zone which was perpendicular, or nearly so, for the first one hundred feet. Below this point the shaft was changed to follow course of this zone. Throughout there is a small streak of high-grade ore, varying in width. The full width of mineralization varies between two and over thirty feet. Since no mineralization of any real consequence has been encountered in the north drift the inference is that the ore shoot has a definite rake to the south. The fact that the one-hundred sixty-five foot shaft was sunk to the south in the country rock lends much support to the belief that the deepest exploration indicates a southward trend to the ore zone.

The deputy mineral surveyor's notes describe crosscuts off the inclined portion of the shaft but no other workings are mentioned in this part of the shaft. No information is available concerning what was discovered in these crosscuts. If the assumption that the ore shoot rakes strongly to the south is true it is probable that these crosscuts did not show much pay ore.

Three samples, Nos. 371, 372 and 373 were taken on the one hundred foot level. No width is assigned to No. 373 as it does not represent a complete section of a mineralized zone. Nos. 371 and 372 were taken across the full width of mineralized ground as it crossed diagonally, by the south drift but is not a complete section of this zone.

On the twenty-five foot (adit) level two samples were taken in the west crosscut-adit. The first one No. 374 just under cover, over a width of five feet. The second, No. 375, was taken over 29 feet west from this sample. Both of these samples were cut on the north side of the adit.

Sample 369 was taken on the Cow Boy Claim. The most extensive work (A on the claim map) consists of an adit-crosscut running west some twenty feet where it connects with a shaft of about fifteen feet depth. The adit continues in its original direction for another twenty feet. From the bottom of the shaft a drive N 20 W has been driven about fifty feet. The sides of the shaft have been shot down somewhat and the ore broken has been piled just outside the adit. It amounts to almost a carload. In the vicinity of the shaft there are numerous fractures only one of which appears to have any very definite relation to ore deposition. This is the fracture followed in the north drift, on a course N 20 W. Unlike other portions of the mineralized arc the ore zone on the Cow Boy dips east at from sixty to seventy degrees.

Above the shaft collar on the Cow Boy there is a well defined zone of copper mineralization running almost north, with seemingly perpendicular walls. On the east side there is a slight brecciation. On the west side the material is firmer with a rather uniform distribution of copper silicate.

*

Sample 364 was taken across three feet of ore on a bench four or five feet above the collar of this fifteen foot shaft. This assayed 2.95% in copper. Some of this material has been broken and added to the pile of sorted ore at the adit level below.

No road reaches this point on the Cow Boy claim but a road can be built very quickly and at little cost. The indications justify some additional work on this ore and it is believed that a limited exploratory program will disclose enough ore to warrant the necessary road work.

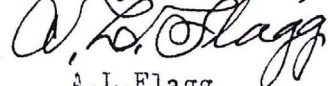
Sample 370 was taken across four feet of mineralized zone at the collar of an inclined shaft reported to be seventy-five feet deep which is off the Esperanza claim by about five hundred feet. It represents the most northerly point on the arc of mineralization previously referred to. This sample assayed 1.85% copper. Samples 369 and 370 represent the extreme points, north and south, on this four thousand foot zone length.

While there is no ore blocked out on the property it appears quite certain that there is some ore available of shipping quality. The margin of profit from such an operation can be increased materially by sorting. However, there is an economic limit to sorting operations. Though no tests have been made an inspection of the larger dump at the Esperanza suggests the possibility of screening this and shipping one, possibly two products.

All the ores, even the harder ones, in which copper minerals occur in a rather evenly disseminated condition are generally quite porous. Such a condition is favorable to leaching. However, a large part of the copper content appears to be in the form of silicate which does not leach readily. The quantity of easily soluble copper can be determined by simple, inexpensive tests and such tests are recommended.

Coincident with any shipping operation, which would be undertaken in a small way probably at the beginning, some further exploratory work might be carried on. It is recommended that the inclined portion of the old Esperanza shaft be opened for inspection. This will not be much of a problem in all probability. Bulk sampling with screen tests on wide zones of mineralization is also recommended.

Respectfully submitted,



A.L. Flagg
Consulting Engineer

Phoenix, Arizona
May 18th, 1943.

*

CLAUDE E. MCLEAN
P.O. BOX 1998

TELEPHONE 8-6272

ARIZONA TESTING LABORATORIES

ANALYTICAL AND CONSULTING CHEMISTS
ASSAYERS, MINING ENGINEERS
823 EAST VAN BUREN STREET

ASSAY CERTIFICATE

PHOENIX, ARIZONA May 13, 1943

MR. A. L. Flagg _____

Phoenix, Arizona

WE HAVE ASSAYED THE SAMPLES RECEIVED FROM YOU AND FIND THE RESULTS AS FOLLOWS:

GOLD FIGURED AT \$ _____ PER OUNCE.

SILVER FIGURED AT \$ _____ PER OUNCE.

LAB. FORM 2

LAB. NO.	SAMPLE	GOLD		SILVER		PERCENTAGES		
		OZ. PER TON	VALUE	OZ. PER TON	VALUE	COPPER	LEAD	
47699	369					2.95		
47699	370					1.88		
47700	371					2.70		
47701	372					2.25		
47702	373					5.35		
47702	374					5.25		
47704	375					2.20		



RESPECTFULLY SUBMITTED,

ARIZONA TESTING LABORATORIES

BY C. E. McLean
Claude E. McLean ASSAYER

CHARGES \$ 7.00

CLAUDE E. MCLEAN
P. O. BOX 1888

TELEPHONE 3-6272

ARIZONA TESTING LABORATORIES

ANALYTICAL AND CONSULTING CHEMISTS
ASSAYERS, MINING ENGINEERS
823 EAST VAN BUREN STREET

ASSAY CERTIFICATE

PHOENIX, ARIZONA May 29, 1943

MR. A. L. Flagg

Phoenix, Arizona

WE HAVE ASSAYED THE SAMPLES RECEIVED FROM YOU AND FIND THE RESULTS AS FOLLOWS:

GOLD FIGURED AT \$ _____ PER OUNCE.

SILVER FIGURED AT \$ _____ PER OUNCE.

LAB. FORM 2

LAB. NO.	SAMPLE	GOLD		SILVER		PERCENTAGES		
		OZ. PER TON	VALUE	OZ. PER TON	VALUE	COPPER	LEAD	
47818	#376					2.82%		
47819	377					1.82		
47820	378					1.52		
47821	379					2.58		
47822	380					2.62		
47823	381					2.35		
47824	382					1.52		
47825	383					2.02		
47826	384					1.85		
47827	385					3.05		
47828	386					3.35		
47829	387					0.75		
47830	388					0.92		



CHARGES - \$ 13.00

RESPECTFULLY SUBMITTED.

ARIZONA TESTING LABORATORIES

BY Claude E. McLean
Claude E. McLean ASSAYER

CLAUDE E. McLEAN
P. O. BOX 1888

TELEPHONE 3-6277

ARIZONA TESTING LABORATORIES

ANALYTICAL AND CONSULTING CHEMISTS
ASSAYERS, MINING ENGINEERS
823 EAST VAN BUREN STREET

ASSAY CERTIFICATE

PHOENIX, ARIZONA

May 29, 1943

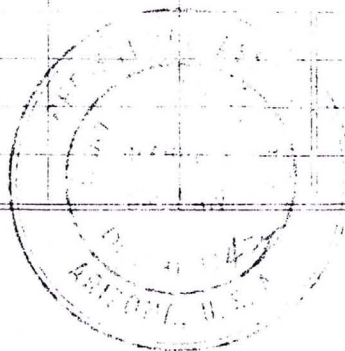
Mr. A. L. Flang

Phoenix, Arizona

WE HAVE ASSAYED THE SAMPLES RECEIVED FROM YOU AND FIND THE RESULTS AS FOLLOWS:

LAB. NO.	SAMPLE	GOLD FIGURED AT \$ PER OUNCE		SILVER FIGURED AT \$ PER OUNCE		PERCENTAGES		
		OZ PER TON	VALUE	OZ PER TON	VALUE	COPPER	LEAD	
47818	#376					2.02		
47819	377					1.82		
47820	378					1.52		
47821	379					2.50		
47822	380					2.62		
47823	381					2.55		
47824	382					1.52		
47825	383					2.02		
47826	384					1.35		
47827	385					3.05		
47828	386					3.35		
47829	387					0.75		
47830	388					0.92		

