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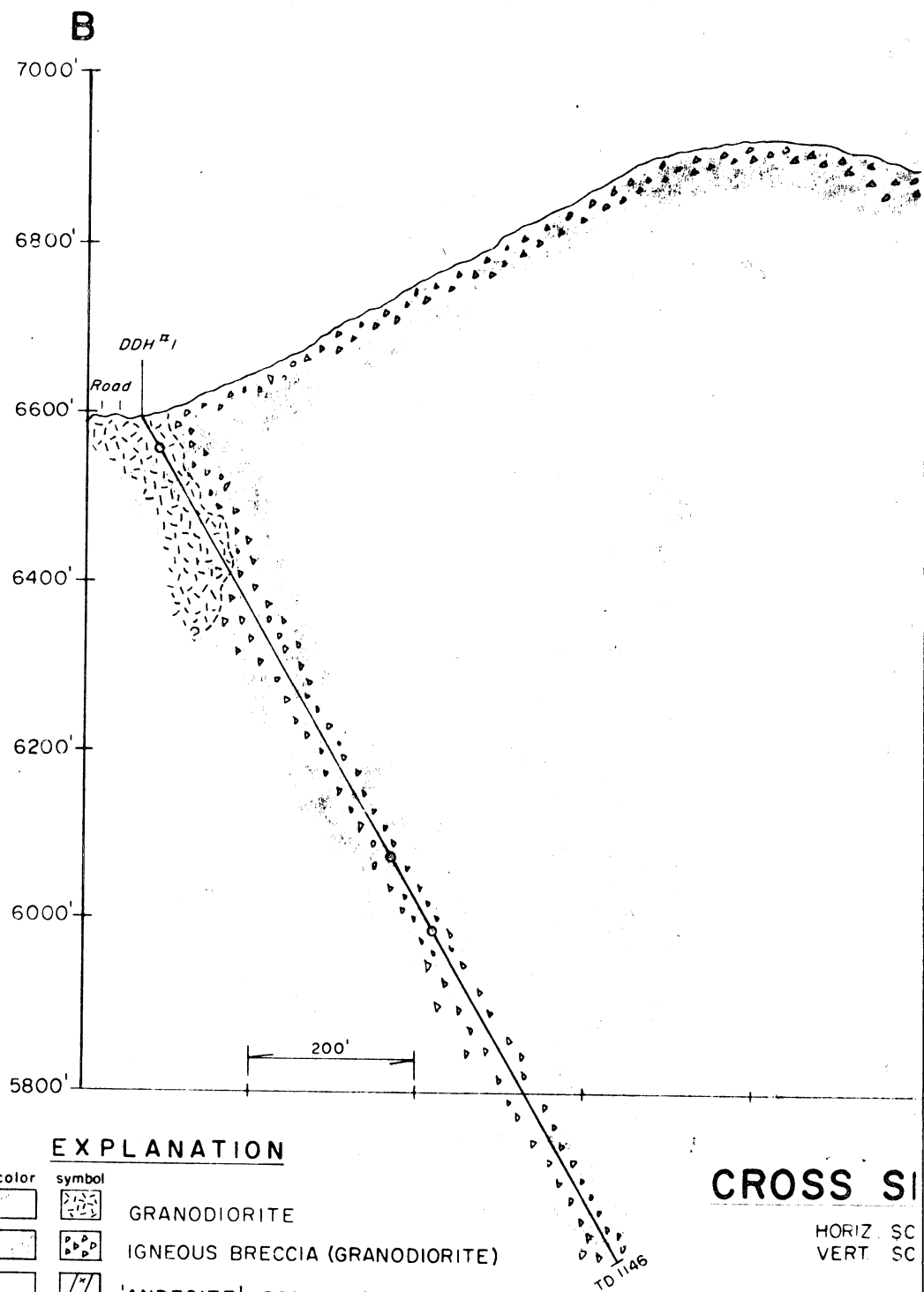
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EXPLANATION

color	symbol	
		GRANODIORITE
		IGNEOUS BRECCIA (GRANODIORITE)
		'ANDESITE' PORPHYRY
f—f		FAULT
?-----?		CONTACT (uncertain, or inferred)
??-----		CONTACT (extent or direction uncertain)

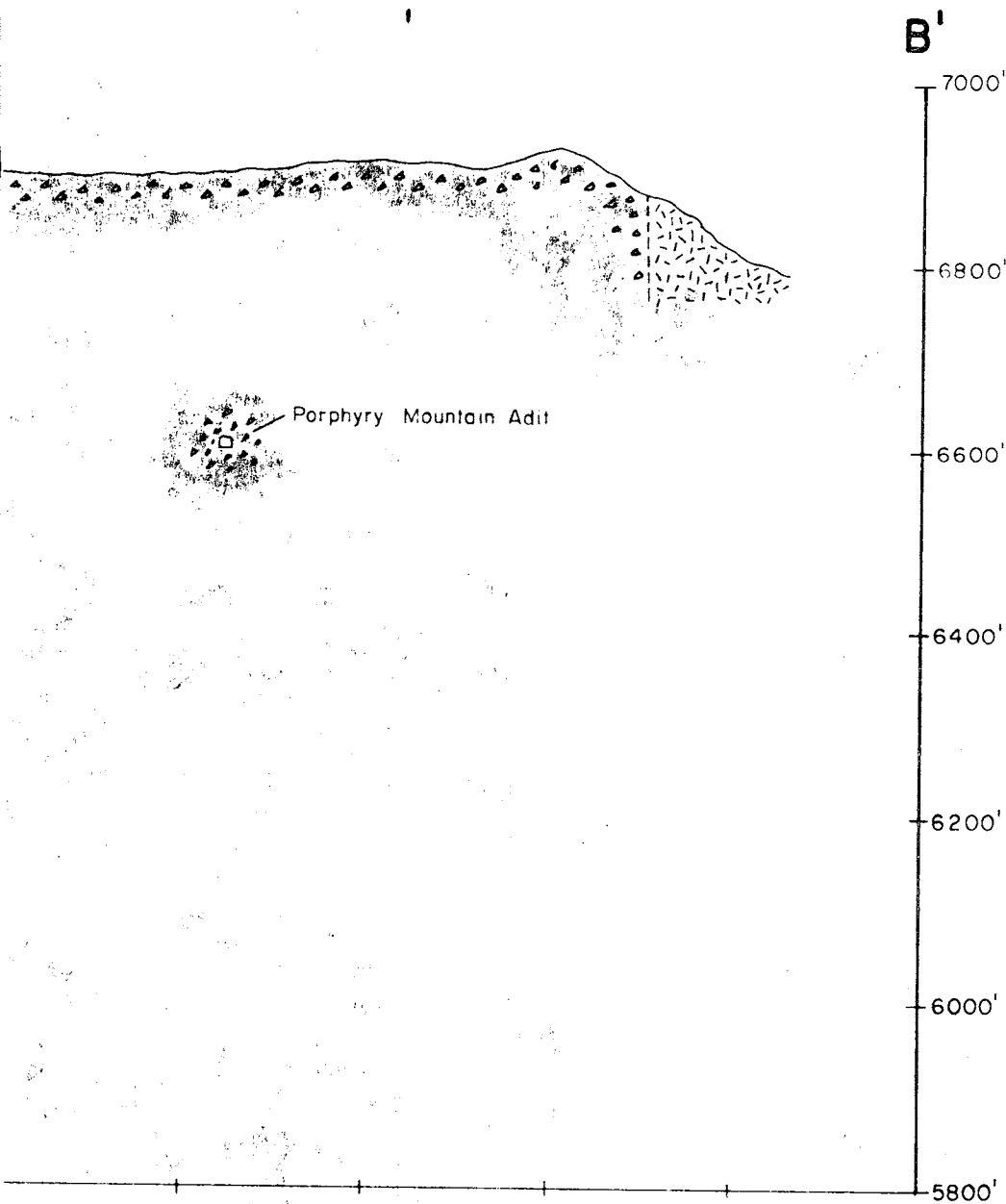
CROSS SECTION

HORIZ. SC
VERT. SC

COPPER MINERALIZATION

COLOR CODE

	0.1 - 0.3%
	0.3 - 0.5%
	0.5 - 1.3%



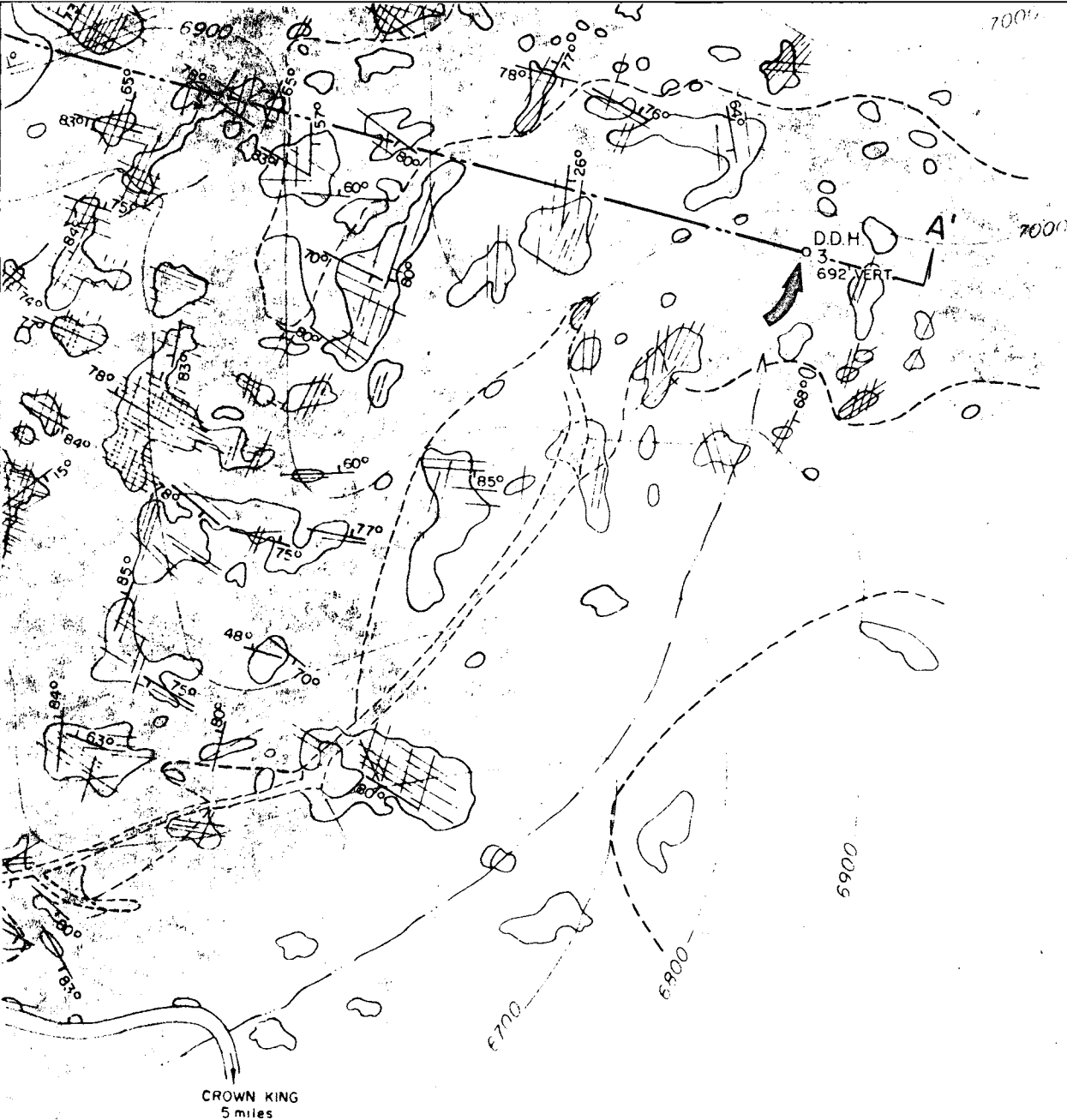
SECTION B-B'

SCALE - 1" = 200 feet
SCALE - 1" = 200 feet

BRADSHAW - PORPHYRY MOUNTAIN PROSPECT
CROSS SECTION B-B'
LINE OF SECTION N. 13° E. (view northerly)
SEC. 9 & 16 (est.) T. 10 N., R. 1 W. (unsurveyed) GILA & SALT RIVER B. & MER.
PINE GROVE (CROWN KING) MINING DISTRICT
YAVAPAI COUNTY, ARIZONA

by Charles Cronenwett, Nov '70

FIGURE 4



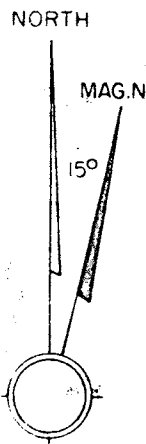
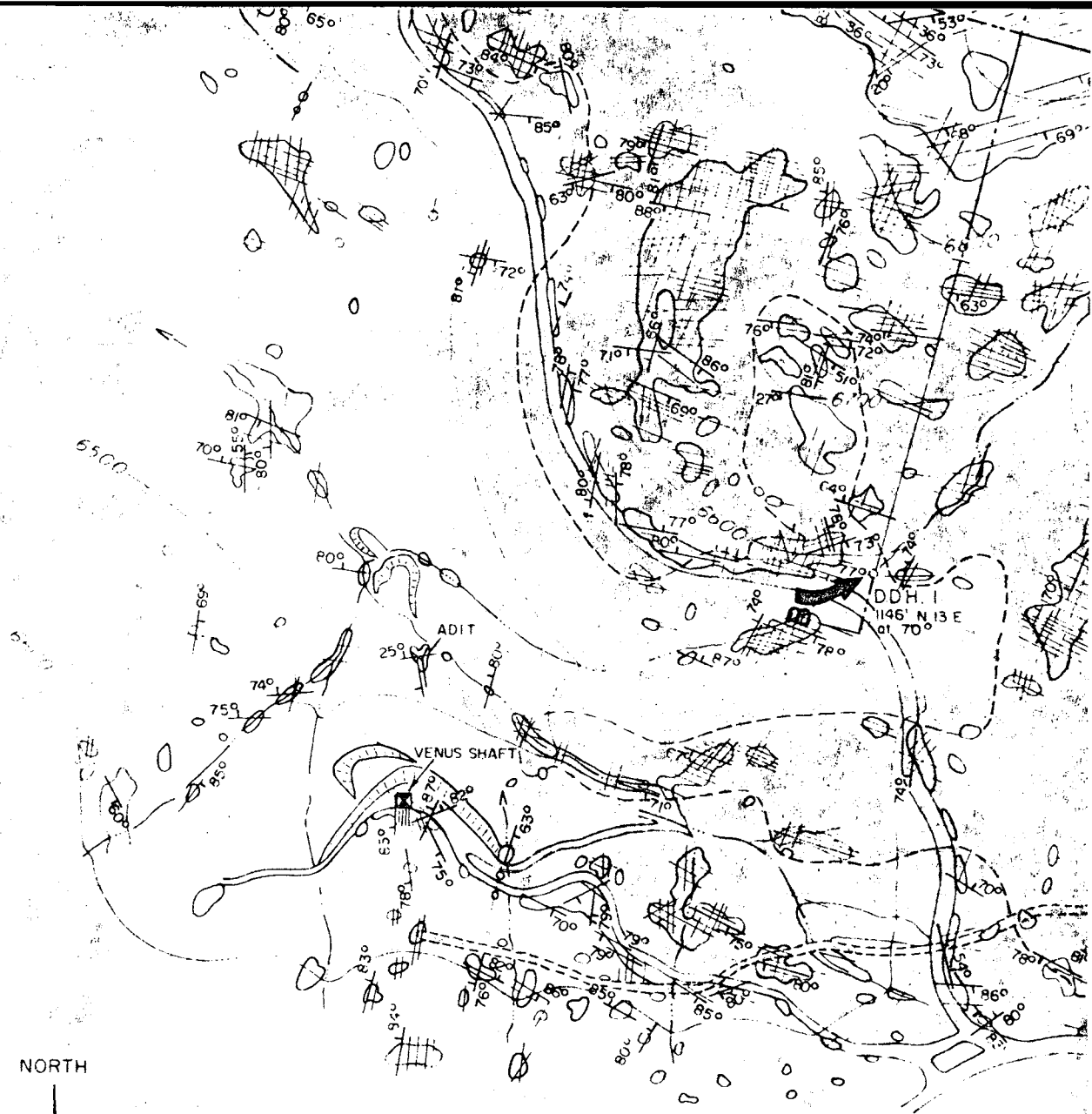
SHAW-PORPHYRY MOUNTAIN PROSPECT GEOLOGIC MAP WITH TOPOGRAPHY

8,9,15, & 16, (est) T.ION., R.I.W., (unsurveyed) GILA & SALT RIVER B. & M.

PINE GROVE (CROWN KING) MINING DISTRICT
YAVAPAI COUNTY, ARIZONA










LEE COMPANIES
Mineral Exploration
300 WELCH ROAD PALO ALTO, CALIF.
NOVEMBER, 1970

