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HOMEWAY REALTY
180 North Railroad Avenue
Willcox, Arizona 85643
602 384-2448

February 3, 1988

Westmont Mining Inc.
2341 S. Friebus Ave. #12
Tucson, Arizona 85713

Dear Sir or Madam:

I currently have listed for sale eight contingent patented mining claims in the Dos Cabezas Mountains. Since your company has shown an interest in mining precious metals in Arizona, I wanted to let you know of the availability of this property.

According to information I have found at the Arizona Department of Mines these claims, known as the Silver Camp Group, have never been extensively mined but contain considerable deposits of Silver, some Gold and Copper. If you are interested I will gladly forward to you a package of all the information I have been able to gather on this property to date.

If you desire more information on these claims or if I may guide your represenative to the location I will be happy to make whatever efforts necessary. Thank you for your time and consideration and I will hope to hear from you soon.

Sincerely,

D. E. Seidel

Dale Edward Seidel

REALTOR®

DALE
SEIDEL
REALTOR - ASSOCIATE

HOMEWAY REALTY
180 N. RAILROAD AVENUE - WILLCOX, AZ 85643
PHONE (602) 384-2448

Estate of
Ethel Pidgeon / Goodwin – heir to C.H. Parent
"Silver Camp" Group
158 acres in total – some ~~interest~~ internal spaces / fractions.

Surrounded by state grazing lease.

HOMEWAY REALTY
180 North Railroad Avenue
Willcox, Arizona 85643
602 384-2448

February 5, 1988

Hugo Dummett, District Geologist
Westmont Mining Inc.
2341 S. Friebus Ave. #12
Tucson, Arizona 85713

Dear Mr. Dummett:

Enclosed is the information on the Silver Camp Group as per our conversation this morning. I hope this will provide some needed information for you. I do not make any judgement as to the accuracy of any of this material. I am merely passing along to you the information as I have found it on file at the Arizona Department of Mines.

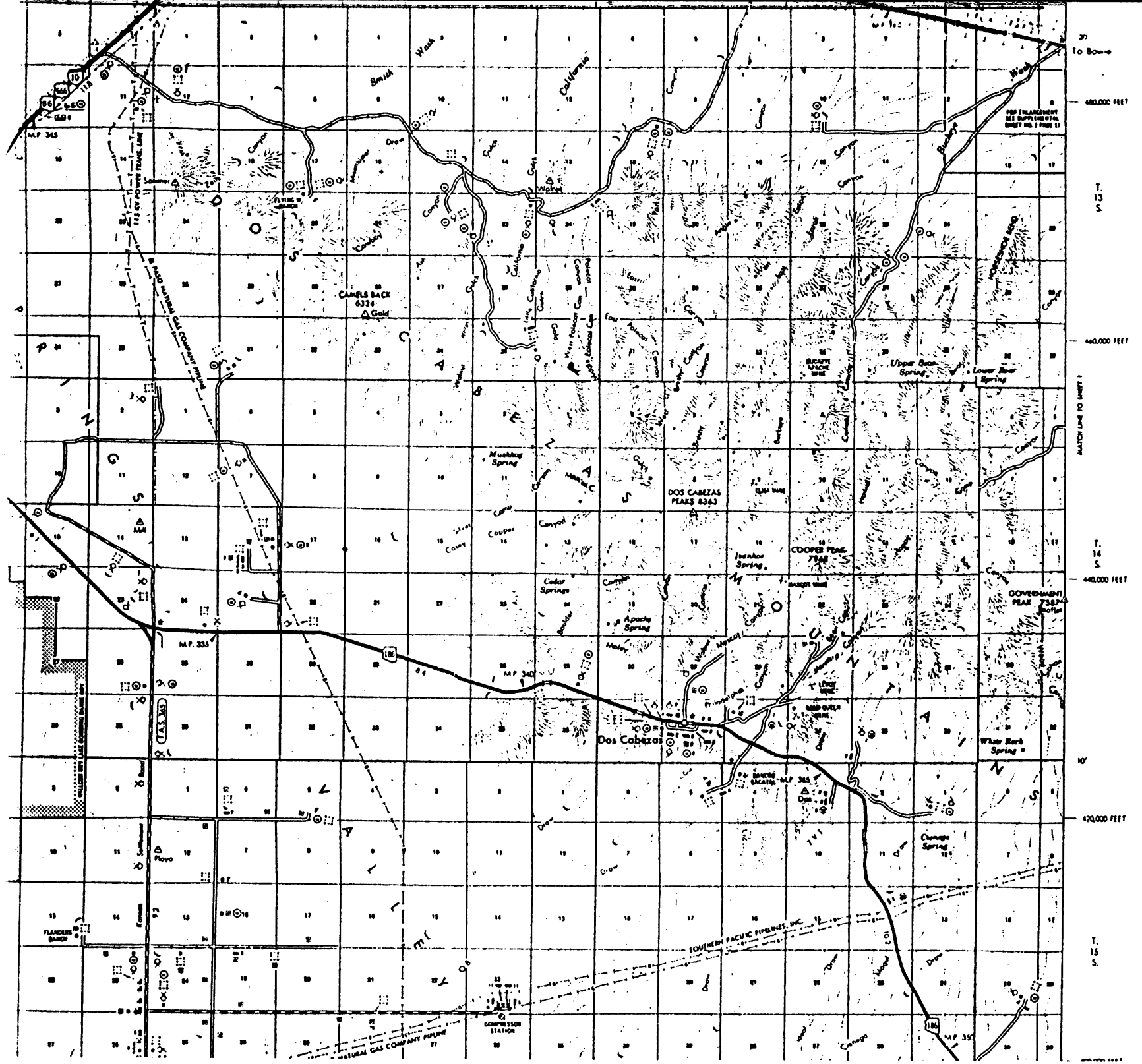
I have visited the property and it is accessable by 4 wheel drive road.

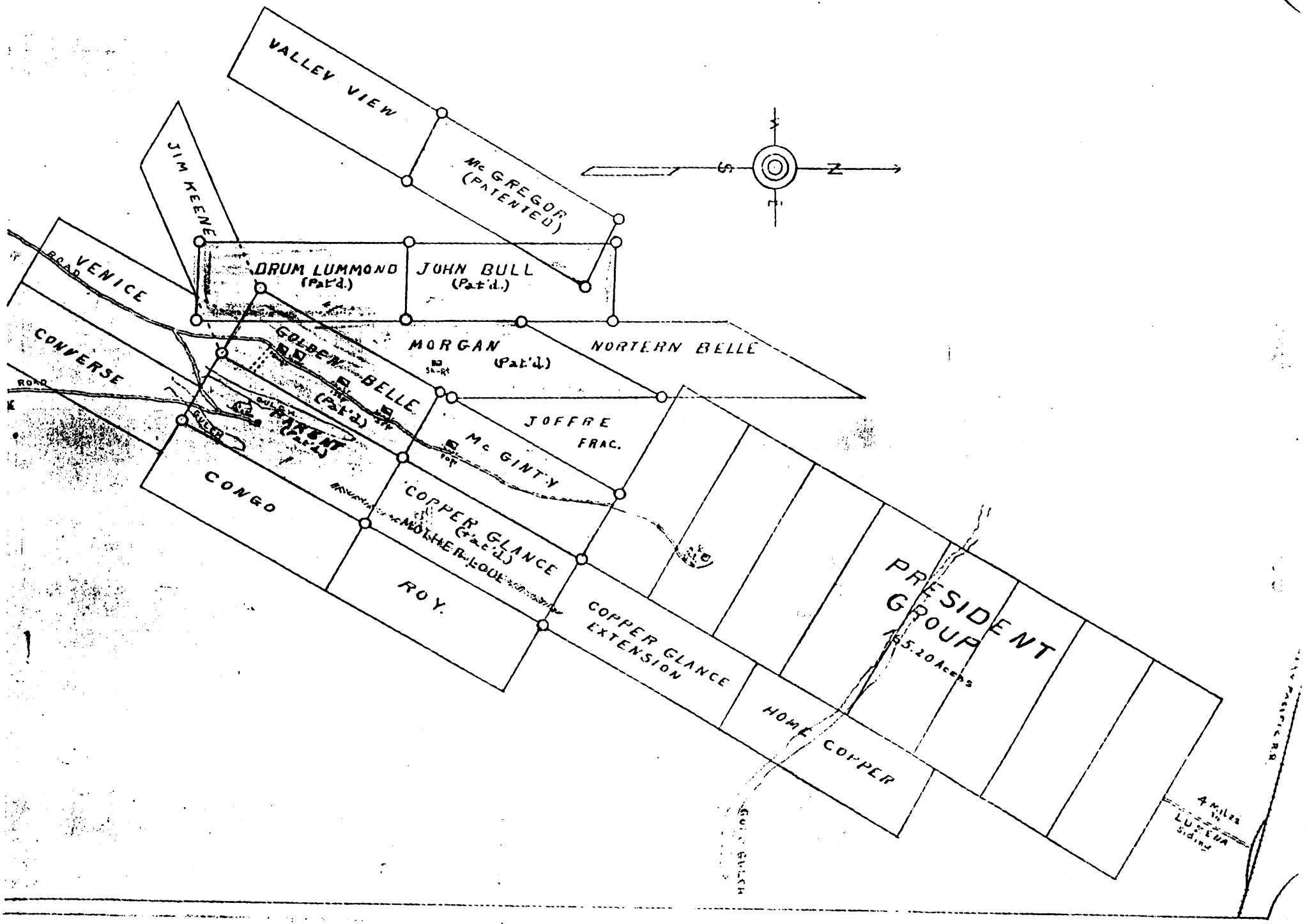
Thanks again for your call. Please contact me when I may be of further asistance to you.

Yours truly,

Dale

Dale Edward Seidel


To Bowie
480,000 FEET
460,000 FEET
440,000 FEET
420,000 FEET
T. 13 S.
T. 14 S.
T. 15 S.
CAMELS BACK 6336
Gold
DOS CABEZAS PEAKS 8363
COOPER PEAK 7868
GOVERNMENT PEAK 7387
Dos Cabezas
Walnut
Upper Bear Spring
Lower Bear Spring
Mustang Spring
Cedar Springs
Apache Spring
Ironside Spring
White Bark Spring
Cienega Spring
M.P. 335
M.P. 340
M.P. 345
M.P. 350
M.P. 355
M.P. 360
M.P. 365
M.P. 370
M.P. 375
186
FLANDERS RANCH
EL PASO NATURAL GAS COMPANY PIPELINE
SOUTHERN PACIFIC PIPELINES, INC.
COMPRESSOR STATION
MATCH LINE TO SHEET 1


VALLEY VIEW
Mc GREGOR (PATENTED)
JIM KEENE
VENICE
DRUM LUMMOND (Pat'd.)
JOHN BULL (Pat'd.)
CONVERSE
GOLDEN BELLE (Pat'd.)
MORGAN (Pat'd.)
NORTERN BELLE
JOFFRE FRAC.
Mc GINTY
CONGO
COPPER GLANCE (Pat'd.)
MOTHER LODE
ROY
COPPER GLANCE EXTENSION
HOME COPPER
PRESIDENT GROUP
65.20 Acres
4 Miles to LUZERA Siding
N
S
E
W

DESCRIPTION OF PROPERTY

Property consists of a group of eight Patetnted mining claims located in a low pass of the Dos Cabesas range of mountains in Cochise County, Arizona, about seven miles Northwest of the village of Dos Cabesas and about ten miles Northeast of Wilcox Station on the main line of the Southern Pacific Railroad. Accompanying map shows relative position of claims to each other.

Considerable development work has been done in the past while my husband was alive, but the property has never been worked on a large scale by reason of fact that my husband died before he had completed the preliminary work necessary. I do know however that values recovered, more than paid for development work which was done. There are a number of shafts, tunnels and drifts which will allow an inspection of the property and they should all be in fairly good condition as they were cleaned out and retimbered several years ago.

The important feature of the property is a great vein of soft, mineralized Porophyry extending in a Northery and Southerly direction through the entire length of the property, showing in places hundreds of feet in width. This vein, lying high and exposed to drainage by deep gulches on either slope of the mountain, has suffered greatly from leaching and shows low values on the surface for the greater part of its length, but the evidences of mineral are everywhere persistent and there is a marked increase in values with the slightest development.

On the " Copper Glance " claim is found the strongest and most extensive " upshoot " or " cropping " that occurs anywhere on this vein. This is a cropping of heavy black iron about 100 feet thick, carrying good values in gold, silver and copper. This cropping has only been developed to a depth of about 65 feet, with values increasing with depth.

Throughout the length of this main vein, numerous contact veins occur, cropping to the surface and ranging in width from a few inches to 15 feet. The contact occurs with lime, granite and in some instances quartzite, but in every vein, the Porophyry contains the mineral. These contact veins all dip towards the main vein and undoubtedly have their origin therein.

There is an abundance of good water on the property for domestic purposes and a sufficient supply for reduction purposes on a large scale can be developed if desired. A mill has recently been erected in the district, but capacity of same is not known at this time.

Eight Patented Mining Claims, known as the Silver Camp Group, Dos Cabezas District, being Copper Glance, Parent, Golden Belle, Drum Lummond, Morgan, McGinty, McGregor and John Bull, Mineral Survey No. 2371, Situated in Twp. 14 S, Range 26 E, G & S R B & M, Cochise County, Arizona, containing 158 acres, more or less.

The following is quoted from a description of the property made a number of years ago by a predecessor in interest. I cannot guarantee the accuracy of any of the statements quoted. This must be left to an examination by any person interested in acquiring the property.

"I hereby submit a crude statement and description of mining property, owned and controlled by me in Cochise County, Arizona, which may be of interest to you.

I will state that this property has had little publicity or exploitation. It has required a good many years of patient effort and many sacrifices on my part to assemble and acquire this property, and it has been my fondest hope and ambition to develop it with my own means, but advancing age and declining health has postponed the development I have so long contemplated and so ardently planned.

LOCATION OF PROPERTY

The property in question is located in a low pass of the Dos Cabesas range of mountains, in Cochise County, Arizona, about seven (7) miles northwest of the village of Dos Cabasas, about ten (10) miles northeast of Willcox Station on the main line of the Southern Pacific Railroad, and about fifty (50) miles north of the great copper mines of Bisbee and the Warren District.

The north end of the property is within about four (4) miles of "LUZENA" a small station on the main line of the S.P.R.R.

A Wagon Road traverses the entire length of the mining property. I will also state that the ground is unusually favorable for the building of a branch railroad right through the center of the mining property from [redacted] the existing railroad.

There is an abundance of good water on the property for domestic use and I believe sufficient water can be developed for reduction purposes on a large scale.

THE "MOTHER LODE"

Now, the most important feature of this property, and the one to which I particularly invite your attention is what I shall hereafter term

The "Mother Lode"

This is a great Vein of soft mineralized porphyry, which shows in places hundreds of feet in width, and extends in a northerly and southerly direction through the entire length of the property for a distance of about two miles, cutting right through the backbone of the mountain.

This Mother Lode, or vein, dips slightly to the southwest atan angle of about 45 degrees, dips under a slight gulch or "ravine", which parallels the vein about 300 feet west from its apex, and continues to unknown depths under the gradually rising ground of the hills beyond.

This great soft porphyry vein, lying high and exposed to drainage by deep gulches on either slope of the mountain, has suffered greatly from "leaching", and shows low values on the surface for the greater part of its length, but the evidence of mineral are everywhere persistent, and there is a marked increase in values with the slightest development.

However, on the "Copper Glance" claim, is found the strongest and most extensive "upshoot" or"cropping" that occurs anywhere on the "Mother Lode". This is a cropping of heavy black iron about 100 feet thick carrying values in gold, silver and copper.

The enclosed map is a copy of the original Goverment Survey, and shows the outlines of the Patented claims.

The small Gulch, or ravine, shown on the map as paralleling the "Mother Lode", and at which point said lode on its western dip has probably attained a vertical depth of perhaps 300 feet, seems to mark the point at which "leaching" has ceased and heavy mineralization has taken place.

This seems to be proven by the fact that from this point westward along and over the dip of the main vein covering the adjacent hills for a width of a half mile or more and a length of about two miles, numerous veins or ledges of porphyry, ranging in width from a few inches to 15 feet, crop to the surface.

Every one of these Porphyry veins carry high grade ore.

These are all contact veins, - Porphyry in contact sometimes with lime, sometimes with granite, sometimes with quartzite, but in every case the Porphyry contains the mineral.

Now, as these eruptions of mineral bearing Porphyry occur above and along and over the dip of the main vein, and as the character of the Porphyry seems to be identical with the Porphyry of the main vein, and as the character of the ores show a great similarity, and further - as ever one of these (as I shall call them) tributary veins dip toward or point directly into the main vein, it seems a positive and unquestionable fact that they are all tributary veins and that they all have their origin in the great "Mother Lode" underlying them.

There are perhaps 100 of these tributary veins showing on this property, each and every one of them showing high grade ore, on or near the surface, some of it assaying hundreds, and some of it thousands of dollars per ton, all of it carrying apparently the same percentage of lime and iron and otherwise showing a strong similarity as though it came from the same source, and although you may not be interested in these tributary veins for themselves alone, yet it is entirely possible, and reasonably probable that they may be made vastly profitable, for the reason these tributary veins wherever they may have been partially developed, seem to show a market increase in size, as well as a corresponding increase in the values of the ores which they contain.

On the GOLDEN BELLE Claim (shown on map) a shaft was sunk and 500 tons, more or less of ore were taken out and shipped under a lease. This happened some years ago before I acquired the property. I have never learned the exact value of the ore shipped, but from the most reliable information I could gain I learned that the ore was rich in Gold and Silver. No estimate given of copper contents. Considerable silver values were found in Golden Belle, McGinty and Morgan.

Judging from the character of ore bodies left in this property, which I found recently while partially cleaning out the old workings, and from a personal knowledge of the whole transaction relating to said lease, I feel warranted in believing that the values given in my report are very conservative.

I cannot in this communication go into all the details of development work done on this property, other than to say it has been extensive and that all

of the work done has shown good results, and has not only furnished valuable and necessary information relating to the extent and value of the property, but the ores extracted have far more than paid the cost of these preliminary developments.

I do not believe I am too optimistic in claiming that the property, when properly developed, will make one of vast extent and richness, and therefore worthy of interest and investigation.

The extent of this property is great and there are many places on the property promising good results with development."

I do not know the present condition of the wells.

