



CONTACT INFORMATION
Mining Records Curator
Arizona Geological Survey
3550 N. Central Ave, 2nd floor
Phoenix, AZ, 85012
602-771-1601
<http://www.azgs.az.gov>
inquiries@azgs.az.gov

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January 10, 1974

Mr. Harold E. Talbott
1005 Canyon Avenue
Miami, Arizona 85539

Dear Mr. Talbott:

Herewith enclosed is your copy of the geologic report by Mr. Lee Hammons on your Pinnacle Claims that you loaned us per Mr. Walter Heinrichs' request. We have made a copy of it for our files to use in discussing the property with any of our clients.

As to visiting the property with you, this is not possible for at least a couple of weeks. We may then be in touch with you about such arrangements.

Sincerely,

Heinrichs GEOEXploration Co.

J. W. Marlatt
Geologist

JWM:mt
Enc. 1 Report

NORTH AMERICAN MINES, INC.

QUINCY A. SHAW, PRESIDENT

50 CONGRESS STREET
BOSTON, MASS. 02109

TELEPHONE
AREA CODE 617
523-8110

February 6, 1974

Via Air Mail

HEINRICH'S
GEOEX

Cable: GEOEX



Mr. Walter E. Heinrichs, Jr.
Heinrichs Geoexploration Company
806 West Grant Road - P.O. Box 5964
Tucson, Arizona 85703

REC'D FEB 8 1974 REC'D

BOX 5964 TUCSON, ARIZONA 85703

Phone: (AREA 602) 623-0578

Dear Mr. Heinrichs:

As Mr. Shaw is out of the office this week, I am returning to you herewith the original letter and attached material sent to you by Mr. Harold E. Talbott on January 7, 1974, regarding his Pinnacle claims, which Mr. Shaw brought back here with him when he returned from his trip West on January 30, 1974.

At Mr. Shaw's request, we have made a copy of this material.

Very truly yours,

Marylou Steeves

MS/s
Enclosure

1/7/74

Walter Heinrichs
of Heinrichs Geoploration Co.
P.O. Box 5954
Tucson Arizona Z.C. 85103

HEINRICHS
GEOEX
Cable: GEOEX



REC'D JAN 9 1974 REC'D

BOX 5964 TUCSON, ARIZONA 85703
Phone: (AREA 602) 623-0578

Dear Sir:

Inclosed is Lee Hammon's Geological report of 1967,
plus a rough Plat of my Pinnacle claims, 1 thru 6.

Hope you will find all of it interesting enough that
you will want to come see the property; as I told Mr.
Marlatt previously I am available to escort any interested
person or persons to the area.