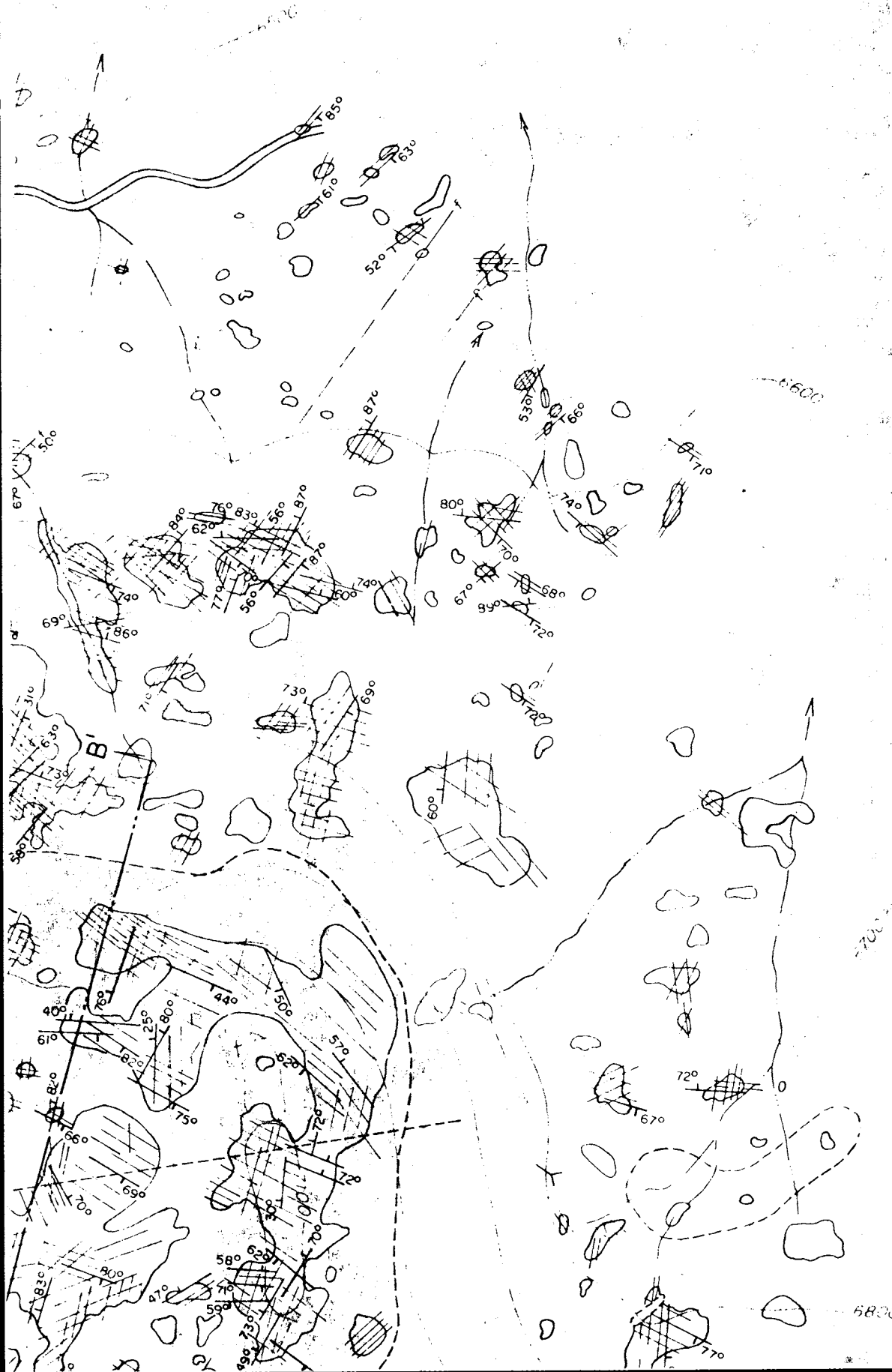


UTM GRID & 1963 MAG. NORTH
DECLINATION

LEGEND

-  IGNEOUS BRECCIA
-  GRANODIORITE BRECCIA
-  ANDESITE PORPHYRY
-  GRANODIORITE
-  FAULT
-  FRACTURES
-  OUTCROP OUTLINE

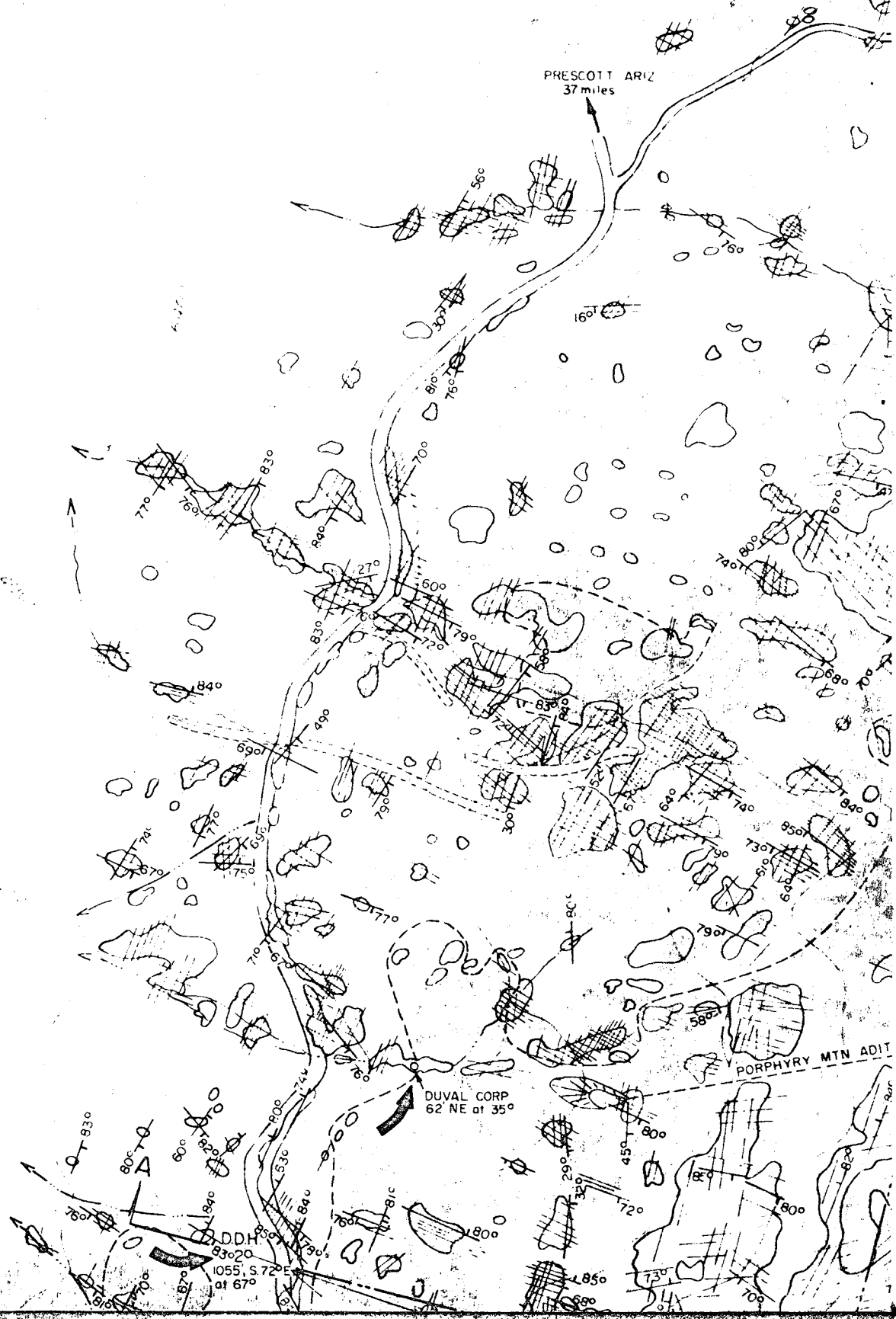
Remarks Mapping after 'Geologic Map Of Porphyry Mountain'
West Range Co rept March, 1967 by F Graybeal



NOTE

TOPOGRAPHIC CONTOUR INTERVAL 100 FT. DATUM AT MEAN SEA LEVEL
TAKEN FROM U.S. CROWN KING QUADRANGLE, ARIZONA

R. I. W.



R. I W.

PRESCOTT ARIZ
37 miles

PORPHYRY MTN ADIT

DUVAL CORP
62 NE of 35°

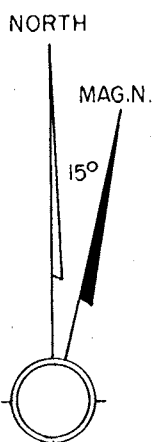
D.D.H.
3-692 VERT

ADIT

VENUS SHAFT

CROWN KING
5 miles

T. ION.



UTM GRID & 1963 MAG. NORTH
DECLINATION

LEGEND

- IGNEOUS BRECCIA
- GRANODIORITE BRECCIA
- ANDESITE PORPHYRY
- GRANODIORITE
- FAULT
- FRACTURES
- OUTCROP OUTLINE

Remarks: Mapping after 'Geologic Map Of Porphyry Mountain'
West Range Co. rept. March, 1967 by F. Graybeal.

BRADSHAW-PORPHYRY MOUNTAIN PROSPECT
GEOLOGIC MAP

SEC. 8, 9, 15, & 16, (est) T. ION., R. I W., (unsurveyed) GILA & SALT RIVER B. & M.
PINE GROVE (CROWN KING) MINING DISTRICT
YAVAPAI COUNTY, ARIZONA

0 100 200 400 600 800 FT.
SCALE

LEE COMPANIES
Mineral Exploration
900 WELCH ROAD PALO ALTO, CALIF.
NOVEMBER, 1970



ESSEX INTERNATIONAL, INC.

METALLURGICAL & MINING DIVISION

1704 WEST GRANT RD., TUCSON, ARIZONA 85705 • PHONE (602) 624-7421

October 19, 1973

Tony Nelson
General Delivery
Crown King, Arizona 86333

Dear Tony:

Enclosed is the data on your Porphyry Mountain property that you loaned to me on October 8. I have made a copy of most of the information, but have not yet had the time to review it very thoroughly.

Very truly,

A handwritten signature in dark ink, appearing to read "J. K. Jones", is written over the typed name.

J. K. Jones
Chief Geologist

JKJ:plb

Don Van Tilborg's claims now.

SPRINGFIELD COPPER MINES
Near Crown King, Arizona

This group of copper mining claims is located at the foot of Towers Mountain in the Southern Bradshaw's, $2\frac{1}{2}$ miles west of Crown King, Arizona, and lies at an elevation of about 6,500 feet.

There is considerable spruce, as well as pine timber on the property, which is especially important now when Oregon Pine is so difficult to procure. This spruce can be used for much of the mine timber needed.

A good county road, into Crown King, is located over the old railway roadbed and connects with state highway 69 (the Black Canyon Road) at the foot of Antelope Hill. There is also quite a good Forest Road from Crown King to and through the Springfield property, and, connecting with the Senator Highway into Prescott.

The Springfield group consists of eleven claims, held by possessory title, but work has been done on only three of those claims where "Chimney" or "Pipe" deposits have been opened up. There are the same kind of "Chimney" deposits as the Duluth mine at Cananea, and the Pilares mine at Nacozari, and others. Three of these "Chimneys" have been opened up, but only to a limited extent.

There are indications of similar "Chimneys" on all the claims, and there is a reason to believe these emanate from a large ore body, as has occurred with other similar deposits. This can only be proven, however, and the extent of the ore body determined, by quite a program of exploratory prospecting and development, which would take a great deal of time and cost a lot of money, and this delay, we believe, would not be in the interest of our Nation's urgent need for more copper.

The development program we have planned, and which would bring this property into production quickly, is to confine our mining operations to the development of the Corilla claim, which has the best showing, with the amount of underground work done, (see maps attached), and to forget the rest of the property for the time being.

An adit driven on this claim encountered a "Chimney" of ore 80 feet from the entrance. This measured 15 feet by 20 feet--a square foot area of 300 feet--A shaft was sunk in the ore 80 feet and at the 42 foot level, a drift, almost entirely around the ore, showed it had increased to 30 feet in both directions, or an area of 900 square feet--just three times the size 42 feet above--. Engineers estimate 3,500 tons of 4 per cent copper ore between those two levels--(see report of J. N. D. Gray attached.)

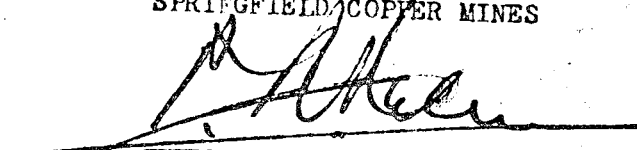
Our operating plans are to raise, above the shaft on the adit level, about 35 feet to the surface, where we would place our compressor, hoist and other machinery. We would then sink the shaft, at least another 100 feet, following the ore all the way. We would then have ample ore developed

to raise a new working shaft, and begin mining, milling at the Corner mill all the ore this mill could handle. At the same time, we would continue development of the main ore body.

The Corner mill--a 75 ton selective oil flotation mill--has just been completed on the old Crown King property. They want our ore. (See letter from Mr. Douglas C. Corner attached.) and we plan to have them mill it until we have developed enough ore to justify building a larger mill at the mine.

This program will bring the mine into production, enable us to concentrate our ore, and have the smelter turning out copper from the Springfield very quickly. We believe this to be in the interest of our Nation's urgent need for one of its strategic metals--copper.

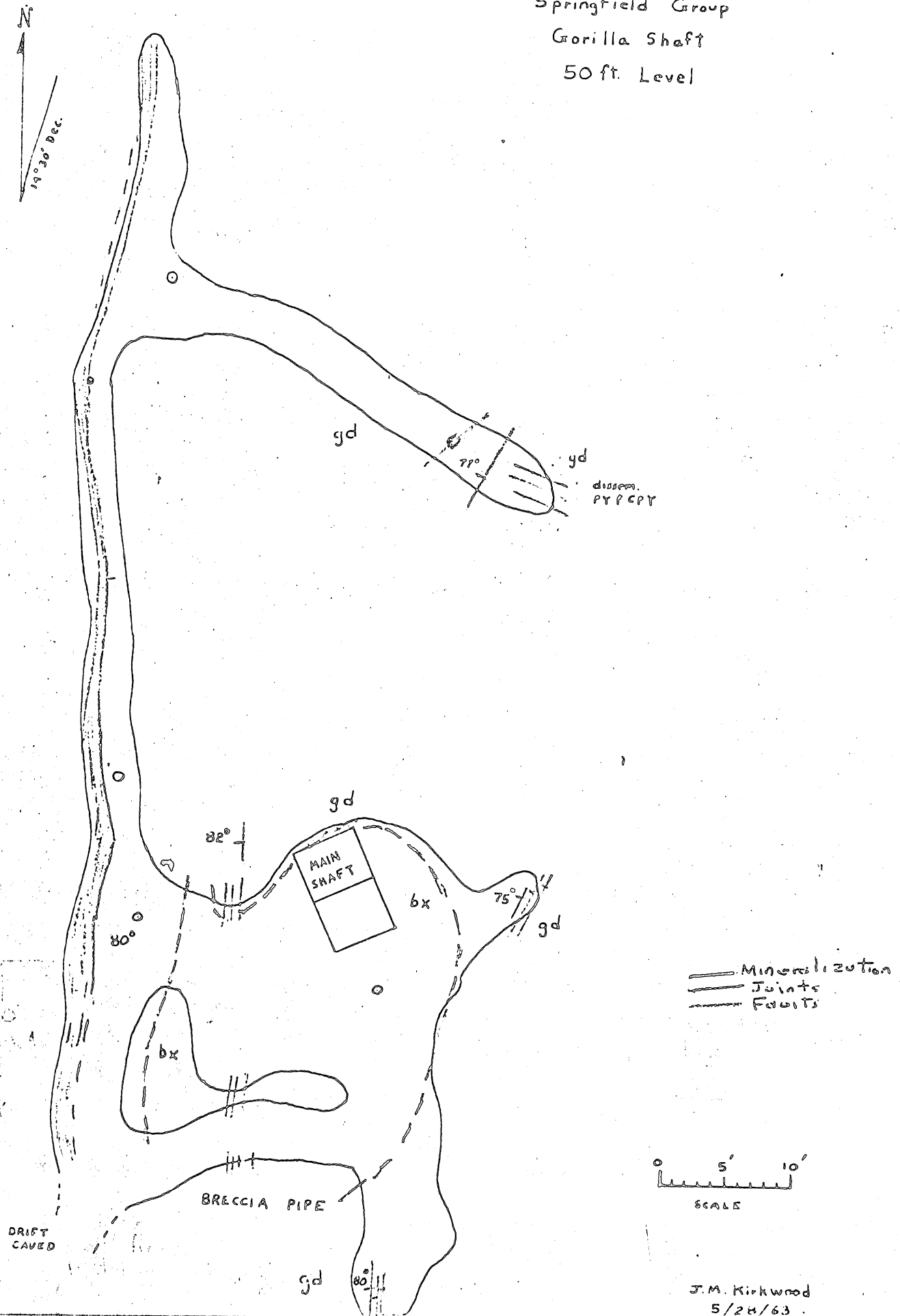
SPRINGFIELD COPPER MINES



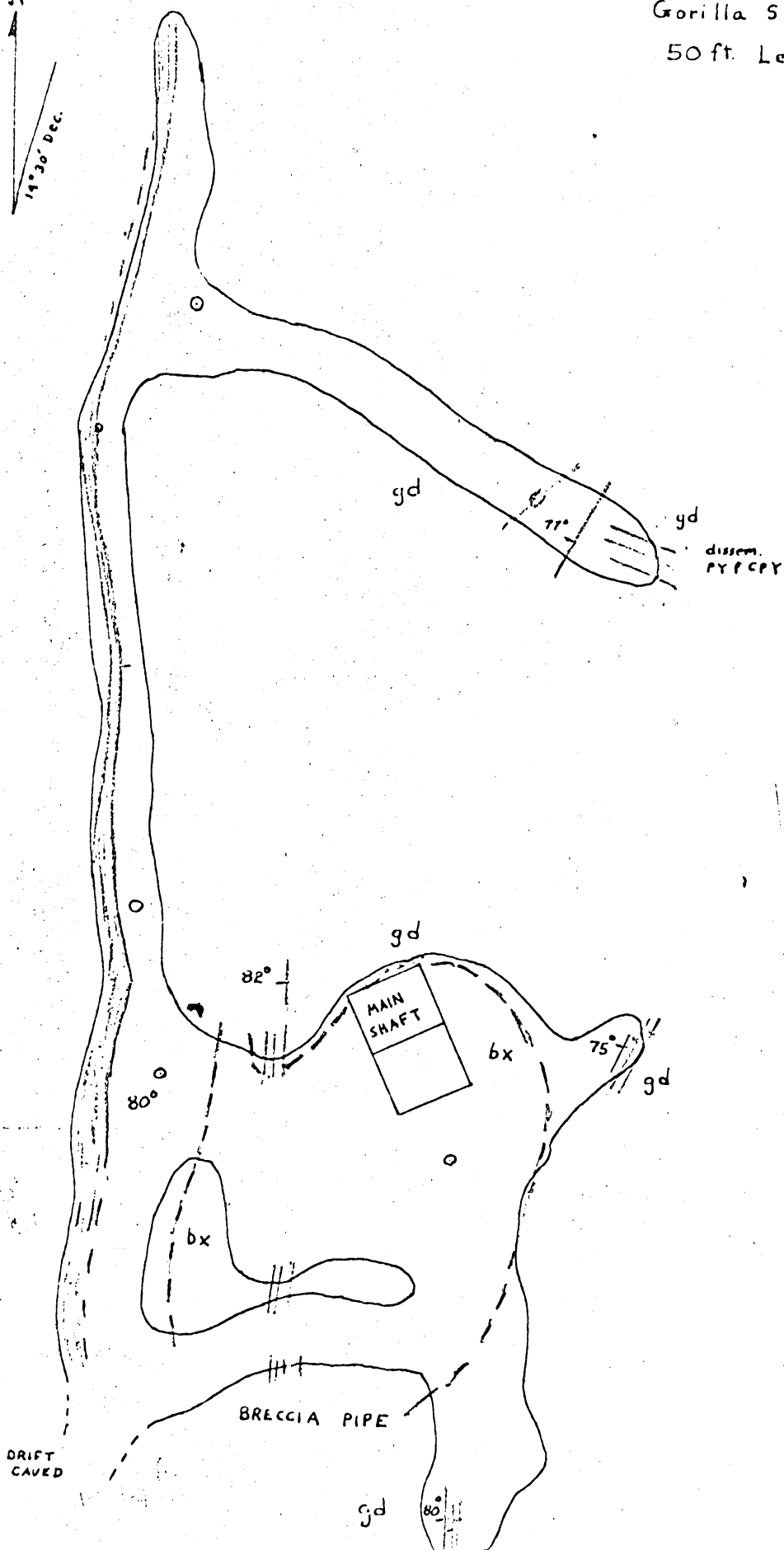
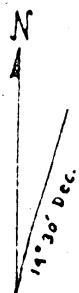
P. R. Helm

August 24, 1942
2606 North 7th Street
Phoenix, Arizona

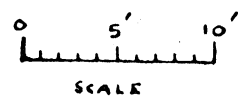
Springfield Group
Gorilla Shaft
50 ft. Level



Springfield Group
Gorilla Shaft
50 ft. Level



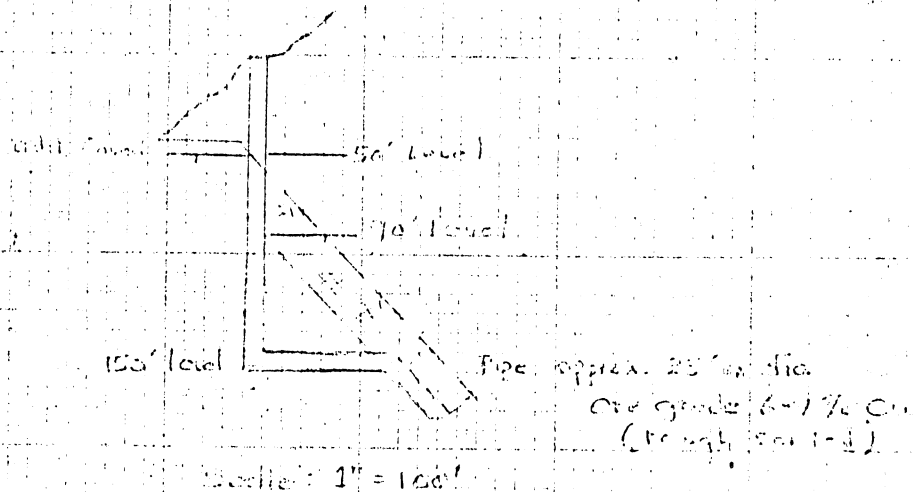
Mineralization
Joints
Faults



J. M. Kirkwood
5/28/63

South

North



Note: This map is a Y-sec. as projected
on a N-S plane

(Attached see drawing - 1-1)

TABLE 1. ASSAY AND DRILLING DATA

FOOTAGE	%Cu			%Mo			Au ozs./ton		Ag ozs./ton	
	DH-1	DH-2	DH-3	DH-1	DH-2	DH-3	DH-1	DH-2	DH-1	DH-2
40-50	.010	.010	.002	.0005	.0011	.0020	TR	TR	.0.2	.0.1
60-70	.06			.032			.005		.2	
70-80	.03			.017					.1	
90-100	.02	.11	.04	.009	.005	.026	TR		.1	
140-150	.04	.10	.05	.009	.006	.055				
190-200	.05	.09	.02	.005	.006	.081				
200-210			.06			.027	NOTE: DH-1 NX TO 660' BX " 1146' (BOT) DH-2 NX TO 1055' (BOT) DH-3 NX TO 240' BX " 692' (BOT)			
240-250	.04	.06	.04	.011	.028	.023				
260-270			.03			.055				
270-280			.03			.085				
290-300	.05	.09	.04	.010	.007	.047				
300-310			.03			.205				
310-320			.05			.074				
340-350	.05	.06		.016	.018					
390-400	.04	.06	.03	.012	.007	.075				
440-450	.06	.05	.03	.013	.002	.019				
490-500	.07	.03	.05	.007	.004	.022				
540-550	.04	.03	.08	.016	.005	.050				
590-600	.10	.04	.05	.014	.006	.008				
610-620	.07			.035						
640-650	.03	.05	.06	.009	.011	.014				
680-690			.05			.022				
690-700	.17	.05		.010	.007					
740-750	.03	.03		.008	.014					
790-800	.06	.04		.013	.013					
840-850	.02	.03		.009	.009					
890-900	.03	.03		.017	.010					
940-950	.03	.05		.010	.004					
990-1000	.05	.04		.007	.009					
1000-1010	.04			.010						
1040-1050	.07	.03		.005	.016					
1090-1100	.03			.020						
1130-1140	.05			.012						
AVG.	.05	.06	.04	.013	.009	.050				

DH-1 0'-211' GRANODIORITE (GRD)
 211'-1146' MIXED IGN. BRC. & GRD.

