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Arizona Geological Survey
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Tucson, Arizona 85701
520-770-3500
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inquiries@azgs.az.gov

ASARCO Incorporated
Tucson Arizona

August 12, 1975

TO: W. L. Kurtz

FROM: J. D. Sell

Review of P. A. Handverger's Report of July 3, 1975; Bradshaw Mtns. Au-As Project Yavapai County, Arizona

Using the file and assay data held by G. J. Stathis, the project results have been reviewed.

Table I is a summation of the samples considered significant to anomalous on the P. A. Handverger YA-series samples. The cut-off is using +0.04 ppm gold and +500 ppm arsenic.

In a review of PP 843-A on the Goldfield area, Nevada, they felt that gold values equal to or above 0.3 ppm and arsenic values of 60-80 ppm might be significant, and gold values in excess of 3.0 ppm and arsenic in excess of 100 ppm should be investigated. Taken from the Brooks Spring Range, Nevada maps MF-563 and 565, the authors felt that +0.25 ppm gold and 200-999 ppm arsenic were significant, and plus 1.0 ppm gold and +1000 ppm arsenic were anomalous.

Based on the plus 1.0 ppm gold and +1000 ppm arsenic values, the YA-series samples show six anomalous gold and ten anomalous arsenic samples with only two samples (both from the same location) showing anomalous values in both gold and arsenic.

Sample numbers 171 thru 217A have not been located on a map but, from Handverger's letter of May 29 and his sketch map of the Black Canyon District dated April 11, 1975, I would suspect the values to be in the area between Bumblebee and Black Canyon City (Xerox copies attached).

Nevertheless, the scattering of the anomalous samples, with quite low valued samples adjacent, suggests that no large scale deposit is located within the sampled area; nor is it likely that any high grade operation has been overlooked.

Handverger's report of July 3, 1975 should be followed up to the extent that a complete map of the sampled areas should be submitted to Asarco and the sample pulps stored for future reference.

James D. Sell

James D. Sell

JDS:lb
Atts.

TABLE 1. YA-Series Samples of P. A. Handverger
Using +0.04 ppm Au & +500 ppm As
as significant—anomalous

Sample #	ppm Au	ppm As	Sample #	ppm Au	ppm As
4N	0.04	31	84	-0.02	880
6	0.04	200	86	0.17	33
8H	0.02	3900	88	4.40	20
9	0.08	10	92	0.06	9000
12	-0.02	1400	97	0.24	3
13	0.04	1020	124	2.10	9
21	0.08	7400	144D	-0.02	600
38	0.18	6	144G	-0.02	525
40A	-0.02	790	163	0.06	5
46	0.13	220	165	0.06	125
47	0.04	14	166	0.14	28
56B	2.80	3	170	0.11	22
57	0.05	78	173	1.20	39000
57A	0.21	8	173S	9.00	170000
60	1.00	105	175	0.41	1750
61	-0.02	720	176	0.06	750
61S	-0.02	1250	177	0.34	5200
73	-0.02	810	178	0.04	410
75	-0.02	540	216	0.09	9
80	0.04	9500	217A	0.04	950

CH 033 1-17

RECEIVED

MAY 30 1975

S. W. U. S. EXPL. DIV.

MAY 30 1975

PAUL A. HANDVERGER
Consulting Geologist

Post Office Box 155 • Clarkdale, Arizona 86324 • (602) 634-8466

May 29, 1975

Mr. William Kurtz, Manager of Exploration
American Smelting and Refining Company
P. O. Box 5747
Tucson, Arizona 85703

Dear Bill:

The results from samples 171-184 strengthen the anomalous samples 165-170 located in the Black Canyon district north of Black Canyon City and south of Bumblebee in T. 9 N., R. 2 E. A possible auriferous exhalite zone is developing along the east side of one of Jerome's tuffaceous units next to the eastern granite-greenstone contact. Two more field days to be conducted next week will complete the Bradshaw reconnaissance geochemical iron formation sampling program.

The next phase of the gold program will require more detailed sampling and mapping in the anomalous zones located in the reconnaissance program and will be discussed with you next month when all the data is available.

The high grade sample 173 is a 4-foot gossan zone with sulfides exposed in a shallow cut located along the west side of the same tuffaceous unit described above.

Overall, using the geology from Stan Jerome's dissertation and the past and present placer operations, and the anomalous geochemical results, a favorable auriferous situation is developing in the lower Black Canyon region.

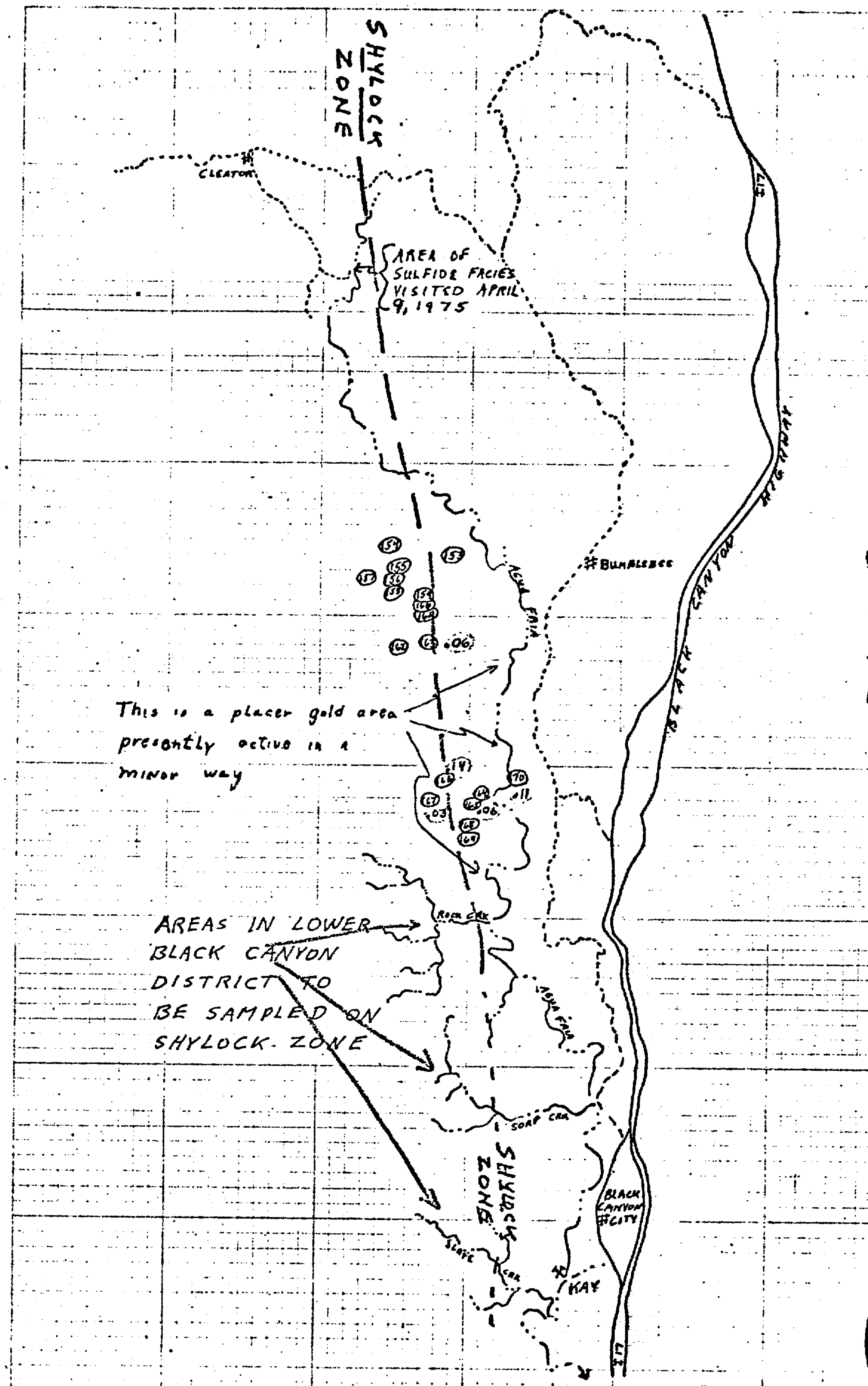
Sincerely yours,

Paul A. Handverger

Paul A. Handverger

PAH:rh

PRELIMINARY SKETCH



Gold Geochemical Sample Locations, Shylock Zone, Black Canyon District, Arizona

SKYLINE LABS JOB# 750722 DTD. 4/9/75

REGISTERED GEOLOGIST
CERTIFICATE NO. 8886
PAUL HANDVERGER
DATE SIGNED 4/11/75
Arizona U. S. A.

ASARCO Incorporated
Tucson Arizona

August 22, 1975

FILE MEMORANDUM

Squaw Peak Prospect
Yavapai County, Arizona

Verbal information updating the Squaw Peak Prospect is here recorded in lieu of inspecting the data.

The property is held by the Squaw Peak Mining Company, Inc.; Mr. Gale Wingfield, president. Best contact is:

Mr. William D. Boler, Jr., Secretary-Treasurer
P.O. Box 6
Camp Verde, Arizona 85322
ph. 567-9983 (office in Boler's Bar)
or ph. 567-4170 (home)

The Asarco file data (Aa-25.19.19) includes part of the Callahan Mining Company data of 1964 where they reported an ore zone trending N30°W, approximately 2500 feet long and with an average width of 900 feet (and maximum width of 1500 feet). The prominent quartz-chalcopyrite-moly fractures trend north to N10°W.