Sincerely
Harold E. Talbott
1005 Canyon ave.
Miami Arizona
Z.C. 85539

M

Manayatzal Range
Buckhorn Intmt

4 Peaks

Elevation here
3700

Location &
assessment holes

Sop land - 6 miles around

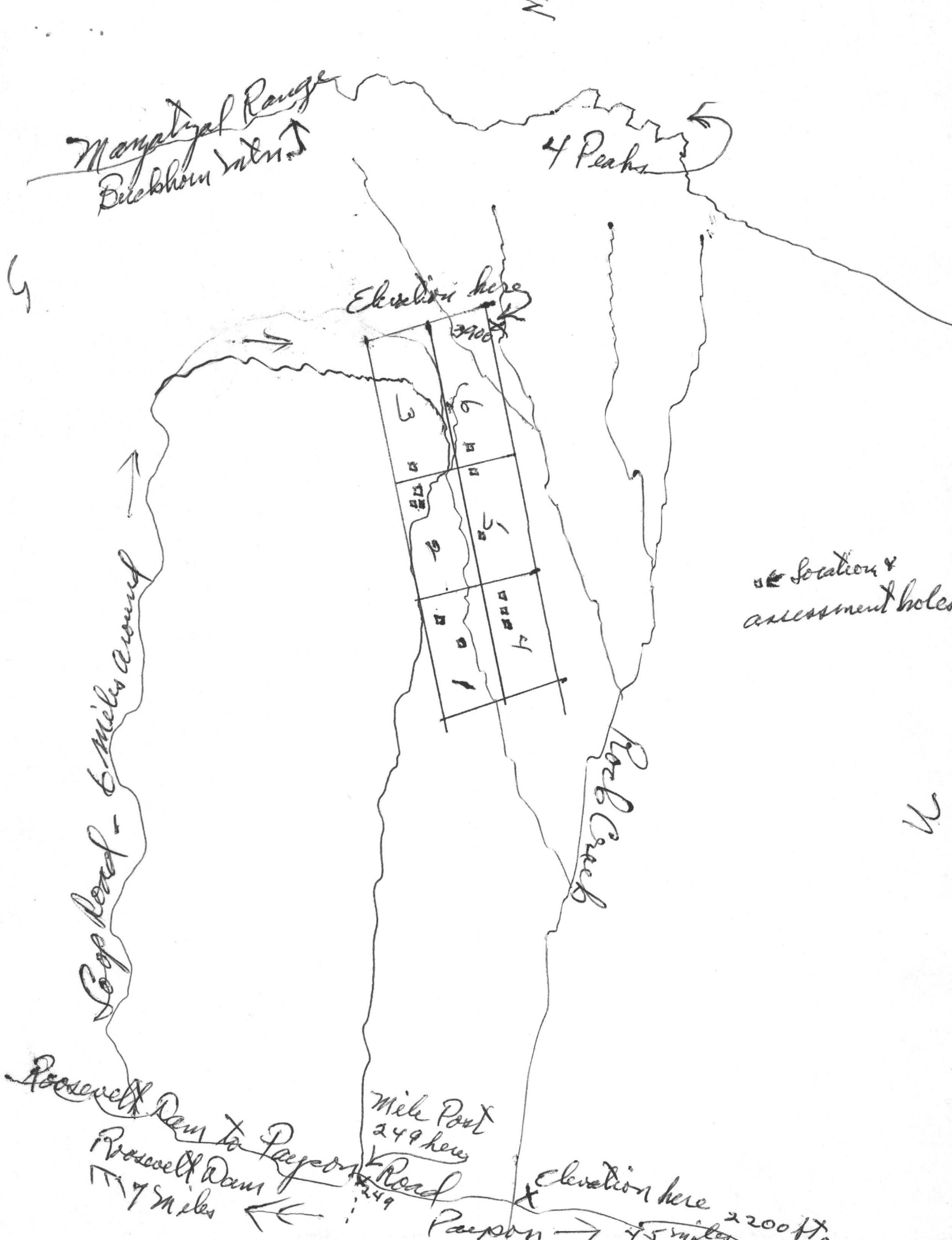
Red Creek

Mile Post
249 here

Roosevelt Dam to Payson
Roosevelt Dam
7 miles

Payson
Elevation here
2200 ft.
75 miles

W



June 18, 1967

Mr. Harold Talbot
1005 Canyon Avenue
Miami, Arizona

Dear Mr. Talbot:

At your request, I have made a geological study of your Pinnacle claims in unsurveyed Section 9, Township 4 North, Range 11 East, Gila County, Arizona.

I found that they contain copper mineralization and several other favorable factors that indicate the possibility that a disseminated copper ore body exists at some depth on the claims. Briefly, they are: structural setting, rock types, structures, alteration and coloration.

It is my opinion that the favorable signs are strong enough to warrant further exploration, particularly one or more deep drill holes. Detailed geological mapping should precede any extensive exploration programs.

Very truly yours,



A GEOLOGICAL REPORT ON THE PINNACLE CLAIMS,
MATATZAL MOUNTAINS, GILA COUNTY, ARIZONA

Purpose and Scope

This report is based upon field work carried out in April, 1967 on the claims and their immediate surroundings. The section on the geology of the claims is based exclusively on the findings of the field investigation.

Information contained in the section on the general geology of the southern half of the Matatzal Mountains (the regional setting of the claims) was adapted from the literature, chiefly from Wilson and Sansome.

The primary purpose of this work was to determine if enough favorable factors existed to warrant further exploration.

The Claims

The Pinnacle group consists of 6 unpatented mining claims located in unsurveyed Section 8, Township 4 North, Range 11 East, Gila County, Arizona. Access is by State Route 188 approximately 8 miles northwest of the Theodore Roosevelt Inn to mile post 249, thence 3 miles southeast on an unimproved dirt road. Supplies and lodging are available at Roosevelt, 14 miles from the claims.

