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The following file is part of the John E. Kinnison mining collection

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STOM NIES DC, at Miss. Univ.
G. H. T. E. E. E.



WALLACE
MINER
Nov 11/76

3 1/2
0
0
5
0
0
5
8
0
5

WALLACE MINER
July 1 1976

Dave Howell consulted
for Rio Amoxo. Determined
the gold control was a
3x pipe, lying (tilted) nearly
flat. Found in underground
work and also found the
outcrop on a hillside.
operations were shut down by
Nov of 1977.

John,

7/9/77

Mr. O'Hare ran the ^{limite} samples from the Oro Grande Mine and said one of them had a trace of Cu and that the other one was a little better. I tried to get him to be a little more descriptive as to strength of lines or amount of Cu but he wouldn't say any more than that Cu was present in both - probably in trace amounts.

Jeff

He says hello.

from Bx specimens J. Meyer collected they looked almost like maries by filling of block relief from w/ Reel streak - like L. hon. - Apparently not - just part of the manganese mineralization.
- J. M.

December 28, 1972

John,

There are two property submittals which have been held on deferred status for quite a while, and I would like for you to have a look at these next month if it can be conveniently arranged.

They are as follows:

1. Little Mac Copper, submitted by Roy Pyle.
2. Sally Ann Mines, submitted by Ed Rundle.

We have a file on both of these properties consisting of data from the owners, which may or may not be accurate. The Little Mac is of interest principally because it is in the Wickenburg area, but it may be relatively inaccessible. The property handled by Ed Rundle is an unknown, and is partly of interest because it is territory about which I know very little. Presumably you will need Rundle for a guide on that trip, but the Little Mac can be investigated at any convenient time.

John Kinnison

/fn

COME SEE WHAT AUNT FRAN HAS

AT THE

VULTURE'S ROOST

OPEN DAILY

10:00 A.M. TILL 5:00 P.M.



LOCATED AT

THE VULTURE GOLD MINE

WEST ON VULTURE MINE ROAD

WICKENBURG, ARIZONA.

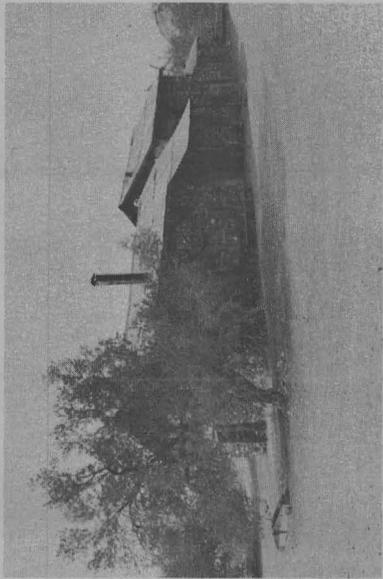
GIFTS, CURIO'S

VULTURE BURGERS & COLD DRINKS

Thank you for visiting the Vulture, please use this brochure as a guide in your visit.



The buildings directly south of the parking area were built circa 1884. The building ahead and to the right is the assay office. The walls of this building contain \$600,000.00 in gold and silver.



Directly behind the assay office is the original home of Henry Wickenburg, built in late 1862.



Taking the trail to the right behind the assay office, the original stamp mill can be seen.



The Vulture gave up \$200,000,000 in gold and silver before the Federal Government closed it in 1942. An estimated 2 to 3 times this amount still remains.

Proceeding on up the trail, the blacksmith shop and main shafts are visible.



The concrete slab at the entrance to the main shaft is where Henry Wickenburg made his "strike" in 1862 while in route across the desert. Henry Wickenburg and his burro paused to rest under a palo verde tree.

When the time came to move on, Henry's burro balked and would not proceed. With this Henry picked up a rock to hit his burro behind the ear.

Noticing the rock was very heavy Henry examined it more closely and found it to contain a large gold nugget. Forgetting about his burro and proceeding to explore with his pick and shovel more and more gold was discovered, and in 1863 the "Vulture" opened full scale. The main shaft is 2000 feet in depth and maintains a perfect 45 degree angle.



Looking to the south from the blacksmith shop the new ball mill and tailing recovery structures are visible. After walking the short distance to these structures and observing their contents, a large metal building can be seen directly behind the new mill.

See Photo Next Panel.



This structure houses the power plant for the "Vulture" as well as serving as the machine shop.



PLEASE WATCH YOUR STEP !

After 109 years the elements have taken their toll to the extent that many of the buildings and shafts of the Vulture Gold Mine are unsafe and off limits!



STAY ON MARKED TRAILS!

STAY SAFE! STAY HAPPY!

HAVE A GOOD TIME!!

Following the trail back towards the parking area, the vast tailing deposits can be seen. These tailings contain an estimated \$7.00 to \$12.00 per ton of powdered gold.



Beyond the tailings can be seen the largest saguaro cactus in existence.



Upon returning to the rock building area, please observe the hanging tree from which seven miners were hung for high grading gold.



It may also be observed that Henry Wickenburg's home has no windows. This was in defence of the Indians. Henry Wickenburg moved into the adjoining building in 1884 and converted his home into the "Vulture jail."

Photos By Carter Lueders & Larry Beal

Directly ahead is the old mess hall.



In the Hey Day of the Vulture 500 to 550 miners worked in the mine. Of these, 55 to 100 miners lived and ate at the mine. The Population of the surrounding area exceeded 5,000 people. The stove in this building was brought in around the cape, then by train and finally by wagon to its present location in the Vulture mess hall.

The Vulture mess hall was also the center for all social occasions. Within its walls dancing and merriment abounded. Mail call was also held on the front steps of the Vulture mess hall.



COME BACK AND SEE US



TELL YOUR FRIENDS

The Vulture is open 7 days a week for your enjoyment and pleasure. Please feel free to inquire about group rates, guided tours, overnight camping and dancing facilities for clubs and organizations. Please feel free to use the Vulture picnic grounds. Picnic tables, barbeque and playground are provided for your convenience.

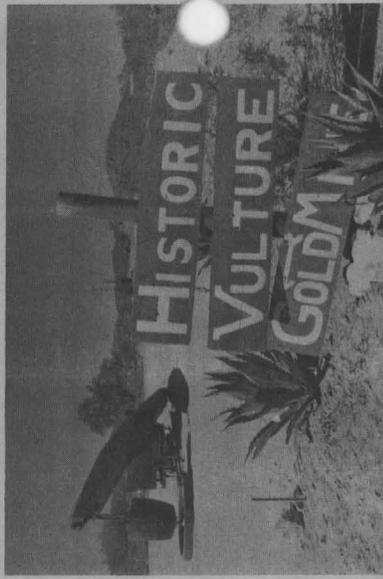
For further information write P. O. Box 1853 Wickenburg, Arizona-85358

FRONTIER PRESS - Wickenburg, Arizona



Visit

Historic Vulture Mine



Wickenburg, Arizona

Welcome to Arizona and especially to the Vulture Gold Mine. It is our sincere wish that your visit will be safe and most pleasant. In the interest of safety we remind you the Vulture Gold Mine is situated in a remote part of the Sonoran Desert and as in all desert areas the careless or unwary can, and do, get into serious trouble.

YOUR HOST
J. "LUCKY" NILLES

J. Lucky Nilles

AERIAL RECONNAISSANCE

November 6, 1972

John Kinnison recording, Aerial Reconnaissance, November 6, 1972;
Aircraft: Commanche 260; Pilot: Henry Hudgin, Hudgin Air Charter
Service. George L. Richardson and Paul Strobel accompanying
J. Kinnison. Leave Avra Valley Air at 8:43 a.m. Sun bright.
Sky clear. No wind at this time. No clouds.

Set course for Wickenburg via the Sacaton Mine. Flight speed
corrected about 190 mph. Passed the Sacaton outcrop and the new
open pit started there. The approach is being made from the west
and the first bench is considerably west of the ore body. Scraper
cuts are currently being placed across the ore body northwest of
the outcrop hill. Dumps are laid out towards the south. Resume
course to Wickenburg.

Flew over the Laramide granite which crosses northwesterly
across the south Phoenix Mountains. The east contact shows reddish
color streaks parallel to jointing. I have not seen this color
on other flights when the sun was at a higher angle--the color may
be false--but it could represent weak alteration. Should be field
checked for general information. Time: 9:18 a.m.

We flew over the White Tank prospect drilled last year. The
sun is at a low angle and the colors do not show well. In order
to use a little time before trying to reconnoiter in the Bradshaw
Mountains--give the sun a little more rise--we have turned southwest
towards Buckeye and will fly over Frost's property west of Buckeye,
submitted in September.

We have circled the Frost prospect area. Northwesterly streaks
suggest a sedimentary or gneissic pre-Cambrian complex. Occurring on

the west side of the claim. Made a low, slow circle. On the east side the Arroyos cut into a light-colored rock which in places looks somewhat altered--scattered bulldozer cuts in it and possibly one or two ancient prospect pits. Circled and flew the area at 6,000 feet elevation. The whole basin comprises minor color anomaly. Set course for Wickenburg. Time: 10:00 a.m.

Approaching Congress junction. Time: 10:20. On course southeast for the Yarnell Cone (Planet Saturn Mine). Dumps apparent down below the new highway say 300 feet. Buildings further down on the access road which runs north from the road to Stanton. The granite composition of the hill south of the Planet Saturn is obvious with a southeasterly jointing extending southeast from the area of the workings. One small digging on the west side of this granite ridge some miles north of Stanton. Another working midway on the flank-west side of the granite mountain. Still north of Stanton, located in a main drainage on a southeasterly continuation--a second dump up the creek from Stanton Road. Rich Hill is dead ahead. Workings on the west flank of Rich Hill are apparent southeast of the town of Stanton. These are minor dumps with various roads to them. Altitude 7400 feet. On strike to the southeast across the southwest trending flank of Rich Hill--another set of workings of minor character. Octave dump at 2:00. Octave workings appear somewhat offset to the southwest from the trend we have just been flying--possibly 2,000 or 3,000 feet. There is one working southeast of Octave across the ridge of the hill south of the Octave. A major camp is in the drainage two miles to the southeast of Octave. The workings just mentioned may be easterly along the strike of Octave rather than southeast. More workings are further to the east, possibly across a drainage which passes

down through a ranch with a lot of corrals. Note: the granite southeast of Octave in general does not show the jointing like that at the Planet Saturn Mine.

Continuing southeast from Octave there are workings in an unidentified drainage coming up from Hassayampa in a little basin-like area. Approaching the Constellation Road where it goes over the first sharp pass after climbing up out of King Solomon's Wash. Workings are seen down below the road (north side) over the pass. The series of workings on the "eastern zone" on the Constellation Road is much more extensive. There are scattered diggings probably--perhaps--on continuation southeast from the northeast one which has a large dump. Some open cuts on a zone about 3/4 mile southeast of the main dumps and headframe. Other diggings on to the southeast. We have circled the area of the Great Southern Mine where Paul found the wulfenite. The rock appears to be granitic in part with scattered miscellaneous color tones of brown and orange in addition to gray. The area of the workings is principally gray. Actually the area we just circled is about 2,000 feet northwest of the wulfenite area. There are northwest trending ridges of rock coming into the wash near the wulfenite exposure. An old corral and windmill are also there. An old stamp or mill foundation and dump. To the southeast there are more diggings on the side of a hill, say, another 2,000 feet southeast. I see the Morris Town road off at 3:00--we are passing over what could, what appears to be a pegmatite mine area. Castle Hot Springs Road ahead.

We have located Sheep Mountain rather precisely finally--the drill holes are sparse through the rugged volcanic terrain but there are occasional drill pads on them. No mistake about the

locations. It is centered on Sheep Mountain as shown on the old Bradshaw Mountain geologic map by Lindgrin. The topography for the Bradshaw Mountain 30 minute quadrangle will probably also show it as Sheep Mountain. See my earlier tape recorder notes for this same location with reference to Castle Hot Springs Resort. Time: 11:55 a.m. Will sit down in Wickenburg Airport for lunch. Amendment, we're heading towards Prescott where there is a restaurant at the airport.

Prescott Airport. Time: 12:45 p.m.

Have made the route from Planet Saturn southeast. Easterly following Hassayampa about 3 or 4 miles upstream and east of the Constellation area a red zone and granite butts or perhaps crosses the Hassayampa. The zone is at least a mile long and perhaps longer. There are some access roads in the area. Color may be due to volcanic sections. (Recheck of U-2 photographs indicates this is part of the volcanic section.) A quick field check is in order. There are numerous workings on the backside of the main hill--that is the east side--from the Constellation area itself. The red zone lies just to the east of that. These observations made from the rear seat--Paul Strobel navigating and observing from the front. Much color observed in granite just north of the northeast perimeter of volcanics which make up the Morris Town--hieroglyphic hills area. The colors are pronounced but very few diggings in them. Some access roads.

Some conclusions: The zone from the Planet Saturn southeast through the Octave is very well marked by diggings principally in the area of the Planet-Saturn, Stanton, Weaver, and Octave. However some scattered work is evident elsewhere on strike in between

these main showings. The workings diminish southeast of the Octave and a broad zone perhaps two miles, separates that area from the Constellation mineral zone. This area may be considered by the absence of diggings to be more or less barren. The Constellation again evidences a southeast trend but there may be two parallel zones, or perhaps somewhat of a random distribution. Thus it would appear that although controlled regionally along possible southeast zones, the Constellation area occupies something of a unit and may be considered a "center" of mineralization. The northwesterly zone from Octave northwest to Planet Saturn is more of an elongated belt with centers at Octave, Weaver, and Planet Saturn, with Stanton being a minor center. Octave is the principle producer located on the southeast edge of this elongated mineral zone.

In addition to more work on the known mineral occurrences, it would appear that some general reconnaissance in the Bradshaw foothills, south of the Hassayampa and a few miles to the east of Constellation is warranted.

A miscellaneous note: The conglomerate capped ridges--there are two of them--of conglomerate which end at King Solomon's Wash where it crosses the Constellation Road are very pronounced, and there is no doubt about this interpretation. The dip is very gentle to the west. Bedrock appears to crop out on the hill slopes on the northeast and south sides of the conglomerate capped ridges.
Time: 1:35 p.m.

We have circled a granite hill area near Forepaugh west of Wickenburg. A color anomaly on the very southeast flank of the hill is somewhat redder than I had seen it on a previous flight where it was noted as an anomaly. Apparently it was much redder when viewed by Richardson and Strobel from a distance on the ground.

There is no doubt that it should be field checked. Reconnaissance finished for the day and set course for Tucson.

Final note: The visibility from front passenger seat of the Commanche 260 is moderately good. The middle seat is very poor, and the rear seat essentially blind.

AERIAL RECONNAISSANCE

John Kinnison recording, July 28, 1972, take-off from Avra Valley airfield in a Cherokee 200 Arrow. Hudgin Air Service, Pilot--Palen Hudgin. Sky--clear, no wind. Destination--Bradshaw mountains area for reconnaissance from Crown King to Wickenburg.

10:55 a.m., approaching Lake Pleasant. The basalts which lie to the east of Lake Pleasant dip very gently east--not more than 5° or 10° . The basalts which cross the Black Canyon highway east or southeast of Lake Pleasant, however, dip more steeply--possibly 25° . The dip of the volcanics crossing the highway is northeast. Dip of the basalts east of Lake Pleasant is more directly east. These basalts are on what is known as Williams Mesa. Looking farther northeast from a point north of Lake Pleasant, the basalts east of Black Canyon form a large mesa, which is very slightly dipping to the west--almost flat.

There is a large red area somewhat elongate northwesterly lying several miles south of Lane mountain. No workings are evident but a number of houses are there and roads lead up to it from the south.

The roads to drill sites on the southwest slope of Lane mountain--about one thirds the way up are quite evident. The setting of a drill site is a cirque-like mountain basin with subdued colors. The clear grey knobs surrounding it evidently mark the margins of alteration. The color zone is somewhat circular with no visible extensions.

We are now over Silver mountain and I see one working with a road to it. There exists northwest of the Lane mountain basin a more westerly facing drainage and basin and some apparent drill holes have been cut into this side. In the forested hills north of Lane mountain there are roads leading to small mine dumps in several places.

The Lane mountain rock in general looks to be a massive unaltered granite or a gneiss. To the north, near Crown King, there is a wide area which is brown or dark brown-red colored.

We are over the brown-colored hills in, I think, the general vicinity of Crown King. These hills are bare of vegetation more or less, and appear as though they could be schist. Have circled, and Crown King is below us. Silver mountain dead ahead.

On the southwest side of Silver mountain, between there and the first volcanics near Castle creek, in the little drainage between the volcanics of Silver mountain, there is a very noticeable red area probably a mile and a half long by at least half a mile wide. Other splotchy areas are seen along the periphery of the main area. No workings are visible in the red area--I wonder if this could be red grit.

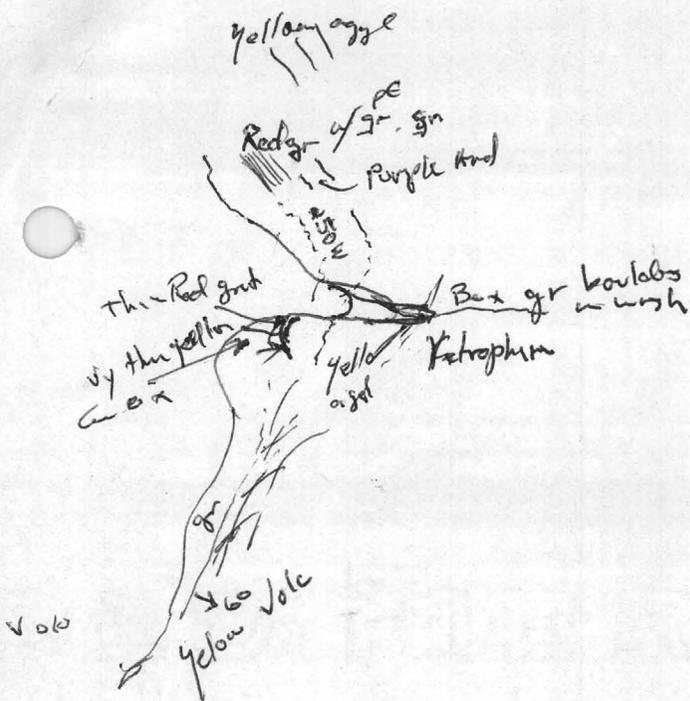
We are parallel to Castle creek near Castle Hot Springs resort--the volcanic sequence dips about 50° easterly as exposed in the canyon. In the volcanic hills to the north of Castle Hot Springs and due west of Silver mountain there appears to be sufficient road network so that this could be the Phelps Dodge drilling site, known as Sheep mountain.

On course northerly we are now heading into Peoples Valley. The volcanics which cap the various hills there dip gently to the east. South of the Hassayampa on the Constellation road, and east on the Solomon wash, the mine dumps are relatively numerous. To a degree this represents a radial, rather a circular distribution rather than elongate. There appears, however, to be some tailing out to the southeast.

We are returning south on the Constellation road to Castle creek. The volcanics of the main Hieroglyphic hills dip more steeply than those to the east around Sheep mountain--and the dip appears to be greater the more southerly one goes. The red area mentioned earlier on the west side of Sheep mountain must clearly be a portion of the volcanic sequence, very possibly a red grit although this is not certain. The

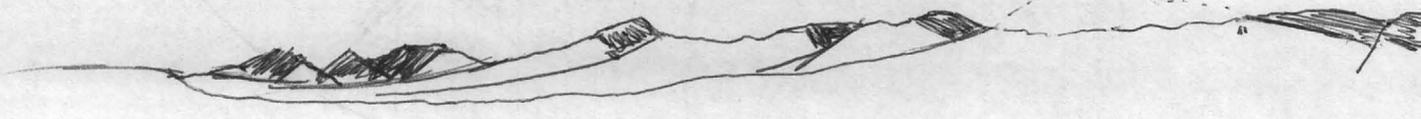
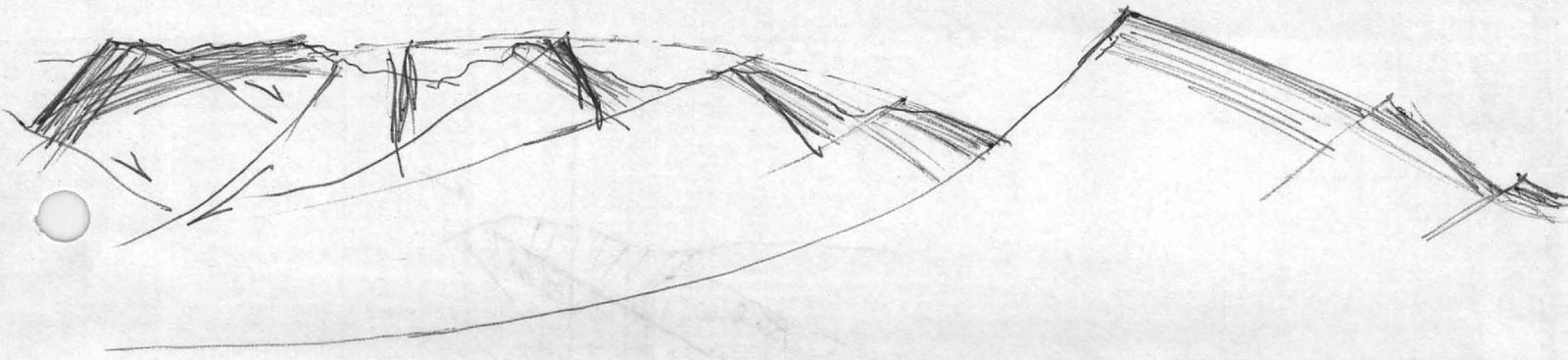
red material abuts Silver mountain, almost as though it might be faulted against it, but the outline is rather irregular--perhaps it lapsed or was deposited against the basement of Silver mountain. With a good view northeast toward the area of Crown King and Lane mountain, there is certainly no suggestion of repetitive deposits or structure trending southwest. If there is a southwesterly zone, it does not really have a surface manifestation.

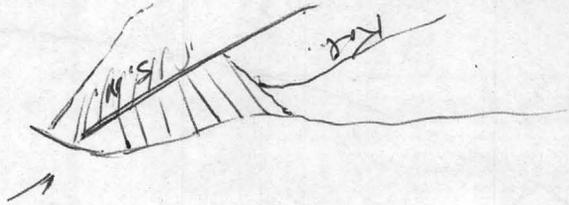
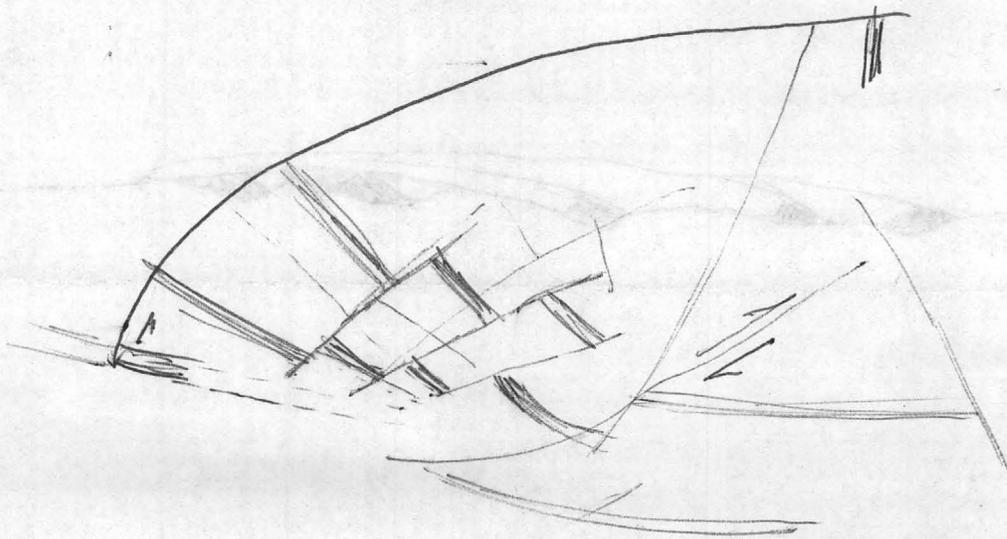
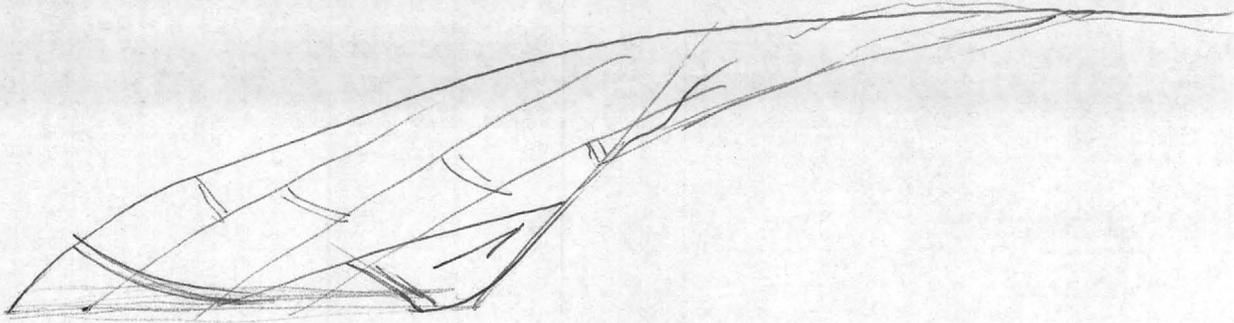
JEK/bl
August 3, 1972

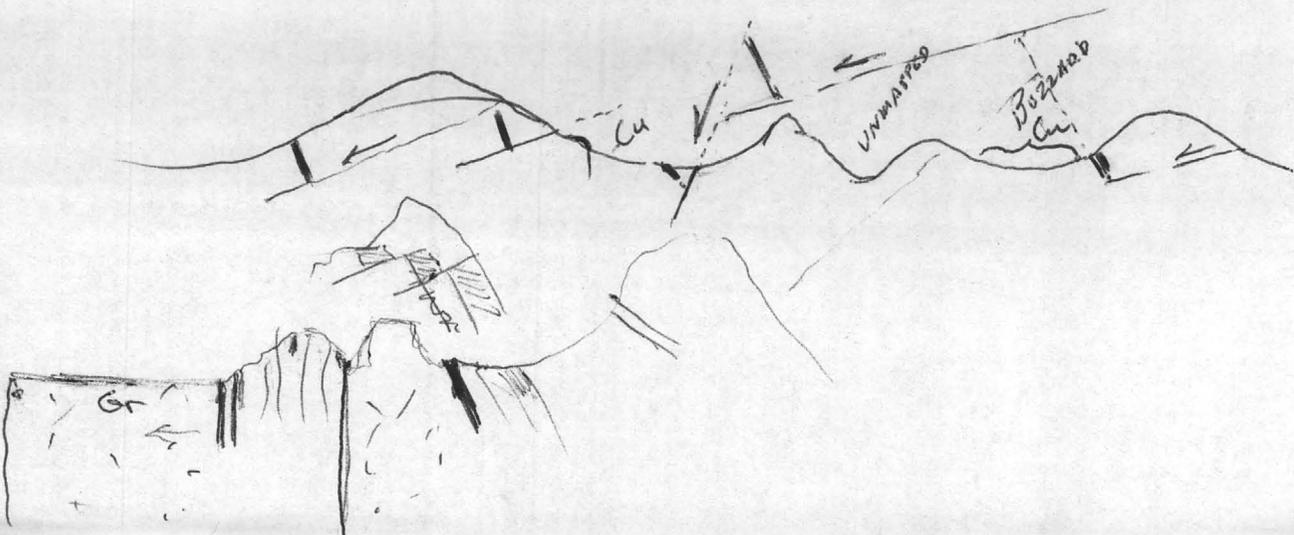
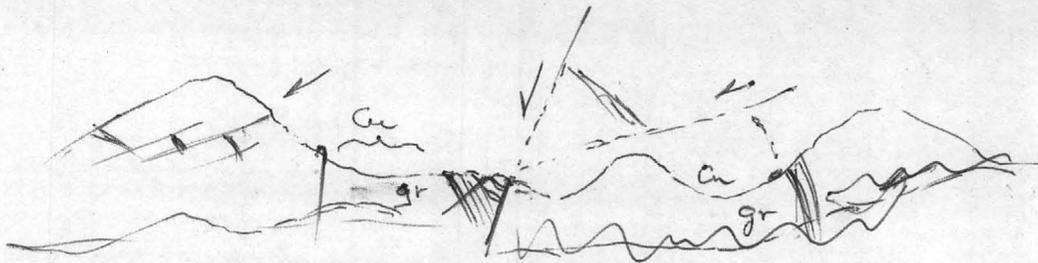
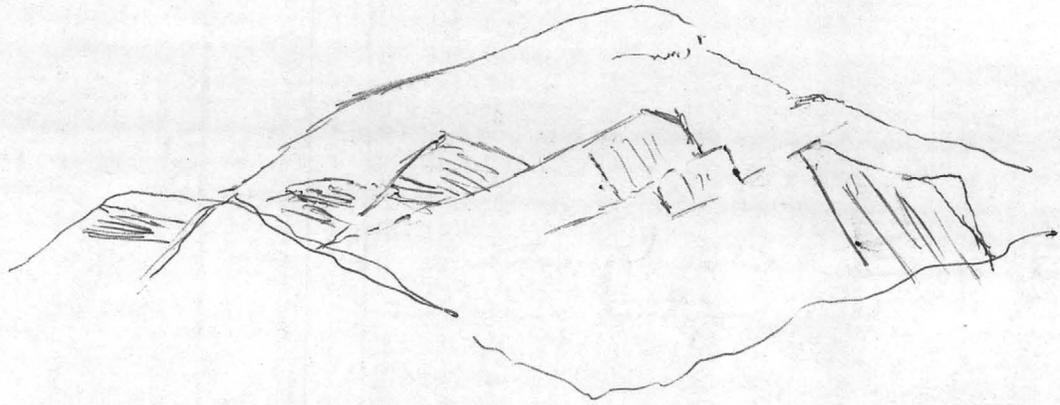


Constellation Rd

July 13 1972







WICKENBURG AREA

From Ariz Bur Mines Bull 137, 1934

Congress Mine # 7,6 M. 11 1889-1910
 deepest shaft 3900 ft incline @ $\pm 25^\circ$.