Earlier work was reported in USGS Bulletin 1182-E, Investigation of Molybdenum deposits, p. E30-32. (Note: The publication has the property in Range 6 E, which should be corrected to Range 5 East.)

Phillips Petroleum optioned the property for a number of years and drilled a number of holes. The first hole was the best, and successive 40-foot intervals assayed (in % copper): 0.66, 0.63, 0.49, 0.48, 0.37, 0.35, 0.29, 0.27, 0.25, 0.17, 0.17, 0.23, 0.17, 0.23, 0.26, 0.14, 0.13, 0.09, 0.11, 0.14, 0.15, 0.21, 0.14, 0.09, 0.08, and 0.06, with the bottom 100 feet running under 100 ppm copper.

Most of the Phillips holes were around 800-1000 feet in length.

Phillips obtained a K-Ar date of 1.643 billion years on the intrusive (Precambrian granite).

Phillips reported a reserve of 30 million tons, based on 9 holes, averaging 0.36% copper and 0.022 MoS_2. The best values were in Zone A which has a north-south orientation and is 1800 feet long and 1000 feet wide and dips into the hill at 50°-60°. They apparently drilled six holes into the zone.

The porphyry system is a low total sulfide with sericite and clay as the main alteration with minor potassic grading outward through chlorite. Phillips' Zone B encompasses Zone A and grades outward from 0.2% copper to less than 0.05% copper. The zone has an overall northwest trend. Eight holes were placed in Zone B.

By the completion of the Phillips drilling, some 20 holes had been drilled into the deposit.

Hanna Mining Company reviewed the data and found a number of breccia pipes and pebble dikes (as had Courtright and Richard in 1959), but did not complete an option on the property. (The above data from Hanna, Tucson, which may be inspected.)

Essex International picked the property up in 1973 and drilled between 12 and 15 new holes, all less than 1000 feet deep. Essex reports a reserve of 11 million tons of 0.46% copper. All the copper is sulfide, with no oxide reported. Essex notes the copper values decreasing with depth, but suggests that complications exist. A Mr. Robert Roe, a student at the U. of A., is presently studying the deposit and data for a degree requirement.

Essex is presently in the process of giving the property up. They have all of the Phillips data, which will be returned to Squaw Peak Mining Co. The Essex agreement states that they will not release any of the Essex data to Squaw Peak unless Squaw Peak specifically requests it. Then Squaw Peak only has the right to inspect the data in the Essex office and copy the material they desire (which they had not done as of 8/15/75). (Verbal, Essex)

James D. Sell

James D. Sell

JDS:lb

N 31 30 W 34° 29' N

double compartment below that. The 46 level contains 40 feet of workings; the 75 level, 10 feet (stub drift); the 150 level, 270 feet; and the 400 level, more than 850 feet.

The underground workings of the Loma Prieta mine were sampled by horizontal channels cut largely with pneumatic chippers. The channels were cut deep enough to yield 80 to 100 pounds per 10 feet of sample length. The samples, broken into small fragments and halved (40 to 50 lbs), were assayed for Cu and MoS_2 by the Union Assay Office, Salt Lake City, Utah. A total of 104 samples was collected while the mine was unwatered.

The channel samples (table 3) indicate that the average grade for the 150 level is 0.9 percent Cu and 0.15 percent MoS_2. On the 400 level, a cutoff of 0.45 percent Cu was used to determine the margin of the mineralized block; the average grade is 0.89 percent Cu, and 0.125 percent MoS_2. Considering the somewhat erratic distribution of the sulfide minerals, the grade of the sampled block is probably within the following limits: 0.85 to 0.90 percent Cu and 0.10 to 0.15 percent MoS_2.

The outline of the mineralized breccia (figs. 7 and 8) was determined by using a cutoff of 0.45 percent Cu. All the workings on the 150 level are in this block; on the 400 level, however, the area within the cutoff limits is approximately 60,000 square feet. No evidence on the surface contradicts the assumption that this horizontal area of mineralized rock persists to the surface beneath the terrace gravels. Mineralized rock containing unaltered sulfide minerals is exposed on the 46 level, and, according to A. B. Peach (written commun., 1917) who was in charge of the mine development, ore found in the shaft at 60 feet extends to the bottom at 414 feet. A vertical range of 350 feet therefore seems permissible in calculating reserves.

See Min World v.6, no.7 Sept 1944, p.36

SQUAW PEAK MINE

5°E

The Squaw Peak mine in secs. ? 29, 30 and 31, T. 13 N., R. 6 E., 6 miles south of Camp Verde, is reached by a graded road from Camp Verde. The mine is owned by the Squaw Peak Copper Mining Co., and in 1943, Edison Thacker was president and manager. In 1942, the RFC granted the company a $20,000 loan for development. The money was spent in exploring and developing molybdenite-copper ore on the main level of the mine. Anderson and Kupfer examined the mine in February 1943.

W. B. Gohring of the RFC supplied assay reports and maps prepared by D. F. Campbell, supervising engineer, RFC, and W. B. Maitland, also of the RFC supplied additional information based on his work as Supervising Engineer of the project.

In 1943, there was more than 4,000 feet of underground workings on three levels. The lower haulage adit was 1,935 feet long. About 350

feet above it was the main level adit, which had more than 2,000 feet of crosscuts and drifts. The upper adit, about 105 feet above the main level adit, was 280 feet long. An inclined shaft, 76 feet deep, connected to the upper adit from the surface. Only the upper adit and southern workings of the main level adit (fig. 9) were mapped. By 1943 there had been no production, but in April 1944 a pilot flotation plant with a capacity of 1 ton per hour produced a commercial grade of molybdenite concentrate. Continued operations in 1944 resulted in shipments of molybdenite concentrate to the Metals Reserve Co., the only purchases of domestic molybdenum under the small-lot purchasing program announced on July 8, 1943 (Jenckes and van Siclen, 1946, p. 634). Molybdenite concentrates were produced sporadically during the first 4 months of 1945 and a small output was made in 1946 (Jenckes, 1947, p. 640, and Jenckes, 1948, p. 798).

USBM Yearbook 1944

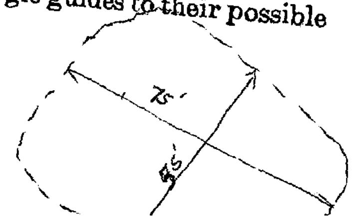
The country rock, which is quartz diorite of Precambrian age, is cut by small quartz veins ranging from narrow stringers to veins several inches wide. Many of the veins are discontinuous and are barren of sulfides. Some of the veins trend northwest and dip steeply southwest; others trend northeast and dip steeply northwest or are vertical. Only in the area of stockwork (fig. 9) on the main level adit where the quartz veins separate blocks of quartz diorite are they irregular and thicker. In the stockwork, molybdenite, chalcopyrite, and pyrite occur in the quartz and quartz diorite. The molybdenite, in small to large crystals, is erratically distributed; the chalcopyrite is more evenly distributed. D. F. Campbell, who systematically sampled the stockwork on the main level, determined an average grade of 0.18 percent MoS_2 and 1.28 percent Cu (W. B. Gohring, written commun. 1943). According to the Mining World (1944), a raise in the stockwork 43 feet above the main level exposed ore, and the mill heads for the first operations of the pilot plant were estimated to average about 1.4 percent Cu and about 1 percent molybdenite.

? 1,643 billion year K-Ar

Disseminated molybdenite is exposed at the face of the haulage adit, mainly under the stockwork exposed on the main level (fig. 9), but the intersecting quartz veins are missing. Molybdenite is found on the dump of the shaft connecting to the upper adit. According to Edison Thacker (oral commun.), this ore came from about 60 feet below the collar of the shaft.

Other mineralized stockworks may be present in the area, but the exploration up to 1943 failed to reveal geologic guides to their possible locations.

Fig. 9 outline of stockwork



ASARCO Incorporated
Tucson Arizona

August 22, 1975

FILE MEMORANDUM

Brindle Pup Prospect
Yavapai County, Arizona

The Brindle Pup Prospect is located in the SE1/4 of unsurveyed section 34, T15N, R2E, Yavapai County.

The Jerome, USGS PP 308, p. 177, paper states that the deposit is in a wide granodiorite porphyry dike that cuts the Deception and Buzzard rhyolite masses.

Lindgren (in USGS Bull. 782, p. 100) reports the Brindle Pup vein contains massive quartz, ankerite, pyrite, galena, and sphalerite.

Hanna Mining Company, in conjunction with Cyprus Mines, drilled 4 holes to around 1000 feet in 1973-74. The holes were located outside the dike and none intercepted the intrusive, suggesting it is a dike or steeply dipping structure which does not open or flare at depth. Weak alteration and mineralization were found in the wall rock. The project will be abandoned this assessment year.

Hanna has submitted a sample of the intrusive for age-dating, but the result is not presently available.

St. Joe Minerals had staked completely around the Hanna-Cyprus ground, but apparently have not drilled any exploration holes.