CHARGES \$ 13.00



RESPECTFULLY SUBMITTED,

ARIZONA TESTING LABORATORIES

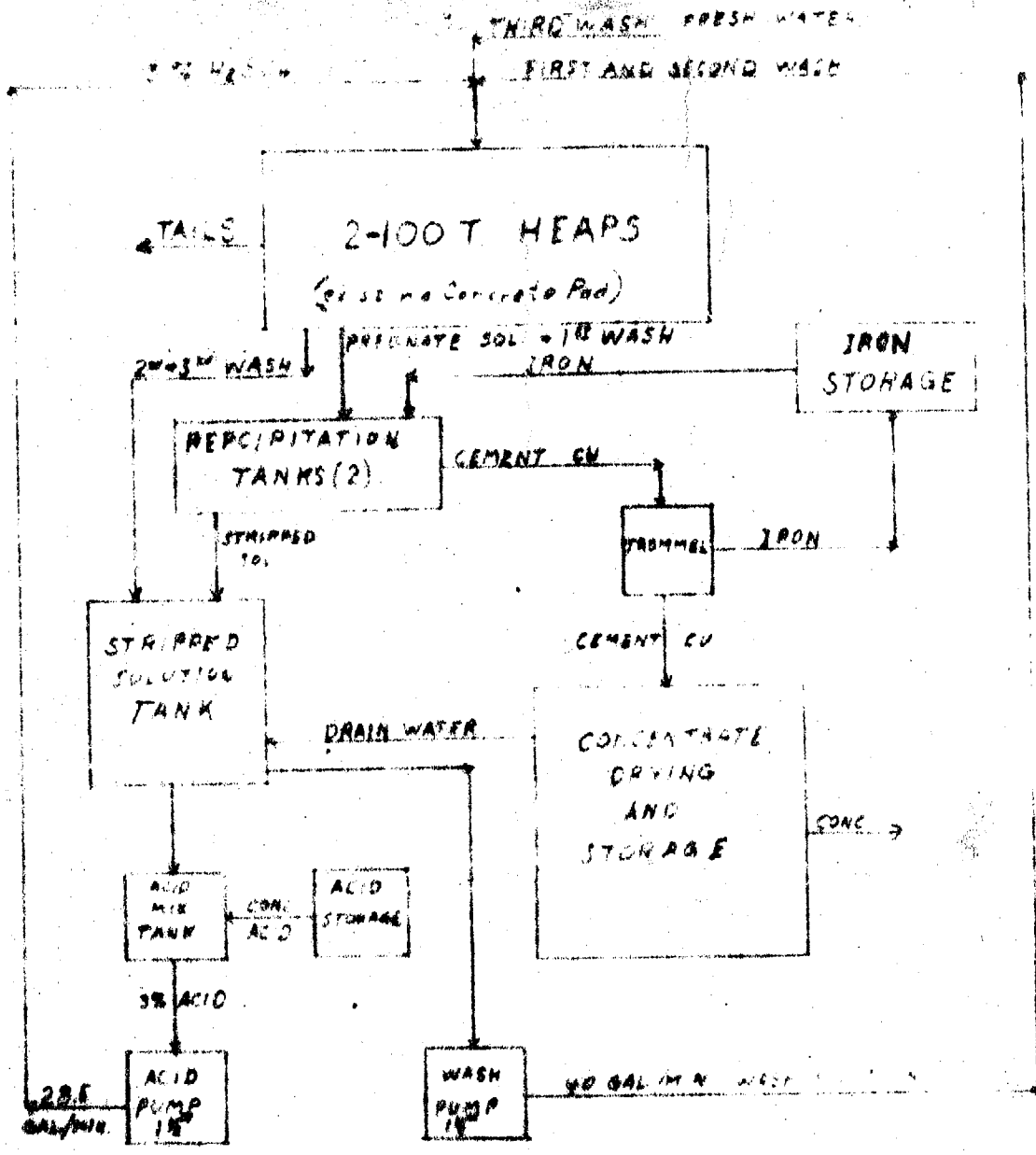
BY *C. E. McLean*
Claude E. McLean ASSAYER

STANDARD MINE

PINAL COUNTY
SILVER REEF MOUNTAINSCOMPOSITE GROUP OF ASSAYS

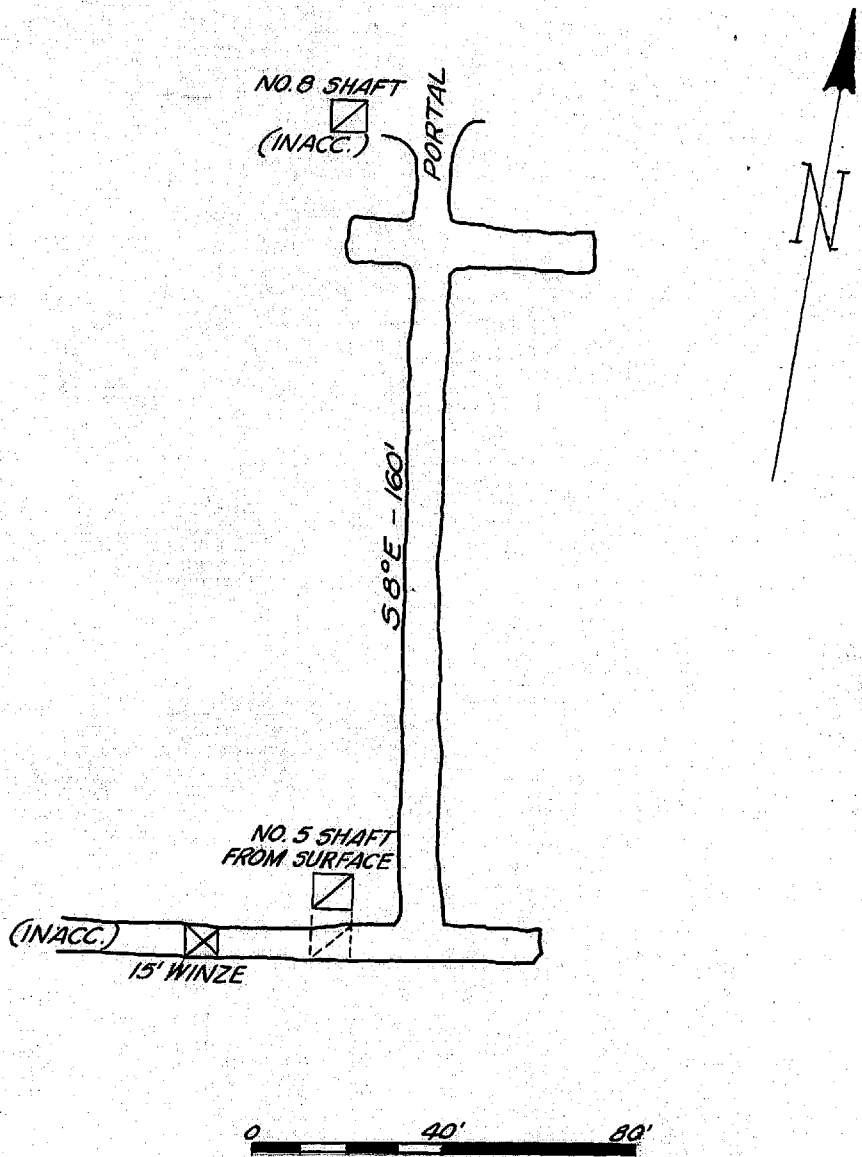
	<u>Ag. Oz.</u>	<u>Au. Oz.</u>	<u>Cu</u>		<u>Cowboy Claim</u>
1.	2.03	0.02	9.24	Below Cliff on Cowboy Claim	"
2.	0.80	0.01	6.75	Dump Sample	"
3. (1)			7.10	Cowboy ore sample	"
4. (2)			2.35	Dump	"
5. (1)			3.00	Tunnel	"
6. (2)			5.96	Ore pile	"
7. (3)			2.02	Dump (dirt)	"
8. (41404)			3.05	Cut across breccia (Outcrop)	"
9. (6)			5.50	General	"
10 (7)			13.30	Cowboy Tunnel at shaft intersection	"
11 (2)			4.25	Outcrop 300' W of Tunnel	"
12 (3)			3.84	Ore pile	"
					<u>Esperanza Claims</u>
13. (1)			1.15		"
14. (2)			4.50	45 Ft Between shaft & Y	"
15. (3)			1.45	At Esperanza Shaft	"
16. (4)			3.25	Crosscut W of Y	"
17. (5)			0.50	Cut in Capping E of Y	"
18. (44333)			1.25	Face of N. Drift at shaft	"
19. (2)			4.30	Roof of drift-shaft at Y (see No. 2 above)	"
20. (3)			0.35	Cut in capping East of Y	"
21. (4)			12.15	Face of cut 30' above shaft	"
22. (371 Flagg)			2.70	W. Crosscut from Esperanza	"
23. (372 Flagg)			2.25	" " " "	"
24. (373 Flagg)			5.35	Face SW drift on 100 level	"
25. (274 Flagg)			5.25	1st Section of crosscut W of Y	"
26. (375 Flagg)			2.20	20 ft. back of section of same	"
27. (44335)			4.55	Face above Esperanza Shaft	"
28.			9.12	Assay from International Smelter	"
29. (1)			3.32	Gen'l Cut 30' above shaft	"
30. (4)			2.02	Low grade Dump Esperanza	"
31. (5)			3.31	Back 20' of crosscut W of Y	"
32. (6)			3.57	15' Face of " " " Y	"
33. (7)			1.35	Dump of Millsite Claim 300' E.	"
34. (8)			2.42	Large sample from Esperanza Dump	"
35. (1)			1.94	Smelter Assay - Hayden	"
36. (2)			4.18	" " "	"
37. (91772)			6.75	No designation	"
38. (41404)			1.50	Esperanza Dump	"
39. (6)			2.40	Deep incline 1/2 mile N of Esperanza Shaft.	"
40. (A)			1.95	New Outcrop (By Barnhard)	"
41. (B)			7.70	Special (By Barnhard)	"
42. (1) Large (Frank Free)			6.53	W. Tunnel Esperanza	"
42. (2) Small (" ")			2.10	" " "	"
43.			3.00	" " "	"

	<u>oz. Ag.</u>	<u>Au. Oz.</u>	<u>Cu</u>	
44. (2)	(Frank Free)		5.96	"High grade" Esperanza
45. (3)	" "		2.02	Low grade "
46. (1)	0.01	0.15	1.94	Sample (Sydney B. Moeur)
47. (2)	0.01	0.39	4.18	(582SiO ₂ " " "
48.	(Frank Free)		7.10	Frank Free (gen'1)
49.	(Frank Free)		2.35	Frank Free Cowboy