Total Tons	Congress	379,000
	Niagara	293,000
	Queen of Hills	20,000
		<hr/> 692,000

Main congress vein - Qtz strgs in a greenstone dike, dips $20-30^\circ$ N.

other veins dip $30-40^\circ$.

Octave st - N 70° E, dips $20-30^\circ$ NW

contains galena, pyrite, sparse cpy.

Ave width $2\frac{1}{4}$ feet.

Joker shaft 1100 feet deep (inclined)

Black Rock Dist. (Constellation area)

Oro Grande 1 Mi. E of Harroburg, $4\frac{1}{2}$ N of Wickenb.

Gold Bar 2.7 Miles NE of Constellation.

Vein st N 70° E, dips 30° NW

Green 7 miles by road E. of Constellation
 two veins, 250' apart. Vertical, st N 20° W.

N O T E S

May 23, 1972, Aerial reconnaissance notes, John E. Kinnison recording. Leave Avra Valley in a Hudgin Air Charter plane, Jim Hudgin is the pilot. The weather is very clear with little or no wind. Will set course for Buckeye.

10:20 a.m. En route to Buckeye I passed over the Silver Reef mountains. The copper showings with some minor workings and buildings on the east side of the Silver Reefs show no sign of current activity.

10:35 a.m.: crossing the Maricopa mountains north a few miles of the point where the railroad traverses the range. Bearing set toward a peak, which is probably the Woolsey Peak northwest of the Gila River. Woolsey Peak on our left, Gillespie Dam on our right. Basalt plain lies beneath us, very little topography. Following the old Agua Caliente road north of the railroad, the area of the Norandex option is off to our left. Altitude reduced to 300 feet. Variegated colors and low-rolling hills--probably of volcanics as previously interpreted. Circling around to the south toward a little anomaly area, parallel ridges of volcanics running southerly. ~~Below~~ ridges, little relief. Some bulldozer trenches are evident, but there is no major road network that did not exist when I flew over the area a year or so ago. No evidence of drills in the vicinity. Have circled and are flying southwest on the south side of the railroad track. The Harquar station is on our right. Circle northeast and will set course for the Vulture mountains. Saddle mountain and the Palo Verde hills are dead ahead. On this line, crossing the Agua Caliente road, are considerable bulldozer trenches and probably some drill sites, situated both sides of the Agua Caliente road.

11:05 a.m.: increasing speed and on course for Vulture mountains. Passing over the northeastern slope of the Big Horn mountains along a road which crosses them from the *Tanopah* road. Considerable diggings scattered

about and much of the rock looks as so it could be schist or perhaps granite overlain by volcanics. Considerable amount of orange and red tones in the ^{^,}glimpse south of the Morningstar mine area. Perhaps this should be field checked. On course for the Vulture mountains, the Vulture mine is dead ahead.

Low hills outcropping on the desert south of the Vulture mine are evident. The red hill by the road west of the Vulture mine and near Jimmy wash are on our left. A number of roads cross-cross the hills immediately north of the Vulture. Some fresh bulldozer cuts. Vulture ridge ^{and} on its high peak lies at two o'clock. We are west of the Vulture mine route turning north into ^{O'Haca} ~~Harcuar~~ Valley. The base of the volcanics on the east side of the ^{O'Haca} ~~Harcuar~~ Valley is barely evident and I can see a red streak at the base--this presumably is the red grit. However, it is not readily identifiable as such, if we did not ^{already} know it was there. Granite floor of the basin shows up nicely--no alterations, however. Twin Peaks off on our right, that is east. Looking into the little basin between ^{O'Haca} ~~Harcuar~~ basin and Paul's basin, the granite soil is evident. There is no indication that the red grit is there present. We are now flying ^{over} Twin Peaks itself. Over the south end of Paul's basin. Looking down into Buzzard basin. Swing out of Buzzard basin north with the ^{Flying E} (flying, whatever it is,) dude ranch on my right. Granite appears to extend out possibly even to their corrals west of the houses; however, good part of this may be soil--of a slightly red-brownish color. Nothing diagnostic really--there is a possibility I think of some outcrop west of the road into the Flying E and north of their big corral or horse pasture. Having traversed east and are turning over the ~~lead~~ tank area.

Circling over the area of red grit projecting south of the road from Buzzard valley. Where it crosses the graded dirt road which has as its turnoff the little quarry in andesite dike, the red grit continuous about five-hundred feet across the road and then it appears to be offset to the east where it picks up again, thereby explaining its disappearance when I had reconnoitered it on the ground.

From this offset, however, which continues somewhat to the south, say a thousand feet--I lose sight of it. I see to our left the area of drilling with its reddish color--the area possibly done by P.D. This is south of town and east to the Hassayampa. The more noticeably red area actually lies about four-thousand feet to the south of the drilled area and camps, and extends on each side of a ridge. The ridge does not appear to be volcanic necessarily. The red area, possibly pyritized andesite in the vicinity of the old houses, east of the Farrow group, is visible and is about due west a mile of the above mentioned color area. We are circling the color area south of the P.D. ground--it is somewhat plotchy and is probably similar to the P.D. ground--but the colors are a much deeper red. Rock is probably the pre-Cambrian complex and perhaps a schist. There are some roads through the area.

11:35a.m.: Now headed toward the Hassayampa following the easterly drainage of Turtle Back wash. The ridge to the north of the drilled area, that is the red color is somewhat more intense appearing than right where the most drilling has been done. I see the red grit well exposed where it goes on both sides of the Turtle Back wash. It can be seen going about a thousand feet to the south, but then I lose track of it. There are some scattered colors on to the east, slightly southeast of the main P.D. drill area on the other side of the volcanic peaks. We have crossed the Hassayampa about a mile and a half south of Wickenburg. A road extends easterly but I do not know its accessibility from the highway. It seems to go in by a group of houses. About four-thousand feet from the highway, that is east of the highway, along with this road and to the north of it principally, there is a red colored area about two-thousand feet in diameter. Roads criss cross the area, although I do not see any old diggings. The color area is distinctly circular or elliptical, and appears to be bounded by volcanics on the south and light-colored rock on the north. I see one prospect pit.

Following up the Constellation road toward Apache, passing the first section of volcanics by the hairpin twist in the road. Volcanics dip fifty or sixty degrees east and seem to form a sequence. The yellow agglomerate is one

of this member. We are now passing the projection of the mineral trend that runs from the *Octave* to the southeast in parallel joining in the granite and the workings along strike where they cross the Constellation road. A second and much more measurable mine operation lies about a mile further east ^{if} in the first showing of this mineral trend, with a former mill being there. This is probably the area of Constellation itself. Actually this is a rather wide mineralized area in this region. A group of volcanics appears to overly it to the east but does not dip as steeply as those nearer Wickenburg. The dips are more like forty degrees. I think I see the red grit at the base. The red grit is seen continuing on north of the Hassayamba at the base of the volcanics.

We have just turned around from the mineralized zone of the Constellation and are heading west down the Hassayamba.

12:53p.m.: We have crossed the alluvial flats north of Wickenburg and have emerged above the east-trenching stretch of highway heading toward Aguila and Salome. The area traversed from the vicinity of the Hassayamba has been rather featureless desert plain with, the last ^{location} statement was incorrect, we have simply emerged over the straight stretch of the railroad toward Aguila. There is ^{some} minor color on the southeast slope of hills north of the railroad. It does not extend into this low group of hills but lies on one or two low knobs at the immediate southeast flanks. A sequence of volcanics running as a tail toward the Harcuvar mountains are appearing steeply tilted ^{to} on the southwest, but seem to flatten to the northeast. These are at three o'clock due north as we are now traveling. Aguila is just ahead of us.

1:20 p.m.: Having flown to Salome and had lunch, we are now taking off from the air strip at Salome to resume reconnaissance for the afternoon. We are heading east by northeast from Salome toward the northeast end of the Harcuvar mountains. At the northeast end of these mountains, ^{see a} say low range in the form of a tail extends off to the southeast toward the road which cuts off toward

Congress. We are going to circle this range--which is largely appears to be volcanic. This is the same range where previously, being viewed from the south, on our trip to Salome, I remarked that the dips were steep on the west slope but more shallow on the east flank. I see one digging on the west slope. The digging is in volcanics. The ridge of volcanics rests on a granitic basement. There is no sign of the red grit. The granite basement seems to extend a good portion the length of this ridge. There are some ~~old~~ roads on the east side of the ridge, probably to prospects although I do not see any workings. Viewed from the north to the south, the more shallow dips seem to be the result of a fold in the volcanics. The east slope of the southeast flank is largely or all basement rock. There is no evidence of mineralization. Reached the highway toward Congress and are following northeast along this route.

Crossing Merit Pass the rock is probably pre-Cambrian complex with no sign of mineralization. At the intersection of the Congress highway with the Kingman highway we turned north. Heading toward the Date Creek mountains over a featureless desert plain. Drainages are shallow and no appreciable incisement is evident. On course to the west end of the Day Creek mountains. Volcanics are there overlying the granite. The contact appears to dip 35° west or southwest. Small outliers to the southwest evidence basement beneath that is probably volcanics--this is the area George Richardson noted a diorite and laramide granite. Near the intersection of the Kingman highway and Date Creek--lying southeast of that intersection is a series of bedded volcanics?--the dip might be 30° . The general color tones are very light--query: Are these gently dipping dikes cutting granite?

Circled and ^{are} flying northeast parallel the Daily Creek. Considerable bedrock exposed in all rolling hills north of the creek. Looks like granite, weathers like granite--this must be the area of laramide granite that George noted. No mineralization is evident. I see a few widely-spaced roads--the remainder of the area is general relief and can be traversed by four-wheel drive. The course is set

over some low granitic hills, which is the southern extension of Greyback mountain. This may or may not be laramide granite. No mineralization is evident. Passed the crest looking into Waterman creek. In the country stretched out northeast before us no mineralization is evident. Sunflower flat lies at three o'clock. The Weaver mountains across the flats look unmineralized from this distance. Sunflower flat will merge, it appears, to the north, into a mesa-like terrain made of dark volcanics. Hillside is directly in front of us, and we are crossing the railroad one mile south thereof.

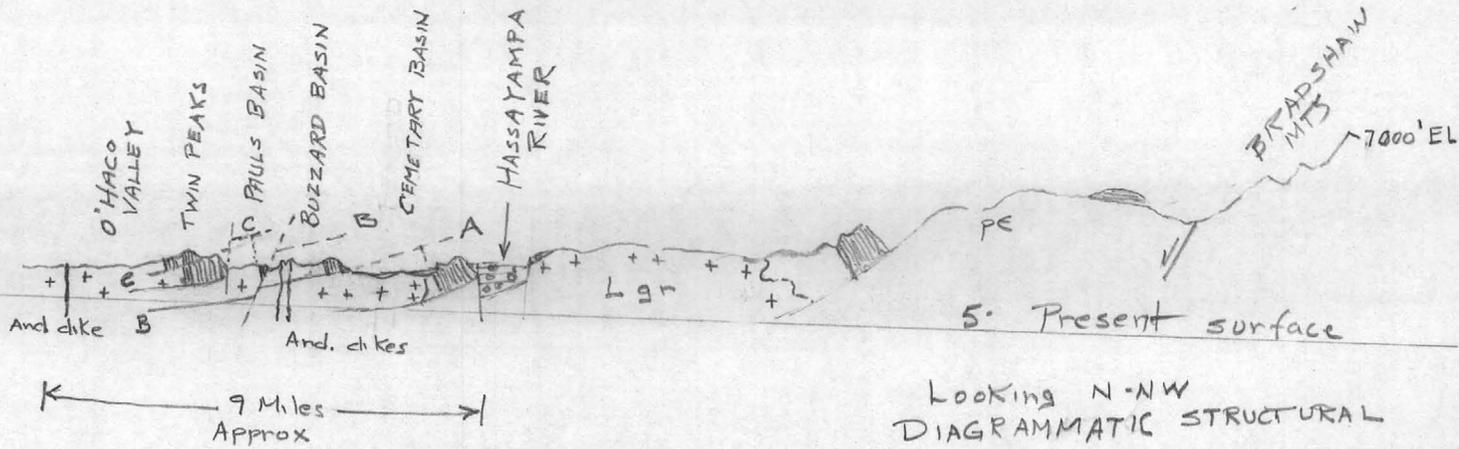
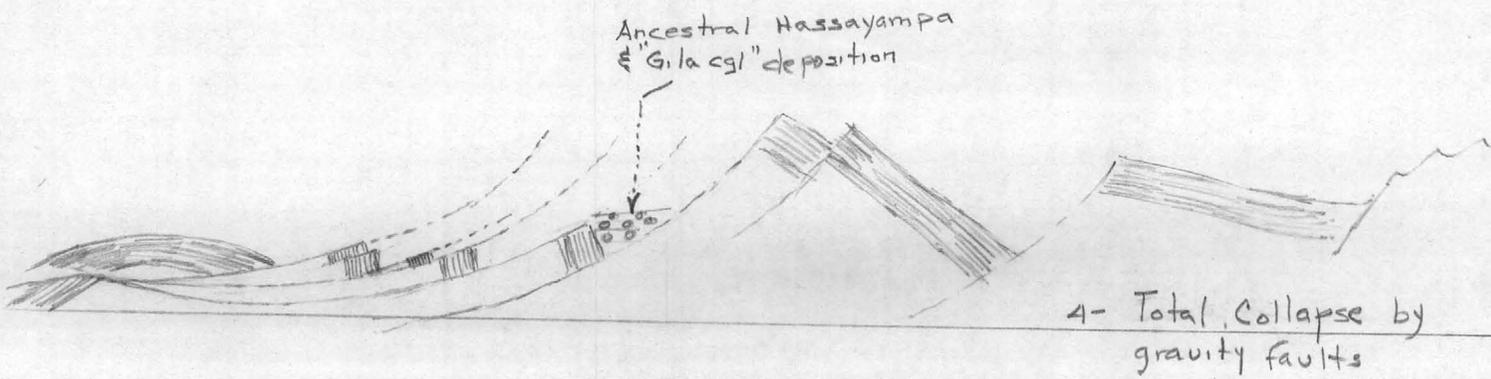
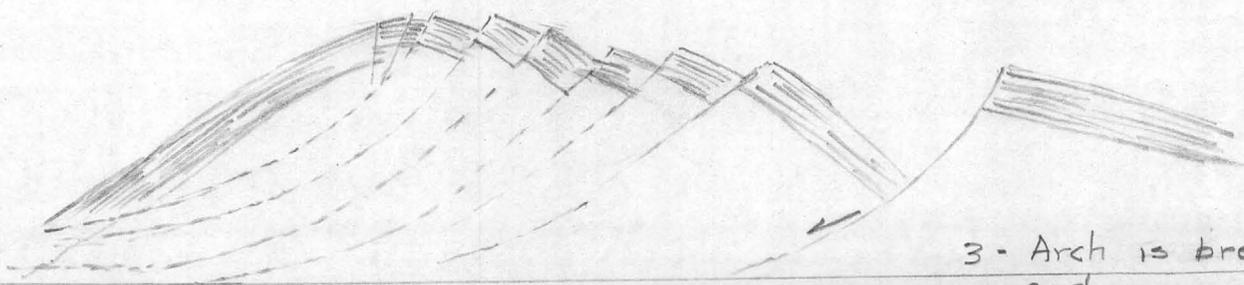
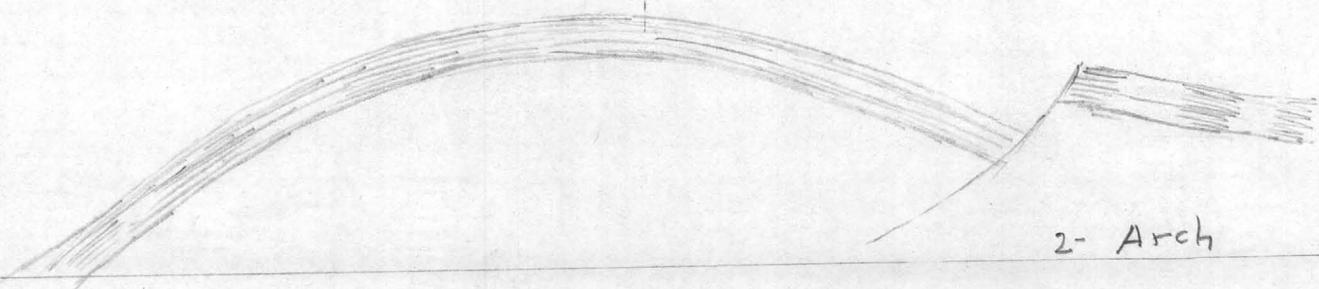
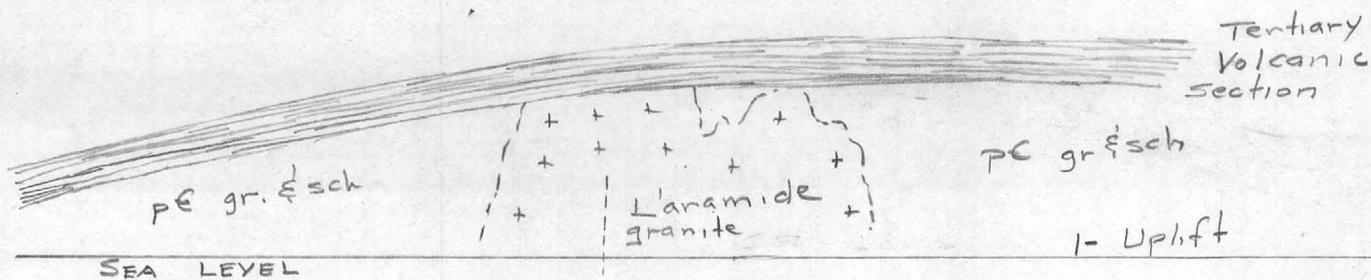
On course northwesterly toward Bagdad. The Cloud mountains on my left appear unmineralized. There is a road winding up to what appears to be a trailer at the top of the mountain. Time: 1:55 p.m. The creek north of the Cloud mountains I guess it is a part of the Santa Maria river--a rather wide drainage. To the north lie volcanics--flatlying basalts. To the south we have been flying over granites. The basalts appear to cross the Santa Maria river and to lap up onto the granite--they have beds of Gila conglomerate underneath them.

Turning east, are diagonalling away from the Santa Maria on its south side. The area traversed sure looks like it is dead and unmineralized. We have circled *Rocky* mountain and Bismarck mountain, both granitic basement--and unmineralized. Emerging back into the valley north of Hillside, which is in part flat-lying basalts but locally incisement has cut beneath showing granite basements. We are now seeing the Weaver mountains toward Yarnell, rather ^{or} Peeples valley. Flying over Peeples' valley headed southwest. There appear to be old diggings of small nature south of Yarnell up on the spur that goes south from there. Yarnell mine or area is at three o'clock over a large knob with workings right below us either Octave or Associated. Turn to the south, now in the valley a little bit-- Richhill is at nine o'clock. I now see the Octave mill tailings south of Richhill. Having just past Richhill on the Octave.

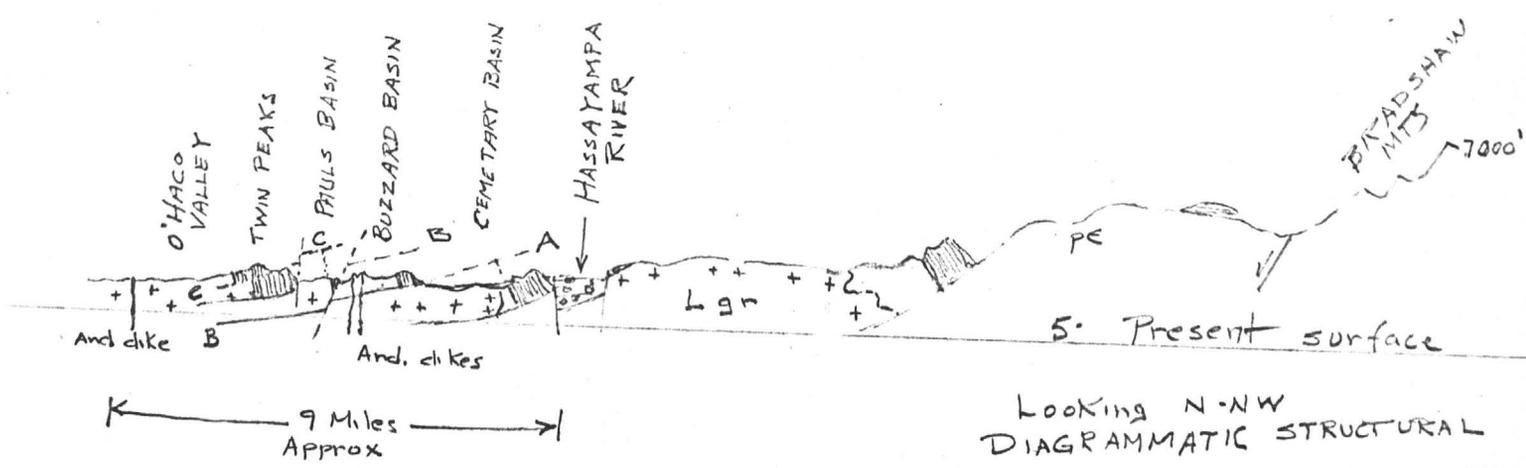
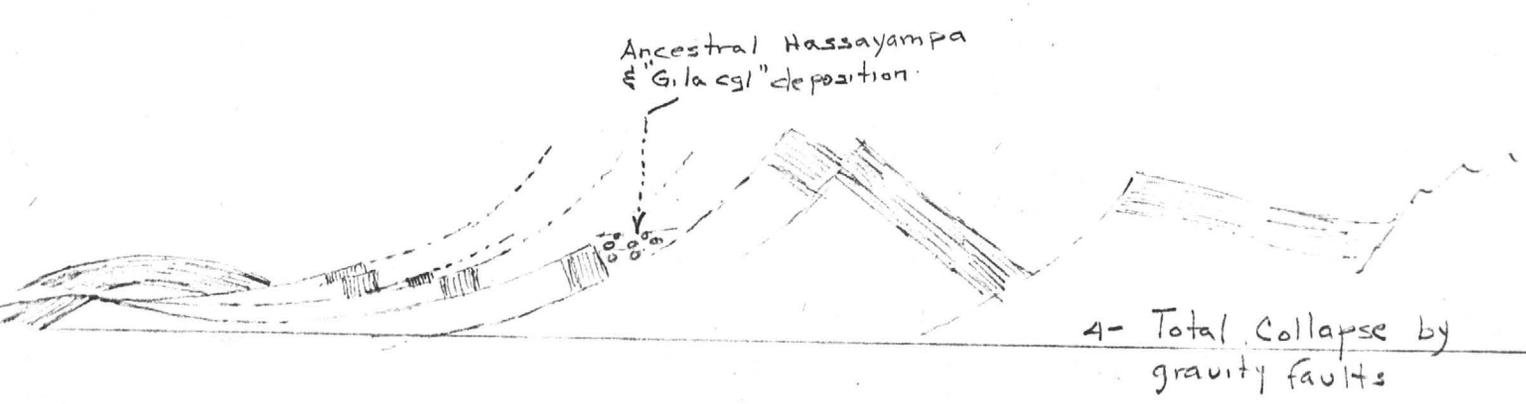
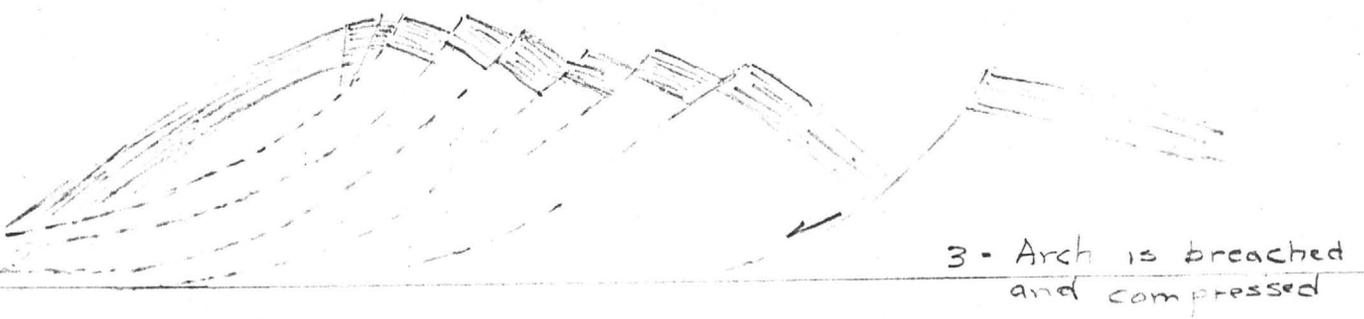
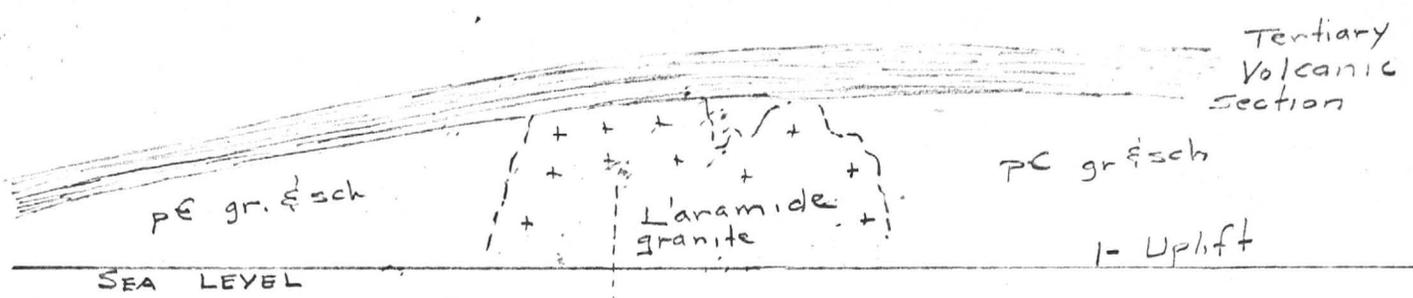
The dissected area flowing down to the Hassayamba appears to be alluvial. Our course is southeast toward the Hassayamba. Gila conglomerate ^{beds} veins are exposed along the Hassayamba river which we are now crossing, heading southeast. We are now heading generally easterly and are over granite. Considerable amount of colors are streaked out in a broad belt toward the Constellation road area. Turning more northerly, the zone of volcanics with red grit at its base is at ten o'clock. The continuation of this zone south of the Hassayamba seems to be offset to the east. I can see the red grits again at the base of the sections. The dips are about, say 40° east on the volcanics. In some manner they wedge out on the north. Turning west, granite basement. We have reached the mineralized zone and turned to northwest toward the Octave tailings. Up the canyon from the Octave tailings the old mine site on the south slope of Richhill--Richhill is being circled now. The sites are pockmarked with scattered diggings. The rock appears to be a schist with a northeast lineation. We have flown right over the top of Richhill. Mineralization on the top is not evident. The pronounced color streaking is evident again and shows up very well north of the Hassayamba about half way between ^{the} Hassayamba and the Octave--thus designating this mineralized belt. South of the Hassayamba is suggested that there may be two mineralized zones about a mile apart east and west, paralleling each other toward the southeast. Both of these cross the Constellation road. The western zone has apparently more widespread red coloration between the Constellation road and the Hassayamba than does the zone on the east. South of the Constellation road, about a mile, there is a cross trend of color heading southwest. Rather narrow zone it is. Considerable splotchy red colors in the east zone beginning about a mile and a half south of the Constellation road. Volcanic cliffs are showing up dead ahead of us. Time 2:35p.m. Still heading southeast in the general direction of Castle Hot Springs and passing over volcanic peaks. These may be the Hieroglyphic mountains.