If by chance you should have occasion to refer to Mineral Survey No. 2371 you will note it is therein stated: "Approximately T 13S, R 27E Unsurveyed". whereas a subsequent survey disclosed that this is in error. However, this is not important because a title company certificate will be furnished.

For your further information I quote from the report of a Mining Engineer made a number of years ago. This was found in the papers of a predecessor in interest. I do not know the name of the Engineer, nor can guarantee any of matter therein. It is furnished merely as a possible source of interest:

"GEOGRAPHICAL SITUATION."

The property is situated in the South Eastern part of the State of Arizona, in Cochise County, which contains an area of 6,147 square miles, being almost square in shape, extending 83 miles North and South, and 84 miles East and West, being slightly larger than the combined areas of the States of Rhode Island Connecticut.

The surface of the County is rugged, being traversed from North to South by three parallel ranges of mountains. In the North center of the County just South from the Railroad pass are the Dos Cabezas Mountains, upon whose flank the mining property

in question is situated. This range of mountains trend somewhat East of Southeast for a distance of about 30 miles, when viewed from the West, the Northern part of this range appears low and barren, further South it culminates in two precipitous twin peaks that rise 8,350 feet above sea level, and form the most distinctive land mark, and are known as the Dos Cabezas (two heads). At the extreme Southern extremity of the range is the well known Apache Pass.

This property is located in a pass or low draw of this range of mountains, about 12.6 miles North-east from the town of Willcox, on the main line of the Southern Pacific Railroad.

The property consists of eight (8) patented claims, the patented claims were surveyed in February 28, 1908, and patented July 18, 1908, under Phoenix mineral entry #424, serial #94699, mineral survey #2371, in T 14 S. R 26 E. Sec.-1-11-12. Latitude 32 09' 38" N. Longitude 109 38' 90" W. in the Dos Cabezas Mining District.

CLIMATE.

The climate is arid, or semi-arid, and most of the rain falls in a few heavy storms, between the middle of July and the Middle of September. The average temperature at Willcox during a period of 25 years was 62°F. The hottest part of the year is June and July preceding the rainy season. In Winter the temperature seldom falls below 10°F. The rare dry cloudless atmosphere allows the rays of the sun to penetrate to the earth readily, but also permits the rapid escape of heat, hence in both Summer and Winter it is warm while the Sun shines, and cool at night, the following rain fall for a period of 30 years at Willcox gives a general idea of the District:

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
9.76	.89	.81	.15	.24	.24	2.97	2.51	.94	.53	.65	.71

this gives the average rain fall for the period of 10½ inches, the greatest rain fall for this period was in 1905 when 23½ inches fell, the lowest was during 1897 when but 5.66 inches fell.

STORMS & WINDS.

Most of the storm winds come from the South-west, but the prevailing wind is from the South, South-west and West. in order of their prevalence, and owing to the high and cool dry air the wind is very penetrating at certain seasons of the year.

TIMBER & VEGETATION.

There are six distinct zones of vegetation in this district, which range from the highest flanks of the mountains to the barren alkali flat of the valley sink. The first zone might be known as the tree or forest zone, is found in the higher reaches, where usually the trees are scattered, or grow in clumps, yellow pine predominates. Lower down on the foot hills, junipers, live oaks, and cedars are common. Sycamore, cotton wood, walnut, huckleberry etc. are found along the stream courses, water being the controlling factor of growth.

The second zone is adjacent to the mountains and is composed mostly of grasses and brush, and bounded on its lower side by the third or mesquite zone, in this second zone are many different sorts of grasses and brushes, and in some places vigorous growths of yucca known as "groves of Yucca". In the Third zone the mesquite occupies the best soil of the valley. Here mesquite bushes grow 5 to 19 feet in height, below this is the Fourth zone which lies almost to the immediate East of the town of Willcox, and might be designated the sage brush area, which grows in the sandy soil of the wind built area. The fifth zone borders the margin of the barren flat Gouth of Willcox, where the prevailing growths are the salt bushes, and salt grasses and other alkali resisting plants, and the lowest part of the flat is the sixth or barren zone upon which nothing grows.

GEOLOGY

In general the mountain ranges of Arizona consist of Pre-Cambrian granites schists or an overlying series of Paleozoic quartzites and limestones with frequent intrusions of masses of Cretaceous or Early Tertiary lavas.

The Dos Cabezas mountains are flanked on the Southwest by hard Paleozoic quartzites and the later limestones that have a dip to the Southwest at a steep angle. A closer study reveals that the range consists of syenite, schists, paleozoic strata and porphyry, the syenite and schists are overlain, the schists unconformably by the Paleozoic, the syenite is not uniform in kind, but a portion is characterized by crystals of orthoclase of large size, some 1 to 2 inches in length, the schists are usually foliated, and fall under the classification of gheiss, which in the vicinity of the central mountain core contain magnetic iron. The Paleozoic strata in some places show thousands of feet of limestones, shale, and some sandstone, with Carboniferous fossils near the top of the series, and lower Silurian (?) near the base, the porphyry overlies the other rocks and is much inferior to all in mass, but constitutes the core of the range, and more especially the peaks of Dos Cabezas.

There is a strongly marked break between the Archean schists and the paleozoic beds, the Archean sediments were foliated, tilted and lifted above the ocean and eroded before the Paleozoic was laid down, one shows complete foliation, while the other retains ripple marks and fossils. The angle of discordence in dip is as great as 65° and the lowest beds of the upper system is a coarse sandstone, which was once spread over a level surface, but later revolutions have tilted the rocks into new positions in which the Paleozoic strata are inclined at all angles even passing the vertical, especially is this true near the peaks of Dos Cabezas, and also a short distance Southeast of the property under consideration. Subsequent denudation has so far removed them, that their area of outcrop are now inferior to those of the Archean, and their metamorphiam well marked, the limestones have in some places been changed to marble.

The general trend of the structural lines of the latter fold or uplift is North 65 degrees West, and the original strike of the schist was due North.

The general structure of the Dos Cabazas Mountains is monoclinal, and is demostrably due to faulting, the same may be said of the Dragoon Mountains West of the sink, or Sulpher Spring Valley, this valley representing the locality of minimum uplift, the Mountains on either side of the maximum.

"WATER"

Water seems to be plentiful, especially so above the quartzites and also in the valley Westward of the range, there seems to be quite a variation on mineral constituents between the valley or old lake bed and the mountain range, at Willcox the Bicarbonates are higher than at the property, while the latter place has more chlorides and sulphates, as is the calcium content due to the proximity of the Paleozoic limestones, this is offset by a low alkali content at the property, while at Willcox the alkali content is greater.

The old lake bed, as mentioned above, which occupies the lowest part of the valley west of the Mountains under consideration, is not to be considered a valley due to erosion, but merely the interval between lines of maximum uplift, the Dragoon Mountains on the west of the valley, and the Dos Cabezas on the East, forming the two loci of the uplift.

The sink of the valley was occupied by an ancient lake 30 miles long and 11 miles wide and had a shore line of about 50 miles, covering approximately 130 square miles, it stood at an elevation of 4,180 feet above sea level, and its deepest portion measured on the present land bottom, would be 45 feet, but no estimate can be given of the lakes depth as it existed in Pleistocene time, since no boreings have been deep enough to bring to light the Paleozoic stratas that are exposed on the mountainflanks that plunge beneath the lake, but it must have been hundreds of feet deep, if it existed today it would cover the S.P. RR Station "Hado" 30 feet and even the town of Willcox would be under water. Since it received the drainage of the mountains that hemmed it in on all sides, and having no outlet, its waters would be salty. The ancient shores can still be seen where the debris of the mountain wash had been raised up in ridge like elevations due to the action of the waves. This shows conclusively, without other existing facts, that this portion, at least, of Arizona was a much more humid place than it is today, and its high rainfall no doubt played an important part in the deposition of the ores found in the mountains on all sides, by the circulating surface waters.

"MINERALIZATION"

Igneous districts, or districts of combined igneous and sedimentary rocks, are always the geological formations in which

veins of metal occur, and as has been indicated above, the district geology shows an igneous rock which lies in juxtaposition with the limestone. It is a well known fact that many very important metaliferous deposits of Arizona occur associated with limestone and an igneous rock, the three great producing districts of Arizona, namely, Globe, Bisbee & Clifton-Morenci resemble each other in that the deposits occur in a limestone region with intrusive eruptive rocks, under conditions of extreme aridity.

The peculiar action of intrusive rocks upon adjacent sedimentary rocks is a well known fact in geology and petrography, as would naturally be expected, the sedimentary limestones would suffer a more or less intense metasomatic alteration, the gangue and ore replacing the limestone, which becoming shattered by the great dynmatic action, would allow the mineralizing solutions to find their way along the planes of fracture, and the silver lead ores would be deposited by metasomatic interchange between minerals carried in solution and the constituents of the limestone.

The original ore deposition appears to have occured mainly along great flat plains, near or adjacent to the dikes of intrusives that cut the limestones, and a sort of secondary migration has taken place along subordinate fractures, all of which evidently formed channels for the circulating mineralized waters.

Experience informs us we should expect a change of ores with depth, we can expect in the process of alteration of surface agencies the oxidation products of silver and copper combinations, which have been leached down more or less and redeposited as sulphides, and should be in greater abundance in contact with the original sulphides of the deposit, this we can readily conceive geologically, when we take a mineralized zone, such as the present one under discussion, and follow its sequences, since its metaliferous deposition down through the lapse of time, with its attending drosions and denudations, and, as the latter progressed, a lower zone would slowly change into the next one above, thus as time goes on it will be a constantly richer zone that has been raised to the surface to be oxidized, and because of the percolating surface waters, it would have part of its oxidized products carried back and re-deposited, either as oxides or sulphides, hence the longer a deposit has been subjected to denudation the greater will be the enrichment below the surface.

"DEVELOPMENT WORK"

There has been considerable prospect development work upon the property, the numerous shafts and quite large stopings would indicate that rich ore had been mined and shipped, as none remains on the dumps, with the exception of very small amounts, much development work has been useless, as the workings are driven, in some cases many feet into the Paleozoic limestones which are barren, the miners evidently not understanding the formation, and therefore expended much time and money.

In the shafts sunk upon the property, they followed the rich streaks until water prevented further work, but what has been done shows that the mineral veins are not uniform in width nor character. Therefore, one may expect a variation in the values, also a severe fluctuation in the width of the "pay streak". As no real test has been made upon the property from an engineering standpoint, we are warranted therefore, from the geological formations exposed, and from the numerous test holes put down in times past to water, that further exploration be undertaken with modern methods, and rigid assays.

No estimate of tonnage can be given in this report, nor can this be done till proper equipment is placed, to remove the water and clean out the shafts and so forth.

"CONCLUSIONS"

After crossing and recrossing the district, we find it to be very highly mineralized, with a pronounced strike of N 60° E for the mineralized zones, and a blanket vein crossing these almost at right angles with a dip of about 40°, the order or mineralization is somewhat like the following:

Near the intrusive masses, the central core of the mountains especially of it's northern portion, the highest gold values predominate, next lead, then copper, although there are off-shots or veins which have radiated from the main fractures, which carry all of the three values, silver was deposited along with the lead.

There has been many secondary minerals formed from the above with the exception of the gold, and are found throughout the rock masses.

This district has won the name of "Silver Camp" in the early days, and all the assays show that it has well won its name.

I do not hesitate to ask that money be expended to develop the property on the prospects shown."

Since the foregoing reports were found among numerous papers of a predecessor in interest, another of his reports on the property has come to light. While, again, I cannot guarantee the accuracy thereof, I do quote it below merely as a matter of information:

"Below the fault where it has been cut by"Gold Gulch" which crosses the fault near its north end, much gold has been found

by placer miners in the gulch, and many nuggets of gold and silver have been found. One silver nugget was said to weigh 60 lbs.

Mexicans have been engaged in placer mining in this gulch during the rainy seasons for many years, a great deal of placer gold having been thus mined there, many important gold nuggets being secured. There are also quite extensive placers on the south side of the mountain. These are both gold and silver placers. The black sand, according to reports, assayed from $200. to $300. per ton. However, the absence of water for sluicing has caused these placers to be inoperative.

The foregoing is just another of the many indications of the highly mineralized nature of the district in which my eight patented claims are located."

I am the sole owner of the fee of the eight patented parcels referred to above, and if additional information is desired I shall be pleased to attempt to secure it.

Mrs. Ethel M. Pidgeon,
540 So. St. Andrews Place,
Los Angeles, Calif. 90005

Telephone: 382-0569

COPY

C. H. PARENT MINING PROPERTY.

PATENTED
DOS CABEZAS MINING DISTRICT,
COCHISE COUNTY, ARIZONA

I own a group of mining claims in the Dos Cabezas Mining District of Arizona that I wish to bring to your attention. I regret that I have no comprehensive report of this property to furnish you, and I am not able to make such a report; yet as a miner of fifty years' experience in most of the mining districts of the West, I feel that this property is of enough importance to ask you to either see it or send an able engineer or geologist to make an examination of the property.

This property is located within three and one half miles of one railroad on the south side of the range and within six miles of the main line of the Southern Pacific Railroad on the north side, with a downhill pull on both sides and about twelve miles from Willcox, Arizona.

The main, and unique feature of this property is an immense fault, which cuts the entire range at right angles, and can be traced readily for more than a mile on either side of the mountain. This fault lies between granite and limestone, extents in northerly and sourtherly direction and develop ments made by me show an average width of about 800 feet. This space seems filled with a soft, or crushed mass of porphyry, quartz, schist, shale and something resembling kaolin; also clay, the whole mass be mineralized.

The granite lies on the west of the fault, limestone on the east. On the west side of the fault there is a rather low hill that seems cut by many intrusions of igneous rocks, cutting through the granite in wide sections, with a strike toward and into the main fault. These intrusions are porphyry, diorite, quartzite, and something resembling shale, or schist. These intrusions show numerous veins of high-grade ore of gold and silver. All of these intrusions covering two or three hundred acres show this high-grade ore, sometimes running into thousands of dollars per ton. All of these rich veins plainly either dip into ,or extend into the main fault. Considerable development has been done on these veins, and considerable ore shipped therefrom, all of which, so far as I know, has averaged $100 per ton. I think I can confidently state that more than fifty distinct veins can be traced into the main fault, all showing high-grade ore.

There is a well defined vein of about five feet along the granite side of the fault. A shaft of 150 feet in depth was sunk on this vein about forty years ago and 600 tons, more or less, of high-grade ore were shipped from this shaft. I was on the ground at the time and saw much of this ore taken out, knew the men who were working the lease and they told me at that time, that the cost of shipment, and treatment in those days to Colorado was such that nothing under $80 ore could be shipped. They very carefully hand sorted all their ore, beating off all the right, soft ore, the chlorides, horn silver, and sulphurets, and throwing the second class ore to one side where you can find to day about 40 tons of this second class ore as they left it, mostly hard quartz and iron.

The lessors used a one horse whim for their work, which was done after an extremely rainy season. After getting below 100 feet, the surface water made it impossible for them to go further; so they stoped out above the water until they sold the mine, in the mean time, putting in small and inferior stulls and lagging, which

very soon gave way, letting in the waste from the stopes and filling the shaft, which has remained in this condition for forty ye rs or more.

This shaft is centrally located on the line of contact with the granite and can be used for much of the development of the mine property, as most of the veins of rich ore seem to concentrate in the line of the dip of this shaft, so that it will be entirely feasible, and practicable to connect most of the property by drifting and crosscutting from this shaft, thus insuring a very economical development, at least for the gold and silver ores, which seem to lie principally west of the main fault as well as for the crosscutting and otherwise developing the main fault.

About 600 feet north of this shaft on the east side of the main fault, near the line there occurs a blowout, or outcropping of black iron about 100 feet wide, coming to the surface for less than 300 feet in length). A crosscut at about 65 feet eyth shows a strong streak of copper ore of about six feet width, showing oxidized iron, chalco-pyrite and bornite copper ore, some of which shows value of 24%, 28% to 36% copper, with considerable gold and silver. This crosscut was extended to the line about 100 feet or more east through porphyry, showing some copper all the way, - the line being apparently a solid mass nearly vertical. However, the indications at this point promise a big copper mine, as well as a big silver and gold mine. Unfortunately this crosscut is at present caved in so that it can not be seen.

There is another feature which I, as a miner, deem of great importance. This great fault is located in a low pass, or draw, in the mountain; it is the lowest point in the range -about 6,000 feet altitude. Directly east of the fault the ground rises rapidly into high hills reaching an altitude of 8,300 feet in about two miles. There are many mineral veins in this area, some showing immense croppings, many of them showing evidence of extreme leaching. These veins all seem to point unerringly downward toward this fault. It has become a settled conviction with miners who have spent most of their lives in looking for minerals in the bosom of Old Mother Earth that it was at some remote period "Some hot place" and that at the time these ledges and veins were formed that this earth of ours was largely in a molten, or at least fluid, state. Is it not feasible, or at least probable, that these liquid minerals or mineralized waters found their way to low places for lodgement? On the principle that Placer Gold finds lodgement in the stream-beds, or that molten minerals settle to the bottom of smelter furnaces, or to the bottom of assayers' crucibles? Therefore if these theories are worth anything or are in any way applicable to the case in point, is it not probable that this great fault and its tributaries, lying as it does at the lowest point at the base of this great mineral range, may have accumulated greatly increased enrichments from those leached mineral deposits above? I am writing as only an untutored miner, - is there any one able to question or dispute these theories?

I have mentioned that this great fault was easily traceable for more than a mile. On the north side of the mountain, a 5 by 8 feet shaft sunk 80 feet deep on this northern extension in the soft porphyry showed value 1/4 to 1% on average of the whole shaft, occasionally nuggets of chalcopyrite being found. A vein of high-grade silver ore of from six to twelve inches has followed this fault persistently, almost its entire length, on the granite side.

Below the fault, where it has been cut by "Gold Gulch" which crosses the fault near its north end ,much gold has been found by placer miners in the gulch, and many nuggets of gold and silver have been found, - one silver nugget, weighing 60 lbs., was taken from a hole drilled through it, drillings assaying over $12,000 in silver and gold. Ores taken from the various shafts and tunnels on this property have averaged .39 troy oz. gold and 473.1 troy oz. of silver to the ton.