FLWSHEET 100 TON/DAY HEAP LEACH PLANT
STANDARD MINE

9/7/61

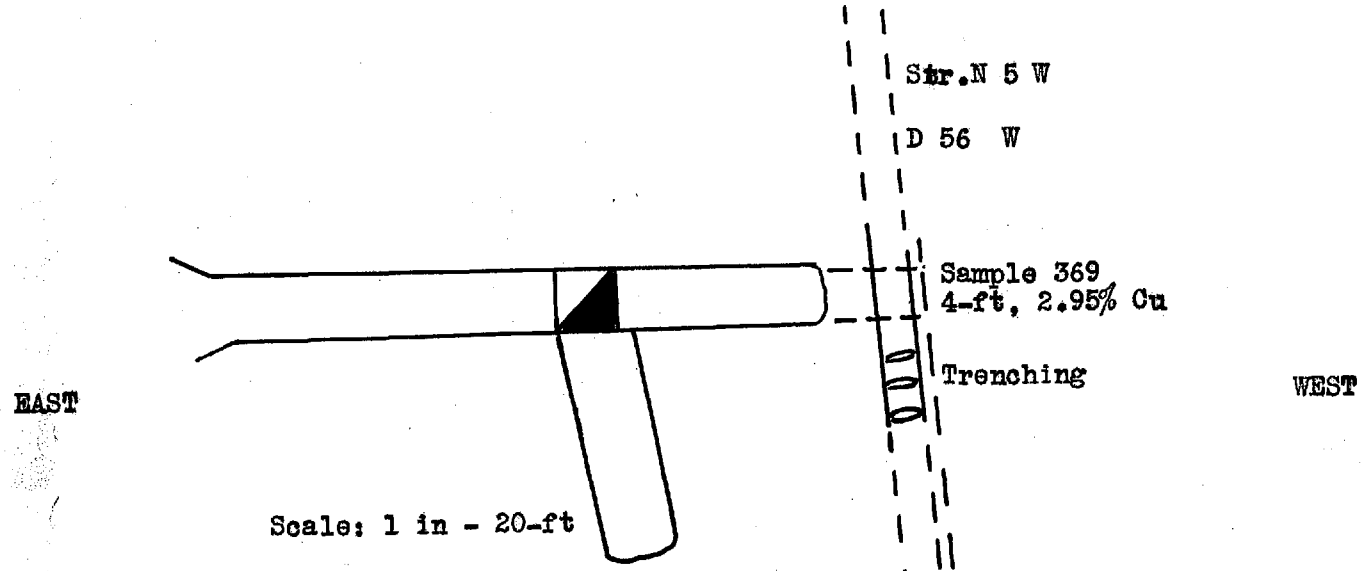


SKETCH MAP-OLD STANDARD COPPER MINE
PINAL CO., ARIZ.

14030

STANDARD GROUP
Silver Reef district,
Pinal county, Arizona.

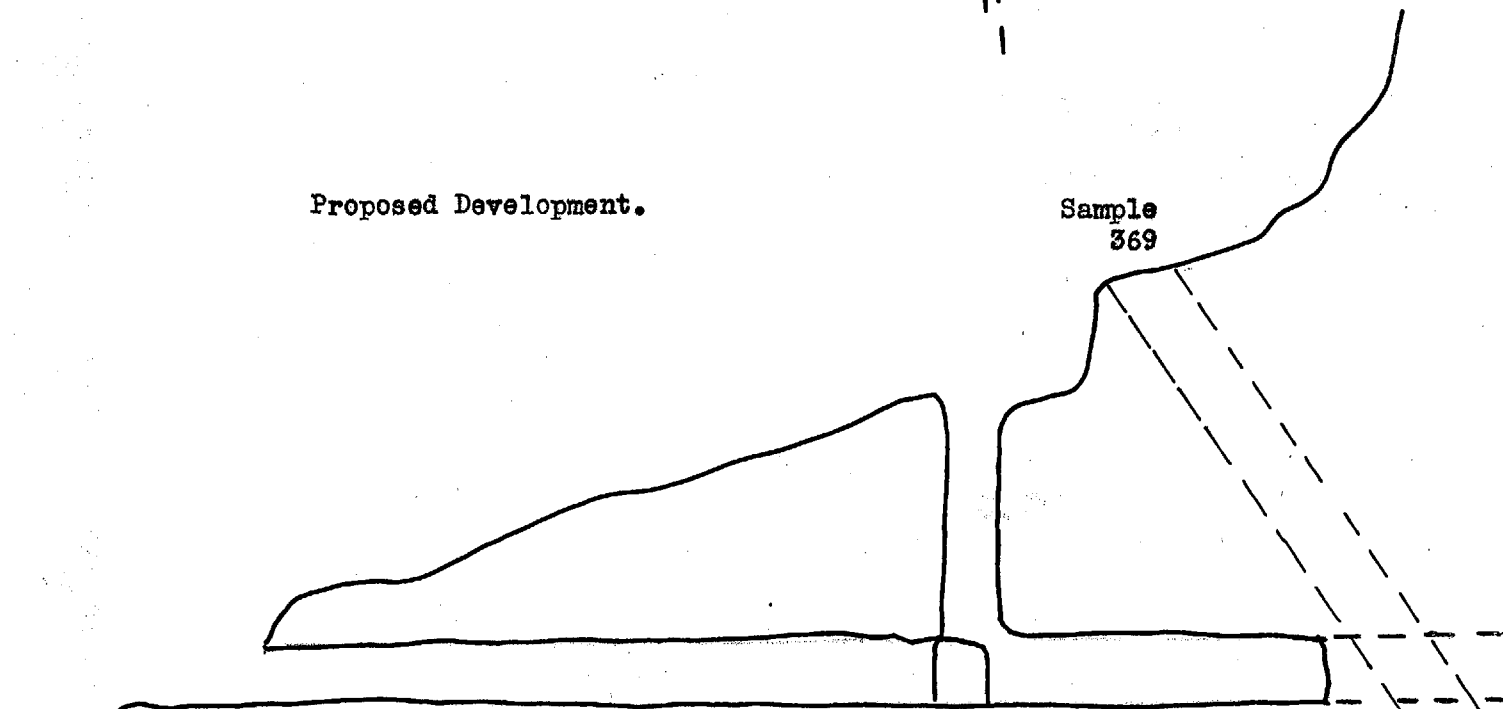
COW BOY WORKINGS.



Scale: 1 in - 20-ft

Proposed Development.

Sample
369

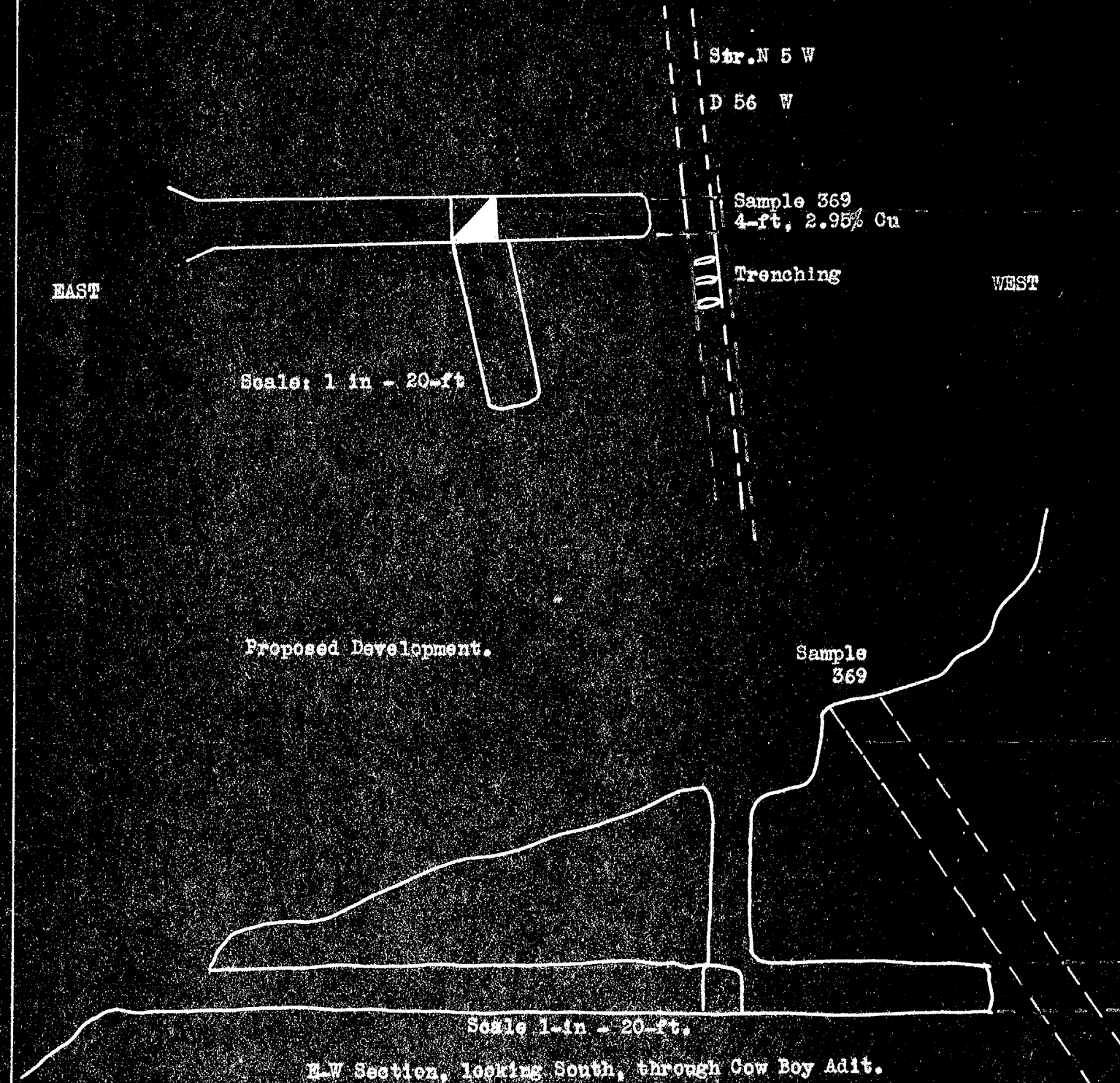


Scale 1-in - 20-ft.