Circled out to Morristown and are following the Phoenix highway toward Phoenix about a distance of a mile to the east. The conical hill which looks very light colored ~~and~~ as seen from the highway to Wickenburg near Wittman appears

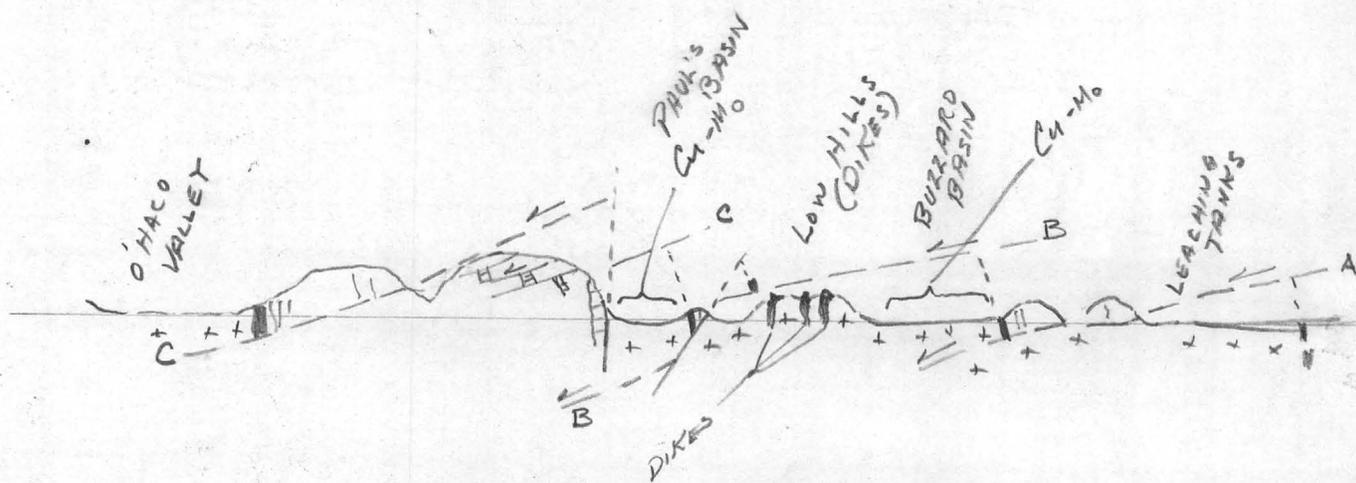
to be a quartz plug or pegmatized plug. It is in the south edge of the Castle Hot Springs mountains and a good road leads directly into it. A quarry is located on the west side of the hill.



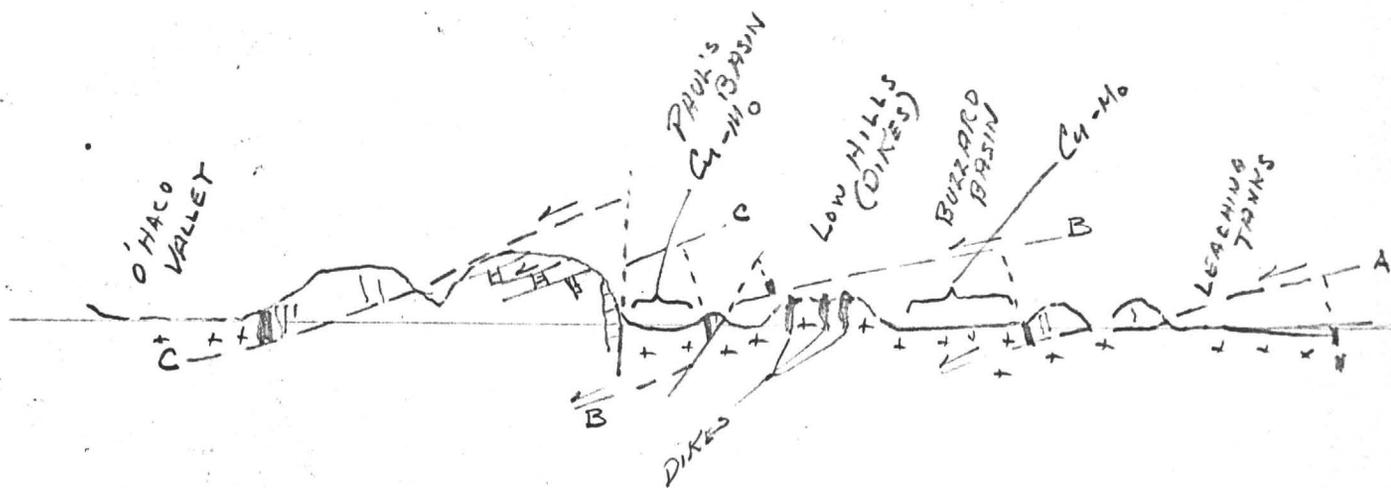
Looking N-NW
 DIAGRAMMATIC STRUCTURAL
 HISTORY - WICKENBURG DISTRICT
 NOT TO SCALE



Looking N-NW
DIAGRAMMATIC STRUCTURAL HISTORY - WICKENBURG DISTRICT
NOT TO SCALE



POSSIBLE INTERPRETATION
 VULTURE MTS AREA
 LOOKING N-W.



POSSIBLE INTERPRETION
VULTURE MTS AREA

LOOKING N-W.

F I E L D N O T E S

John Kinnison

Wickenburg Vicinity
March 2 and 3, 1972

Thursday reconnoitered general area and drove the Constellation road north-east from Wickenburg to the Constellation mine. ~~Past~~^{Passed} a Coolidge granite overlain by some volcanics and intruded by dikes of andesite. Noted a coarse agglomerate, which appeared to have steep contacts--possibly an intrusive.

Friday spent the day with John Sandy and George Richardson southwest of Wickenburg, in the vicinity of Twin Peaks lying north of the Vulture mine road and circling around and emerging via Jimmy wash by the Vulture mine. Refer to sketch map attached.

An agglomerate similar to the one noted above on the Constellation mine road is very conspicuous east of Twin Peaks. It appears to be an intrusive agglomerate or ignimbrite, intruding both Coolidge Laramide granite, and also a welded tuff--somewhat vitrophyric--which overlies Coolidge granite and dips approximately 40°. The copper oxide in the granite east of Twin Peaks appears to be along sheeted zones. Other spots of copper oxide are reported north of Twin Peaks, and one which was visited did not show evident control by structural features. A continued reconnaissance by a segment of old highway north of Twin Peaks shows a spheroidal ~~of~~ volcanic--possibly equivalent to the welded tuff mentioned earlier. In this vicinity also are layers of red sandstone or conglomerate interbedded with tuff--possibly a portion of Gila conglomerate or conceivably an inter-volcanic sedimentary series. The red sandstone is granite derived, and pre-Cambrian granite is seen in the immediate vicinity.

Continuing the reconnaissance south from the segment of old highway in general, headed toward the Vulture mine. We passed through a diorite which is evidently a phase of the Coolidge granite and much resembles the diorite associated with the

March 2 and 3, 1972

Laramide in the Sacaton region. The area first called limestone by Sandy and Richardson appears to be a spheroidal rhyolite or volcanic. Very likely it is a welded rhyolitic tuff. Farther south in an area of hills copper begins to show in veins and scattered areas. This has not been examined yet by Sandy who is now working in this direction. Farther south still, along Jimmy wash, we passed through a section of odd-textured granite, quite shattered with quartz veins and pegmatite stringers. This is probably a pre-Cambrian complex. A little bit south further is a section of metamorphics--a dark chloritic schist. This would appear to correspond perhaps to an area of schist on the Farrow property submittal, east of Caballeros Peak, and northeast of the Jimmy wash exposure. Also, south of Wickenburg, on the highway to Phoenix, about three miles, the road cuts expose a schist zone. Thus there appears to be a belt of metamorphics extending from the highway south of Wickenburg southwesterly past Jimmy wash. The hills in the valley north of Wickenburg are reported by Richardson to contain granite similar to that in the above-mentioned pre-Cambrian ? granite complex.

JEK/b1
3-6-72

Tape #1: Reconnaissance from Casa Grande to Wickenburg. ~~San~~ Magu, pilot.

Reconnaissance from Casa Grande north toward Wickenburg. Monday morning

7/27/70 John Kennison recording. Over Casa Grande at 10:25. Weather is clear; almost no clouds. Slight wind. Air is clear over the Casa Grande Valley and northward to the Salt River Mts. Beyond that the valley appears smoggy. Pass on west side of Gila Butte. Coolidge granite is light brown, schist on north is gray--typical colors. Heading towards gap in Salt River Mts. and passing over International Testing Range. Some of the hills on the south appear that they could be volcanic. The granite is clearly distinguishable, has no alteration of color^{tones} to it. Other than Jackson's Butte, an outlier south of the mountains, there are no other scattered outliers. There could well be a pediment developed on the south as the mountains gradually taper out with little knobs--although outside of Jackson Butte there are no outliers as such. To the west, across a short valley the Sierra Estrella show a very straight front as though little or no pediment has developed and as though maybe they are fault controlled along the base of the mountains.

Approaching east side of White Tanks Mountains northwest of Phoenix: they tail into the alluvium ~~abruptly~~ abruptly on spurs radiating from the center and the existence of a pediment is not indicated one way or the other.

Flew over the copper mine symbol shown on A.M.S. sheet without seeing any mineralization of pervasive nature. Flew across north slope of White Tanks without seeing signs of widespread pediment. There are a few small outliers as the range tapers somewhat under alluvium, but the actual line of outcrop limit is rather abrupt. The area of possible volcanics or alteration on the northwest tip of the mountains is very low-lying, and very definitely is pediment in its topographic appearance. Small patches of bedrock appear well out to the west of the range on this north^{west} side and show color. No activity is evidenced at this time. One drill site spotted on the western edge of the principal outcrop area.

Fly across valley from White Tanks Mountains going northerly to the line of

bluffs which makes the southeast flank of the Vulture Mts., ~~I guess~~. These are brown to tan-colored volcanics. A ~~tail~~ of basalt on a ridge runs south off to our west. The ^HAssayampa is couple of miles to the right. Digging in the volcanics. Colors, particularly on the slopes, are variegated white and orange. Numerous roads. Dip appears to be steep to the east, particularly on one main ridge near the Hassayampa and also same suggestion over the ridge we're flying over. Strike is northerly. Considerably large patch of orange color almost due south of the town and a couple of miles west of the Hassayampa. The alluvial area just west of Wickenburg is well in sight: it's shown as T.S. on the county map but I can't tell whether it's ordinary alluvium or incised older sediments. Volcanics appear again to the north making up a low, rolling hill belt, apparently volcanic as they are shown on the map. Many of the hills are seen to be of layered sediments, possibly Gila type in this hill belt northwest of Wickenburg, rather deeply incised. Quite a network of roads.

Flew across towards Congress, a rather uneventful, slightly dissected alluvial area, then went to the Yarnell grade and picked up the mine just below that and just below Yarnell. Trailers and cars parked there: a number of dumps. Rock appears to be granite. Slight sheeting paralleling the mountain front which would be southeast; vertical sheeting in the granite. Not too pronounced. Other small workings on the southeast strike, about a mile south of the mine. See the tailings from the ~~Congress, no, from the~~ Octave, ~~rather~~, on to the south. Will circle. What is probably the Octave camp upslope about a mile from the tailings--two different sites of buildings plus a fair amount of discolored area immediately around the buildings. Strike of the coloration appears northeast. Drill rig located on the upper Octave site. Major structures, if any, are not apparent.

Another old camp area appears about 3/4 of a mile to the south. Could be a ranch; there's not much sign of dumps.

Flying southeast over a major drainage trending up from the Hassayampa; either this is the Hassayampa or it's a large tributary into it. Constellation should lie over the next ridge beyond this to the southeast. Rock is still granite; various brown to gray tones; no pronounced alteration colors. There are, however, numerous small spots which could be alterations. We're flying by what is probably the Constellation; a rather large dump, it's right on a main dirt road coming northeast up from the Hassayampa. ~~A~~ The joining in this area is not distinctive as it was around the Octave. Diggings on strike to the southeast of the Constellation suggest continuity of the structure. An open pit of small size and drill rig. _____ (Tape #2)

South of the Constellation there are numerous diggings scattered about. We are now passing a ~~particularly~~ thickly bedded series of dark brown easterly dipping volcanics with one set of diggings in them. An old mill site is located about a mile and a half west of these volcanics down in a stream bed; also in what is probably volcanic terrain. There are numerous small and large dumps about in the volcanics; some camp buildings.

These last observations are due east of Wickenburg town. No workings were noted in the few miles due east of Wickenburg on this last traverse. Course is now set southwest from Wickenburg to fly over the Vulture range. Our course has been aimed directly at Black Butte and we have passed over essentially no workings, although some off to the south were noticed, probably toward the Vulture, which we can see in the distance. Turned north on the east side of Black Butte, which is a volcanic and basaltic cap with tuff beds all dipping about ³⁰90° northerly, or perhaps northwesterly.

Continued after having lunch in Salome; headed across the Agila Copper prospect of Beckingham and up to Agila; thence southeasterly to the north side of Black Butte. There is a string of low hills between the _____ Mts. ~~and~~ and

the Vulture Mountains, made of volcanics. These appear to dip southerly as does Black Butte. I had earlier recorded its dip as northerly or northwesterly. I cannot tell whether there is a slight folded appearance or not, but the dip does seem to have a southerly component as well as westerly, viewed from this side. No workings are seen along this traverse to Black Butte.

We are now on course between Black Butte and the Vulture Mine. We're crossing very low rolling hills with spotty outcrops. All appear to be volcanic. The Vulture is marked by one large open pit, plus the old shafts in the same vicinity. It appears to strike westerly, or west-southwest. There are some diggings in the hills to the north of the mainworkings. Other than that, the deposit is essentially isolated and is not surrounded by a highly mineralized immediate district.

It is of note, however, that the mine is situated on the very tip of the range, in very low hills and that alluvium encroaches all about it. There are scattered outliers continuing on further to the south, but become less numerous as they fade into the valley plain. Continued from Vulture northeast across a craggy ridge which trends southerly. On the other side of this ridge is a vast expanse of orangish mottling, probably volcanics. On circling this I see an occasional bulldozer cut; actually several bulldozer trenches, definitely prospect cuts. In color ~~looks~~ looks more like it is alteration than that it is derived merely from volcanics. The rock, which is gray in places, could be schist.

Now we have passed one small shaft and one rather large old workings with shaft and ore bins, thus the host rock is at least pre-mineralization of some age. It does appear as though it's splotchy pervasive pyritic ^{alteration} olveration (?). Field check is justified. There are prospects immediately adjacent to the north trending high craggy ridge. It is here that the coloration or ^{alteration} ~~olveration~~ tends to stop. There is a gap of about 3/4 mile with essentially no color and then the oranges reappear. This coloration probably also due to ^{alteration -} ~~olveration~~ mineralization is that which I commented

on earlier and lies south of Wickenburg. This was noted this morning upon approaching these mountains. There are old workings in this altered zone also. It seems to be more spotty and less pervasive than the one farther west against the north trending ridge. However, the oranges are deeper and the weathering and color suggest a rather high sulfide content originally.

We are now following a course northeast on the road out of Morristown towards Castle Hot Springs. A large area of scraped off material, oh, say, six hundred feet or a thousand feet in diameter is about a half mile south of the road. This may be what's his name's oxide area--the contractor in Phoenix. Error in above location: the road from Morristown has been about two miles to the south of us; we're now cutting across to intersect it.

(Tape 3) Continuing from the Wickenburg survey. We're now paralleling the road between Morristown and Castle Hot Springs. Located what is probably Sheep Mt. north of Castle Hot Springs in volcanics to the northeast of the bend in the road and of the big drainage which goes down through Castle Hot Springs resort. The main drilling area is probably two to three miles northeast of the main arroyo flowing through Castle Hot Springs.

Flew southwest from Castle Hot Springs out across the volcanics on a line with the White Tank Mts. ~~Now~~ workings seen in this area at all, or other sign of mineralization. On the north side of the Sierra Estrella the Gila River cuts square across a section of low hills forming the northern outlier area of the range. No telling what the depth of alluvium would be to the north. There is a low trail of topographic knobs running off to the southwest from this northern section of the Sierra Estrella range. Certainly bedrock may be shallow there and there is one isolated outlier to the south of this southwest trending trail of outcrops. Thus the outcrop area forms something of a U inverted south. Rock is gray-brown schist.

Dark trending areas at the north edge of the main range appear to be thick dikes of some kind. The entire western flank is marked with a rather straight boundary.

The spurs come out from the main range and terminate at about the same point on an imaginary line drawn on the west edge. This is suggestive of fault control; no good suggestion of a pediment existing. The main range shows no sign of mineralization or alteration, nor do I see any on the spurs at their tips before they go under alluvium. The very south ^{end} ~~edge~~ of the range looks like it has pegmatites plus some granite. In fact, the southern portion must be granite on the south slope.

Ended reconnaissance at the southern end of the Sierra Estrella in the

afternoon of this day, Monday, three o'clock

June 20, 1982
Reconnaissance
S and SW of Vulture Mine

About 1 1/2 mi SSW of Vulture Mine Shaft. SW 1/4 Sec 2 T5N R6W;
"silicified" looking hill. N. end of H. 11; Shaft on N. slope, low, down
on a silic volc? Shaft 50' ± - can't get near enough to look down.

Up hill on N. side near top. 2 prospect openings (stake about 1/2 open cut)
Rock is "craggy weathered" siliceous looking. This is a superficial appearance
of silice, gives way to deformed pumice shards about 1/8 - 1" dia. usually
angular & angular - but few as down out (flattened) to 3-4" long and
flattened.

Bank of claims (see daily log) by Vulture mine Inc. over alluv.
underlay on to this hill.

The surface of N. part of this hill is composed all of one kind
of silice-looking rock; on surface, Mn-stained, weathers out to
a "ragged" appearance, like volcanic. It also resembles gtz mineralogy
because of pits which look like a combination of gtz-calcite, with
calcite having weathered out - However, this appears to be an
agglom. in which extensive devit. has largely silicified the surface
for the outer 2-2 1/2 ft, and the cavernous texture is caused by
weathering out of the pumice frags which are exposed well in the
two shallow prospect holes. The matrix of the pumice shards
are bonded by a good film of pure silica.
No other signs of hydrothermal Mn.

Strike of the devit aggl (measured on silicified hill) is N 05 E dip vertical or 85° NE.
Tends to offer correlation to Vulture Volc.

Shaft in center of top of hill inclined 80° E. Mined or lead
for shaft not obvious. Seems to follow streaking or pumice. Bed in
volcanic. On strike line of shaft is exposed a volcanic breccia? with
many frags of gtz. Shaft covered, now 40' to core.

(over)

hill \pm 1 mile west of Vulture mine, just W. of
Lower well, SW $\frac{1}{4}$ Sec 35 T6N R6W, N. part of hill is
fine gr granite or aplite. Two \pm 100' long qtz veins. E. one
strike N45°W, west one N30W; intermediate dips to NE.
looks somewhat like the Vulture qtz in heavy lam/ben
or St3; little wiggly texture. Width of veins is 4-5'.
only of shallow bulboidal trenches and pot holes. No
deeps & diggings.



Getty Oil Company | P. O. Box 15668, 345 Bearcat Drive, Salt Lake City, Utah 84115 • (801) 487-0861

Minerals Division, Regional Exploration Office

July 10, 1978

J. E. F

JUL 17 1978

Mr. John E. Kinnison
Pillar, Lowell and Associates
5115 North Oracle Road
Tucson, Arizona 85704

Dear John,

Enclosed is a partial report on a gold-copper property in the Wickenburg area which, with your extensive background in that area, you may be able to see a little romance in.

The idea advanced by the enclosed sketch map may be worth considering to the point of reviewing the data Poyner mentions. I realize Dave Lowell's reported comments are not too encouraging. However, if the upper plate mineralization is suggestive of a weak system then a lower plate target in the general area seems plausible. Although a deep hypogene target isn't attractive, a hypogene target with payable gold could be. Of course, the gold content will, no doubt, drop to a significant degree as a porphyry system is approached but it still might stay high enough to be of interest. In any event, I'm passing the idea along for your consideration.

The man who sent it, Denys Poyner, is a fellow I've known for some time. World War II interrupted his education in geology so he has no degree. Nonetheless, I find him to be a perceptive prospector and a reasonably skilled field geologist. I've also found him to be very straightforward and honest although, I think, he's a bit naive when it comes to partners and to believing what they may tell him. I have heard from another geologist who dealt in 1974 with Denys that he (Denys) tried to peddle something he really didn't own. I believe, however, that Denys might have been misled by his partners in this particular situation as I have, in my dealings, found him rather scrupulously honest and a valuable contact.

Sincerely,

ROBERT G. BLAIR
Senior Project Geologist

RGB:mdc
Encl.

2168 Kingman Ave 86401
(602) 753-3838

DENYS K. POYNER

2168 KINGMAN AVENUE, KINGMAN, ARIZONA 86401

RECEIVED SALT LAKE
MINE CO. ENCL.

602-753-3838

June
Twentyninth
1978

JUL - 3 1978

Mr. Robert G. Blair
Getty Oil Company
PO Box 15037
Salt Lake City, Utah 84115

Dear Bob:

Goldex, Inc. is a small Washington Corporation, publicly owned, whose stock is occasionally traded on the NOTC market. I serve Goldex, Inc., (very little) on the board of directors.

Goldex, Inc. owns and controls certain patented and unpatented mining claims NE of Wickenburg, Ar. known as the Goldbar property, which property has in olden days produced a sizeable sum of money, values in Au., from the oxidized surface of one of two swarms of highly mineralized breccia pipes, wherein the gold was freemilling. Goldex, Inc. has rehabilitated a 700' shaft and did underground drilling and proven some 40,000 tons of 0.40 of Au. After examination of the data and the property I suggested to management that the property had some recognized characteristics of porphyry type mineralization. Mo. had previously been reported by one writer who had reported on the property.

Subsequent to this, Goldex, Inc. had a limited IP survey ran over portions of the property, and interested RioAmex in the property on a JV proposal. RioAmex then drilled one misplaced hole and withdrew from the project. I inclose herewith thier final report.

Golex geologist do not concur intirely with the conclusions of Rio-Amex. Even if they are correct in thier calculations, mining in the future is going to be deeper and deeper, if, future generations are to have sufficient supplies of minerals.

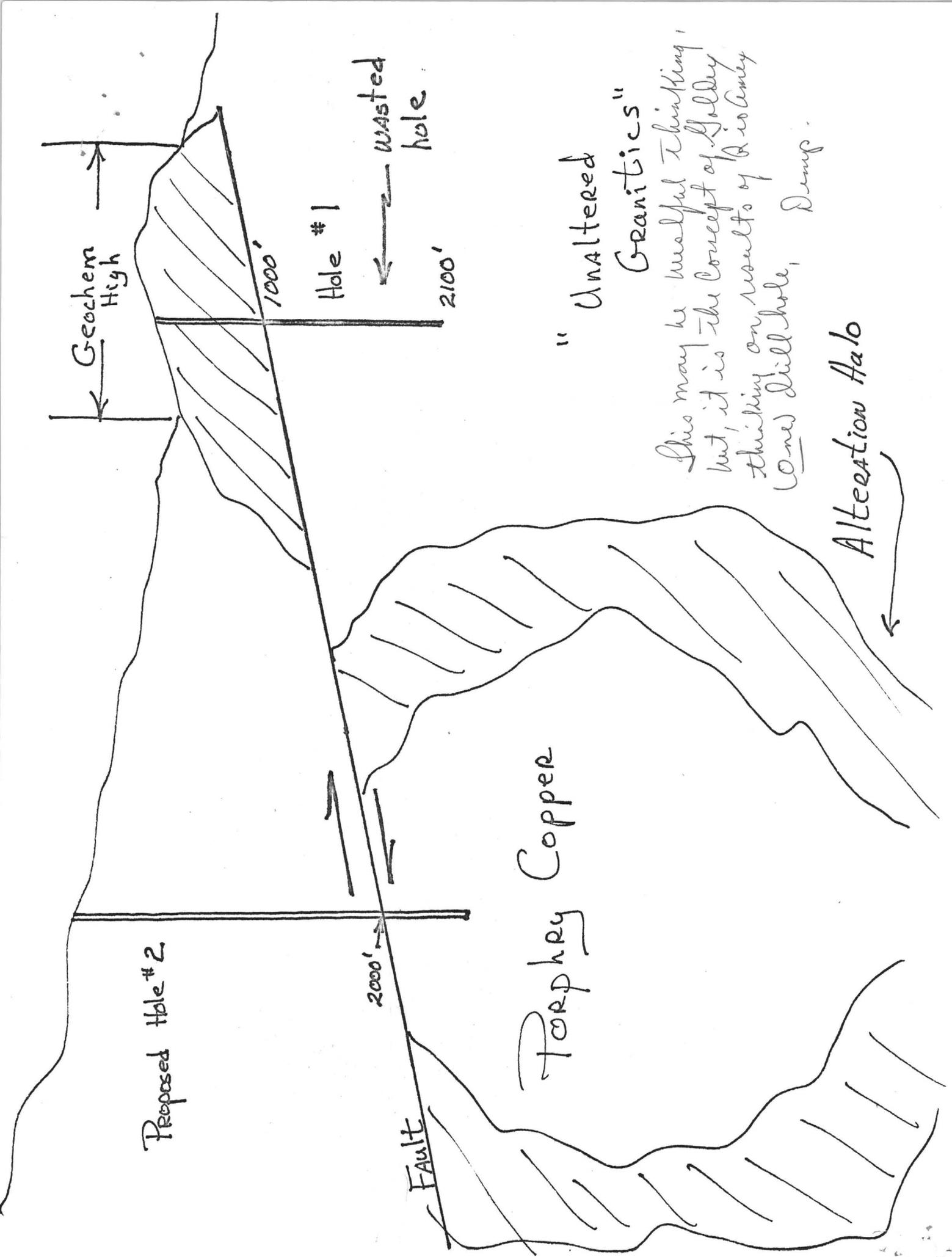
I wont go into a long and drawn out discussion herein, but if you would like to take a look see at the available information the next time you are down this way, give a jingle, I have the complete file of data.

The very best of regards,

Denys

Denys K. Poyner

Incl. Report by RioAmex



"Unaltered Granitoids"

This may be useful thinking, but, it is the concept of Goldrey thinking on results of (one) drill hole, Damp.

Alteation Halo

Proposed Hole #2

Hole #1

wasted hole

1000'

2000'

2000'

Fault

Porphyry Copper

YEAR-END REPORT

GOLDEX OPTION

March 4, 1977

Dana C. Durgin

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PLATE 1 - Geology of Gold Bar Prospect, Arizona	(In Pocket)
PLATE 2 - Cu, Zn, Mn Geochemistry, Gold Bar Prospect	(In Pocket)

ABSTRACT

An integrated program of geologic mapping, rock chip geochemistry, and petrography was carried out on the Gold Bar property. This caused Rio to complete a 2108 foot diamond hole in what was considered the most appropriate part of a geochemical and alteration anomaly.

Mapping and geochemistry indicated that we were dealing with a porphyry copper system which has been tilted some 40° to the northeast and cut obliquely by a fault of imperfectly known displacement. Initially it was felt that drilling depths to the center of the system would be 2500 to 3000 feet. The results of drilling and considerable contemplation indicate depths more on the order of 5000 feet.