DH-2 0'-465' MIXED IGN. BRC. & GRD.
 465'-1055' IGN. BRC.

DH-3 0'-120' MIXED GRD. & BRC.
 120'-419' GRD. BRC.
 419'-692' MIXED GRD. & BRC.

FORMERLY-

ST. LOUIS POWER SHOVEL CO.

INCORPORATED

MANUFACTURERS OF

POWER SHOVELS FOR MINES, QUARRIES AND TUNNELS

ST. LOUIS, U. S. A.

BUILDERS OF CONWAY SHOVELS
PATENTED BY NATIONAL TRAD CO.

PLEASE ADDRESS REPLY TO
425 EAST 41 STREET
NEW YORK CITY
TELEPHONE: MADISON 1-7000
RUE DU POLE POWER CO. NEW YORK CITY

Dear Mr. Nelson,

I am anxious to learn how soon you expect to start operating your Springfield copper mine near Troy, N.Y. My interest is occasioned by the fact that I have just completed a 75-ton selective flotation mill on the old Crown Mine property and I will be able to take some outside ore while I am developing the Tiger property. I would therefore like to arrange to mill your ore. There was a considerable production of copper, lead and zinc from the Crown Mine district during the first World War and I hope that we can do our share at this time. I have two boys in the service and am anxious for them to have plenty of metal to work with.

I understand that you and Mr. Nelson have applied for an underground mine and I would be glad to know how matters are progressing. I have been to your Springfield mine and I am sure that with the development that has been done already and the amount of ore that is blocked out, you should be able to bring it into production very quickly. I am particularly interested because as I said above, my mill is ready to handle your ore. With best wishes, I am,

Sincerely yours,

Douglas C. Corner
Douglas C. Corner

The CONWAY TUNNEL MUCKING MACHINE

Conway means the conveyor way of loading

Phoenix, Arizona
2606 North 7th Street
July 15, 1942

Mr. W. J. Graham, President,
Small Mine Operators Association,
Phoenix, Arizona,

My dear Mr. Graham:

One of this nation's most urgent needs in strategic materials is for more copper. It needs it badly. It needs it quickly, and it needs lots of it.

Before the Japs struck at Pearl Harbor, the authorities in Washington believed that all the copper required could be brought here from South America. They also thought we could bring in all the rubber, tin, and many other strategic needs, but the Japs stopped all that, and, at the rate U-Boats are sinking our cargo vessels--so much faster than new ships are being built and commissioned--the need for copper is daily becoming more urgent, and may become critically so.

Recognizing this need, the authorities have increased the price for newly mined copper, and have made loans totaling many millions of dollars to some of our large operating companies so that these companies can explore, open up, and mine certain copper deposits. In Arizona, big loans have been made for this purpose to Phelps Dodge for their Morenci operations, to the Miami interests for their Castle Dome properties, and to the Bagdad people. These are all big operations and are valuable in a long range program, but it will take time, and a lot of time, for these operations to begin producing copper.

There is another source for copper which does not seem to have been given much consideration, but could be very important in solving this copper shortage. I refer to the numbers of small copper properties which could be brought into production quickly, and whose total output would be a very large tonnage. Time should not be wasted in exploring and trying to find out the extent and total tonnage possibilities of the ore bodies of these properties, but they should be brought into production just as quickly as possible. Their tonnage would increase as development programs proceed, and a surprisingly large total tonnage of copper would be quickly realized from this source.

Louis Cates, who as president of Phelps Dodge, is one of our largest copper producers, realizes the importance of these small copper mines. In an interview given the Phoenix papers about the middle of last March, he said, "Every small mine must be brought into operation at the earliest possible date-----it is surprising what a ton here and a ton there

Mr. W. J. Graham--2--July 15, 1942

will do." Mr. Wyle Brown, president of the Phelps Dodge Products Corporation, who accompanied Mr. Cates, also said, "The government is prepared to comb the country with a fine tooth comb for these materials."

So far, the government seems to have overlooked the importance of these small copper mines as a helpful means of solving the copper shortage. This may be because it has not been forcefully brought to their notice.

I am one of the owners of a small property--the Springfield Copper Mine near Crown King, Arizona--The group consists of eleven claims. Some work has been done on three of the claims. The Gorilla, the Venus, and the Uranus, where "chimney" or "pipe" deposits have been opened up. These "chimney" deposits are the same type as at Duluth Mine in Cananea, and the Pilares Mine near Nacozari, and others. There are indications of these "chimney" deposits on all the claims, but work has been done on only three. It is possible, and I think we can say there is a strong probability that these "chimneys" emanate from a large ore body, as has been the case in other similar deposits. But that can only be proven by further prospecting, exploration, and development. To prospect all these claims and prove the extent of the ore bodies, would take a lot of time and would cost a lot of money. In my opinion, this is not justified at the present time. This country needs copper now, not potential future possibilities.

Our best showing is on our Gorilla claim, and we propose to forget the rest of the property for the time being and to center our work there. An Adit driven on this claim encountered a "chimney" or "pipe" of ore at 80 feet. This measured 15 feet in one direction and 20 feet in the other direction. A shaft was sunk, and at the 42 foot level a drift, almost entirely around the "chimney," showed it had widened to 30 feet in both directions. Engineers estimate between 3,500 and 3,800 tons of 4% ore between these two levels. Our operating plans are to raise above the shaft on the Adit level, about 35 feet to the surface where we would place our compressors, hoist, and other machinery, then sink an incline shaft from the 42 foot level another 50 feet or more. There should then be enough ore blocked out in this "chimney" to justify raising a new working shaft and begin mining and milling the ore developed. At the same time, we would continue development of the main ore body.

There have been two mills just recently completed near Crown King. Both want our ore. One 25 ton mill is about a 2 mile haul from our mine. The other 75 ton capacity has

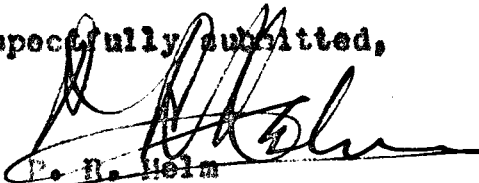
Mr. W. J. Graham--3--July 15, 1942

been erected on the old Crown King Mine, about a 1/2 mile haul. The program outlined would enable us to begin milling our ore quickly. We would mill the ore brought up while sinking our incline shaft, and as soon as we had completed our working shaft would go into production.

There are many other small properties which could be quickly brought into production, much the same as our Springfield Mine. These operations would total a big tonnage, and would be an important factor in solving the copper shortage.

We made an application in January to the RFC for a class "B" development loan. This loan would provide us sufficient funds to get into production quickly, and I believe, would be of aid to the Nation in this National emergency. On the eleventh of May an engineer of the RFC made an examination, but we have not yet (July 15-42) learned whether the loan is to be granted.

Respectfully submitted,


P. R. Helm
Springfield Copper Mine

PPH:BT

*would be glad to
have your criticisms
HJH*

PPH

619 Heard Building,
Phoenix, Arizona.
February 9, 1942.

Mr. Hugh Nelson,
Crown King, Arizona.

My dear Hugh:

Flagg has returned. He got in Saturday and is leaving again today. Mr. Flagg has been selected by the Government as field engineer, because of his knowledge of certain strategic urgently needed metals in the War industries today. In this particular field he is, I believe, beyond any question the best authority in the United States, the result is that he has had a tremendous amount of work piled up ahead of him.

He went over our proposed application with me and I am going to get it out right away. Without his help and lay-out, I doubt if I could have gotten it out. There are certain things that will be required in this application and I haven't the data necessary to get them out.

1. A brief history of the Springfield. Kindly give me just a short, brief story.
2. The book and page record of the following mines.
Atlanta, Crosscut,
Palo Alto, Crosscut Extension,
Uranus, Mount Treasury.
3. Have to file brief partnership agreements,
 - a. Percentage, ownership, each partner.
 - b. Giving me authority to make the application for the loan and to carry out the provisions of the development program. (I will make out a brief statement and forward this to you for your consideration.)

We will have to file a notice of labor performed on all of the properties for this fiscal year (1941-1942). Don't know whether the affidavit has been filed on any of the properties this year or not. Kindly let me know regarding this.

It is my understanding, and I believe we discussed this when I was last in Crown King, that work done on, or in connection with the building operations which our lessor did, can be used in filing the notice of labor performed. It also makes no difference how many years have elapsed since the labor was performed

2 - Hugh Nelson.

on or for any of these claims prior to this fiscal year, as long as there have been no filings by other parties on any of these claims. In other words, filing the notice of labor performed will renew the life of these claims and certainly there was plenty of work done in connection with this mill and milling operations to justify the filing of this affidavit. Filing of this notice is, of course, not a part of this application, but can be done later at our convenience.

I am afraid that I shall have to go out of town for a couple of days, but will reach the making out of this application just as fast as possible.

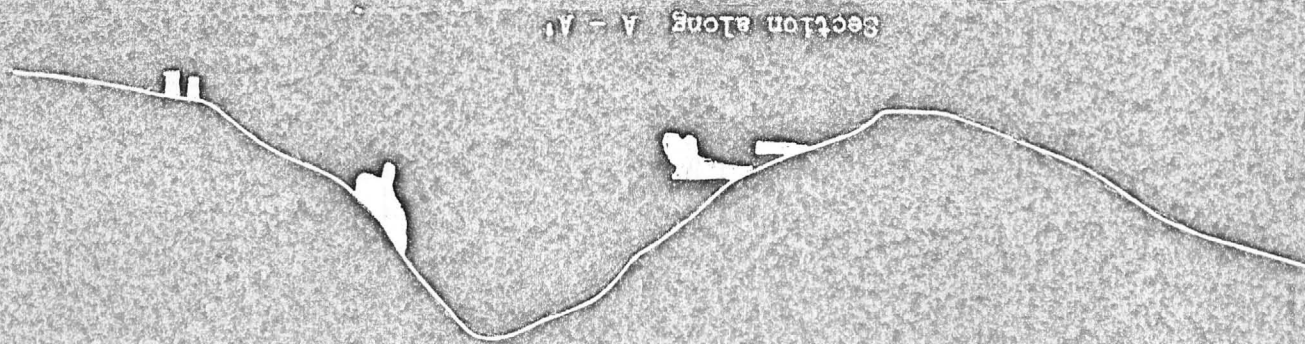
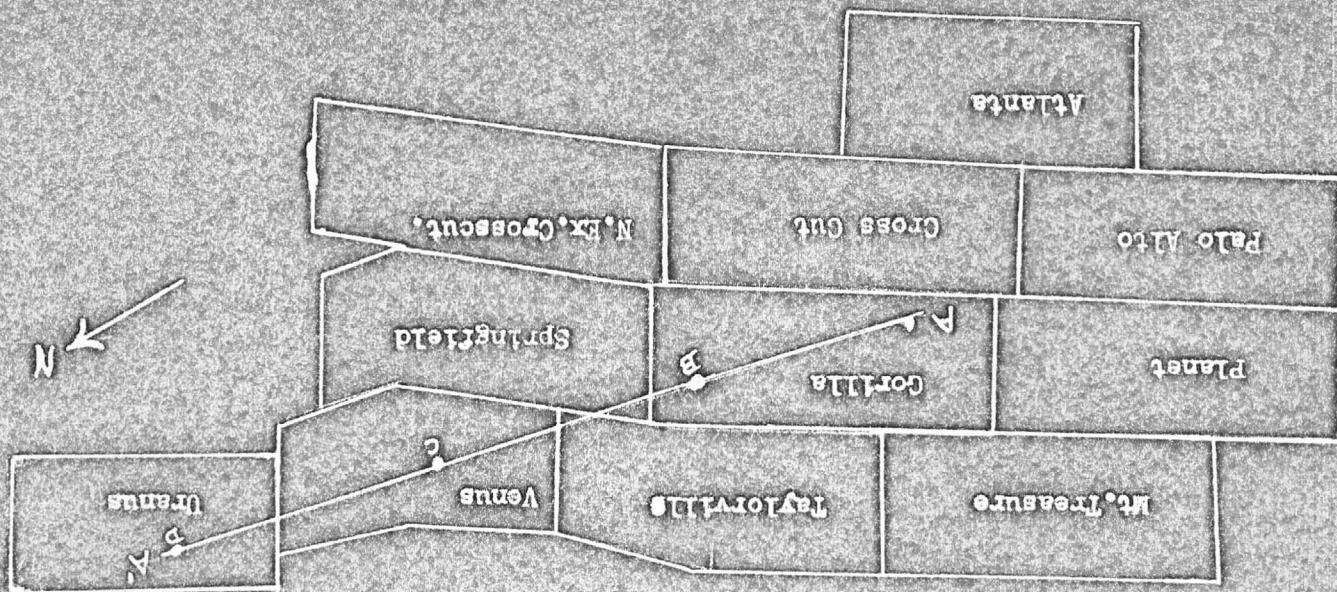
In this mornings mail I received a letter from Senator Hayden, in which he says "I appreciate your letter of January 26, and I hope you will let me know if there is some way in which I can be of further assistance to you in bringing about the development of your copper properties." I am counting on Hayden as well as McFarland to help in getting our application up for early consideration.

Cordially,

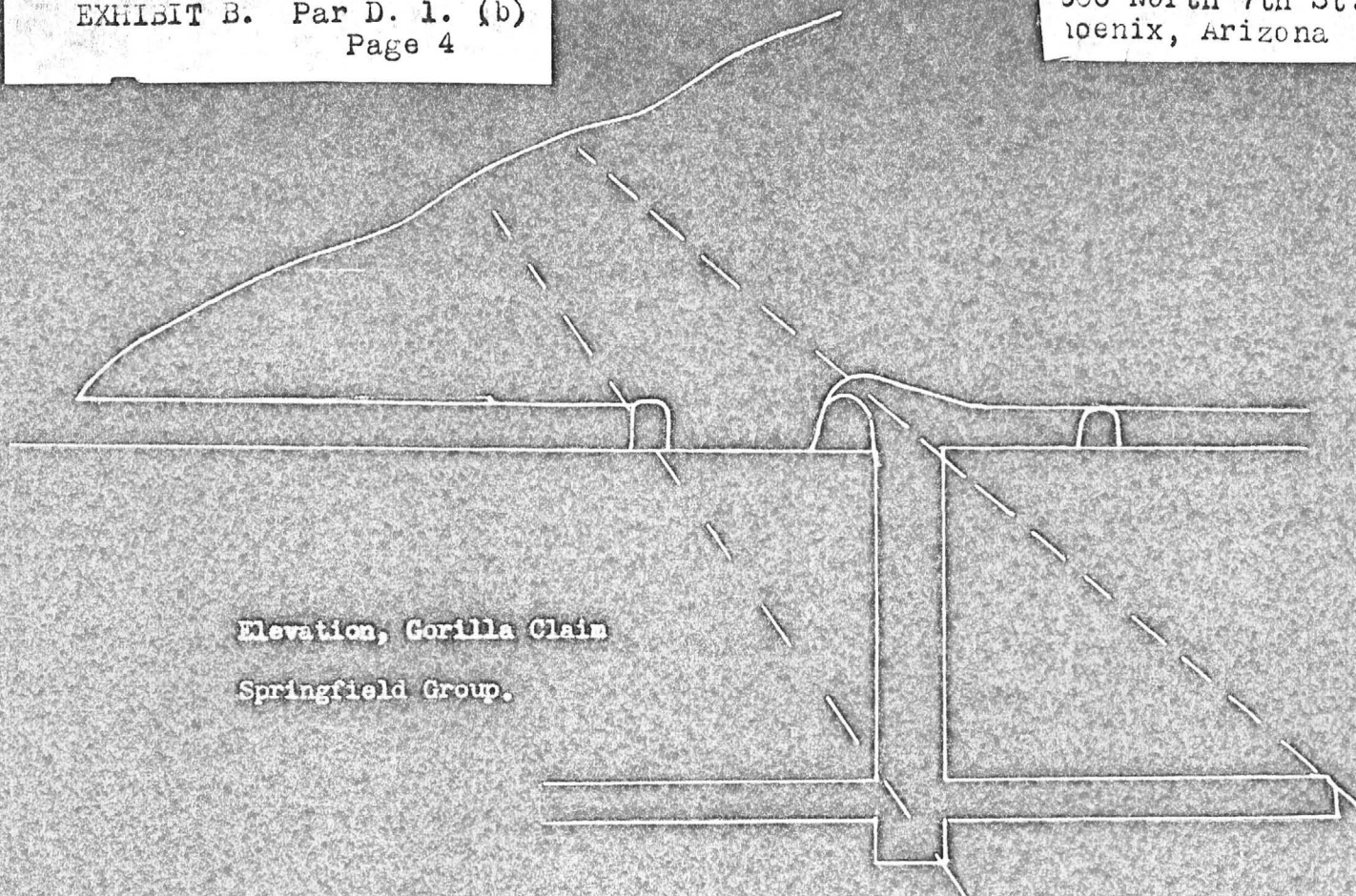

P. R. Helm.

PRH:ab.

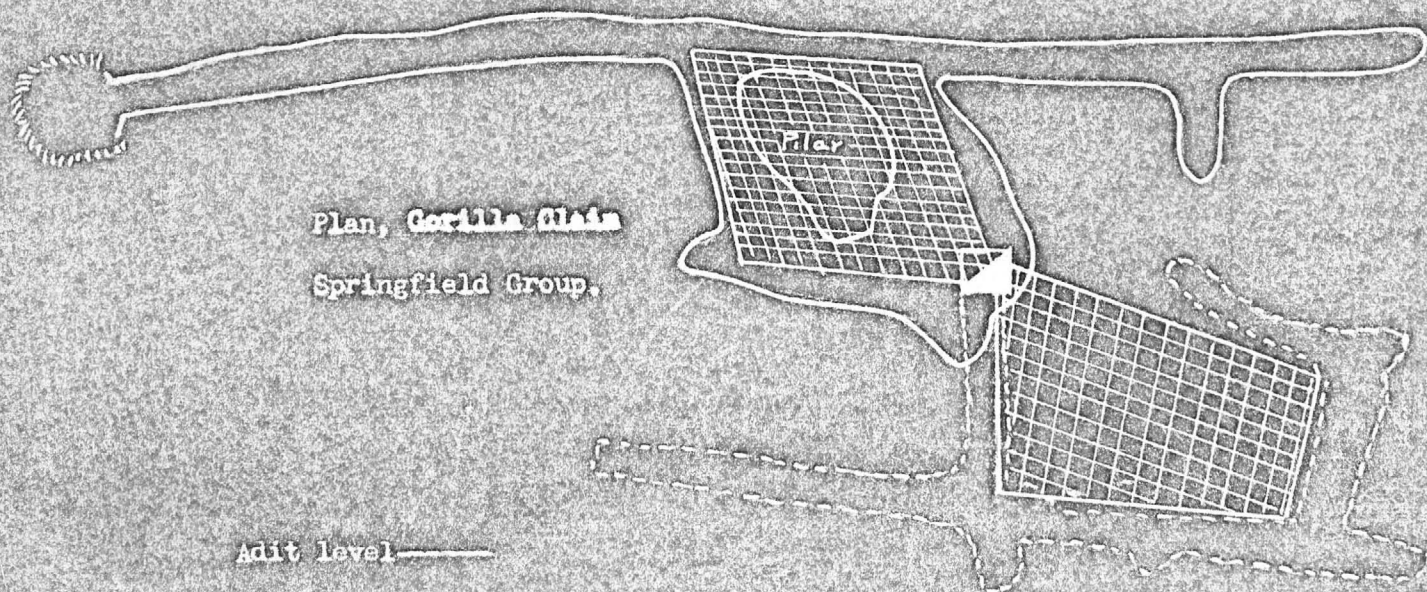
P. R. Helm
2606 North 7th St.
Phoenix, Arizona



Elevation, Gorilla Claim
Springfield Group.



