

Geologic Mapping

Field mapping and prospect examinations were conducted in areas where previous work appeared to be inadequate and/or incorrect. Recent, good quality mapping by KEI-GRD in the Hickiwan (Welsh-1974), Growler (Jones-1974), and Ajo (Jones-1974) areas greatly reduced the field work required for comprehensive evaluation of the Target Area.

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Gunsight district. Mineralization in the Gunsight district was examined in detail and the northern portion of the district was remapped at a reconnaissance scale. Results of this work are detailed elsewhere (Allan-1975), the most significant being the mapping of a Laramide(?) porphyry dike swarm and associated copper mineralization in the southwestern portion of the mapped area. In addition, it was concluded that the Gunsight stock and associated silver and copper-bearing quartz-barite-fluorite veins are of mid-Tertiary age and have little or no relation to porphyry copper type mineralization. Also the Laramide age previously assigned to the gneisses in the southern part of the district (Wilson-1960) is questionable. It is concluded here they should be considered Precambrian until stratigraphically or radiometrically determined otherwise.

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West Cardigan (Copper Canyon) Area. Previously unreported (BCMC/KCC files) copper occurrences in Copper Canyon four miles west-southwest of Ajo were examined and are considered to be of little or no exploration significance (Swan-1975).

Structural Interpretation

The only known, significant mineral deposits in the Target Area, the Ajo and Gunsight districts, are located on major, pre-Laramide west-northwest fracture zones (Plates 1 and 4) which appear to have strongly influenced the emplacement of intrusions and mineralization. Both districts occur on or near intersections of the west-northwest zones with major fracture zones of north-south to north-northeast trend and undetermined age.

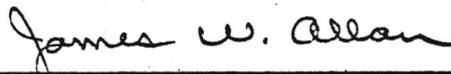
In the Ajo district, the reactivated Little Ajo Mts fault and the southern contact of the Cornelia stock are interpreted as major, pre-Laramide (Precambrian?) transcurrent fault zones along which the stock was emplaced (Plate 4). The andesite porphyry and hornblende andesite dike swarms northwest of the New Cornelia pit and the aplite dikes farther west occupy fractures compatible with 2nd order or Riedel shear direction related to 1st order left lateral shear stress along west-northwest, transcurrent faults.

In the Gunsight district, evidence for large scale, west-northwest faulting is more indirect. In the region east of the southern part of the district, west-northwest dikes up to two miles in length may represent elements of a poorly exposed, major fracture zone cutting through the northern part of the Gunsight district. The Laramide(?) Burro Burro and Stonehouse dike swarms, dominantly andesite and hornblende andesite porphyries, may be analogous to those at Ajo and if so, may be related to a covered Laramide intrusion and porphyry copper deposit to the west.

Conclusions and Recommendations

Results of structural interpretation indicate two preferred areas for exploration: (1) the Why Area representing about 25 square miles south of the village of Why and (2) the Ajo Valley area, about 16 square miles, east of Ajo (Plate 4). Other equally favorable areas like those along the major, west-northwest fracture zones west of Ajo and east of Gunsight are on lands which are not presently available for exploration.

It is recommended that (1) land status within the areas be determined, (2) gravity and aeromagnetic data be reviewed to reach an estimate of gravel cover thickness, and (3) if feasible, conduct IP surveys over the recommended areas.


James W. Allan

Gunsight Target Area
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No Author

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GUNSIGHT (MEYER) MINING DISTRICT
PAPAGO INDIAN RESERVATION
PIMA COUNTY, ARIZONA

by

James W. Allan
February 1976

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GUNSIGHT (MEYER) MINING DISTRICT
PAPAGO INDIAN RESERVATION
PIMA COUNTY, ARIZONA

INTRODUCTION

Location and Land Status

The Gunsight or Meyer mining district comprises an ill-defined area of about 100 square miles in western Pima County, Arizona (Figure 1). The southwestern portion (Copper Mtn area) of the district lies within the Saguaro National Monument; the northern and eastern portion (Gunsight area) of the district with which this report is concerned is on the Papago Indian Reservation immediately east of the Reservation's western boundary.

In the portion of the district on the Papago Indian Reservation a total of 14 patented claims (Figure 2 and Plate 1) surrounded by 78 valid (pre-1955) unpatented claims are currently held by the Gunsight Mining Corp. (Tognoni-1964). Any other land in the district unclaimed prior to 1955 is totally owned by the Papago Indian Tribe. Several valid unpatented claims may exist in the Rockhouse group (Horlocker-1970) two miles south of the patented claim group; however, this was not verified.

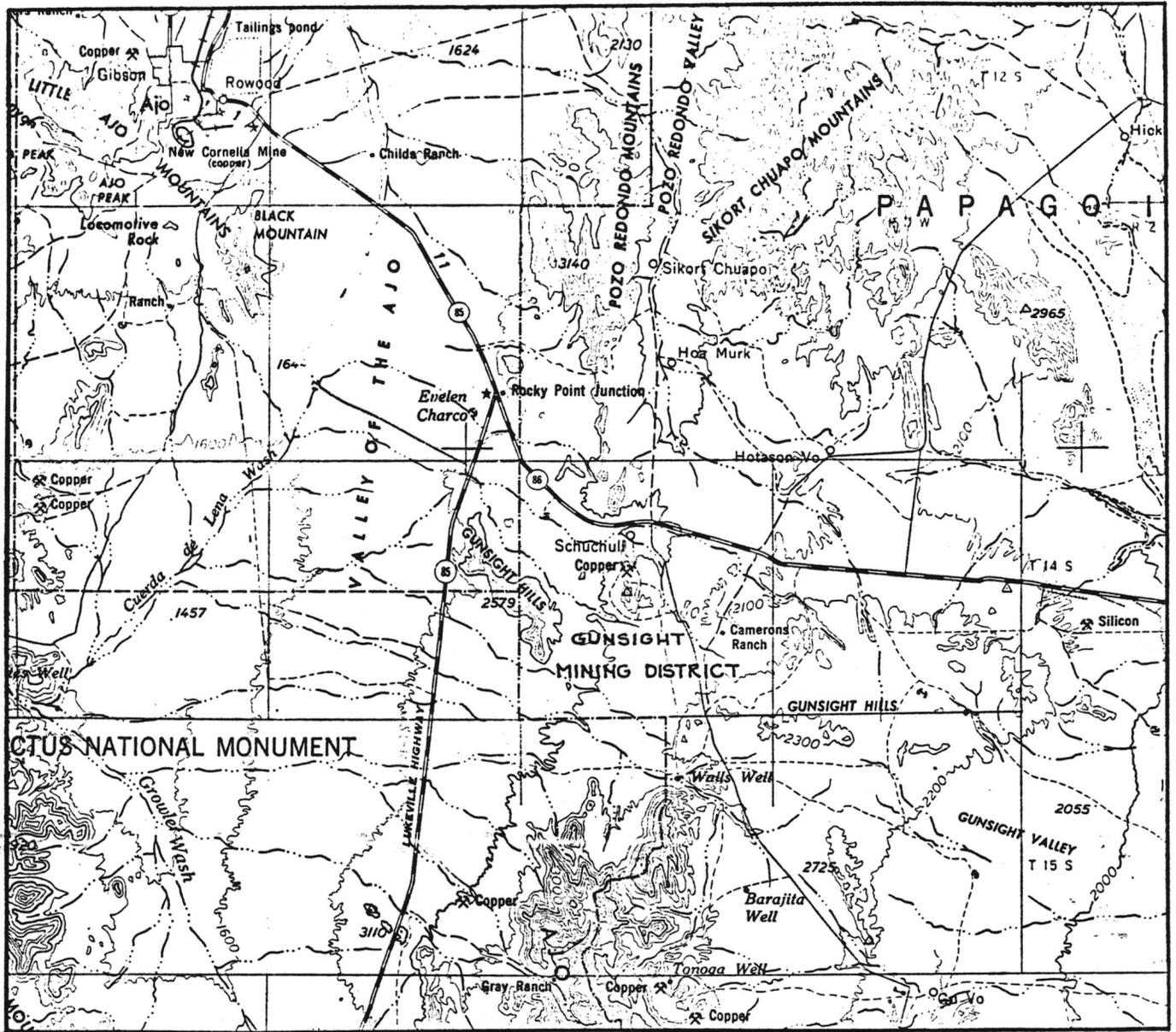
District Metal Production

The Gunsight Mine was a minor producer of silver between 1878 and 1896 with an estimated total production of \$100,000 (Elsing-1936). A more recent estimate of the district's total production is \$176,000 which includes 100,600 oz. of silver, 400 oz. of gold, 780 tons of lead, and very minor copper, zinc, and tungsten (Keith-1974).

Some of the copper production probably is from the Burro Burro Mine area where some near surface stoping along veins is evident. Ruins of very old stone residences and a mill or sorting house mark the site of Burro Burro which is shown on a map of Pima County bearing the date 1878.