James D. Sell

James D. Sell

JDS:lb

ASARCO

Southwestern Exploration Division

J.DS

September 5, 1985

W. L. Kurtz

Bradshaw Mts.
A Hemlo-type area?
Yavapai Co., AZ

While reviewing the files I reread the MAGMACHEM proposal for the Precambrian greenstone belt of Minnesota-Michigan. Note that all of his series from magnesian thru alkalic has a major ore deposit-district type deposit within it.

Keith had also sent along their evaluation of the alkalic to calk-alkalic porphyry gold and mesothermal vein area of the Climax Mine in the Bradshaw Mountains.

My initial feeling in 1984 when Keith first proposed the Bradshaws, was that the veins didn't have what we were really looking for, especially if deep drilling was necessary. However, while browsing the two Hemlo papers submitted to you on 9/4/85, and somewhat discussed with you, it is apparent that very close scrutiny is necessary to find the clues to a Hemlo-type deposit which may well be located in the "less-mineralized" central portion which is surrounded by strong fracture controlled vein zones. Of course, the Hemlo-type is still within a sheared-faulted zone, but with the relatively narrow individual quartz seams, the erosional expression is much subdued compared to the massive bull quartz outcrops expressed elsewhere.

As a number of companies have been involved in the Bradshaws for the past ten-fifteen years, it is imperative that we have a specific question to resolve, and perhaps build a model, and thus I would suggest that the Climax Mine area of Magmachem interest might well be the starting point for such a study.

I have asked Stringham to check the claim owners density around the Climax Mine area. Density sketch attached also.

James D. Sell
J. D. Sell

JDS:mek
Atts.

MAGMACHEM ASSOCIATES

Regional Mineral Exploration and Property Evaluation

Suite 202, Ahwatukee Professional Building
10827 South 51st Street
Phoenix, Arizona 85044
(602) 893-1434

Stanley B. Keith ● Monte M. Swan

PRESENTS

MINNESOTA-MICHIGAN GOLD SEARCH

PHASE I - REPORT

by Monte M. Swan, Stanley B. Keith, and Michael G. Parr

September 23, 1983

SUMMARY

This report summarizes the Phase I consulting work done for Bear Creek on the Northern Minnesota-Michigan region gold search. It focuses upon the region's potential for gold in the Archean-Proterozoic rocks. Objectives of Phase I were to identify specific exploration targets and to formulate a new approach to gold exploration based on magma-series chemistry. The potential for gold ore in the greenstone belts of Minnesota and Michigan probably has been underestimated, as demonstrated by the recent Hemlo gold discovery, which is located less than 150 miles away and is now approaching 20 million ounces gold. Hemlo, Ontario's first major new gold camp discovery in 50 years, has triggered the largest staking rush in Canadian history. (See Appendix 1 for articles). Exploration activity in the United States after the Hemlo discovery is surprisingly light.

Our recent breakthroughs in synthesizing magma-series chemistry with depositional environments of gold deposits, when combined with direct geologic projections from Canada's Abitibi gold belt and Hemlo deposit into greenstone belts in the United States, indicates that the six types of gold deposits listed below are present in the greenstone belts in Minnesota and Michigan. Each of these six types occurs in a specific geologic environment and has a unique geochemistry; thus, a unique exploration approach is required for each deposit type. The six types are outlined below.

Gold Deposit Type	Magma-series Chemistry	Depositional Environment	Deposit Size in Millions Ounces Gold
Homestake	magnesian	exhalative	50
Timmins	calcic	exhalative	33
Grass Valley	calcic	vein	14
Hemlo	calc-alkalic	exhalative	+20
Red Lake	calc-alkalic	vein	13
Kirkland Lake -Main Break	alkalic	vein	23

MINNESOTA-MICHIGAN GOLD SEARCH 1983

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COST

The total cost of the Minnesota-Michigan gold search report is $9000.00 payable upon delivery of the product.

The Minnesota-Michigan gold search report will be available for sale April 1, 1984.

NAME: CLIMAX MINE

TYPE: ALKALIC TO CALK-ALKALIC PORPHYRY GOLD AND MESOTHERMAL VEIN

LOCATION: SECTION 1, TOWNSHIP 12 NORTH, RANGE 3 WEST, GILA AND SALT RIVER BASE AND MERIDIAN SURVEY; PRESCOTT NATIONAL FOREST;

PRODUCTION: 1911-1916, 1933-1937; 4,000 OZ. AU, 570 OZ. AG, AND 744 LBS. CU FROM 5,300 SHORT TONS ORE;

CLAIMANTS: JOHN TRUFFA, PHOENIX, AZ.; ESTATE OF ED BLOCK, GREAT BEAR LAKE, CA.; CHRISTOPHER M. FRENCH, PHOENIX, AZ.

ABSTRACT

THE CLIMAX MINE IS CENTERED WITHIN AN EAST-NORTHEAST ELONGATE, DOME-SHAPED FEATURE APPROXIMATELY THREE AND ONE-HALF MILES LONG AND TWO AND ONE-HALF MILES WIDE. DETECTABLE GOLD MINERALIZATION, AS DEFINED BY BULK ROCK CHIP SAMPLING (IN EXCESS OF 20 LBS. PER SAMPLE), OCCURS OVER A WIDE DEPTH ZONE RANGE IN A VARIETY OF HABITS:

SAMPLE 1: LOC. NW4NE4NW4, SEC. 1, T. 12N., R. 3W.; (BAIRD PROSPECT) 0.06 OZ./T. IN STOCKWORK QUARTZ OVER INTERVAL OF 20 FEET;
SAMPLE 2: LOC. NE4NE4SW4, SEC. 1, T. 12N., R. 3W.; (CLIMAX MINE) 1.2 OZ./T. IN EN ECHELON FISSURE VEIN AND ENCLOSING WALLROCK OVER INTERVAL OF 20 FEET;
SAMPLE 3: LOC. NE4SE4NE4, SEC. 1, T. 12N., R. 3W.; (BUCKHAVEN MINE) .09 OZ./T. IN STOCKWORK OVER INTERVAL OF 20 FEET;SAMPLE 4: LOC. SE4SW4NE4, SEC. 1, T. 12N., R. 3W.; (SILICIFIED OUTCROP) .01 OZ./T. OVER 5 FEET INTERVAL;
SAMPLE 5: LOC. NE4SW4NW4 SEC. 12, T. 12N., R. 3W.; (DIRECT REPLACEMENT OF RHYODACITE DIKE) .02 OZ./T. OVER 5 FEET INTERVAL;

SAMPLES 2, 3, AND 4, WHEN INTEGRATED WITH GEOLOGIC OBSERVATIONS, DEFINE AN INFERRED ZONE OF ANOMALOUS VALUES 2,700 FEET LONG AND SEVERAL HUNDRED FEET WIDE TRENDING ENE, ROUGHLY COINCIDENT IN A GEOMETRIC SENSE WITH THE MAJOR AXIS OF THE ELLIPSE. THE WIDE EXTENT AND DIVERSE NATURE OF MINERALIZATION ARE POSSIBLY INDICATIVE OF A SIGNIFICANT, UNUSUAL, AND PREVIOUSLY UNRECOGNIZED GOLD SYSTEM.

THE ELLIPTICAL FEATURE IS INFERRED TO REPRESENT A SUBSIDENCE STRUCTURE, POSSIBLY THE BOTTOM OF A CALDERA. THE SUBSIDENCE STRUCTURE HAS POSSIBLY SERVED AS THE FOCUS FOR RESURGENT INTRUSION OF ALKALIC TO CALC-ALKALIC STOCKS, DIKES, AND PLUGS IN LATE CRETACEOUS (?) TIME. A PRIMARILY ENE-WNW DIRECTED OBLIQUE-SLIP STRUCTURAL REGIME IS RESPONSIBLE FOR SIGNIFICANT DILATION ALONG A

NNW-NNE CONJUGATE FRACTURE SET. STRUCTURALLY, THESE MUTUALLY PERPENDICULAR FRACTURE SETS, WHICH ARE PRESUMABLY INHERETED FROM THE PRECAMBRIAN, FORM THE MAJOR AND MINOR AXIS OF THE (STRAIN) ELLIPSE. THE EPIZONAL, SUBVOLCANIC, CONTACT-HOSTED FISSURE VEIN DEPOSIT KNOWN AS THE CLIMAX MINE IS REMARKABLY COINCIDENT WITH THE NORTHWEST-TRENDING MINOR AXIS OF THIS ELLIPSE. WIDESPREAD STOCKWORK SILICIFICATION AND LOW GRADE GOLD MINERALIZATION WITHIN AN ALKALIC TO CALKALKALINE SYSTEM ARE INFERRED TO POSSIBLY DEFINE A GENETIC ASSOCIATION WITH SYENITE MODEL GOLD PORPHYRY SYSTEMS. THIS NEEDS TO BE EMPIRICALLY PROVEN ON THE BASIS OF MAGMACHEMISTRY.IN ADDITION, SOME FIELD EVIDENCE INDICATES POSSIBILITIES FOR MINERALIZATION ALONG DEEP-SEATED, SHALLOW-DIPPING STRUCTURES. ADDITIONAL SMALL GOLD-SILVER AND SILVER-LEAD OCCURENCES ARE LOCATED AROUND THE PERIMETER OF THE ELLIPSE.