The Mexicans have been engaged in placer mining in this gulch during the rainy season for more than forty years, a great deal of placer gold having been thus mined

here, many important gold nuggets being secured, some worth, and sold for, at from $100 up to $700 each. There are also quite extensive placers on the south side of the mountains, directly under my quartz claims. These are both gold and silver placers, the black sand, as found, assaying $200 to $300 and more per ton. These placers, being directly below and under my claims, unquestionably represent erosions from said claims. However, the absence of water for sluicing has caused placers to be inoperative.

I own eight patented claims covering the main fault, or about 158 acres, which cover a part of these placers, which should become quite valuable, when water from the operation of the mines may be stored for sluicing.

There is a well of water within 300 feet of the hoisting plant which will furnish good, palatable water for plant and domestic needs. Other water may be secured by gravity. There is a comfortable cabin twelve by twenty-four on the ground, and a fairly good wagon or auto road from Willcox to the property.

My property covers a solid body of land of about 158 acres.

In conclusion I will say, it has been my intention to make only truthful statements, as I, a miner, understand the property. I am very anxious to have this property fall into able and capable hands, people who are able to develop it into one of the great mines of the country.

BAVERSTOCK & PAYNE ASSAYERS

Los Angeles, 10 - 15 - 17

	Values	Gold Oz.	Gold Value	Silver Oz.	Silver Value	Au Ag Total	%	Copper Value
1.	Copper Glance	.12	$2.50	8.6	$ 7.74	$ 10.14	24.2	$121.00
2.	Copper Glance	.16	3.30	5.0	4.50	7.80	15.2	76.00
3.	Copper Glance	.14	2.90	2.0	1.80	4.70	8.6	43.00
4.	Copper Glance	--	--	8.2	7.38	7.38	28.7	143.50
5.	Golden Belle	.12	2.50	55.2	49.68	52.18	2.6	13.00
6.	Golden Belle	.39	8.05	223.3	199.07	207.12	1.4	7.00
7.	McGinty Mine	.07	1.45	288.3	259.47	260.92	0.8	4.00
8.	McGinty Mine	.11	2.20	106.6	95.94	98.14	7.7	38.50
9.	Morgan Mine	.06	1.25	98.5	88.65	89.90	8.2	41.00
10.	McGregor Mine	.07	1.45	40.8	36.72	38.17	0.3	1.50

Silver 90¢ per oz.

Copper 25¢ per lb.

COPY

ASSAY CERTIFICATE
BAVERSTOCK & PAYNE
223 West First Street
Los Angeles, California

For Mr. C. H. Parent

Our No. 4040 Entered for Record Sept. 16-21

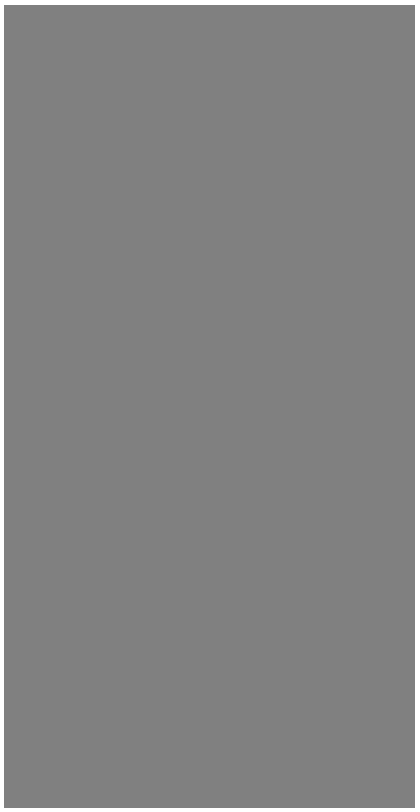
Owner's Mark or Description	Gold Per Ton Oz. Troy	Gold Per Ton Value	Silver Per Ton Oz. Troy	Silver Per Ton Value	Total Bullion Value
#1. Morgan Mine	.04	$0.85	250.2	$250.20	$251.05
2. McGinty Mine	.08	1.65	473.1	473.10	474.75
3. McGinty Mine	.09	1.85	228.8	228.80	230.65
4. McGregor Mine	.02	0.40	55.1	55.10	55.50
5. Morgan Mine	.03	0.60	26.1	26.10	26.70
6. McGinty Shaft	.05	1.05	142.8	142.80	143.85

All values based on current New York quotations.

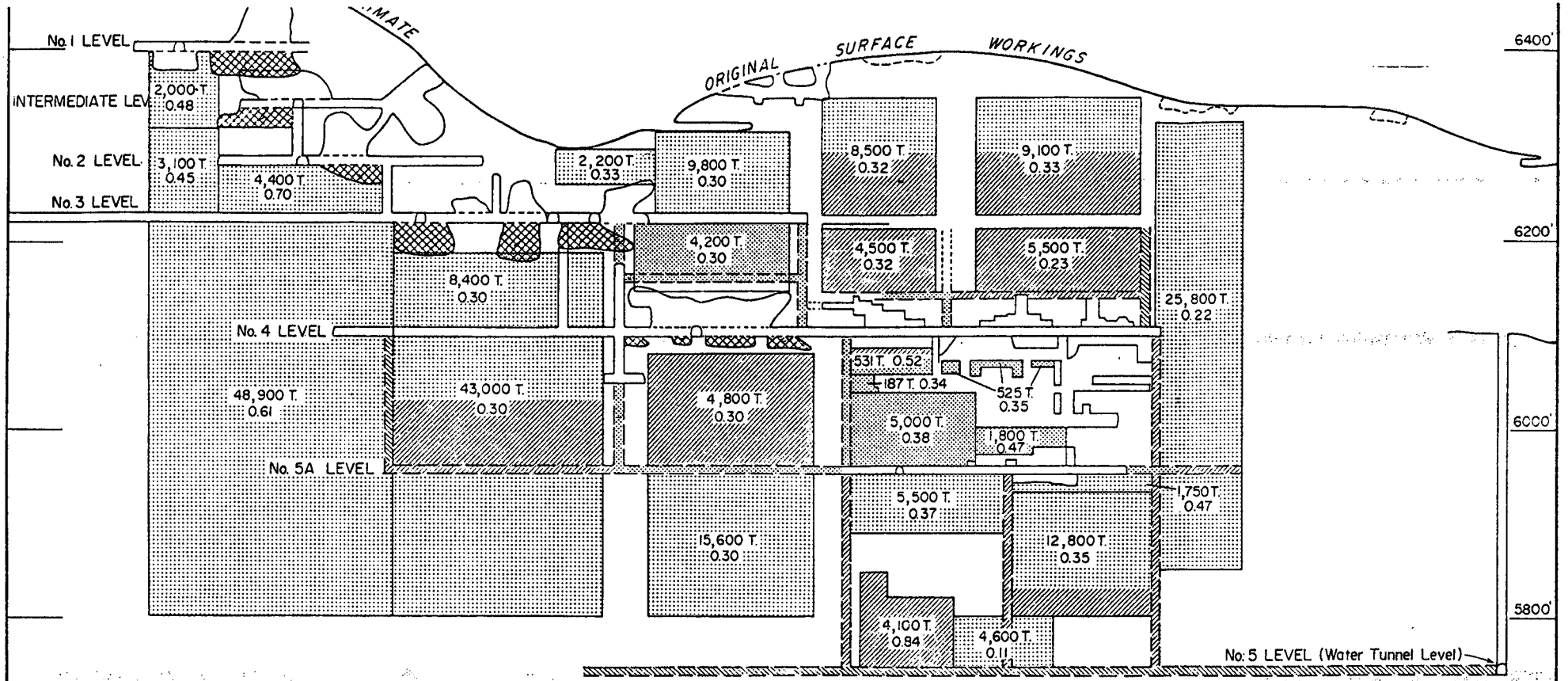
Gold $20.67 per oz. Troy.
Silver 1.00 cts. per oz. Troy.

Signed Baverstock & Payne
This Date Sept. 17 - 21

	oz.	Gold	Silver		Total	% Copper	Value
Copper Glance	.12	$2.50	8.6	$ 7.74	10.04	24.2%	$121.00
Copper Glance	.16	3.30	5.0	4.50	7.00	15.2	76.00
Copper Glance	.14	2.90	2.0	1.80	4.70	8.6	43.00
Copper Glance	--	--	8.2	7.34	7.38	28.7	143.50
Golden Bell	.12	2.50	55.2	49.68	58.18	2.6	13.00
Golden Bell	.39	8.05	223.3	199.07	207.12	1.4	7.00



Northern Miner, April 18, 1988



EXPLANATION

- YEAR 1 DEVELOPMENT
- YEAR 2 DEVELOPMENT
- RESERVES - ALL CATEGORIES 236,768 TONS, AVERAGE GRADE OF 0.384 oz/T. GOLD
- FILLED STOPES, 4,507 TONS OF 0.32 oz/T.

FT 0 50 100 200 300 FT

m 0 25 50 100 m

QUEENSTAKE RESOURCES

DOS CABEZAS PROJECT

GOLD PRINCE MINE

PROPOSED DEVELOPMENT PLAN

LONGITUDINAL SECTION - ORE RESERVES

COCHISE COUNTY, ARIZONA

AUG -1987

QUEENSTAKE RESOURCES LTD.

DOS CABEZAS PROJECT - JULY 1987 SAMPLING

3 Level Gold Prince Mine:

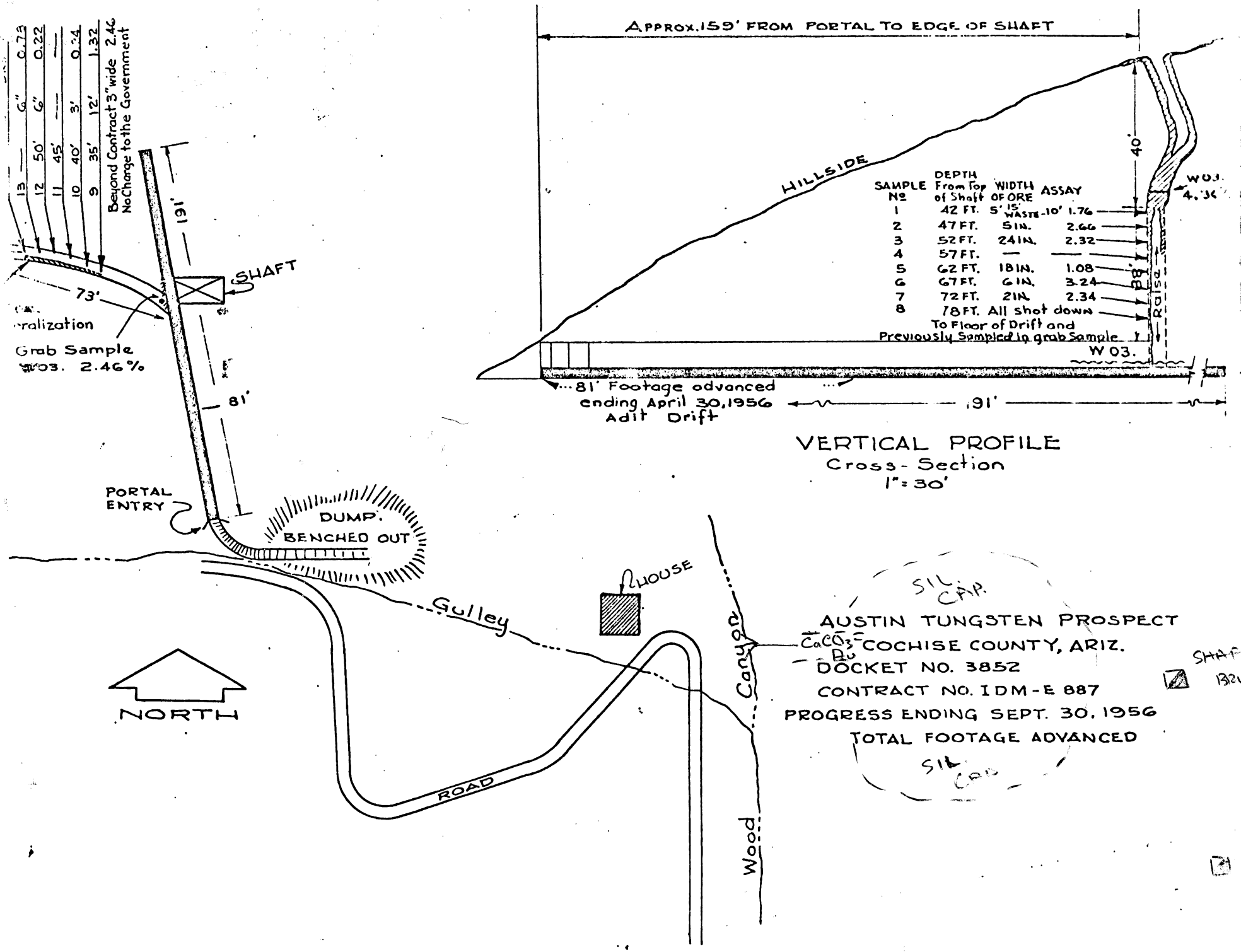
West ore shoot:		
Old stope west face	3.5'	0.110
+ 10' west	3.2'	0.040
+ 20' west	3.0'	0.020
+ 30' west	4.2'	0.010
+ 40' west	3.5'	1.250
+ 50' west	4.0'	1.575
+ 60' west	3.6'	0.900
+ 65' west	3.8'	0.330
+ 70' west	4.2'	0.470
+ 80' west	4.0'	0.580
+ 90' west	4.8'	0.035
End of sampling		
East ore shoot:		
Vein in drift rib	3.0'	1.662
+ 10' east	3.6'	2.015
+ 12' east	0.8'	3.798
+ 20' east	3.0'	0.095

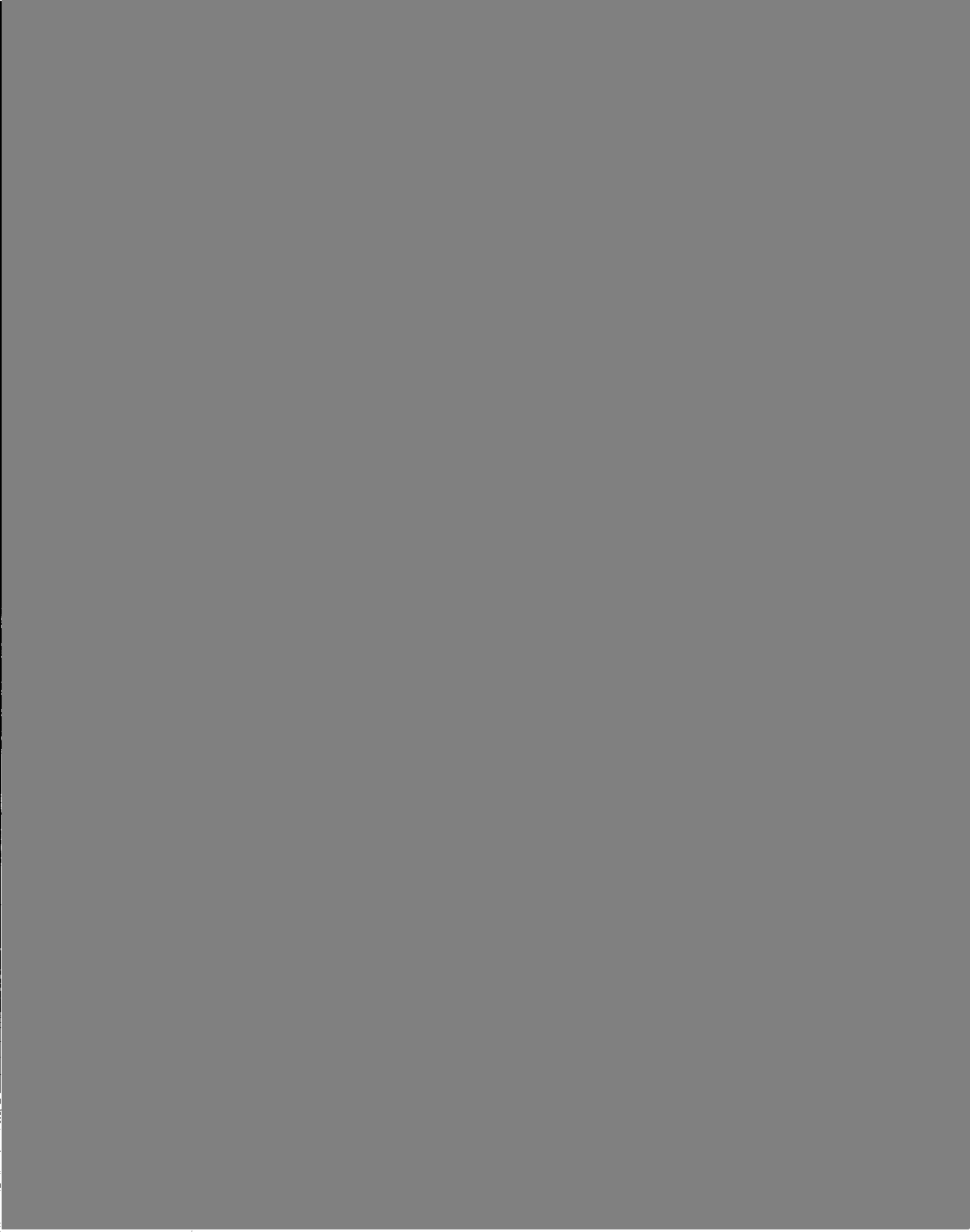
4 Level Gold Prince Mine:

6 Stope-5 Stope ore shoot:		
East face 6 stope	4.6'	0.425
+ 10' east	3.0'	1.430
+ 20' east	3.5'	0.180
+ 30' east	4.0'	0.125
West face 5 stope	5.1'	0.385
+ 10' west	6.0'	0.065

5A Level Gold Prince Mine:

South vein ore shoot:		
Brow at No.1 Raise	4.8'	0.710
+ 5' west	4.0'	0.520
+10' west	3.8'	0.080
+15' west	3.0'	0.075
+20' west	3.0'	0.045
+25' west	4.5'	0.105
+30' west	3.0'	0.045
Stope backs P.D.	4.0'	1.330
+ 5' west	4.2'	0.240
+10' west	4.2'	0.070
+15' west	4.3'	0.070
+20' west	4.4'	0.030
+25' west	4.3	1.840
+30' west	4.0'	0.550
+35' west	4.0'	0.440
West brow 3 Stope	4.2'	0.480
+ 5' west	3.8'	0.135
+10' west	4.1'	0.340


APPROX. 159' FROM PORTAL TO EDGE OF SHAFT
HILLSIDE
40'
W03. 4.3%
SAMPLE Nº | DEPTH From Top of Shaft | WIDTH OF ORE | ASSAY
1 | 42 FT. | 5' IS' WASTE-10' | 1.76
2 | 47 FT. | 5IN. | 2.66
3 | 52 FT. | 24 IN. | 2.32
4 | 57 FT. | — | —
5 | 62 FT. | 18 IN. | 1.08
6 | 67 FT. | 6 IN. | 3.24
7 | 72 FT. | 2 IN. | 2.34
8 | 78 FT. All shot down To Floor of Drift and Previously Sampled in grab Sample 1
W03.
88'
Raise
81' Footage advanced ending April 30, 1956 Adit Drift
91'
VERTICAL PROFILE
Cross-Section
1" = 30'
13 — 6" 0.73
12 50' 6" 0.22
11 45' — —
10 40' 3' 0.24
9 35' 12' 1.32
Beyond Contract 3" wide 2.46 No Charge to the Government
191'
SHAFT
73'
Grab Sample W03. 2.46%
81'
PORTAL ENTRY
DUMP
BENCHED OUT
HOUSE
Gulley
Canyon
Wood
ROAD
NORTH
SHAFT IN BRUSH
AUSTIN TUNGSTEN PROSPECT
COCHISE COUNTY, ARIZ.
DOCKET NO. 3852
CONTRACT NO. IDM-E 887
PROGRESS ENDING SEPT. 30, 1956
TOTAL FOOTAGE ADVANCED



Emigrant Hills Area

Bonnie Mtn North 7.5' Quad Arizona

Cochise
Cty., AZ

NICOR Mineral Ventures, Inc.
2659-G Pan American Freeway, N.E.
Albuquerque, New Mexico 87107

The geology of, and known mineral occurrences within, Wilderness Study Area 4-65 Dos Cabezas Mountains

by
Susan R. Calder
Research Assistant

contract to: Dr. Stephen J. Reynolds
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Tucson, Arizona 85719

contractor:
U.S. Dept. of Interior
Bureau of Land Management
Safford District Office
425 East 4th. Ave.
Safford, Arizona 85546
(Mr. Ron Loomis)

February 18, 1982

contents:

Interpretations and conclusions in this report are those of the consultant and do not necessarily coincide with those of the staff of the Bureau of Geology and Mineral Technology.