Plan, Gorilla Claim
Springfield Group.



Adit level ———

121 level

has been partly oxidized, and some of the ore is very rich, both in gold and silver, reaching assay values of \$100 a ton. Either silver or gold may predominate, or they may be present in equal quantities. Where there is much silver there is also likely to be much ankerite. The primary ores are not rich, as a rule. In few places do they seem to average better than \$10 a ton. The water level is deep. In the Crown King mine the water now stands at 250 feet below the surface.

All these veins are of a similar type, and it is believed that they have a genetic connection either with the granodiorite or with the system of rhyolite porphyry dikes. They are almost surely post-Cambrian and probably Mesozoic or early Tertiary.

Unusual types are the Springfield copper deposit in granite porphyry, which presents some similarity to the deposit at Copper Basin, near Prescott, and is considered Mesozoic; and the siderite-sphalerite deposits in Yavapai schist on the headwaters of Bear Creek and Peck Canyon, which are probably pre-Cambrian. No pre-Cambrian quartz veins were seen in the district.

The location of the veins is shown in Plate 22.

It is difficult to give an estimate of the production of the district. Much of it was extracted in the early times. Probably it has not reached \$3,000,000. The table on page 172 shows the combined production of the Pine Grove and Tiger districts.

SPRINGFIELD GROUP

About 2½ miles west of Crown King, near the divide between Poland Creek and Pine Creek, is the Springfield group of copper claims, now owned by Harrington, Sweet & Nelson. The altitude is from 6,400 to 6,500 feet.

The principal rock is granodiorite (quartz diorite), but as shown on the geologic map it is cut by several long dikes of light-colored porphyry with a north-northeast trend. The conditions are more complicated than is shown on the map. A short distance west of the point where the Prescott road crosses the divide are four parallel dikes of fine-grained quartz porphyry. A little farther east, where Crown King comes into view from this road, is a larger mass of granite porphyry, which occupies some flat-topped hills on the Springfield claims and which contains the prospects.

The Springfield shaft is 175 feet deep and connects with a 200-foot tunnel 80 feet below the collar. The shaft discloses apparently a chimney filled with gash veins containing chalcopyrite, pyrite, and quartz, with a little purple fluorite. Two carloads of 12

per cent ore were shipped from this small ore body, which is perhaps 30 feet in diameter. The chalcopryite is superficially covered by chalcocite. Much trenching has been done just north of the shaft, but although disseminated chalcopryite occurs in many places there is apparently no commercial ore in large amounts. South of the shaft is the Gorilla claim, on which a tunnel discloses a body of chalcopryite ore of similar occurrence occupying a space of about 20 by 50 feet.

The country rock in both places is a granodiorite porphyry with phenocrysts of orthoclase, plagioclase, quartz, and biotite in a scant coarse groundmass of orthoclase and quartz. The predominating feldspars are oligoclase-andesine. Apatite is present in unusually large crystals, also magnetite and titanite. The quartz crystals contain fluid inclusions, some dark and showing, besides gas bubbles, small cubes of a colorless salt.

There are small quantities of sericite, calcite, and chlorite, but the principal product of mineralization consists of granular aggregates of albite and quartz, so that in many places near the irregular veinlets the rock has been entirely converted to an aggregate of these two minerals; the albite grains are 1 to 2 millimeters in diameter. The chalcopryite veinlets are very irregular and intersect the albite rock. This is a deposit of rather unusual character and very similar to the irregular deposits at Copper Basin, 12 miles west of Prescott, where the same coarse porphyry appears.

WILDFLOWER MINE

The Wildflower group of 13 patented claims lies the farthest northwest of the properties in the Pine Grove district, and the principal vein is covered by locations for 2 miles. The mine is 3,000 feet east of Towers Mountain, at an altitude of about 6,500 feet. The vein is opened for 4,400 feet. The developments consist mainly of a shaft 700 feet deep inclined 60° WNW., with levels at 110, 200, 300, and 480 feet. The 480 level connects with the Wildflower tunnel, a total distance of 3,100 feet. The mine is connected with the mill at Crown King by an aerial tramway 2 miles long. The mine was worked from 1917 to 1919, and the production amounted to \$104,000. About 13,000 tons was milled, averaging \$9 a ton. The operating company, organized by Randolph Gemmill, was called the Bradshaw Reduction Co. High expenses incidental to war times are said to have been the cause of closing. At the time of operation the costs could hardly be brought below \$7 a ton. According to a report by W. H. Weed in 1918, there are two ore shoots; the north

shoot contained 22,000 tons, and the south or Sabronje shoot was estimated to contain 32,000 tons. The Sabronje shoot yields ore assaying \$1.20 in gold and 6 ounces silver to the ton, 2½ per cent of copper, and 12 per cent of zinc.

Weed notes that the hanging wall is smooth, with striations pitching north like the shoots. He also holds that there was an earlier pyritic mineralization that introduced gold and a late reopening that brought in silver, lead, and zinc. William A. Farish, who also made a report on the property, notes that there are seven distinct veins in the group.

The country rock at the Wildflower is much mixed, quartz diorite, diorite, quartz porphyry, and amphibolite being observed.

The Wildflower is a well-defined fissure vein, with quartz-sulphide filling, in which the sulphides occur in considerable abundance. The slopes average 5 feet in width. The ratio of concentration is said to have been 5:1.

Though the mine was not accessible in 1922, there was plenty of ore on the dump. The deposition was clearly accomplished by filling, drusy and comb quartz being common. The country rock is sericitized and contains particles of sulphides. In the quartz sphalerite, chalcopryite, and pyrite are abundant in the order given. There is also a little chalcopryite. After the sulphides and quartz had been deposited ankeritic carbonates and also calcite were deposited in the center of the vein. There is much crushing in places, suggesting a period of reopening of the fissure.

DEL PASCO GROUP

About 4,000 feet east of the Wildflower is the Del Pasco vein, an old-time property which was worked in the early days and which has yielded a considerable production. It is first mentioned in Raymond's report of 1874. The present owner is said to be Mrs. L. M. Jackson, of Prescott. The Del Pasco strikes north-northeast, like the other veins in this vicinity, and dips 70° W. The main workings are on the south side of the ridge, at an altitude of 6,300 feet. Another tunnel enters from the north slope and taps the vein at an altitude of 6,600 feet. The dump at the north tunnel showed ore not unlike that of the Wildflower, with much sphalerite, pyrite, and galena. The ore is said to contain gold with little silver. An upper tunnel on the north slope at an altitude of 6,700 feet exposed a vein said to be a branch of the Del Pasco, called the Jackson Strata. This was worked in 1922 by Reoff & Carner, who were also operating

WEST RANGE COMPANY

1015 N. 5th Ave.
Tucson, Ariz.
July 7, 1966.

Mr. Ron F. Shuck
P.O. Box 476
Bagdad, Ariz.

Dear Ron,

Enclosed is the information you sent me at Crown King. I have also included the Weed report you gave me during our meeting. I have found the enclosed very interesting, and have taken the liberty to make copies of the geologic sketch map and some of the assay sheets.

I was in Crown King during the week preceeding the Fourth, and did some more work in the Porphyry Mtn. area. I have found the ground in general quite interesting. I have since communicated with my superiors in Toronto, and have delivered my information to them. Within two days I expect an answer as to what their next move will be. Should they decide to come to Crown King, and should they then be interested, we will immediately be in touch with you at Bagdad.

Whatever their decision, I will inform you of it as soon as it is known.

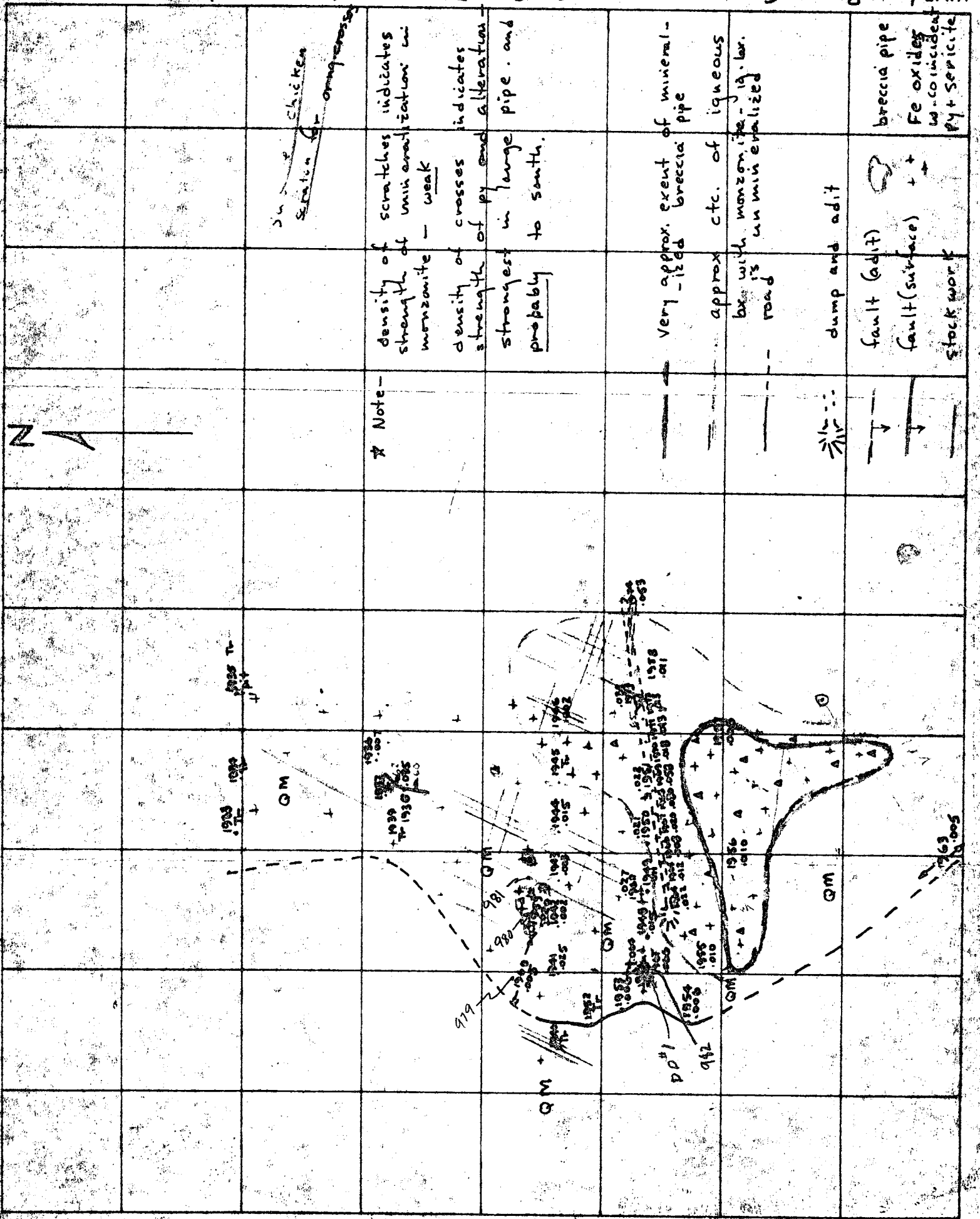
With best regards,

Very truly yours,

Frederick E. Graybeal

Frederick E. Graybeal
Geologist.

*Note - David Lohr was by Jim Fisher
a U of A classmate & good friend
of mine - left Crown before we
other than Geology class.*



AMERICAN SMELTING AND REFINING COMPANY

MISSION UNIT

Lone Ranger Claims 3 & 6 Work Sheet

Samples

1962

Sample No.	Cu	MoS ₂	Fe	Zn	Pb	Wc	of Ag	of Au	Lead
3-a	0.04	0.162							
(Pipe)									
3-b	0.02	0.131							
(Pipe)									
6-a	0.16	0.169							
(Fault)									
6-b	0.27	0.923							
3a & 3b are same old breccia pipe cut in an erosion gully.									
6a is a 15' cut across a fault with the qtz monzonite porphyry.									
6b is a black gouge from the fault zone - the fault - it is a high grade sample, cut for Ag, Au assay.									

MINE SAMPLE ASSAY REPORT

DATE 6-23-65

REMARKS

SIGNED

Field No.	Copper	Molybdenum
OK #1	155	20
OK #2	75	12
OK #3	20	10
OK #4	110	11
OK #5	+1000	100
OK #6	60	13
OK #7	145	32
OK #8	95	35
OK #9	60	15
OK #10	240	50
OK #11	70	45
OK #12	90	32
OK #13	55	70
OK #14	330	10
OK #15	20	190
OK #16	20	+200 re-run 1500
OK #17	350	+200 re-run 375
OK #18	145	65
OK #19	100	60
OK #20	180	60
OK #21	155	+200 re-run 550
OK #22	+1000	+200 re-run 1600
OK SB #1	205	75
#16	170	+200 re-run 750

isolates N of Venus & west of road

Shot hole fork on knob

Ridge above Gorilla

Drill hole to w. fork of pipe & down to 44" line.

Above drill hole

(soil)

near 9410

Geochem samples by Shottrock Dev.

E. A. Johnson
E. A. Johnson

Shuck, Stevens, and Alexander - Copper Molybdenum Prospect

For brevity the property has been described in outline form:

Location: Sections 9, 10, 15 and 16, Township 10 North, Range 1 West, in the Crown King Mining District, Yavapai County, Arizona.

Topography: Rugged, well-timbered mountain terrain, elevations ranging from 5,000 to 7,800 feet. Annual rainfall is 15 to 30 inches with some snow in winter.

Geology: There were apparently five major tectonic movements forming the mineralized zones:

(a) A massive igneous intrusion of quartz-monzonite, which solidified to a porphyry bearing Cu, Mo, Fe, Zn sulfides disseminated throughout.

(b) Subsequent piercing of this quartz-monzonite cap by molybdenum bearing molten silica from below, forming (at least on the surface) one very large and several smaller breccia pipes or "chimneys".

(c) Strike-slip faulting in parallel planes trending north to south over thousands of feet in breccia and in porphyry zones, with individual faults ranging in size from 1/8 inch to 30 feet in width, all striking and dipping in the same direction.

(d) Injection filling of fault zones with sulfide bearing quartz.

(e) A massive, high pressure movement along an east-west direction, resulting in a shear zone 4 to 5 feet wide and extending for thousands of feet.

Mineralization

Of the 40-odd surface samples assayed thus far all show at least trace MoS_2 - economic percentages of MoS_2 appear to be confined to the

brecchia zones. Copper values appear to be highest in the contact zones of the smaller (100 - 200 foot diameter) pipes to the southeast and southwest of the large structure adjacent to the schist beds to the south. This ore structure appears to be identical to that of Climax Molybdenum Corporation at Climax, Colorado.

Mining Activity

Considerable patented ground lies approximately 3 miles to the west, and was mined for gold, silver and copper in the 1890-1930 era. The most recent mining was a development program financed by an \$80,000 Federal loan on the claims bordering us on the southwest. According to a 1942 geological report, both shafts were sunk into brecciated ore zones, which assayed an average of 4 percent Cu, 1-1/2 ounces Ag and 0.01 ounce Au per ton, with one 4,000 ton block of ore developed. Other than sampling the dumps at these two shafts, I have had no opportunity to evaluate these claims. Considerable MoS₂ is visible in the dumps.

During the time mining was carried on in this area, there was little or no market for molybdenum, and apparently its existence was not even known. None of the historical literature nor the old reports mention MoS₂ and I have not seen any assay reports for MoS₂ in this area other than mine.

Our purpose in securing the property to the southwest is primarily to provide a millsite, and to enable you to present a "package" covering all of the possible ore zone and avoiding any legal entanglements or the necessity of your having to negotiate with several property owners.

Size of Mineralized Zones - (On our Lone Ranger Group of Seven Claims)

1. The large pipe: assuming a depth of 1,000 feet there are approximately 80,000,000 tons of mineralized zone. The exposed outcrop has an area of approximately 300,000 square feet, and is roughly triangular in shape. The three smaller pipes have a roughly circular surface outcrop and range from 100 to 250 feet in diameter.

2. The North - South major fault can be traced for 3,600 feet and is 7 to 15 feet wide.

3. The shear zone appears on the surface in Section 15, and again in Section 16, 6,000 - 8,000 feet to the east and is approximately 4 feet wide in both outcrops. This shear zone is just north of the large pipe in the quartz-monzonite porphyry.

A road map of the State of Arizona is enclosed with the area marked out (the red circle) as well as an enlargement of a U.S.G.S. topographic map of Township 10 North, Range 1 West. The approximate area of the 660 acres has been cross-hatched in blue.

Ron F. Smuck
Mining Engineer

CERTIFICATE OF ASSAY

BEAKER NOS.	MARKS, ETC.		SAMPLE GMS.	% Mo	Claim No			
	EX-1933	EX 1		Trace		8		
	1934	2		Trace		8		
	1935	3		Trace		8		
	1936	4		.007	.012			
	1937	5		Trace				
✓	1938	6		.035	.058			
	1939	7		Trace				
	1940	8		Trace				
✓	1941	9		.025	.042	5		
	1942	10		.002	.0033	5		
	1943	11		.003	.005	5		
	1944	12		.015	.025	5		
	1945	13		Trace	.00	5		
	1946	14		.002	.0033	5		chest
✓	1947	15		.066	.111			Haskell Disc.
	1948	16		.015	.025			
	1949	17		.011	.018			
✓	1950	18		.021	.035			
✓	1951	19		.022	.037			
	1952	20		Trace	—			
	1953	21		.006	.010			} road cuts where
	1954	22		.006	.010			
	1955	23		.010	.017			
	1956	24		.010	.017			
	1957	25		.006	.010			
	1958	26		.011	.018			
✓	1959	50		.020	.033	5		N. pipe
	1960	51		.005	.0083	5		pipe to road

107-451 M.L.

E. Goodrich

CERTIFICATE OF ASSAY

BEAKER NOS.	MARKS, ETC.		SAMPLE	%	Mo	No S ₂			
			GMS.						
✓	EL-1961	52 ?		.064	.107				
✓	1962	54		.027	.045				open sack no. no.
	1963	55		.005	.0083				
✓	1964	30		.022	.037				edit 0-100
	1965	31		.012	.020				100 - 200
	1966	32		.008	.013				200 - 300
✓	1967	33		.020	.036				300 - 400
✓	1968	34		.030	.050				400 - 500
✓	1969	35		.058	.098				500 - 600
	1970	36		.018	.030				600 - 700
	1971	37		.013	.022				700 - 800
	1972	38		.013	.022				800 - 900
✓	1973	39		.038	.063				channel fit at 900
✓	1974	40		.053	.089				shear zone at end of drift
	1975			.010	.017				L.R. #5 - finger ridge
	1976			.012	.020				N-S chip by Shuck

FORM 311 M.L.

E. K. Robinson

ASSAY RECORD SHEET

For. 17068

Reference Point: -

Stage From Reference Point			% Rec.	Width	Sample No.	Assay					Assay X Width Factors					Sp. Gr.	Ton	Rd
To	L ₁	L ₂				Au	Ag	Pb	Zn	Cu	MoS ₂	Au	Ag	Pb	Zn				Cu
0	9.0			9.0	10463	TR.				0.10	0.068						Q72 Mon	
0	20.5			11.6	10464	TR.				0.12	0.041						Q72 Mon	
6	30.6			10.0	10465	NIL				0.08	0.038						Q72 Mon	
6	41.5			11.2	10466	TR.				0.08	0.034						Q72 Mon	
6	52.6			19.0	10467	TR.				0.10	0.027						Q72 Mon	
6	63.0			9.4	10468	TR.				0.10	0.014						Q72 Mon	
log of DD hole below and assays																		

REPORT ON THE
SPRINGFIELD GROUP OF COPPER CLAIMS

CROWN KING, ARIZ.

The Springfield group of nine claims held under bond and lease by the Springfield Copper Co. covers a tract about 4500 feet long and 1200 feet to 1800 feet wide, lying on both sides of a wooded ridge south of Porphyry mountain. The camp at the base of that peak is about 1400' above Crown King and accessible by four miles of fairly good mountain roads. In a direct line it is but two miles from the railway terminus at Crown King.

The group consists of the Longside, Uranus, Venus, Mt. Treasury, Taylorville, Planet, Gorilla, Springfield and Saturn claims, all held by location. There are underground workings showing a good grade of copper ore on the Gorilla and on the Venus Claims.

GEOLOGY

The claims cover an area of quartz diorite, a light colored mica hornblende rock, similar in appearance to, but finer grained than the prevailing Bradshaw granite of the region. This rock is locally altered by pneumatolytic actions (or eruptive aftereffects) which have changed its color and apparent texture as at Porphyry mountain, so that the altered material has a superficial resemblance to porphyry and is very commonly so called, not only here but at other mining camps.