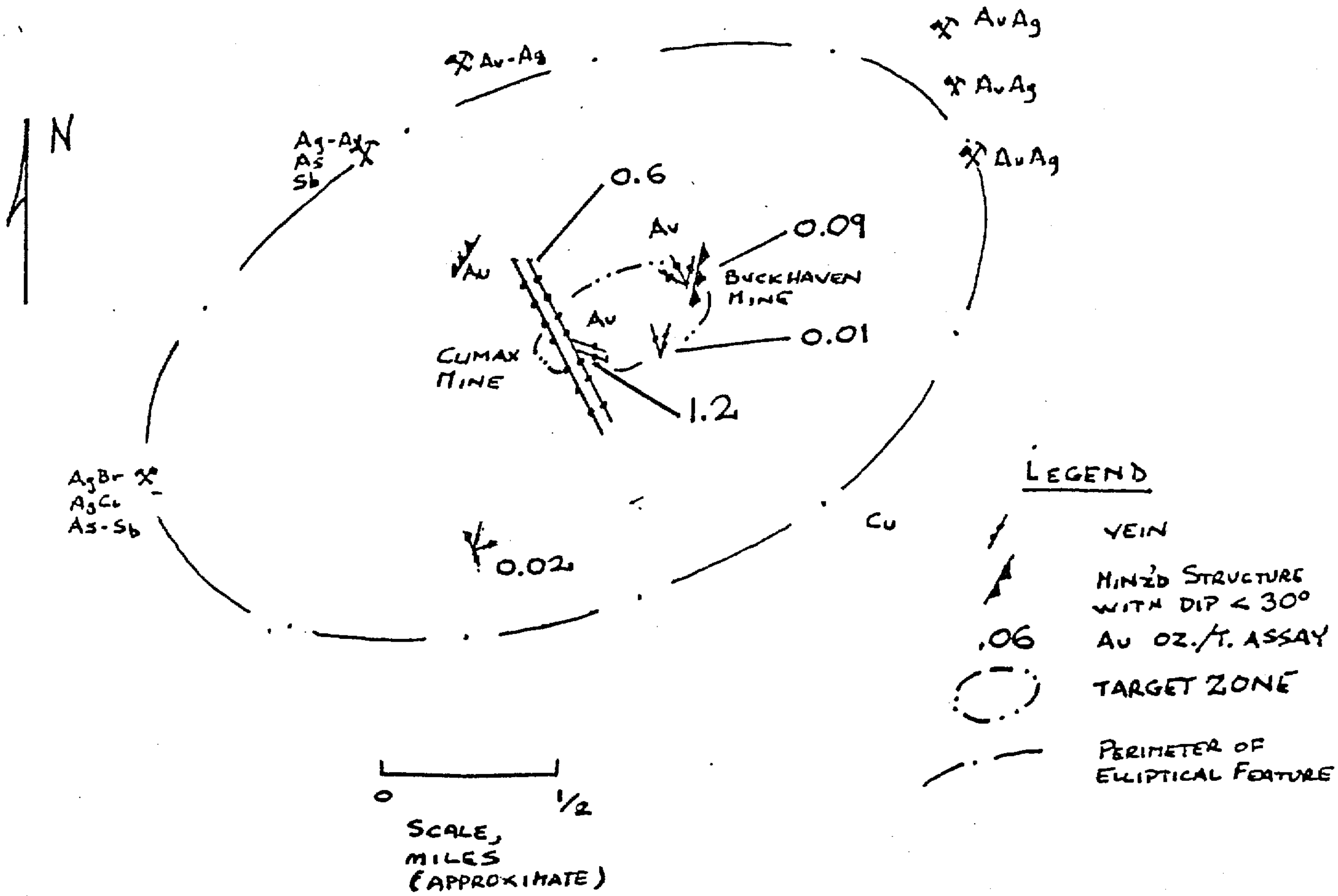
PRECAMBRIAN HOST ROCKS INCLUDE THE SO-CALLED GREEN GULCH METAVOLCANIC GROUP OF THE YAVAPAI SERIES. AT LEAST THREE SEPERATE PRECAMBRIAN IGNEOUS EVENTS HAVE METAMORPHOSED THESE ROCKS FROM GREENSCHIST TO AMPHIBOLITE GRADE. THE GREEN GULCH METAVOLCANICS OCCUR WITHIN A NORTH-TRENDING GRABEN-LIKE OR SYNFORMAL STRUCTURE BOUNDED ON THE EAST BY THE GOVERNMENT CANYON GRANODIORITE AND ON THE WEST BY AN UNNAMED QUARTZ MONZONITE OF BATHOLITHIC PROPORTIONS. THE ANCIENT GRABEN-LIKE OR SYNFORMAL STRUCTURE WHICH THE METAVOLCANICS OCCUPY REPRESENTS A ZONE OF FUNDAMENTAL CRUSTAL ANISOTROPY NEAR THE SOUTHERN TERMINUS OF THE WASATSCH-JEROME LINEAMENT.

THE LATE CRETACEOUS (?) INTRUSIVE ROCKS IN THE CLIMAX MINE AREA ARE CLASSIFIED AS MEMBERS OF THE ALKALIC TO CALC-ALKALIC SUITE. A RARE EARLY BIMODAL SUITE OF SYENITES AND MELADIORITES YIELD TO A VOLUMETRICALLY MAJOR QUARTZ LATITE CHONOLITHIC STOCK AND A PLETHORA OF RELATED PLUGS AND DIKES. THESE ARE IN TURN INTRUDED BY PREMINERAL DIKES OF PYROXENITE, DIORITE, AND ANDESITES. DIKES INFERRED TO BE TEMPORALLY RELATED TO MINERALIZATION INCLUDE QUARTZ LATITES, RHYOLITES, ALASKITES, SILICIC VITROPHYRES, SILICA-FELDSPAR ROCK, QUARTZ PORPHYRIES, BIOTITE-K-FELDSPAR-ANHYDRITE (?) DIKES, AND HYDROTHERMAL BRECCIA DIKES. THE LATTER TWO SHOW A COMPLEX INTERRELATIONSHIP WITH THE GOLD-BEARING FISSURE VEINS.

MINERALIZATION AT THE CLIMAX MINE IS CLASSIFIED AS AN EPIZONAL, CONTACT-HOSTED FISSURE VEIN AND STOCKWORK DEPOSIT. SILICIFICATION IS THE PRIMARY ALTERATION PRODUCT ASSOCIATED WITH MINERALIZATION, ACCOMPANIED BY K-FELDSPAR, SECONDARY BIOTITE, AND SERICITE. ALTERATION IS VERY SUBTLE, AND IS DIFFICULT TO RECOGNIZE BECAUSE OF THE MINERALOGICAL SIMILARITIES BETWEEN THE AFFECTED HOSTROCK AND THE FLUIDS IMPREGNATING IT. THE ALTERATION ENVELOPE DECREASES DRAMATICALLY AWAY FROM THE CENTRAL ORE CONDUITS. THE PRINCIPLE ECONOMIC MINERAL IS GOLD, OFTEN ASSOCIATED WITH BORNITE OR CHALCOPYRITE. MAGNETITE AND ARSENOPYRITE ARE COMMON ACCESSORIES. THE HIGH MAGNETITE CONTENT IS INDICATIVE OF A SYSTEM WITH A HIGH OXYGEN FUGACITY. HUEBNERITE (MnWO4) HAS BEEN IDENTIFIED WITHIN THE CENTRAL ORE CONDUIT. TETRADYMITE (BiTeS2) HAS BEEN REPORTED IN THE LITERATURE. FLOURITE OCCURS IN SEVERAL LOCALITIES. PETROLOGIC AND MINERALOGIC FIELD OBSERVATIONS ARE COMPATIBLE WITH DATA COLLECTED FROM ALKALIC GOLD PORPHYRY MODELS (STAN KEITH, PERSONAL COMMUNICATION), ALTHOUGH THIS HAS NOT BEEN EMPIRICALLY DEMONSTRATED.

EVIDENCE FOR MINERALIZATION AT DEPTH MUST BE EXPLORED. SIGNIFICANT MINERALIZATION ALONG THE CLIMAX VEIN OCCURS OVER A STRIKE INTERVAL IN EXCESS OF 4,800 FEET. WORKINGS EXTEND OVER A VERTICAL INTERVAL OF 600 FEET. MINE REPORTS INDICATE THAT THE GOLD CONTENT INCREASED IN THE DEEPER, UNOXIDIZED LEVELS OF THE CLIMAX WORKINGS. THIS HAS NOT BEEN VERIFIED. PLASTIC CATACLASIS, INDICATIVE OF ELEVATED P-T CONDITIONS, IS OBSERVABLE NEAR DETECTABLE GOLD MINERALIZATION. DEEPER LEVELS OF THE MINE CONTAIN SHALLOWLY-DIPPING CALCITE VEINS REPORTED TO BE OF HIGH GOLD CONTENT. FIELD EVIDENCE SUGGESTS A RELATIONSHIP EXISTS BETWEEN CALCITE-ANKERITE VEINS AND DEEPER LEVELS OF MINERALIZATION.