Brief summary of geological features and known mineral occurrences

Wilderness Study Area 4-65
Dos Cabezas Mountains

1) The WSA is underlain by Precambrian metamorphic rocks, Paleozoic to Mesozoic sedimentary strata, and Cretaceous-Tertiary volcanics. Existent structures are believed to be of Laramide age (62-56 m.y.); during this period, folding and thrusting, doming, and north-south trending normal faulting occurred extensively throughout the Dos Cabezas and Chiricahua mountain ranges. The ores of the Dos Cabezas Mining District are chiefly lode deposits in steeply dipping fault fissure zones and replacement veins cutting metamorphosed sedimentary beds and volcanic flows near porphyry intrusives;

2) One inactive exploration prospect is located within the WSA. The Howell Claim, situated in the north-central portion of the WSA, contains spotty concentrations of auriferous pyrite and galena. There are no records of development or production;

3) Copper minerals occur to the west of the WSA in sulfide-bearing quartz fissure veins cutting Cretaceous volcanic rocks and Precambrian metasediments. Mining operations bordering the WSA produced several thousand tons of ore between the late 1800's and the mid-1900's. The largest copper producers in this area were the Elma and Mascot mines; the Elma Mine recovered over 8000 tons of copper and silver ore, while the Mascot Mine Group produced about 60,000 tons of copper, lead, silver, gold, and iron ore. Minor amounts of copper ore were also mined from several of the gold and silver prospects to the west of the WSA;

4) Silver occurs in association with lead and gold to the west and south of the WSA, in Precambrian granite

and metamorphosed Paleozoic limestone. Several hundred tons of ore were produced during the late 1800's and early 1900's from the Yeakley prospect, as well as from the Silver Camp Mine, Honey Dew Mine Group, Mascot Group, Dives Mine, and Silver Strike Mine. The Leroy Mine produced over 4000 tons of lead ore between the 1800's and 1950;

5) Gold lode deposits are located throughout the Dos Cabezas region. Lenses and spotty concentrations of auriferous pyrite and galena are contained in fissure veins dissecting Precambrian granite. Of the 28 reported occurrences of gold lode, 16 produced over 100 tons of gold ore. The largest producers in the region were the Dives and Gold Prince mines; each reported production of 10,000 tons of gold ore. The Buckeye Apache, Ewell Springs, and Gold Ridge mines recovered over 1000 tons of gold, silver, and lead ore, respectively;

6) There are gold placer deposits in shallow alluvium blanketing granitic pediments on the northern flanks of the Dos Cabezas range. Reported production from the Dos Cabezas and Gold Gulch placers was insignificant (less than one ounce, respectively);

7) Beryllium occurs in small masses and as fracture coatings in granitic rocks on the southern border of the WSA. Some lots of hand-sorted beryl were sold from the Beryl Hill and Live Oak Prospects during the late 1950's;

8) Fluorspar occurs to the north of the WSA in Precambrian granitic rocks. Several small prospect pits were located in this area. Records of production are unavailable;

9) Manganese oxides occur, in association with secondary copper minerals, to the west of the WSA. There are no records of production;

10) Scheelite, a tungsten mineral, forms vein deposits in Cretaceous-Paleocene granite rock to the north and west, and along the southern border, of the WSA. A few tons of ore were mined from the Comstock Lode Mine during the 1950's; five additional claims containing occurrences of scheelite did not record any production;

11) There are reports of uranium radioactivity from four exploration prospects to the west and south of the WSA. No uranium production has been recorded from the Dos Cabezas region;

12) Gemstone prospecting was conducted to the south of the WSA during the mid-1900's. Records of development or production are unavailable;

13) The Paronazzo and Pentelicus marble quarry to the southeast of the WSA reported minor production in the early 1900's;

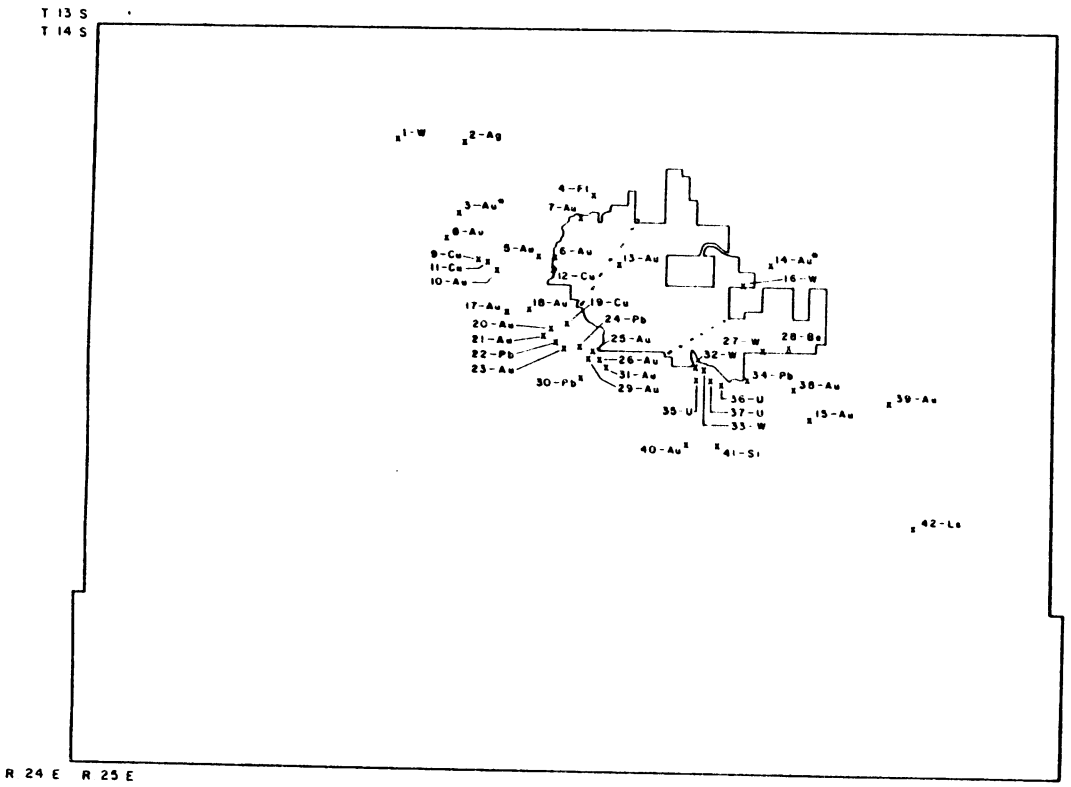
14) Trace occurrences of molybdenum, zinc, bismuth, niccolite, and arsenopyrite have also been reported from the Dos Cabezas Mountains;

15) The WSA is included in the Dos Cabezas-Teviston Mining District; to the south and west, the WSA borders numerous mines and prospects, mostly relatively small. According to Keith:

> "The known ore deposits of the Dos Cabezas and Teviston mining districts appear to be relatively small, spotty, and low grade veins and contact metamorphic bodies. However, the widely scattered and varied mineralization, and favorable geologic formations and structures suggests that possibilities still exist in the area for large, low grade, disseminated copper deposits."

Gold in quartz veins and shallow placer deposits was discovered on both sides of the Dos Cabezas mountain range in the 1860's. Between the early 1880's and 1930's, approximately 100,000 tons of ore, primarily of gold and copper, were mined from the area. Mining activity dwindled following the 1930's; by 1950, most of the mines within the district were idle.

For further discussions of the geology and mineral potential of the Dos Cabezas region, see Sabins (1957), Tenney (1927-1929), and Shields (1940).



MINERAL OCCURRENCES IN THE

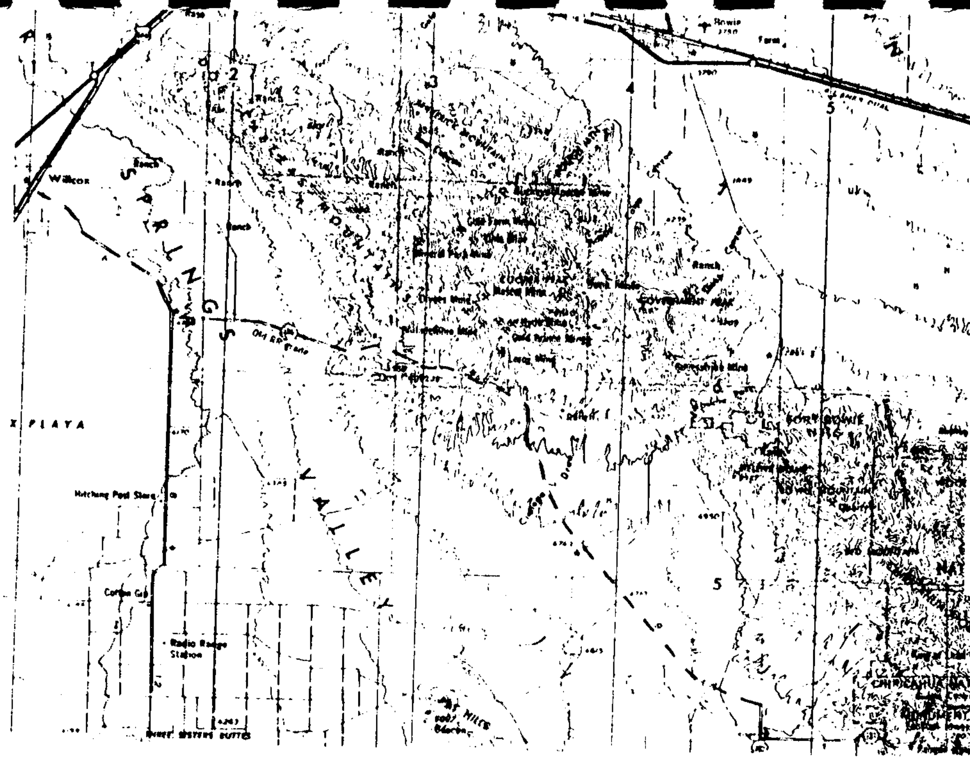
DOS CABEZAS AREA (4–65)

EXPLANATION

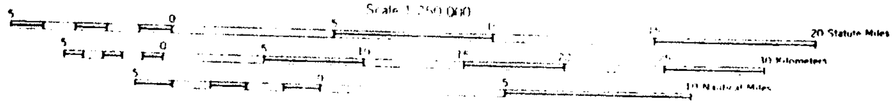
Known mineral occurrences are located by map number, followed by type of mineral deposit. See accompanying table of mineral occurrences

Listed by major commodity.

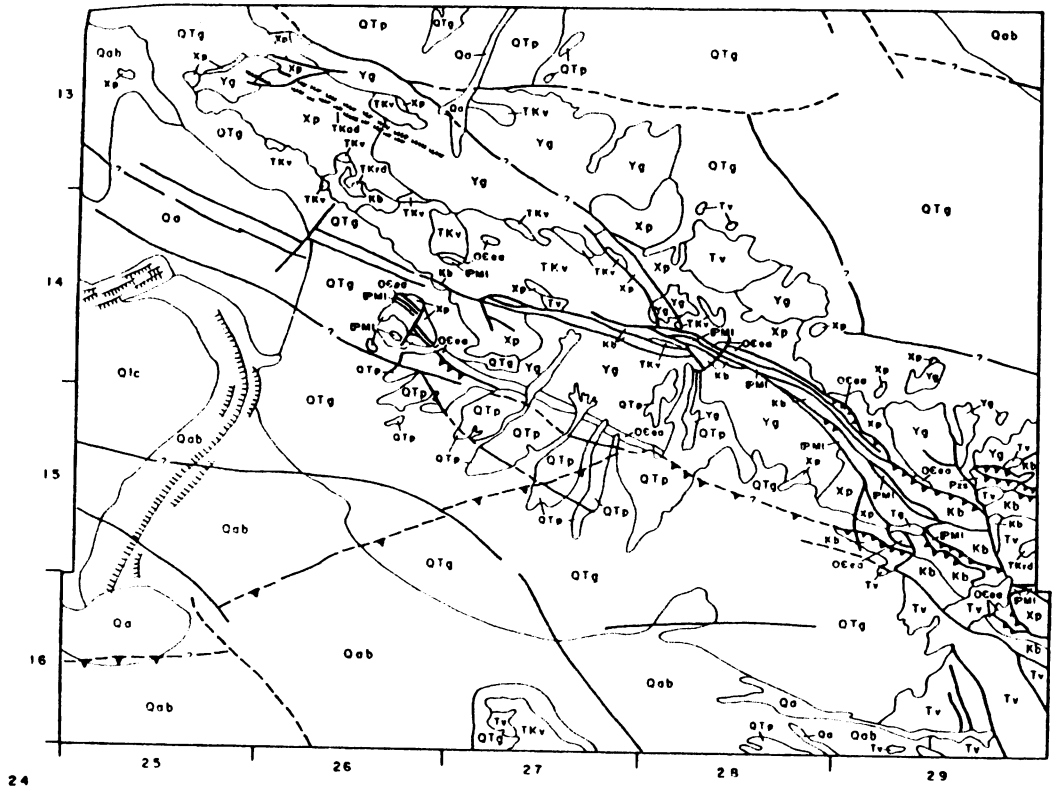
- W — tungsten, chiefly scheelite
- Ag — silver, associated lead ore
- Au — gold lode, associated silver, and copper ore
- Au* — gold placer
- Fl — fluorspar
- Cu — copper, chiefly chalcopyrite and chrysocolla, associated silver, lead, gold lode, uranium, and manganese oxides
- Pb — lead oxides, associated gold lode, copper, silver, zinc
- Be — beryllium
- U — uranium, associated fluorspar
- Si — semiprecious silicates
- Ls — stone, marble



Scale 1:250,000



CONTOUR INTERVAL 200 FEET



GEOLOGY OF THE DOS CABEZAS AREA (4-65)

Sources of information include:

Conper, 1960

Wynn, 1981

Unpublished U S Geological Survey information

Contact

Fault, dashed where inferred or covered

Low-angle fault, sawteeth on upper plate

Ancient shorelines of Wilcox Playa, erosional and evaporation features

EXPLANATION

Recent

- Qlc — Clay and water soluble salts devoid of vegetation; marginal parts of the barren ground contain considerable silt and sand

Quaternary

- Qa — Younger alluvium; unconsolidated silt, sand, and gravel on active floodplains and in stream channels.
- Qab — Extensive, broad, low-gradient alluvial fans that are largely inactive and generally dissected by erosion.

Quaternary-Late Tertiary

- QTg — Weakly to well-indurated conglomerate, fanglomerate, and breccia capping low terraces and ridges.
- QTp — Older alluvium and colluvium; coarse pediment gravel; including sand and silt of older valley fill.

Tertiary

- Tv — Rhyolite welded ash-flow tuff and coarse-grained porphyritic andesite flows

Middle Tertiary-Cretaceous

- TKrd — Dikes and small intrusive bodies of rhyolite and rhyolite porphyry
- TKad — Dikes of andesite and andesite porphyry
- TKv — Flows, tuffs, breccias, and volcanic conglomerates of andesitic to rhyolitic composition

Cretaceous

- Kb — Bisbee Formation; interbedded sandstone, shale, and limestone, with basal conglomerate unit.

Carboniferous

- PMl — Fine-grained fossiliferous limestone; Horquilla and Escabrosa Formations.