Our perception of the vertical dimensions of the system is greatly obscured by the fact that the drill hole intersected a large fault at 1180 feet and a large portion of the alteration-mineralization "section" was repeated in the northern down-thrown block. Alteration in the bottom of the hole was still only mildly propylitic, therefore still a considerable distance from the center of the system. Drilling results also suggest that the fault is not of sufficient displacement to have caused the rotation of the breccia pipes and sediments.

It is the conclusion of the Rioamex staff and J. David Lowell that this is indeed a porphyry system, our target area was properly chosen, and depths to the target are prohibitive - on the order of 5000 feet.

INTRODUCTION

In December 1975, the Gold Bar property near Wickenburg, Arizona was submitted to Rioamex by Goldex, Inc. of Spokane. It appeared attractive in many respects and Rio decided to pursue an exploration option. Due to disagreements among the owners and numerous revisions by both sides, a written agreement was not forthcoming until late in September. Preliminary field work was begun late in July after a verbal agreement had been reached.

FIELD WORK ACCOMPLISHED

Our efforts on the project included the establishment of a surveyed grid with a north-south base line and east-west lines spaced at 1000 foot intervals and 500 foot intervals in areas of more interest. This grid was established as a base for geochemical, geophysical and geologic work. (Plate 2)

A geologic map was prepared at 1" = 500' covering approximately 5 square miles. Concurrent with mapping, and after areas of greatest interest were recognized, more than 700 geochem samples were collected. No geophysical surveys were performed, except for a brief reconnaissance with a scintillometer. (Plate 1)

After analysis of all acquired data, a site was selected and a diamond drill hole was completed to 2108' with disappointing results. Some 550 man days were charged to the project.

GEOLOGY

Much of the mapped area is underlain by Precambrian metamorphics - granites, granitic gneisses, and biotite gneisses. These are cut by tourmaline-bearing pegmatite dikes and a few diabase dikes also of Precambrian age. Younger dike sets, presumably of Larimide age are nearly all strongly fault controlled. A swarm of distinctive dacite dikes trending N50W, 45SW occupies an extensive fracture zone between the Black Rock and Monte Cristo Mines. A near vertical hornblende andesite dike trending N50E is discontinuously exposed over at least two miles, occupying what seems to be a major fault. The youngest dikes are rhyolites occurring in two sets, nearly flat-lying and near vertical, of very similar appearance. These show strong flow banding, abundant xenoliths and other drag features near contacts.

They are also somewhat radioactive and occasionally contain minor sulfides.

In the northern part of the mapped area are exposed interlayered siliceous volcanics and coarse red continental arkoses. These are tilted, with an average dip of 40° to the northeast. They occasionally contain minor fault-controlled mineralization. In age they are contemporaneous with, to slightly older than, the rhyolite dikes.

The cluster of breccia pipes, or collapse columns near the Gold Bar Mine and to the north are of indeterminate age. They may have been formed as a result of magma degassing related to the intrusion of the rhyolite and/or dacite dikes.

The structure of the area is dominated by N50W and N50E fracture patterns. These directions are well defined by drainage, dike, and vein patterns. Two relatively flat faults are present in the eastern part of the area. These are of uncertain significance, but may be related to regional flat faulting suggested by J. David Lowell. The major NE-SW fault passing near the drill site may have up to 1000 feet of vertical displacement and perhaps 1000 feet of left-lateral movement. Its significance will be discussed further.

ALTERATION AND MINERALIZATION

The strongest alteration is within and immediately adjacent to the breccia pipes. Fragments and wallrocks are intensely sericitized and pyritized with some chalcopyrite. Interstices are filled with vuggy quartz and coarse auriferous pyrite. Outside the pipes, alteration drops off rapidly to nearly fresh rock within 100' or 200' in most cases.

Elsewhere, alteration and mineralization are weak and/or very isolated in occurrence, except for an area some 3-4000' in diameter centered about 1.3 miles southwest of the Gold Bar Mine. The most intense alteration is characterized by numerous quartz-chlorite-pyrite-chalcopyrite veinlets. Peripheral to this zone is an outer zone of less altered rock with small lenticular brecciated zones carrying quartz-pyrite-specularite, with minor chalcopyrite locally. Both zones are weakly radioactive. Beyond the boundaries of these zones, the rocks are weakly hematitic (after specularite) with occasional small veins of galena, sphalerite, barite with lesser precious metals. Cinnabar was noted in one occurrence. The two inner zones are readily recognized on the ground by a moderate color anomaly due to hematite staining, perhaps a square mile in extent.

GEOCHEMISTRY

Some 300 rock chip samples were collected at 200' intervals along grid lines covering the above mentioned color anomaly. Samples were analyzed for Cu, Mo, Zn, S, Se, Mn, and Co. Of these, only Cu, Zn and Mn showed any significant pattern. The attached map displays the distribution of these elements. Absolute values are quite low, but a significant anomaly was apparent.

Anomalous Cu and Zn values are almost completely coincident, with Zn covering a slightly larger area, approximately 2500' x 1000'. Around these is a widespread halo of anomalous Mn, elongated parallel to the plunge of the breccia pipes. The weak Cu-Mn anomaly in Section 34 is probably due to leaching from a mineralized flat fault. The small Cu-Zn-Mn anomaly at the west edge of Section 35 is unexplained, but appears insignificant. The patterns are strongly influenced by a large fault running NE to SW. The central Cu-Zn, Mn anomaly is coincident with a large portion of the altered zone.

The low absolute values of the main anomaly were originally interpreted to reflect a moderately deep target (~2500'). They may well represent residual accumulation of metals near the surface with a much greater depth to their source, perhaps 5000'.

Numerous samples were collected from dumps and prospect pits in the mapped area with the intention of developing a zoning pattern, but this idea was not followed-up.

DRILLING RESULTS

A diamond drill hole was spotted near the middle of the central geochemical anomaly. Had access been better, it might have been drilled a little further to the south. The hole was in predominantly quartz biotite gneiss which is cut by several rhyolite dikes. These rhyolites increase in grain size when compared to similar dikes observed at surface, but still have chilled, flow-banded margins with abundant xenoliths as in surface exposures.

The hole was stopped at 2108' in moderately propylitically altered quartz-biotite gneiss containing occasional specks of chalcopyrite and molybdenite as well as minor pyrite.

Century Geophysical Company probed the hole with gamma-ray, S.P.

and resistivity prior to removing the drill rig. The gamma-ray log revealed the intersected rhyolite dikes to be mildly radioactive, up to twice background, and showed that some fracture zones were quite radioactive. The maximum value was 120 cps over 12 inches. This was in a strong fault zone at 1180 feet. It was apparent from careful analysis of the drill logs that the hole penetrated into the downthrown northern block, causing a repetition of the alteration pattern and effectively turning a 2100 foot hole into a 1200 foot one.

Radiometric checking at surface indicates that the fault cut at 1180 feet is probably the same as the major one mapped at surface, as its trace is mildly radioactive. Remapping of the fault indicates that it passes within 500 feet of the collar at surface and with a minor change in dip it could easily be the same fault.

CONCLUSIONS

Vertical displacement on the fault cut by the drill hole is limited to less than 1000 feet by the following:

- a. Absence of the breccia pipes in outcrop in the upthrown block.
- b. The bedrock copper anomaly is essentially confined to the upthrown block.
- c. Rhyolite dikes do not outcrop in the downthrown block, but do occur in it below 1200 feet. The uppermost intercepts of rhyolite are 830 feet (upthrown block) and 1540 feet (downthrown block).

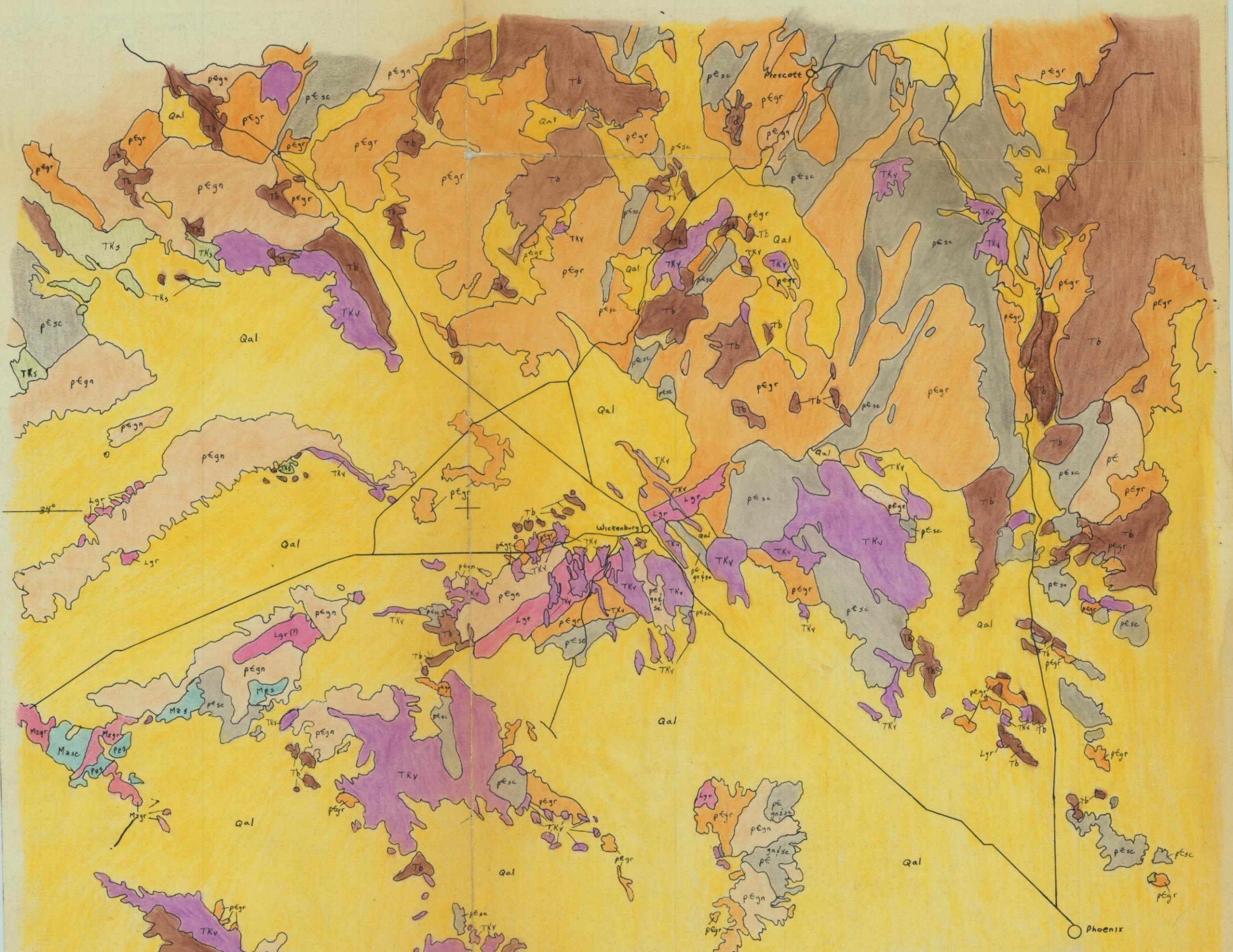
The fault probably also had up to 1000 feet of left lateral movement, as indicated by offset of the swarm of dacite dikes. A precise analysis of fault movements is impossible due to insufficient data.

Also, as we now see it, this fault could not have been of great significance in causing the rotation of the breccia pipes some 60° from the vertical. The tilting of the volcanics and sediments is only 40°. If the pipes are pre-volcanics, their altitude was 20° from vertical immediately before tilting. If they were rotated only 40° rather than 60° as earlier supposed, the target would be considerably deeper than 2500'

If throw on the fault was significant, the lack of alteration at surface in the downthrown block and the position of the pro-

jected intersection of the pipes with the fault plane preclude the location of mineralized cupola within reasonable depths in this block. Perhaps 1000' southeast would be a reasonable location for another hole. However, it is the opinion of J. David Lowell who examined the core on January 5th, 1977, that alteration in the core is too weak to suggest proximity to a mineralized center. He felt that depth to such a center would be in excess of 5000', but the drill site was well chosen. He also felt that the fault was of little real significance, especially as regards the rotation of the breccia pipes from an original near vertical position. I still feel that drill depths should be some hundreds of feet less on the south side of the fault.

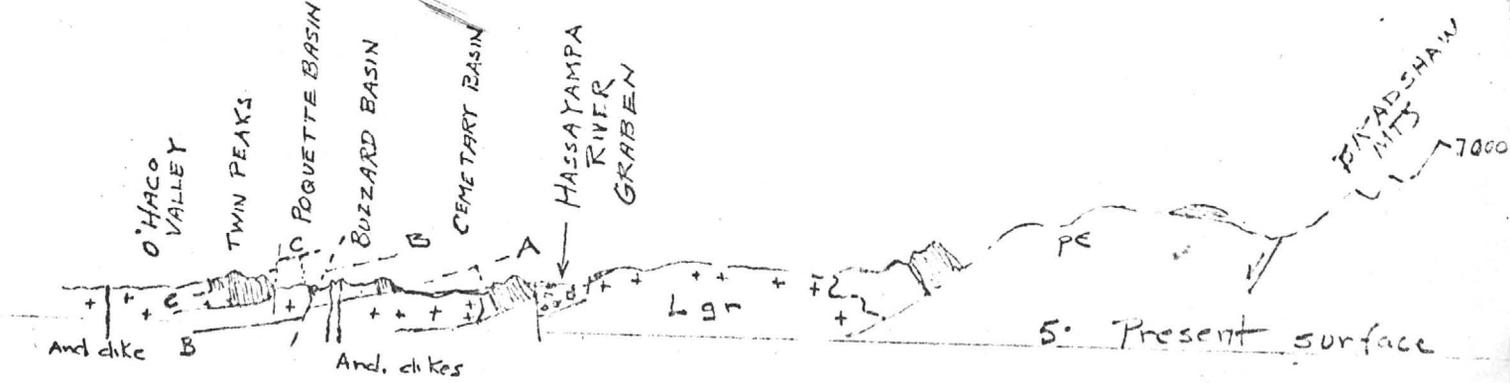
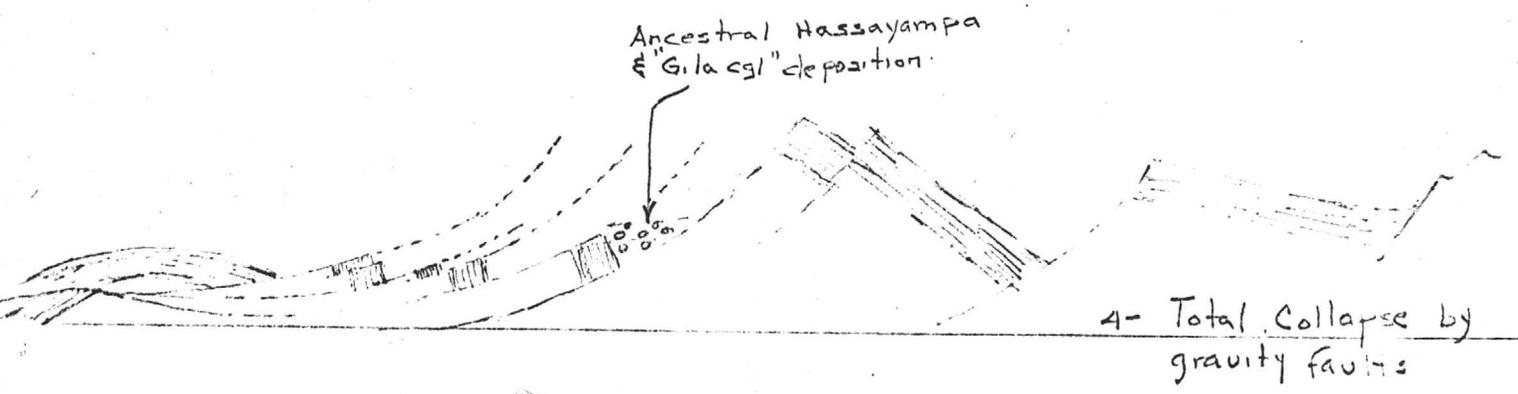
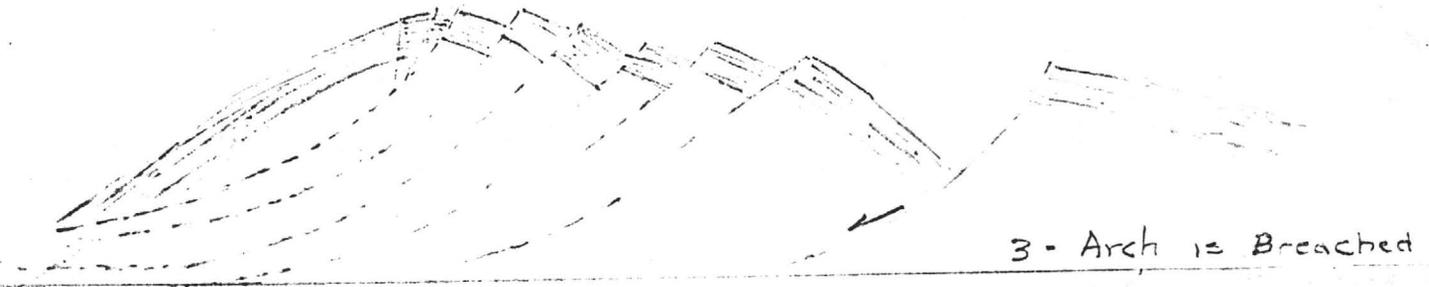
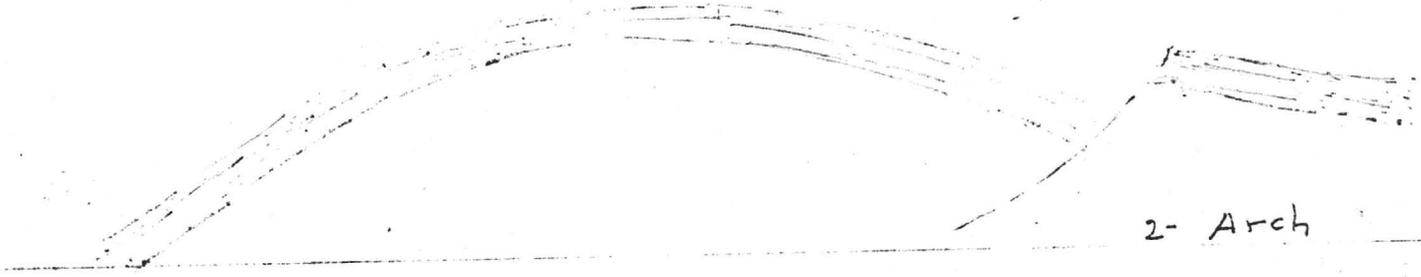
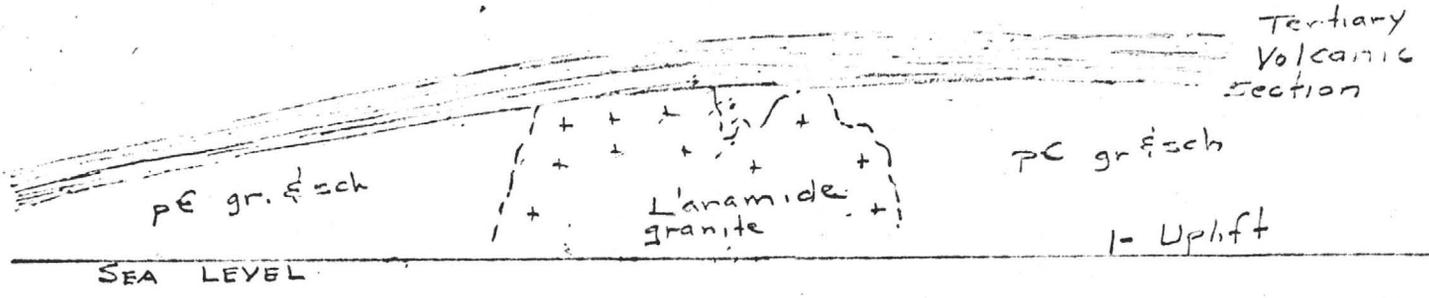
The best conclusion to be drawn from this exercise is that the Gold Bar project was technical success but an economic failure. It probably is a porphyry system, but drilling depths are prohibitive.



REVISED GEOLOGIC MAP
 MARICOPA PROJECT
 1:500,000
 1" = 8 miles
 (modified from 1969 state Geologic Map and other sources)

Qal	alluvium	TKv	volcanics	Lgr	Laramide granite	Mzs	sediments	pEgr	granite
Tb	basalt	TKs	sediments	Mzgr	granite	pEs	sediments	pEgn	gneiss
								pEsc	schist

ATTACHMENT A
TO ACCOMPANY Geophysical
TO J. J. Durek Proposal
BY J. E. Kinnison
DATE 11-21-72

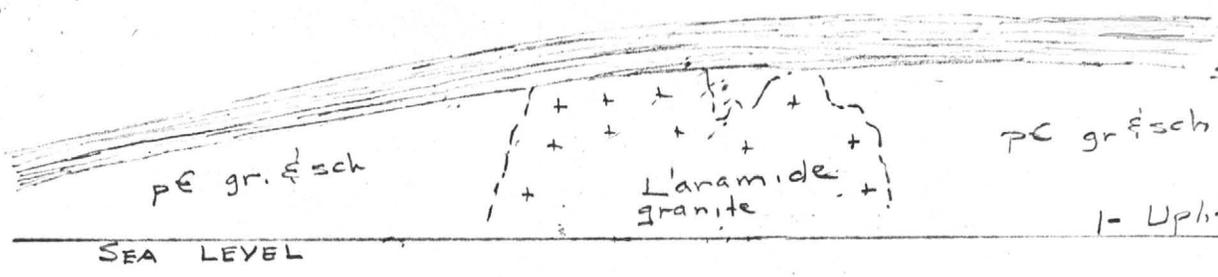


(Not to Scale)

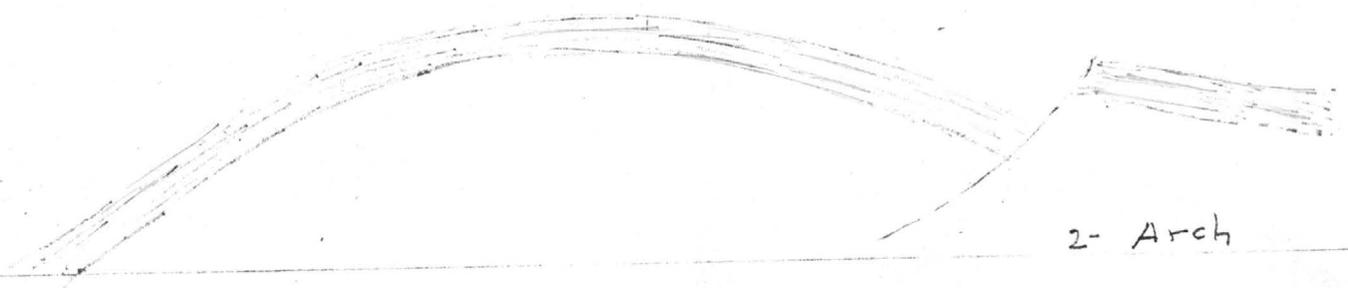
INTERPRETIVE
STRUCTURAL EVOLUTION
VULTURE-WICKENBURG MTS

John E. Kinnison

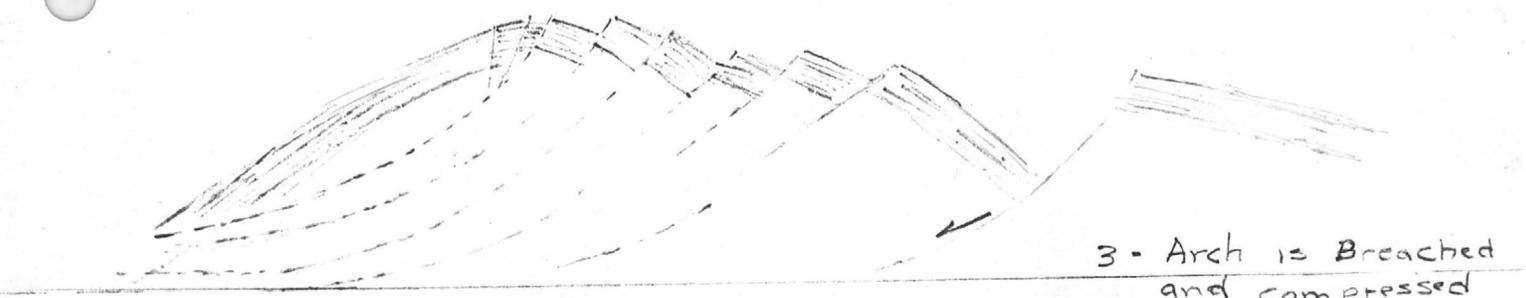
Tertiary
Volcanic
Section



2- Arch

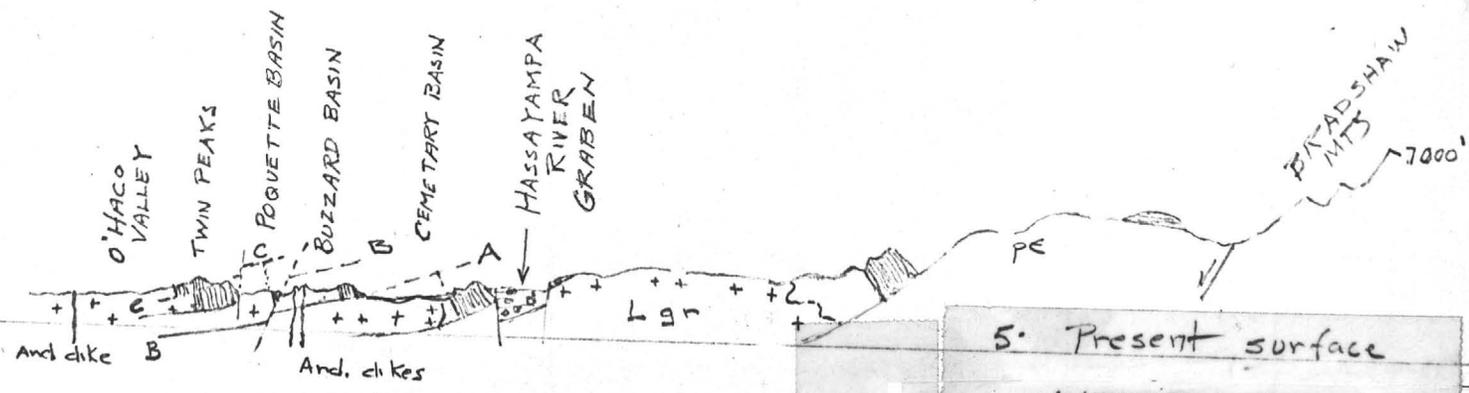
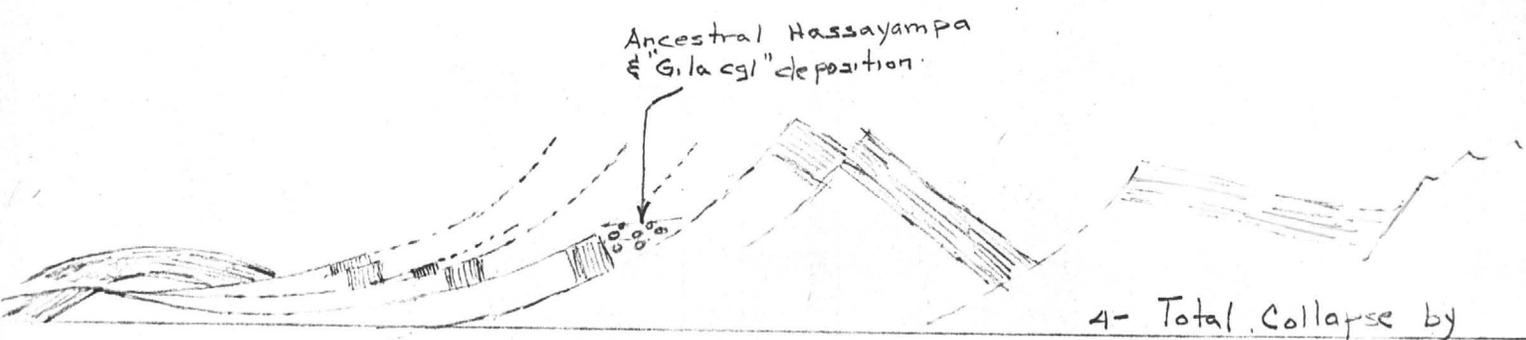


3- Arch is Breached
and compressed



Ancestral Hassayampa
& "Gila cgl" deposition

4- Total Collapse by
gravity faults



9 Miles
Approx

(Not to Scale)

5- Present surface

INTERPRETIVE
STRUCTURAL EVOLUTION
VULTURE-WICKENBURG MTS

John E. Kinnison

*file Maricopa program general
KEN, dex copy*

DN

INTER-OFFICE MEMORANDUM

TO
AT

John E. Kinnison
Tucson, Arizona

DATE November 7, 1972

FROM John Sandy
AT Tucson, Arizona

J. S.

J. E. K.

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NOV 13 1972

SUBJECT Laramide-Age Intrusive
Rocks in West Central
Arizona

E. A. Schmidt described the "belts" of ENE-traveling Laramide-age intrusives, in South Central Arizona, in his paper published in Vol. IX of the Arizona Geological Society Digest, December 1971. He concluded that the "belts" occur in fractures in a zone of weakness (caused by doming) that was activated during Laramide time, and that these fractures serve as the primary structural control for the emplacement of porphyry copper deposits and accompanying hydrothermal alteration.