Purpose and Scope of Examination

This examination of the Gunsight district was prompted by the observation of an east-northeast trending Laramide (?) dike swarm at Burro Burro during the structural evaluation of the Ajo AMS quadrangle. About four days were spent examining mines and prospects and briefly recording the traversed bedrock geology in the course of the mineral examinations with the purpose of evaluating the district's porphyry copper potential as initially suggested by the dike swarm. All previous



SCALE 1:125,000

AJO AMS sheet

LOCATION MAP
 GUNSIGHT MINING DISTRICT
 PIMA COUNTY, ARIZONA

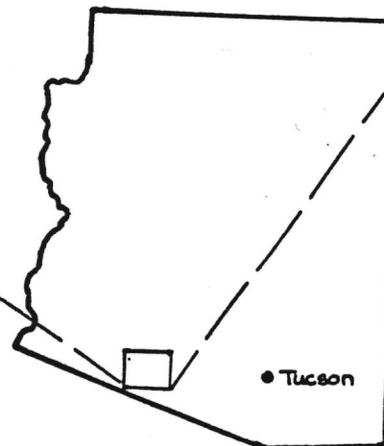


FIGURE 1

Bear Creek/Kennecott data and other available information on the district was closely reviewed; all geologic and geophysical data are indexed on Figure 3 overlays and listed under "References."

SUMMARY AND CONCLUSIONS

Summary of Geology and Mineralization

The exposed portion of the area under consideration is an irregular three by six mile window of granitic and gneissic rocks surrounded by late Tertiary-Quaternary volcanic rocks and gravels. The crystalline rocks, dominantly in the quartz monzonite to granodiorite composition range and probably older Precambrian in age, are intruded in the north by a small, mid-Tertiary (?) composite stock of leucocratic quartz monzonite and aplite. To the south of the stock the granitic/gneissic rocks are intruded by a swarm of Laramide (?) porphyry dikes which range in composition from quartz monzonite to hornblende diorite.

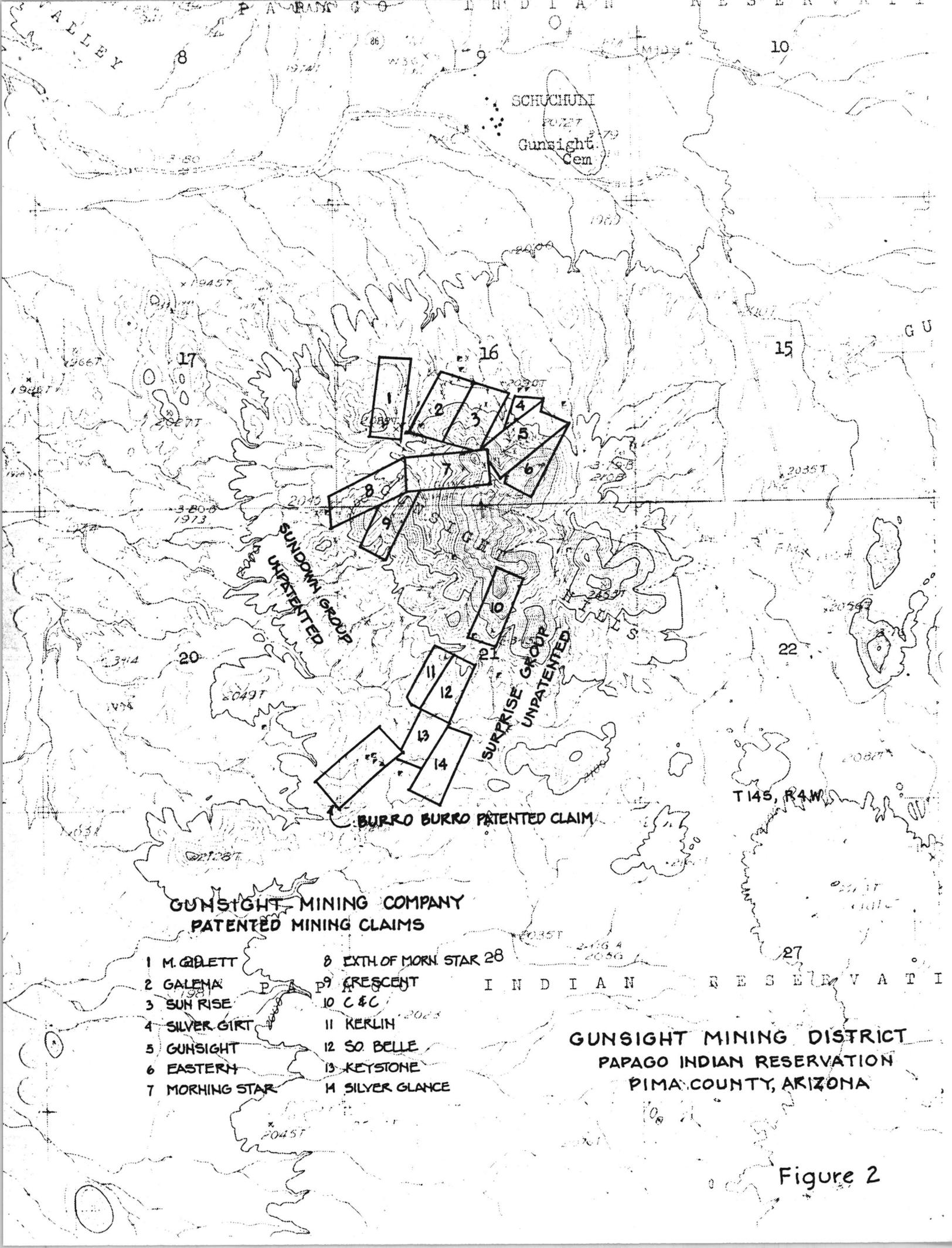
Major structural features of the district are interpreted as a strong west-northwest zone of pre-Laramide transcurrent faults intersected by a north-south zone of Tertiary faulting and intrusion. The mid-Tertiary Gunsight stock is emplaced in the intersection of these major fault zones.

Mineralization in the district is of two distinct types and ages. Classic epithermal quartz-barite-fluorite veins occur within and peripheral to the mid-Tertiary stock to which they very probably are genetically related. The lead and silver bearing portions of these veins account for the bulk of the Gunsight district's modest production. South of the stock, quartz-chalcopyrite veins of markedly different nature are closely associated spatially with the Laramide (?) porphyry dikes. These veins have been seriously prospected in places but their production appears to have been insignificant.

Conclusions and Recommendations

None of the mined and prospected veins of the Gunsight district appears to have any potential as significant future producers of base or precious metals. No mineralization or alteration of the type and pervasiveness normally associated with porphyry copper deposits was noted within the mapped area and nothing seen in the exposed bedrock suggests the cover immediately surrounding the window may obscure a nearby porphyry copper deposit.

It is interpreted that major west-northwest faulting and Laramide porphyry dike swarms and copper-bearing veins in the district are elements of a structural framework very similar to that at Ajo. In a previous report (Allan-1975) an Induced



**GUNSLIGHT MINING COMPANY
PATENTED MINING CLAIMS**

- | | |
|----------------|--------------------------|
| 1 M. GIBLET | 8 EXTH. OF MORN. STAR 28 |
| 2 GALENA | 9 CRESCENT |
| 3 SUN RISE | 10 C & C |
| 4 SILVER GIRL | 11 KERLIN |
| 5 GUNSLIGHT | 12 SO BELLE |
| 6 EASTERN | 13 KEYSTONE |
| 7 MORNING STAR | 14 SILVER GLANCE |

**GUNSLIGHT MINING DISTRICT
PAPAGO INDIAN RESERVATION
PIMA COUNTY, ARIZONA**

Figure 2

Polarization survey was recommended for the volcanic/gravel covered area along the projection of the west-northwest fault zone immediately west of the Papago Indian Reservation's western boundary.

The Gunsight mining district as described in this report should be considered of no further interest at this time.

GEOLOGY

Areal Geology

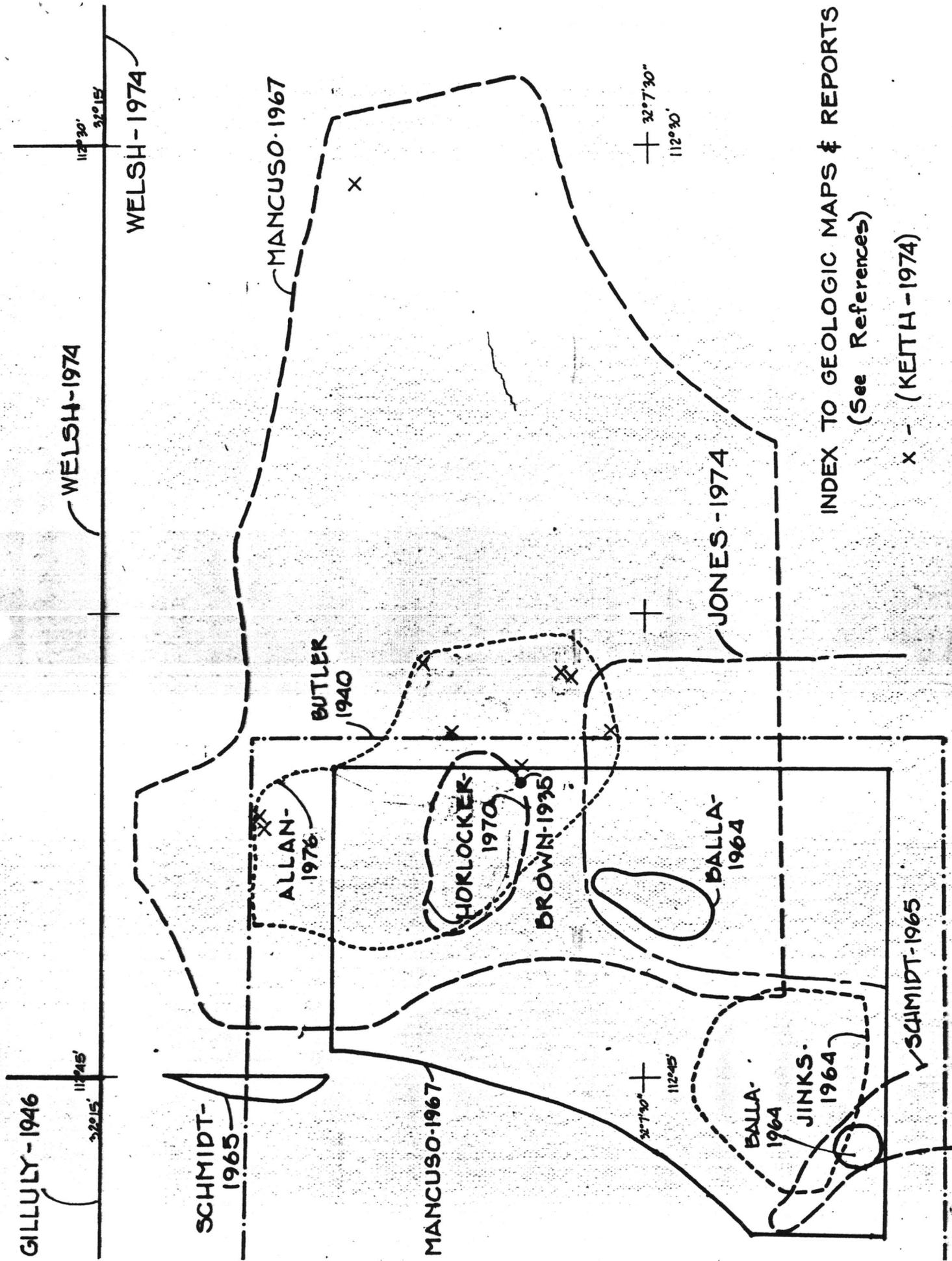
In the Gunsight mining district, rocks old enough to host Laramide and mid-Tertiary mineralization are exposed as a group of irregular, different sized windows surrounded by late Tertiary volcanic rocks and gravels for more than ten miles in all directions (Figure 3). The windows occupy a broad, low pass across a north trending mountain range comprised mainly of late Tertiary to Quaternary volcanic rocks.