Ordovician

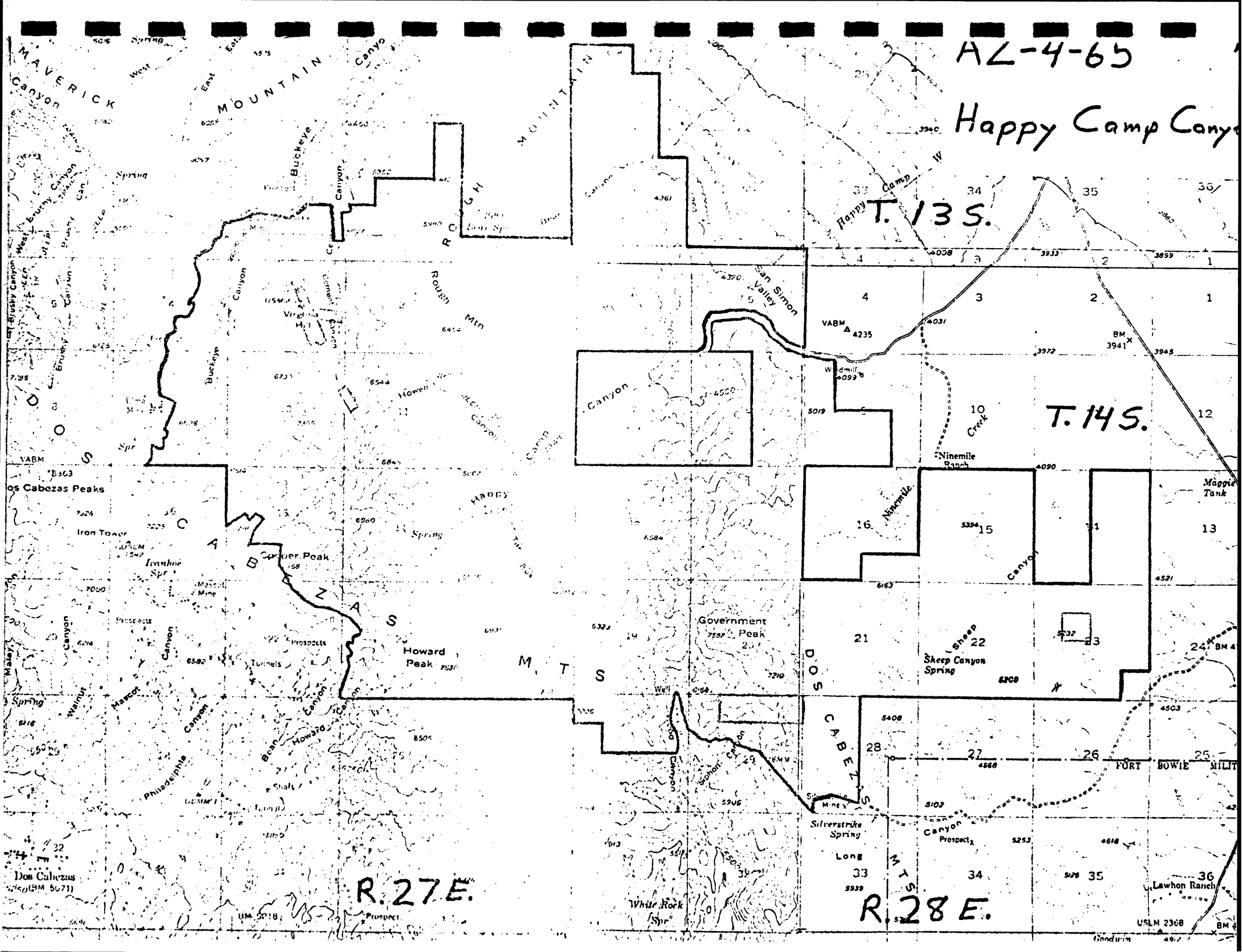
- OCea — Limestone with laminated siltstone and sandstone beds; El Paso and Abrigo Formations

Cambrian

- Pzs — Undifferentiated Paleozoic sedimentary rocks, including limestone, quartzite, and shale

Precambrian

- Yg — Medium-to coarse-grained granitic rocks, commonly porphyritic
- Xp — Pinal Schist; locally containing rhyolitic schist, greenstone, phyllite, metagraywacke, and quartzite


AZ-4-65
Happy Camp Canyon
T. 13 S.
T. 14 S.
R. 27 E.
R. 28 E.
MAVERICK MOUNTAIN
Canyon
Buckeye Canyon
Rough Mtn
San Simon Valley
Happy Camp Canyon
Ninemile Ranch
Ninemile Creek
Maggie Tank
Sheep Canyon
Sheep Canyon Spring
Government Peak
Howard Peak
Iron Tower
Copper Peak
Ivanhoe Spr
Mascot Mine
Prospects
Tunnels
Howard Canyon
Philadelphia
Walnut Canyon
Mascot Canyon
Bear Canyon
Shaft
Dos Cabezas Peaks
Dos Cabezas
Silverstrike Spring
Long Canyon
Prospect
White Rock Spr
Lawhon Ranch
Fort Bowie
VABM 4235
VABM 8363
BM 3941
USLM 2368
Windmill
Well
Spring
DOS CABEZAS MTS.

KNOWN MINERAL OCCURRENCES

DOS CABEZAS MOUNTAINS (4-65)

Gold, Copper, Silver, Lead Zinc, Manganese,
Tungsten, Uranium, Beryllium, Fluorspar,
Gemstone, and Marble Deposits

The Dos Cabezas Mountains are composed of complexly faulted and folded schists and granite (Precambrian); sedimentary rocks, primarily sandstone, shale, and limestone (Paleozoic to Mesozoic); and volcanic rocks (Cretaceous to Tertiary) intruded by small granite plutons of Laramide (56-62 m.y.) and middle Tertiary (28-34 m.y.) age. Precious and base metal replacement deposits and veins are generally small and erratically distributed over fairly large areas. Age of mineralization is probably correlative with the Laramide and middle Tertiary plutonic events.

Gold, silver, lead, zinc, copper, and iron deposits are associated with sulfide-bearing veins along shear zones and sporadic replacement deposits in upper Paleozoic limestone. Placer gold deposits (map numbers 3, 14) have been located in shallow alluvium covering granitic pediments on the northern and southern flanks of the Dos Cabezas range. Gold lode deposits (map numbers 5-10,13,15,17,18,20-26,29-33,38-40) form spotty concentrations of auriferous pyrite and galena in Precambrian granite; deposits are variously associated with uranium radioactivity and with molybdenum, lead, copper, and silver minerals. Copper deposits, chiefly chalcopyrite and chalcocite, are found in quartz-filled veins along contacts between intrusive igneous bodies and Paleozoic limestones and schists (map numbers 9-12,17-24,29,30,32,34).

Tungsten-bearing quartz veins are found in Precambrian granite and schists, and in Paleozic limestone. Low-grade scheelite deposits are located by map numbers 1,16,27,32,22, and 34.

Flourspar (map numbers 4,36) occurs in veinlets cutting Precambrian granitic rocks.

Uranium radioactivity (map numbers 11, 35-37) is associated with base metal sulfides in Cretaceous-Tertiary sedimentary rocks and Precambrian schists and granite.

Manganese oxides occur, in association with secondary copper minerals, in irregular quartz-filled veins cutting Cretaceous schistose rocks and intrusive rhyolite bodies (map numbers 11,25,26).

Single occurrences of other minerals associated with base metal sulfides and oxides have been reported in this region, these being: bismuth (map number 19); beryllium as fracture coatings and pegmatite masses in Precambrian granite (map number 28); semiprecious gemstones (map number 41); and marble from quarries on the southern flank of the Dos Cabezas range (map number 42).

Many mineral deposits were discovered prior to 1870 but mining operations did not begin until the late 1870's. By 1950, most of the mines were idle.

Map No.: 4-65-1

Mine: Comstock Lode Mine
(Cohen, Adams)

Location: T. 13S, R. 26E; Sec. 22, Cen., E½; Lat. 32-17-22N, Long. 109-40-18W, Elev. 4700 Ft.

Geology:

Spotty scheelite with minor galena and oxidized iron and lead minerals in quartz veins and veinlets in Cretaceous-Paleocene granitic rock. Some low-grade tungsten placers. Quartz veins trend east and dip south in the quartz diorite-monzonite Cowboy Pluton (59m.y.)

Mineral Products: Tungsten (WO_3): Scheelite
Lead: Galena
Silver

Development and Production: Open cuts, pits, short adits, and shallow shafts. A few tons of ore mined in the 1950's. Discovered in 1944. Operated by Tyrone Mining Co. (1973).

References:

Keith, 1973, p. 72
USBM Files, Comstock Lode Mine
Dale, et al., 1960, p. 25-26
ADMR Comstock
Cooper, 1960

USGS Railroad Pass Quad (1:24000)

Map No.: 4-65-2

Mine: Yeakley

Location: T. 13S R. 26E Sec. 24 Lat. 32-16-09N Long. 109-38-36W Elev. 4500 Ft.

Geology:

Base metal deposits on or near contact between Pinal Schist (Precambrian) and shallow gravel resting on a granitic pediment (Quaternary).

Mineral Products: Lead
Silver
Copper

Development and Production: Prospect, underground and surface cuts. Operated by T. J. Barnes and L. P. Wers (1943). Maximum of 200 tons; reportedly little possibility of commercial ore being recovered from property (as of 1943). Located on Gold Gulch Placer property.

References:

USBM Files, Yeakley
USGS Crib Data, 1972
USGS Railroad Pass Quad (1:24000)
Cooper, 1960

Map No.: 4-65-3

Mine: Gold Gulch Placers
(Inspiration, Teliston, Sturgess Property)

Location: T. 13S, R. 26E; Sec. 36, Cen., W½; Lat. 32-15-41N, Long. 109-38-51W, Elev. 5000 Ft.

Geology:

Placer gold in shallow alluvium and gravel covering a granitic pediment in a mountain basin on north flank of Dos Cabezas Mountains. Veinlets of Quartz contain trace amounts of fine galena, chalcopyrite, and pyrite. Uranium radioactivity confined to wall rock in small quartz veins; uranium mineral tentatively identified as uraninite. Veins associated with dense basic dikes in coarse porphyritic granite country rock.

Mineral Products: Gold Placer

Development and Production: Mainly a dry placer operation. Estimated that over 18,000 cubic yards treated during various periods from early 1900's to 1940. Operators included Cochise Mining Co., Inspiration Placers Inc., Gilman Rice, and Gold Gulch Mining Co. (1973). Workings also in Sec. 35, E½ (T. 13S, R. 26E).

References:

Keith, 1973, p. 72
USBM Files, Gold Gulch Placers
Wilson, 1961, p. 68
USGS Crib Data, 1980
USGS Luzena Quad (1:24000)
USAEC, 1952(?), Sturgess Property

Map No.: 4-65-4

Mine: Buckeye Canyon Prospect

Location: T. 13S Sec. 34 Lat. 32-15-51N
R. 27E NE Long. 109-34-18W
Elev. 4660 Ft.

Geology:

Mixed deep purple and green veinlets occur in open cuts through medium-to coarse-grained granitic rocks (late Precambrian). Countryrock transected in locality by Tertiary rhyolite porphyritic dikes.

Mineral Products: Fluorspar: Fluorine

Development and Production: Small prospect pits; extent of development unknown. Located on Buckeye Apache Mines Co. property.

References:

Elevatorski, 1971, p. 12
USBM Files, Buckeye Canyon Prospect
USGS Luzena Quad (1:24000)
Cooper, 1960

Map No.: 4-65-5

Mine: Gold Farms

Location: T. 14S, R. 27E; Sec. 5, SE; Lat. 32-14-29N, Long. 109-36-15W, Elev. 6025 Ft.

Geology:

Lenses and spotty concentrations of auriferous pyrite and galena in small quartz-filled fissure veins (N90W and N10E) in Precambrian granite. Deposits near Tertiary dike.

Mineral Products: Gold Lode; Pyrite; Galena

Development and Production: Exploration prospect; shallow surface workings.

References:

USBM files, gold farms
Cooper, 1960
USGS Dos Cabezas Quad (1:24000)

Map No.: 4-65-6

Mine: Apache Prospect

Location: T. 14S, R. 27E; Sec. 4, C; Lat. 32-14-42N, Long. 109-35-41W, Elev. 5623 Ft.

Geology:

Spotty concentrations of auriferous pyrite and galena in small quartz-filled fissure veins in coarse-grained, commonly porphyritic, Precambrian granitic rocks.

Mineral Products: Gold Lode: Auriferous Pyrite and Galena

Development and Production: Raw prospect; extent of development unknown.

References:

USBM Files, Apache Prospect
Cooper, 1960

Map No.: 4-65-7

Mine: Buckeye Apache Mines (Buckeye, Apache, Sunrise, Fairview)

Location: T. 14S, R. 27E; Sec. 4, SE, Cen.; Lat. 32-14-26N, Long. 109-35-07W, Elev. 5700 Ft.

Geology:

Auriferous pyrite and argentiferous galena in quartz veins along fissure zones in Precambrian medium-to coarse-grained granitic rocks. Granite is commonly porphyritic, and is cut by diabase, rhyolite porphyry, and andesite porphyry dikes. 2 flat-lying veins (N30W, 20°W); NSE, 22°W; respectively) cut through dikes and countryrock; main ore concentration is found at intersection of these 2 veins.

Mineral Products: Gold, Silver, Lead: Galena; Pyrite; Tellurides

Development and Production: Development included 2000 ft. of tunnels and 250 Ft. of crosscuts, one 30 Ft. shaft inclined at 35 degrees, 28 additional shafts, various inclines, and open cuts, and 3 10-acre mill sites. Property comprises 40 patented and unpatented mining claims, totalling about 800 acres. Operated by Buckeye Apache Mines, Co. (1973). Mining operations on property began prior to 1880. Workings also located in Section 3 (T. 14S, R. 27E), and in Sections 33 and 34 (T. 13S, R. 27E).

References:

USBM Files, Buckeye Apache Mine
Keith, 1973, p. 72
Cooper, 1960
ABGMT Crib Data, 1981
ADMR Buckeye Apache File
USGS Dos Cabezas Quad (1:24000)

Map No.: 4-65-8

Mine: Silver Camp Mine

Location: T. 14S Sec. 12 Lat. 32-14-05N
R. 26E NW Long. 109-38-54W
Elev. 5820 Ft.

Geology:

Spotty copper oxides, chalcocite, and chalcopyrite with magnetite and garnet in a fault block of pyrometamorphosed Paleozoic limestones cut by diabase dikes and with silver mineralization and some gold in a quartz-pyrite vein along a fault fissure and at diabase and rhyolite dike intersections. Major country rock types are Cretaceous-Paleocene volcanics and intrusive quartz monzonite (62m.y.). Major N-S trending normal fault through vicinity; mineralization occurs on west (downthrown) side.

Mineral Products: Copper: Chalcocite, Chalcopyrite
Silver
Gold Lode

Development and Production: A few thousand feet of work from tunnels and shafts. First claims in the district and over 500 tons of ore produced in late 1880's. A few tens of tons shipped in the 1930's. Operated by Parent Mining Co. (1973). Property comprises 8 patented and 8 unpatented claims (as of 1969).

References:

Keith, 1973, -. 62
USBM Files, Silver Camp Mine
Mines Handbook, 1926
USGS Simmons Peak Quad (1:24000)
ABGMT Crib Data, 1981
ADMR Silver Camp Mine File

Map No.: 4-65-9

Mine: Kit Carson Prospect
(Fourth of July)

Location: T. 14S Sec. 7 Lat. 32-14-02N
R. 27E SE of NW¼ Long. 109-37-51W
Geology: Elev. 6750 Ft.

Mineral deposits in highly alterred red dike contact in major overthrust belt comprising Cretaceous volcanic rocks of andesitic to rhyolitic composition (flows, tuffs, breccias, and volcanic conglomerates).

Mineral Products: Lead; Copper Oxide, Gold Lode

Development and Production: Prospect; produced 3500 lbs. of copper ore in 1908. Workings also in Sec. 6 (T. 14S, R. 27 E).

References:

USBM Files, Kit Carson Prospect
USGS Crib Data, 1972
USGS Simmons Peak Quad (1:24000)
Cooper, 1960

Map No.: 4-65-10

Mine: Mineral Park
(Gold Slope, Maria)

Location: T. 14S R. 27E Sec. 7 NE Lat. 32-14-02N Long. 109-37-28W Elev. 6900 Ft.

Geology:

Irregular quartz veins containing spotty free gold, copper oxides, pyrite, and chalcopyrite in epidotized and chloritized Cretaceous-Paleocene volcanics intruded by a granitic plug of the same age.

Mineral Products: Gold Lode; Silver; Copper: Chalcopyrite; Pyrite

Development and Production: Numerous small workings from tunnels and shafts. Worked during late 1880's and intermittently from 1915 to 1935. Few hundred tons of ore produced. Operators included Gold Slope Mining Co., Park Mining and Milling Co., Maria Copper Co., Mineral Park Gold Mining Co.

References:

Keith, 1973, p. 62
USBM Files, Mineral Park
ABGMT Crib Data, 1981
Cooper, 1960
USAEC, 1953, A-P-74

USGS Simmons Peak Quad (1:24000)
USGS Dos Cabezas Quad (1:24000)

Map No.: 4-65-11

Mine: Name Unknown

Location: T. 14S, R. 27E; Sec. 7, E2; Lat. 32-14-00N, Long. 109-37-30W, Elev. 7000 Ft.

Geology:

Copper mineralization in quartz veins along a fault system in schists and metasediments (Cretaceous or Tertiary). Fault system strikes N80W - N80E and dips 85^{0} NW. Associated with quartz, epidote, and chlorite.

Mineral Products: Lead; Uranium (U_3O_8); Copper: Malachite, Azurite, Chrysocolla, Chalcopyrite; Pyrite; Specular Hematite; Limonite; Manganese Oxides, Gold (reported).

Development and Production: Extensive workings consist of shafts, adits, and trenches.

References:

USBM Files, Name unknown
USAEC, 1970, RME - 154
Cooper, 1960

Map No.: 4-65-12

Mine: Elma Mine
(Central Copper Co. Group; Tout)

Location: T. 14S Sec. 9 Lat. 32-13-51N
R. 27E Cen. Long 109-35-42W
Elev 5850 Ft.

Geology:

Irregular, frequently massive, magnetite, chalcopyrite, and pyrite in a pyrometasomatic pipe-like body along a strong shear and fault zone cutting brecciated and metamorphosed Paleozoic limestone and Laramide rhyolite and granitic intrusive rock.

Mineral Products: Copper; Silver; Gold Lode; Molybdenum

Development and Production: 5000 Ft. of underground workings; at least 4 levels, upper levels at 40, 113, and 163 Ft.; considerable stoping about the 163 Ft. level workings. At least 8000 tons of ore produced intermittently from the late 1910's to the late 1960's. Ore trammed to Mascot Mine 2 miles to the south (10,600 Ft. of aerial tramway). Last operators were Tout, Arivaca Mining Co. (1973). Considered part of Tout (Mascot Mine) Property.

References:

Keith, 1973, p. 61
USBM Files, Elma Mine
ADMR Elma Mine File
ADMR Tout Mine File
Tenney, 1927-29, p. 226-227
USGS Crib Data, 1979
USGS Dos Cabezas Quad (1:24000)
Cooper, 1960
ABGMT Clippings, Mascot Copper Co.

Map No.: 4-65-13

Mine: Howell
(Red Jacket, Lowwill, Grace E.)