Obviously unknown to Schmidt is the longest, and also cupriferous, Laramide-age "Wickenburg" intrusive that we have mapped. I submit that this "belt" of granite is a similar fracture and that the entire length of outcrop should be examined, i.e. reconnaissance-mapped and geochemed.

As previously mentioned, the entire length of the "Wickenburg Granite" (37 miles in surface outcrop) contains copper oxides all the way to its southwestern end in the Big Horn Mountains. In fact, there are several outcrops equal to, or more impressive than the copper staining in Pauls Valley. These areas are almost all held by W. D. Roper and associates.

Parallel intrusive trends occurring to the northwest of the "Wickenburg" intrusive may also be related (Harquahala Mountains, and Harcuvar Mountains). A regional reconnaissance of these intrusives is also recommended.

/fn

JEK
Maricopa General

DN

INTER-OFFICE MEMORANDUM

TO John E. Kinnison
AT Tucson

RECEIVED
JUL 17 1972

DATE July 12, 1972

FROM Joseph J. Durek
AT Oakland, 2026 KBV

COPIES TO

TUCSON
KAISER EXPLORATION & MINING CO.

SUBJECT Miscellaneous Comments

New Dates for Plateau Uplift

New K-Ar dates of basalts in the upper Verde Valley indicate that the oldest basalts are 10-15 m.y. and basaltic cobbles deposited from the ancient north-flowing drainage are 10-12 m.y. The age of some basalts that flowed southward into the Verde Valley, i.e., the direction of modern drainage, is 5 m.y. It is concluded that the major relative uplift of the southern part of Colorado Plateau occurred within the 5-10 m.y. interval, or early to middle Pliocene. (Sources: U.S.G.S. Professional Paper 750-A, p.43.) The Vulture Mountains are close enough to have been affected by this event, but the age coincides with the deposition of Gila conglomerate and may mark the widespread block faulting of the entire Southwest.

Scheduled Gold Publication

Watch for publication this year of "Placer Gold Deposits of Arizona, U.S.G.S Bulletin 1355 (in press). It describes 87 districts and concludes that alluvial fans or well-defined gulches have been most productive. This should be a useful reference, and it may encourage speculation about source areas and typical transport patterns applicable to other metals.

Aeromagnetism in the Vulture Mtns. Area

Review John Summer's aeromagnetic map for possible help in interpreting the structure of the Vulture Mtns. Only broad generalizations are possible from this high-altitude data because of scale and masking by volcanic flows, but the regional fabric and the stress orientation necessary for its development can often be interpolated to determine probable attitude and direction of local displacements. Of course, landslides may bear only a secondary relationship to the principal structural events.

The readily detected magnetic reference points are the high of the basalt of Blowout Mtn. to the north and the lows of the rhyolite-tuff masses both southwest and southeast of Wickenburg.

The Vulture Mtns. are represented by a southwestern lobe extending from the Bradshaw Mtns., the slight emphasis on areas of schist or gneiss may be susceptibility or only topographic effect. The narrow, exaggerated low parallel to the northwest edge of the mountains extends into the Bradshaw Mtns. along the Hassayampa channel, and a trough is present west-southwest of Wickenburg which may have been the pre-Pliocene channel. A similar nose with a trough on the northwest edge is present over the White Tank Mtns.

The total magnetic relief of about 150 gammas is comparable to the possible relief of a porphyry deposit. Therefore, flexures or slight irregularities of contours could have significance, and their cause should be reasoned or sought. Generally, they can be attributed to some obvious geologic feature. Conspicuous closures will almost always be basalt or basin gravels, unless contact effects are widespread.

The southwest-oriented lobes contrast with the more pronounced northwest trend of contours. This is partly due to regional magnetic gradient which has not been removed and increased toward the northeast about 9 gammas per mile. It is also exaggerated by the constant flight elevation over the rising Arizona mountain belt and the plateau. The regional gradient has introduced one 50 gamma contour each 5 miles northeast, and these should be mentally subtracted when viewing the map.

Enclosed is a tracing of residual magnetism which can be overlain on the 1:500,000 geological map of Arizona; this was a first try and possibly not a unique solution. Note that there are few positive areas and these are shifted about 3 miles southeast of the features that seem to have caused them. Both could be calibration and flight path errors.

Satellite Photographs of Arizona

Satellite photos of much of Arizona are contained in a new lay publication (This Island Earth, NASA SP-250). The White Tank fracture system is conspicuous, and the NNW "texture" reappears beyond gravels 2-4 miles to the north where gravels must be thin; projection to the central Vulture area is obvious. A probable N70°W fault extends between the Vulture and Big Horn Mtns. The northern edge of the Vulture Mtns. appears bound by a N060E fault, as suggested in the aeromagnetic map.

Distribution of Porphyry Deposits

The Santa Rita-Tyrone, Morenci-Safford, and Miami-Ray zones which "parallel the Texas lineament" also reflect intersecting belts having northeast orientations.

*When lined up
in a row*

These paired deposits have 20-mile spacings; are there two Texas lineaments, such as in the divergence of the San Andreas and Hayward fault here in California, rather than a wide lineament belt? Lacking other control, an assumption of symmetry permits this type of exercise to be extended. For example, the next westward intervals would reach the White Tank Mtns. and then Bagdad. However, the three zones you mentioned have an increased spacing westward; if this is continued, Jerome (!) and Kingman occur between the next two intervals and a California prospect is marked next. I believe these are useful speculations, but Wortz taught us where uncontrolled efforts lead. Preliminary control is derived from your knowledge of Arizona; airphotos, aeromagnetic and geological maps, and some conceptual model give guidelines and permit screening.

JJD:la
Attachment

John Sandy
Tucson, Arizona

June 26, 1972

John E. Kinnison
Tucson, Arizona

File
Blue

Maricopa Program, Mapping

Since you have made a beginning into reconnaissance in the Big Horn mountains, I would like to have you continue with this work until at least the northwestern flank of the range where basement is exposed beneath Tertiary volcanics is completed. The task, of course, is to locate any signs of mineralization which could act as a lead beneath volcanics or alluvium on a pediment slope. It is hardly likely that a sizable zone of alteration/mineralization can exist there unrecorded. Your observations already have located Laramide granite, with occasional copper mineralization in the form of oxides.

Unless such oxide occurrences appear in profuse quantity as at the northeast end of the Vulture mountains where anomalies are consistently several hundred to greater than 1,000 ppm, these occurrences will not in themselves be considered diagnostic at this time. The over-all pattern of Laramide granite or porphyry intrusives, however, together with any other mineralization might eventually be used as clues for I.P. work.

Another aspect is to determine to what extent mineralization in the Big Horns is post-Laramide, and perhaps middle-Tertiary. For the moment at least, I do not wish to pursue mineralization which is Tertiary in age and which occurs in association with the Tertiary volcanics.

With respect to the Vulture mountain area, I would like for you to spend a short time examining outcrops of the basal grit and conglomerate, to see if you can determine direction of channeling or direction of transport and deposition of the formation. Although the data will not necessarily guide exploration, it might well be of considerable value as an interpretive guide. For the moment, it is not necessary that this study extend westerly of O'Haco valley.

JEK/bl

J. J. Durek
Oakland, California

JEK,
April 24, 1972

John E. Kinnison
Tucson, Arizona

File
Blue

Expediting Field Work

In your last memorandum of April 14, regarding expenditures for the Tucson office, you closed with a paragraph summarizing underruns and a comment on Maricopa--which is lagging behind my original time schedule. You suggest the possibility of a summer student despite hiring difficulties.

Inasmuch as Paul Strobel is currently operating as a technician, I am tempted to prefer not to hire someone else in the same category. Although Paul is currently spending most of his time in the field, we could probably not fully utilize a second man for this type of work.

One factor that would be of considerable help, however, is the acquisition of another vehicle. Although in part Paul can operate as an aide to and in conjunction with one of us, his greatest usefulness has been independent work--carefully supervised. A quick estimate suggests that a vehicle acquired now would add about \$1,500 for the remaining period of April through December. In addition to advantages accrued now while geologic work is being done, it would also make a vehicle available for use during property acquisitions, drilling, and other such matters if the need arises this fall.

If you concur with this suggestion, please advise and I will forward specifications for a Bronco, and let the leasing people obtain the best cost on it.

I will be out of town this week, so would you please forward comments to Mrs. Ludgate.

JEK/b1

INTER-OFFICE MEMORANDUM

TO J. J. Durek
AT Room 2026 KB
Oakland, California

DATE March 6, 1972

FROM John E. Kinnison
AT Tucson, Arizona

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SUBJECT Field Progress, Maricopa Copper
Program

Richardson and Sandy have been continuing with reconnaissance north and southwest of Wickenburg, and I visited the area last week in their company, southwest of Wickenburg, and briefly reconnoitered to the northeast on the Constellation mine road.

The region southwest of Wickenburg is underlain by a basement of probable pre-Cambrian granitic complex and metamorphics, intruded by Laramide granite. Volcanics of probable Tertiary age form in part a network of intrusive bodies, both as normal igneous dikes and also apparently as intrusive ignimbrites. The volcanic geology is exceedingly complex, but appears to be a locus of vent-type action as well as extrusive flows. The limits of Laramide granite are the first priority, and the volcanic geology will be gathered in more detail at an appropriate time. Scattered stringers of copper oxide are present at different points within the Coolidge granite, and their distribution and origin are being studied.

Northeast of Wickenburg, as exposed along the Constellation mine road, the basement is principally Laramide granite, overlain by a volcanic sequence, and in part intruded by volcanic textured material. The basic geology, however, may be much simpler than to the southwest. The extent of Laramide granite in this area is not known.

I can now express more enthusiasm than previously was possible, due to the fact that indeed Laramide ~~and~~ granitic intrusives are present. The area southwest of Wickenburg is underlain by at least six to eight square miles of such granite, and is locally cupriferous in the sense that small stringers of copper oxide are present. Thus, I think it is possible to say that a Laramide igneous activity has indeed been present, and this is a very encouraging feature. The volcanic activity, although evidently (so we think at this point) post-mineral in age, nonetheless indicates that the area was one of significant intrusive activity with concomitant structural implications.

No specific target, or leads under aluvium, are yet recognized, however.

Roy Petersen ~~Ph~~ Ph 933 3232

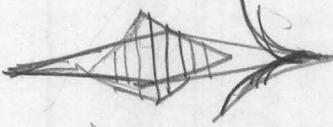
Sun City, Ariz -

13 claim - Mancoska -

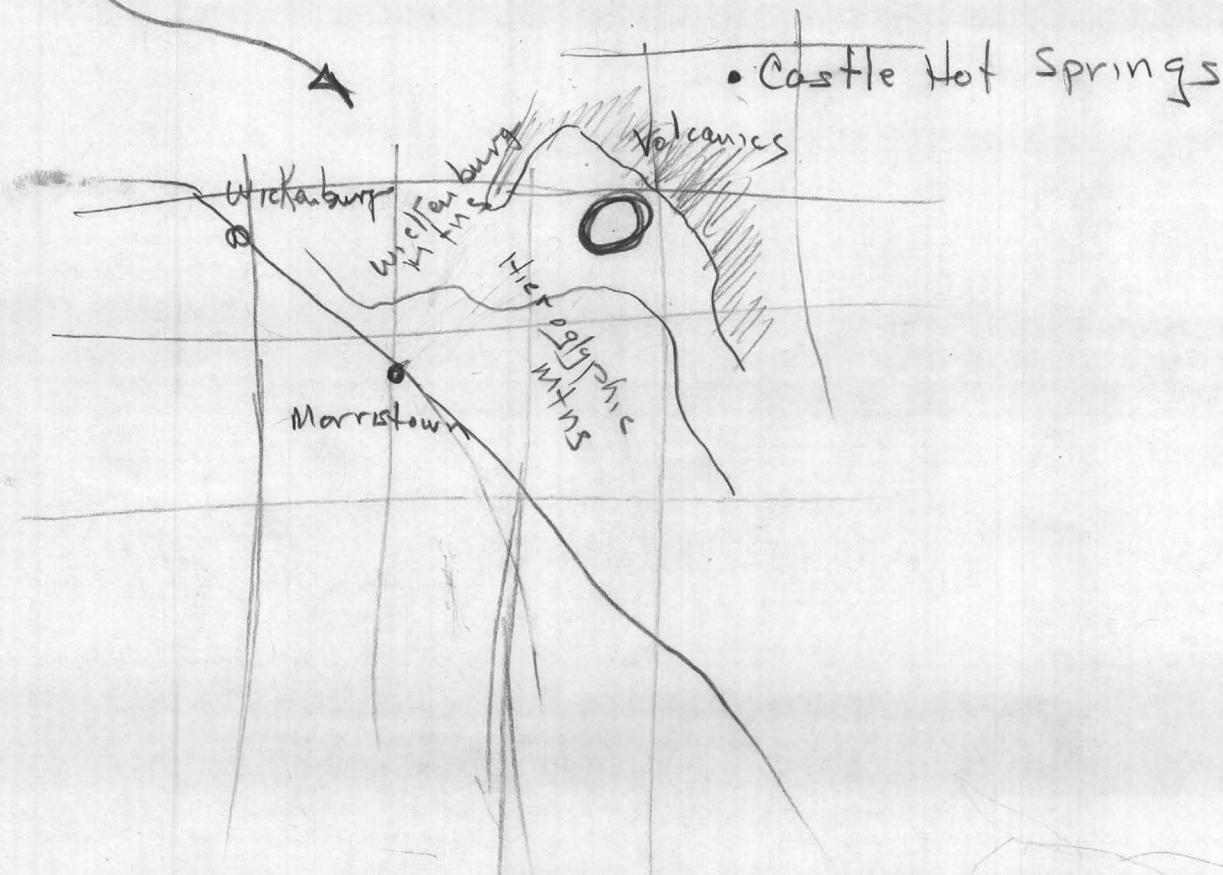
40 mi NW of Phoenix -

T6N R2W - Sec 3+4 ~~-----~~

granite-schist 

35% Cu. 

schist - granite - Cap - lead - Au - Ag 



Wickenburg

FUN AND ADVENTURE MAP
SHOWING POINTS OF INTEREST:

Streets — Churches — Highways —
Roads & Jeep Trails, etc.



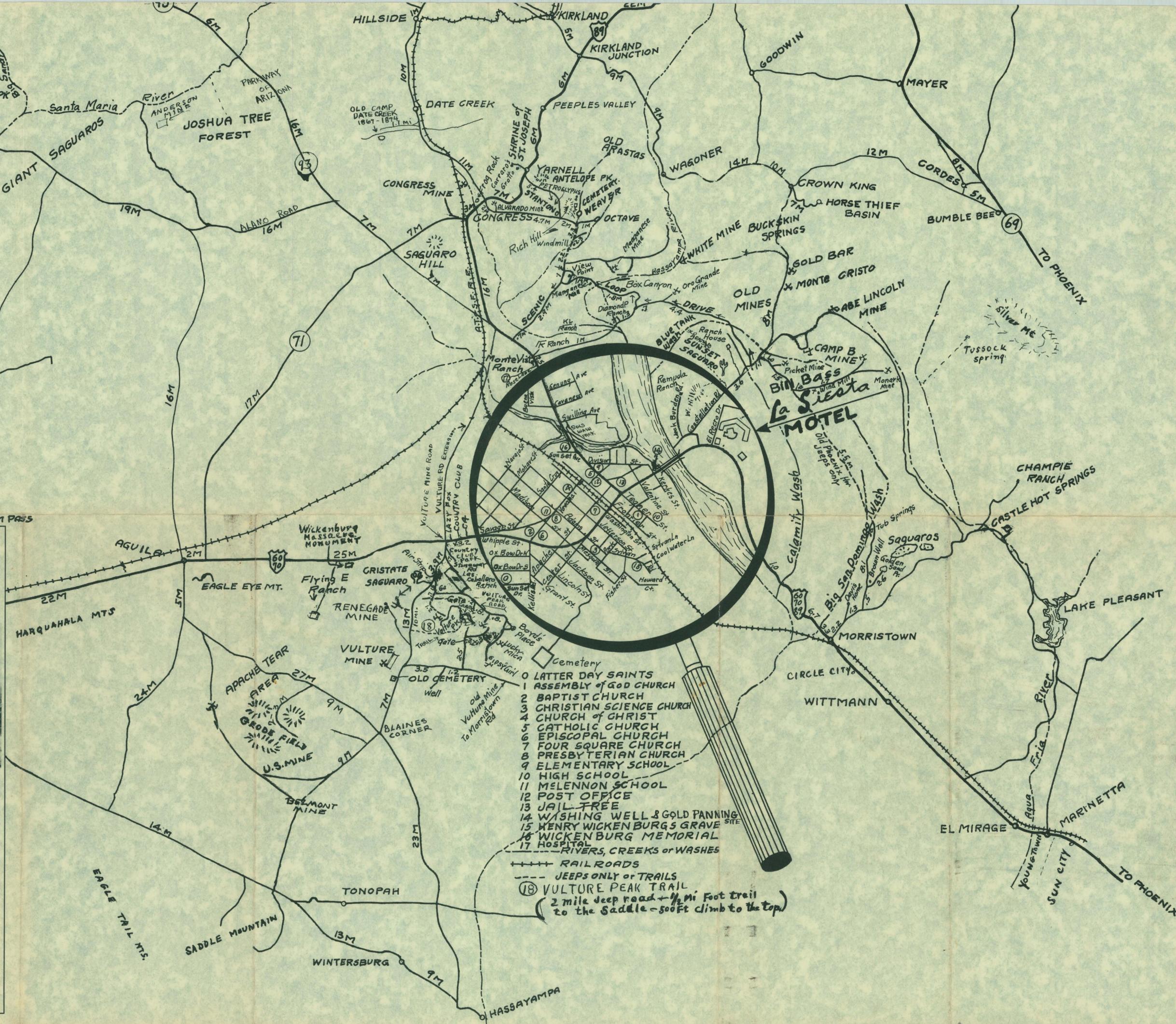
Wickenburg — one of the oldest towns in Arizona is situated in a most interesting part of Arizona, combining the desert with the mountain foothills.

Wickenburg is the Mecca for the photographer — artist — prospector, rockhound and adventurer.

There are many interesting horseback trails in the area with horses available at the local stable and various guest ranches.

The close observer may note that several streets on the outskirts of town are not shown. Because of the magnification this would be impractical.

Published by Bill Bass
Wickenburg Arizona
Cost: 25c



KAISER
EXPLORATION & MINING
COMPANY

August 4, 1972

Mr. W. D. Roper
Congress, Arizona
85332

Dear Mr. Roper:

During the past month our company has been giving the Vulture Mountains a cursory examination for mineral potential. While looking at the area around the old Twin Buzzard mine, we noted that you hold a group of claims there.

This letter is to express an interest in these claims, and to inquire if you have any drill core from the several drill holes present in the Twin Buzzard's area, which we might examine.

Please let us know if we can discuss these matters with you.

Sincerely,

George L. Richardson
Staff Geologist

GLR/bl

KAISER
EXPLORATION & MINING
COMPANY

July 12, 1972

J. E. K.

JUL 14 1972

Mr. William Cooper
Cooper Aerial Surveys Company
952 Prince Road, West
Tucson, Arizona 85705

Dear Mr. Cooper:

As per our telephone conversation of today, I am forwarding the accepted agreement between Cooper Aerial Surveys Company and Kaiser Exploration and Mining Company for aerial photographic services in the Wickenburg, Arizona, area, to you by mail.

Very truly yours,

Brigitta G. Ludgate
(Mrs.)

/bl
Encl.

DN

INTER-OFFICE MEMORANDUM

TO John E. Kinnison
AT Tucson

DATE July 10, 1972

FROM Joseph J. Durak
AT Oakland, 2026 *JJD*

COPIES TO

SUBJECT CONTRACT FOR AIR PHOTOS

J. E. K.

JUL 14 1972

Enclosed is the executed contract submitted by Cooper Aerial Surveys for photographs of the Vulture Mountains area. Please forward it to Cooper and proceed with the scheduled work.

RECEIVED
JUL 13 1972

TUCSON
KAISER EXPLORATION & MINING CO.

JJD:1a
Enc.

June 13, 1972

J. E. K.

JUL 14 1972

Mr. John Kinnison
Kaiser Exploration & Mining Company
5938 N. Oracle Road
Tucson, Arizona

Dear John:

This letter, upon acceptance by Kaiser Exploration and Mining Company, will serve as the agreement between Cooper Aerial Surveys Company and Kaiser Exploration and Mining Company for aerial photographic services in the Wickenburg, Arizona area.

We will fly and furnish 1:12,000 color aerial photography of about 40 square miles as outlined by Mr. George Richardson, and furnish one set of color contact prints. This work is to be performed to the satisfaction of Mr. Richardson in accordance with the standards of the industry.

The cost for this work will be \$1,135.00.

Cooper Aerial Surveys Company agrees to indemnify and save harmless Kaiser Exploration and Mining Company for any damages arising out of performance of this agreement.

Cooper Aerial Surveys Company further agrees to maintain our aircraft insurance, policy number 7146509 of the Ranger Insurance Company, in force during the performance of this agreement.

Accepted by
Kaiser Exploration and Mining Company

Edward Kichers V.P. 
Name Title

Yours very truly,

William Cooper
William Cooper
Cooper Aerial Surveys Company

WC:lkg

INTER-OFFICE MEMORANDUM

J. E. K. *File*

TO T. F. O'Neill
 AT Oakland, 2023 KB

DATE July 10, 1972 JUL 14 1972

RECEIVED
 JUL 14 1972

FROM Joseph J. Durek
 AT Oakland, 2026 KB

COPIES TO ✓ John E. Kinnison
 Tucson

TUCSON
 KAISER EXPLORATION & MINING CO.

SUBJECT COPPER-VULTURE MTN. PROSPECT
 Proposed Contract for
 Aerial Photographs

The following technical data apply to the bid by Cooper Aerial Surveys Company for colored prints of the Vulture Mountains area being mapped by George Richardson:

Wild RC-10 camera (a new model) with 6-inch f.l. Universal Aviogon lens used at f/5.6 (The proposed scale of 1:12,000 must therefore be flown at 6,000 feet.)

Clear vignetting filter (Probably a variable density filter to correct fall off in edge illumination; ultraviolet filtration below 400 mμ is provided by the lens.)

Kodak Aerocolor Neg. 2445 (This is the standard film for color prints, although some continue to use Kodak Ektachrome Aero transparency film but process only to a negative to produce prints.)

Kinnison has used B/W prints and has seen color prints produced by Cooper, and he rates them as good. It is believed that this service company is using modern equipment and techniques, and they should produce prints of optimum quality. Although the rainy season has begun, Richardson is at the prospect site and can relay weather information.

JJD:la

GRAVITY SURVEY
WICKENBURG AREA 124-157
YAVAPAI AND MARICOPA COUNTIES,
ARIZONA
FOR
PILLAR, LOWELL AND ASSOCIATES
PROJECT 0730

GRAVITY SURVEY

WICKENBURG AREA 124-157

YAVAPAI AND MARICOPA COUNTIES, ARIZONA

FOR

PILLAR, LOWELL AND ASSOCIATES

PROJECT 0730

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INTRODUCTION	1
INTERPRETATION	2
SURVEY PROCEDURE	3

ACCOMPANYING THIS REPORT:

1 LOCATION MAP

8 GRAVITY PROFILES

1 COMPUTER LISTING OF GRAVITY DATA

DISTRIBUTION:

ORIGINAL & 2 COPIES: John E. Kinnison, Tucson

GRAVITY SURVEY
WICKENBURG AREA 124-157
YAVAPAI AND MARICOPA COUNTIES, ARIZONA
FOR
PILLAR, LOWELL AND ASSOCIATES

SUMMARY:

A complex Bouguer gravity anomaly low indicates that 800' to 2900' of low density postmineral rocks (alluvium or volcanics) cover most of the area of interest. The gravity data suggest that the postmineral cover thins to the west and premineral rocks may be as shallow as 800' in section 7. Shallow premineral rocks probably occur in the northwest corner of the area of interest (see location map) in sections 5 and 6.

INTRODUCTION:

A gravity survey was conducted in the titled area during the period July 10 to 15 and July 27 to 30, 1977. The survey was carried out by Scott Rogers, geologist for Mining Geophysical Surveys, Inc. The interpretation and report are by Robert E. West and W. Gordon Wieduwilt, geophysicists for MGS.

Rocks exposed in the survey area include Precambrian granite, Laramide granite, Tertiary volcanics and sediments and Quaternary alluvium. The purpose of the gravity survey was to determine the extent of shallow premineral rocks. Of particular interest is an area which includes sections 4, 5, 6, 7, 8 and 9 in Township 7 North, Range 5 West.

INTERPRETATION:

A complex Bouguer gravity anomaly low is centered over Wickenburg and trends east-west there. West of Wickenburg this anomaly splits into two branches. Parts of these branches occur over the area of interest and indicate that significant thicknesses of low density postmineral rocks (volcanics or alluvium) probably occur over most of the area of interest.

We have attempted to draw the boundaries of the thick sections of postmineral rock. Although these boundaries are shown as normal faults, they may be buried contacts where the postmineral rocks have filled erosional lows in the Precambrian and Laramide bedrock. Depth estimates for the postmineral rocks are shown on the plan map and assume density contrasts of 0.5 and 0.3 gm/cm³. John Kinison reports that the Tertiary volcanic rocks include low density tuffs and vitrophyres that have devitrified. The 0.5 gm/cm³ density contrast is optimistic and assumes that the postmineral rocks are largely made up of these low density volcanic rocks. Since we have not made density measurements on rock samples from this area, these assumed density contrasts are somewhat speculative. However, density measurements on rocks further to the south in the Vulture Mine area indicate that density contrasts as large as 0.5 gm/cm³ can occur between low density tuffs and Precambrian bedrocks (MGS project 0735).

North and east of the area of interest the gravity data and small outcrops of Precambrian rocks indicate that bedrock is shallow. The north end of profile FF' suggests that the thickness

of postmineral rocks may increase to the northeast and we have shown a possible fault here. Profile CC'C" suggests that a tilted fault block with the northeast side down occurs northeast of C". In this case depth to bedrock would increase gradually northeast of C". An extension of line 10 to the northeast would be necessary to resolve this ambiguity. In either case, we estimate that 800 to 1300' of postmineral rocks occur southwest of the fault shown near station 40 on line 6.

A possible fault is shown north of Wickenburg with the south side down. Bedrock may be shallow north of this fault. Profile GG'G" shows two possible regional gravities. If the dashed regional is correct, bedrock may be close to surface.

SURVEY PROCEDURE:

A LaCoste and Romberg, Inc. model G geodetic gravity meter (#325) was used for the survey. This meter has a reading accuracy of 0.01 mgal and a drift rate of less than 1 mgal/month.

The gravity survey was tied to the Wickenburg, Arizona base station of the Arizona Gravity Base Station Network, with an observed gravity of $979\,419.262 \pm .012$ mgal.

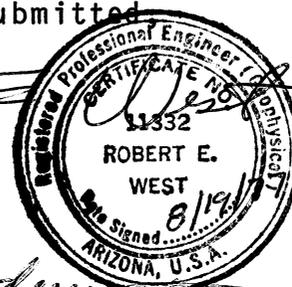
Latitude, longitude, and elevation were obtained for each station from 7-1/2' U.S. Geological Survey topographic maps. Contour intervals for these maps vary from 20' to 40'. Scatter in the Bouguer anomaly profiles indicates that elevation errors are less than $\pm 15'$.