Exposed bedrock in the windows is comprised mainly of gneissic to locally schistose granitic rocks which are cut by numerous aplite and pegmatite dikes and lenses. On the Arizona State Geologic Map these rocks are shown as Laramide, an age assignment which seems questionable; forty miles to the northeast in the Vekol-Table Mtn area, similar rocks are depositionally overlain by late Precambrian Apache group strata.

Rocks

Precambrian (?) Granitic/Gneissic Basement. Within the area of the Gunsight mines and southeastward (Plate 1), the older crystalline rocks consist mainly of medium to coarse grained, holocrystalline granodiorites and/or quartz diorites (hand lens). In the northwestern two-thirds of the mapped area these crystalline rocks generally are medium grained and decidedly gneissic; in the southeastern area, the rocks are consistently coarser grained with only very weak gneissic texture if any. The southeastern exposures are laced by hundreds of narrow, east-west to west-northwest trending aplite dikes, most of which are too small to show at the map scale. These latter, less gneissic rocks commonly exhibit different degrees of pervasive cataclastic deformation of feldspar and quartz phenocrysts.

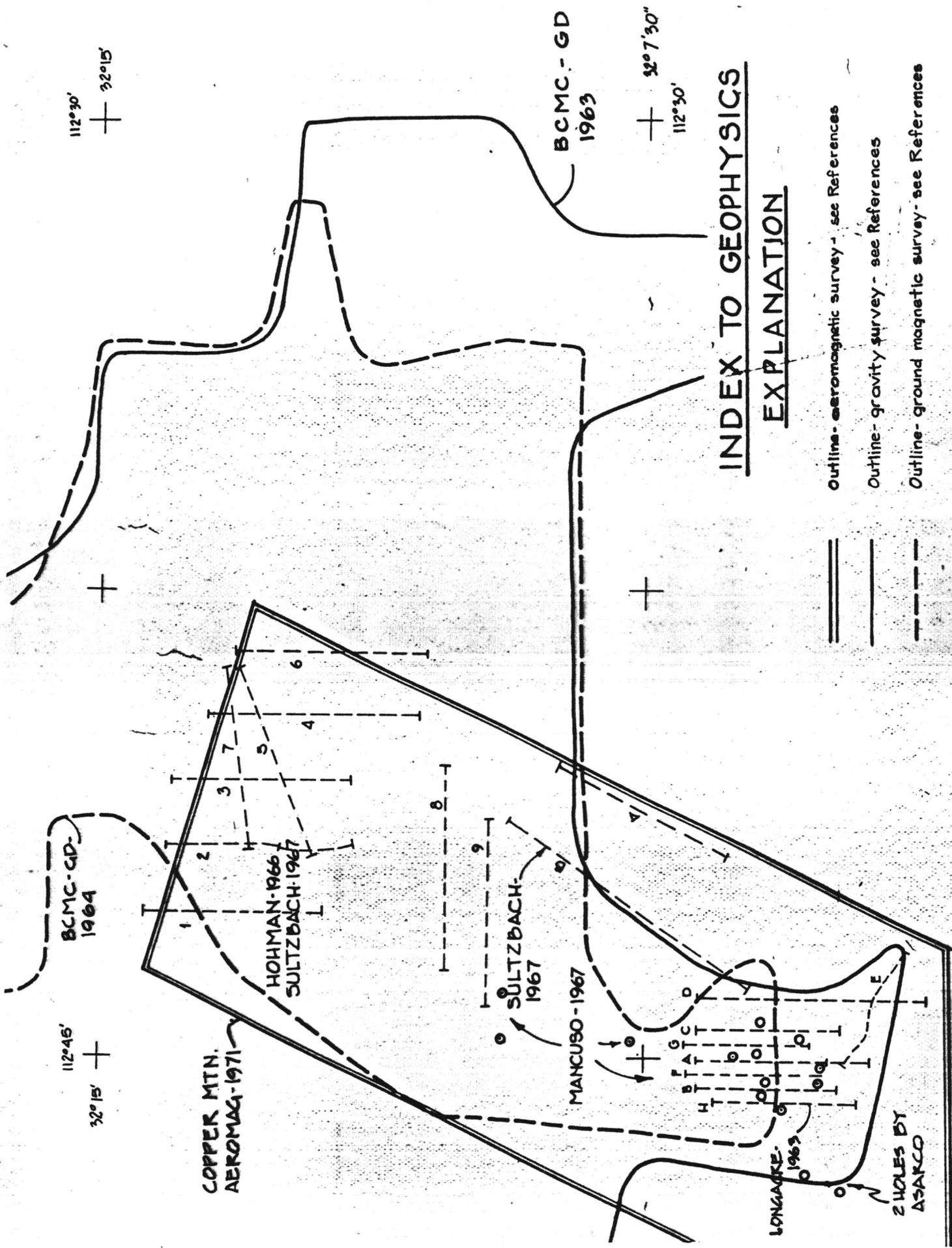
Two K-Ar age dates of the gneissic/granitic rocks done in conjunction with a University of Arizona masters thesis (Jones-1974 and Damon, P.E.-personal communication) are shown on Plate 1. One located at lat 32°10' long 112°40' yielded 46 m.y.; the other at lat 32°08' long 112°38' yielded 39 m.y. These ages appear highly questionable. On the basis of similarities to stratigraphically



INDEX TO GEOLOGIC MAPS & REPORTS
(See References)

X - (KEITH - 1974)

FIGURE 3



INDEX TO GEOPHYSICS

EXPLANATION

- Outline - aeromagnetic survey - see References
- Outline - gravity survey - see References
- Outline - ground magnetic survey - see References
- IP lines (pre-VIP) - see References