Location: T. 14S Sec. 11 Lat. 32-13-59N
R. 27E W2 Long. 109-33-51W
Geology: Elev. 6000 Ft.

Lenses and spotty concentrations of auriferous pyrite and galena in small quartz-filled fissure veins in Precambrian granite.

Mineral Products: Gold Lode; Pyrite; Galena

Development and Production: Exploration prospect.

References:

Cooper, 1960
USBM Files, Howell
USGS Dos Cabezas Quad (1:24000)

Map No.: 4-65-14

Mine: Dos Cabezas Placers

Location: T. 14S, R. 28E; Sec. 10; Lat. 32-13-56, Long. 109-28-18W, Elev. 4000 Ft.

Geology:

Gold placer deposits in alluvium and gravel in all gulches draining southwest flank of Dos Cabezas range. Gold is flat, ragged, and fairly coarse.

Mineral Products: Gold Placer: Native Gold

Development and Production: Operated mainly as dry placers until about 1947. ~~Discovered in 1901.~~ Produced about 4.03 kg. Av (1906-1914, 1934-1936). Workings also in Sections 16, 14 and 22 (T. 14S, R 28E), and in Sections 29, 31, 32, 33, 34, and 27 (T. 14S, R. 27E).

References:

USBM Files, Dos Cabezas Placers
Johnson, 1972, p. 4-6
USGS Crib Data, 1972
USGS Dos Cabezas Quad (1:24000)

Map No.: 4-65-15

Mine: Apache Pass Mines (New Year, Gold Belle, Helen Dome, Quillan, Lula Gold Nugget)

Location: T. 15S R. 28E Sec. 10 NE Lat. 32-08-49N Long 109-27-52W Elev. 5100 Ft.

Geology:

Spotty gold and silver values with minor oxidized base metal sulfides in irregular quartz-filled fissure veins cutting Precambrian quartz monzonite country rock.

Mineral Products: Gold Lode
Lead
Zinc
Silver
Copper

Development and Production: Numerous scattered pits, shafts, and adits. About 600 tons of ore produced intermittently since 1870's. Claims extend into Sec. 4, SE¼; Sec. 9, N½; Sec. 10, N½ (T. 15S, R. 28E)

References:

Keith, 1973, p. 71
USBM Files, Apache Pass Mines
USGS Bowie Mountain North Quad (1:24000)
ABGMT Crib Data, 1981

Map No.: 4-65-16

Mine: Rough No. 1 and 2

Location: T. 14S Sec. 18 Lat. 32-12-53N
R. 28E Long. 109-31-30W
Geology: Elev. 6000 Ft.

Irregular disseminations and narrow streaks of scheelite in Precambrian amphibole schist.

Mineral Products: Tungsten (WO_3): Scheelite

Development and Production: Exploration prospect; several surface workings. Discovered in early 1940's. Operated by Ben Kratzberg (1943).

References:

Dale, 1960
USBM Files, Rough No. 1 and 2
USGS Crib Data, 1972
USGS Dos Cabezas Quad (1:24000)

Map No.: 4-65-17

Mine: Dos Cabezas Queen Mine

Location:	T. 14S	Sec. 19	Lat. 32-12-25N
	R. 27E	NE	Long. 109-37-36W
Geology:			Elev. 5750 Ft.

Scattered pyrite gold ore with sparse base metal sulfides in quartz-calcite filling of a fault fissure zone in slightly graphitic Cretaceous shale.

Mineral Products: Gold Lode; lead; silver; zinc; copper; pyrite; base metal sulfides

Development and Production: Adit workings. A small tonnage produced in early 1900's. Operated by Dives Mining Co. Workings also in Sec. 18, SW¼ (T 14S, R. 27E).

References:

Keith, 1973, p.61
USBM Files, Dos Cabezas Queen Mine
USGS Crib Data, 1980
USGS Simmons Peak Quad (1:24000)

Map No.: 4-65-18

Mine: Honey Dew Mine Group (Silver Peak, New Era, White Oaks Lode, Silver Cave, Silver Cave South, Silver Dike, Gold Spot, Gold Nuggest)

Location:	T. 14S	Sec. 20	Lat. 32-12-14N
	R. 27E	Cen.	Long. 109-36-37W
Geology:			Elev. 6190 Ft.

Lensing quartz veins and veinlets with minor streaks and disseminations of base metal sulfides along a fault fissure zone cutting Cretaceous metamorphosed shale.

Mineral Products: Gold Lode; silver; lead; copper sulfides

Development and Production: Numerous shallow shafts and tunnels. A few hundred tons of ore produced in late 1880's and about 300 tons intermittently in 1916, 1932-35 and 1941. Operated by Robinson and Hately (1973).

References:

Keith, 1973, p. 61
USBM Files, Honey Dew Mine Group
USGS Dos Cabezas Quad (1:24000)
USGS Crib Data, 1980

Map No.: 4-65-19

Mine: Mascot Mine Group (Iron Tower, Tout Group, Central Copper, Consolidated Tunnel, Bachelder Group, Dos Cabezas Consolidated Mines)

Location: T. 14S Sec. 21 Lat. 32-12-27N
R. 27E N½ Long. 109-35-23W
Elev. 6450 Ft.

Geology:

Iron and copper minerals associated with epidote, chlorite, garnet, and talc in irregular veins, disseminations, and massive bunches in extensively fractured and faulted blocks of pyrometamorphosed Paleozoic limestone, Cretaceous shales, and volcanics. Host rocks along or near Laramide granitic intrusives and associated with dikes ranging from rhyolites to basalts. Magnetite occurs as contact metamorphic replacement deposits in limestone fault blocks.

Mineral Products: Copper: chalcopyrite, bornite
lead: galena
silver
gold
iron: magnetite, pyrite
bismuth

Development and Production: Surface and underground workings include a 2100 Ft. tunnel, 1700 Ft. tunnel, crosscuts, 2 shafts (Elma Consolidated and Mascot). Group includes 32 patented and 56 unpatented claims, owned by Edwin I. Tout. About 60,000 tons of ore produced intermittently from the early 1910's to mid-1950's. Claims extended into T. 14S, R. 27E, Sec. 16, W and S½; T. 14S, R. 27E, Sec. 15, SW¼. Elma Mine is located 1.5 miles N of Mascot Mine (part of Mascot Mine Group).

References:

Keith, 1973, p. 62
USBM Files, Mascot Mine Group
ABGMT Crib Data, 1981
Harrer 1964, p. 22
Cooper, 1960
USGS Dos Cabezas Quad (1:24000)
ADMR Elma Mine File
ADMR Tout Mine File
Mines Handbook, 1916, p. 735
Mines Handbook, 1926, p. 238
ABGMT Clippings, Mascot Copper Co.

Map No.: 4-65-20

Mine: Antelope

Location: T. 14S, R. 27E; Sec. 21, NE; Lat. 32-12-23N, Long. 109-35-20W, Elev. 6440 Ft.

Geology:

Copper minerals associated with epidote, chlorite, garnet, and talc in disseminations and quartzitic veins in faulted blocks of pyrometamorphosed Paleozoic limestone, Cretaceous shales, and volcanics. Veins associated with basaltic to rhyolitic dikes and nearby Laramide granitic intrusives.

Mineral Products: Copper; silver; gold lode

Development and Production: Prospect; extent of development unknown.

References:

USBM Files, Antelope
USGS Dos Cabezas Quad (1:24000)
Cooper, 1960

Map No.: 4-65-21

Mine: Dives Mine
(Bear Cave, Porter, Emma, Nettie, Nobbey)

Location: T. 14S Sec. 21 Lat. 32-11-56N
R. 27E SW Long. 109-35-51W
Elev. 5750 Ft.

Geology:

Scattered bunches and disseminations of auriferous pyrite and minor base metal sulfides in a strong, coarsely-textured quartz vein along a fault fissure zone separating a wide band of metamorphosed, graphitic Cretaceous shale from Precambrian granitic rock. Vein strikes N68-87W and dips nearly vertically. E-W Trending fault separates quartz monzonite to the south from Cretaceous shales to the north.

Mineral Products: Gold Lode; zinc: sphalerite; silver, lead: galena; pyrite; copper: chalcopyrite, azurite, cerrusite, malachite

Development and Production: Shaft and tunnel workings. Some 10,000 tons of gold ore produced sporadically from 1882 to 1931. Development included an inclined shaft 30 m deep, 2 adits and more than 1000 m of underground workings. Operators included Twin Peaks Mining Co., Dives Mining Co., Consolidated Gold Mines Inc., Santa Maria Mining Co. (1973).

References:

Keith, 1973, p. 61
USBM Files, Dives Mine
Wilson, E. D., et al., 1934, p. 118-119
Shields, 1940
Cooper, 1960
ABGMT Crib Data, 1981

USGS Dos Cabezas Quad (1:24000)

Map No.: 4-65-22

Mine: Ewell Springs Mine

Location: T. 14S Sec. 21 Lat. 32-11-44N
R. 27E Cen., S½ Long. 109-35-40W
Elev. 5750 Ft.

Geology:

Auriferous pyrite and minor base metal sulfides in a quartz vein in a fault fissure cutting graphitic Cretaceous slate. Located on or near contact of slate with Precambrian quartz monzonite.

Mineral Products: Gold Lode; Lead: Galena; Copper; Silver; Zinc; Pyrite

Development and Production: Surface workings. 600-1000 tons reportedly produced in 1880's.

References:

Keith, 1973, p. 61
USBM Files, Ewell Springs Mine
USGS Crib Data, 1980
USGS Dos Cabezas Quad (1:24000)

Map No.: 4-65-23

Mine: Philadelphia Mine

Location:	T. 14S	Sec. 21	Lat. 32-11-51N
	R. 27E	SE	Long. 109-35-20W
Geology:			Elev. 6250 Ft.

Irregular quartz vein with bunches and disseminations of base metal sulfides in a crosscutting fault in Precambrian quartz monzonite. Associated with a biabase dike. Quartz monzonite body is extensively faulted and sheared; fault separrated quartz monzonite from Cretaceous sediments to north.

Mineral Products: Gold Lode
Silver
Lead: Galena
Copper Sulfides
Pyrite

Development and Production: Small tunnel workings. Considerable gold ore produced in the 1880's and about 50 tons in 1935. Operated by E. E. Cochran (1935).

References:

Keith, 1973, p. 62
USBM Files, Philadelphia Mine
Shields, 1940
ABGMT Crib Data, 1981
USGS Dos Cabezas Quad (1:24000)

Map No.: 4-65-24

Mine: Gold Ridge Mine
(Casey, Juniper, Huntsman)

Location: T. 14S Sec. 21 Lat. 32-11-44N
R. 27E SE Long. 109-35-24W
Elev. 6000 Ft.

Geology:

Scattered bunches and disseminations of auriferous galena, pyrite, and chalcopyrite in bands of coarse-textured quartz along a major fault and parallel shears separating blocks of Cretaceous graphitic shale and pyrometamorphosed Paleozoic limestone from Precambrian granitic rocks. E-W trending fault separates Cretaceous Bisbee Group to north from Precambrian Rapakivi quartz monzonite to south. Cretaceous beds trend E-W and dip about 60° N. Principal vein is 4-34 Ft. wide, 1750 Ft. long and averages 400 Ft. deep; 7 other veins are located on property.

Mineral Products: Gold Lode; Silver; Lead; Galena; Copper: Chalcopyrite; Pyrite

Development and Production: Numerous shaft and adit workings. 1000 or more tons of ore produced intermittently in 1880's and 1890's and from 1915 to 1936. Developments included 2 tunnels with 1000 Ft. workings on lower tunnel, 1500 Ft. workings on upper tunnel; and about 2000 Ft. of cross cuts, winzes, and drifts. Operations included Dos Cabezas Gold Ridge Mining Co., Chicago and Arizona Copper Co. Property totals 9 unpatented claims; workings also in Sec. 20, SW¼ (T. 14S, R. 27E).

References:

Keith, 1973, p. 61
USBM Files, Gold Ridge Mine
Wilsin, E.D. et al, 1934, p. 119
Shields, 1940
Elsing and Heinman, 1936, p. 91
ADMR Gold Ridge Mine File
ABGMT Crib Data, 1981
USGS Dos Cabezas Quad (1:24000)

Map No.: 4-65-25

Mine: Arizona Klondyke Mine
(Arizona and Klondyke groups, Denmark, Bean Manganese Prospect)

Location: T. 14S R. 27E Sec. 22 SE;SW Lat. 32-11-56N Long. 109-34-19W Elev. 6250 Ft.

Geology:

Spotty gold and minor silver values associated with irregular quartz veins along fault fissures cutting Cretaceous schistose rocks and with minor manganese oxide in limy beds. E-W trending fault south of mine juxtaposes Precambrian quartz monzonite (to south) with limestone and schistose rocks of Cretaceous Bisbee Group (to north). Largest manganese deposit, near east end of outcrop, is an irregular replacement body as much as 10 Ft. wide.

Mineral Products: Gold Lode; Silver; Manganese: Wad, Pyrolusite; Pyrite

Development and Production: Shaft and surface workings. A few hundred tons of ore produced from 1884 to 1933. Property comprises 6 claims, operated by T. P. Bean (1940-?). Attempted gold mining-operations were unsuccessful. Workings also in Sec. 23 (T. 14S, R. 27E).

References:

Keith, 1973, p. 60
USBM Files, Arizona Klondyke Mine
Farnham, L.L., et al, 1961, p. 41-42
Cooper 1960
ABGMT Crib Data, 1981
USGS Dos Cabezas Quad (1:24000)
USBM Files, Bean Manganese Prospect
USGS Crib Data, 1972
USBM Files, Klondyke Group-
Courtland, Gleeson D.

Map No.: 4-65-26

Mine: Howard Group
(Adriatic, Double Springs, Atlantic, Pacific)

Location: T. 14S Sec. 23 Lat. 32-11-45N
R. 27E SW Long. 109-33-41W
Elev. 6500 Ft.

Geology:

Lensing quartz stringers with minor base metal sulfides associated with shear zones along a rhyolite-slate contact.

Mineral Products: Gold Lode; Silver; Manganese; Lead; Copper

Development and Production: Shallow workings. A few hundred tons of ore produced in the late 1880's and some 20 tons in 1932.

References:

Keith, 1973, p. 62
USBM Files, Howard Group
USGS Crib Data, 1980
USGS Dos Cabezas Quad (1:24000)

Map No.: 4-65-27

Mine: Ram Claims

Location: T. 14S, R. 28E, Sec. 21, E½
Lat. 32-12-03N
Long. 109-29-36W
Elev. 5250 Ft.

Geology:

Scheelite in quartz lenses that follow foliation in Precambrian schist. Country rock cut by felsite dikes.

Mineral Products: Tungsten (WO_3): Scheelite

Development and Production: Several shallow surface workings. Discovered in 1956.

References:

DALE, 1960
USBM Files, Ram Claims
USGS Bowie Mtn. North Quad (1:24000)

Map No.: 4-65-28

Mine: Beryl Hill and Live Oak Prospects

Location:	T. 14S	Sec. 23	Lat. 32-11-48N
	R. 28E	SW	Long. 109-27-45W
Geology:			Elev. 4600 Ft.

Lensing quartz-pegmatite masses in granitic dikes and fracture coatings along the contact of Precambrian gneiss with porphyry granite.

Mineral Products: Beryllium
Mica
Silicon
Quartz
Feldspar

Development and Production: Open cut workings. Some lots of hand sorted beryl sold in the late 1950's. Workings also in Sec. 23, NE ¼ (R. 14S, R. 28E). Grade 0.18-2.6% BeO.

References:

Keith, 1973, p. 72
USBM Files, Beryl Hill and Live Oak Prospects
Meeves, 1966, p. 14, 16
ADMR Live Oak Prospect File
Moore, 1969, p. 102-113
USGS Bowie Mtn. North Quad (1:24000)

Map No.: 4-65-29

Mine: Gold Prince Mine (Gold Hill, Highlonesome, Henry Clay, Pat Price, Murphy, Basin, Bain)

Location: T. 14S Sec. 27 Lat. 32-11-37N
R. 27E Cen. N½ Long. 109-34-39W
Geology: Elev. 5850 Ft.

Lenticular bodies of pyritic quartz containing irregular bunches of auriferous base metal sulfides in a strong zone of sheared and pyrometamorphosed Cretaceous sandstone and graphitic shale along a major fault. Associated rhyolite, andesite, and diabase dikes. Lenticular quartz bodies strike N70W and dip 65°s. E-W fault separates Cretaceous Bisbee Group to north from Precambrian Rapakivi Quartz monzonite to south.

Mineral Products: Gold Lode; Silver; Zinc: Sphalerite; Lead: Galena Copper; Pyrite

Development and Production: Extensive shaft and tunnel workings. The major gold producer of the district with some 10,000 tons produced sporadically from early 1880's to 1950. Developments included 5 tunnels in steep hillside sloping south; depth of workings at least 500 Ft. Total length of workings estimated at 3000 Ft. Operators included Dos Cabezas Gold Mining Co., R.E.D. Mining Co., Gold Prince Mining Co., Out West Mining Co., Bean. Discovered in 1878. Workings also in Sec. 22, South-Central (T. 14S, R. 27E).

References:

Keith, 1973, p. 61
USBM Files, Gold Prince Mine
Wilson, E. D. et al, 1934, p. 119-120
USAEC, 1953, A-P-48
ABGMT Crib Data, 1981
Elsing and Heinman, 1936, p. 91
ABGMT Clippings File
Mines Hanbook, 1926
USGS Dos Cabezas Quad (1:24000)

Map No.: 4-65-30

Mine: Leroy Mine Group (Black Hawk, Climax, Comet, Oneida, Gold Queen, Standard, Jack Dempsey, Lost Hope, War Eagle)

Location:	T. 14S	Sec. 27	Lat. 32-59-41 N
	R. 27E	SW	Long. 109-33-57W

Geology:

Scattered bunches and disseminations of pyrite, galena, sphalerite, and minor chalcopyrite in irregular, coarsely textured, crosscutting quartz veins along faults and shears cutting Precambrian quartz monzonite. Fault separates quartz monzonite body from Cretaceous sediments to north; monzonitic country rock is in concordant contact with Cambrian sediments to south bedding, as well as fault, trends E-W; accompanied by intrusive diabase dikes.