E-W Section, looking South, through Cow Boy Adit.

STANDARD GROUP
Silver Reef district,
Pinal county, Arizona.

COW BOY WORKINGS.



W 350

W 300
NORTH

W 250

Esperanza Mine,
Silver Reef district,
Pinal county, Arizona.

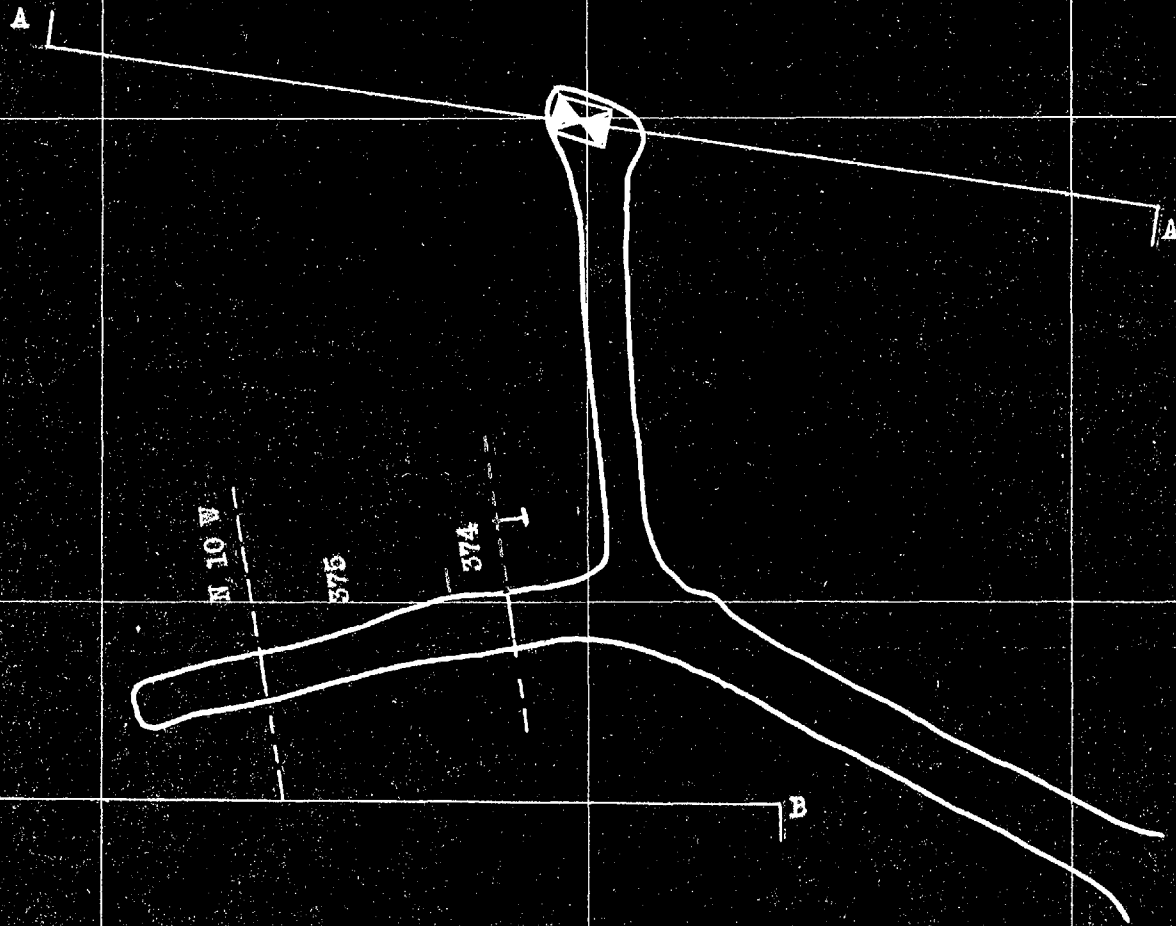
Twenty-five foot level.

N 350

N 300

N 250

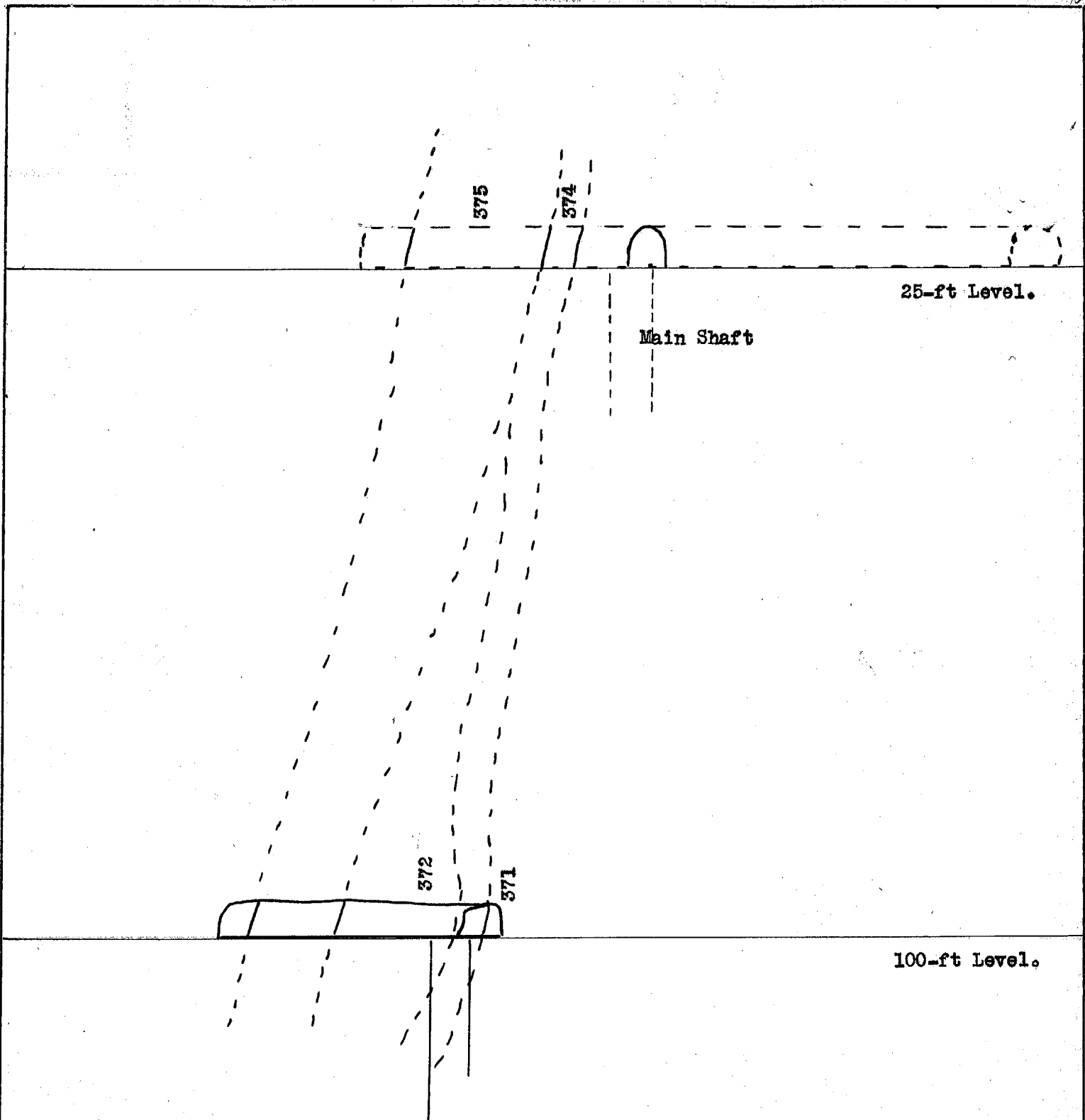
N 200



Sample 374: 5.0-ft 5.25% Cu
Sample 375: 20 -ft 2.20% Cu

Scale: 1 inch - 20-ft

1948



Sample	371	3.0-ft	2.70 %	Cu
Sample	372	4.0-ft	2.25 %	Cu
Sample	374	5.0-ft	5.25 %	Cu
Sample	375	20 -ft	2.20 %	Cu

Esperanza Mine,
 Silver Reef district,
 Pinal county, Arizona.