At Porphyry mountain the rock-outcrops show silicification along shearing planes, and in underground workings an impregnation with pyrite and some chalcopyrite with quartz-vugs and crusts where intersecting fractures

have made brecciated masses, or pipes. In the Springfield group there is no such general alteration, but several places show the altered rocks and the peculiar spongy, rusty, quartzose material typical of "pipe" deposits of copper ores.

On the Venus and Gorilla claims workable deposits of shipping copper ore have been developed. These orebodies are of the same general type as the "chimney" deposits of Copper Creek, near Mammoth, Arizona, the Washington mine in Sonora; the Pilares mine near Nacozari and the Duluth mine at Cananea. The Springfield deposits are however smaller than those noted, though the ore is of good grade.

The ore is characteristically a breccia composed of large and small fragments and angular blocks of somewhat altered and bleached country rock, cemented by a mixture of chalcopyrite and pyrite. Where these minerals do not fill the space between fragments crystalline quartz occurs, sometimes in open vugs. In addition to this breccia, which is typical of this character of ore deposit, there is also more or less altered rock showing sulphide plates on fractures and more or less impregnation of the mass of the rock with sulphides.

The size and persistence of the orebodies at all the deposits of this type depend upon the occurrence of a brecciated mass whose porous spaces permitted the accumulation of the highly leached material and hence that deposited mass surrounded by solid rock. The pipe of crushed material occurs where there is a crossing of intersecting fractures along which slight movement has taken place.

At the Gorilla mine there are conjugate fracture running East-West but dipping in opposite direction and crossed by North-South fractures and by

N.20 deg.E. fractures. As such fractures occur in clusters it is easy to see why such deposits are pipe-shaped and why in some cases the deposits widen as they go down and eventually become diffuse and of low grade as the fractures spread out.

At the two largest deposits known, Pilares and Cananea (Duluth orebody) the spreading fractures have made an annular orebody about a large central core of waste.

In the Springfield group only two of these ore chimneys, or pipes are known, one on the Venus claim and one on the Gorilla. Neither of the deposits show the prominent silicification or chimney-like outcrops weathering out above the surrounding slopes which characterize deposits of this type at other places.

While this lack of such outcrops prevents the ready recognition of any other possible deposits in this group, it is quite likely that careful detailed observation of the rock sheeting, especially where the fractures are closely spaced, may lead to the discovery of other orebodies at intersection points.

THE GORILLA MINE

The Gorilla mine shows a rusty outcrop and a mass of goassan-like limonite that led to the present development work. The Gorilla tunnel driven a few years ago under the direction of E.A.Hagget, runs 220 feet northerly along a fault that is marked by clay and fault breccia 12 inches to 2 feet wide.

Crosscuts east from this drift at 63' and 120' respectively from the portal, encountered only thin joint seams in the diorite, but at 80 feet from the entrance a crosscut developed an ore mass of typical brecciated nature that measures about 15' in one direction and 20' in the other. This has been further developed by the Springfield company by a 50' winze in ore all

the way down with about 150' of workings on that level. The work here has shown the ore to be about 30 feet across in each direction. The ore is limited by well defined walls, or joint planes, the east wall running N.10 deg.-20E. while the northern limit is an East-West slip dipping 45 degrees to the East. There is a distinct intersection of conjugate East-West fractures having opposed dips with North-South and Northwest fissures.

The orebody is not yet fully delimited but I consider that averaging the cross section on the two levels and multiplying the result by 50 feet will give the approximate tonnage which amounts to 3800 tons. The average copper content may be safely assumed as 2 $\frac{1}{2}$ % since numerous samples of the deposit warrant this figure. Samples taken at five feet intervals down the winze average 2 oz. silver and 2.6% copper. Twelve samples taken daily from the face of the west crosscut showed 1.08 oz. silver and 2.48% copper and samples along the east drift 20 feet north of the bottom of the winze average 2.8 oz. silver and 9% copper. A sample of the impregnated diorite casing the breccia ore, assayed for me in the company's laboratory carried 4.78 oz. silver and 3.4% copper.

The ore on the mine dump having come from the block measured is of course included in the 3800 tons estimated.

THE VENUS MINE

The Venus claim contains an orebody which has yielded very rich chalcopryrite and bornite ore and from which a couple of carloads of ore have already been shipped. The company camp has been built near the mine as it is on the wagon road. The orebody is developed by a tunnel and by the Venus shaft, the latter going down 60 feet below the tunnel level with exploratory workings 50 feet below the tunnel.

In the absence of a map of the tunnel workings I cannot give the size of the orebody on that level but in a stope 30 feet below the tunnel the orebody is about 16' by 20', equivalent to 180 square feet, while on the level below the ore has a U shaped section of about 135 square feet area indicating that the "pipe" of ore is becoming smaller downward. The ore in the tunnel level is reported to have averaged over 5% copper and samples taken at 5' intervals for 30 feet down the Venus shaft show an average of 4.28% copper with 1.26 oz. silver.

There is about 100 tons of ore on the dump and perhaps 1200 tons in the mine.

In view of the above facts and of my experience with ore deposits of this type, I cannot recommend extensive development of the property since I do not believe it will ever make a big mine. The Gorilla orebody is however widening downward and therefore warrants further development and deeper exploration. If \$10,000 be spent in equipment and road work and \$25,000 in running expenses, the orebody could be very fully developed to a depth of 200 feet or so more. This amount together with that already spent on the property by the Springfield Copper Co. should be repaid by the treatment of the ore already developed.

Respectfully submitted,

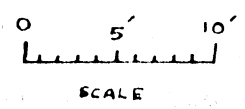
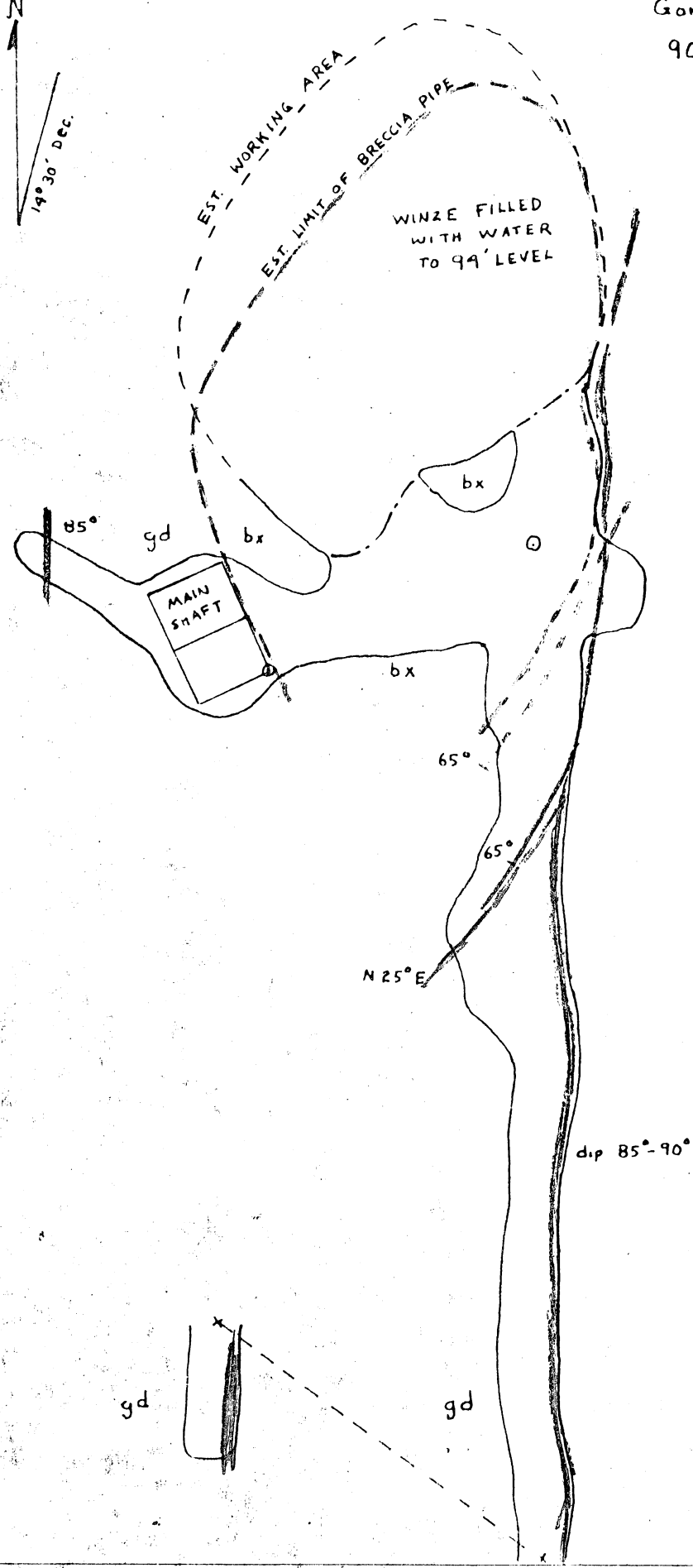
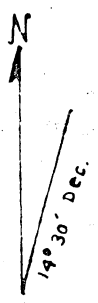
(Signed)

Walter Harvey Weed

Phoenix, Ariz.

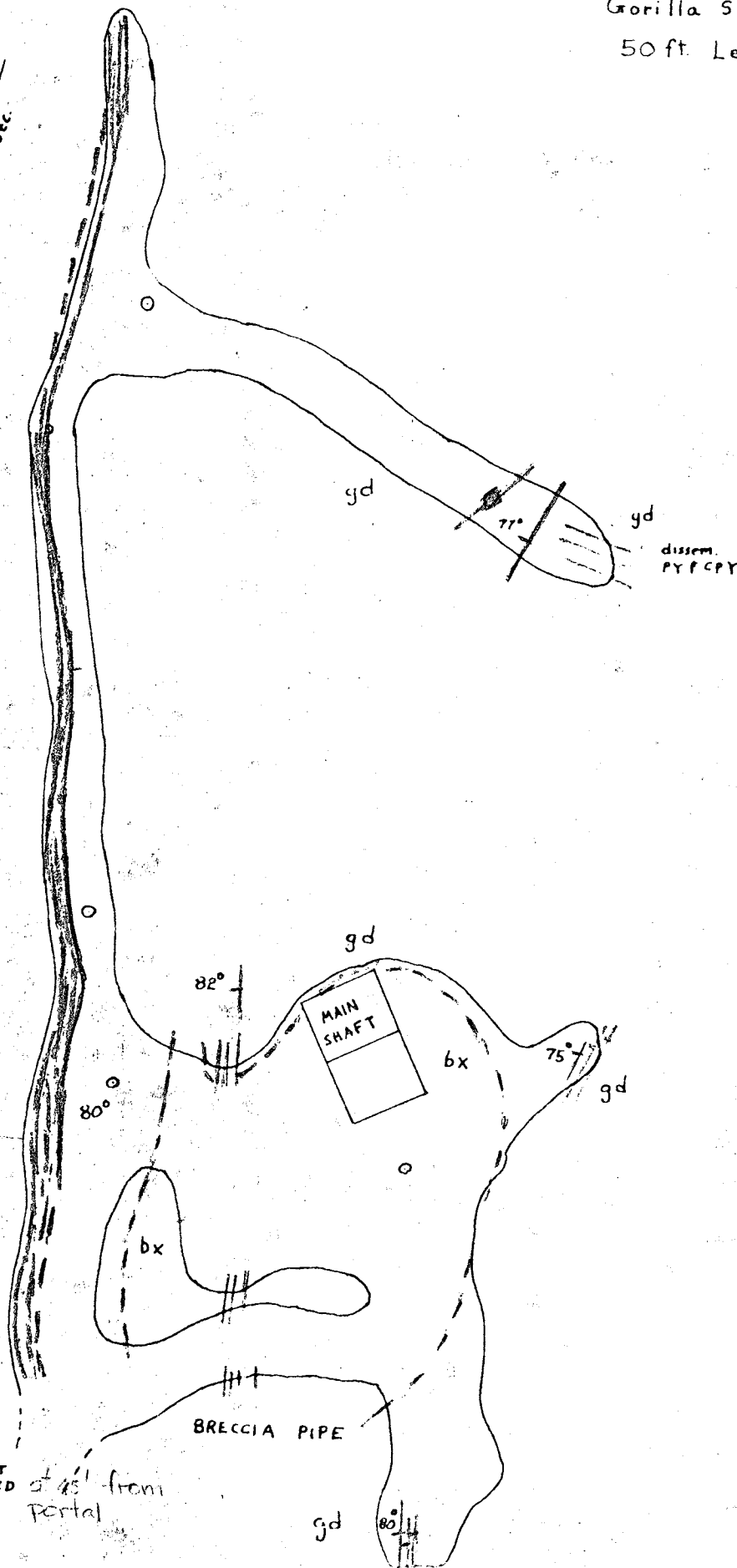
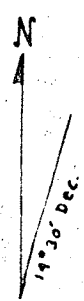
April 5, 1918.

Springfield Group
Gorilla Shaft
90 ft. Level

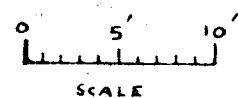


J.M. Kirkwood
5/28/63

Springfield Group
Gorilla Shaft
50 ft. Level



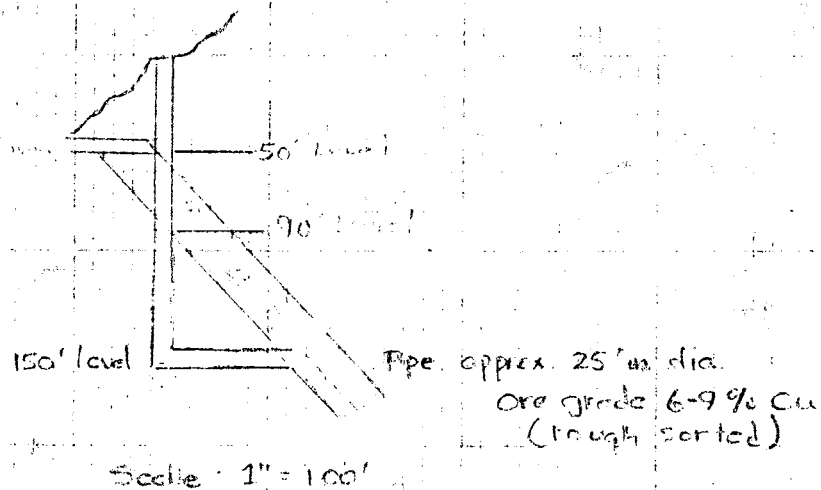
— Mineralization
- - - Joints
= = = Faults



J.M. Kirkwood
5/28/63

South

North



This map not a X-sec or projected
on a N-S plane

(Attached to Kirkwood maps)
CSC

Kirkwood ??

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SPRINGFIELD GROUP OF COPPER CLAIMS

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The ore is characteristically a breccia composed of large and small fragments and angular blocks of somewhat altered and bleached country rock, cemented by a mixture of chalcopryite and pyrite. Where these minerals do not fill the space between fragments crystalline quartz occurs, sometimes in open vugs. In addition to this breccia, which is typical of this character of ore deposit, there is also more or less altered rock showing sulphide plates on fractures and more or less impregnation of the mass of the rock with sulphides.

The size and persistence of the orebodies at all the deposits of this type depend upon the occurrence of a brecciated mass whose porous spaces permitted the circulation of the highly heated vapors and gases that deposited the ore. This breccia almost invariably occurs as a pipe, or chimney shaped mass surrounded by solid rock. The pipe of crushed material occurs where there is a crossing of intersecting fractures along which slight movement has taken place.

At the Gorilla mine there are conjugate fracture running East-West but dipping in opposite direction and crossed by North-South fractures and by

N.20 deg.E. fractures. As such fractures occur in clusters it is easy to see why such deposits are pipe-shaped and why in some cases the deposits widen as they go down and eventually become diffuse and of low grade as the fractures spread out.

At the two largest deposits known, Pilares and Cananea (Duluth orebody) the spreading fractures have made an annular orebody about a large central core of waste.

In the Springfield group only two of these ore chimneys, or pipes are known, one on the Venus claim and one on the Gorilla. Neither of the deposits show the prominent silicification or chimney-like outcrops weathering out above the surrounding slopes which characterize deposits of this type at other places.

While this lack of such outcrops prevents the ready recognition of any other possible deposits in this group, it is quite likely that careful detailed observation of the rock sheeting, especially where the fractures are closely spaced, may lead to the discovery of other orebodies at intersection points.

THE GORILLA MINE

The Gorilla mine shows a rusty outcrop and a mass of goossan-like limonite that led to the present development work. The Gorilla tunnel driven a few years ago under the direction of E.A.Haggot, runs 220 feet northerly along a fault that is marked by clay and fault breccia 12 inches to 2 feet wide.

Crosscuts east from this drift at 63' and 120' respectively from the portal, encountered only thin joint seams in the diorite, but at 80 feet from the entrance a crosscut developed an ore mass of typical brecciated nature that measures about 15' in one direction and 20' in the other. This has been further developed by the Springfield company by a 50' winze in ore all

the way down with about 150' of workings on that level. The work here has shown the ore to be about 30 feet across in each direction. The ore is limited by well defined walls, or joint planes, the east wall running N.10 deg.-20E. while the northern limit is an East-West slip dipping 45 degrees to the East. There is a distinct intersection of conjugate East-West fractures having opposed dips with North-South and Northwest fissures.

The orebody is not yet fully delimited but I consider that averaging the cross section on the two levels and multiplying the result by 50 feet will give the approximate tonnage which amounts to 3800 tons. The average copper content may be safely assumed as $2\frac{1}{2}\%$ since numerous samples of the deposit warrant this figure. Samples taken at five foot intervals down the winze average 2 oz. silver and 2.6% copper. Twelve samples taken daily from the face of the west crosscut showed 1.08 oz. silver and 2.46% copper and samples along the east drift 20 feet north of the bottom of the winze average 2.8 oz. silver and 9% copper. A sample of the impregnated diorite casing the breccia ore, assayed for me in the company's laboratory carried 4.78 oz. silver and 3.4% copper.

The ore on the mine dump having come from the block measured is of course included in the 3800 tons estimated.

THE VENUS MINE

The Venus claim contains an orebody which has yielded very rich chalcopyrite and bornite ore and from which a couple of carloads of ore have already been shipped. The company camp has been built near the mine as it is on the wagon road. The orebody is developed by a tunnel and by the Venus shaft, the latter going down 60 feet below the tunnel level with exploratory workings 50 feet below the tunnel.

In the absence of a map of the tunnel workings I cannot give the size of the orebody on that level but in a stope 30 feet below the tunnel the orebody is about 16' by 20', equivalent to 180 square feet, while on the level below the ore has a U shaped section of about 135 square feet area indicating that the "pipe" of ore is becoming smaller downward. The ore in the tunnel level is reported to have averaged over 5% copper and samples taken at 5' intervals for 30 feet down the Venus shaft show an average of 4.28% copper with 1.26 oz. silver.

There is about 100 tons of ore on the dump and perhaps 1200 tons in the mine.

In view of the above facts and of my experience with ore deposits of this type, I cannot recommend extensive development of the property since I do not believe it will ever make a big mine. The Gorilla orebody is however widening downward and therefore warrants further development and deeper exploration. If \$10,000 be spent in equipment and road work and \$25,000 in running expenses, the orebody could be very fully developed to a depth of 200 feet or so more. This amount together with that already spent on the property by the Springfield Copper Co. should be repaid by the treatment of the ore already developed.

Respectfully submitted,

(Signed)

Walter Harvey Weed

C. J. F.

A Brief History of the

Springfield Group of Mines.

Tiger Lining District, Navajo County, Arizona. February 1948.

The Springfield group of nine unpatented lode mining claims, viz: Venus Book 66, Page 475, Uranus Book 66 Page 474, Mt. Mansury Book 67 Page 339, Gorilla Book 77, Page 240, Crescent Book 77 Page 237, Palo Alto Book 77 Page 239, Springfield Book 80 Page 103, Crescent Mt. Book 88 Page 166, Atlanta Book 88 Page 268.

Were located mostly in the early years of the present century, the oldest location being 1900, by Geo. P. Harrington and Otto Nebarden.

The group lies about two and a half miles west of Crown King in the Bradshaw Mountains. The first road into this district, the old Indian grade, came over the Venus claim of this group. It was over this road that John Wake brought in the first mill erected in Crown King, the old Crowned King Mill, erected by Mr. Wake in the 1890s, for the Venus mine, being purchased from him in the 20's for the Crowned King mine. A new road over the property, built by the Forest Service connects with Crown King and Prescott, Arizona.