The gravity data was reduced by computer using standard gravity corrections. Linear drift corrections were applied to the field data after tide corrections had been applied. Latitude, free-air, and Bouguer corrections were made on the observed gravities. Terrain corrections were not applied to the data. A density of 2.67 gm/cm^3 was used for the Bouguer correction.

Respectfully submitted

Robert

Robert E. West
Geophysicist

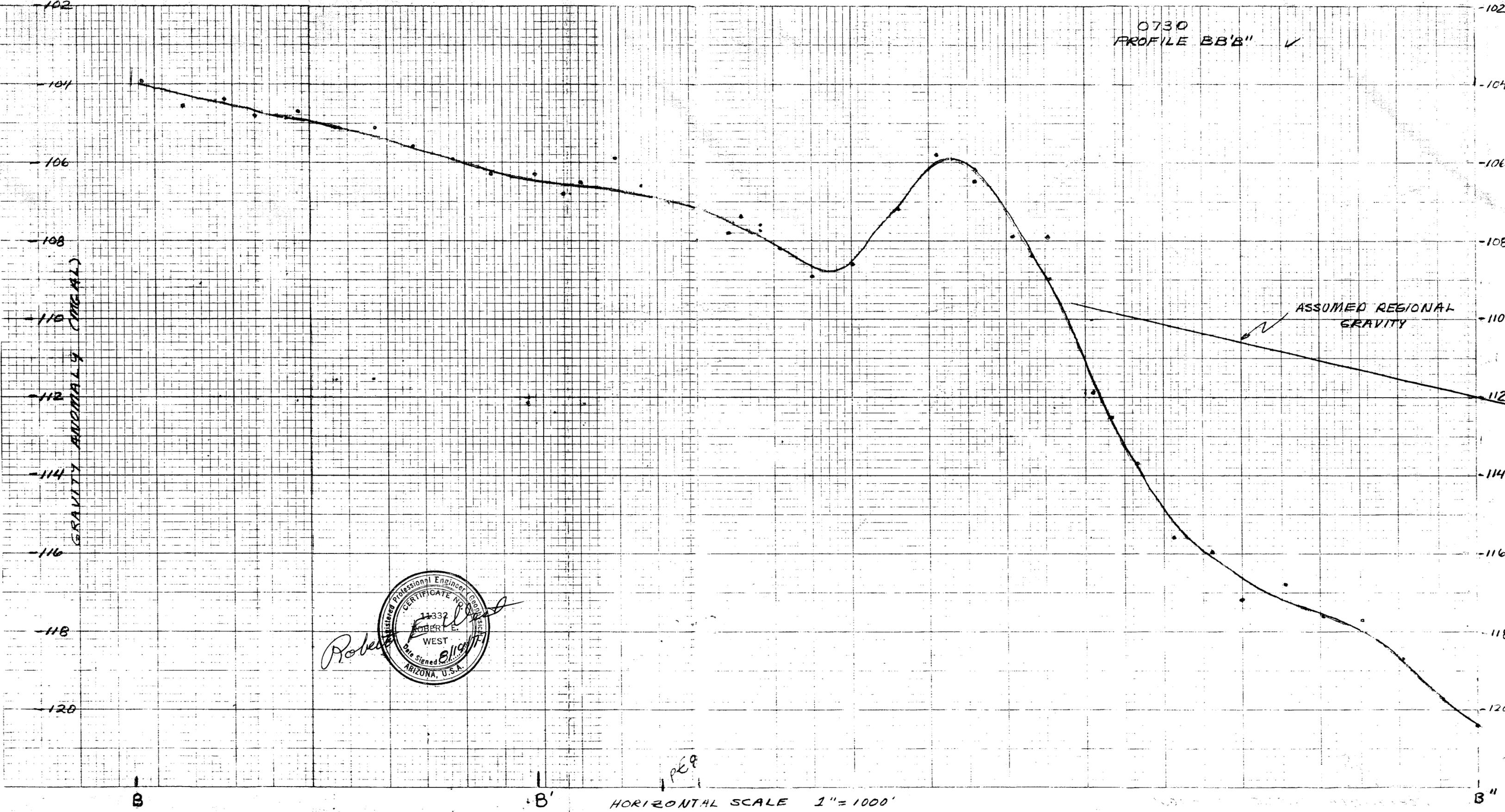


W. Gordon Wieduwilt
W. Gordon Wieduwilt
Geophysicist

August 18, 1977

Tucson, Arizona

0730
PROFILE BB'B''

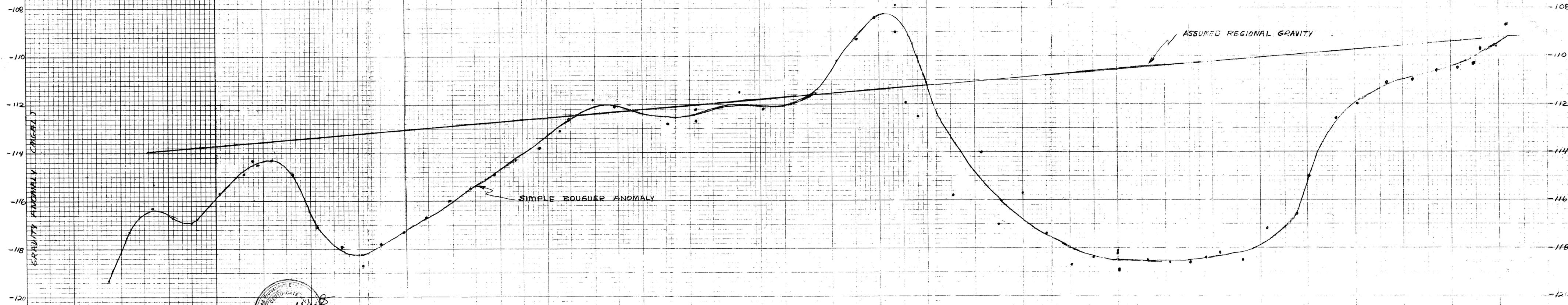


Robert E. West
Professional Engineer (Geodetic)
CERTIFICATE NO. 11332
WEST
Date Signed 8/19/71
ARIZONA, U.S.A.

0730
PROFILE CC'C''C'''

46 0782

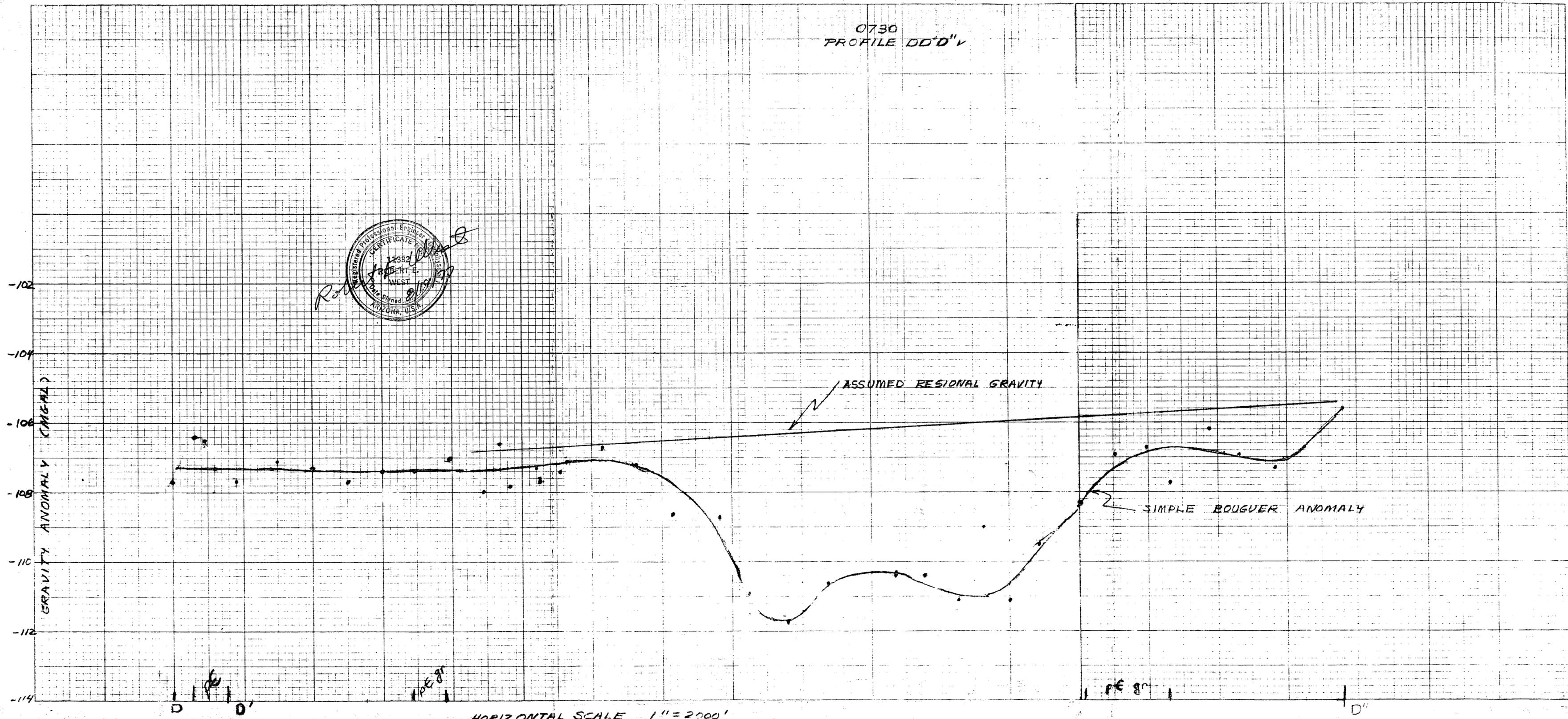
1/2" = 10 X 10 TO THE INCH 7 X 10 INCHES
KLOTZ & FESSER CO. MADE IN U.S.A.



NORTH SOUTH

HORIZONTAL SCALE 1" = 2000'

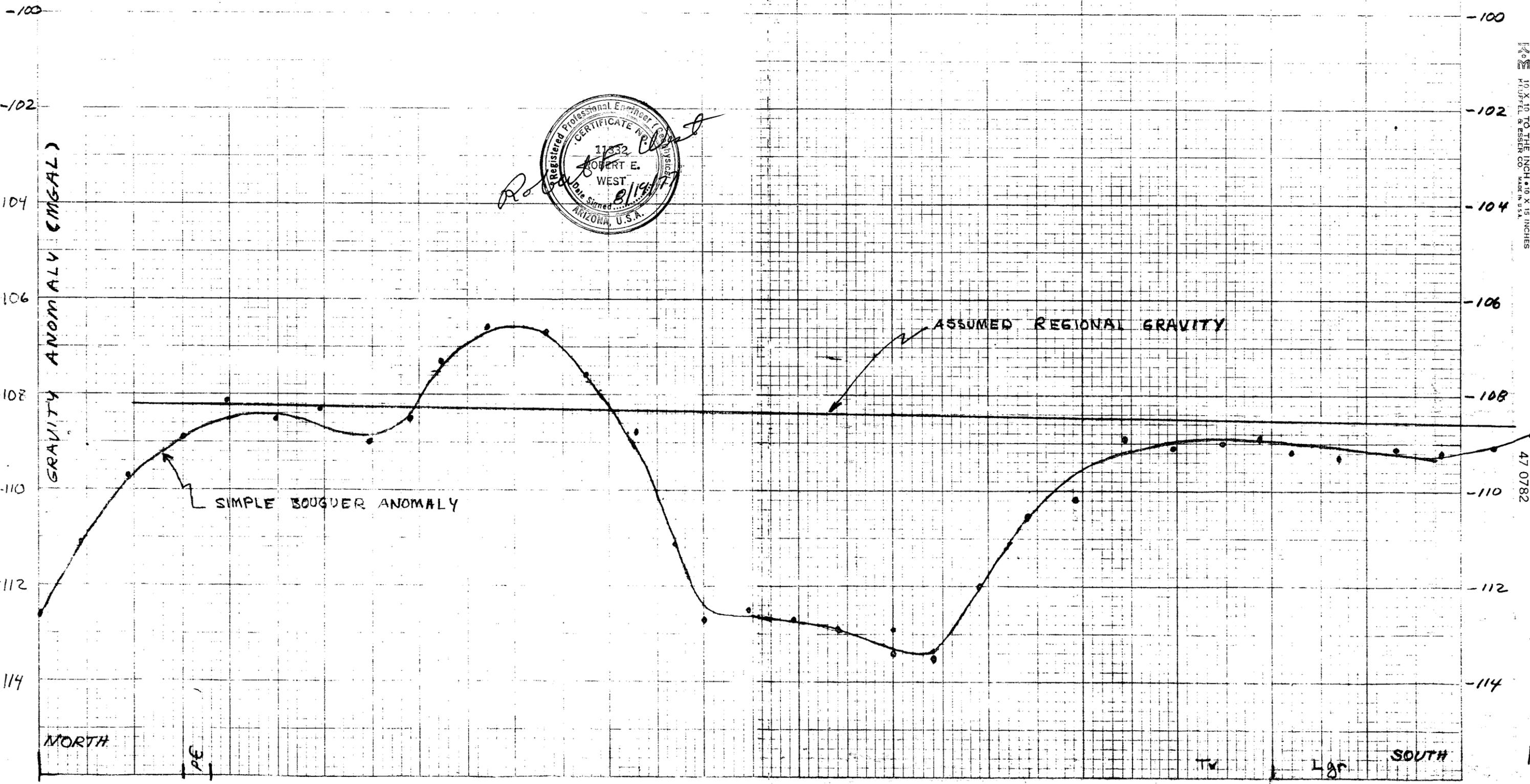
0730
PROFILE DD'D''



HORIZONTAL SCALE 1" = 2000'

0730

PROFILE FF'



12 10 X 10 TO THE INCH • 10 X 15 INCHES
MUFFEL & ESSER CO. MADE IN U.S.A.

HORIZONTAL SCALE 1" = 2000'

NORTH PE TV Lgr SOUTH

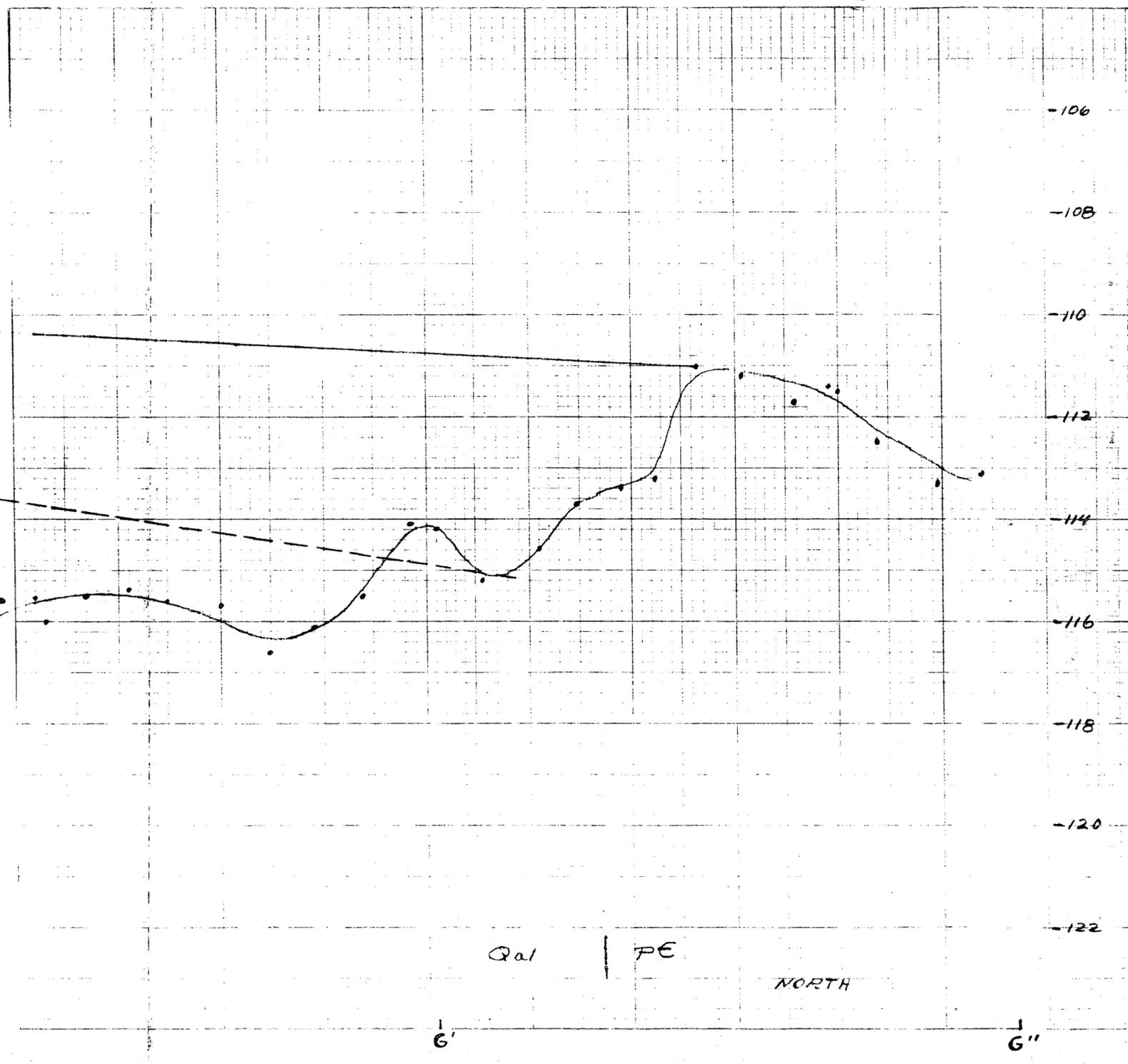
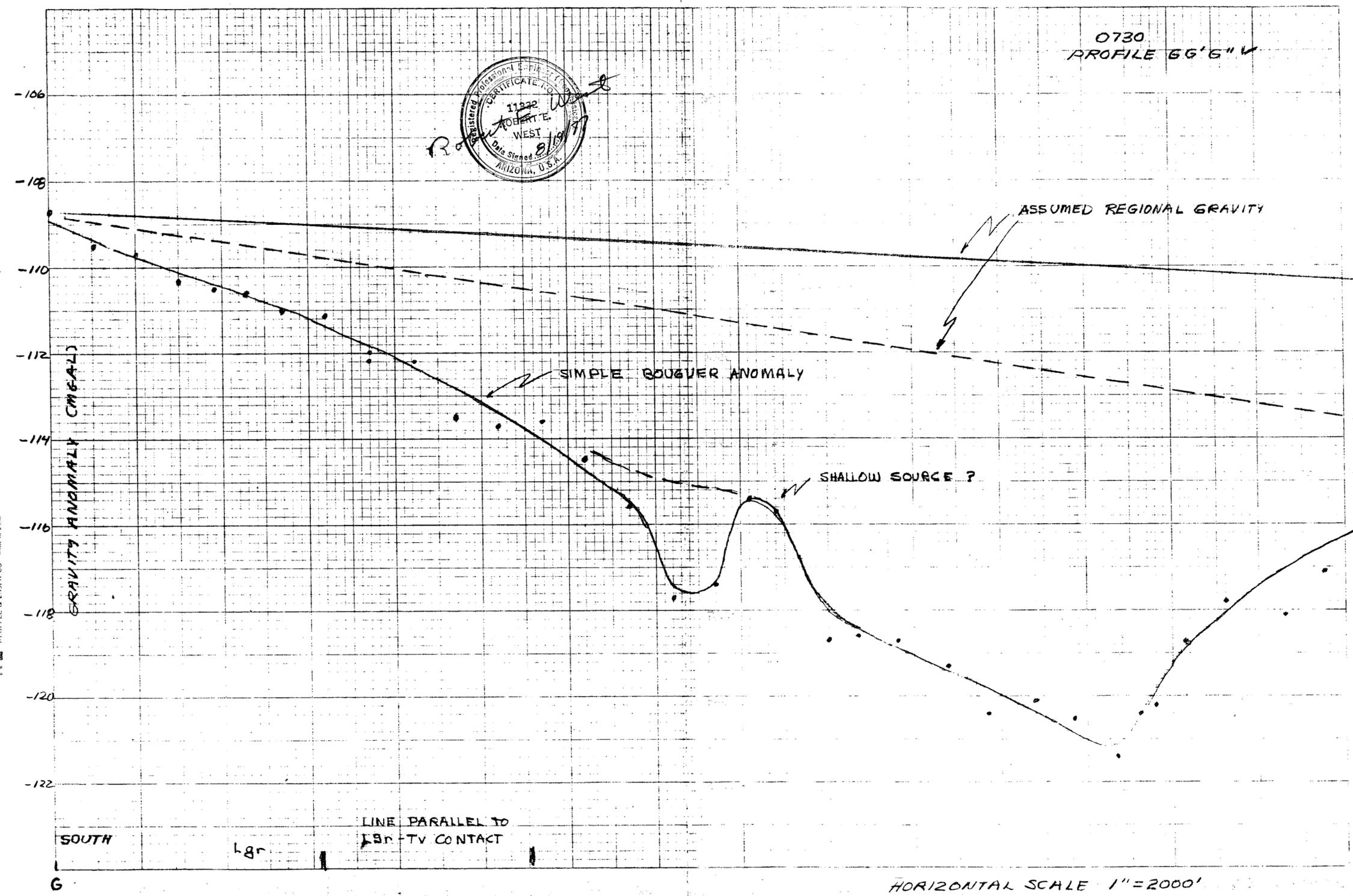
F

FF'

47 0782

47 0782

1 X 10 TO THE INCH • 10 X 15 INCHES
MUTUAL & ESSER CO. MADE IN U.S.A.



0730

PROFILE A-H

46 0782

-106

-108

-110

-112

-114

-116

-118

-120

GRAVITY ANOMALY (MGAL)



SIMPLE BOUGUER ANOMALY

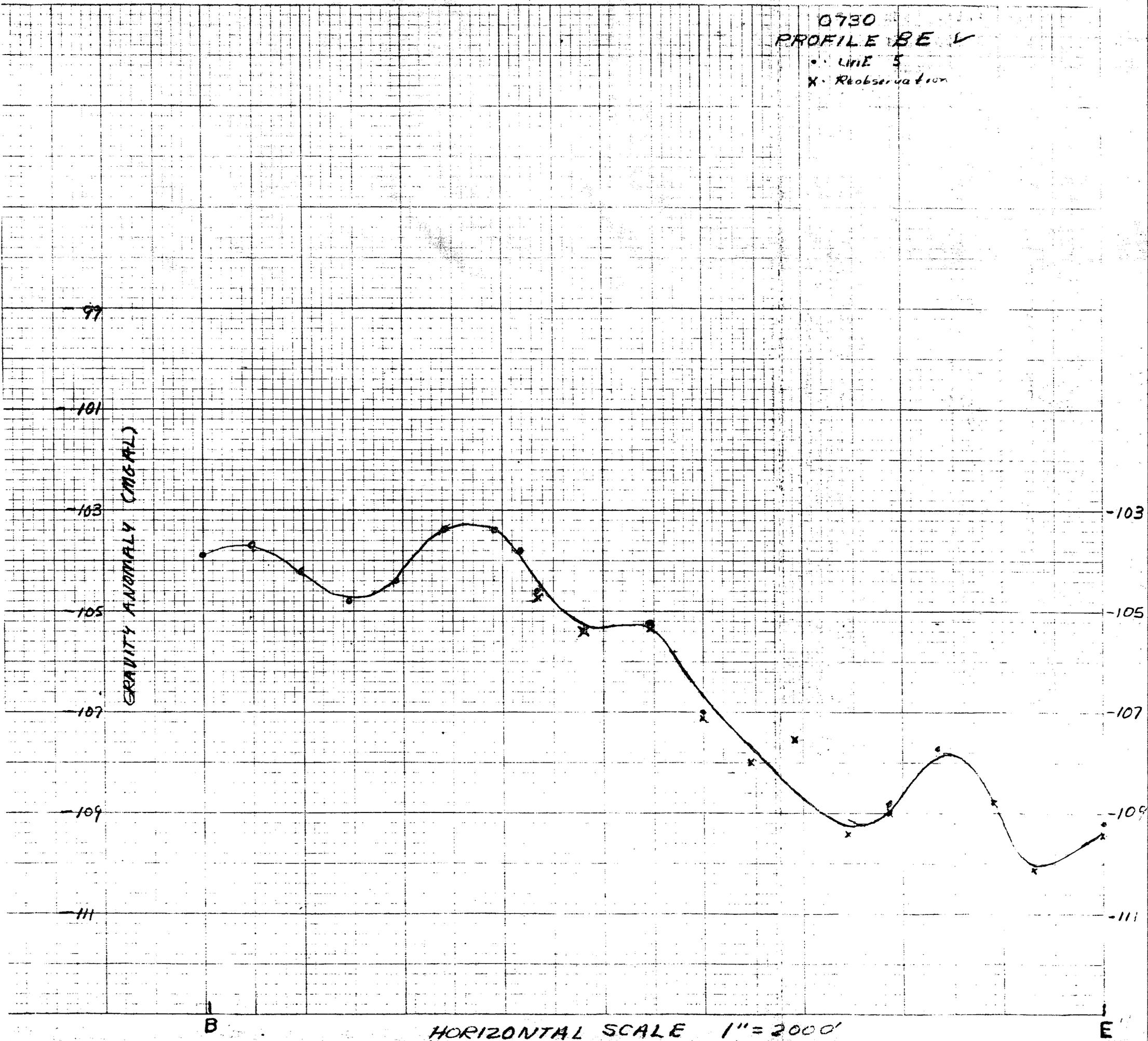
SOUTH

NORTH

HORIZONTAL SCALE 1" = 2000'

KE 10 X 10 TO THE INCH • 7 X 10 INCHES KEUFFEL & ESSER CO. MADE IN U.S.A.