Section: B - B

Scale: 1 inch - 20-ft

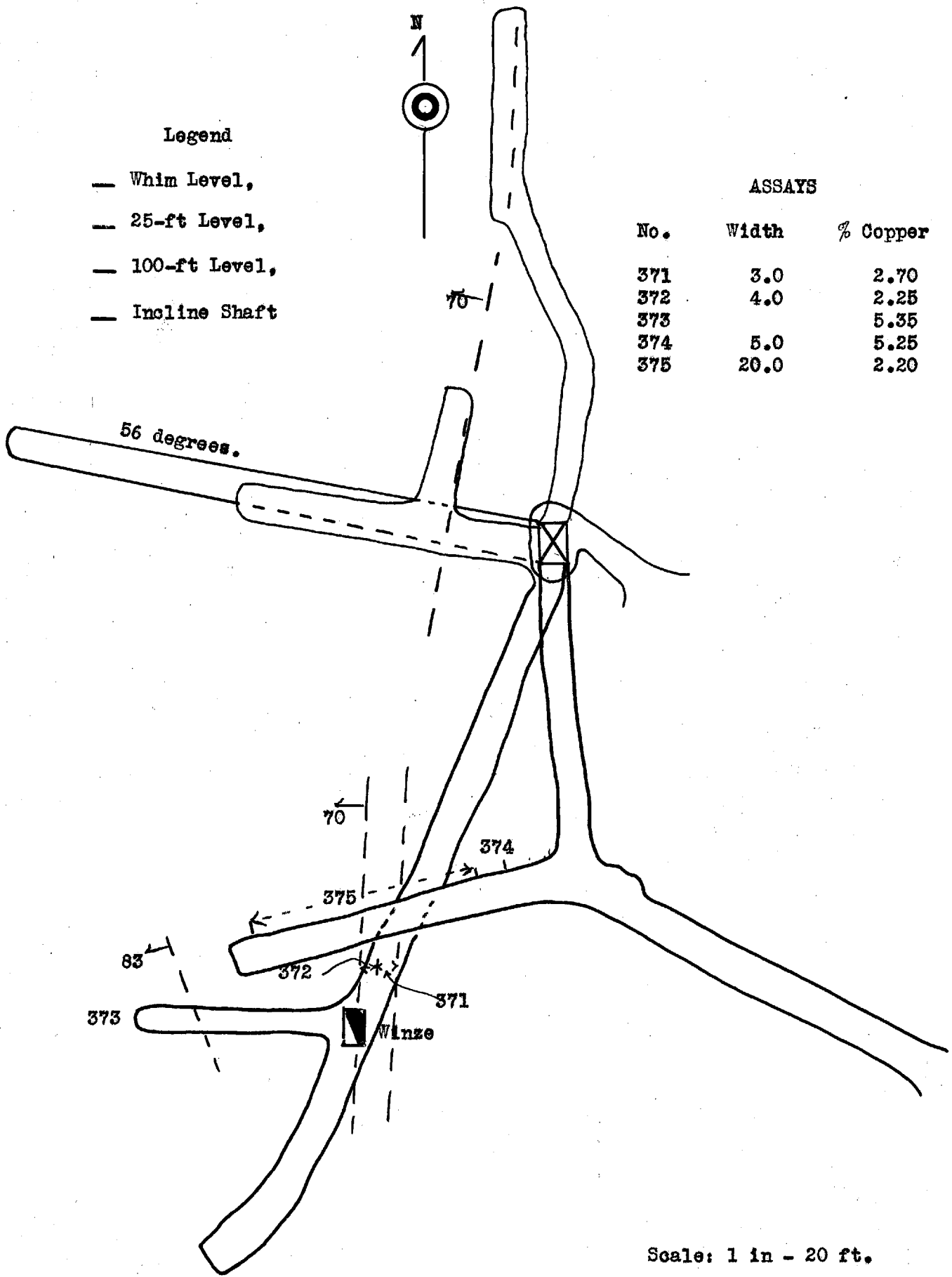
ESPERANZA MINE PLAN



Legend

- Whim Level,
- 25-ft Level,
- 100-ft Level,
- Incline Shaft

ASSAYS		
No.	Width	% Copper
371	3.0	2.70
372	4.0	2.25
373		5.35
374	5.0	5.25
375	20.0	2.20



Scale: 1 in - 20 ft.

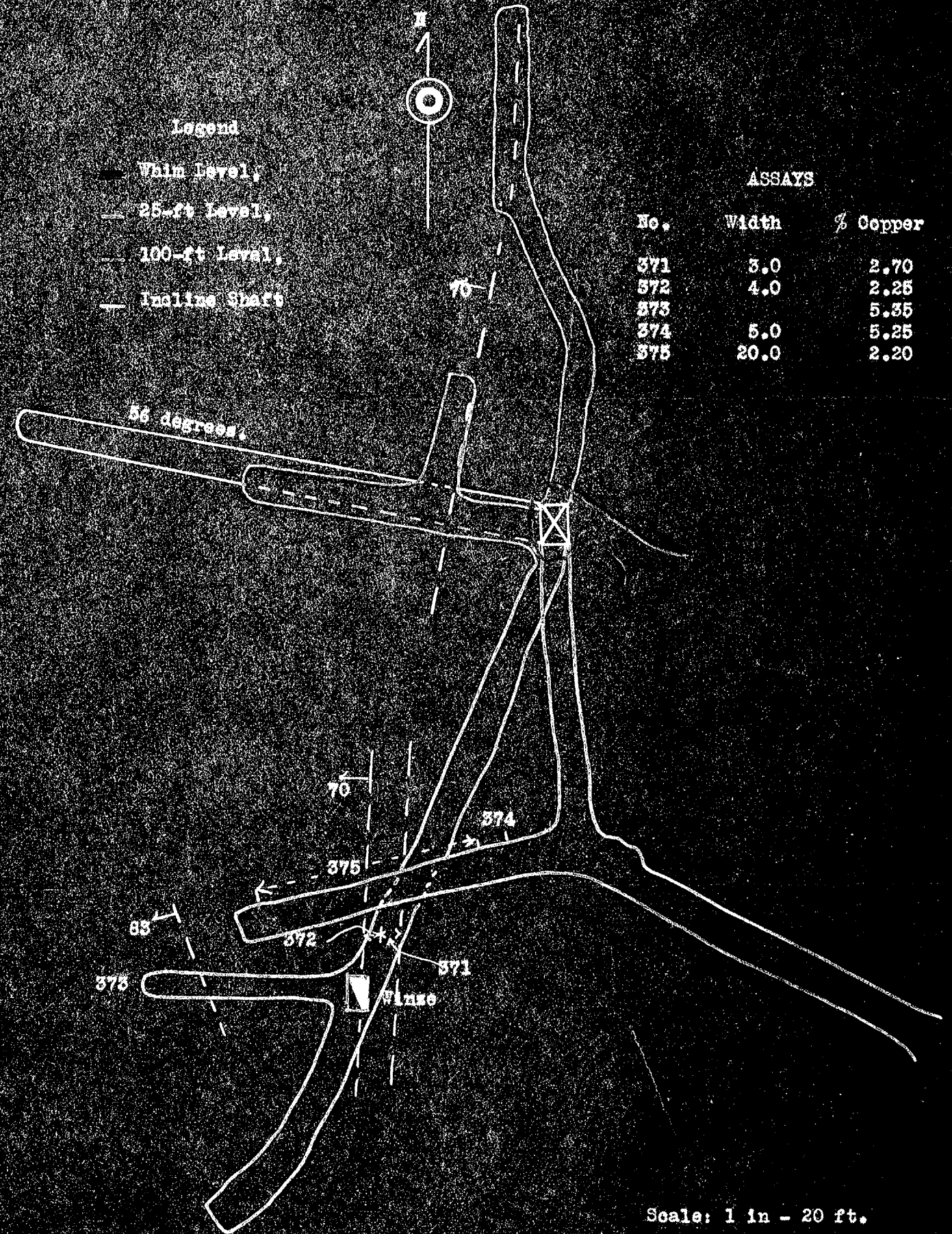
ESPERANZA MINE PLAN

Legend

- Main Level,
- - - 25-ft Level,
- - - 100-ft Level,
- - - Incline Shaft

ASSAYS

No.	Width	% Copper
371	3.0	2.70
372	4.0	2.25
373		5.35
374	5.0	5.25
375	20.0	2.20



Scale: 1 in - 20 ft.

W 350

W 300
NORTH

W 250

Esperanza Mine,
Silver Reef district,
Pinal county, Arizona.

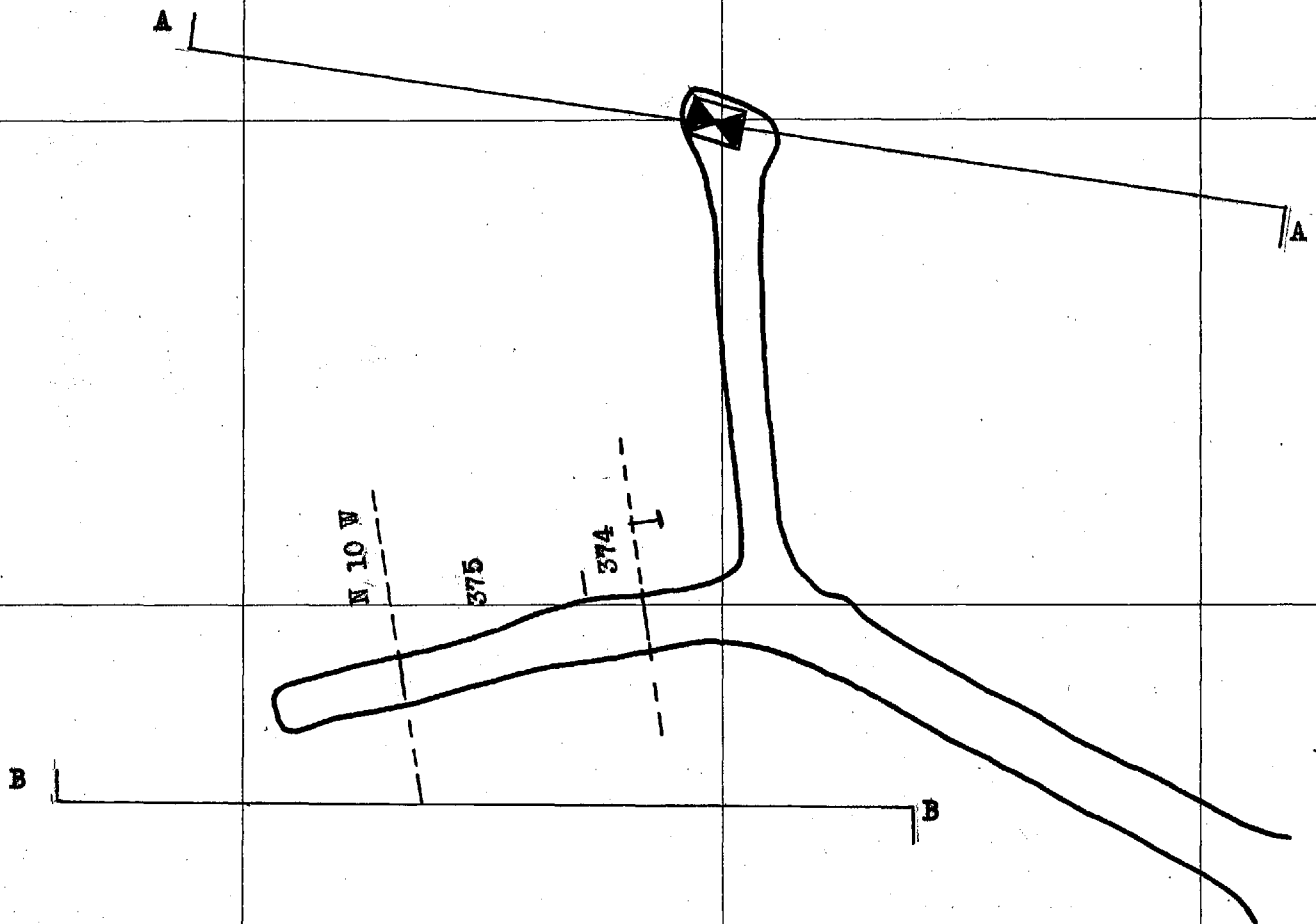
Twenty-five foot level.