Average elevation is about 3200 feet above sea level; the climate is semi-arid with several varieties of cacti and creosote bush as the most prominent plants. The claims are about 5 miles

east of Four Peaks and command sweeping views of several mountain ranges and Theodore Roosevelt Lake.

General Geology

The majority of the rocks of the Mazatzal Range are Precambrian in age. The southern half is composed largely of a granite batholith which was intruded near the end of Older Precambrian time. It is younger than the Mazatzal quartzite (Older Precambrian) and older than the Apache group (Younger Precambrian). The geologic setting for the Pinnacle claims is the Mountain Region Physiographic province which is a narrow mountainous belt lying between the Basin and Range province and the Colorado Plateau--an area of great crustal movement. In late Older Precambrian time, the Mazatzal Mountains area was subjected to a series of severe crustal movements which has been named the Mazatzal Revolution.

There were many cycles of uplift and erosion followed by subsidence and deposition, all complicated by igneous intrusions and extrusions. There was not, however, a great deal of deformation after the Mazatzal Revolution until the Basin and Range disturbance occurred in the Tertiary period.

It was during Tertiary time that the present mountain ranges and valleys were created. They are regarded as horsts and grabens formed by faulting.

Over half of the Mazatzal Range is made up of granite, especially the southern portion which extends from Mt. Ord to the Salt River. It was intruded into Older Precambrian rocks during the Mazatzal Revolution, near the end of that period.

Most of the older rocks have been eroded off in the southern half. Younger Apache group formations which were deposited on top of the granite have also been almost completely removed.

The granite is medium to coarse grained and pinkish brown in color. It weathers to a pale yellow-brown, except where it has been mineralized. It is probably equivalent to the Ruin granite in the Globe to Ray area and to the Bradshaw granite. Physical characteristics are almost identical. The feldspars are principally orthoclase and microcline.

Geology of the Claims

The claim area is the steep slope of the Mazatzal Range, dissected into almost parallel ridges and canyons. Average topographic relief is about 400 feet. The ridges have narrow crests, largely covered by alluvium. Some of the slopes are covered by heavy growths of brush.

The mountain front is almost certainly a heavily eroded faultline scarp, though no direct field evidence was uncovered. An older system of faults and strong jointing run approximately parallel to each other on a northeast trend. That is the same trend of the canyons and ridges.

Another system of shears and normal faults trend generally North to Northwest, forming crossed fissures that could easily serve as channels for mineralization and spaces for the deposit of minerals.

In addition to such gross structures, there are a multitude of micro-structures in the shattered and laminated rocks. All of the rocks observed on the Pinnacle claims are well fractured, a

large percentage intimately fractured. There can be little doubt that a large volume of openings is present.

The rocks on and near the claims are part of the Precambrian granite batholith which comprises the southern half of the Mazatzal Range. It is obvious from the field work that the term "granite" applies only in the overall, general sense. There are local variations in composition.

They can best be described as granitic, porphyritic, schistose and gneissic in character. Positive classifications were not attempted because of heavy weathering. Instead, attention was given to the practical matter of finding out if there are large volumes of rock having characteristics usually associated with disseminated copper ore bodies.

Good exposures exist at the northeast and southwest ends of of the claim group. Most of the outcrops have some favorable characteristics; some look very good. Very little of the visible rock looks unfavorable.

The area between favorable outcrops is roughly 4,000 feet long by 2,000 feet wide. The claims cover the heart of it.

Near the northeast end of the claims, a jeep trail is cut into the mountainside. Along the cut may be seen alternating bands of well fractured granitic and porphyritic rocks with light to heavy alteration; and schistose to gneissic rocks, also well altered and fractured.

To the west along the trail is a shallow water filled shaft in the bottom of the canyon and several cuts in its walls. Light copper mineralization shows on both sides in schistose and

porphyritic rocks. The elevations are between approximately 3100 and 3200 feet as determined from the topographic map (Theodore Roosevelt Dam Quadrangle).

At the southwest end of the claims, several small cuts and pits have been made. One contains a strong showing of copper mineralization. Staining of the rock by iron oxides is stronger here than in other areas, alteration of the feldspars is also strong. There are several small quartz veins and veinlets. The elevation is about 3600 feet.

Feldspar phenocrysts in the granitic and porphyritic rocks are weakly to strongly altered, part by weathering and part by hydrothermal activity.