FIGURE 3

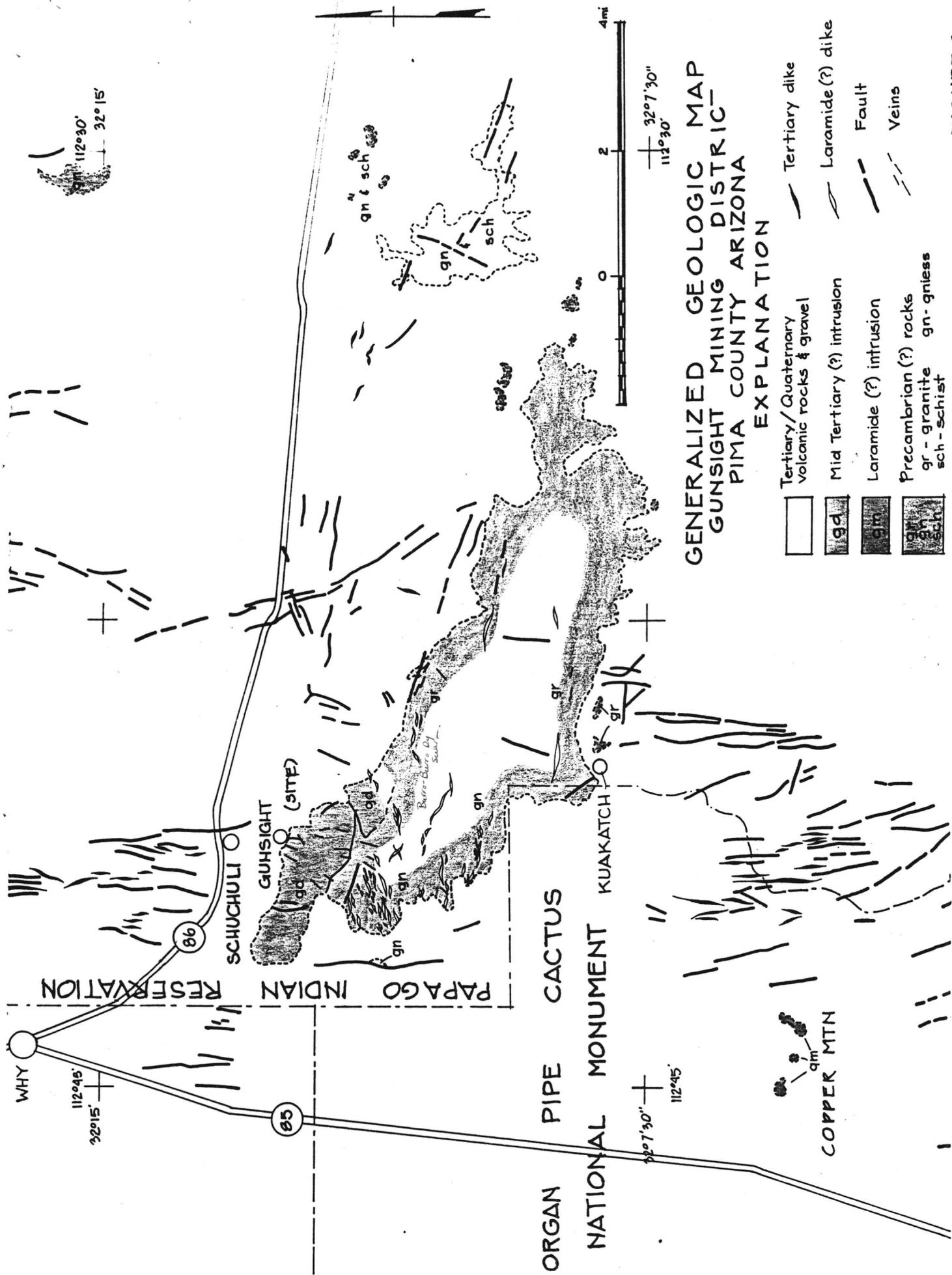


FIGURE 3

dated rocks to the northeast, the granitic/gneissic rocks and aplite dikes of the Gunsight district probably should be considered older Precambrian in age. Texturally isotropic unaltered Laramide intrusives of similar composition would be difficult to detect in the granitic rocks and some may well be present.

Laramide (?) Dike Swarms. The gneissic crystalline rocks are cut by numerous, generally east-west trending dikes of a wide range of composition. The dikes are essentially undeformed and clearly truncate the linear gneissic structure in the enclosing rocks at many places.

In the north, the Burro Burro dike swarm trends east-northeast over an exposed strike length of 6000 feet and width of 4000 feet (Plate 1). The dikes are to a degree shown schematically on the map; many more exist than can be drawn at the map scale. Texturally the dikes are porphyries and range from quartz monzonite to hornblende diorite in composition (hand lens).

To the south in the Rockhouse prospect vicinity the dikes are markedly less abundant and trend west-northwest. In composition the dikes are decidedly more mafic and finer grained than those to the north. They generally are dark greenish to almost black in color and seemingly are comprised mainly of a fine grained, amphibole-like mineral.

The assignment of a Laramide age to the above dike swarms is tenuous. They do not appear volcanic in nature and are very similar, particularly in the Burro Burro swarm, to the hornblende andesite and feldspathic andesite porphyry dikes mapped as Cretaceous-Tertiary in the Ajo district (Gilluly-1946) fifteen miles to the northwest.

Mid-Tertiary (?) Composite Stock. In the northern end of the mapped area the gneissic rocks are intruded by an aplite-quartz monzonite composite stock which in plan is at least one mile wide and two and one-half miles long. The stock is comprised mainly of two distinct intrusions. The one seemingly forming the largest proportion of the stock is alaskite aplite (hand lens) which is conspicuously miarolitic and almost devoid of ferromagnesian minerals. The other is similar to the aplite but is distinctly coarser grained and appears near quartz monzonite in composition. This rock also is strongly miarolitic and leucocratic. The relative ages of these two facies were not determined; however, their contact is sharp and distinct where observed and careful mapping probably would determine which is older. A few narrow, north trending quartz porphyry and basalt/andesite dikes cut the stock; none of these was mapped.

In most of the outcrops observed, the stock is characterized by disseminated intergranular clots and films of specularite. Specularite is a common though not abundant constituent of the epithermal veins in the stock and may be more a result of mineralization than an accessory mineral to the intrusions themselves. In this

region of Arizona specularite is conspicuous in most of the mineralized occurrences, including the porphyry copper deposit at Ajo.

What may be a third facies of the stock or a completely separate intrusion was noted at the southeast end of the main aplite-quartz monzonite body (Plate 1). This rock, which was only briefly examined, is a medium grained, holocrystalline biotite quartz monzonite (hand lens) where observed. The rock is somewhat similar to some of the Burro Burro dikes and may be related to them.

As with the Laramide (?) dikes, assignment of an age to the stock is speculative. It simply "appears" mid-Tertiary; the abundant miarolitic cavities and generally high intergranular porosity are typical of intrusions of this age elsewhere in the region. In addition, the stock is closely associated spatially and probably genetically with classic epithermal veins which are almost certainly of mid to late Tertiary age.

Late Tertiary-Quaternary Volcanic Rocks. Flanking the mapped area on all sides but only generalized on Plate 1 are late Tertiary to possibly Quaternary volcanic rocks. These rocks generally appear to be a series of andesitic to latitic flows, agglomerates and tuffs capped locally by basaltic flows. Refer to Jones' thesis (Jones-1974) for description of these rocks in the region south of the mapped area of Plate 1. Age dates of some of these rocks as listed in the thesis are as follow:

Base of Organ Pipe volcanics
16.0 ± 0.3 m.y. and 17.1 ± 0.7 m.y.
Top of Organ Pipe volcanics
14.7 ± 0.5 m.y. and 15.4 ± 0.3 m.y.
Overlying basalt
15.0 ± 0.4 m.y.

Recent Bolson and Alluvial Gravels. Bolson gravels and alluvium over a wide range of thickness cover most of the area of Plate 1 and Figure 3. Much of the granitic and gneissic rock mapped on Plate 1 is covered by a thin veneer of pediment gravels and alluvium.

STRUCTURE

Introduction

In the Gunsight district exposed rocks older than the late Tertiary volcanic rocks are all of intrusive igneous origin and thereby lack any reference planes by which structural information such as folding, tilting, and fault offsets can be inferred. The following brief discussion of structure is therefore limited to fault and dike patterns and their probable significance. Also the interpreted age of these structures obviously is only as correct as the presumed age of the affected rocks.

Laramide and Older Faults and Dikes

The stronger faults cutting the older rocks of the district consistently trend west-northwest and east-west (Plate 1). In the central and southern portions of the mapped area dike swarms of presumed Laramide (quartz monzonite to diorite porphyries) and Precambrian (aplite) age are emplaced along deep seated faults and fractures of this trend. The southern contact and exposed outcrop pattern of the Gunsight stock conform to the west-northwest direction.

The west-northwest trending zone of faulting and dike intrusion extends more than two miles east of the Gunsight district (Figure 4) where it is obscured by bolson gravels. To the west the zone is covered by younger volcanic rocks and gravels immediately west of the district.

The east-northeast trending Burro Burro dike swarm represents elements of the same structural pattern which deviate from the above noted trends. If the west-northwest to east-west elements of the older faulting are assumed to represent transcurrent or wrench fault patterns, the Burro Burro trend is compatible with tensional strain derived from left lateral shearing stress along a west-northwest plane of rupture (Figure 4). The west-northwest faults would represent master (McKinstry-1953) or first-order (Moody-1956) shearing and the east-west faults Riedel or second order shearing.