N 350

N 300

N 250

N 200

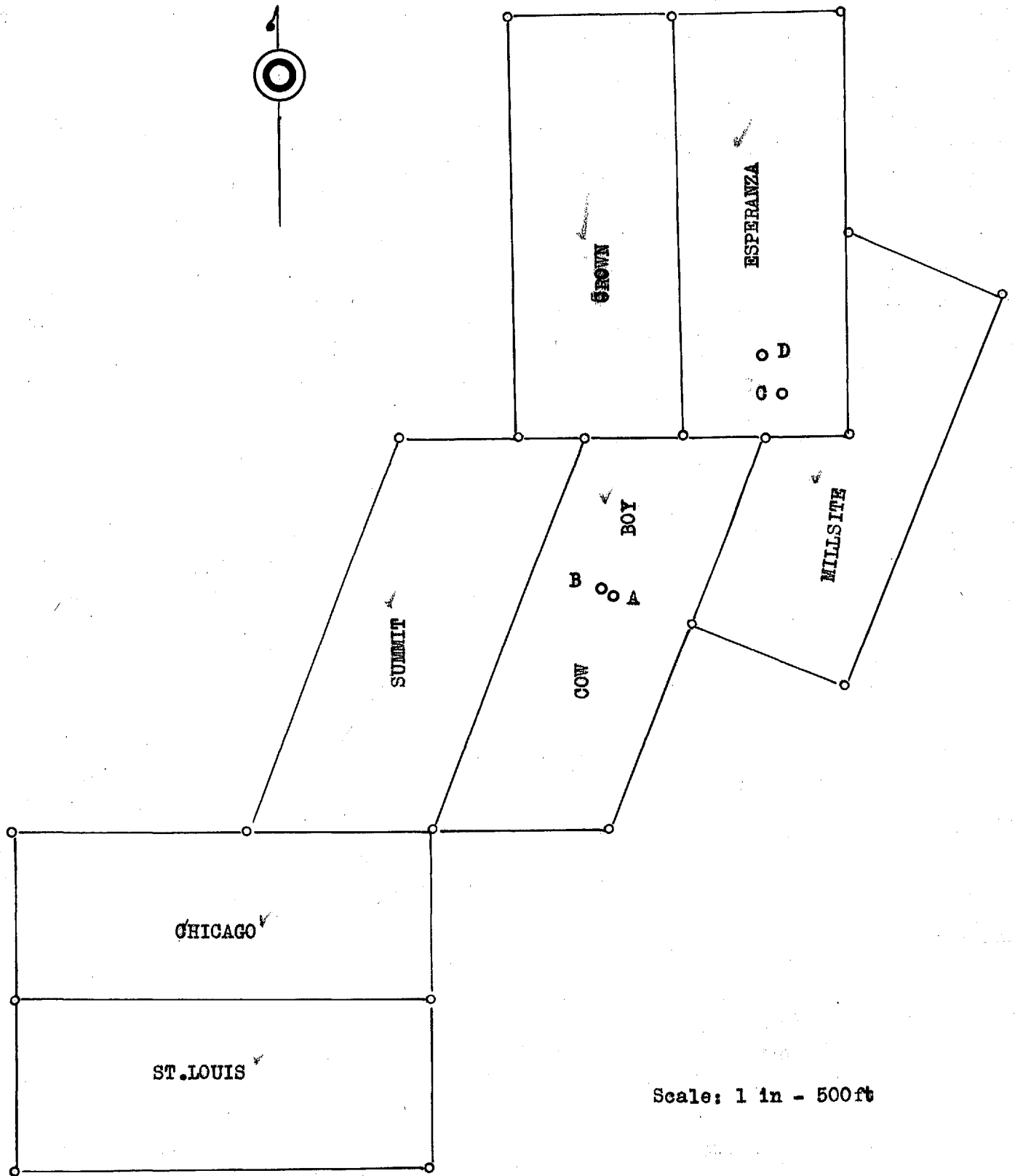


Sample 374: 5.0-ft 5.25% Cu
Sample 375: 20 -ft 2.20% Cu

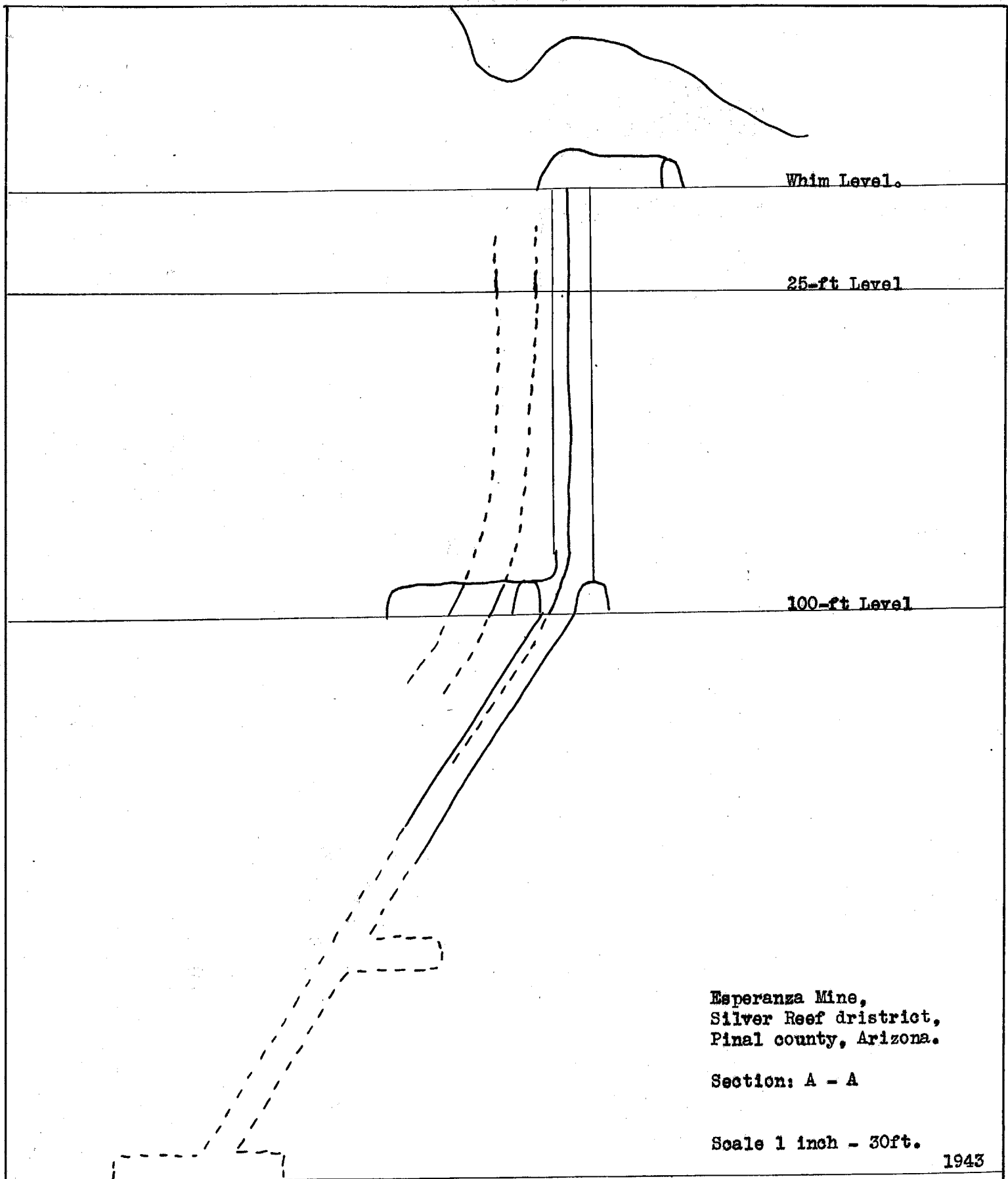
Scale: 1 inch - 20-ft

1943

STANDARD GROUP
Silver Reef district, Pinal county, Arizona.



Scale: 1 in - 500ft



Whim Level.

25-ft Level

100-ft Level

Esperanza Mine,
Silver Reef district,
Pinal county, Arizona.

Section: A - A

Scale 1 inch - 30ft.

1943

W 350

NORTH

W 250

Esperanza Mine,
Silver Reef district,
Pinal county, Arizona.