Iron oxide staining is light to heavy. It tends to increase in depth of color as the claims are approached from the northeast, beginning some half mile from the end of the claims. There is moderate to abundant epidote and chlorite in the rocks, with a tendency to shift from epidote to chlorite as the copper mineralized areas are approached. Staining and mineralization are cut off rather abruptly near the southwest end.

Evaluation

The Central Arizona Mountain region has produced great quantities of copper, gold, silver, lead, zinc and molybdenum from rocks whose structures are related to Precambrian features.

The area of the Pinnacle claims is a short step-out from the rich Miami-Inspiration district. There, too, and at Ray, Precambrian rocks are important. Copper ore occurs in the Pinal schist of Precambrian age.

Main structural trends (faults and joint systems) strike Northeast in the claim area as at Miami-Inspiration. Easterly dips are in the direction of the probable mountain front fault of Tertiary age. At Ray, ore bodies formed in rock cut by many small fractures; also, yellow-brown iron oxide stains formed a color anomaly over the ore. A comparable situation exists on the Pinnacle claims.

Water is available in the canyons on and near the claims, especially in Rock Creek to the north. No detailed evaluation of water resources was made.

Rock types suitable to serve as host rocks for a disseminated copper deposit exist on the claims in sufficient volume. Structures, including faults and shattering are present. Copper mineralization is present. Alteration has occurred in sufficient degree to be encouraging. There is a color anomaly in the surface rocks similar to that of known deposits.

There are enough factors favorable to the existence of a possible disseminated copper ore body present in the prospect area to encourage further exploration. The present heavy demand for copper ores helps to make the Pinnacle claims an attractive prospect.

Recommendations

Additional exploration could take several forms. Aerial color photographs would probably show the size and intensity of the color anomaly. Geophysical and geochemical studies should be made.

However, the strongest recommendation that can be made at this time is to drill a deep hole, under proper technical supervision, approximately 1200 feet from the southwest end of the claims.

The existing road can be used. Additional holes may be desirable, even if the first one is barren.

A detailed geologic mapping program should be carried out if funds are available for a full-scale drilling program. It would also be needed for a geophysical study.

A detailed petrographic study to accurately classify rock types would be highly desirable. If it could be proved that some of the rocks are younger and intrude the Precambrian granitics, that would be very important.

Respectfully submitted,

June 15, 1967



Manayatal Range
Berkshires Intmt

4 Peaks

Elevation here
3100

Location &
accessment holes

Loop road - 6 miles around

Rock Creek

W

Roosevelt Dam to Payson
Roosevelt Dam
7 Miles

Mile Post
249 here

Road

elevation here 2200 ft.

Payson 7.5 miles



November 3, 1969

MEMORANDUM

To: Mr. Q. A. Shaw
From: D. B. Cooley

Subject: Analysis of Yellow Basin Area Data.

1. The Canadian Aero Mineral Services I. P. appears to be complete but needs reinterpretation in the light of drilling results. The McPhar data indicates a good I. P. response but without the location plan and text of the report is not useful. Possibly some deep I. P. at the contact of the intrusive may be useful.

2. This project mainly requires drilling to prove or disprove its economic possibilities. So far, a large mineralized area has been indicated but no obvious single best target has been outlined. The exploration techniques used to date all indicate the presence of mineralization. The drilling has not shown that the mineralization is economic, but the drilling is also incomplete, very wide-spread and no core is available. The amount of drilling to complete this evaluation could approach a half million dollars or more.

3. Further drill sites should be selected after study of all available data including the core of each hole as it is drilled.

4. Further geophysics and/or geochemical work should be held in abeyance for the time being, but should or could be very useful in helping guide drilling a little later on.