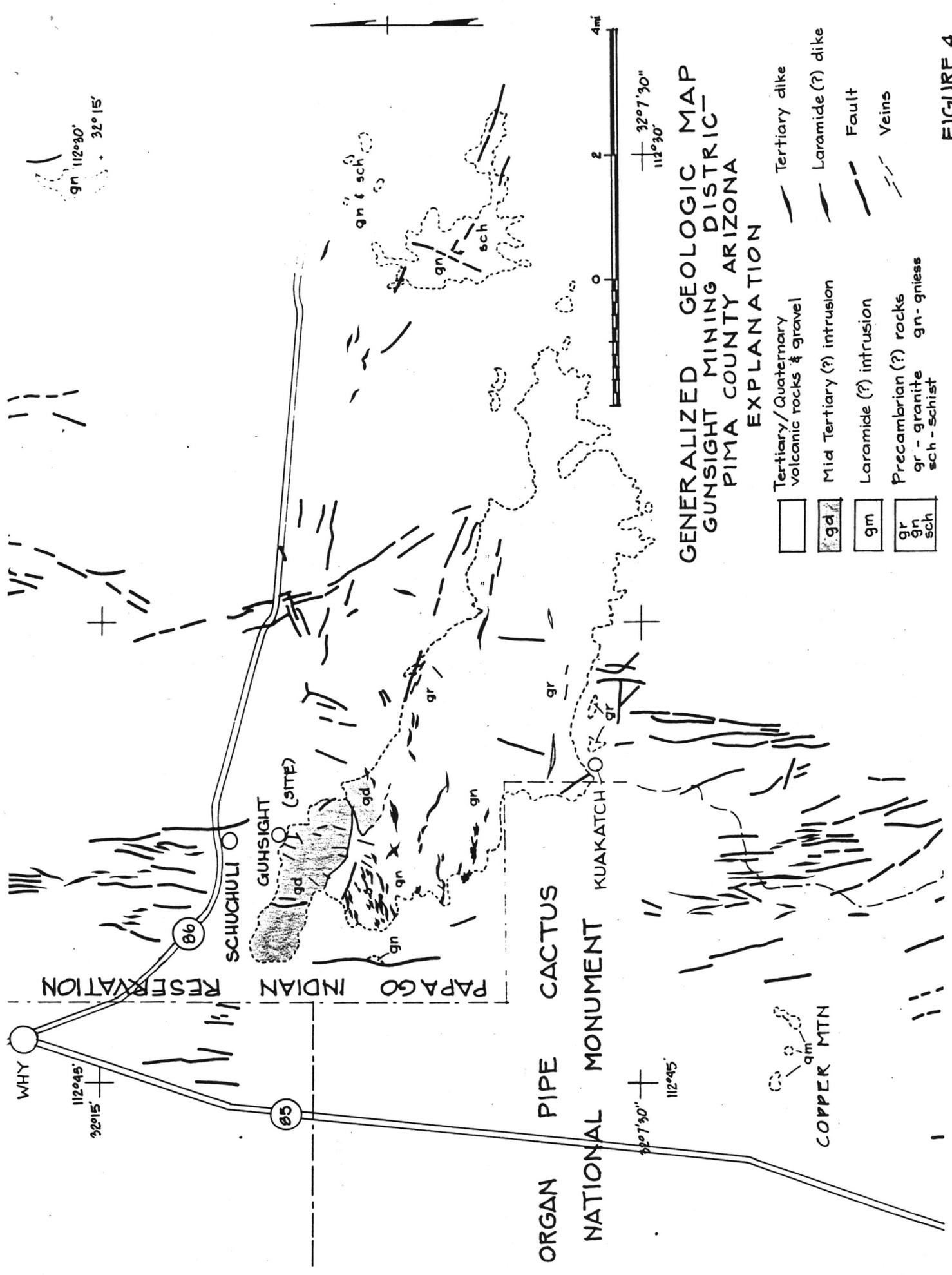
Mid to Late Tertiary Faults and Intrusions

Faults and dikes of demonstrated mid to late Tertiary age without exception trend north-south in the Gunsight mining district (Figure 4). These structural elements form the central portion of a four mile wide, north trending zone of Tertiary faulting and intrusion more than 30 miles in length. The Gunsight stock is emplaced squarely in the intersection of this north-south zone with the above described, older zone of west-northwest faulting.

The epithermal veins of the Gunsight district fill faults and fractures of the same general trend with a slight tendency toward a north-northeast strike at the north and south ends of the vein system. Most of the other epithermal districts of southern and central Arizona exhibit north-trending vein and dike systems.

Basin and Range Faults

No well-defined Basin and Range faults were mapped in the Gunsight district although the western edge of the district probably roughly coincides with a north trending zone of faulting of Basin and Range type.

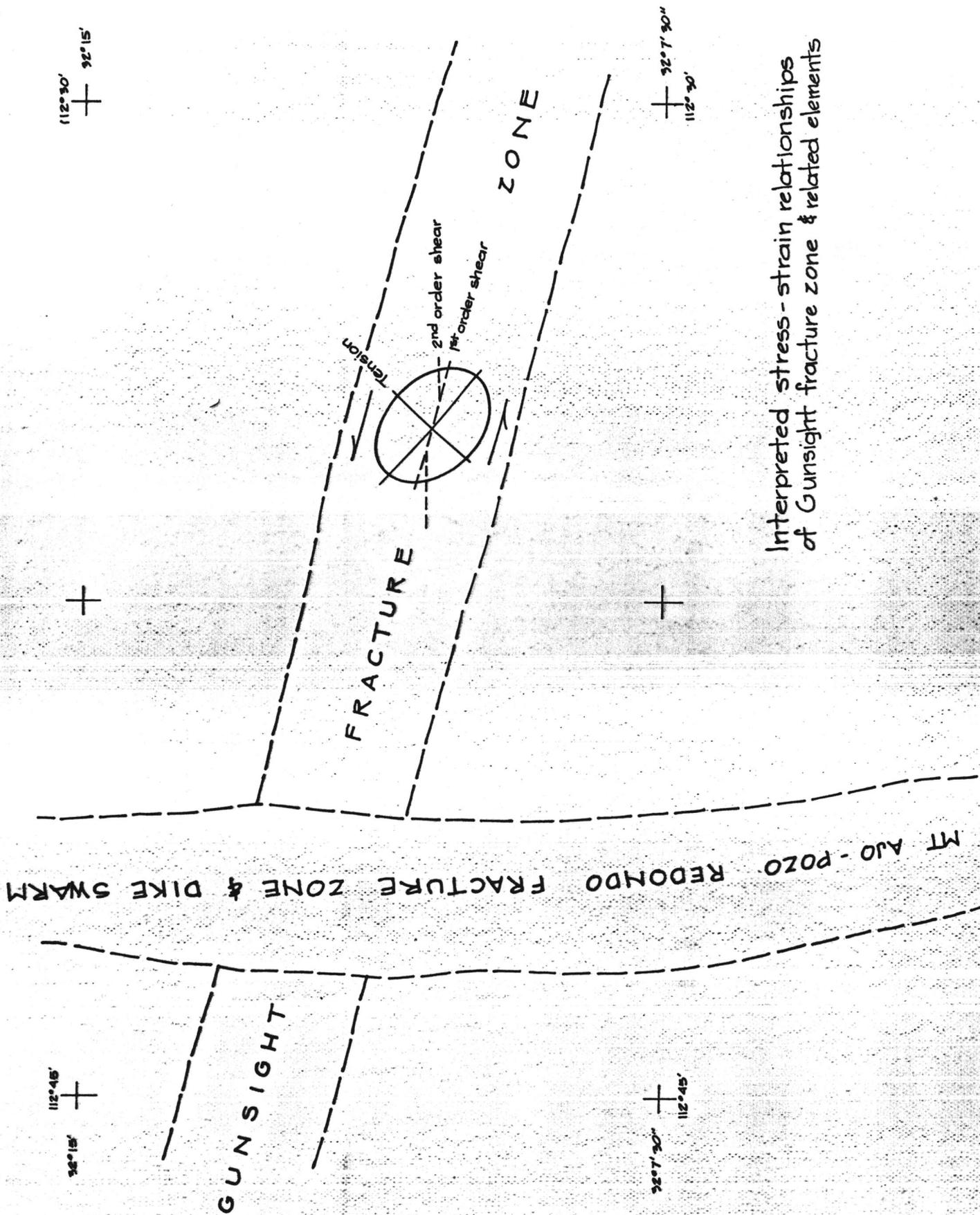


**GENERALIZED GEOLOGIC MAP
GUNSIGHT MINING DISTRICT—
PIMA COUNTY ARIZONA**

EXPLANATION

- | | | | |
|--|--|--|-------------------|
| | Tertiary/Quaternary volcanic rocks & gravel | | Tertiary dike |
| | Mid Tertiary (?) intrusion | | Laramide (?) dike |
| | Laramide (?) intrusion | | Fault |
| | Precambrian (?) rocks
gr - granite
gn - gneiss
sch - schist | | Veins |

FIGURE 4



Interpreted stress-strain relationships of Gunsight fracture zone & related elements

Figure 4 overlay

MINERALIZATION

Introduction

Mineralization of at least two and possibly three distinct types and ages have been mined and prospected in the Gunsight mining district. Quartz veins carrying small amounts of copper and a few with small but minable amounts of tungsten and gold are the oldest. The tungsten-gold bearing veins are considerably removed from the copper veins and also may be different in age. The youngest and past most important mineralization in the district are silver and lead bearing epithermal veins.

Laramide Veins

Relatively narrow, impersistent quartz-pyrite-chalcopyrite veins cutting gneissic granodiorite have been fairly extensively prospected in the Burro Burro and Rockhouse areas. In both areas, the mineralization is closely associated with Laramide(?) dikes which are themselves locally veined to a minor extent with quartz, pyrite, and chalcopyrite. Wall rock alteration in the Burro Burro area consists of strong argillation and chloritization of the gneissic vein walls for distances of three or four feet. The porphyry dikes are generally weakly epidotized, even where completely barren of mineralization. Alteration in the Rockhouse area is difficult to identify; the vein walls seemingly are flooded for two or three feet by a dark, fine mixture of silica(?) and chlorite(?).

Later epithermal veins occur superimposed across the older veins in both the Burro Burro and Rockhouse areas.

In the area three to five miles southeast of the Burro Burro prospects several veins have been prospected for gold, tungsten, and copper. These include the Lucky Strike, Sunset Limited, Lilly-Saguaro-Empire, Ajo Gunsight, and Black Bess-Bullion Bar prospects (Plate 1). Of these, none of which is very impressive, the Black Bess-Bullion Bar shows the best copper mineralization. All of the veins are dominantly massive, crystalline quartz with scarce sulfides and even scarcer copper minerals generally. Their age is difficult to even guess; some may be as old as Precambrian.