Mineral Products:

Silver Sulfide
Lead: Galena
Gold Lode
Zinc Sulfide: Sphalerite
Copper Sulfide: Chalcopyrite
Pyrite
Niccolite
Arsenopyrite

Development and Production:

Development included 2 shafts, Climax and Leroy, and numerous tunnels. At least 2000 Ft. of workings in Climax Shaft on 3 levels; 1500 Ft. of workings in Leroy Shaft on 3 levels. One tunnel, the Oneida, is 500 Ft. long, with 500 Ft. of side drifts. Property comprises 6 patented claims (as of 1964) and extends into Sections 33, NE¼, and 34, NW¼ (T. 14S, R. 27E). Operators included Leroy Consolidated Mines Co., Arelead Mining Co., VMP Leasing Co., Bean. A few thousand tons of ore produced in 1880's and about 4000 tons intermittently between early 1900's and 1950.

References:

Keith, S. B., 1973, p. 62
USBM Files Leroy Mine Group
USGS Dos Cabezas Quad (1:24000)
ABGMT Crib Data, 1981
Wilson, E.D., et al, 1934, p. 120-121
Elsing and Heinman, 1936, p. 91
ADMR Leroy Mine Group File
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USAEC, 1953, A-P-49
Cooper, 1960
Moore and Roseveare, 1969, p. 251-270

Map No.: 4-65-31

Mine: First Chance Mine

Location: T. 14S R. 27E Sec. 26 NW Lat. 32-11-36N Long. 109-33-49W Elev. 6250 Ft.

Geology:

Pyritic gold-quartz vein with minor lead in a fault fissure zone cutting pyrometamorphosed Cretaceous limy shale of the Bisbee Group. E-W trending fault separates Bisbee Group shales from Precambrian Rapakivi quartz monzonite to the south.

Mineral Products: Gold Lode; Silver; Lead; Pyrite

Development and Production: Shallow pit and open cut workings. Several hundred tons of ore produced in the 1880's and a few tons in 1936-1937. Operators included Globe Mining and Smelting Co., Equities, Inc., and Bean.

References:

Keith, 1973, p. 61
USBM Files, First Chance Mine
USAEC, 1953, A-P-50
Cooper, 1960
USGS Crib Data 1980
USGS Dos Cabezas Quad (1:24000)

Map No.: 4-65-31

Mine: First Chance Mine

Location: T. 14S R. 27E Sec. 26 NW Lat. 32-11-36N Long. 109-33-49W Elev. 6250 Ft.

Geology:

Pyritic gold-quartz vein with minor lead in a fault fissure zone cutting pyrometamorphosed Cretaceous limy shale of the Bisbee Group. E-W trending fault separates Bisbee Group shales from Precambrian Rapakivi quartz monzonite to the south.

Mineral Products: Gold Lode; Silver; Lead; Pyrite

Development and Production: Shallow pit and open cut workings. Several hundred tons of ore produced in the 1880's and a few tons in 1936-1937. Operators included Globe Mining and Smelting Co., Equities, Inc., and Bean.

References:

Keith, 1973, p. 61
USBM Files, First Chance Mine
USAEC, 1953, A-P-50
Cooper, 1960
USGS Crib Data 1980
USGS Dos Cabezas Quad (1:24000)

Map No.: 4-65-32

Mine: Austin Mine
(Kaske Mine)

Location: T. 14S, R. 28E; Sec. 30, NE; Lat. 32-12-00N, Long. 109-31-00W, Elev. 6000 Ft.

Geology:

High-grade scheelite mineralization occurs in sheared and silicated shaly limestone of the Martin formation (Devonian), on or near contact of limestone with quartzite of the Pinal Schist Formation (Precambrian). Steeply dipping vein of quartz, trending easterly, cuts diagonally across silicated limestone beds. Assocated with galena and minor amounts of sphalerite, chalcopyrite, and pyrite.

Mineral Products:

Gold
Tungsten (WO_3): Scheelite
Copper: Chalcopyrite
Lead: Galena
Zinc: Sphalerite
Pyrite

Development and Production: Developed by a shallow shaft and short adit. Austin Claim located in 1880 by Tom Hatton. Property comprises 3 unpatented claims owned by G. A. Kaske (Austin, Chance No. 7 and Chance No. 8 Claims). Adit is 190 Ft. long and cuts bottom of 85 Ft. deep shaft; W-trending drift from adit is 70 Ft. long. Assays averaged 0.22-1.32% WO_3.

References:

Dale, 1960
USBM Files, Austin Mine
Cooper, 1960
USGS Dos Cabezas Quad (1:24000)

Map No.: 4-65-33

Mine: Silver Bell Claims

Location: T. 14S Sec. 29 Lat. 32-12-00N
R. 28E Cen. Long. 109-30-30W
Geology: Elev. 6000 Ft.

Scheelite and replacement deposits of gold and silver in quartz vein (N72-82E, 90°) transecting contact metasomatized limestone.

Mineral Products: Gold
Silver
Tungsten (WO_3): Scheelite

Development and Production: Development included 50 m. deep shaft and one adit. Located as gold prospect in 1910-1911.

References:

Dale, 1960
USBM Files, Silver Bell Claims
Cooper, 1960
Dos Cabezas Quad (1:24000)

Map No.: 4-65-34

Mine: Silver Strike Mine
(Devonian Group, Cawood, Tennessee Shaft)

Location: T. 14S Sec. 28 Lat. 32-10-56N
R. 28E Cen. S½ Long. 109-29-36W
Elev. 5200 Ft.

Geology:

Spotty argentiferous galena with minor chalcopyrite and sphalerite in a quartz plug along a fissure vein striking N62°E and dipping 80°SE through Paleozoic and Cretaceous sedimentary rocks. Close to a Cretaceous or Tertiary granitic intrusive. Spotty scheelite occurs in shear zones and quartz bodies in pyrometamorphosed Paleozoic limestone.

Mineral Products: Lead: Galena
Tungsten (WO_3): Scheelite
Zinc: Sphalerite
Silver
Copper: Chalcopyrite

Development and Production: Development included a 300 Ft. shaft (inaccessible in 1960), 80 Ft. inclined shaft, and a 600 Ft. branching tunnel. Property includes 8 unpatented claims. Owned and operated by James and Morris Cawood (1939-1955). Produced a few hundred tons of lead-silver ore between the 1890's and 1919. Claims extend into Sections 29 and 33 (T. 14S, R. 28E).

References:

Keith, 1973, p. 72
USBM Files, Silver Strike Mine
ABGMT Crib Data, 1981
Dale, et al, 1960, p. 18-22
USGS Bowie Mtn. North Quad (1:24000)
USBM Files, Unknown Prospect

Map No.: 4-65-35

Mine: Rattler Group

Location: T. 14S Sec. 31 Lat. 32-10-30N
R. 28E Cen. Long. 109-31-00W
Elev. 5690 Ft.

Geology:

Radioactivity associated with minerals in quartz veins cutting quartzite of the Precambrian Pinal Schist Formation. Located on or near rhyolitic dikes (Tertiary).

Mineral Products: Uranium (U_3O_8)

Development and Production: Prospect; extent of development unkonown.

References:

USAEC, 1970, RME-154
USBM Files, Rattler Group
Cooper 1960
USGS Dos Cabezas Quad

Map No.: 4-65-36

Mine: Uranium Hill Claims

Location: T. 14S Sec. 32 Lat. 32-10-30N
R. 28E Cen. Long. 109-30-30W
Geology: Elev. 5495 Ft.

Unknown radioactive minerals in quartz-fluorite veins cutting Precambrian granite in E-W direction. Aplite and andesite dikes. Associated with limonitic stains and quartz.

Mineral Products: Uranium (U_3O_8); Fluorite

Development and Production: Exploratory surface cuts and diamond drill holes. Core samples assayed 0.3 and 1.09% U_3O_8. Owned by Tom Bean (as of 1955).

References:

USAEC, 1970, RME-154
USBM Files, Uranium Hill Claims
Cooper 1960
USGS Dos Cabezas Quad (1:24000)

Map No.: 4-65-37

Mine: Typest Group

Location: T. 14S, R. 28E; Sec. 32, Cen.; Lat. 32-10-30N, Long. 109-30-30W, Elev. 5495 Ft.

Geology:

Unknown radioactive minerals in N-S trending shear zone in porphyritic granite.

Mineral Products: Uranium (U_3O_8)

Development and Production: Discovery cuts on 7 claims. Owned by K. C. Judson (as of 1955).

References:

USAEC, 1970, RME-154
USBM Files, Typest Group
USGS Dos Cabezas Quad (1:24000)

Map No.: 4-65-38

Mine: Hillside Mine

Location:	T. 14S	Sec. 35	Lat. 32-10-37N
	R. 28E	NE	Long. 109-27-07W
Geology:			Elev. 4500 Ft.

Spotty gold and silver values in quartz veins in Precambrian Pinal Schist.

Mineral Products: Gold Lode
Silver

Development and Production: Limited tunnel and shaft workings. Some 77 tons of ore produced in 1908.

References:

Keith, 1973, p. 72
USBM Files, Hillside Mine
USGS Crib Data, 1980
USGS Bowie Mtn. North Quad (1:24000)

Map No.: 4-65-39

Mine: Happy Hooligan

Location: T. 14S R. 29E Sec. 31 SE Lat. 32-10-00N Long. 109-25-00W Elev. 4480 Ft.

Geology:

Unknown.

Mineral Products: Gold Lode
Lead

Development and Production: Prospect; extent of development unknown.

References:

USBM Files, Happy Hooligan
USGS Bowie Mtn, North Quad (1:24000)

Map No.: 5-65-40

Mine: Cottonwood Mine

Location: T. 15S Sec. 6 Lat. 32-09-18N
R. 28E SE Long. 109-31-18W
Geology: Elev. 5226 Ft.

Spotty gold and galena in quartz-filled fissure veins in Precambrian quartz monzonite. Veins generally strike N-S and dip 32°E; fissure veins are visible on surface for 4500 Ft. and are worked underground for distance of 500 Ft. Workings located on or near andesite and rhyolite dikes (Tertiary).

Mineral Products: Gold Lode
Lead: Galena
Silver

Development and Production: Shaft workings. 500 or more tons of gold ore produced from 1880's to 1934. Development included one main shaft with workings at 56 Ft., 113 Ft., 180 Ft. and 280 Ft. below surface; and one smaller shaft to 56 Ft. level.

References:

Keith, 1973, p. 60
USBM Files Cottonwood Mine
Cooper, 1960
ADMR Cottonwood Mine File
ABGMT Crib Data, 1981

USGS Dos Cabezas Quad (1:24000)

Map No.: 4-65-41

Mine: Topaz Prospect

Location: T. 15S, R. 28E; Sec. 8, NW; Lat. 32-08-33N, Long. 109-30-37W, Elev. 5100 Ft.

Geology:

Prospect located on or near contact of porphyritic granitic rocks (Precambrian) with alluvium and overlying pediment gravel (Pliocene).

Mineral Products: Gemstone: Semiprecious Silicates

Development and Production: Prospect; extent of development unknown.

References:

USBM Files, Topaz Prospect
Cooper, 1960
USGS Dos Cabezas Quad (1:24000)

Map No.: 4-65-42

Mine: Paronazzo and Pentelicus Quarries

Location: T. 15S R. 29E Sec. 20 Lat. 32-06-53N Long. 109-24-10W Elev. 5600 Ft.

Geology:

Massive fractured, white and colored marmolized Pennsylvanian Horquilla Limestone.

Mineral Products: Stone: Marble

Development and Production: Open Quarries. Minor production in the early 1900's.

References:

Keith, 1973, p. 72
USBM Files, Paronazzo and Pentelicus Quarries
Paige, 1909, p. 299-311
Burchard, 1914, p. 1338-1346
Wilson and Roseveare, 1949, p. 48
Wilson, 1961

USGS Cochise Head Quad (1:24000)

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ARIZONA TUNGSTEN OCCURRENCES

Dos Cabezas

EMIGRANT & MARBLE QUARRY CANYONS

Minorex Ltd. Joint Venture

MINOREX LTD - HJV 1971

Summary Report
of

ARIZONA PROJECT

INTERNATIONAL MINERALS & CHEMICAL CORPORATION

CONFIDENTIAL

MINOREX LTD

HAILEY JOINT VENTURE - 1971

Summary Report

of

FIELD WORK

ARIZONA PROJECT

January 1, through March 31, 1971

by: John W. Motter
Project Geologist

and

James H. Bright
Manager, Western U. S.

CONFIDENTIAL

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OBJECTIVE

It was decided by unanimous agreement of the Management commitee of the Hailey Joint Venture 1971 to spend the first few months of 1971 in Arizona, working on a project limited in time and scope. After a review of the literature, and preliminary evaluation of the possible potential of a number of areas in Arizona, Cochise County in southeastern Arizona was chosen as a favorable area in which to concentrate a search for scheelite bearing ore.

Initially, some interest and consideration was given to other areas. The first of these was a tungsten referral in the Death Valley. This referral simply never quite materialized as a definite property. After discussion with Richard Stewart of the California Bureau of Mines and Geology, it was decided not to pursue a regional tungsten exploration program in Death Valley.

Also being considered was a copper referral in the Grand Canyon Area by Mr. Jackson of Pacific Grove, California. This submittal was dropped due to vague arrangements with the Hualpai Indian Tribe, bad weather, and the liklihood that the copper ore specimen submitted had fallen off an ore truck from one of the mines in the area.

Field personnel employed by the Venture were John Motter, project geologist and Bill Brooks and John Pascoe, prospectors. Supervisor was James H. Bright.

The project extended from January 1, 1971 to March 31, 1971.

DISCUSSION

Prior to the arrival of the field crew in Arizona, several weeks were spent by the project geologist in Southern Arizona doing preliminary work. The severity of the winter weather prevented consideration of areas in the Northern part of the state, thus effort was concentrated in Cochise, Pima, and Santa Cruz Counties. Preliminary work included review of all pertinent literature, discussions with personnel from the Arizona Bureau of Mines and elsewhere, and examination of many of the tungsten properties described in the literature. This work suggested three areas as being particularly favorable for scheelite exploration. These areas are the Little Dragoon Mountains, the Dos Cabezas Mountains, and the Chiricahua Mountains in Cochise County. All three areas are shown on the Cochise County geologic map #02-71-2 (in map pocket). Descriptions of most of the known tungsten occurrences in these areas are given by Dale (1960), Wilson (1941), and Kerr (1946).

The method employed by the prospectors was to prospect intensely during the day and look for favorable rock types, staining, alteration and similar criteria. Samples were taken from all interesting outcrops, and these were all "lamped" utilizing ultra-violet mineral lights. These sample sites were marked and then revisited by the prospectors after dark. "Lamping" was then begun starting from these marked outcrops. It was found that this method gave maximum efficiency.

The prospectors also carried pans, with which they could collect pan concentrates of heavy minerals (including, of course, scheelite). This technique was used with some success in tracing scheelite up the drainages to its source. Lack of water in most drainages, however, severly limited the use of this technique to its full extent.

In addition to these prospecting techniques, available aeromagnetic date (Dempsey, 1963 and Dempsey and Hill, 1963) was used in an attempt to locate possible tactites buried at a shallow depth below alluvium. The tactites in this area, however, appear to possess too small magnetic susceptibilities to be significant aeromagnetic anomalies at the altitude and flight line spacing of the surveys. This was determined by susceptibility measurements performed by John W. Erwin, Geophysical Consultant.

Work was limited primarily to possibly favorable lithologic sedimentary units (chiefly lower Paleozoics). For example, Epis & Gilbert (1957) and Cooper (1959) show the paleozoic sedimentary rocks in the Chiricahua and Dos Cabezas areas. These sedimentary rocks are felt to have a greater potential for an economic size orebody than the tungsten bearing vein structures typical in the quartz monzonite intrusive in the little Dragoon Mountains. (Cooper & Silver, 1964).

Between January 18 and March 31, the prospectors had prospected the following areas in detail: The Little Dragoon Mountains, the Dos Cabezas Mountains from East of Willcox, Arizona to Apache Pass, and the Chiricahua Mountains from Apache Pass to Paradise, Arizona.

See enclosed maps for area locations.

This area comprises approximately 280 square miles as noted on the enclosed geologic map of Cochise County, Arizona.

RESULTS

Unfortunately most of the scheelite finds made by the prospectors were only small veinlets or stringers, too small to be of interest to the Venture. Two prospects found, are worthy of note.

The first of these is a scheelite and molybdenite occurrence located in the South Fork of West Emigrant Canyon. (See map #02-71-3). This mineralization occurrs in a tactite composed of epidote, garnet, chlorite, calcite, calc-silicate minerals, pyrite and scheelite. In one outcrop of this rock, molybdenite is associated with powellite. A maximum assay of the scheelite bearing rock went 0.33% WO_3, while a sample of the molybdenite bearing rock carried 0.408% Mo and 0.02% WO_3. (See assay sheet).

In the Emigrant Canyon prospect (See drawing 02-71-3), the tactite occurs as discontinuous lenses and beds near the base of the Cambrian stratigraphic sequence of sedimentary rocks. Erosion has removed much of this originally thick geosynclinal sequence, and in this area the crystalline basement is very near. Considerable thrusting and faulting (Epis, 1957) has complicated the regional geology.

Due to the discontinuous nature of the tactite, and the low assays and spotty occurrence of the scheelite, no further action is contemplated on this prospect.

The other prospect of note is a dissemination of magnetite in pre-cambrian (?) granite about one (1) mile north of the Emigrant Canyon prospect, in what is known locally as "marble quarry" canyon, due to the abandoned quarry there. This magnetite bearing granite occurs over large areas and carried up to a maximum of 0.15% copper and 0.15% titanium, in one magnetite rich sample. No action is planned at present.

While this Arizona project has not directly contributed to finding a mine, it has, however, provided additional information on where not to look for tungsten in Arizona.