The old Tiger mine is situated about a half mile to the south east and the Crown King mine about 3/4 miles east. Both these mines produced several million dollars during their operation. The Wildflower mine lies about two miles north. This mine also has a production record of several hundred thousand dollars, the values in all these mines being in gold, silver, lead, zinc, and a small percentage of copper, which occasionally. The DelPace mine about three miles north east, and the Far Eagle-Gladiator property, both producing at this time (the Far Eagle-Gladiator being about a mile east of the DelPace), have values in gold, silver, lead, and zinc with more or less copper in the Gladiator.

When the Springfield Group was first taken up it was valuable for the fine stand of good timber more than for its minerals, as both copper and silver were low in price at the time.

Considerable development work was done on the Springfield group. Prior to 1916, a tunnel about 120 feet long being driven on the Corliss, and a shaft about 80 feet deep on the Venus. This shaft was sunk to 180 feet in 1913. In the Corliss tunnel about 60 feet from the portal a 30 foot sinze was sunk, developing a body of copper ore, about 4000 tons of 4 to 5 percent copper being blanchet out. Then east and south was run on the Venus, and a 2000.0 ton cuts and trenches on the other side.

The Ora Belle Mine is about 2 miles south of the Fairfield, and has produced several hundred tons and contains in its veins of gold. It is being worked now under a lease and a mining contract with the U. S. Other properties not being worked and situated about the same locality, and Glendora mentioned above. The Union Mine is being worked by the reduction and will start producing as soon as their mill is finished.

7/19/65

Mr. Ron Shuck

Water Sample

Copper ——— 0.048 g/litre

Iron ——— 0.065 " "

MoS₂ ——— None

ph ——— 2.85

Chief Chemist — Fred Wheadon

Water from Gorilla shoot.

(7-11-62) - 90' level

64 1/2

On the 40' level from sample, there is
a large amount of material lying on the surface of
the sediments.
#1, Hory. Cut 18' long, 4-5' above road. Cur 3⁸⁷ 90; Hg. 0⁵⁹ 07
#2, " " 20' " 3⁵ " " Cur 2¹³ 90; Hg. 0⁵² 07
#3, " " 12' " 3⁵ " " Cur 6⁴⁵ 90; Hg. 1⁰ 07
#4, 4' vert. cuts on 2' long, 4 to 6' above road. Cur 6²⁵ 90; Hg. 4⁵² 07.

ASSAY CERTIFICATE

PHOENIX, ARIZONA 2/25/42 1944

M. P. N. Helm

Thomas Wilson

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

GOLD FIGURED AT \$_____ PER OUNCE.

LAB. FORM 2

SILVER FIGURED AT \$_____ PER OUNCE.

[illegible]

RESPECTFULLY SUBMITTED,

ARIZONA TESTING LABORATORIES[illegible]

ASSAYES

CHARGES \$ ~~6.25 paid~~ -

STATE OF NEW YORK

IN SENATE,

NAME	RESIDENCE	EDUCATION	EXPERIENCE	REMARKS	DATE
JOHN A. BROWN	ALBANY	B.A. COLLEGE	10 YEARS	...	...
JAMES C. DAVIS	ALBANY	B.A. COLLEGE	12 YEARS	...	...
WILLIAM E. FOSTER	ALBANY	B.A. COLLEGE	15 YEARS	...	...
CHARLES G. HARRIS	ALBANY	B.A. COLLEGE	18 YEARS	...	...
EDWARD H. JONES	ALBANY	B.A. COLLEGE	20 YEARS	...	...
FRANK L. KELLY	ALBANY	B.A. COLLEGE	22 YEARS	...	...
GEORGE M. LEWIS	ALBANY	B.A. COLLEGE	25 YEARS	...	...
HENRY N. MILLER	ALBANY	B.A. COLLEGE	28 YEARS	...	...
ISAAC O. NELSON	ALBANY	B.A. COLLEGE	30 YEARS	...	...
JACOB P. OLIVER	ALBANY	B.A. COLLEGE	32 YEARS	...	...
JOSEPH Q. PETERSON	ALBANY	B.A. COLLEGE	35 YEARS	...	...
LEWIS R. QUINN	ALBANY	B.A. COLLEGE	38 YEARS	...	...
MICHAEL S. ROBERTS	ALBANY	B.A. COLLEGE	40 YEARS	...	...
NATHAN T. SIMMONS	ALBANY	B.A. COLLEGE	42 YEARS	...	...
OSCAR U. TAYLOR	ALBANY	B.A. COLLEGE	45 YEARS	...	...
PETER V. WATSON	ALBANY	B.A. COLLEGE	48 YEARS	...	...
ROBERT W. YOUNG	ALBANY	B.A. COLLEGE	50 YEARS	...	...

...

NAME	RESIDENCE	EDUCATION	EXPERIENCE	REMARKS	DATE
JOHN A. BROWN	ALBANY	B.A. COLLEGE	10 YEARS	...	...
JAMES C. DAVIS	ALBANY	B.A. COLLEGE	12 YEARS	...	...
WILLIAM E. FOSTER	ALBANY	B.A. COLLEGE	15 YEARS	...	...
CHARLES G. HARRIS	ALBANY	B.A. COLLEGE	18 YEARS	...	...
EDWARD H. JONES	ALBANY	B.A. COLLEGE	20 YEARS	...	...
FRANK L. KELLY	ALBANY	B.A. COLLEGE	22 YEARS	...	...
GEORGE M. LEWIS	ALBANY	B.A. COLLEGE	25 YEARS	...	...
HENRY N. MILLER	ALBANY	B.A. COLLEGE	28 YEARS	...	...
ISAAC O. NELSON	ALBANY	B.A. COLLEGE	30 YEARS	...	...
JACOB P. OLIVER	ALBANY	B.A. COLLEGE	32 YEARS	...	...
JOSEPH Q. PETERSON	ALBANY	B.A. COLLEGE	35 YEARS	...	...
LEWIS R. QUINN	ALBANY	B.A. COLLEGE	38 YEARS	...	...
MICHAEL S. ROBERTS	ALBANY	B.A. COLLEGE	40 YEARS	...	...
NATHAN T. SIMMONS	ALBANY	B.A. COLLEGE	42 YEARS	...	...
OSCAR U. TAYLOR	ALBANY	B.A. COLLEGE	45 YEARS	...	...
PETER V. WATSON	ALBANY	B.A. COLLEGE	48 YEARS	...	...
ROBERT W. YOUNG	ALBANY	B.A. COLLEGE	50 YEARS	...	...

MISSION UNIT

Samples

1962

		% Cu	% Ni	% Fe	% Mn	% Zn	% Pb	% As
LR3A	2 g. 1/4 from first dump	.06	.194	1.6	87.3	TR	TR	TR
LR3B	1/2 road	.02	.140	1.0	88.8	TR	TR	TR
LR6A	1/2 first dump	.05	.183	2.8	84.1	TR	TR	TR
LR6B	1/2 dump	.30	.817	5.6	77.4	.01	TR	TR

[illegible]

HUMBOLDT SMELTER

SOUTHWEST METALS COMPANY

SMELTER LOT NO.

563

HUMBOLDT, ARIZONA

SHIPPER LOT NO.

T.O. 4.5.4

E.S. QUOTE 0.5

MORE SETYLEMENT

PRECEDENT: NOV 28, 1926.

SAMPLED: NOV 28, 1926.

Clasator, Arizona.

(OTO)

E. M. & J. QUOT. FOR WEEK ENDING 11/24/26

SILVER: 54.500 C PER OZ

COPPER: 13.525 C PER LB.

LESS: 3. C PER LB.

PAY AT: 10.525 C PER LB.

CAR INITIAL

WET WEIGHT LBS.

% MOIST

DRY WEIGHT LBS.

CAR NO.

A.T.

53,378

50,040

4.5

47,768

CHARGES

EXCESS INSOLUBLE: % @ C \$

TREATMENT:

5% OF GROSS VALUE OF SILVER

3C PER OZ. SILVER PAID FOR

SMELTING TOLL

4.00

EXCESS LIME & IRON: % @ C CR

TOTAL CHARGES PER TON \$ 4.00

PAYMENTS

GOLD: 1.7 - 0.5 OZS @ \$ NO PAY \$

SILVER: 1.2 OZS @ 54.500

COPPER: 5.70 % 114.0 LBS.

LESS 19. LBS.

PAY FOR 104.0 LBS. 10.525

10.95

TOTAL PAYMENTS PER TON \$ 11.60

TOTAL CHARGES PER TON \$ 4.00

NET VALUE PER TON \$ 7.60

GROSS PROCEEDS: 23.694 TONS AT \$ 7.60 PER TON

Minimum 30 TONS

FREIGHT: 25.020 TONS AT \$.60 PER TON

SAMPLING CHARGE

\$18.00

10.00

\$11.59

\$126.00

AMOUNT DUE SHIPPER \$ 153.59

17/

FIGURED

DAB

CHECKED:

OPJ

HUMBOLDT SMELTER

SOUTHWEST METALS COMPANY
HUMBOLDT, ARIZONA

SMELTER LOT NO. 561
SHIPPER'S LOT NO.

ORE SETTLEMENT

TO R. J. CHATTEY
Creston, Arizona.

RECEIVED Dec. 11, 1926.
SAMPLED Dec. 15, 1926.

(Ore - 1st E.J. Humboldt - Springfield.)

E. M. & J. QUOT. FOR WGT ENDING 12/6/26
SILVER 53% C PER OZ
COPPER 13.304 C PER LB
LESS: 3. C PER LB
PAY AT 10.304 C PER LB

CHARGES

EXCESS INSOLUBLE

C \$

TREATMENT

5% OF GROSS VALUE OF SILVER

3% PER OZ. SILVER PAID FOR

SMELTING TOLL

EXCESS LIME & IRON

C CR

CHARGES PER TON

\$ 4.00

GROSS PROCEL

16.923

FREIGHT

30 T. R.

SAMPLING CHARGE

TONS AT \$

7.32

PER TON

TONS AT \$

PER TON

116.60

110.00

20.00

MT/

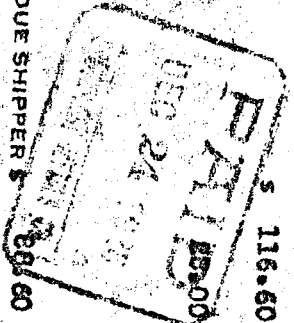
FIGURED

PER

CHECKED

QPS

AMOUNT DUE SHIPPER \$ 116.60



PAYMENTS

GOLD 1.6 - .5

.01

OZS. @

NO PAY

\$

SILVER 1.1

OZS. @

53.0004 C

.58

COPPER 5.71

%

114.2

LBS

10.74

(92%)

ELM.

%

10

LBS

10.304

10.74

TOTAL PAYMENTS PER TON \$ 11.32

TOTAL CHARGES PER TON \$ 4.

NET VALUE PER TON \$ 7.32

Rocky Mountain Geochemical Corporation

2050 EAST 14TH STREET
TUCSON, ARIZONA 85719Phone 622-5702
Area Code: 602CERTIFICATE OF ANALYSES

Date September 10, 1970 Page 1 of 2

Client Lee Companies
900 Welch Road
Palo Alto, California 99304

Report on: 25 Samples

Submitted By: Mr. C. E. Cronenwett

Date Received: September 2, 1970

Analysis: Copper, Molybdenum, Lead, Gold, and Silver

Remarks: Molybdenum determined colorimetrically. All others determined by atomic absorption.

Job No. 70-8-4T

cc: Enclosed

RMGC: SLC

file

MHH:rg

All values are reported in parts per million unless specified otherwise. A minus sign (-) is to be read "less than" and a plus sign (+) "greater than." Values in parenthesis are estimates. This analytical report is the confidential property of the above mentioned client and for the protection of this client and ourselves we reserve the right to forbid publication or reproduction of this report or any part thereof without written permission.

ND = Non Detected

1 ppm = 0.0001%

1 Troy oz./ton = 34.28 ppm


% Mo. x 1.6683 = %MoS₃

<u>Sample No.</u>		<u>ppm Copper</u>	<u>ppm Molybdenum</u>	<u>ppm Lead</u>	<u>ppm Gold</u>	<u>ppm Silver</u>
PMA	50	870	167			
"	100	200	95			
"	150	145	137		-0.1	
"	200	150	121			
"	250	940	68		-0.1	
"	300	45	201			
"	350	140	128			
"	400	70	145		-0.1	
"	450	1170 +300=0.053%				
"	500	45 +300=0.035%				
"	550	80	282			
"	600	+1000=1.15%			2.1	
"	650	80	180			
"	700	95	174			
"	750	190	108			
"	760	570	106		-0.1	
"	800	130	162			
"	850	80	89	-0.1	-0.1	
"	900	70	98			
"	925	130	63		-0.1	
"	950	30	112			
PMA	994	180	118			
"	S-W	20		350	-0.1	1
"	S-D	+1000=0.21%		+1000=1.14%	-0.1	370
PMA	S-E	-5		20	-0.1	1

ROCKY MOUNTAIN GEOCHEMICAL CORPORATION

Tucson, Arizona September 10, 1970

By


 Martin H. Hibbetts

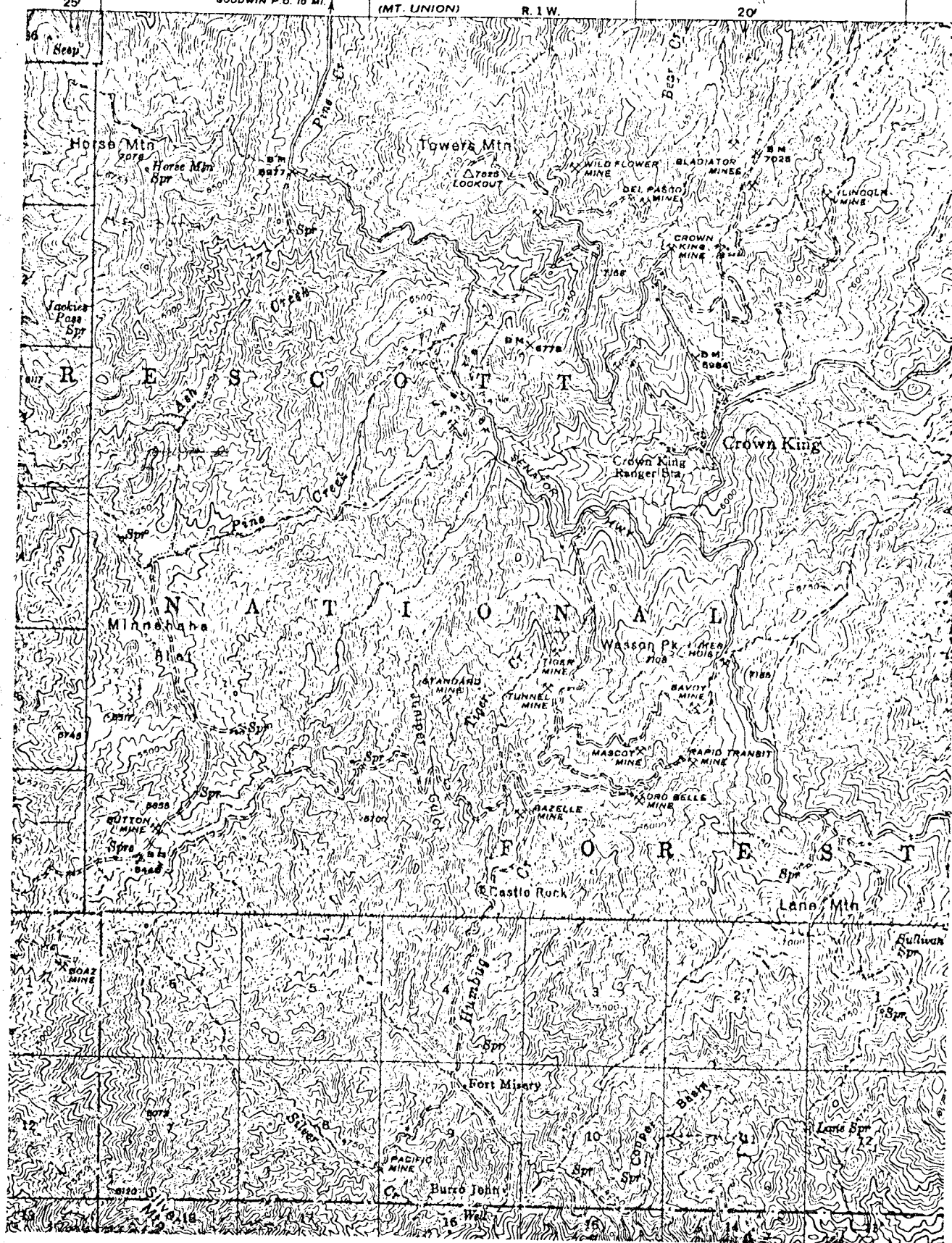
DEPARTMENT OF AGRICULTURE
FOREST SERVICE

PRESCOTT 34 MI.
GOODWIN P.O. 10 MI.

(MT. UNION)

R. 1 W.

20



; E

; Collar Elev.:

Date Started

Drilled By: W. Alexander

Location

Inclination: *Approx 35°*

Total length

62'

Date Completed

Logged By: *W.A.**W.A.*

; 100°

; 200°

; 300°

; 400°

; 500°

; 600°

; 700°

; 800°

; 900°

L₁L₂

% Rec.

Int. Angle

Rock Type

Geology

Remarks

Orz Monzonite

Medium grained, light tan-gray color, matrix mainly biotite & hornblende. Feldspar generally sericitized & locally nativized, moderate silicification, total sulphide content < 2%, mostly disseminated pyrite & traces of molybdenite. Moderately fractured < 3 fractures/ft.

Orz Monzonite

Medium to coarse grained, light tan-gray color, matrix does mainly biotite with some hornblende, brecciated appearance, Feldspar phenocrysts highly altered, matrix sericitized, pushed & rounded appearance, fracturing appears to be more intense > 4 fractures/ft, pervasively silicified along fractures, locally vuggy, total sulphides < 2%, mainly disseminated pyrite with minor molybdenite & traces of molybdenite

*Core Recovery**65-2*

0

MINING PROPERTY LEASE AND PURCHASE OPTION

KNOW ALL MEN BY THESE PRESENTS:

That the undersigned, John D. Nelson AKA David Nelson and Elizabeth Nelson, his wife, Tony Nelson and Iona Abbie Nelson, his wife, T. W. Alexander, a single man, Don Van Tilborg and Evelyn Van Tilborg, his wife, Ron F. Shuck and Marcine Shuck, his wife, Haskell Stevens and Ethel Stevens, his wife

WHOSE ADDRESS IS 2205 Thumb Butte Road, Prescott, Arizona 86301

hereinafter called OWNER, (whether one or more), for and in consideration of the sum of Five Hundred and no/100

----- Dollars (\$ 500.00 -----) in hand paid, receipt of which is hereby acknowledged, and other good and

valuable consideration, hereby give(s) and grant(s) to Humble Oil & Refining Company whose address is

P. O. Box 2180, Houston, Texas 77001 Attention Minerals Department

hereinafter called OPTIONEE, an exclusive and irrevocable option to purchase for the sum of One Million and

no/100 ----- Dollars (\$ 1,000,000.00 -----) all those mining claims and mining properties situate in the

County of Yavapai, State of Arizona, more particularly described on Exhibit A hereto attached and by this reference made a part hereof, upon the following terms and conditions, to-wit:

1. TERM OF OPTION

This Option shall continue so long as the payments to OWNER, either minimum or otherwise, are accruing or may accrue pursuant to the provisions of the following Paragraph 7.

2. EXERCISE OF OPTION

OPTIONEE may exercise this Option by delivering to OWNER at the address specified above written notice of the exercise of the Option herein contained, or by mailing such notice to OWNER by registered mail addressed as aforesaid; provided however, that in the event OPTIONEE has not so exercised this Option at such time as the payments made to OWNER hereunder equal the total purchase price specified in Paragraph 4 hereof, then this Option shall for all purposes be deemed to be exercised at the time such payments equal the total purchase price.

3. PAYMENT OF PURCHASE PRICE AND DELIVERY OF DEED

Upon exercise of this Option, OPTIONEE shall pay to OWNER any balance remaining of the total purchase price specified in Paragraph 4 hereof. Upon such payment of the total purchase price to OWNER by OPTIONEE, title shall be conveyed from OWNER to OPTIONEE by good and sufficient deed or deeds containing covenants of warranty.