Mid to Late Tertiary Epithermal Veins

Classic epithermal "Tertiary type" veins comprise the only economically significant mineral deposits found in the Gunsight district. The veins range up to 15 feet or more in thickness and several persist individually along strike for more than 1000 feet. Vein texture is characteristically banded, crustified, and commonly exhibits

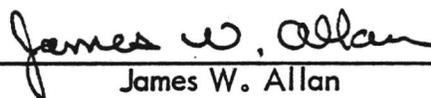
filled, cockade breccia with abundant vugs. The larger veins generally are actually sheeted zones of closely spaced individual veins up to one foot or so in thickness. Vein walls generally are abrupt and well-defined.

Wall rock alteration is the typical strong bleaching of vein walls for several feet on both sides. No instrumental analysis of alteration minerals was attempted; however, the bleached zones appear to be dominantly argillic with probably some development of sericite.

Vein minerals are, in approximate order of abundance, dominantly (1) quartz, both crystalline and chalcedonic; (2) siderite or other high ferrian carbonate; (3) barite; (4) fluorite, mainly pale green and little pale purple; (5) specularite, mainly as late(?) films and veinlets in tight fractures; and highly variable amounts of chalcopyrite and galena. Supergene minerals include scarce chalcocite and covellite replacing chalcopyrite and locally conspicuous chrysocolla, malachite and azurite. Cerusite and probably anglesite apparently were abundant in the oxidized silver-bearing oreshots originally mined in the district.

Although no tungsten minerals were observed, scheelite is reported in the veins (Tognoni-1964) and vein widths of up to five feet are reported to contain nearly 0.7 percent WO_3 in places. Oddly, tungsten mineralization is not unusual in epithermal veins which, in Nevada and Colorado, have been significant producers of the metal.

The stronger veins occur in a one-half mile wide, north-trending zone about one and one-half miles in length across the eastern, exposed portion of the Gunsight mid-Tertiary stock. The southernmost veins cut the older, gneissic rocks; however, the productive portions of the veins are limited to the stock.


James W. Allan

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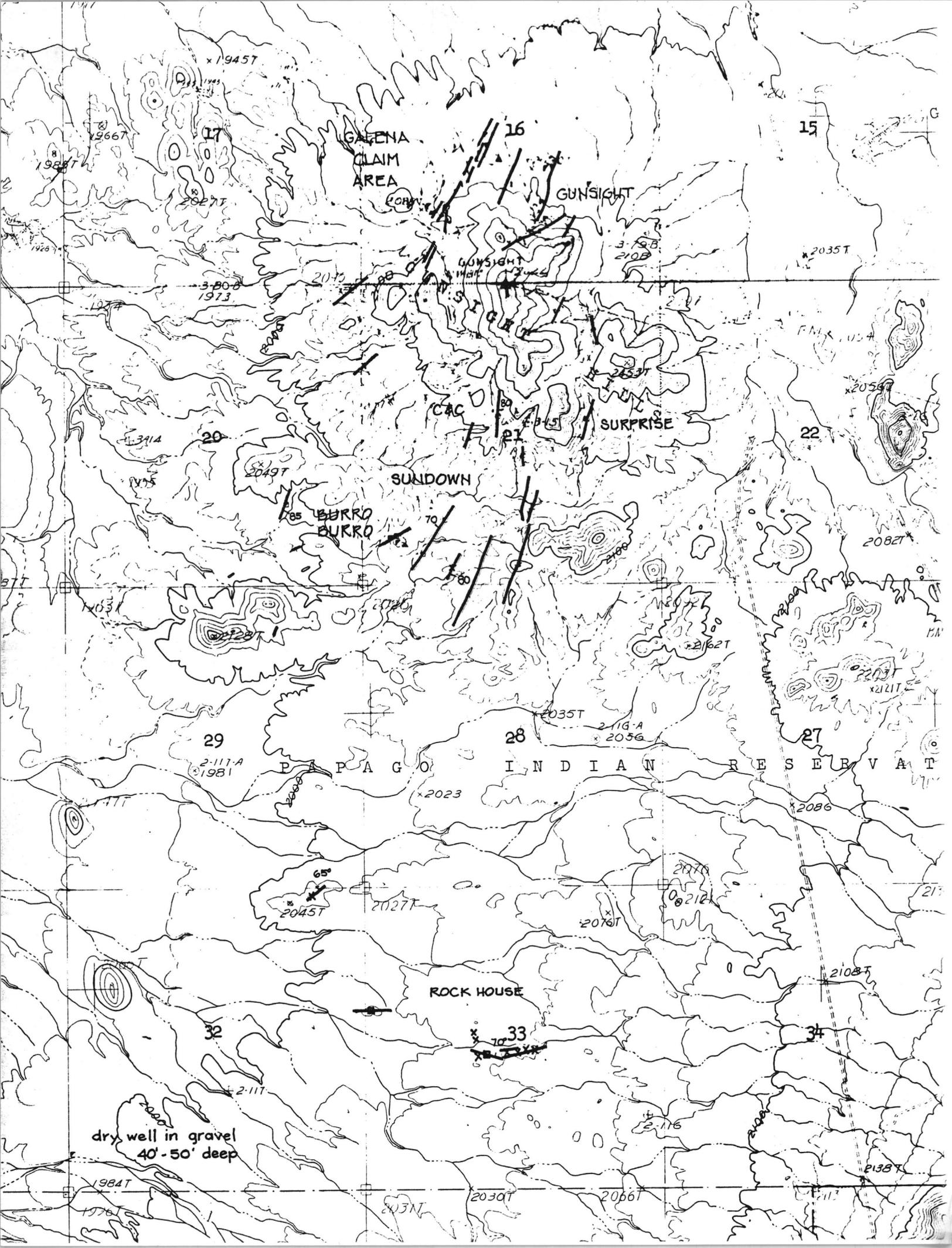
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No Author

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APPENDIX

Mine and Prospect Descriptions



GALENA CLAIM AREA

GUNSIGHT

SUNDOWN

BURRO BURRO

PAPAGO INDIAN RESERVATION

ROCK HOUSE

dry well in gravel
40'-50' deep

x 1945T

1966T

1988T

17

16

15

3-80-3
1973

x 2035T

314

20

CAC

PI

SURPRISE

22

2049T

70

80

x 2054T

2082T

29

28

27

2-117-A
1981

2-116-A
x 2056

x 2023

x 2086

65

x 2045T

2027T

x 2076T

2076

2021T

32

33

34

2-117

2108T

1984T

2031T

2030T

2066T

2138T

Prospect Burro - Burro prospects Former Name _____

Metal(s) of Interest Cu Exam. by JWA Date 4-18-75

Location 24 mi SE of Ajo County Pima State Ariz
SW 1/4 Sec. 21; T 14S, R RW Map Ref. Tonaca NW prelim 7 1/2
mt Ajo 15' quad

Property & Owner _____

References, remarks, etc. _____

Development Most extensive on Burro Burro claim (see sketch below) -
several shallow pits and cuts in areas to east ($\pm 3000'$) and west
($\pm 1500'$). Several stone cabin ruins and stone mill foundations
in area of Burro Burro shaft.

Remarks _____

Geology, Type Deposit: quartz-pyrite-chalcopyrite veins

Areal geology, rocks: _____

A strong ENE to E-W swarm of dikes ranging from diorite
porphyry to qtz monzonite porphyry cut medium grained,
gneissic granodiorite. Scattered, impersistent quartz-pyrite-
chalcopyrite veins occur in the gneissic granodiorite in close
spatial association with the dikes.

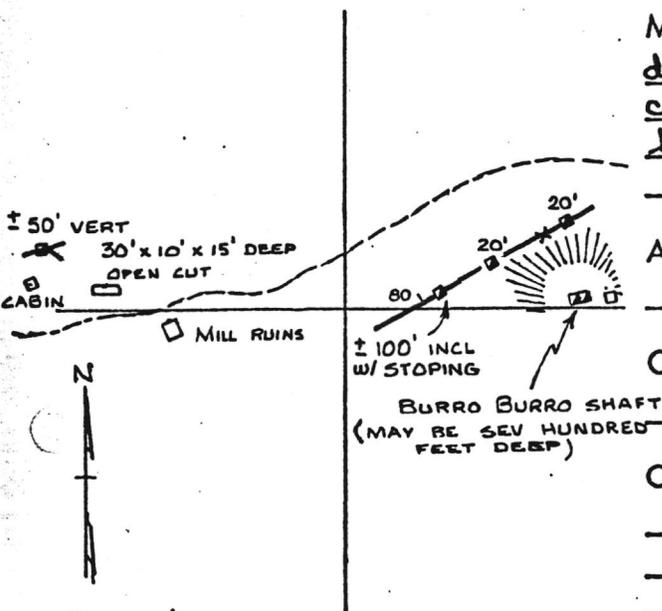
Structure: The most persistent and best defined vein of the area
occurs just north of the Burro Burro shaft (see sketch). It
appears to range up to 2 ft or so in width, strikes N60E,
and dips 80° N. Dump of Burro Burro shaft is dominantly
dark, barren, unaltered (diorite porphyry?) dike rock.

Minerals: quartz, massive crystalline is
dominant, much lesser pyrite and
chalcopyrite - malachite and chrysocolla
locally conspicuous, "limonite"

Alteration: local argillic & chloritic alteration
of wall rock. weak epidote in dikes

Oxidation: sulfides on dump of inclined
shaft.

Conclusions and Recommendations: _____
of no further interest.



PROSPECT DATA

Prospect Valena claim area Former Name _____

Metal(s) of Interest Ag, W Exam. by JWA Date 4-18-75

Location 24 mi SE of Ajo County Papago and Pima State Ariz
SW 1/4 Sec. 16 ; T 14S , R 4W Map Ref. Tonaca NW prelim sheet
mt Ajo 15' quad

Property & Owner _____

References, remarks, etc. _____

Development Several shallow vertical and inclined shafts, dozens of shallow cuts & pits. Largest working appears to be inclined shaft in extreme NW cor sec 20.