IN SUMMARY, THE CLIMAX MINE IS COINCIDENT WITH THE MINOR AXIS OF AN ELLIPTICAL FEATURE OF REGIONAL SCALE. THIS FEATURE IS MAGMATICALLY CHARACTERIZED BY THE RESURGENT EMPLACEMENT OF AN INCREASINGLY SILICIC SERIES OF ALKALIC TO CALC-ALKALIC LATE CRETACEOUS (?) COMPOSITE DIFFERENTIATES. ANCIENT DEEP-SEATED FRACTURES WITHIN A STABLE CRATON REACTIVATED BY A TRANSCURRENT STRESS REGIME GUIDE EMPLACEMENT OF A SERIES OF MINERALIZING EVENTS CHARACTERIZED BY ANOMALOUSLY HIGH GOLD VALUES MINERALOGICALLY ASSOCIATED WITH BORNITE, HUEBNERITE, ARSENOPYRITE, MAGNETITE, AND TETRADYMITE. STRUCTURES ASSOCIATED WITH MINERALIZATION ARE CHARACTERIZED BY IMPRESSIVE STRIKE LENGTH. AT THE PRESENT TIME, LIMITED EVIDENCE SUGGESTS THAT MINERALIZATION CONTINUES AT DEPTH. THIS HYPOTHESIS NEEDS TO BE TESTED BY DRILLING. MINERALIZATION OCCURS IN A VARIETY OF LOCATIONS AND HABITS OVER A WIDE DEPTH-ZONE RANGE WITHIN A SUBVOLCANIC EPIZONAL ENVIRONMENT AS FISSURE VEINS AND PORPHYRY-TYPE STOCKWORK.



CURRICULUM VITAE

PERSONAL DATA:
NAME: CHRISTOPHER M. FRENCH
D.O.B.: 8/20/58
HEALTH: EXCELLENT

HOME ADDRESS: 3030 E. CLARENDON #7
PHOENIX, AZ. 85016
(602) 957-6922 (H)
(602) 893-1434 (O)

PRESENT EMPLOYER: MAGMACHEM ASSOCIATES; PART-TIME GEOLOGIC AND GEOCHEMICAL RESEARCH ASSOCIATE; DISTRICT- AND REGIONAL-SCALE TECTONIC AND MAGMATIC DATA COMPILATION; DEVELOPEMENT OF DATABASE FOR EMPIRICALLY SOUND DISCRIMINATION OF DEPOSIT TYPES WITHIN MODERN FRAMEWORK OF EXPLORATION MODELS, AS DEFINED BY MAGMACHEMISTRY AND TECTONIC AFFILIATION;

11/82 TO PRESENT: SELF-EMPLOYED CONSULTING GEOLOGIST AND HYDROLOGIST; WATER RESOURCE MANAGEMENT AND APPRAISAL FOR ENGINEERING AND RANCHING CONCERNS IN YAVAPAI CO., AZ.; DETAILED ABOVE- AND UNDERGROUND MAPPING AND APPRAISAL OF PRECIOUS METAL OCCURENCES; MANAGER OF FINANCED ALKALI MODEL PRECIOUS METALS EXPLORATION PROGRAM; SURVEYING AND TITLE SEARCH OF MINING PROPERTIES IN THE GREATER BRADSHAW MOUNTAINS.

6/81 TO 6/82: TEMPORARY POSITION WITH NEWMONT EXPLORATION, LTD.; RECONNAISSANCE GEOLOGY, GEOCHEMICAL SAMPLING, CORE AND ROTARY DRILLING OPERATIONS; DETAILED ABOVE- AND UNDERGROUND GEOLOGIC MAPPING; TRANSIT SURVEYING; CARLIN- AND MESQUITE-TYPE DISSEMINATED PRECIOUS METALS AND PRECAMBRIAN VOLCANIGENIC DEPOSITS; CENTRAL NV, YAVAPAI CO., AZ., SE CALIFORNIA;

6/76 TO 1/81: (SEASONAL) PHYSICAL SCIENCE TECHNICIAN WITH U.S. GEOLOGICAL SURVEY; DETAILED GEOLOGIC MAPPING OF STRUCTURE AND HYDROTHERMAL ALTERATION WITHIN 15 SQ. MILE PORTION OF THE GABBS VALLEY RANGE, NV.; STUDY OF REMOTE SENSING AND AERIAL PHOTOGRAPHY APPLICATIONS FOR LOCAL AND REGIONAL DELINEATION OF STRUCTURAL AND HYDROTHERMAL TRENDS IN WEST CENTRAL UTAH AND WALKER LANE, NEVADA; PETROGRAPHIC AND X-RAY DIFFRACTION ANALYSIS OF IGNEOUS, VOLCANIC, AND SEDIMENTARY ROCKS; GEOLOGIC AND GEOPHYSICAL SURVEYING ASSISTANT IN ARCHEAN TERRAINS OF UPPER PENINSULA, MI.; INSTRUMENTAL NEUTRON ACTIVATION ANALYSIS LABORATORY ASSISTANT;

PRINCETON-Y.B.R.A. FIELD COURSE IN RED LODGE, MONTANA; GRADE: B+;FIELD MAPPING ASSIGNMENTS AT AMHERST COLLEGE; TOUR OF UNDERGROUNG FACILITIES AT MAJOR MINING DISTRICTS IN CANADA;

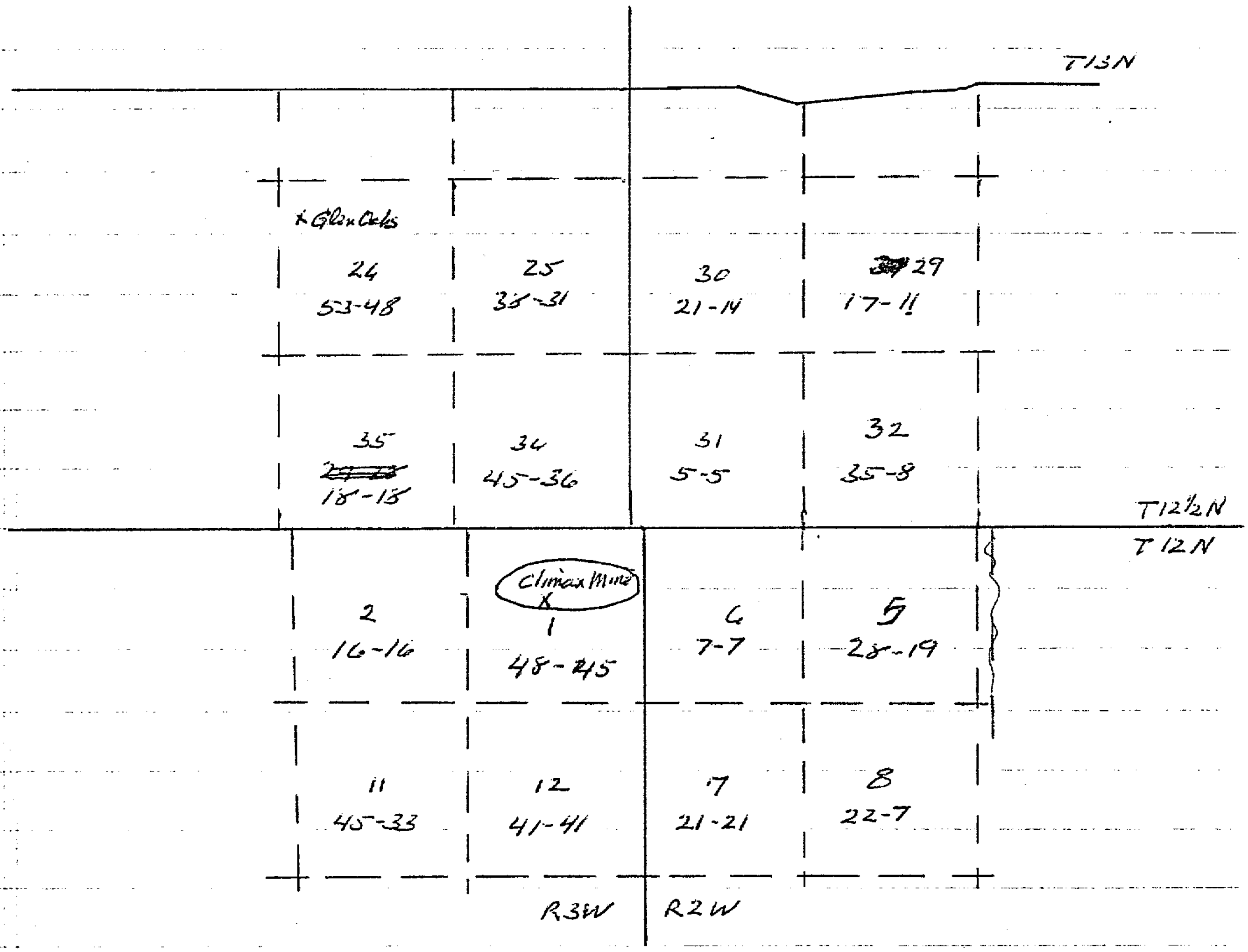
ACADEMIC BACKGROUND:
AMHERST COLLEGE, AMHERST, MA. 01002 (9/77 TO 4/81)
B.A. IN GEOLOGY AND GERMAN LITERATURE G.P.A.: B+
PAPERS: "ANISOTROPIC FEATURES OF THE EASTERN GREAT BASIN"; "STRUCTURE AND HYDROTHERMAL ALTERATION OF A PORTION OF THE GABBS VALLEY RANGE, NV.";
ACADEMIC HONORS: WARREN STEARNS PRIZE FOR GEOLOGY, 1980; NATIONAL SPACE CLUB AWARD FOR OUTSTANDING RESEARCH, 1976;