4. TOTAL PURCHASE PRICE

The total purchase price for the properties described on Exhibit A shall be the purchase price first above stated, less and except the following deductions:

- A. The sum of money paid as consideration for this instrument;
- B. All payments made in accordance with the provisions of the within Paragraph 7;
- C. That part of the general ad valorem taxes upon the property for the tax year in which the deed is delivered prorated to the date of delivery of deed; and
- D. The amount necessary to pay and discharge any documentary stamp tax upon the warranty deed or deeds or excise tax assessed or assessable by reason of transfer of title.

5. PROPERTIES AND RIGHTS INCLUDED IN OPTION

The properties covered by this instrument of lease and purchase option shall include all and singular the OWNER'S mines, minerals, lodes and veins, dips and spurs, all dumps, plants, fixtures, improvements, water rights or other rights, easements and appurtenances whatsoever either upon, in or under or belonging to or associated with or used or useable in connection with the properties described on Exhibit A hereof whether heretofore or hereafter acquired. The designation of specific improvements, rights or appurtenances or other items, if any, on Exhibit A shall not be deemed to be a limitation upon the generality of the foregoing sentence.

6. LEASE OF PROPERTIES

For the same considerations and for and during the term of the option above provided, OWNER has granted, demised and leased, and by these presents does grant, demise and lease, exclusively unto OPTIONEE, the above mentioned properties and interests which are made subject to the option hereby created with the exclusive rights and privileges to explore for, develop, mine (by open pit, underground, strip mining, solution mining, or any other method), extract, mill, beneficiate, store, remove and market, all of the minerals, metals, ores, materials of whatsoever nature or sort found thereon, therein or thereunder or on, in or under other lands.

B-1. The difference, if any, between the payments made pursuant to the provisions of the attached Exhibit B for the year ending December 20, 1973, and a minimum annual payment in the sum of Six thousand and no/100 Dollars (\$ 6,000.00).

7. PAYMENTS

OPTIONEE shall be obligated to make the following payments to OWNER during the term hereof:

- A. The total sum of Nine hundred thousand five hundred Dollars (\$ 900,500.00) payable from, and only from, the payments provided in Exhibit B attached hereto and by reference made a part hereof.
- B. The difference, if any, between the payments made pursuant to the provisions of the attached Exhibit B for the year ending 12/20, 1972, and a minimum annual payment in the sum of One thousand and no/100 Dollars (\$ 1,000.00). *See sub-paragraph B-1 attached.*
- C. The difference, if any, between said payments made pursuant to the provisions of the attached Exhibit B for the year ending 12/20, 1974 and the next ensuing year or years during the term of this option, and a minimum annual payment of Twenty thousand and no/100 Dollars (\$ 20,000.00).
- D. The amount of the payments made for any year in excess of the minimum annual payments herein provided shall be credited against minimum annual payments that may accrue in subsequent years. Each minimum annual payment, if applicable, shall be due and payable within thirty (30) days after the end of the year for which it is made. There shall be no further obligation to make said payments under the foregoing subparagraphs A, B or C, either in minimum annual amounts or based on production, after the total amount first mentioned in the foregoing subparagraph A has been paid to OWNER or after the exercise of the purchase option herein contained.

8. DEPOSITORY BANK

Any and all payments of monies due or payable by OPTIONEE to OWNER under the terms hereof shall be paid or tendered to OWNER or to the credit of OWNER in the _____ Bank of _____, which bank is designated as the depository and the agent of the OWNER for the purpose of receiving such payments.

9. LESSER INTEREST PROVISION

Without impairment of the warranties of title contained in this instrument, if OWNER owns less than the entire and undivided mineral estate in the properties above mentioned and described on Exhibit A, then the total purchase price and all other payments herein provided shall be proportionately reduced and payable to OWNER only in the proportion which the OWNER'S interest bears to the entire undivided mineral estate therein.

10. WARRANTY

OWNER hereby warrants and agrees to defend the title to the patented mining claims or other patented lands referred to on Exhibit A, and with respect to each unpatented mining claim described therein warrants unencumbered ownership of the claim and represents and warrants that the same was validly located upon lands open to mining location by OWNER or a predecessor, that the same is valid and subsisting and that all assessment work for prior years has been done and proof thereof recorded as required by law. OPTIONEE shall have the optional right to redeem for the OWNER by payment any mortgage, tax or other lien upon said properties subject hereto in the event of default of payment by OWNER and be subrogated to the rights of the holder thereof. OPTIONEE shall also have the right to retain from any payment which would otherwise become due or payable to OWNER hereunder and thereby reimburse OPTIONEE for payment of any such tax, mortgage or other lien and the retention of such sum or sums for payment shall have the same effect as if the amounts thereof were paid directly to the OWNER in whose behalf such payment was made. In case of a suit, adverse claim, dispute or question as to the ownership of the properties described on Exhibit A or the right to receive any of the monies payable under this instrument, OPTIONEE shall not be in default in payment of any sum due hereunder until thirty (30) days after OPTIONEE has been furnished with original or certified copies of instrument or instruments disposing of such suit, claim or dispute with proof sufficient, in OPTIONEE'S opinion, to settle such question.

11. RELEASE

OPTIONEE may at any time execute and deliver to OWNER or place of record a release or releases covering all of the properties described on Exhibit A and thereby surrender this instrument as to all such properties and thereby terminate all obligations relating thereto except the payment obligations accrued as of the day of surrender.

OPTIONEE shall likewise and in like manner have the right from time to time to surrender this instrument insofar as it covers a portion only of such properties. In the event of a partial release, the amounts payable under paragraph 7 hereof and the total purchase price payable in the event of the exercise of the option to purchase shall be reduced proportionately.

As to any properties released under this paragraph 11, OPTIONEE shall have the right at any time or within six (6) months after the termination or expiration of the rights granted by this instrument to remove all property including mine tailings, fixtures or structures erected or placed by OPTIONEE on such properties except the timbering in tunnels, shafts and openings.

12. TITLE

Upon request by OPTIONEE, OWNER shall furnish promptly to OPTIONEE all abstracts of title in OWNER'S possession covering the properties described on Exhibit A in whole or in part, the recorded notice of location, prior deeds, if any, proofs of annual labor and all other data and material in OWNER'S files relative thereto.

13. TAXES

OWNER shall pay promptly when due all property taxes levied against the properties affected by this instrument except as hereinafter provided. OPTIONEE shall pay all taxes levied or assessed for periods during the term of this instrument upon improvements placed by the OPTIONEE upon the properties. The parties shall bear their respective shares of all severance or other taxes now or hereafter levied or computed upon the amount or value of ores produced.

The provisions for annual minimum and other payments contained in the foregoing paragraph 7 and in Exhibit B are intended to exclude and negative any implied duty or obligation to perform exploration or development work or to mine at any rate or in any manner. The activities of OPTIONEE, if any, shall be only to the extent and at the locations, times and methods and in the manner that OPTIONEE shall determine in OPTIONEE'S sole discretion. However, with respect to all such work as OPTIONEE shall determine to perform, it is specifically agreed as follows:

- A. OPTIONEE, in all operations under this instrument, will comply with all applicable state and federal laws, including the social laws relative to employment, workmen's compensation insurance, social security, unemployment tax and tax withholding. OPTIONEE shall hold OWNER harmless from claims of damage to persons or property arising from OPTIONEE'S operations under this instrument, except only that any right of access to the properties by OWNER or OWNER'S representatives shall be at OWNER'S risk.
- B. If the payments provided in paragraph 7 and in Exhibit B are determined in whole or in part by the amount or value of mineral production from the premises, then, until all of those payments have been made; (1) OWNER shall have access to the operations upon the properties at OWNER'S own risk and to the records and accounts thereof at reasonable times to the end that OWNER might verify that the specified payments are being made properly; and (2) ore, substances or materials from the properties which is mixed or commingled with ore, substances or materials from other lands shall be determined as to quantity and grade by the OPTIONEE through procedures consistent with practices in the mining industry, such as truck factors, skip factors, and volumetric surveys.
- C. At the termination of this lease and option, in the event the purchase option is not exercised, OPTIONEE shall supply to OWNER copies of any analyses of cores taken from the premises if those copies are then available.
- D. For the assessment year commencing September 1, 1971, and each year thereafter during the term hereof, OPTIONEE shall, with respect to each unpatented mining claim described on Exhibit A, endeavor in good faith to do and perform the assessment work as required by law for the maintenance of the claim and to file reports and affidavits as required by law with respect thereto. It is provided, however, that OPTIONEE shall have no assessment work obligation for the then current assessment year with respect to any unpatented mining claim which is released from this agreement not later than July 1st of any year.

15. INUREMENT

The provisions hereof are intended to be specifically enforceable and shall inure to the benefit of and shall bind the parties hereto, their heirs, devisees, personal representatives, successors and assigns; but no change in the ownership of the properties or in the right to receive the payments made hereunder shall be binding upon OPTIONEE until thirty (30) days after OPTIONEE shall have received the original or certified copies of all instruments necessary, in OPTIONEE'S opinion, to evidence the transfer.

16. FAILURE TO MAKE PAYMENTS

OWNER shall not claim or assert either a termination or an impairment of any of the rights and privileges granted to OPTIONEE by the terms of this instrument, unless the payments provided herein are not made as specified. And, if, in the opinion of OWNER, there has been a failure to make a payment or an erroneous payment (whether the payment is claimed to be late, insufficient in amount, to the wrong person, or otherwise), then OWNER shall notify OPTIONEE in writing by registered mail, stating specifically the asserted neglect or error. If OPTIONEE within a period of thirty (30) days after the receipt of notice corrects an erroneous payment or makes a payment theretofore neglected, then the additional or delayed payment shall have the same force and legal effect as if the payment had been made properly and timely in the first instance.

17. JOINDER

The joinder herein by the spouse of OWNER or of one or more of the parties who constitute the OWNER is with the intent and for the purpose of committing to this agreement and releasing and waiving any and all dower, homestead exemption and other rights conferred upon or reserved to such spouse by the laws of the state in which the properties described on Exhibit A are located and all rights which such spouse has or might obtain in and to the said properties are committed to and bound by this agreement.

18. HEADINGS

The headings to the paragraphs of this instrument constitute no part of the agreement between the parties, having been inserted for convenience only.

19. COUNTERPARTS

This instrument may be executed in any number of counterparts, each of which shall be deemed to be an original, but all of which together shall constitute one and the same instrument. No party who executes a counterpart need execute the same counterpart as any other party and this instrument shall be binding upon each party who executes a counterpart notwithstanding the fact that one or more of the parties in interest do not execute a counterpart.

20. WORK OBLIGATION

Subject to its right of release above contained, OPTIONEE agrees to expend not less than the following sums during the following times in exploring, prospecting, developing, or testing the properties subject hereto:

<u>During the year ending</u>	<u>Amount</u>
December 20, 1972	\$10,000.00
December 20, 1973	\$20,000.00
December 20, 1974	\$30,000.00

- 26 Claims

Any work done in excess of the minimum for a year may be carried forward to a subsequent year or years. In the event of a release within one of the three years above mentioned OPTIONEE shall either perform the minimum work for that year prorated to the date of release or pay OWNER an equivalent amount in money.

Initial for identification:.....

IN WITNESS WHEREOF, this option has been executed and delivered by OWNER to OPTIONEE this 17th day of December, 1971.

ACKNOWLEDGEMENT FOR NATURAL PERSONS

(For use in Arizona, Colorado, Idaho, Kansas, Montana, Nebraska, Nevada, New Mexico, North Dakota, Oklahoma, Oregon, South Dakota, Utah, Washington and Wyoming)

STATE OF _____ } ss.
COUNTY OF _____ }

I, the undersigned Notary Public, do hereby certify that on the _____ day of _____, 19____, personally and in person appeared _____ and _____ his/her wife/husband, the signer_____ of the above instrument, and personally known to me to be the person_____ described in and who executed the foregoing instrument and whose name_____ is/are subscribed thereto and duly acknowledged to me that _____ freely and voluntarily signed, sealed, executed and delivered the same as _____ free and voluntary act and deed for the uses and purposes therein specified and set forth.

Given under my hand and official Notarial seal this _____ day of _____, 19____.

My commission expires: _____

Notary Public, whose place of residence is _____

CORPORATION ACKNOWLEDGEMENT — COLORADO

STATE OF _____ } ss.
COUNTY OF _____ }

The foregoing instrument was acknowledged before me this _____ day of _____, 19____, by _____ as _____ President and _____ as _____ Secretary of _____ a corporation.

Witness my hand and official seal.

Notary Public.

My commission expires: _____

COLORADO ACKNOWLEDGMENT FOR NATURAL PERSONS

STATE OF _____ } ss.
COUNTY OF _____ }

The foregoing instrument was acknowledged before me this _____ day of _____, 19____, by _____

WITNESS my hand and official seal.

My commission expires: _____

Notary Public.

MINING LEASE AND OPTION TO PURCHASE

FROM

TO

STATE OF _____ } ss.
County of _____ }

This instrument was filed for record the _____

day of _____ A.D. 19____

at _____ o'clock _____ M., and duly recorded in

Book _____, on Page _____

Clerk.

Deputy.

RETURN TO

EXHIBIT B

to

MINING PROPERTY LEASE AND PURCHASE OPTION

dated.....

from John D. Nelson AKA David Nelson and Elizabeth Nelson, his wife
Tony Nelson and Iona Abbie Nelson, his wife, T. W. Alexander,
a single man, Don Van Tilborg and Evelyn Van Tilborg, his wife,
Ron F. Shuck and Marcine Shuck, his wife, Haskell Stevens and
Ethel Stevens, his wife
to Humble Oil & Refining Company

OWNER
OPTIONEE

The total sum first mentioned in Paragraph 7 of the within instrument of Lease and Purchase Option shall be paid from, and only from, but subject to all of the terms, conditions, provisions and agreements in said instrument, the following:

Five percent (5%) of the amount of the payments received by the OPTIONEE from the smelter or other purchaser for the ore concentrate mined and removed from the properties described on Exhibit A, less the following deductions: (1) the deductions made by the purchaser for sampling, assays and penalties; (2) less all costs of freight, transportation and haulage; and (3) less any taxes attributable to the OWNER'S interest in the ore concentrate or the proceeds therefrom. But if some or all of the mineral production from the properties shall not be sold as ore concentrate but is otherwise sold or used, then the above stated percentage shall be applied to the purchase price which would have been received had said production been sold as ore concentrate to an independent smelter or other purchaser reasonably available to OPTIONEE.

The phrase "ore concentrate" as used herein means the product derived from beneficiation of crude ores to upgrade one or more of the valuable constituents thereof through physical separation from waste materials by mechanical means (including, but not limited to, leaching or solution mining).

All of the payments provided in this Exhibit B shall be due and payable within thirty (30) days after the end of each calendar quarter within which mineral production has been obtained from the properties and the products obtained thereby are sold or used. Such payments shall be accompanied or preceded by statements indicating the quantities and values of the ore concentrate for which payment is made. Payment of the amount due under any statement shall not prejudice the right of OWNER to protest or question the correctness thereof. All statements rendered to OWNER by OPTIONEE shall be conclusively presumed to be true and correct after sixty (60) days from the end of the calendar quarter to which such statement applies, unless within said sixty-day period, OWNER takes exception thereto and makes written claim on OPTIONEE for adjustment. Failure on the part of OWNER to make claim on OPTIONEE for adjustment in such period shall establish the correctness and preclude the filing of exceptions thereto or making of claims for adjustment thereon. No adjustments favorable to OPTIONEE shall be made unless within the prescribed period or unless in connection with a claim of OWNER.

Signed for identification:

OWNER

WEST RANGE COMPANY

Started 10 Completed 1055 PROJECT PORPHYRY MOUNTAIN D.H. No. 2 Collar elev 6420'
 Logged by _____ Bearing 57°E Dip 60°-70° Sheet L of L

RECOVERY	STRUCTURE	CU.	MO.	MINERALIZATION	ALTERATION	ROCK TYPE
95%+	<p>Directions & frequencies as in DH-1</p> <p>Fault & fracture zones @ 754', 468', 455', 724', 445', 766', 811', 819', 926', 1001', 933', 1025', 1036'</p>			<p>Orange & red brown limonite crusts & films in fractures to about 30' where transitional yellowish films oxidation to about 45'. Disseminated pyrite rusty to fresh.</p> <p>To 55' original sulfide content 2-3% with very weak chalcopyrite and molybdenite</p> <p>Below 55' to hole bottom general range of sulfides is 1/2-1% with occasional short runs of slightly higher grade. Sulfide is practically all pyrite</p> <p>1/2" pod of sooty chalcocite on pyrite @ 50'</p> <p>As in DH-1 chalcopyrite and molybdenite are ubiquitous with occasional weak concentrations. Overall content is quite uniform. Pyrite increase not paralleled with Cu or Mo increase to any significant extent</p> <p>See "Gen. Note" on DH-1 log.</p>	<p>generally weakly propylitized to 185' strong propyl. & albite-quartz spotty or as veinlet sel-vages.</p> <p>Moderate to strong propyl. with minor alb.-qtz to 465'</p> <p>Strong alb.-qtz with minor propyl. A few thicker (1/2-1') qtz. veinlets to 569'</p> <p>Mixed fresh, propyl. & alb.-qtz with propyl. dominant to 628'</p> <p>Dominantly propyl. with minor alb.-qtz to 650'</p> <p>Dominantly alb.-qtz to 705'</p> <p>Dominantly propyl. to 803.</p> <p>Dominantly alb.-qtz to 1055.</p>	<p>Granodiorite porphyry</p>

WEST RANGE COMPANY

Started 10' Completed 1126' PROJECT Bartholomew Mountain

Logged by _____ Bearing N 13° E Dip 60° - 70°

D.M. No.

Collar elev 265752

Sheet 1 of 1

RECOVERY	STRUCTURE	CU.	MO.	MINERALIZATION	ALTERATION	ROCK TYPE
90% 100 100 100 100	<p>Commonest directions of fracturing: 0-20°, 45° & 90° (angle with long axis of core)</p> <p>5-10 fractures per linear foot (free & leached)</p> <p>Fault & fracture zones @ 10', 97', 107', 120', 150', 168', 194', 226', 276', 467', 483', 492', 531', 538', 577', 597', 1122'</p>			<p>Linonite, mainly in fractures, weak below 22'. Mixed linonite & pyrite at 17' —</p> <p>From 17' to 154' gradual increase of pyrite to 17% & up to 2% by 165'. Chalcopyrite and molybdenite very weak overall. A show of .03 Al₂ at 70' —</p> <p>165'-1146' general range of total sulfides practically all pyrite is 1/2-1% with occasional short runs to 2 or 3%.</p> <p>GEN. NOTE: Chalcopyrite and molybdenite found thruout hole as disseminations & with qtz. stringers. Chalc. usually in fine grains or platy in fractures, somewhat heavier in qtz. stringers. Moly usually in very fine flakes. Pyrite shows good correlation with qtz. with coarser occurrences in either vuggy or high silica sections.</p>	<p>Slight to strong anhydritization with mixtures & sections of albite-quartz alteration to 280' —</p> <p>280-600' dominantly alb-qtz. with occasional sections of high qtz in 'veins' & veinlets —</p> <p>600-988 mixed & alternating alb-qtz. & propyl. to 660 alb-qtz ~60% & below 30% —</p> <p>988-1044 slight propyl. Alb. qtz. strongest as veinlet selvages</p> <p>1044-1146 propyl about 1/3 and alb-qtz about 2/3 of rock</p>	<p>Granodiorite with pyrite</p>

WEST RANGE COMPANY

Started 10' Completed 692' PROJECT POPPY MOUNTAIN D.M. No. 3 Celler elev. 6995'
 Logged by _____ Bearing _____ Dip Vertical Sheet 1 of 1

DEPTH	OVERLY	STRUCTURE	CU.	MO.	MINERALIZATION	ALTERATION	ROCK TYPE
10'	75'	Comp. west dir. sections of pro- turbine are 20° 60°, 90°			Weak to moderate brown limonite in fractures, but mostly in vugs decreasing gradu- ally to 106'. Dissem- inated pyrite com- pletely oxidized to rusty to fresh. Occasional very thin film of secondary chala- cite on pyrite	Dominantly white quartz with minor alb. qtz. to 75'	
81'		5-10 fractures per 100' foot			Original total sulfides to gen- erally range from 1-4%, iron sulfide with pyrite in occasional small nodules concentrated core is vuggy	75-120' propylitic dominant with minor alb. qtz.	
280'		Cal - 1 fracture zones @: 18° 30', 40° 75' 77' 100', 220° 279° 475°, 506°, 516°			higher grade only is associated with dark gray vuggy vein quartz breccia, generally at contact of qtz. with wall rock. Light & medium gray breccia carries signifi- cantly less iron alite better than wall rock which has the usual 01 Mo con- tent. Chalcopyrite very weak thro- out. The breccias occur mainly between 120 & 413 in sections separated by weakly mineralized rock. Rich pyrite sections (to 20%) associated with the vuggy breccia sections.	Weathering to 2140' more strongly appears propyl. as alb. qtz.	
692'					413-692 sulfides dominantly pyrite generally ranging from 1% to 3% Chalcopyrite very weakly in sections	418-480 alb. qtz. with minor pro- pyl. 480-692 propyl dominant with the minor alb. qtz. decreasing with depth	

FOOTAGE	%Cu			%Mo			Au 023/TON		Ag 023/TON	
	DH-1	DH-2	DH-3	DH-1	DH-2	DH-3	DH-1	DH-2	DH-1	DH-2
40-50	.010	.010	.002	.0005	.0011	.0020	Tr	Tr	.0.2	.0.1
60-70	.06			.032			.005		.2	
70-80	.03			.017					.1	
90-100	.02	.11	.04	.009	.005	.026	Tr		.1	
140-150	.04	.10	.05	.009	.006	.055				
190-200	.05	.09	.02	.005	.006	.081				
200-210			.06			.027				
240-250	.04	.06	.04	.011	.028	.023				
260-270			.03			.055				
270-280			.03			.085				
290-300	.05	.09	.04	.010	.007	.047				
300-310			.03			.205				
310-320			.05			.074				
340-350	.05	.06		.016	.018					
390-400	.04	.06	.03	.012	.007	.075				
440-450	.06	.05	.03	.013	.002	.019				
490-500	.07	.03	.05	.007	.004	.022				
540-550	.04	.03	.08	.016	.005	.050				
590-600	.10	.04	.05	.014	.006	.008				
610-620	.07			.035						
640-650	.03	.05	.06	.009	.011	.014				
680-690			.05			.022				
690-700	.17	.05		.010	.007					
740-750	.03	.03		.008	.014					
790-800	.06	.04		.013	.013					
840-850	.02	.03		.009	.009					
890-900	.03	.03		.017	.010					
940-950	.03	.05		.010	.004					
990-1000	.05	.04		.007	.009					
1000-1010	.04			.010						
1040-1050	.07	.03		.005	.016					
1090-1100	.03			.020						
1130-1140	.05			.012						
AVG.	.05	.06	.04	.013	.009	.050				

NOTE:

DH-1 NX TO 660'
BX " 1146' (BOT)
DH-2 NX TO 1055' (BOT)
DH-3 NX TO 240'
BX " 692' (BOT)

DH-1 0'-211' GRANODIORITE (GRD)
211-1146' MIXED IGN. BRC. & GRD.