0730
PROFILE BE V
• LINE 5
x Reobservation



GRAVITY SURVEY DATA

MINING GEOPHYSICAL SURVEYS - 2400 EAST GRANT ROAD - TUCSON, ARIZONA 85719

WICKENBURG WEST AREA - MARICOPA COUNTY, ARIZONA - FOR PILLAR, LOWELL AND ASSOCIATES --- MGS 0730

STATION NUMBER	NORTH LATITUDE (DEG)(MIN)	WEST LONGITUDE (DEG)(MIN)	ELEV. (FT)	TIDE CORP (MGAL)	OBSERVED GRAVITY (MGAL)	FREE AIR ANOMALY (MGAL)	SIMPLE BOUGUER ANOMALY RHO 2.670 (MGAL)
----- DRIFT RATE= .021230 MGAL/HR -----							
B.M.2289 BASE	33. 57.69	112. 46.24	2289.0	.111	979402.860	-40.025	-118.009
B.M.2289 BASE	33. 57.69	112. 46.24	2289.0	.111	979402.860	-40.026	-118.010
----- DRIFT RATE= -.046794 MGAL/HR -----							
LINE 1 STN 00	33. 56.89	112. 50.63	2545.0	.074	979400.552	-17.611	-103.246
LINE 1 STN 01	33. 56.90	112. 50.72	2560.0	.066	979398.839	-17.457	-104.674
LINE 1 STN 02	33. 56.92	112. 50.91	2575.0	.063	979397.777	-17.135	-104.864
LINE 1 STN 03	33. 56.92	112. 51.12	2560.0	.059	979399.896	-16.427	-103.644
LINE 1 STN 04	33. 56.93	112. 51.29	2590.0	.055	979399.145	-14.371	-102.610
LINE 1 STN 05	33. 56.94	112. 51.49	2595.0	.051	979401.608	-11.451	-99.861
LINE 1 STN 06	33. 56.91	112. 51.70	2595.0	.048	979403.698	-9.319	-97.729
LINE 1 STN 07	33. 56.92	112. 51.89	2620.0	.043	979400.823	-9.857	-99.118
LINE 1 STN 08	33. 56.92	112. 52.11	2655.0	.040	979397.933	-9.455	-99.908
LINE 1 STN 09	33. 56.94	112. 52.32	2660.0	.034	979397.248	-9.698	-100.322
LINE 1 STN 10	33. 56.86	112. 50.44	2542.0	.018	979400.587	-17.346	-103.950
LINE 1 STN 11	33. 56.78	112. 50.63	2550.0	.015	979399.231	-17.838	-104.714
LINE 1 STN 12	33. 56.66	112. 50.75	2555.0	.011	979399.913	-16.519	-103.566
LINE 1 STN 13	33. 56.58	112. 50.80	2565.0	.007	979397.630	-17.750	-105.138
LINE 1 STN 14	33. 56.48	112. 50.85	2575.0	.003	979396.860	-17.440	-105.168
LINE 1 STN 15	33. 56.24	112. 50.84	2585.0	-.001	979395.897	-17.129	-105.198
LINE 1 STN 16	33. 56.07	112. 50.88	2595.0	-.005	979396.507	-15.342	-103.751
LINE 1 STN 17	33. 55.90	112. 50.84	2600.0	-.009	979395.823	-15.319	-103.899
LINE 1 STN 18	33. 56.64	112. 51.02	2603.0	-.013	979396.035	-15.855	-104.537
LINE 1 STN 19	33. 56.59	112. 51.17	2600.0	-.018	979397.104	-14.998	-103.578
LINE 1 STN 20	33. 56.52	112. 51.35	2610.0	-.020	979397.117	-13.946	-102.867
LINE 1 STN 21	33. 56.46	112. 51.50	2630.0	-.023	979395.482	-13.617	-103.219
LINE 1 STN 22	33. 56.38	112. 51.74	2620.0	-.027	979397.584	-12.344	-101.605
LINE 1 STN 23	33. 56.81	112. 50.27	2565.0	-.035	979397.754	-17.946	-105.333
LINE 1 STN 24	33. 56.78	112. 50.07	2560.0	-.037	979396.360	-19.768	-106.985
LINE 1 STN 25	33. 56.74	112. 49.87	2555.0	-.038	979395.166	-21.377	-108.424
LINE 1 STN 26	33. 56.79	112. 49.70	2540.0	-.040	979397.042	-20.982	-107.518
LINE 1 STN 27	33. 56.88	112. 49.51	2535.0	-.042	979396.769	-21.850	-108.216
LINE 1 STN 28	33. 56.94	112. 49.40	2520.0	-.043	979397.581	-22.533	-108.387
LINE 1 STN 29	33. 57.02	112. 49.25	2495.0	-.045	979399.425	-23.151	-108.154
LINE 1 STN 30	33. 57.12	112. 49.09	2475.0	-.046	979401.071	-23.526	-107.847
LINE 1 STN 31	33. 57.19	112. 48.91	2455.0	-.048	979401.032	-25.543	-109.183
LINE 1 STN 32	33. 57.27	112. 48.76	2440.0	-.049	979401.444	-26.653	-109.782
LINE 1 STN 33	33. 57.35	112. 48.57	2420.0	-.050	979402.405	-27.685	-110.132
LINE 1 STN 34	33. 57.41	112. 48.38	2400.0	-.051	979403.353	-28.702	-110.468
LINE 1 STN 35	33. 57.48	112. 48.20	2385.0	-.051	979403.190	-30.373	-111.628
LINE 1 STN 36	33. 57.53	112. 48.02	2375.0	-.052	979402.284	-32.290	-113.204
LINE 1 STN 37	33. 57.61	112. 47.84	2365.0	-.053	979401.364	-34.261	-114.835
LINE 1 STN 38	33. 57.65	112. 47.67	2360.0	-.053	979400.337	-35.615	-116.218
LINE 1 STN 39	33. 57.73	112. 47.46	2355.0	-.054	979399.311	-37.423	-117.655
LINE 1 STN 40	33. 57.74	112. 47.27	2335.0	-.054	979400.004	-38.624	-118.175
LINE 1 STN 41	33. 57.74	112. 47.03	2310.0	-.054	979401.659	-39.320	-118.020

GRAVITY SURVEY DATA

MINING GEOPHYSICAL SURVEYS - 2400 EAST GRANT ROAD - TUCSON, ARIZONA 85719

WICKENBURG WEST AREA - MARICOPA COUNTY, ARIZONA - FOR PILLAR, LOWELL AND ASSOCIATES --- MGS 0730

STATION NUMBER	NORTH LATITUDE (DEG)(MIN)	WEST LONGITUDE (DEG)(MIN)	ELEV. (FT)	TIDE CORR (MGAL)	OBSERVED GRAVITY (MGAL)	FREE AIR ANOMALY (MGAL)	SIMPLE BOUGUER ANOMALY RHO 2.670 (MGAL)
LINE 1 STN 42	33. 57.74	112. 46.90	2295.0	-.053	979402.482	-39.908	-118.097
LINE 1 STN 43	33. 57.74	112. 46.72	2280.0	-.053	979403.374	-40.428	-118.105
LINE 1 STN 44	33. 57.74	112. 46.47	2280.0	-.052	979403.794	-40.008	-117.685
B.M.2289 BASE	33. 57.69	112. 46.24	2289.0	-.051	979402.826	-40.060	-118.044
B.M.2289 BASE	33. 57.69	112. 46.24	2289.0	-.051	979402.829	-40.057	-118.041
----- DRIFT RATE = .008984 MGAL/HR -----							
LINE 2 STN 00	33. 57.74	112. 47.46	2355.0	.005	979399.358	-37.389	-117.622
LINE 2 STN 01	33. 57.76	112. 47.68	2350.0	.012	979400.712	-36.533	-116.596
LINE 2 STN 02	33. 57.79	112. 47.82	2349.0	.016	979401.662	-35.719	-115.747
LINE 2 STN 03	33. 57.84	112. 47.98	2365.0	.019	979401.961	-33.984	-114.558
LINE 2 STN 04	33. 57.86	112. 48.21	2380.0	.025	979401.796	-32.766	-113.851
LINE 2 STN 05	33. 57.91	112. 48.39	2395.0	.031	979401.716	-31.505	-113.101
LINE 2 STN 06	33. 57.93	112. 48.61	2400.0	.035	979401.890	-30.889	-112.655
LINE 2 STN 07	33. 57.93	112. 48.78	2400.0	.040	979402.140	-30.639	-112.405
LINE 2 STN 08	33. 57.92	112. 48.97	2405.0	.045	979402.716	-29.579	-111.515
LINE 2 STN 09	33. 57.91	112. 49.07	2410.0	.050	979402.889	-29.921	-111.028
LINE 2 STN 10	33. 57.87	112. 49.31	2430.0	.057	979402.248	-27.626	-110.414
LINE 2 STN 11	33. 57.83	112. 49.50	2450.0	.064	979401.115	-26.822	-110.291
LINE 2 STN 12	33. 57.77	112. 49.69	2466.0	.068	979401.830	-24.518	-108.533
LINE 2 STN 13	33. 57.68	112. 49.88	2475.0	.073	979400.402	-24.975	-109.296
LINE 2 STN 14	33. 57.65	112. 49.98	2485.0	.076	979400.862	-23.532	-108.194
LINE 2 STN 15	33. 57.54	112. 50.16	2510.0	.082	979398.346	-23.543	-109.057
LINE 2 STN 16	33. 57.43	112. 50.32	2540.0	.087	979397.799	-21.115	-107.651
LINE 2 STN 17	33. 57.39	112. 50.49	2520.0	.094	979400.620	-20.119	-105.974
LINE 2 STN 18	33. 57.34	112. 50.78	2500.0	.098	979401.751	-20.800	-105.973
LINE 2 STN 19	33. 57.29	112. 50.86	2535.0	.103	979402.079	-17.110	-103.476
LINE 2 STN 20	33. 57.24	112. 51.06	2540.0	.107	979402.460	-16.190	-102.725
LINE 2 STN 21	33. 57.19	112. 51.25	2555.0	.111	979401.798	-15.372	-102.419
LINE 2 STN 22	33. 57.14	112. 51.43	2565.0	.113	979402.513	-13.646	-101.034
LINE 2 STN 23	33. 57.09	112. 51.62	2590.0	.116	979403.625	-10.113	-98.352
LINE 2 STN 24	33. 57.03	112. 51.80	2600.0	.119	979403.841	-8.873	-97.453
LINE 2 STN 25	33. 57.01	112. 51.98	2617.0	.122	979401.744	-9.343	-98.502
LINE 2 STN 26	33. 56.99	112. 52.19	2640.0	.126	979399.583	-9.313	-99.255
LINE 2 STN 27	33. 56.94	112. 52.32	2660.0	.127	979397.151	-9.794	-100.418
LINE 2 STN 28	33. 56.92	112. 52.55	2650.0	.129	979398.948	-8.910	-99.193
LINE 2 STN 29	33. 56.87	112. 52.74	2635.0	.130	979399.756	-9.443	-99.215
LINE 2 STN 30	33. 56.82	112. 52.93	2630.0	.132	979399.936	-9.664	-99.266
LINE 2 STN 31	33. 56.74	112. 53.24	2620.0	.133	979402.104	-8.325	-97.587
LINE 3 STN 00	33. 58.62	112. 45.56	2130.0	.131	979411.350	-47.785	-120.353
LINE 3 STN 01	33. 58.66	112. 45.72	2135.0	.129	979411.749	-46.972	-119.710
LINE 3 STN 02	33. 58.73	112. 45.91	2150.0	.128	979411.938	-45.469	-118.718
LINE 3 STN 03	33. 58.80	112. 46.10	2160.0	.125	979412.414	-44.151	-117.740
LINE 3 STN 04	33. 58.91	112. 46.27	2165.0	.122	979412.388	-43.859	-117.619
LINE 3 STN 05	33. 58.97	112. 46.43	2160.0	.120	979412.407	-42.513	-116.784
LINE 3 STN 06	33. 59.01	112. 46.59	2180.0	.118	979412.070	-42.906	-117.177
LINE 3 STN 07	33. 59.02	112. 46.77	2195.0	.114	979412.394	-41.184	-115.966
LINE 3 STN 08	33. 59.06	112. 46.99	2190.0	.110	979413.127	-40.978	-115.589

GRAVITY SURVEY DATA

MINING GEOPHYSICAL SURVEYS - 2400 EAST GRANT ROAD - TUCSON, ARIZONA 85719

WICKENBURG WEST AREA - MARICOPA COUNTY, ARIZONA - FOR PILLAR, LOWELL AND ASSOCIATES --- MGS 0730

LINE	STN	STATION NUMBER	NORTH LATITUDE (DEG)(MIN)	WEST LONGITUDE (DEG)(MIN)	ELEV. (FT)	TIDE CORP (MGAL)	OBSERVED GRAVITY (MGAL)	FREE AIR ANOMALY (MGAL)	SIMPLE BOUGUER ANOMALY RHO 2.670 (MGAL)
LINE 3	STN 09		33. 59.12	112. 47.16	2200.0	.106	979414.461	-38.786	-113.738
LINE 3	STN 10		33. 59.21	112. 47.36	2215.0	.101	979415.553	-36.409	-111.873
LINE 3	STN 11		33. 59.23	112. 47.56	2240.0	.096	979418.077	-31.561	-107.876
LINE 3	STN 12		33. 59.28	112. 47.75	2240.0	.086	979418.102	-31.606	-107.921
LINE 3	STN 13		33. 59.33	112. 47.95	2270.0	.080	979417.782	-29.174	-106.511
LINE 3	STN 14		33. 59.36	112. 48.14	2280.0	.076	979417.955	-28.101	-105.779
LINE 3	STN 15		33. 59.47	112. 48.30	2280.0	.070	979416.672	-29.538	-107.215
LINE 3	STN 16		33. 59.59	112. 48.50	2289.0	.065	979414.934	-30.596	-108.581
LINE 3	STN 17		33. 59.63	112. 48.71	2285.0	.052	979414.930	-31.032	-108.880
LINE 3	STN 18		33. 59.62	112. 48.91	2300.0	.029	979414.735	-29.803	-108.162
LINE 3	STN 19		33. 59.53	112. 49.07	2305.0	.023	979414.805	-29.137	-107.667
LINE 3	STN 20		33. 59.37	112. 49.22	2310.0	.016	979414.563	-28.686	-107.386
LINE 3	STN 21		33. 59.38	112. 49.42	2325.0	.010	979413.924	-27.928	-107.139
LINE 3	STN 22		33. 59.51	112. 49.51	2335.0	.003	979413.328	-27.764	-107.316
LINE 3	STN 23		33. 59.66	112. 49.62	2355.0	-.003	979413.097	-26.323	-106.556
----- DRIFT RATE = .022237 MGAL/HR -----									
LINE 4	STN 00		33. 59.37	112. 49.42	2325.0	-.020	979413.947	-27.891	-107.102
LINE 4	STN 01		33. 59.17	112. 49.42	2325.0	-.010	979414.024	-27.535	-106.746
LINE 4	STN 02		33. 59.01	112. 49.42	2365.0	-.001	979410.920	-26.655	-107.229
LINE 4	STN 03		33. 58.84	112. 49.42	2480.0	.007	979402.447	-24.073	-108.565
LINE 4	STN 04		33. 58.66	112. 49.42	2380.0	.015	979408.093	-27.583	-108.668
LINE 4	STN 05		33. 58.49	112. 49.42	2485.0	.023	979398.698	-26.865	-111.527
LINE 4	STN 06		33. 58.30	112. 49.42	2543.0	.031	979394.785	-25.059	-111.697
LINE 4	STN 07		33. 58.10	112. 49.42	2500.0	.042	979398.145	-25.465	-110.638
LINE 4	STN 08		33. 57.83	112. 49.50	2450.0	.060	979401.047	-26.889	-110.359
LINE 4	STN 09		33. 57.66	112. 49.42	2485.0	.077	979398.714	-25.694	-110.356
LINE 4	STN 10		33. 57.48	112. 49.42	2610.0	.085	979390.184	-22.215	-111.136
LINE 4	STN 11		33. 57.36	112. 49.41	2555.0	.092	979395.497	-21.909	-108.956
LINE 4	STN 12		33. 57.24	112. 49.42	2620.0	.099	979389.599	-21.526	-110.788
LINE 4	STN 13		33. 57.11	112. 49.42	2510.0	.105	979397.307	-23.984	-109.498
LINE 4	STN 14		33. 56.94	112. 49.42	2520.0	.112	979397.688	-22.426	-108.280
LINE 3	STN 23		33. 59.67	112. 49.62	2355.0	.146	979413.082	-26.352	-106.585
LINE 3	STN 24		33. 59.81	112. 49.72	2355.0	.147	979413.930	-25.699	-105.932
LINE 3	STN 25		33. 59.91	112. 49.85	2350.0	.146	979414.044	-26.194	-106.257
LINE 3	STN 26		34. 0.00	112. 49.92	2350.0	.143	979413.605	-26.758	-106.820
LINE 3	STN 27		34. .12	112. 50.05	2364.0	.142	979413.521	-25.693	-106.233
LINE 3	STN 28		34. .14	112. 50.25	2360.0	.139	979413.690	-25.928	-106.331
LINE 3	STN 29		34. .12	112. 50.44	2368.0	.135	979413.657	-25.181	-105.857
LINE 3	STN 30		34. .10	112. 50.65	2375.0	.133	979413.425	-24.726	-105.640
LINE 3	STN 31		34. .07	112. 50.85	2380.0	.130	979413.643	-23.997	-105.082
LINE 3	STN 32		34. .07	112. 51.04	2390.0	.126	979413.068	-23.631	-105.056
LINE 3	STN 33		34. .06	112. 51.23	2397.0	.122	979412.997	-23.030	-104.694
LINE 3	STN 34		34. .06	112. 51.45	2405.0	.120	979412.385	-22.889	-104.825
LINE 3	STN 35		34. .06	112. 51.63	2410.0	.116	979412.515	-22.289	-104.396
LINE 3	STN 36		34. .06	112. 51.82	2412.0	.111	979412.188	-22.428	-104.603
LINE 3	STN 37		34. .03	112. 51.99	2415.0	.105	979412.712	-21.580	-103.857
LINE 5	STN 00		33. 59.93	112. 51.91	2417.0	.101	979412.637	-21.327	-103.672

GRAVITY SURVEY DATA

MINING GEOPHYSICAL SURVEYS - 2400 EAST GRANT ROAD - TUCSON, ARIZONA 85719

WICKENBURG WEST AREA - MARICOPA COUNTY, ARIZONA - FOR PILLAR, LOWELL AND ASSOCIATES --- MGS 0730

STATION NUMBER	NORTH LATITUDE (DEG)(MIN)	WEST LONGITUDE (DEG)(MIN)	ELEV. (FT)	TIDE CORP (MGAL)	OBSERVED GRAVITY (MGAL)	FREE AIR ANOMALY (MGAL)	SIMPLE BOUGUER ANOMALY (MGAL)
LINE 5 STN 01	33. 59.75	112. 51.87	2445.0	.092	979410.228	-20.852	-104.151
LINE 5 STN 02	33. 59.62	112. 51.78	2460.0	.087	979408.503	-20.985	-104.795
LINE 5 STN 03	33. 59.49	112. 51.68	2455.0	.082	979409.026	-20.751	-104.391
LINE 5 STN 04	33. 59.35	112. 51.58	2440.0	.077	979410.732	-20.261	-103.390
LINE 5 STN 05	33. 59.22	112. 51.47	2445.0	.072	979410.271	-20.071	-103.370
LINE 5 STN 06	33. 59.14	112. 51.39	2425.0	.067	979410.962	-21.150	-103.768
LINE 5 STN 07	33. 58.96	112. 51.42	2480.0	.058	979406.559	-20.129	-104.620
LINE 5 STN 08	33. 58.87	112. 51.29	2480.0	.050	979405.685	-20.877	-105.369
LINE 5 STN 09	33. 58.74	112. 51.21	2435.0	.041	979408.361	-22.253	-105.211
LINE 5 STN 10	33. 58.64	112. 51.05	2465.0	.035	979404.588	-23.066	-107.046
LINE 5 STN 11	33. 58.49	112. 50.94	2503.0	.027	979401.240	-22.630	-107.906
LINE 5 STN 12	33. 58.44	112. 50.73	2465.0	.020	979404.076	-23.299	-107.280
LINE 5 STN 13	33. 58.30	112. 50.66	2505.0	.013	979400.720	-22.697	-108.040
LINE 5 STN 14	33. 58.21	112. 50.45	2490.0	.004	979400.689	-24.014	-108.846
LINE 5 STN 15	33. 58.05	112. 50.39	2465.0	-.001	979403.132	-23.700	-107.681
LINE 5 STN 16	33. 57.87	112. 50.33	2455.0	-.006	979402.652	-24.870	-108.509
LINE 5 STN 17	33. 57.77	112. 50.19	2545.0	-.010	979395.755	-23.162	-109.869
LINE 5 STN 18	33. 57.65	112. 49.97	2485.0	-.014	979399.834	-24.560	-109.222

----- DRIFT RATE = .016909 MGAL/HR -----

LINE 6 STN 00	33. 57.73	112. 47.26	2335.0	-.075	979400.038	-38.576	-118.128
LINE 6 STN 01	33. 57.91	112. 47.31	2320.0	-.069	979400.896	-39.380	-118.420
LINE 6 STN 02	33. 58.06	112. 47.31	2320.0	-.065	979400.869	-39.615	-118.656
LINE 6 STN 03	33. 58.23	112. 47.31	2315.0	-.060	979402.614	-38.577	-117.447
LINE 6 STN 04	33. 58.39	112. 47.33	2315.0	-.056	979404.595	-36.819	-115.690
LINE 6 STN 05	33. 58.58	112. 47.34	2275.0	-.047	979405.996	-39.445	-116.953
LINE 6 STN 06	33. 58.70	112. 47.35	2275.0	-.038	979409.091	-36.517	-114.024
LINE 6 STN 07	33. 58.88	112. 47.36	2255.0	-.030	979410.785	-36.955	-113.781
LINE 6 STN 08	33. 58.99	112. 47.37	2240.0	-.023	979411.316	-37.988	-114.303
LINE 6 STN 09	33. 59.10	112. 47.31	2227.0	-.015	979414.087	-36.593	-112.465
LINE 6 STN 10	33. 59.20	112. 47.37	2215.0	-.004	979415.536	-36.412	-111.875
LINE 6 STN 11	33. 59.23	112. 47.57	2240.0	.044	979416.985	-32.654	-108.969
LINE 6 STN 12	33. 59.39	112. 47.62	2235.0	.091	979418.031	-32.300	-108.445
LINE 6 STN 13	33. 59.53	112. 47.59	2300.0	.098	979413.501	-30.911	-109.270
LINE 6 STN 14	33. 59.68	112. 47.56	2340.0	.102	979410.384	-30.475	-110.197
LINE 6 STN 15	33. 59.84	112. 47.46	2360.0	.109	979407.993	-31.207	-111.610
LINE 6 STN 16	34. .04	112. 47.44	2320.0	.114	979410.301	-32.940	-111.980
LINE 6 STN 17	34. .19	112. 47.35	2320.0	.118	979410.261	-33.189	-112.229
LINE 6 STN 18	34. .34	112. 47.26	2315.0	.123	979411.496	-32.634	-111.504
LINE 6 STN 19	34. .44	112. 47.19	2338.0	.125	979409.610	-32.495	-112.149
LINE 6 STN 20	34. .58	112. 47.09	2350.0	.128	979408.559	-32.612	-112.675
LINE 6 STN 21	34. .70	112. 47.34	2365.0	.131	979408.277	-31.651	-112.224
LINE 6 STN 22	34. .87	112. 47.18	2318.0	.134	979410.757	-33.829	-112.801
LINE 6 STN 23	34. .93	112. 47.01	2295.0	.137	979411.585	-35.248	-113.437
LINE 6 STN 24	34. 1.06	112. 46.96	2225.0	.139	979417.124	-36.474	-112.278
LINE 6 STN 25	34. 1.16	112. 46.95	2230.0	.141	979417.134	-36.133	-112.107
LINE 6 STN 26	34. 1.32	112. 46.89	2250.0	.142	979416.478	-35.130	-111.786
LINE 6 STN 27	34. 1.46	112. 46.77	2276.0	.144	979414.336	-35.022	-112.563

GRAVITY SURVEY DATA

MINING GEOPHYSICAL SURVEYS - 2400 EAST GRANT ROAD - TUCSON, ARIZONA 85719

WICKENBURG WEST AREA - MARICOPA COUNTY, ARIZONA - FOR PILLAR, LOWELL AND ASSOCIATES --- MGS 0730

STATION NUMBER	NORTH LATITUDE (DEG)(MIN)	WEST LONGITUDE (DEG)(MIN)	ELEV. (FT)	TIDE CORR (MGAL)	OBSERVED GRAVITY (MGAL)	FREE AIR ANOMALY (MGAL)	SIMPLE BOUGUER ANOMALY (MGAL)
LINE 6 STN 28	34. 1.43	112. 46.54	2295.0	.146	979412.603	-34.927	-113.115
LINE 6 STN 29	34. 1.58	112. 46.48	2330.0	.149	979410.028	-34.417	-113.799
LINE 6 STN 30	34. 1.76	112. 46.43	2340.0	.151	979409.183	-34.573	-114.295
LINE 6 STN 31	34. 1.92	112. 46.42	2368.0	.152	979407.131	-34.215	-114.891
LINE 6 STN 32	34. 2.03	112. 46.29	2395.0	.153	979405.023	-33.936	-115.532
LINE 6 STN 33	34. 2.22	112. 46.15	2430.0	.153	979402.694	-33.238	-116.026
LINE 6 STN 34	34. 2.26	112. 46.08	2448.0	.153	979400.974	-33.320	-116.722
LINE 6 STN 35	34. 2.37	112. 45.90	2470.0	.153	979399.247	-33.131	-117.282
LINE 6 STN 36	34. 2.52	112. 45.82	2492.0	.153	979397.591	-32.927	-117.827
LINE 6 STN 37	34. 2.61	112. 45.66	2506.0	.152	979396.013	-33.313	-118.691
LINE 6 STN 38	34. 2.73	112. 45.52	2533.0	.151	979395.313	-31.641	-117.938
LINE 6 STN 39	34. 2.86	112. 45.38	2553.0	.149	979395.178	-30.077	-117.055
LINE 6 STN 40	34. 3.03	112. 45.31	2592.0	.147	979395.244	-26.579	-114.886
LINE 6 STN 41	34. 3.18	112. 45.31	2607.0	.146	979395.138	-25.483	-114.301
LINE 6 STN 42	34. 3.29	112. 45.23	2647.0	.144	979392.581	-24.431	-114.612
LINE 7 STN 00	33. 59.52	112. 49.06	2305.0	.126	979414.834	-29.094	-107.623
LINE 7 STN 01	33. 59.64	112. 49.17	2315.0	.109	979414.241	-28.914	-107.784
LINE 7 STN 02	33. 59.72	112. 49.32	2335.0	.105	979412.898	-28.487	-108.038
LINE 7 STN 03	33. 59.90	112. 49.37	2400.0	.099	979410.313	-25.209	-106.975
LINE 7 STN 04	34. .07	112. 49.31	2370.0	.095	979411.923	-26.657	-107.401
LINE 7 STN 05	34. .23	112. 49.42	2370.0	.078	979412.132	-26.671	-107.415
LINE 7 STN 06	34. .39	112. 49.40	2375.0	.072	979411.765	-26.791	-107.705
LINE 7 STN 07	34. .55	112. 49.40	2370.0	.067	979412.704	-26.545	-107.289
LINE 7 STN 08	34. .72	112. 49.40	2382.0	.061	979412.387	-25.970	-107.123
LINE 7 STN 09	34. .93	112. 49.40	2420.0	.052	979410.855	-25.914	-107.748
LINE 7 STN 10	34. .93	112. 49.55	2420.0	.039	979410.266	-24.809	-107.256
LINE 7 STN 11	34. .93	112. 49.60	2443.0	.035	979409.607	-23.305	-106.536
LINE 7 STN 12	34. .93	112. 49.67	2396.0	.030	979412.522	-24.810	-106.440
LINE 7 STN 13	34. .93	112. 49.78	2423.0	.025	979409.626	-25.167	-107.717
LINE 8 STN 00	33. 58.91	112. 46.27	2165.0	.005	979412.387	-43.860	-117.620
LINE 8 STN 01	33. 58.73	112. 46.27	2185.0	-.002	979410.339	-43.776	-118.217
LINE 8 STN 02	33. 58.56	112. 46.27	2200.0	-.006	979407.478	-44.990	-119.942
LINE 8 STN 03	33. 58.39	112. 46.27	2235.0	-.010	979406.071	-42.868	-119.012
LINE 8 STN 04	33. 58.23	112. 46.27	2240.0	-.017	979404.902	-43.344	-119.659
LINE 8 STN 05	33. 58.07	112. 46.27	2240.0	-.023	979406.169	-41.855	-118.170
LINE 8 STN 06	33. 57.90	112. 46.27	2240.0	-.027	979406.386	-41.401	-117.716
----- DRIFT RATE= -.022904 MGAL/HR -----							
LINE 04 STN 14	33. 56.93	112. 49.40	2520.0	.165	979397.691	-22.409	-108.263
LINE 04 STN 15	33. 56.78	112. 49.40	2483.0	.168	979401.101	-22.270	-106.864
LINE 04 STN 16	33. 56.62	112. 49.40	2540.0	.169	979397.650	-20.138	-106.673
LINE 04 STN 17	33. 56.50	112. 49.40	2585.0	.169	979393.731	-19.657	-107.726
LINE 04 STN 18	33. 56.32	112. 49.40	2540.0	.169	979397.714	-19.656	-106.192
LINE 04 STN 19	33. 56.17	112. 49.40	2585.0	.168	979394.117	-18.811	-106.880
LINE 04 STN 20	33. 56.00	112. 49.41	2700.0	.167	979386.615	-15.260	-107.246
LINE 04 STN 21	33. 55.87	112. 49.40	2620.0	.164	979391.800	-17.419	-106.680
LINE 04 STN 22	33. 55.70	112. 49.40	2568.0	.161	979395.803	-18.070	-105.560
LINE 09 STN 00	33. 55.01	112. 48.03	2558.0	.122	979392.324	-21.530	-108.679