Remarks _____

Geology, Type Deposit: Epithermal quartz-barite-fluorite veins.
Areal geology, rocks: identical with Sunlight mine

Structure: Individual veins generally narrower and less persistent than those to west. One vein exposed in extreme NE cor sec 20 has been considered by some to be the southwestern end of the Sunlight vein, it strikes N55E, dips 70°NW.

Minerals: same as Sunlight mine.
Some pale purple fluorite noted

Alteration: _____

Oxidation: _____

Conclusions and Recommendations: _____

PROSPECT DATA

Prospect Sunright mine Former Name _____

Metal(s) of Interest Ag, W Exam. by JWA Date 4-18-75

Location 24 mi SE of Ajo County Papago and Pima State Ariz
5 1/2 Sec. 16 T 14S, R 4W Map Ref. Tonoca NW prelim sheet
Mt Ajo 15' quad

Property & Owner _____

References, remarks, etc. Described briefly in Ariz Bur Mines Bull 189

Development Several shafts and adits connect to fairly extensive underground workings. One vein stopped to surface south of Baker shaft (see sketch below). Mill foundations, tailings remnants, and ruins of several stone buildings.

Remarks The Sunright district veins are classically epithermal and mid-Tertiary in age, as are their host rocks, very probably.

Geology, Type Deposit: Epithermal quartz-barite, fluorite veins

Areal geology, rocks: Veins cut medium to coarse grained, holocrystalline intrusive which appears to be a leucocratic quartz monzonite or granodiorite. Biotite is the dominant ferromagnesian but is probably less than 2 vol percent. A significant volume of the rock is occupied by small microclitic cavities. The rock "looks" mid Tertiary. It occurs mainly in the northern portion of the Sunright Hill.

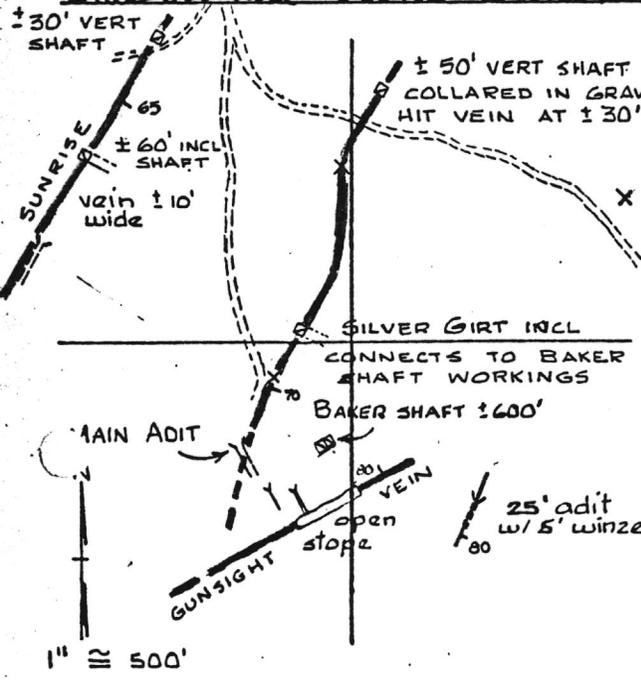
Structure: Veins exhibit typical epithermal banding, crustification, and cockade texture. Most are strongly developed and range up to 15 ft or more in thickness. Most trend N10° to 60° E with steep variable dips. Larger veins are actually zones of closely spaced individual veins 2 in to 1 ft in thickness. Walls are well-defined.

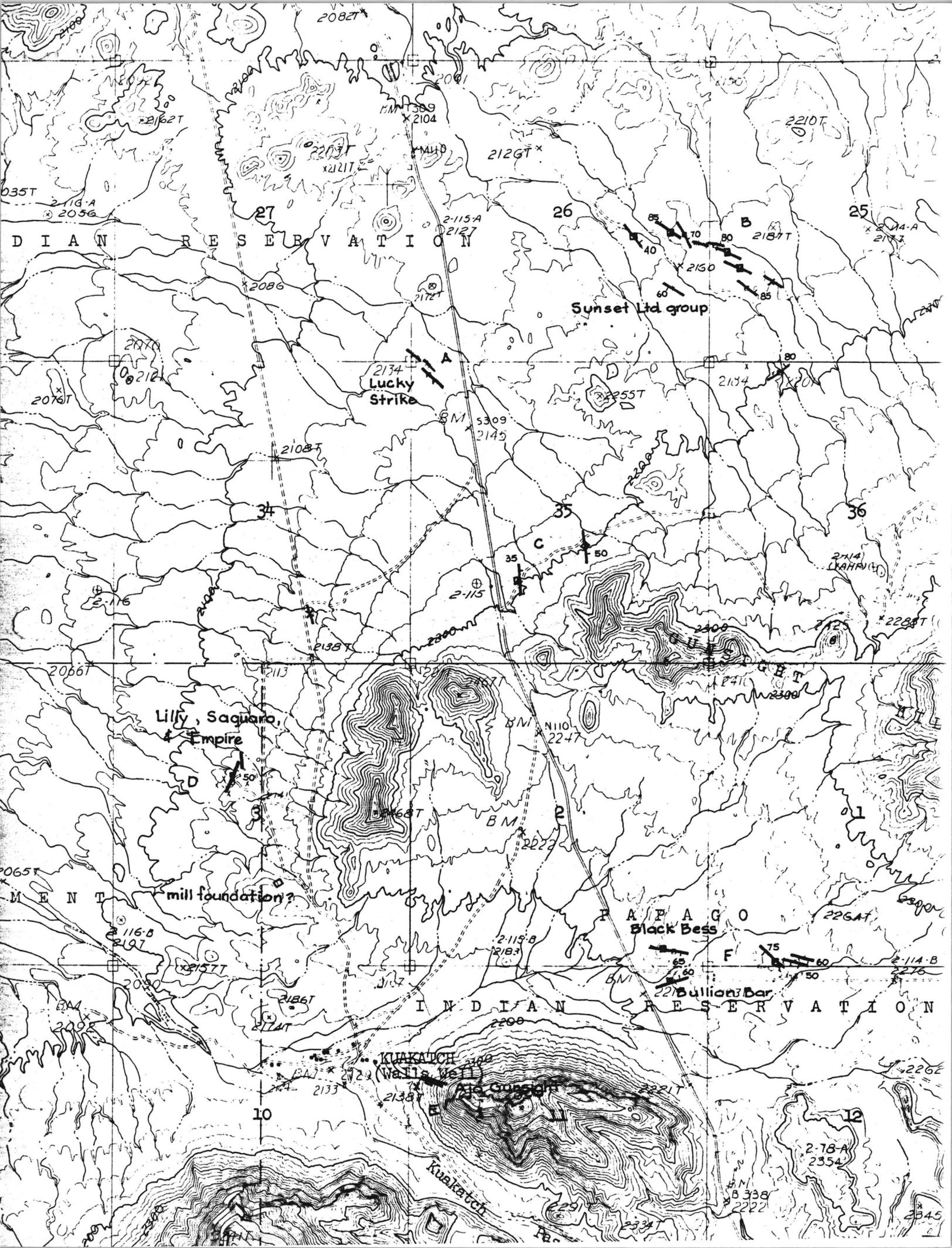
Minerals: quartz, barite, fluorite, and siderite(?) dominant - small variable amounts of galena & chalcopirite. specularite appears as a late mineral in tight fractures. Oxides include chrysocolla, malachite, azurite, & "limonite".

Alteration: strong argillic alteration of vein walls for 2 or 3 ft

Oxidation: remnant galena/chalcopirite in main adit level

Conclusions and Recommendations: Of no further interest.





DIAN RESERVATION

Sunset Ltd group

Lucky Strike

Lily, Saguaro, & Empire

mill foundation?

PAPAGO Black Bess

INDIAN RESERVATION

KUAKATCH (Wells Well)

Air Cannon

Kuakatch

2-78-A 2354

B.M. 3338 2222

2345

2082

MNT 389 X2104

2126T

2210T

2203T X2121

M.H.D.

2-115-A 2127

26

2187T

25

2-74-A 2173

2086

2134

2134

2076T

2108T

B.M. 5309 2145

2255T

34

35

36

2-116

2-115

2-114 (KAHAYU)

2288T

2066T

2113

2400

2410

2390

B.M. 1110 2247

B.M. 2223

2065T

PAPAGO Black Bess

F

2-114-B 2276

M E N T

mill foundation?

2-115-B 2183

B.M. 22 Bullion Bar

INDIAN RESERVATION

10

12

KUAKATCH (Wells Well)

Air Cannon

Kuakatch

2-78-A 2354

B.M. 3338 2222

2345

PROSPECT DATA

Prospect shaft - line between sec 17 & 18 Former Name _____

Metal(s) of Interest _____ Exam. by JWA Date 4-18-75

Location 24 mi SE of Ajo County Pima State Ariz
Sec. 17 & 18 ; T 14S , R 4W Map Ref. Tonoca NW prelim sheet
mt Ajo 15' quad

Property & Owner _____

References, remarks, etc. _____

Development shaft, incl 70° NW, ± 60' deep

Remarks _____

Geology, Type Deposit: _____

Areal geology, rocks: _____

shaft is sunk on N45E fracture zone with weak
limonite" flooding in finer grained "Sunlight stock" rock
cut by poorly exposed platite (?) porphyry dikes. Rocks in
area generally are barren & unaltered.