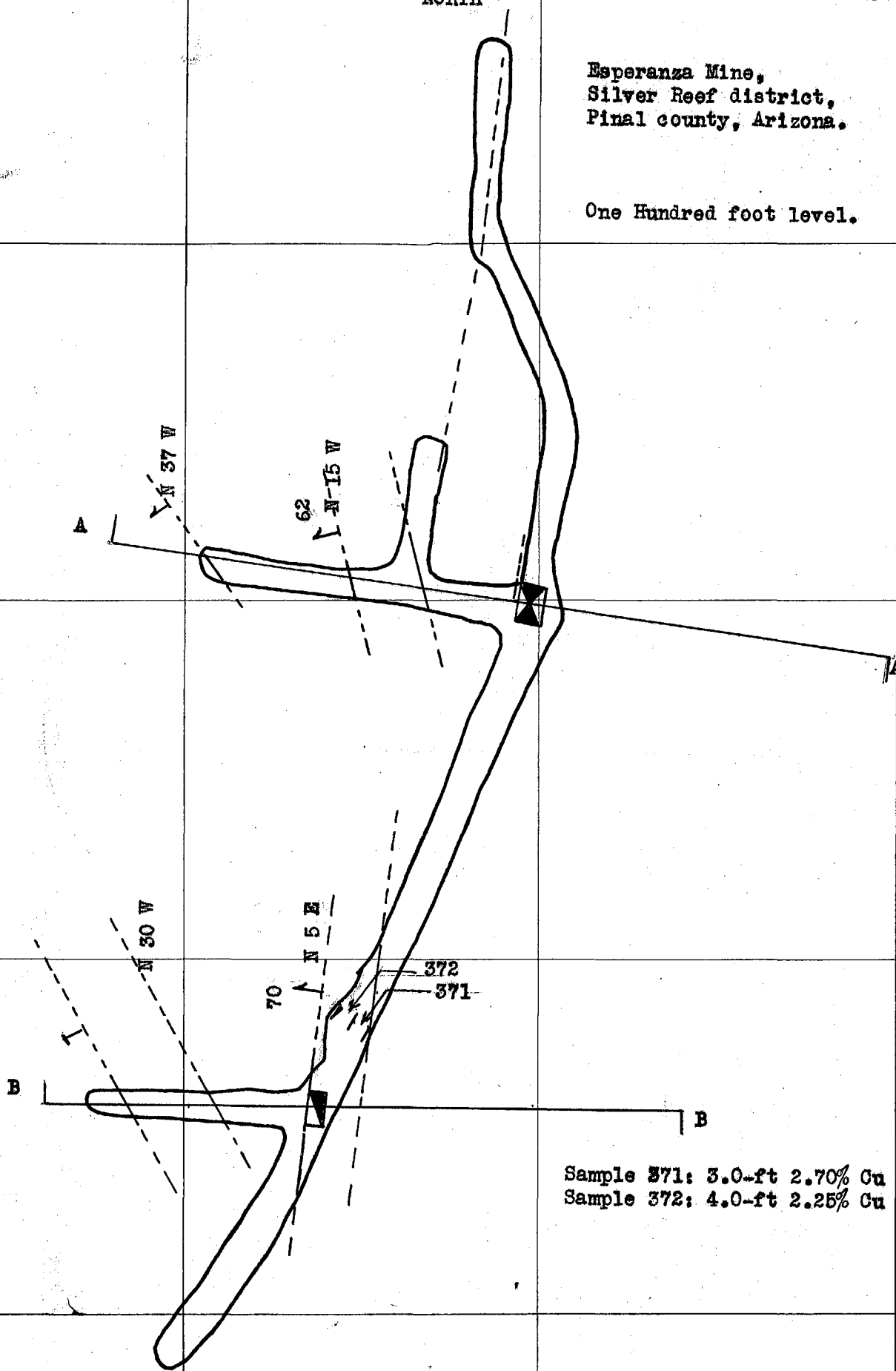
One Hundred foot level.

N 350

N 300

N 250

N 200



Sample 371: 3.0-ft 2.70% Cu
Sample 372: 4.0-ft 2.25% Cu

Scale 1 inch - 20 feet.

W 350

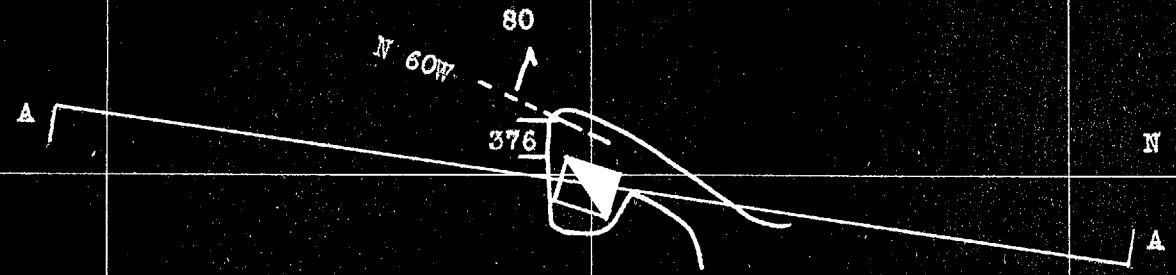
W 300
NORTH

W 250

Esperanza Mine,
Silver Reef district,
Pinal county, Arizona

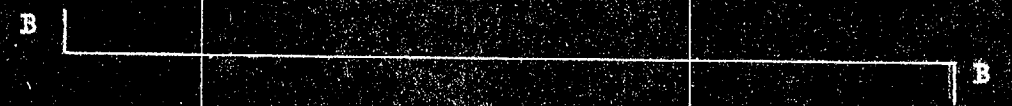
Whim Level.