D. B. Cooley, Geologist

DBC:jh

HOLE #1

YELLOW BASIN

<u>DEPTH</u>	<u>% MOLY (+0.075%)</u>	<u>% CU. (+0.2%)</u>
102.4-103.3	0.38	
189.4-190.2	0.175	
193.4-194.1	0.390	
198-200	0.235	
245.3-246.1	0.652	
388-393	0.28	
470.6-471.6	0.190	
513.5-515.5	0.246	
521-521.2	0.200	
597.2-597.5	0.384	
622.2-622.7	0.307	
Bottom Hole	1192'	

HOLE #2

46.5-48	0.152	
160-17		
173.-178.5	0.076	0.2
180-190		
290-300		
320-330		0.252
584.7-590	0.360	0.195
591-593	0.145	
639.4-640	0.57	
643-645	1.40	
692.4-697.3	0.104	0.195
705.6-706.8	0.096	0.375
720.7-723.6	0.080	
966.-968.7	0.134	
968.7-970	0.104	
973.-978.5	0.122	
981-983.2	0.092	
1060.4-1061.4	0.195	
No data 1232-1458		
1458-1460	0.180	

HOLE #3

YELLOW BASIN

DEPTH

% MOLY (+0.075%)

% CU. (+0.2%)

155-160
Bottom Hole

0.630
750'

HOLE #4

110-120
140.2-148.2
148.6-152
160-164
681-682
1056-1662
1096-1099
1104-1109
1120.5-1123
Bottom Hole

0.213
0.204
0.120
0.112
0.165
1134'

0.302

HOLE #5

258.3-259
530-535
577.7-578

0.146
0.081
0.150

HOLE #6

320-330
556.5-565.5
752-755
922-926
1004-1012
1060-1070
1080-1090
1090-1100
Last data

0.089
0.100
0.156
0.21
0.076
0.500
0.085
0.100
1685'

HOLE #7

345-350
Total Depth

381'

0.091

HOLE #8

Total Depth

705.5'

HOLE #9YELLOW BASINDEPTH% MOLY (+0.075%)% CU. (+0.2%)

Total Depth 1000'

HOLE #10

690-700	0.065
740-750	0.200
1430-1440	0.073
Total Depth	1751'

HOLE #11

240-250	0.200
290-300	0.078
1370-1376	0.121
Total Depth	1376'

HOLE #12

930-940	0.237
950-960	0.146
970-980	0.300
Total Depth	1519'

HOLE #13

380-385	0.252	0.74
385-390	0.34	0.34
855-860	0.062	
1033-1035	0.670	
Total Depth	1164'	

HOLE #14

Total Depth 804'

October 17, 1969

MEMO TO: Mr. Q. A. Shaw

FROM: Donald B. Cooley

SUBJECT: Yellow Basin Investigation - Hualapai Mountains
11-15 October 1969

13 October 1969, was spent in examining and discussing the data accumulated to date with Mr. R. L. Breedlove, Chief Geologist for Arkansas-Louisiana Oil and Gas Company and 14 October 1969 in the field examining the property. R. L. Breedlove, Q. A. Shaw, W. MacKay and D. B. Cooley were involved in the discussions and field trip.

The data acquired by Arkla to date includes the following:

- (1) Geologic Map
- (2) Molybdenum and Copper Geochemical Maps
- (3) Fourteen (14) Drill Holes - Core Logs and Assays
- (4) Induced Polarization Surveys by McPhar and Canadian Aero Mineral Service.

This data will be forwarded to GEOEX for evaluation and our conclusions and recommendations will be presented to Mr. Shaw of North American Mines as soon as possible for his consideration.

Mr. Q. A. Shaw
Page Number Two
October 17, 1969

At this time with only the above discussion and one days time in the field, the possibilities for this prospect appear quite good. An area of definite mineralization has been located and partially processed. The remainder of the work required to evaluate this ground is mostly drilling. This will be expensive as the area of interest is large but definitely seems to be warranted at this time. Depending upon the evaluation of the geophysics completed to date, additional geophysics may be required over the property to help select the most favorable drilling locations.

The evaluation of the data will be sent to you as soon as possible after we receive the data from Arkla.

February 11, 1974

Mr. Quincy A. Shaw
President
North American Mines, Inc.
50 Congress Street
Boston, Mass. 02109

Re: Pinnacle Claims
GEOEX Job #437

Dear Mr. Shaw:

On February 7th I visited the Pinnacle Claims accompanied by the present owner, Mr. Harold E. Talbott. The claims were first located July 12, 1921, by Mr. Fredrick Weiss, and were relocated by Mr. Talbott in 1949, 1954, 1959-1960, and most recently in 1966. Mr. Talbott has filed assessment for the last two years, and the claims appear to be valid with him as the sole owner.