Map Index
W. Emigrant Canyon

Sample Report

Date March 19, 1971

Sample No.	Location	Rock Description	Type Sample	Width	%Cu	Mo %	oz. %	oz. %WO_3	Sampler
JP 1926	See Geologic map	tactite	grab	-		0.013		0.33	Pascoe
JP 1927	"	"	chip channel	15		0.011		0.21	Pascoe
JP 1928	"	"	grab	-		0.408		0.02	Pascoe
JP 1929	"	"	chip channel	40		0.024		0.02	Pascoe

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UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

INDEX TO TOPOGRAPHIC MAPS OF ARIZONA
ORDER MAPS BY NAMES PRINTED IN BLACK AND BY SERIES DESIGNATION
ALL MAPS SHOWN ON THIS INDEX
ARE DISTRIBUTED BY THE GEOLOGICAL SURVEY

ARIZONA

GLEN CANYON RECREATION AREA

COLORADO

NEVADA

UTAH

NEW MEXICO

CALIFORNIA

MESQUITE 1957 · LITTLEFIELD 1954 · VIRGIN PEAK 1958 · GANE SPRINGS 1954 · GOLD BUTTE 1953 · HENDERSON 1952 · HOOVER DAM 1953 · VIRGIN BASIN 1952 · ICEBERG CANYON 1953 · BLACK CANYON 1952 · SENATOR MTN 1960 · GARRET MTN 1962 · MT PERKINS 1955 · WHITE HILLS 1960 · SPIRIT MTN 1956 · CHLORIDE 1938 · DAVIS DAM · NEEDLES 1952 · NOT SURVEYED · YUCCA 1927 · SAWTOOTH RANGE 1950 · TOPOCK 1952 · BUCK MTS 1927 · WHIPPLE MTS 1950 · PARKER DAM · CASTANEDA HILLS 1966 · ARTILLERY PEAK 1966 · PARKER 1949 · BLACK PEAK 1959 · SWANSEA 1966 · IVES PEAK 1966 · BIG MARIA MTS 1943-51 · MOMO MTN 1927-31 · BOUSE 1962 · DOME ROCK MTS 1950 · QUARTZSITE · VICKSBURG 1962 · HOPE 1961 · LONE MTN 1961 · BIG HORN MTS 1967 · BELMONT MTS 1962 · WHITE TANK MTS 1957 · SUTTING 1962 · SALOME 1961 · GLADDEN 1961 · AGUILA 1962 · VULTURE MTS 1961 · CIBOLA 1942-51 · TRIGO PEAKS 1954 · LIVINGSTON HILLS 1962 · KOFA BUTTE 1962 · LITTLE HORN MTS 1962 · EAGLETAIL MTS 1962 · CORTEZ PEAK 1962 · ARLINGTON 1962 · PICACHO 1943-51 · RED HILL 1935-54 · CASTLE DOME MTS 1962 · ENGESSER PASS 1960 · PALOMAS MTS 1960 · DENDORA VALLEY 1950 · WOOLSEY PEAK 1951 · COTTON CENTER 1951 · MOBILE 1951 · PICACHO PEAK 1940-51 · LAGUNA 1936-55 · RED BLUFF MTN 1959 · ROLL 1940-55 · STOVAL 1937-56 · SENTINEL 1949 · THEBA 1950 · GILA BEND 1950 · ESTRELLA 1962 · ANTELOPE PEAK (S) 1946-63 · YUMA · FORTUNA 1946 · WELLTON 1929 · MOHAWK 1926 · AGUILA MTS 1965 · CHILDS VALLEY 1965 · MIDWAY 1956 · HAT MTN 1956 · KAKA 1956 · VEKOL MTS 1925-63 · SILVER REEF MTS 1940-63 · ELOY 1929-64 · RED ROCK 1946-63 · TORTOLITA MTS 1959 · SOUTH OF YUMA 1964 · VOPOKI RIDGE 1965 · TINAJAS ALTAS 1965 · CABEZA PRIETA PEAK 1965 · ISLA PINTA 1965 · GRANITE MTS 1965 · GROWLER PEAK 1964 · TULE MTS 1965 · SIERRA ARIDA 1965 · O'NEILL HILLS 1965 · AGUA DULCE MOUNTAINS 1964 · QUITOBAQUITO SPRINGS 1963 · LUKEVILLE 1963 · DIAZ PEAK 1963 · KOM VO 1963 · GU OIBAK 1963 · SELLS 1941 · LA LESNA 1963 · VAMORI 1941 · PRESUMIDO PEAK 1941 · BRIVACA 1941 · COMOBABI 1937 · KINO PEAK 1963 · MOUNT AJO 1963 · PISINIMO 1963 · QUIJOTOA MOUNTAINS 1964 · AJO 1963 · SIKORT-CHUAPO MOUNTAINS 1963 · CIMARRON PEAK 1963 · GU ACHI 1963 · SAN VICENTE 1938 · SANTA ROSA MOUNTAINS 1963 · VACA HILLS 1959 · SILVER BELL PEAK 1959 · COCORAQUE BUTTE 1941 · SAN XAVIER MISSION 1940-57 · PALO ALTO RANCH 1940 · TWIN BUTTES 1939-57 · TUBAC 1939-57 · RUBY 1939-57 · SAHUARITA 1958 · EMPIRE MTS 1958 · TUCSON 1946-57 · RINCON VALLEY 1957-68 · WRIGHTSON 1958 · ELGIN 1948-58 · LOCHIOEL 1948-58 · NOGALES 1958 · MT LEMMON 1957 · BELLOTA RANCH 1957 · HAPPY VALLEY 1943-58 · DRAGOON 1948-58 · COCHISE 1941-58 · DOS CABEZAS 1941-57 · COCHISE HEAD 1950 · VANAR 1950 · REDINGTON 1942-57 · WINCHESTER MTS 1942-57 · WILLCOX 1942-58 · LUZENA 1947-57 · BOWIE 1949 · SAN SIMON 1950 · BENSON 1958 · ST DAVID 1958 · PEARCE 1958 · SQUARETOP HILLS 1958 · CHIRICAHUA PEAK 1958 · PORTAL 1954 · HUACHUCA 1948-58 · TOMBSTONE 1942 · GLEESON 1958 · SWISSHELM MTN 1958 · APACHE 1958 · SUNNYSIDE 1948-58 · HEREFORD 1952 · BISBEE 1954 · PAUL DOUGLAS 1954 · COLLEGE PEAKS 1958 · GUADALUPE CANYON 1954 · MESA 1948-58 · PASS 1948-58 · SW 1952

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MINOREX-HJV 1971

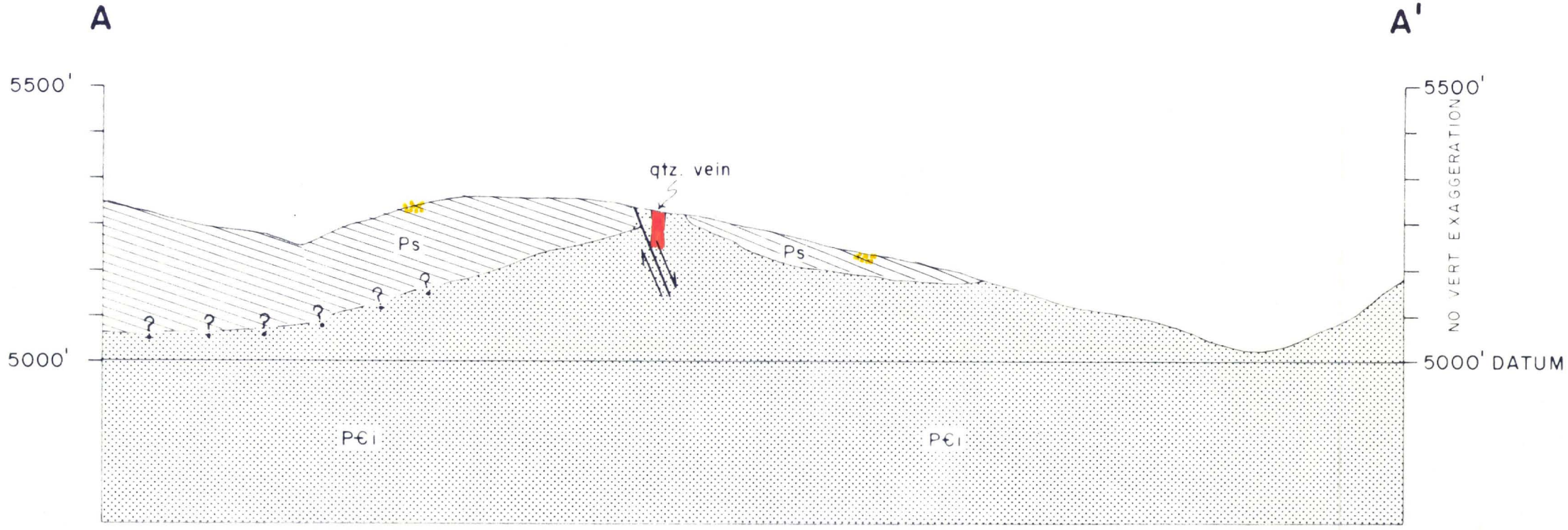
ARIZONA

INDEX MAP

SHOWING COCHISE COUNTY

J. MOTTER — APRIL 1971

02-71-1



0 100' 200' 300' 400' 500'

SCALE 1" = 300'

MINOREX - HJV 1971

GEOLOGIC CROSS SECTION

WEST EMIGRANT CANYON

SCHEELITE - MOLYBDENUM

COCHISE COUNTY, ARIZONA

J. MOTTER APRIL 1971

NOTE: THIS MAP IS TO ACCOMPANY
GEOLOGIC MAP NO. 02-71-3

02-71-4

EXPLANATION

Mi? — DIABASE INTRUSIVE SILL - MEDIUM GRAINED AND DARK GREY IN COLOR AGE IS LATER THAN LOWER PALEOZOIC

Ps — LOWER PALEOZOIC SEDIMENTARY ROCKS, LARGELY METAMORPHOSED. DOMINANT LITHOLOGIES IS A QUARTZITE WHICH IS LIMEY - OVERLAIN BY A DARK GREY META-SHALE. A THIN CONGLOMERATE APPEARS TO BE AT THE BASE OF THE CAMBRIAN BOLSA(?) QUARTZITE.

pεi — PRECAMBRIAN GRANITE - LIGHT GREY IN COLOR AND WEATHERS TO BUFF TO RED COLOR. ORTHOCLASE PHENOCRYSTS OFTEN IN EXCESS OF 2-3 CM, 1-10% MAGNETITE DISSEMINATED THROUGHOUT

SCHEELITE MINERALIZATION

MOLYBDENITE MINERALIZATION

VERTICAL QUARTZ VEIN

STRIKE AND DIP OF BEDDING

STRIKE AND DIP OF JOINTING

STRIKE OF VERTICAL JOINTING

STRIKE AND DIP OF FAULT

CONTACT, DASHED WHERE INFERRED

STREAM

SCALE

MINOREX - HJV 1971

GEOLOGIC MAP

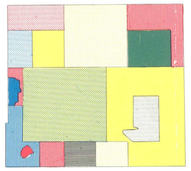
WEST EMIGRANT CANYON
SCHEELITE - MOLYBDENUM
COCHISE COUNTY, ARIZONA

J. MOTTER — APRIL 1971

02-71-3

UNIVERSITY OF ARIZONA
ARIZONA BUREAU OF MINES
J. D. FORRESTER, DIRECTOR

Map showing sources of geologic data.



Cooper, J. R.; U. S. Geol. Survey

Cooper, J. R. and others; U. S. Geol. Survey

Creasey, S. C.; U. S. Geol. Survey

Épis, R. C.; Univ. Calif., Berkeley (modified by Cooper, J. R.)

Gilluly, J. and others; U. S. Geol. Survey

Moore, R. T.; Ariz. Bur. Mines

Ransome, F. L.; U. S. Geol. Survey

Sabins, F. F.; Geol. Soc. America Bull.

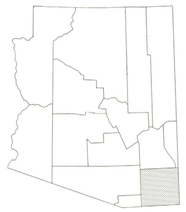
Tyrell, W. W.; Yale Univ.

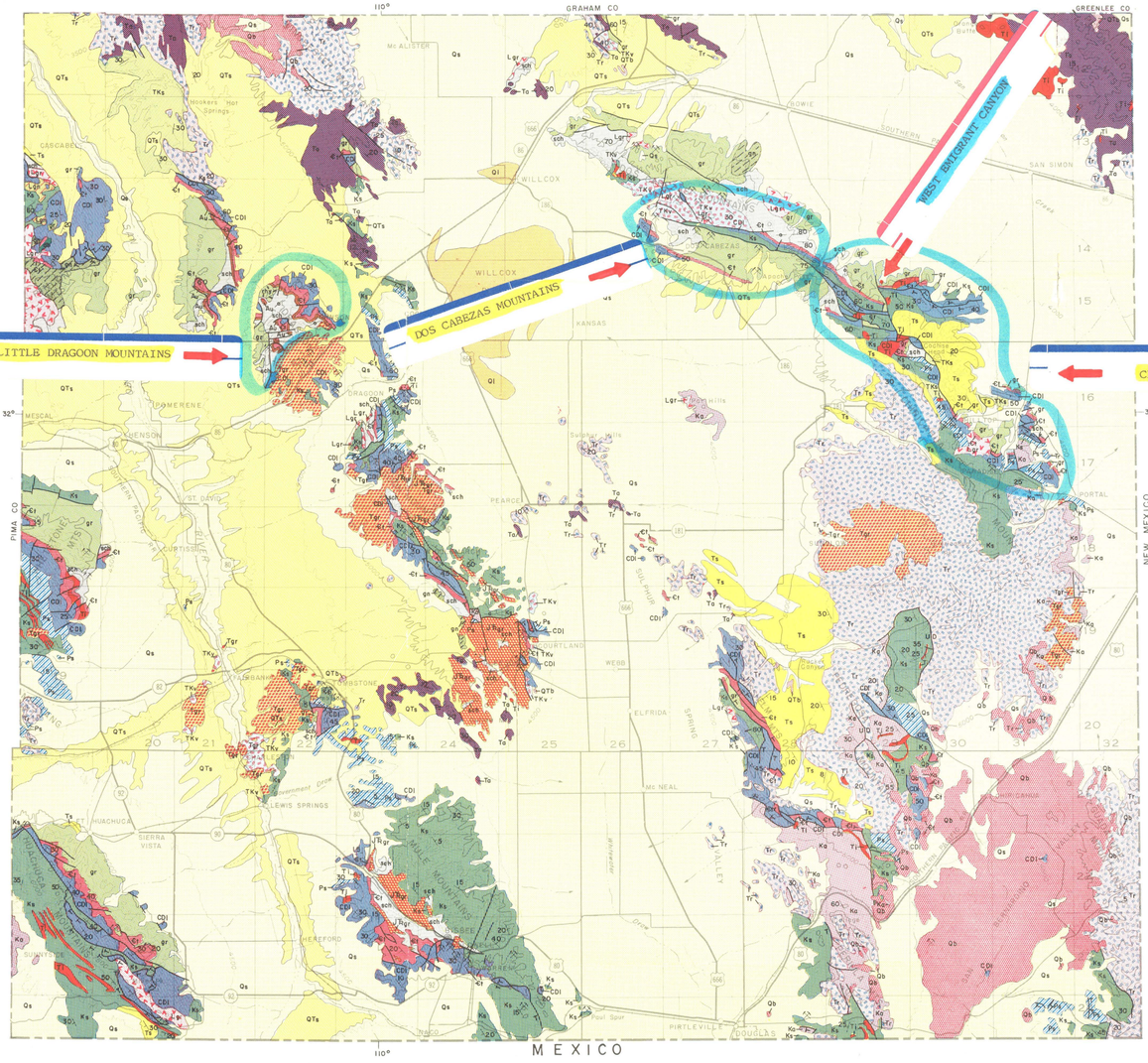
Weber, R. H.; Univ. of Ariz.

Wilson, E. D.; Ariz. Bur. Mines

Wilson, E. D.; Ariz. Bur. Mines and Heindl, L.A.; U.S. Geol. Survey

INDEX MAP OF ARIZONA
Showing Location of Cochise County.





GEOLOGIC MAP
OF
COCHISE COUNTY, ARIZONA

PREPARED BY THE

ARIZONA BUREAU OF MINES
UNIVERSITY OF ARIZONA
TUCSON, ARIZONA

Base materials furnished by U. S. Geol. Survey.

Scale $\frac{1}{375,000}$

10 0 10 20 30 Miles

10 0 10 20 30 Kilometers

Contour interval 500 feet
datum is mean sea level

1959

EXPLANATION

SEDIMENTARY ROCKS

Qs — **Gravel, sand, and silt**

Ql — **Lake Deposits**

QTs — Silt, sand, and gravel.

Ts — Sand, gravel, and conglomerate.

TKs — **Sandstone, shale, and conglomerate**
Includes some volcanic rocks.

Ks — **Shale, sandstone, and limestone**
Locally metamorphosed to phyllite and schist as in Rincon and Dragoon Mts.

Ps — **Permian limestone, sandstone, and shale.**

CDl — **Carboniferous and Devonian limestone, shale, sandstone, and quartzite**

<Ct — **Bolsa and Troy quartzites and Abrigo and related limestones.**
Includes Ordovician limestone

Au — **Apache group**
Mescal limestone, Dripping Spring quartzite, Barnes conglomerate, Pioneer shale, and Scanlan conglomerate. Locally includes some Cambrian Troy quartzite.

METAMORPHIC ROCKS

Lgr — **Gneiss**
Derived from igneous and sedimentary rocks ranging from Precambrian through Cretaceous in age.

sch — **Schist**

gn — **Granite gneiss**

IGNEOUS ROCKS

Qb — **Basalt**
Locally includes tuff and agglomerate.

QTb — **Basalt**
Locally includes tuff and agglomerate.

Ti — **Dikes and plugs**

To — **Andesite**
Includes tuff and agglomerate

Tr — **Rhyolite**

Tgr — **Granite and related crystalline intrusive rocks**

TKv — **Volcanic flows and pyroclastic rocks, rhyolitic to andesitic in composition.**
Locally includes interfingering conglomerate, sandstone, and shale.

Lgr — **Granite and related crystalline intrusive rocks**

Ko — **Andesite**
Locally includes tuff and agglomerate.

Kgr — **Granite and related crystalline intrusive rocks**

db — **Diabase**

gr — **Granite**

Rh — **Rhyolite**

SYMBOLS

Contact, showing dip

Fault, showing dip
Dashed where approximately located
U, *upthrown side*; D, *downthrown side*

Thrust fault
(T, upper plate)

Axis of anticline

Axis of syncline

Strike and dip of beds

Strike and dip of overturned beds

Strike of vertical beds

Mine

QUATERNARY
TERTIARY
LARAMIDE
CRETACEOUS
TRIASSIC AND JURASSIC
PERMIAN
CARBONIFEROUS AND DEVONIAN
CAMBRIAN
YOUNGER PRECAMBRIAN
OLDER PRECAMBRIAN
YOUNGER PRECAMBRIAN TO TERTIARY

02-71-2