N 350



N 300

N 250

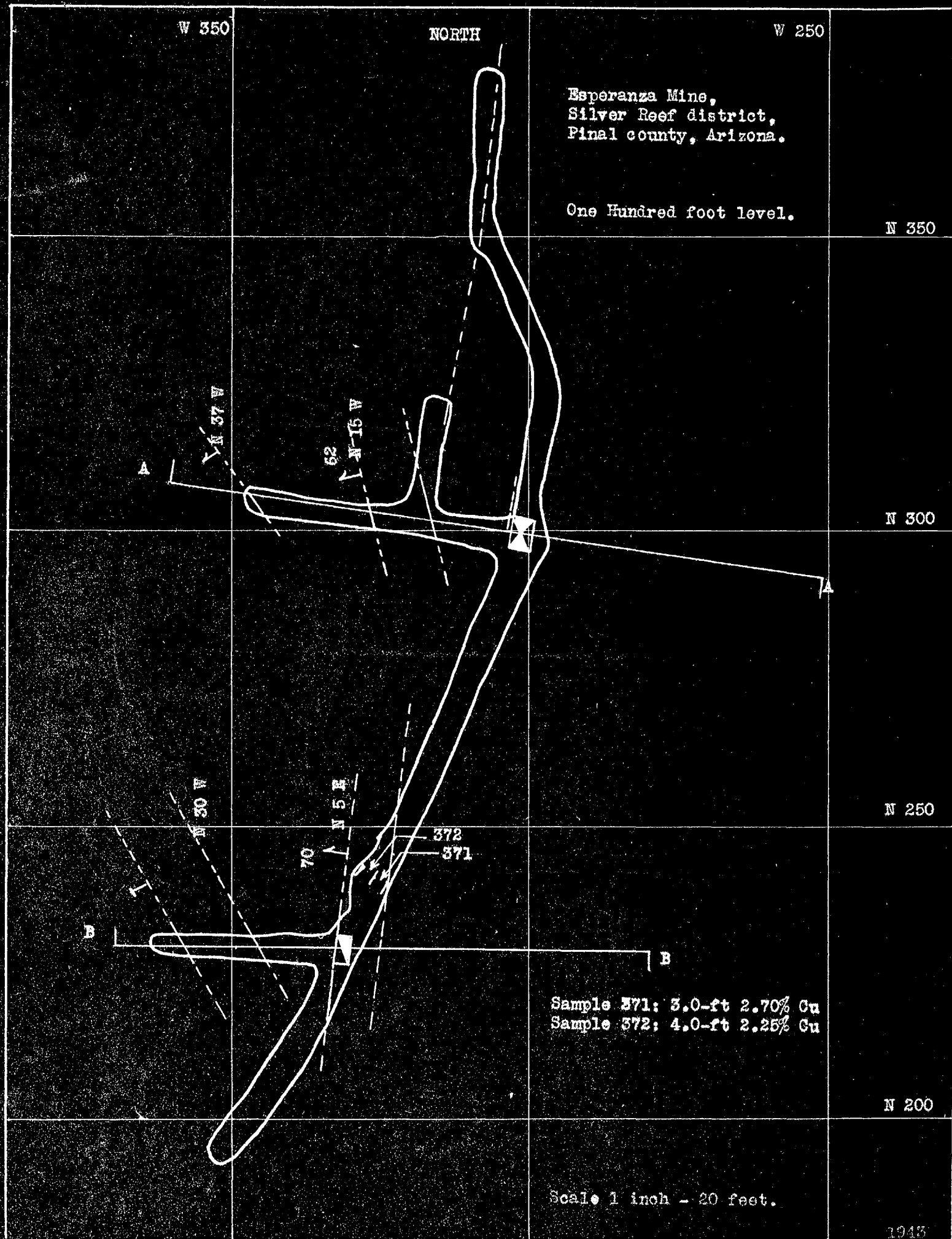


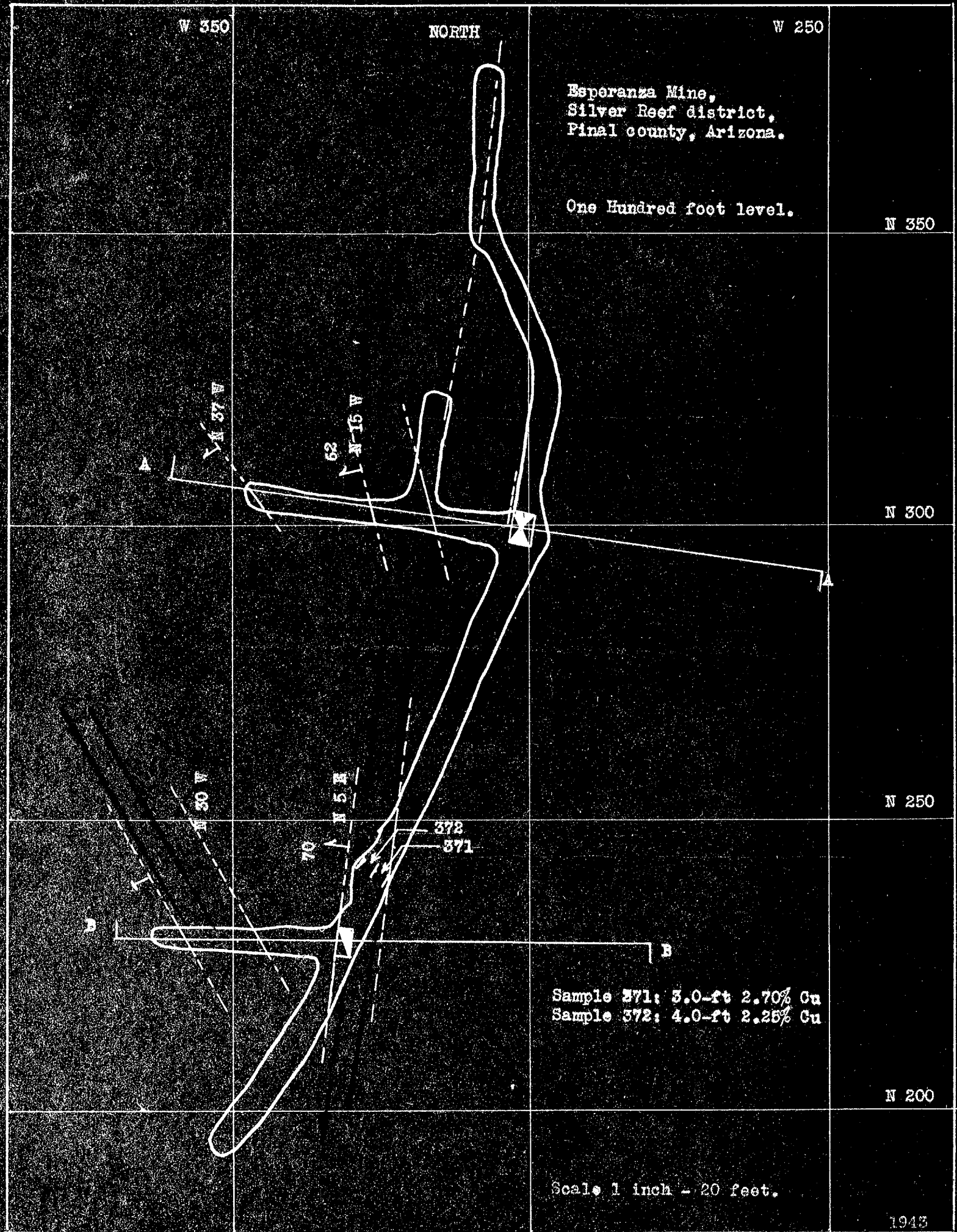
Sample 376: 4.0-ft 2.83% Cu.

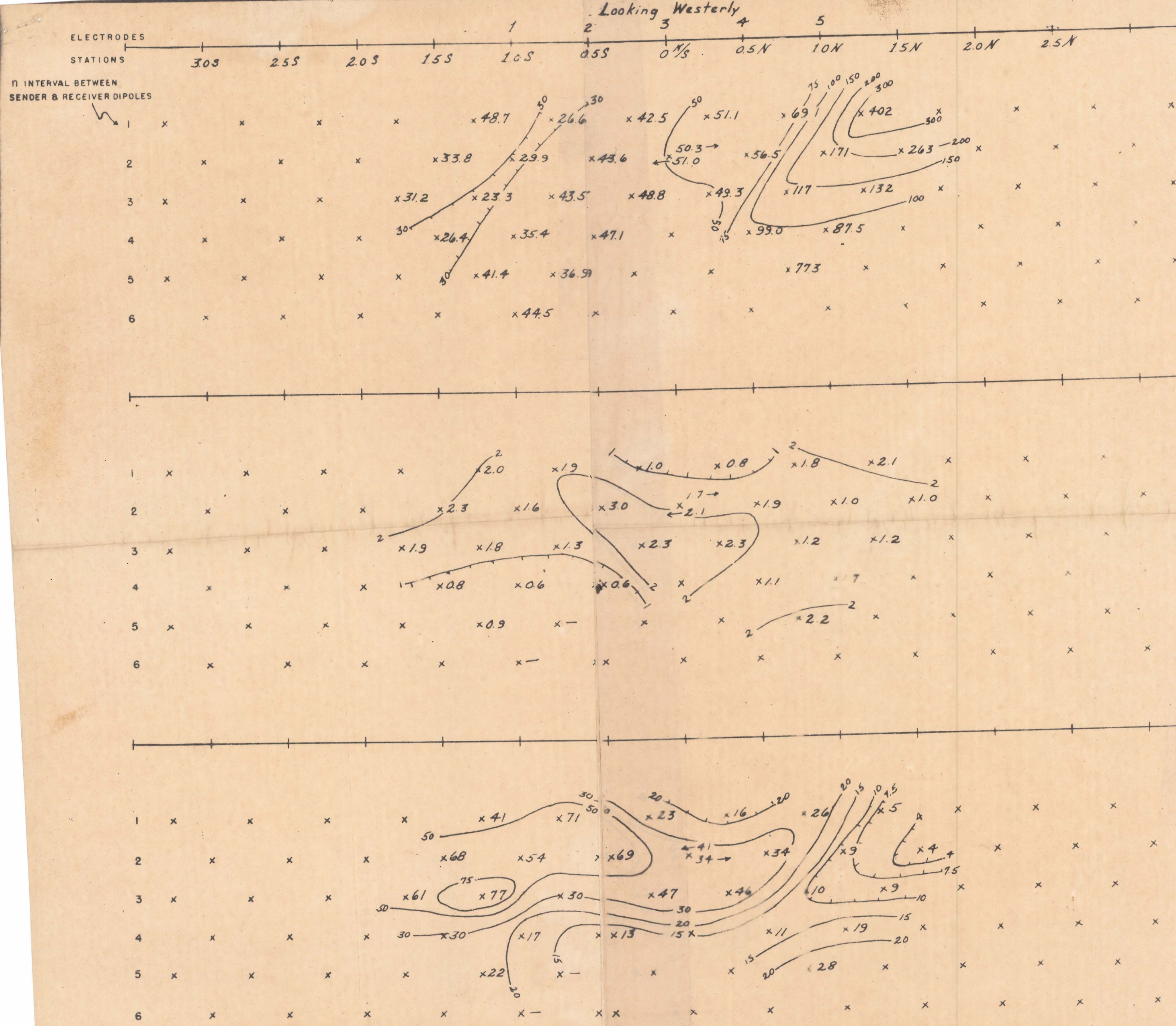
N 200

Scale: 1 inch - 20 feet

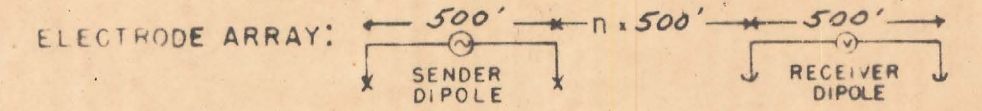
1943







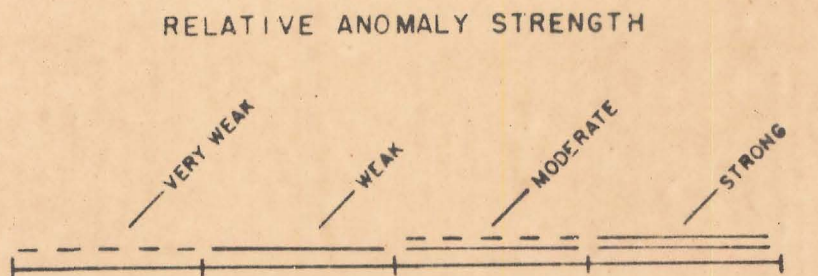
EXPLANATION



APPARENT RESISTIVITY (ρDC)
 IN UNITS OF OHM FEET
 CONTOUR INTERVAL LOGARITHMIC
 SENDER FREQUENCY: 0.05 cps

PERCENT FREQUENCY EFFECT (PFE)
 CONTOUR INTERVAL CONSTANT
 SENDER FREQUENCIES: 0.05 & 3.0 cps

APPARENT "METALLIC CONDUCTION" FACTOR (MCF)
 $(MCF = \frac{PFE \times 1000}{\rho_{DC}})$
 CONTOUR INTERVAL LOGARITHMIC



SECTIONAL DATA SHEET
 LINE No. 1, Spread 1
 INDUCED POLARIZATION TRAVERSE
 Barnhard Prospect - Silver Reef Mts, Ariz.
 HEINRICHS GEOEXPLORATION COMPANY
 SCALE: 1" = 500' DATE: January 29, 1964

FOR
 C.C. Huston & Associates
 Toronto, Ontario, Canada