This property has previously been examined by representatives of P.D., Duval, Inspiration, and Miami Copper companies, but none of these companies have been sufficiently interested to do any exploration on the property.

There is sparse to rare chrysocolla staining on some fractures in a large block of schist bounded on three sides by Pre-Cambrian granite and granite gneiss. The best mineralization that was seen would not average over two percent copper. Talbot reports that Weiss sank a 25 foot shaft and drifted from the bottom of the shaft about 60 feet. The size of the dump substantiates that about that amount of work was done. In the shaft chalcocite was reputedly found in small amounts with some silver ores. No confirmation of this statement was possible as the workings are presently flooded.

The schist outcrop covers an area approximately 2,000 feet wide at the western part of the claims and tapers to an edge to the east. The schist is, as Hammons reports, highly fractured; but is very little altered. What alteration is present is very low temperature. This indicates that if there is a mineralized body below the claims it is probably deep or distant.

If any further work is to be done on the property at all, it should be along the lines of geologic scouting in an attempt to better focus the geophysics. If no better target develops than these claims, I would probably

Mr. Quincy A. Shaw
February 11, 1974
Page Two

recommend that the property be dropped. If the area were more accessible and if the indications of mineralization or alteration were more abundant, I would consider a few lines of deep I.P.; but field conditions would cause this project to be more expensive than our usual I.P. coverage.

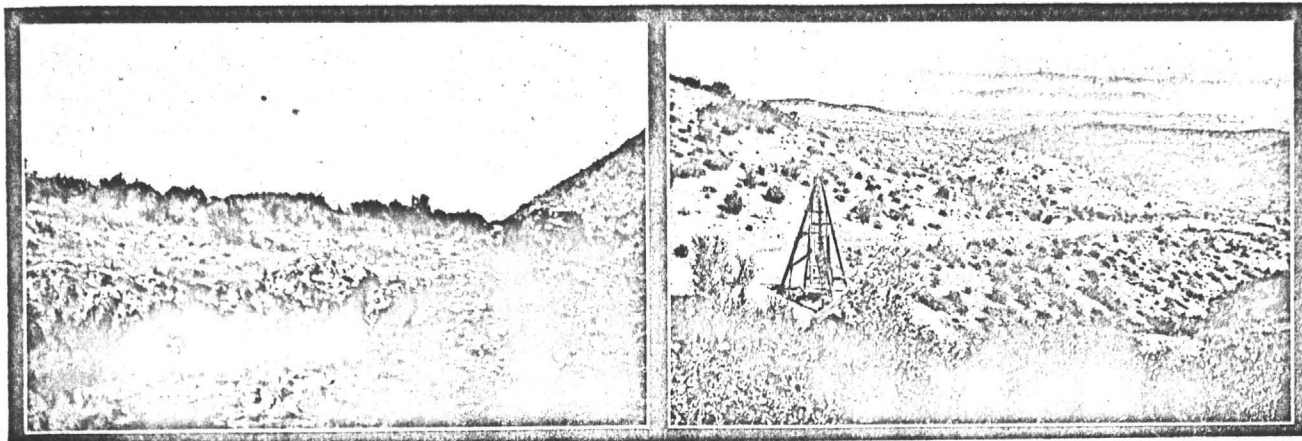
If you think this property might be of potential interest to you, we can arrange a visit when you next come to Tucson. Mr. Talbott is a very interesting person and has many of the best gem-grade specimens from the Inspiration Mine. He values his collection at something like \$65,000.00.

I took some pictures, and will send them to you when they are developed.

Respectfully submitted,
Heinrichs GEOEXploration Co.

Wm. Hovey Smith
Senior Geologist

WHS:mt



OUTCROP OF THE WHALE VEIN.

THE TELLURIDE CHIEF MINE.

Molybdenum in the Hualpai Mountains

By L. WEBSTER WICKES

The Hualpai mountains, pronounced and sometimes spelled Wallapai, are situated near the centre of Mohave county, Arizona, south and east of the main line of the Santa Fe railway, and rise from 2500 to 5000 ft. above the Big Sandy valley on the east and the Sacramento valley on the west. Hualpai peak attains an altitude of 8266 ft. above sea-level. The range extends north and south about 40 miles, with a maximum width of 15 miles.