GEOLOGIC MAPPING	MAGMACHEMISTRY	TITLE RESEARCH
UNDERGROUND MAPPING	ORE PARAGENISIS	PHOTOGEOLOGY
RECONNAISSANCE	PETROGRAPHY	REMOTE SENSING
TECTONIC INTERPRETATION	CORE LOGGING	TRANSIT SURVEYING

HOBBIES:: GYMNASTICS, SKIING, SAILING, ROCK CLIMBING, PHOTOGRAPHY;

Attachment

Sketch, showing sections and number of valid claims on microfiche 1984 assessment year



1 (Section)
48-45
(listed claims) (valid claims)

9/5/85

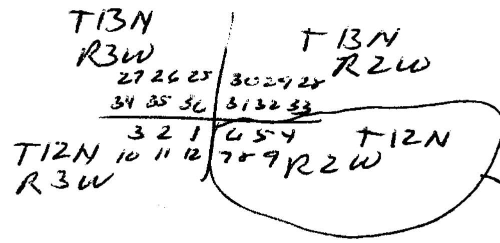
FROM: J. D. SELL

TO: JRStringham

Please make a quick check of the claim density in Yavapai Co. Bradshaw Mtns

12N 2W

Secs 4	11 Claims	
5	28	"
6	7	"
7	21	"
8	22	"
9	15	"



There is
well

Sec. 1 Climax Mine

JDS

See

In 2W there are

Sec ~~25~~ 28	11	"	"
~~26~~ 29	17	"	11 Valid
~~27~~ 30	21	"	14 Valid
~~34~~ 31	5	"	5 Valid
~~35~~ 32	35	"	8 "
36 33	22	"	2 "

In 3W

25	38 Claims	31 Valid
26	53 "	48 Valid
27	29 "	28 "
34	10 "	8 "
35	18 "	ALL Valid.
36	45 "	34 Valid

Kovner

9-5-85

T13N R3W

Sec 25 -	2 Claims -	2 Valid
26 -	5 -	3 Valid
27 -	7 -	1 Valid
Sec 34 -	No Claims (is it open?)	
35 -	29 Claims	24 Valid
36 -	28 Claims	17 Valid

T12N R3W

1	48 Claims	45 Valid
2	16 Claims	All Valid
3	2 Claims	2 Invalid
10	7 Claims	0 Valid
11	45 Claims	33 Valid
Sec 12	41 Claims	All Valid

help! I need 4, 5, 9, 7, 8

T. 13N R 2W

28	21 Claims - 8 Valid	X
29	2 Claims 1 Valid	x
30	11 Claims 9 Valid	x
31	3 Claims 0 Valid	
32	68 Claims 38 Valid	
33	- 33 Claims 10 Valid	

T. 12N R2 W

1	41 Claims	17 Valid
2	48 -	9 Valid
3	53 -	15 Valid
10	30 -	15 -
11	27 -	8 -
12	37 -	28 -

Silver Crown Examination
Arizona Michigan Mining Company
Yavapai County, Arizona

James D. Sell

April 14, 1969

AMERICAN SMELTING AND REFINING COMPANY
Tucson Arizona
April 14, 1969

FILE MEMORANDUM

TO: Mr. J.H. Courtright

FROM: Mr. J.D. Sell

Silver Crown Examination
Arizona Michigan Mining Company
Yavapai County, Arizona

Summary and Conclusions

Assay results from diamond drill core which was split and sampled by ASARCO personnel failed to verify interesting to high values of gold and silver, reportedly from the same drill holes, submitted by the Arizona Michigan Mining Company. Assaying of limited surface sampling also returned low values. This information terminated further work on the area in light of no additional known target areas.

The conclusions were expressed in a memorandum dated March 26, 1969, and this FILE MEMORANDUM is for the expressed purpose of gathering the total available information into one package. The information in the file copy includes assays by Arizona Michigan and Asarco, surface locations and sampling, diamond drill hole notes, as well as miscellaneous notes.

James D. Sell

James D. Sell

JDS:ir
cc: WESaegart
RDKarvinen

AMERICAN SMELTING AND REFINING COMPANY
Tucson Arizona
April 14, 1969

FILE MEMORANDUM COPY

Silver Crown Examination
Arizona Michigan Mining Company
Yavapai County, Arizona

Arizona Michigan Mining Company, Inc. Personnel:

President: Dr. A.V. Smith, 116 West Sycamore Street, Mason, Michigan 48854

Sec-Trea: Mr. W.O. Hall, Mason State Bank, P.O. Box 270, Mason, Michigan 48854

Exec. 1st V.P. and General Manager: Mr. Langley W. Rayner Box 829, Prescott, Arizona 86301 (Private phone 445-2369

Property Geologist: Mr. Ken E. Eakin, Star Route 46, Kirkland, Arizona 86332. (Note: All mail for Arizona Michigan can be sent in care of this address).

Analytical Results:

Six sheets of assay results on gold, silver, and copper by Arizona Assay Office (Phoenix) were submitted to ASARCO by the Arizona Michigan Mining Company. The certificates are dated 25 February 1969, and 5 March 1969. The assays represent pulps which were prepared by Arizona Michigan Mining Company in their company laboratory on intervals of Drill Holes Number 9,10,11, 12, 14, and 15. The assay certificates are listed in Attachment A, and the arithmetic average for the holes are listed in Table I.

Half of the above pulps plus some new ones were saved by Arizona Michigan Mining Company and these were split by ASARCO personnel. The pulps were submitted to American Analytical and Research Laboratory (Tucson) and assays for gold and silver were returned on a five-page Certificate dated March 18, 1968, and submitted as Attachment B. As with the assays from Arizona Assay listed above, the arithmetic average of the samples run by both Arizona Assay and American Analytical are shown in Table I.

The arithmetic averages shown in Table I show that for holes number 9,11, and 12, the Arizona Assay results are three to five times as high as the American Analytical results whereas holes number 14, and 15 show comparable results.

From the above pulps, ten samples were submitted to Hawley and Hawley (Tucson) for check assaying. The assay results were submitted as Certificate No. TUC 34544, dated 3/26/69 and are shown as Attachment C. Of the ten pulps submitted only four were run by all three laboratories while the remaining six were run only by both Tucson labs. The comparative assays are listed in Table II. These show that Hawley and Hawley check the American Analytical results quite favorably. Although the Tucson labs are lower than Arizona Assay in many assays it is nevertheless evident that interesting values are represented by the assay results of these pulps.

To further check the potential values indicated above, permission was granted by Arizona Michigan Mining Company for ASARCO to log, split, and sample the core from the various holes. ASARCO personnel completed this phase without any aid from Arizona Michigan personnel. The results are submitted as Attachment D consisting of Certificates (2 pages) dated March 22, 1969, and (3 pages) dated March 23, 1969 from American Analytical. The arithmetic average of the new split assays are shown on Table III. As with all the tables, the arithmetic averages are not completely accurate as the footage interval represented are not always the same increment. The low results suggested that the original pulps submitted by Arizona Michigan were not representative of the core. Table IV is the comparison between essentially equal sampled areas with pulps prepared by Arizona Michigan and ASARCO.

Bulk sampling on outcrop surface areas was also conducted with four lines being run. Only part of one line was assayed by American Analytical and the results are submitted as Attachment E consisting of one Certificate sheet dated March 13, 1969. The results are all very low. Also one sample, SC-J-75, was collected from the surface ore pile from vein material secured from the #4 level of their mine on the north end of the property. The sample is submitted on the one page Certificate dated March 19, 1969 and shown as Attachment F. The results, 0.025 oz. Au/ton and 8.22 oz Ag/Ton, indicates that values do exist in the high-sulfide quartz pods within the Yavapai schist zone.

Five of the surface sample pulps were submitted to Hawley and Hawley for check assay and these were returned in Certificate TUC 342541 dated 3/20/69. The results of these are lower than the assays from American Analytical. The Hawley and Hawley assays are shown on Attachment G and the research spectrograph on the composite sample is submitted as Attachment H. The spectrograph indicates no unusual amounts of the various elements.

Surface Sampling and Diamond Drill Locations

Attachment J are mylar prints of three photos which cover the main location of the surface sampling and also the location of the fourteen diamond drill holes.

The surface samples are bulk cuts from the best available areas such as road and bulldozer cuts. Table V is a listing of the sample numbers and the footage represented. The assays from the ASARCO diamond drill core splits were given in Attachment D with the partial surface sample assays reported in Attachment E.

Diamond Drill Hole Information:

The location of the 14 drill holes (note: Drill hole #13 was not named but the numbers skipped from #12 to #14) were given on Attachment J. In Table VI, and VI-A, the available information is given on drill hole collar elevation, angle inclination of the hole, depth of oxidation, and drift of the hole.

Main Underground Workings:

The underground workings were not inspected except for the entrance adit, Here the bleached schist carried minor quartz stringers which are said to open up into various sized pods carrying gold, silver, lead and copper values. Mine values are reported at $35.00/ton in lead and silver with $2.80 in gold. Our grab sample SC-J-75 of the crushed ore pile from the #4 level returned 0.025 oz/ton gold and 8.22 oz/ton silver, with no assay asked for on the lead content, for an approximate value of $17.50/ton.

Sketch map Figure 1 is a general section through the Silver Crown workings where at present some five men are employed putting the workihgs into operational condition.