DH-2 0'-465' MIXED IGN. BRC. & GRD.
465-1055' IGN. BRC.

DH-3 0'-120' MIXED GRD. & BRC.
120-419' GRD BRC.
419-692' MIXED GRD. & BRC.

A GEOLOGIC REPORT ON THE BRADSHAW-PORPHYRY MOUNTAIN COPPER PROSPECT,
YAVAPAI COUNTY, ARIZONA

Prepared for THE LEE COMPANIES, Palo Alto, California

LOCATION

The subject property consists of 26 full or partial lode mining claims located in parts of Sections 9, 10, 15 and 16 (unsurveyed), Township 10 North, Range 1 West (see Fig. 1), within the Crown King Mining District, Yavapai County, Arizona, and lie 1.5 miles west of Crown King, Arizona, approximately 24 air miles southeast of Prescott, and 60 air miles northwest of Phoenix. The claim group has been recorded by the County Seat under the following names: Lone Ranger, Springfield, Mamouth, Hope, Fortitude, Venus, Gorilla, (Exhibits 1 and 1-A).

ACCESSIBILITY

The subject property can be reached from U. S. Interstate 17 near Bumble Bee Junction via 21 miles of graded gravel road to Crown King, thence 4 miles by a fair gravel road (Senator Highway) to the property boundary. Although rough over portions, this road will permit a passenger-type vehicle.

SUMMARY

During the period 20 to 24 August, 1970, the writer, assisted by Mr. H. H. Hatchett, mapped, sampled and field checked earlier mapping by West Range Company, a prior optionee of the above claim group. In addition, two inoperative mines on the periphery of the property were examined.

The area of interest has been invaded by a mineral bearing granodiorite intrusion during the Laramide. Within the intrusion, a porous pipe-like body of breccia some 1400 feet in diameter occurs, which is encompassed by the Porphyry Mountain claim group. (See Fig. 1 and 2.) The breccia consists of broken granodiorite which has been recemented with calcite, quartz and locally by a quartz-sulfide matrix.

This breccia body has been tested by a 994 foot horizontal adit, (see Fig. 3), four drill holes (see Figs. 3 and 4), aggregating 2,955 feet and by several programs of surface sampling. The West Range Company geochemical sampling program, indicated numerous areas of anomalous copper and molybdenum concentrations in areas of alteration. Sulfides were noted in disseminated form as well as in fractures and vugs. Within the adit, samples taken by the writer at 50 foot intervals averaged .02% Cu. (see Table 2). Assays of cores taken by West Range Company averaged .05% Cu. (see Table 1). The maximum depth drilled was 1,146 feet.

The mapping program conducted by West Range was found to be accurate and the location of their drill holes reasonably located and directed with respect to the testing of the mineralization present (Fig. 2.) Assuming that the wells were carefully sampled, the writer agrees with the author of the West Range Company report in his conclusion that the uniformity of the low assay values to the depth tested, eliminates any reasonable chance for development of open pit operation. His conclusion is substantiated by the low assays of samples taken by the writer from the Porphyry Mountain adit. In the writer's opinion, the known thickness of uneconomic overburden and remoteness of the area argues against initiation of a drilling program by the Lee Companies.

RECOMMENDATIONS

I recommend that the lease and option of this property be terminated and the property be dropped from the Lee Company inventory.

GEOLOGY

The predominant rock type exposed on the subject property is a medium to coarsely crystalline light colored granodiorite which is typical of Laramide intrusions in Arizona. Where it is unaltered, it is characterized by evenly distributed ± 2 mm euhedral biotite flakes. This intrusion, reportedly some two miles in diameter (Graybeal, 1967) carries rare schist inclusions. With increasing proximity to Porphyry Mountain, it has been locally altered to a finely crystalline or sugary texture characterized by the presence of granoblastic quartz, alteration of the feldspars to clays and general destruction of primary biotite.

Fractured and/or brecciated granodiorite makes up the main mass of Porphyry Mountain. The fragments have been recemented in a quartz, calcite and sulfide matrix. Variability in the degree of cementation has produced a rock which varies from massive to vuggy in texture. Graybeal (1967) estimates the main mass of breccia to be some 1,400 feet in diameter.

The contact between the granodiorite and breccia varies from sharp to gradational on both the surface and underground exposures. In addition, within the Porphyry Mountain adit sometimes they are found in fault contact. Occasional narrow porphyritic andesite dikes occur on the north and south sides of Porphyry Mountain. These are characterized by zoned plagioclase phenocrysts in a dark aphanitic matrix. Quantitatively unimportant, these carry sulfides and are similar to the host rock which carry copper-molybdenum in Copper Basin twelve miles west of Prescott. The semi-circular outcrop pattern of the andesite is suggestive of ring dikes, which surround some intrusions and are associated with local collapse.

A field check by the writer, of the surface contacts of the strata described above as mapped by Graybeal and Moger for the West Range Company (Fig. 2), indicates that their mapping is essentially accurate and that they have delineated the areas of favorable host rock within the claim boundaries. This host has been tested by 4 drill holes* aggregating 2,955 feet, a 994 foot horizontal adit and numerous prospect pits.

*In 1965, a 62 foot hole was drilled by Duval Corporation (see Fig. 2 and Table 3).

PORPHYRY MOUNTAIN ADIT

This horizontal adit has been driven on a N 10° E strike into Porphyry Mountain for 994 feet (Fig. 3 and 2). It penetrated a section alternating between granodiorite and brecciated granodiorite. Several andesite dikes up to three feet in thickness were also intersected. Although there were extensive areas of heavy iron staining, faulting and fracturing, assays failed to show mineralization of economic interest. (Table 2.)

GORILLA MINE

The writer entered the Gorilla shaft to a depth of 60 feet. The present water level is at 93 feet and the shaft from the 60 foot station is shown by Kirkwood's section to bottom at approximately 150 feet. (See Exhibit 2-page 3.) None of the reports available to the writer confirms this depth or give any reason for the cessation of mining. At 60 feet a stope approximately 15 X 20 feet in diameter has been mined in very coarse breccia consisting of granodiorite fragments cemented principally by quartz and sulfides. This "pipelike" mass appears to have been formed by east-west conjugate shears or fractures intersecting a N 10° E 70° W fault. The ore dips 45° easterly and is reported to be contained by an east-west striking slip or fracture.

Various reports indicate that an average assay for ore in this mine would run approximately 2.5% Cu. and \pm 2 oz. Ag. On the basis of the ore remaining on the walls, this would appear to be a reasonable estimate of the copper content.

VENUS MINE

The Venus shaft lies approximately 1000 feet north of the Gorilla Mine. (See Fig. 2.) A report by Gray (1923) gave a total depth of 120 feet with an ore "pipe" similar to that in the Gorilla mine beginning at 60 feet. A more complete report by Weed (1918) is included. (See Exhibit 3.) Although the shaft was not entered by the writer, a visual inspection indicated a sub-level at about 50 feet, with the shaft plugged by debris at about 60 feet.

On the north slope below the mine, an irregularly directed adit has penetrated the hill along a S15 E 75° W shear zone and connects with the shaft which is water filled to the tunnel level. A 10 X 15 foot area of breccia is present at this level as well as 2 inch wide, S65W vertical mineralized fault.

The report by Weed (1918) states that an ore body yielding chalcopyrite and bornite was developed in this adit and shaft. He describes a stope 30 feet below the tunnel level with 16 X 20 foot dimensions. According to Weed, "The ore has a U-shaped section.....indicating that the pipe of ore (becomes) smaller downward."

MINERALIZATION AND ALTERATION

Metallic mineralization observed by the writer in this area consists of primary chalcopyrite, bornite, molybdenite and pyrite. Secondary mineralization is weak but some mine workings exhibit carbonates, oxides and silicates of copper. Most of the sulfide content consists of pyrite which is commonly associated with quartz which lines vugs as well as forming veinlets. Oxidation of the sulphides has produced a conspicuous area of iron staining with conspicuous local areas of gossan.

The mineralization observed by the writer appeared to be associated with an area of brecciation in the intrusive approximately 1,400 feet in diameter that forms the 7,000 foot high Porphyry Mountain. This area occurs within a granodiorite intrusion approximately 2 miles in diameter.

Adjacent to Porphyry Mountain, intersecting fault and fracture systems locally have produced "pipelike" breccias a few 10's of feet in diameter. The resulting porosity produced by the event of brecciation has been partly filled by a silica-calcite-sulfide matrix. At least two such "pipes" have been worked to shallow depths in the Gorilla and Venus mines.

A geochemical survey conducted over the property by West Range Company indicated definite copper and molybdenum anomalies in the area within and adjacent to Porphyry Mountain. Subsequent drilling failed however, to encounter economic amounts of copper mineralization. In three core holes aggregating 2,893 feet, only a single 10 foot interval assayed as much as 0.17% Cu. The average for the three holes was 0.05% Cu. (Table 1.) A 62 foot hole cored by Duval Corp. in 1965, averaged 0.096% Cu. with a single 11.6 foot interval assaying 0.12% Cu. (See Table 3). A 994 foot horizontal adit, which at some earlier date, had been driven in Porphyry Mountain, averaged 0.02% Cu. for chip samples taken by the writer at 50 foot intervals. (Table 2).

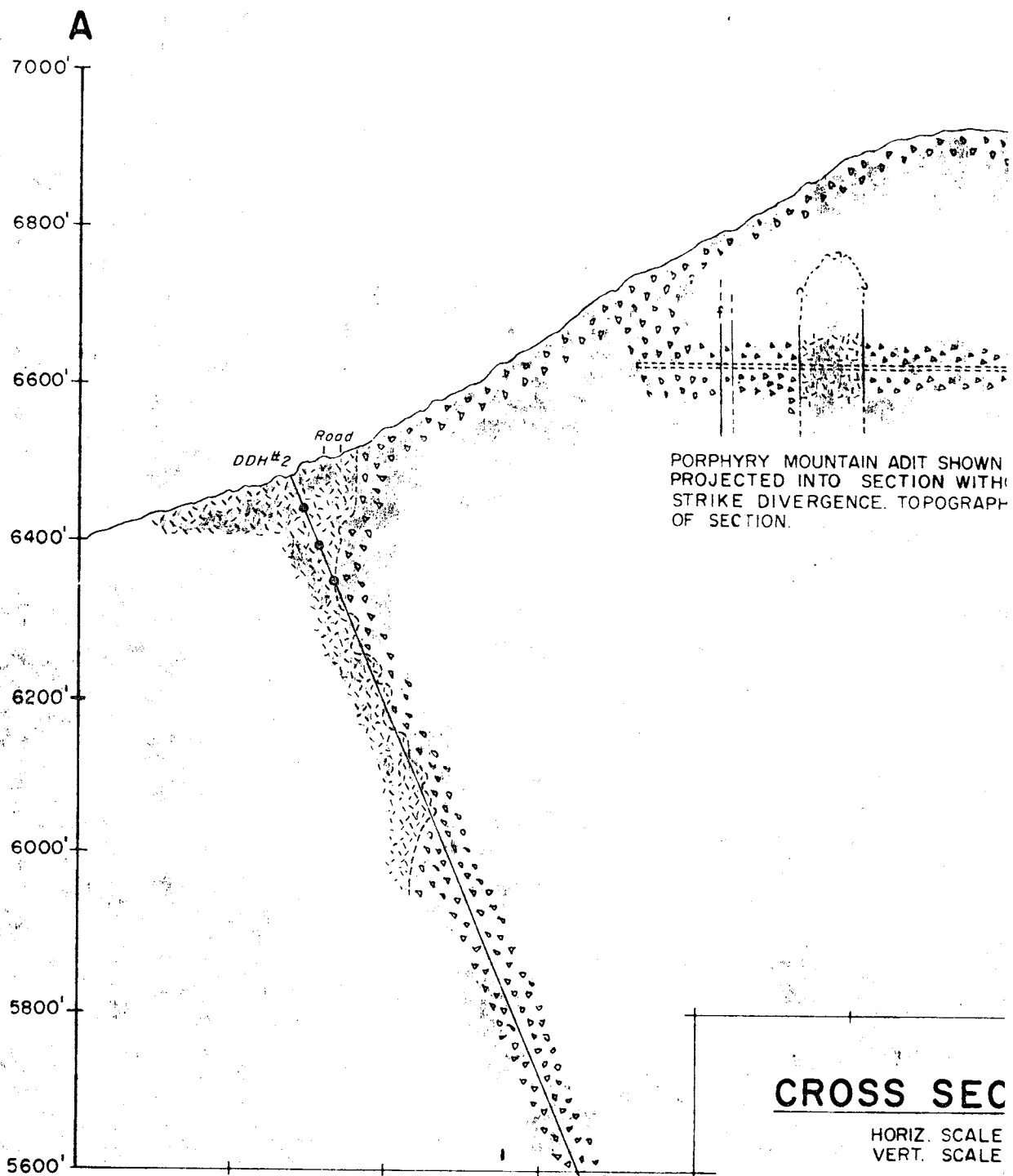
This uniform mineralization suggests that the host rock alteration and porosity have combined to form a very favorable locus for mineralization. However, the copper content of the mineralizing solutions, at least to the depth tested, has not been high enough to create a body of ore of economic merit.

Respectfully submitted,


Charles E. Cronenwett
Consulting Geologist

September 17, 1970
Casa Grande, Arizona

California Registration # 2312

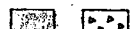


EXPLANATION

color symbol



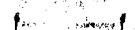
GRANODIORITE



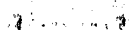
IGNEOUS BRECCIA (GRANODIORITE)



'ANDESITE' PORPHYRY



FAULT



CONTACT (uncertain, or inferred)



CONTACT (extent or direction uncertain)

COOPER MINERALIZATION

COLOR CODE



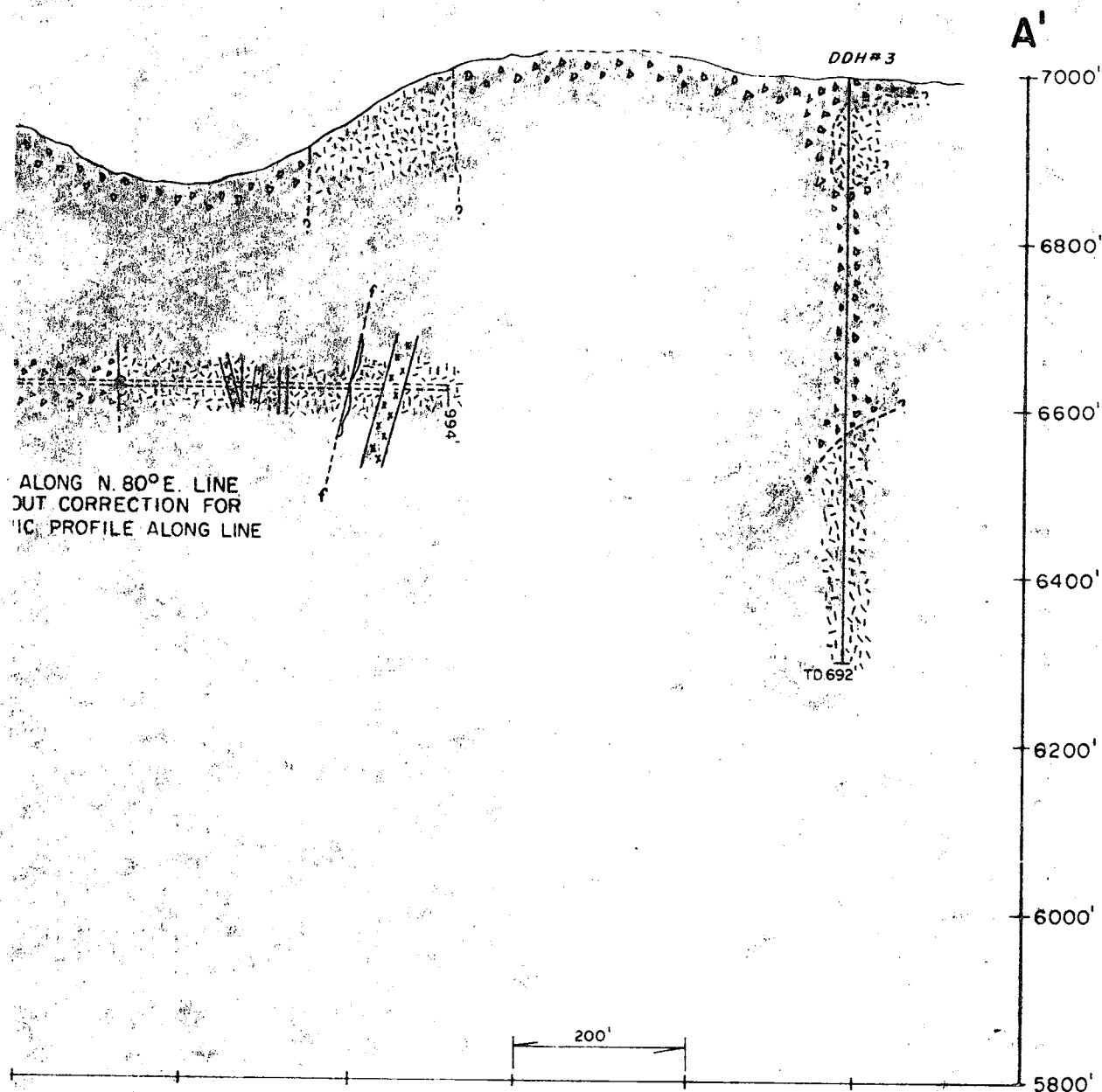
0.1 - 0.3%



0.3 - 0.5%



0.5 - 1.3%



CROSS SECTION A-A'

- 1" = 200 feet
- 1" = 200 feet

BRADSHAW - PORPHYRY MOUNTAIN PROSPECT
 CROSS SECTION A-A'
 LINE OF SECTION N.76°W. (view northerly)
 SEC. 15 & 16 (est.) T. 10 N., R. 1 W. (unsurveyed) GILA & SALT RIVER B. & MER.
 PINE GROVE (CROWN KING) MINING DISTRICT
 YAVAPAI COUNTY, ARIZONA

by Charles Cronenwett, Nov '70

FIGURE 3