GRAVITY SURVEY DATA

MINING GEOPHYSICAL SURVEYS - 2400 EAST GRANT ROAD - TUCSON, ARIZONA 85719

WICKENBURG WEST AREA - MARICOPA COUNTY, ARIZONA - FOR PILLAR, LOWELL AND ASSOCIATES --- MGS 0730

STATION NUMBER	NORTH LATITUDE (DEG)(MIN)	WEST LONGITUDE (DEG)(MIN)	ELEV. (FT)	TIDE CORR (MGAL)	OBSERVED GRAVITY (MGAL)	FREE AIR ANOMALY (MGAL)	SIMPLE BOUGUER ANOMALY (MGAL)	RHO 2.670 (MGAL)
LINE 09 STN 01	33. 55.10	112. 47.27	2546.0	.116	979392.293	-22.810	-109.550	
LINE 09 STN 02	33. 55.20	112. 47.71	2530.0	.111	979393.249	-23.503	-109.698	
LINE 09 STN 03	33. 55.27	112. 47.51	2517.0	.107	979393.563	-24.505	-110.257	
LINE 09 STN 04	33. 55.38	112. 47.39	2500.0	.102	979394.464	-25.361	-110.534	
LINE 09 STN 05	33. 55.54	112. 47.37	2488.0	.097	979395.336	-25.839	-110.604	
LINE 09 STN 06	33. 55.72	112. 47.37	2474.0	.094	979396.007	-26.735	-111.023	
LINE 09 STN 07	33. 55.89	112. 47.36	2464.0	.087	979396.724	-27.196	-111.142	
LINE 09 STN 08	33. 56.04	112. 47.27	2454.0	.083	979396.497	-28.572	-112.178	
LINE 09 STN 09	33. 56.19	112. 47.16	2443.0	.071	979397.372	-28.940	-112.171	
LINE 09 STN 10	33. 56.30	112. 47.01	2426.0	.066	979397.176	-30.889	-113.540	
LINE 09 STN 11	33. 56.45	112. 46.94	2404.0	.060	979398.585	-31.757	-113.660	
LINE 09 STN 12	33. 56.57	112. 46.81	2390.0	.055	979399.650	-32.176	-113.602	
LINE 09 STN 13	33. 56.71	112. 46.67	2368.0	.050	979400.262	-33.829	-114.505	
LINE 09 STN 14	33. 56.83	112. 46.53	2358.0	.041	979399.962	-35.237	-115.572	
LINE 09 STN 15	33. 56.95	112. 46.40	2360.0	.036	979397.931	-37.247	-117.650	
LINE 09 STN 16	33. 57.10	112. 46.31	2325.0	.031	979400.536	-38.142	-117.353	
LINE 09 STN 17	33. 57.27	112. 46.29	2325.0	.023	979402.743	-36.171	-115.382	
LINE 09 STN 18	33. 57.38	112. 46.28	2298.0	.017	979404.152	-37.456	-115.747	
LINE 09 STN 19	33. 57.50	112. 46.12	2283.0	.011	979402.271	-40.915	-118.694	
LINE 09 STN 20	33. 57.61	112. 45.97	2280.0	.007	979402.695	-40.925	-118.603	
LINE 09 STN 21	33. 57.74	112. 45.96	2252.0	.000	979404.373	-42.062	-118.786	
LINE 09 STN 22	33. 57.92	112. 45.83	2235.0	-.005	979405.108	-43.177	-119.321	
LINE 09 STN 23	33. 58.05	112. 45.74	2220.0	-.009	979405.115	-44.762	-120.395	
LINE 09 STN 24	33. 58.20	112. 45.63	2210.0	-.015	979406.218	-44.808	-120.101	
LINE 09 STN 25	33. 58.38	112. 45.63	2200.0	-.020	979406.666	-45.551	-120.503	
LINE 09 STN 26	33. 58.51	112. 45.52	2115.0	-.025	979411.093	-49.300	-121.357	
STN X-1	33. 58.18	112. 46.69	2282.0	-.035	979402.325	-41.901	-119.647	
LINE 09 STN 27	33. 58.61	112. 45.55	2130.0	-.044	979411.272	-47.849	-120.417	
LINE 09 STN 28	33. 58.72	112. 45.64	2130.0	-.060	979411.649	-47.626	-120.193	
LINE 09 STN 29	33. 58.89	112. 45.72	2155.0	-.065	979411.895	-45.265	-118.684	
LINE 09 STN 30	33. 59.06	112. 45.73	2185.0	-.071	979411.227	-43.348	-117.789	
LINE 09 STN 31	33. 59.26	112. 45.54	2244.0	-.086	979407.688	-41.615	-118.067	
LINE 09 STN 32	33. 59.35	112. 45.37	2163.0	-.088	979413.603	-43.445	-117.136	
LINE 09 STN 33	33. 59.48	112. 45.17	2130.0	-.089	979417.273	-43.060	-115.627	
LINE 09 STN 34	33. 59.48	112. 44.89	2118.0	-.091	979418.065	-43.396	-115.555	
----- DRIFT RATE = .033297 MGAL/HR -----								
B.M. 2289 BASE	33. 57.70	112. 46.27	2289.0	-.083	979402.845	-40.054	-118.039	
LINE 10 STN 00	33. 57.43	112. 48.37	2400.0	-.071	979403.370	-28.713	-110.479	
LINE 10 STN 01	33. 57.26	112. 48.38	2408.0	-.060	979402.915	-28.179	-110.218	
LINE 10 STN 02	33. 57.09	112. 48.37	2404.0	-.054	979404.212	-27.022	-108.924	
LINE 10 STN 03	33. 56.92	112. 48.37	2420.0	-.047	979402.874	-26.618	-109.065	
LINE 10 STN 04	33. 56.75	112. 48.37	2440.0	-.041	979401.486	-25.888	-109.017	
LINE 10 STN 05	33. 56.62	112. 48.37	2433.0	-.034	979401.827	-26.025	-108.915	
LINE 10 STN 06	33. 56.50	112. 48.37	2460.0	-.024	979399.782	-25.363	-109.173	
LINE 10 STN 07	33. 56.34	112. 48.37	2460.0	-.009	979399.442	-25.481	-109.291	
LINE 10 STN 08	33. 56.15	112. 48.36	2476.0	.002	979398.372	-24.781	-109.136	
LINE 10 STN 09	33. 55.98	112. 48.36	2488.0	.012	979397.316	-24.472	-109.236	

GRAVITY SURVEY DATA

MINING GEOPHYSICAL SURVEYS - 2400 EAST GRANT ROAD - TUCSON, ARIZONA 85719

WICKENBURG WEST AREA - MARICOPA COUNTY, ARIZONA - FOR PILLAR, LOWELL AND ASSOCIATES --- MGS 0730

STATION NUMBER	NORTH LATITUDE (DEG)(MIN)	WEST LONGITUDE (DEG)(MIN)	ELEV. (FT)	TIDE CORP (MGAL)	OBSERVED GRAVITY (MGAL)	FREE AIR ANOMALY (MGAL)	SIMPLE BOUGUER ANOMALY RHO 2.670 (MGAL)
LINE 10 STN 10	33. 55.82	112. 48.35	2500.0	.022	979396.540	-23.896	-109.069
LINE 10 STN 11	33. 55.63	112. 48.37	2520.0	.037	979395.476	-22.615	-108.669
LINE 10 STN 12	33. 57.50	112. 48.37	2398.0	.119	979402.226	-30.281	-111.979
LINE 10 STN 13	33. 57.77	112. 48.37	2398.0	.128	979401.166	-31.578	-113.276
LINE 10 STN 14	33. 57.91	112. 48.37	2395.0	.135	979401.597	-31.625	-113.220
STN X-2	33. 56.81	112. 47.87	2428.0	.164	979396.899	-31.687	-114.407
LINE 06 STN 43	33. 56.04	112. 47.27	2454.0	.173	979396.751	-28.318	-111.924
LINE 06 STN 44	33. 56.23	112. 47.33	2437.0	.177	979397.334	-29.599	-112.626
LINE 06 STN 45	33. 56.42	112. 47.38	2430.0	.179	979395.659	-32.196	-114.985
LINE 06 STN 46	33. 56.50	112. 47.33	2450.0	.179	979392.946	-33.140	-116.609
LINE 06 STN 47	33. 56.71	112. 47.33	2397.0	.177	979395.844	-35.519	-117.183
LINE 06 STN 48	33. 56.88	112. 47.33	2380.0	.175	979395.806	-37.392	-118.477
LINE 06 STN 49	33. 57.03	112. 47.33	2362.0	.173	979397.368	-37.733	-118.204
LINE 06 STN 50	33. 57.12	112. 47.33	2373.0	.169	979396.610	-37.581	-118.428
LINE 06 STN 51	33. 57.24	112. 47.33	2340.0	.165	979398.623	-38.839	-118.561
LINE 06 STN 52	33. 57.38	112. 47.33	2331.0	.154	979399.305	-39.198	-118.613
LINE 06 STN 53	33. 57.54	112. 47.33	2328.0	.144	979399.868	-39.140	-118.453
LINE 06 STN 00	33. 57.74	112. 47.27	2325.0	.137	979399.863	-39.706	-118.917
LINE 05 STN 18	33. 57.65	112. 49.97	2486.0	.107	979399.593	-24.702	-109.398
LINE 05 STN 17	33. 57.79	112. 50.19	2545.0	.101	979395.533	-23.412	-110.118
LINE 05 STN 16	33. 57.89	112. 50.32	2455.0	.095	979402.432	-25.118	-108.757
LINE 05 STN 15	33. 58.07	112. 50.37	2465.0	.090	979403.015	-23.844	-107.825
LINE 05 STN 14	33. 58.22	112. 50.45	2490.0	.084	979400.555	-24.162	-108.994
LINE 05 STN 13	33. 58.28	112. 50.62	2507.0	.078	979399.245	-23.956	-109.368
LINE 05 STN 12	33. 58.45	112. 50.71	2465.0	.073	979403.910	-23.479	-107.459
LINE 05 STN 11	33. 58.50	112. 50.94	2503.0	.066	979401.119	-22.765	-108.040
LINE 05 STN 10	33. 58.63	112. 51.04	2465.0	.061	979404.495	-23.144	-107.125
LINE 05 STN 09	33. 58.74	112. 51.17	2435.0	.056	979408.236	-22.378	-105.336
LINE 05 STN 08	33. 58.87	112. 51.28	2482.0	.050	979405.583	-20.791	-105.351
LINE 05 STN 07	33. 58.97	112. 51.42	2480.0	.043	979406.513	-20.189	-104.681
LINE 08 STN 00	33. 58.93	112. 46.29	2168.0	.017	979412.424	-43.569	-117.431
LINE 08 STN 07	33. 59.12	112. 46.29	2200.0	.009	979411.268	-41.979	-116.932
LINE 08 STN 08	33. 59.28	112. 46.29	2238.0	-.003	979410.145	-39.751	-115.998
LINE 08 STN 09	33. 59.45	112. 46.29	2260.0	-.008	979409.447	-38.617	-115.613
LINE 08 STN 10	33. 59.62	112. 46.29	2240.0	-.014	979411.581	-38.601	-114.916
LINE 08 STN 11	33. 59.78	112. 46.29	2245.0	-.020	979411.439	-38.495	-114.980
LINE 08 STN 12	33. 59.98	112. 46.29	2260.0	-.026	979411.505	-37.297	-114.293
LINE 08 STN 13	34. .18	112. 49.28	2303.0	-.038	979409.417	-35.618	-114.079
LINE 08 STN 14	34. .23	112. 46.34	2303.0	-.045	979409.350	-35.755	-114.217
STN X-3	33. 59.32	112. 46.83	2240.0	-.054	979411.747	-38.017	-114.332
----- DRIFT RATE = -.020655 MGAL/HR -----							
LINE 10 STN 14	33. 57.90	112. 48.37	2397.0	-.024	979401.760	-31.259	-112.923
LINE 10 STN 15	33. 58.10	112. 48.37	2373.0	-.015	979403.482	-32.073	-112.919
LINE 10 STN 16	33. 58.24	112. 48.37	2390.0	-.005	979402.916	-31.235	-112.661
LINE 10 STN 17	33. 58.41	112. 48.37	2363.0	.012	979404.886	-32.041	-112.547
LINE 10 STN 18	33. 58.56	112. 48.37	2455.0	.024	979399.374	-29.109	-112.748
LINE 10 STN 19	33. 58.66	112. 48.37	2363.0	.034	979406.668	-30.607	-111.112

GRAVITY SURVEY DATA

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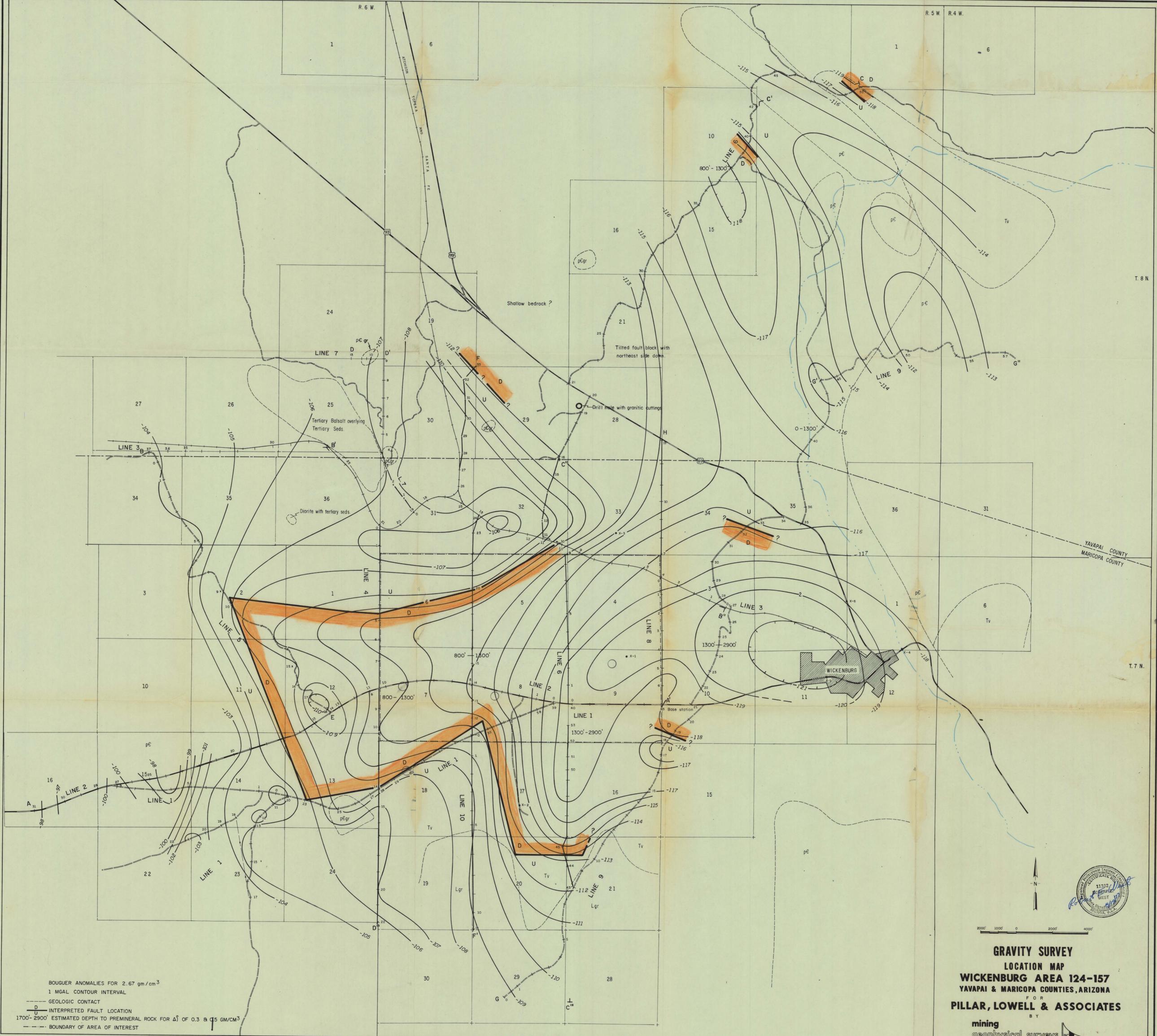
STATION NUMBER		NORTH LATITUDE (DEG)(MIN)	WEST LONGITUDE (DEG)(MIN)	ELEV. (FT)	TIDE CORP (MGAL)	OBSERVED GRAVITY (MGAL)	FREE AIR ANOMALY (MGAL)	SIMPLE BOUGUER ANOMALY RHO 2.670 (MGAL)
LINE 10	STN 20	33. 58.70	112. 48.37	2375.0	.045	979408.356	-27.846	-108.760
LINE 10	STN 21	33. 58.97	112. 48.37	2300.0	.059	979414.402	-29.231	-107.590
LINE 10	STN 22	33. 59.11	112. 48.37	2293.0	.069	979415.880	-28.606	-106.726
LINE 10	STN 23	33. 59.31	112. 48.37	2270.0	.081	979417.672	-29.256	-106.593
LINE 10	STN 24	33. 59.49	112. 48.35	2280.0	.099	979416.639	-29.599	-107.276
LINE 10	STN 25	33. 59.54	112. 48.50	2289.0	.109	979414.921	-30.540	-108.524
LINE 10	STN 26	33. 59.73	112. 48.53	2295.0	.140	979414.391	-30.770	-108.959
LINE 10	STN 27	33. 59.89	112. 48.52	2307.0	.145	979414.549	-29.706	-108.304
LINE 10	STN 28	34. .05	112. 48.52	2325.0	.147	979413.495	-29.290	-108.501
LINE 10	STN 29	34. .22	112. 48.52	2337.0	.156	979413.388	-28.506	-108.125
LINE 10	STN 30	34. .37	112. 48.48	2350.0	.161	979412.049	-28.830	-108.893
LINE 10	STN 31	34. .56	112. 48.50	2363.0	.166	979410.613	-29.309	-109.814
LINE 10	STN 32	34. .73	112. 48.52	2377.0	.170	979408.774	-30.068	-111.050
LINE 10	STN 33	34. .86	112. 48.37	2418.0	.173	979404.945	-30.220	-112.600
STN X-4		33. 58.24	112. 43.54	2037.0	.178	979418.505	-48.849	-118.248
STN X-5		33. 57.99	112. 44.41	2090.0	.174	979411.905	-50.116	-121.321
STN X-6		33. 58.68	112. 44.17	2074.0	.171	979416.250	-48.236	-118.896
LINE 09	STN 34	33. 59.48	112. 44.89	2118.0	.167	979418.084	-43.378	-115.536
LINE 09	STN 35	33. 59.42	112. 44.68	2090.0	.164	979419.132	-44.879	-116.084
LINE 09	STN 36	33. 59.58	112. 44.65	2085.0	.155	979420.196	-44.509	-115.543
LINE 09	STN 37	33. 59.74	112. 44.68	2095.0	.151	979419.972	-44.015	-115.390
LINE 09	STN 38	33. 59.91	112. 44.73	2103.0	.148	979419.557	-43.914	-115.562
LINE 09	STN 39	34. .06	112. 44.70	2100.0	.141	979419.779	-44.184	-115.729
LINE 09	STN 40	34. .21	112. 44.57	2095.0	.135	979419.379	-45.263	-116.638
LINE 09	STN 41	34. .33	112. 44.46	2098.0	.130	979419.836	-44.691	-116.168
LINE 09	STN 42	34. .46	112. 44.39	2110.0	.126	979419.975	-43.604	-115.490
LINE 09	STN 43	34. .63	112. 44.42	2117.0	.120	979421.156	-42.001	-114.126
LINE 09	STN 44	34. .76	112. 44.50	2117.0	.115	979421.262	-42.077	-114.201
LINE 09	STN 45	34. .80	112. 44.31	2135.0	.105	979419.214	-42.487	-115.225
LINE 09	STN 46	34. .86	112. 44.13	2165.0	.099	979418.168	-40.795	-114.554
LINE 09	STN 47	34. .96	112. 43.97	2210.0	.092	979416.480	-38.390	-113.683
LINE 09	STN 48	34. .97	112. 43.80	2260.0	.070	979413.809	-36.372	-113.368
LINE 09	STN 49	34. .97	112. 43.66	2320.0	.064	979410.412	-34.125	-113.166
LINE 09	STN 50	34. 1.04	112. 43.52	2355.0	.059	979410.597	-30.745	-110.978
LINE 09	STN 51	34. 1.06	112. 43.35	2375.0	.053	979409.143	-30.346	-111.260
LINE 09	STN 52	34. 1.06	112. 43.17	2408.0	.046	979406.725	-29.660	-111.698
LINE 09	STN 53	34. 1.08	112. 43.03	2403.0	.041	979407.369	-29.514	-111.382
LINE 09	STN 54	34. .99	112. 42.97	2393.0	.036	979407.694	-30.004	-111.531
LINE 09	STN 55	34. .97	112. 42.78	2430.0	.030	979404.496	-29.694	-112.482
LINE 09	STN 56	34. 1.02	112. 42.59	2453.0	.023	979402.361	-29.735	-113.307
LINE 06	STN 57	34. 1.02	112. 42.43	2473.0	.017	979401.367	-28.849	-113.102
LINE 06	STN 42	34. 3.29	112. 45.23	2647.0	-.007	979392.723	-24.289	-114.470
LINE 06	STN 43	34. 3.47	112. 45.28	2670.0	-.016	979391.744	-23.356	-114.320
LINE 06	STN 44	34. 3.54	112. 45.25	2690.0	-.020	979390.075	-23.239	-114.885
LINE 06	STN 45	34. 3.62	112. 45.03	2590.0	-.026	979395.132	-27.701	-115.940
LINE 06	STN 46	34. 3.59	112. 44.79	2472.0	-.030	979401.167	-32.723	-116.942
LINE 06	STN 47	34. 3.53	112. 44.63	2468.0	-.036	979401.550	-32.633	-116.715
LINE 06	STN 48	34. 3.46	112. 44.44	2432.0	-.040	979403.898	-33.574	-116.430

GRAVITY SURVEY DATA

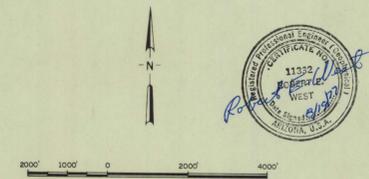
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STATION NUMBER	NORTH LATITUDE (DEG)(MIN)	WEST LONGITUDE (DEG)(MIN)	ELEV. (FT)	TIDE CORP (MGAL)	OBSERVED GRAVITY (MGAL)	FREE AIR ANOMALY (MGAL)	SIMPLE BOUGUER ANOMALY RHO (MGAL)
LINE 06 STN 49	34. 3.42	112. 44.23	2443.0	-.044	979402.360	-34.021	2.670 -117.253
LINE 06 STN 50	34. 3.50	112. 44.07	2430.0	-.048	979401.224	-36.492	-119.280



BOUGUER ANOMALIES FOR 2.67 gm/cm³
 1 MGAL CONTOUR INTERVAL
 ----- GEOLOGIC CONTACT
 ——— INTERPRETED FAULT LOCATION
 1700'-2900' ESTIMATED DEPTH TO PREMINERAL ROCK FOR $\Delta\sigma$ OF 0.3 B/GM/CM³
 - - - - - BOUNDARY OF AREA OF INTEREST



GRAVITY SURVEY
LOCATION MAP
WICKENBURG AREA 124-157
YAVAPAI & MARICOPA COUNTIES, ARIZONA
 FOR
PILLAR, LOWELL & ASSOCIATES
 BY
 mining
 geophysical surveys





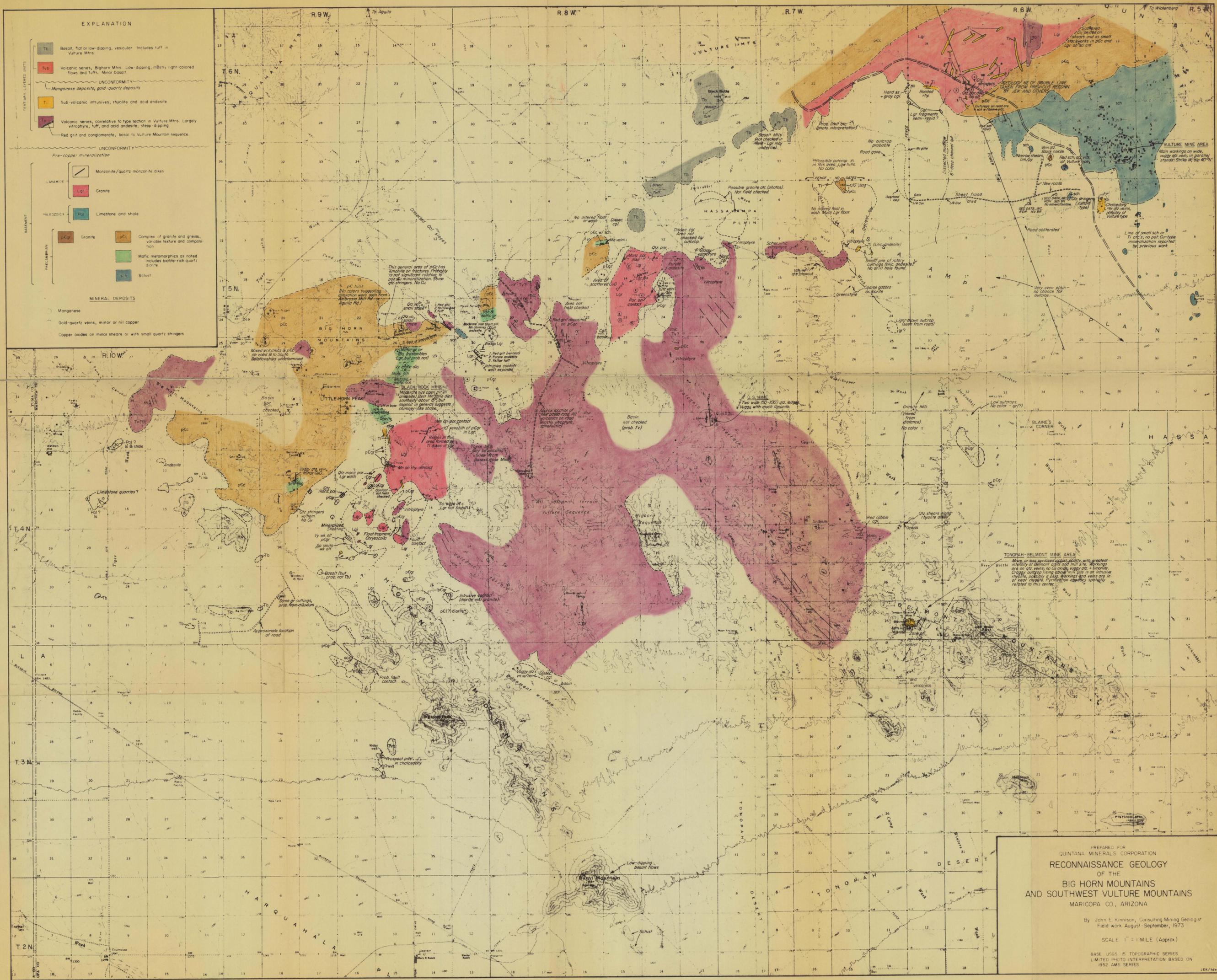
SAMPLE No. ○ $\frac{Cu}{Mo}$ ppm

Cu ppm

- < 100
- 100-500
- 500-1000
- > 1000

CEMETERY WASH AREA,
VULTURE MOUNTAINS

Lgt - GEOCHEM. STUDY
1" = 500'



EXPLANATION

- TERTIARY LAYERED UNITS**
- Td Basalt, flat or low-dipping, vesicular. Includes tuff in Vulture Mtns.
 - Tvb Volcanic series, Big Horn Mtns. Low dipping, mostly light-colored flows and tuffs. Minor basalt.
- UNCONFORMITY**
- Manganese deposits, gold-quartz deposits
 - Sub-volcanic intrusives, rhyolite and acid andesite
 - Volcanic series, correlative to type section in Vulture Mtns. Largely vitrophyre, tuff, and acid andesite, steep dipping. Red grit and conglomerate, basal to Vulture Mountain sequence.
- UNCONFORMITY**
- Pre-copper mineralization
- Monzonite/quartz monzonite dikes
- LARAMIDE**
- Lgr Granite
- PALEOZOIC**
- Pls Limestone and shale
- PRECAMBRIAN**
- pGr Granite
 - pCc Complex of granite and gneiss, variable texture and composition
 - Mafic metamorphics as noted includes biotite-rich quartz diorite
 - sch Schist
- MINERAL DEPOSITS**
- Manganese
 - Gold-quartz veins, minor or nil copper
 - Copper oxides on minor shears or with small quartz stringers

PREPARED FOR
 QUINTANA MINERALS CORPORATION
RECONNAISSANCE GEOLOGY
 OF THE
BIG HORN MOUNTAINS
AND SOUTHWEST VULTURE MOUNTAINS
 MARICOPA CO., ARIZONA

By John E. Kinnison, Consulting Mining Geologist
 Field work August-September, 1973

SCALE 1" = 1 MILE (Approx)

BASE 1968 U.S. TOPOGRAPHIC SERIES
 LIMITED PHOTO INTERPRETATION BASED ON
 1952 AMS SERIES

JEK/MS