The geology of the Hualpai range was described by W. T. Lee in Bulletin 352 of the U. S. Geological Survey and in Bulletin 397 by F. C. Schrader. Schrader says, "These mountains are composed of pre-Cambrian granitic rocks, and seem to be a fault-block tilted eastward." The slope is steep to the west, where there exists a wide belt of gneiss and several strong faults. Mining has been carried on intermittently here since 1871, when members of Lieut. Wheeler's exploring party found vein outcrops containing silver and gold. Silver was the object of search in the early days and resulted in the opening of a number of properties, mostly on the east slope. Later developments were on outcrops of copper and lead-zinc veins. During the last few years tungsten has excited interest. From some of the tungsten properties regular shipments of hand-sorted ore are being made. Bismuth and vanadium minerals are also found. Molybdenum has been known in these mountains for a long time. Traces of this metal are generally found wherever the surface has been eroded to the pre-Cambrian complex in Mohave county. It usually occurs as molybdenite, although occasionally wulfenite is found in the lead veins. It is most abundant just north of Wheeler wash, and near Deluge wash, both of which lead into the Big Sandy. Wheeler wash is near the north end of the range, and the properties are from 20 to 25 miles from Kingman. The Deluge area is 25 to 30 miles from Yucca, and was the first one in the district worked for molyb-

denum, where the Leviathan Mines Co. and the American Mineral & Chemical Co. are now operating. A description of the Leviathan is given by F. W. Horton in the Bureau of Mines Bulletin 111.

In the vicinity of the molybdenum deposits the country is a medium-grained granitic rock, which extends north and south for some distance, and must be very wide, but its east boundary is hidden by detrital material. It seems to be intrusive through coarse red granite and gneiss. Dark basic dikes are found to the south, west, and north, while several miles north-west rhyolite and latite are found. Near the deposits are small pegmatite stocks, which, however, seem to have no connection with the mineralization. The ore occurs in veins running nearly parallel with the main ridge and conformable to the principal jointure of the granite. It is a white quartz containing molybdenite and chalcopryrite, outcropping prominently. On the Whale vein, of the Leviathan company, the outcrop is strong for 1500 ft., with 'pinch and swell' from 18 in. to 30 ft. Underground it shows an average width of over 3 ft. There is a shaft 135 ft. deep, and about 700 ft. of driving and tunneling has been done. This vein is distinguished by crossing instead of conforming to the jointure of the granite. There is also more evidence of movement; the foot-wall being a clean slip, while the hanging wall is irregular. The metal-content is fairly uniform in veinlets, stringers, and drusy material. I. C. Stricker, the manager, states that the ore gives an average of slightly under 2% MoS_2 , and a trifle over 2% copper. Bunches of high-grade are found repeatedly, and in one case a lens yielded 700 pounds of 67% ore. I estimate that over 16,000 tons of 2% ore is ready for stoping, and at least twice that amount of probable ore, while the possibilities are much greater. This relates only to the Whale vein, and there are others that give promise. A

50-ton mill has just been completed, and the first shipment of 30% MoS₂ concentrate is now being made. Concentration is entirely by flotation at present.

The Wheeler wash section presents a condition different from that at Deluge wash. The strong outcrops of quartz are entirely lacking, and no definite vein-system has been discovered. The country rock is similar, but lacks some of the accessory minerals. It has a finer grain and is sometimes porphyritic. It is interesting to note that though biotite is a constituent of the country rock, it seems to decrease in amount and is entirely lacking at places in close proximity to the ore deposits. This effect is sometimes noticeable for a distance of 10 feet.

In the granite at Wheeler wash are a number of north and south fractures showing a little movement. These show alteration and silicification, sericite and kaolin having also been developed. There are veinlets of secondary quartz, usually $\frac{1}{4}$ to $\frac{1}{2}$ in. wide, and occasionally as much as $\frac{1}{2}$ inches. The fractures are nearly vertical, and are intersected at right angles by a system of minor vertical faults, with the throw nearly horizontal. These movements have produced coarsely brecciated zones in which the molybdenite is found. Where the alteration has been the greatest the percentage of molybdenite increases. Molybdenite is also found as thin flakes on the fault planes.