Miscellaneous:

Several reports were submitted to ASARCO by the Arizona Michigan Mining Company. One is the "Report on Core Well No. 8", submitted as Attachment K which includes various notes on the property and ore occurrence. Attachment L is a summary of the Annual Meeting held on May 15, 1968, by the Arizona Michigan Mining Company, Inc. The claim map submitted by the company is included as Attachment M.

Photographs and Pulp Storage:

The photo coverage by Cooper Aerial Survey Company of Tucson has been indexed and filed in the ASARCO library.

The pulps from the various samples have been boxed and stored in the basement along with similar pulps from other projects. Selected core segments were removed from the various drill holes, during examination and sampling, and these are also stored with the pulp samples. The surface bulk samples which were not assayed (SC-J-25 thru -74) have been discarded along with the pulp rejects from SC-J-1 thru -24 and SC-J-75.

Listing of Attachments, Tables, and Figure:

ATTACHMENTS

A. Resume of Arizona Assay Certificates on Pulps submitted by Arizona Michigan Mining Company.

B. American Analytical and Research Laboratories Assay Certificates on Pulps submitted by Arizona Michigan Mining Company.

C. Hawley and Hawley check Assay Certificate on Pulps submitted by Arizona Michigan Mining Company.

D. American Analytical Assay Certificates on Pulps split and prepared by ASARCO Personnel.

E. American Analytical Assay Certificate on Surface Samples cut by ASARCO Personnel.

F. American Analytical Assay Certificate on "Ore Bin" Sample from main Underground Workings- No. 4 level.

G. Hawley and Hawley Assay Certificate on Surface Sample check assays.

H. Hawley and Hawley Spectrograph Assay Certificate on composite Surface Sample.

J. Mylar Sheets (3) on sampled and drilled zone.

K. Report on Core Well No. 8, Silver Crown Mine, by K.E. Eakin.

L. Summary of Annual Meeting Report held by Arizona Michigan Mining Company on May 15, 1968.

M. Claim map submitted by Arizona Michigan.

TABLES

I. Comparative assay results of duplicate samples submitted by Arizona Assay and American Analytical on pulps prepared by Arizona Michigan Mining Company.

II. Comparative Assays on diamond drill hole core pulps prepared by Arizona Michigan Mining Company.

III. Assay results from core split and sampled by ASARCO personnel.

IV. Comparison of assay results from pulps submitted by Arizona Michigan and NEW pulps from some areas prepared by ASARCO.

V. Surface Sample Lines and Numbers (SC-J-Series).

VI and VI-A. Diamond Drill Hole Information.

FIGURE

1. Sketch through Main Silver Crown Workings.

Table I - Comparative assay results, arithmetic average, of duplicate samples submitted to Arizona Assay and American Analytical on pulps prepared by Arizona Michigan Mining Company (results in oz per ton).

Hole No.	No of Samples	Arizona Assay Au	Arizona Assay Ag	American Analytical Au	American Analytical Ag
9	9	Tr.	11.55	0.010	2.66
10	None	-	-	-	-
11	5	Tr.	14.40	0.010	4.23
12	10	0.01	12.65	0.011	4.31
14	18	0.35	8,98	0.483	8.27
15	2	0.012	2.80	0.009	1.45

Table II- Comparative Assays on diamond drill hole core pulps prepared by Arizona Michigan Mining Company (results in oz. per ton).

Hole and Footage	Arizona Assay		American Analytical		Hawley & Hawley	
	Au	Ag	Au	Ag	Au	Ag
#9: 185-195	Tr.	12.90	0.020	3.02	0.005	3.19
#11: 330-335	-	-	0.010	4.36	0.009	5.55
#12: 348-353	Tr.	15.00	0.024	2.42	0.005	2.62
#14: 100-105	-	-	0.092	1.08	0.062	0.72
#14: 107-112	-	-	0.030	3.06	0.036	3.20
#14: 200-205	-	-	1.350	10.90	0.358	10.16
#14: 385-390	-	-	1.720	3.12	0.099	2.78
#14: 422-427	-	-	0.280	2.56	0.126	1.47
#14: 547-549	0.46	7.30	1.160	6.32	0.305	5.32
#14: 655-664	-	-	6.820	13.04	1.730	10.57
#14: 766-771	0.58	14.90	1.180	13.56	0.407	13.98
#15: 133-137	-	-	0.016	2.84	0.008	3.43

<u>Table III-</u> Assay results from core split and sampled by ASARCO personnel. (results in oz. per ton)

Hole No.	No. of Samples	American Analytical Au	Ag
SC-6	9	0.005	0.05
SC-7	15	0.005	0.05
SC-8	25	0.003	0.06
SC-9	7	0.002	0.01
SC-10	None	-	-
SC-11	13	0.006	0.09
SC-12	8	0.003	0.09
SC-14	4	0.005	0.01
SC-15	11	0.009	0.19

Table IV- Comparison of assay results from pulps submitted by Arizona Michigan and NEW pulps from some areas prepared by ASARCO. (oz per ton).

Arizona Michigan Hole:Footage	Au	Ag	ASARCO Hole:Footage	Au	Ag
9:140	Tr.	12.50	9:142-152	Tr.	0.01
9:150	Tr.	13.20			
9:185	Tr.	12.90	9:182-187	Tr.	0.01
11:245	1.16	25.70	11:245-253	0.005	0.11
11:254	0.43	15.50			
11:292	0.52	9.00	11:291-300	Tr.	0.11
11:322	Tr.	12.80	11:319-338	0.003	0.10
11:357	0.01	11.20	11:356-363	0.003	0.16
11:387	Tr.	5.80	11:384-394	0.008	0.02
11:395	Tr.	13.80			
12:300	Tr.	13.90	12:302-307	0.003	0.06
12:395	0.01	14.40	12:392-400	0.005	0.07
14:537	0.34	8.40	14:531-542	0.003	0.02
14:705	1.12	13.10	14:702-711	0.005	0.01
14:755	0.10	7.90	14:752-761	0.005	0.01
15:252	Tr.	12.60	15:248-263	0.010	0.19
15:312	Nil	10.40	15:309-321	0.008	0.16
15:318	Tr.	13.20			

Table V- Surface Sample Lines and Numbers- (SC-J-Series)

Line	Sample Number	Cut in Footage	"alteration" Description	Remarks
I	1	50	wk	Starting on NW and Trending SE.
	2	42	wk-md.	
	3	50	wk	
	4	50	wk-md.	
	5	50	wk-md.	
	6	50	wk	
	7	50	md.	
	8	36	md.	
	11	25	wk-md.	Sample ends at DDH #11.
	-	80	Cover	
	3A	-	wk-md.	Offset sample, part of #12 zone extension.
	12	80	wk-md.	
	13	10	wk	
	14	50	wk	
	15	50	wk	
	4A	-	wk	Offset sample, part of #16 zone extension.
	16	30	wk	
	17	50	wk	
	18	25	wk	
	19	25	md-st.	
	20	25	st.	
	21	25	md-st.	
	22	15	st.	
	-	15	Cover	
	23a	10	md-st.	Sample ends at DDH #9
	23b	5	md-st.	
	-	90	Cover	
	24	35	md	
	25	15	wk	Offset from #24 but starts some place along schistosity.
	26	38	st.	
	27	26	wk	
	-	25	Cover	
	28	30	md.	
	-	20	Cover	
	29	35	md.	
	30	50	st.	Sample ends at proj of DDH #10
	-	50	Cover	
	31	37	wk-md.	
	32	25	wk-md	Sample at DDH #10 location.
II	33	50	wk-md	From NW to SE
	34	50	wk-md.	
	35	50	wk-md.	
	36	50	wk-md.	

Table V Continued

Line	Sample Number	Cut in Footage	"Alteration" Description	Remarks
III	37	50	wk-md.	From NW to SE.
	38	50	wk-md.	
	39	45	wk.	
	-	45	Cover	
	40	21	wk-md.	
	-	6	Cover	End of cover is DDH #14.
	-	20	Cover	
	41	50	md.	
	42	60	md.	
	43	27	md.	
IV	44	50	wk	From NW to SE.
	45	50	wk-md.	
	46	50	wk-md.	
	47	50	wk.	
	48	50	wk-md.	
	49	50	wk-md.	
	50	50	wk.	
	51	50	wk.	
	52	50	wk-md.	
	53	50	wk-md.	
	54	50	wk-md.	
	55	50	wk-md.	
	56	50	md.	
	57	50	md.	
	58	50	wk-md.	
	59	-	st.	$2\frac{1}{2}$' cut in tunnel opposite #58.
	-	80	Cover	
	60	50	wk-md.	
	61	50	md.	
	62	50	wk-md.	
	-	120	Cover	
	63	-	wk-md.	Damp grab near end of #62
	64	50	wk-md	
	65	50	wk-md.	
	66	50	wk-md.	
	67	50	wk.	
	68	30	wk.	
	-	80	Cover	
	69	50	wk-md.	
	70	50	wk-md.	
	71	50	wk-md.	
	72	50	wk-md.	
	73	50	wk-md.	
	74	30	wk-md.	
V	75	-	-	Grab from crushed ore pile from No. 4 lead.