On the ground of the Telluride Chief Co. is a shaft 200 ft. deep with 350 ft. of work at the bottom. Roy Cornell, resident engineer of the company, informs me that a zone 30 ft. wide which has been cross-cut, assays 1% molybdenite. The total area where the molybdenum has been found is about one by two miles in both the Wheeler and Deluge wash districts. These areas are nearly 12 miles apart. The intervening country is being actively prospected.

Milling the ore is a serious problem. With the exception of some on the Arizona Molybdenite Co.'s ground, the ore contains pyrite and chalcopyrite. Buyers of molybdenite formerly insisted on having a product containing less than 1% copper and over 60% molybdenite. At the present time this condition does not have to be met, but will again in the future. The high percentage of chalcopyrite makes it difficult to obtain clean molybdenite. The American Co. has had an experimental mill in operation for some time; the Leviathan has just completed its new mill, with a capacity of 50 tons; and the Arizona Molybdenite Co. has a mill under construction. Considerable testing has been done with laboratory flotation-machines and good results obtained. It has proved difficult to bring the copper content below 5%. A good copper product is made in the laboratory, and it should be only a matter of further experimenting before it can be done in practice. Good results have been obtained by using a light oil, making an evanescent bubble, in a machine that can be skimmed quickly. Upon the addition of a heavy oil in a machine with long spitzkasten, the copper product is obtained. An ammonium resinate has been successfully used to float the molybdenite and leave

make a concentrate in the first machine, floating all the sulphides, and then subjecting this concentrate to a light roast, after which the molybdenite can be readily floated leaving the copper and iron in the tailing.

The method of analysis which has been found most satisfactory, particularly when much copper is present, was developed by R. C. Jacobson of Mohavè. It is as follows: Weigh 4 gm. in a casserole and add 10 cc. nitric acid; cover and heat to decomposition. After brown fumes have ceased, add 0.5 gm. potassium chlorate and heat until chlorine has ceased coming off. Add 3 cc. sulphuric acid, and evaporate to white fumes. Be sure that all the nitric acid has been expelled. Cool; dissolve in water and heat on the hot-plate until all has gone into solution; cool, and add an excess of ammonia (at least 5 or 6 cc. ammonia to 25 or 30 cc. water after the solution is neutralized). Heat to boiling for a few minutes, transfer to a 100 cc. volumetric flask; cool and dilute to the mark. Mix and pour through a dry filter into a beaker. Draw off 50 cc. with a pipette, and place in another 100-cc. flask. Add cautiously 10 cc. strong sulphuric acid and rinse it down with a wash bottle; then add 0.3 gm. powdered aluminum. Give the flask a rotary movement to stir thoroughly, and rinse down the aluminum. If the flask is too hot and acts too strongly on the aluminum, cool slightly in water. The heat should be just sufficient to insure ready action on the aluminum, but not to cause it to foam. The flask is then set aside for about 10 min., shaking it at intervals. Cool and dilute to the mark. Place a plug of absorbent cotton, firmly pressed down with the fingers, in a dry funnel and place underneath a dry beaker containing a piece of aluminum foil. Pour off the reduced molybdenum solution, containing the powder, through the cotton. The object of the foil in the beaker is to prevent the molybdenum from re-oxidizing. The solution should be run through rapidly for the same reason. It should have a clear green color. Draw off 50 cc. with a pipette, which should represent 1 gm. of the original ore, and titrate with N/10 permanganate solution. From the number of cubic centimetres used deduct 0.3 for the action of the impurities of the aluminum product (it is best to run a blank test against 0.3 gm. Al), and multiply the remainder by 0.00533 for MoS₂, or by 0.0048 for the molybdenum oxide, MoO. Continue the titration till the pink tint from the last two drops does not fade out for at least one-half minute. With ore containing 10 to 25% use only 2 gm. of the ore, and for those above 25% use only 1 gm. A small amount of aluminum running through the cotton will affect the result, and make the end point indistinct.

ESTIMATES from present incomplete exploration of the coal areas of the United States of Columbia give an available supply of over 27,000 million tons of bituminous coal. Peru has 1339 millions of tons of bituminous, and 700 millions of anthracite. Chile, according to the governmental estimates, has resources of bituminous coal:

YELLOW BASIN

Moly - \$1.72/pound

1% = 20 pounds = \$34.40

0.1% = 2 pounds - \$3.44

0.075% = 1 1/2 pounds = \$2.37

Nothing magic about 0.075% Moly
Just a figure that is handy.