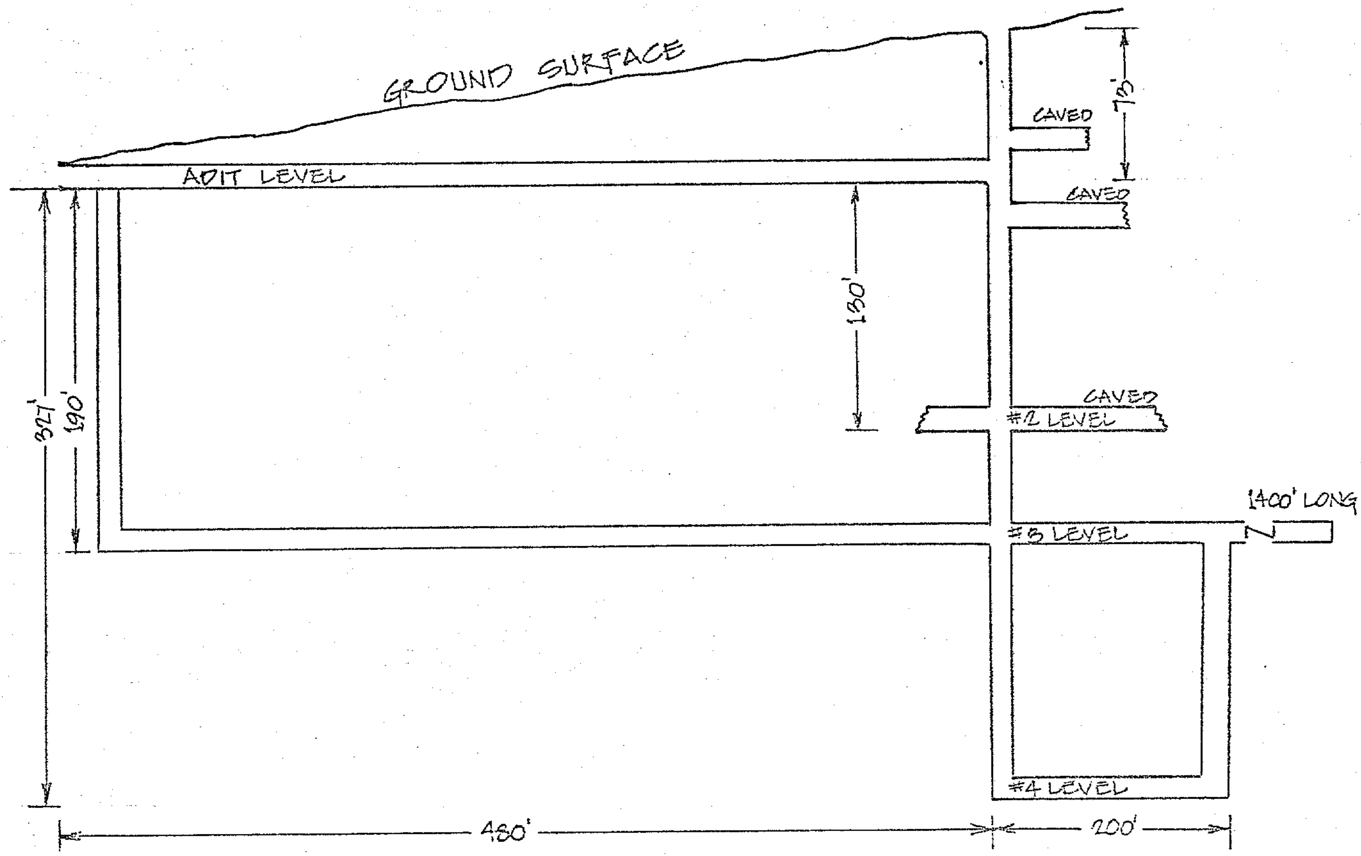
Table VI- Diamond Drill Hole Information*

Drill Hole Number	Surface Elevation**	Total Depth	Inclination & Direction	Bottom Hole Drift	Depth of strong Oxidation
1	4394				
2	4464				
3	4423				
4	4421				
5	4600				
6	4596	382			
7	4647	712			
8	4604	1254	88°@		
9	4337C.	400	86°@N38°W	48 feet	200 feet.
10	4488	400	86°@N46°W	87 feet	
11	4417	500	86°@		386 feet.
12	4324	402	90°@		284? feet.
14	4232C.	800	86°@		331 feet.
15	4157C.	567	75°@		467 feet.

* individual inclinations down holes #8,9,10,11,12,14, and 15 are given separately in Table VI-A.

** Corrected barometric elevations designated as "C", others are uncorrected.

FIGURE 1 SKETCH THROUGH MAIN SILVER CROWN WORKINGS



LOOKING SOUTHEAST
STRUCTURE DIPS TO NW@80°
1" = 100'

Resume of Arizona Assay Office Certificates on Pulps
submitted by Arizona Michigan Mining Company
(Copper values only on original certificates).

Dated 25 Feb. 1969

Hole-footage	oz Ag	oz Au
10-155	2.90	0.03
10-200	5.50	0.05
10-280	8.30	0.22
10-250	10.40	0.58
10-300	0.40	Tr.
10-325	7.20	0.32
10-340	5.10	0.38
10-360	12.00	0.72
10-375	9.90	0.66
10-400	9.60	0.94
11-200	9.80	0.46
11-212	16.90	0.34
11-235	21.20	0.88
11-254	15.50	0.43
11-245	25.70	1.16
11-262	6.70	0.44
11-272	25.70	0.97
11-282	12.60	1.02
11-292	9.00	0.52
12-200	0.40	Tr.
12-210	6.10	0.28
12-220	3.60	0.24
12-230	8.30	0.26
12-242	7.60	0.42
12-247	2.40	0.03

Hole-footage	oz Ag	oz Au
11-225	15.80	0.88
12-257	1.20	Tr.
12-267	6.90	0.38
12-275	4.80	0.01
12-290	5.00	0.34
14-487	11.80	0.54
14-497	13.00	1.06
14-512	5.70	0.46
14-520	6.70	0.40
14-526	10.70	0.38
14-537	8.40	0.34
14-547	7.30	0.46
14-562	7.10	0.84
14-584	12.50	0.42
14-574	6.70	0.28
15-100	2.10	0.28
15-107	3.30	0.26
15-117	6.40	0.22
15-130	2.80	0.14
15-140	4.40	0.01
15-150	2.90	0.02
15-160	0.80	Tr.
15-167	1.10	0.02
15-177	0.30	Tr.
15-192	0.90	0.01

Dated 5 March 1969

Hole-Footage	oz Ag	oz Au	Hole-Footage	oz Ag	oz Au
9-132	13.50	Tr.	12-348	15.00	Tr.
9-140	12.50	Tr.	12-357	14.70	Tr.
9-150	13.20	Tr.	12-376	3.20	Tr.
9-159	1.30	Tr.	12-385	14.40	0.08
9-167	12.80	Tr.	12-395	14.40	0.01
9-177	12.80	Tr.	14-705	13.10	1.12
9-185	12.90	Tr.	14-715	3.60	Tr.
9-195	11.50	Tr.	14-730	7.80	Tr.
9-199	13.50	Tr.	14-738	14.80	Tr.
9-222	3.70	Tr.	14-747	19.30	0.26
11-230	14.10	Tr.	14-755	7.90	0.10
11-240	17.20	Tr.	14-768	14.90	0.58
11-267	13.50	Tr.	14-775	4.50	Tr.
11-277	14.20	Tr.	14-785	7.70	Tr.
11-305	13.00	Tr.	14-795	4.40	0.01
11-322	12.80	Tr.	15-90	3.20	0.02
11-347	12.70	Tr.	15-126	2.40	Tr.
11-357	17.20	0.01	15-210	13.80	Tr.
11-387	5.80	Tr.	15-230	12.70	Tr.
11-395	13.80	Tr.	15-252	12.60	Tr.
12-300	13.90	Tr.	15-302	12.60	Tr.
12-310	15.70	Tr.	15-312	10.40	Nil.
12-320	6.00	Tr.	15-318	13.20	Tr.
12-330	14.10	0.01	15-332	12.70	Tr.
12-337	15.10	Tr.	15-342	13.40	Tr.

AMERICAN SMELTING AND REFINING COMPANY
Tucson Arizona

February 24, 1954

MEMORANDUM FOR MR. KENYON RICHARD

BROUSE TUNGSTEN PROSPECT
Pima County, Arizona

The Brouse tungsten prospect, located six miles due southwest of Arivaca (9.5 miles by road), was visited by Mr. Papke and me on February 20. Mr. Val Nuttall, New Year's Eve mine foreman, had previously described the area as one containing numerous showings of fluorescent tungsten stringers for distances of 1000 feet or more across the strike. Our brief examination determined that the veins were too narrow and spaced too widely to offer commercial possibilities.

The tungsten occurs as scheelite in small, irregular masses in a series of east-west, north-dipping quartz veins in granite. Occasionally scheelite could be observed in some of the outcrops without the aid of ultraviolet light. Such concentrations were quite rare; most of the quartz was barren, or nearly so. Minor sulphide mineralization was evidenced by small pockets of limonite in the quartz. Some of these closely resembled boxwork after galena.

The veins vary in width from one-half inch to two feet and are spaced 10 to 50 feet or more apart. They are discontinuous along strike, but occur throughout a quarter-square mile area. There were only two small prospect pits.

Samples from the outcrops and the gravel in the main wash were checked for radioactivity, but none was found.

JHC:ar

J. H. Courtright