Structure: _____

	Minerals: <u>Weak quartz & pyrite. Tr chrysocolla</u> <u>& malachite in dump specimens</u>
	Alteration: _____ Oxidation: _____
	Conclusions and Recommendations: _____ <u>of no further interest</u>

Prospect Sundown-Surprise area Former Name _____Metal(s) of Interest Ag, W Exam. by JWA Date 4-19-75Location 24 mi SE of Ajo County Pima State Ariz
Sec. 20 & 21; T 14S, R 4W Map Ref. Tonoca NW prelim sheet

Property & Owner _____

References, remarks, etc. _____

Development ① vert shaft $\pm 15'$, ② pit $\pm 10'$, ③ Keystone vein, north shaft incl $70^\circ W$ $\pm 30'$, shallow pits & drier cuts to south, ④ shaft $\pm 20'$, ⑤ Vert shaft $\pm 30'$, pits
 ⑥ vert shaft $\pm 40'$, ⑦ shaft $\pm 30'$, ⑧ incline shaft $\pm 60'$, adit 10', ⑨ shaft $\pm 50'$, trench
 C & C incline $80^\circ E$ for $\pm 50'$, flattens deeper, possibly 200' + deep, Surprise incline $75^\circ E$,
 timber & ladders in shaft, 10' adit to south, concrete tank & hoist foundations, shaft
 Remarks may be + 200' deep. ⑩ shallow pits

Geology, Type Deposit: Epithermal quartz-lignite-fluorite veins
 Areal geology, rocks: Veins are similar to those at Sunlight mine. Vein wall rocks are as follows: ① gneissic granodiorite & andesite porphyry dikes, ② gneissic granodiorite & monzonite porphyry dikes, ③ gneissic granodiorite & dark dikes, ④ thru ⑨ and C & C and Surprise inclines - aplitic qtz monzonite. The aplitic quartz monzonite is very similar compositionally to the quartz monzonite at the Sunlight mine. It occurs in the south and western portions of the Sunlight Hills, ⑩ gneissic granodiorite
 Structure: ① vein N20E, 85E, 2"-1' lenses in 5' fault zone. ② vein N15E, 80E, 2"-8" lenses in 4'-5' fault zone, ③ vein N35E, 70W, 3'-4' on north, 20'-25' on south, ④ vein N15E, ⑤ vein N50E, vert. 6"-1' wide, ⑥ vein N20E, vert. 1'-3' wide, ⑦ vein N-5, 80E, 1'-4' wide, ⑧ vein N5W, vert; stamens in 5'-6' fault zone, ⑨ vein N25E, 85E, stamens in 4'-5' sheeted fault zone. C & C incline, vein N5E, 80E, Surprise incline, vein N20E, 70E.
 ⑩ vein N22E, vert, 1'-2' wide.

Minerals: Same as Sunlight mine veins plus:
 ① pale green fluorite ③ vein dominantly massive, crystalline siderite, ⑥ chalcopysite blebs in dense vein material, C & C incline dump has small amts of chalcocite & covellite replacing chalcopysite in vein specimens.

Alteration: wide bleached, "limonite" flooded zone along vein at Surprise incline.

Oxidation: _____

Conclusions and Recommendations: _____

Prospect Rockhouse
Stone House claims Former Name _____

Metal(s) of Interest Cu Exam. by JWA Date 5-7-75

Location _____
County Papago Ind Res State Ariz
Pima
Sec. 32 & 33; T 14S, R 4W Map Ref. Tonaca NW prelim sheet
mt Ajo 15' quad.

Property & Owner _____

References, remarks, etc. _____

Development NE cor sec 32: 8' pit. SW cor sec 32: 40' to 50' well or shaft. Sec 33: one inclined shaft \pm 50' near center of section, one caved shaft filled to \pm 15' west edge of section, numerous shallow pits and cuts. Stone house ruin at 50' incl shaft.

Remarks The vein in NE cor sec 32 is clearly epithermal and identical to the Sunlight veins

Geology, Type Deposit: epithermal veins & copper-bearing dikes & quartz veins

Areal geology, rocks: In section 33 numerous narrow, ill-defined quartz veins carry conspicuous copper oxides. They appear related to a NW to ENE swarm of dense, fine-grained, dark greenish (amphibole) dikes cutting the granodiorite country rock which is locally gneissic. The dikes themselves sporadically are mineralized with copper-bearing quartz veinlets. Away from the narrow, scattered veins, rocks in the area are barren & unaltered.

Structure: NE cor sec 32: vein 6" to 1' wide, N53E, 65°N. W edge sec 33: fracture zone & dark dike E-W, 70°-80°N. Center sec 33: mineralized dark dikes & ill-defined, impersistent veins, at east end N60°-70°E, 70°N, at west end (50' incl shaft) N75°-80°W, 70°N. The gneissic granodiorite country rock in the area commonly is locally strongly deformed cataclastically.

Minerals: NE cor sec 32: quartz, barite, fluorite, calcite, siderite, chrysocolla. W edge sec 33: quartz, calcite, barite, specularite, chalcocite \rightarrow covellite, malachite & chrysocolla. Center sec 33: quartz, chrysocolla, malachite.

Alteration: dark silicic(?) & chloritic "flooding" of vein walls for 2 or 3 ft.

Oxidation: _____

Conclusions and Recommendations: _____

Of no further interest.

Prospect Prospect A Former Name _____

Metal(s) of Interest Au Exam. by JWA Date 4-19-75

Location Papago and Res County Pima State Ariz
NW 1/4 Sec. 35 ; T 14S , R 4W Map Ref. Tonoca NW prelim sheet
mt Ajo 15' quad

Property & Owner _____

References, remarks, etc. Briefly described as Lucky Strike mine in
Ariz Bur Mines Bull 189.

Development Two vertical shafts, 30 ft and 50 ft deep and a dozen
or more shallow pits and cuts.

Remarks _____

Geology, Type Deposit: quartz-pyrite veins
Areal geology, rocks: _____

A zone of massive white crystalline quartz veins about 800 ft
long cuts gneissic granodiorite.

Structure: Individual veins impersistent. zone shows sub-parallel,
en echelon arrangement. Veins trend generally N 50°-55° W
and have steep variable dip.

	<p>Minerals: <u>quartz, little pyrite, chlorite clots</u> <u>in quartz. to chrysocolla.</u></p> <p>Alteration: <u>Wallrock argillized for 2 ft or so</u></p> <p>Oxidation: _____</p> <p>Conclusions and Recommendations: _____ <u>of no further interest.</u></p>
--	---

Prospect Prospect B Former Name _____

Metal(s) of Interest Au, W? Exam. by JWA Date 4-25-75

Location _____
County Papago Ind Res Pima State Ariz
SW 1/4 Sec. 25; T 14S, R 4W Map Ref. Tonoca NW prelim sheet
SE 1/4 26
NW 1/4 36 mt Ajo 15' quad
Property & Owner _____

References, remarks, etc. Briefly described as Sunset Limited mine group in Ariz Bur Mines Bulls 148 & 189

Development Shaft numbers on accompanying sketch. ① incline, shallow, caved, also pits & trenches. ② vert, ± 30' caved. ③ vert, ± 30, short drift SE. ④ vert, ± 60', short drift SE ⑤ vert, ± 70' ⑥ vert, ± 20' ⑦ vert, possibly ± 100' ⑧ incline ± 50'. Numerous shallow pits and cuts in area.

Remarks _____

Geology, Type Deposit: quartz-pyrite veins

Areal geology, rocks: Massive, milky white quartz veins ranging from inches to 6 ft in width occur in medium to coarse grained, microcrystalline granodiorite which locally is weakly gneissic. The veins comprised of lenses and stringers of quartz in fault zones are normally broken & shattered. At ⑧, vein walls are strongly schistose parallel to vein.

Structure: Veins: ① N40W, 40E. ② N58W, 85 N quartz lenses in fault zone.

③ N27W, 70E. ④ N80W, 80 N. ⑤ N68W, vert, 1'-2' wide. ⑥ N67W, vert

⑦ N47W, 85 N, 2'-3' wide. ⑧ N55E, 80 N, 5'-6' wide.

The granodiorite generally exhibits pervasive cataclastic texture.

Minerals: quartz, massive, milky, crystalline with small amounts of pyrite and scheelite (reported). vein at ⑧ contains more limonite than usual

Alteration: General bleaching & chloritization of walls for 3 or 4 ft.

Oxidation: _____

Conclusions and Recommendations: _____

of no further interest.

Prospect Prospect C Former Name _____

Metal(s) of Interest _____ Exam. by JWA Date 4-25-75

Location Papago Ind Res County Pima State Ariz
S 1/2 Sec. 35 ; T 14S , R 4W Map Ref. Tonoca NW prelim sheet
Mt Ajo 15' quad

Property & Owner _____

References, remarks, etc. _____

Development Two incline shaft - east 40' incl 50°E, west 35' incl 35°E.
several shallow pits

Remarks _____

Geology, Type Deposit: quartz-pyrite veins

Areal geology, rocks: _____

Veins cut medium to coarse grained, holocrystalline biotite
quartz diorite or granodiorite. Away from the veins, the rock
is barren & unaltered.

Structure: East shaft - 1 to 2 ft wide quartz vein N10W, 50 E

West shaft - 1 to 2 ft wide quartz vein N5W, 35 E

Minerals: quartz, massive crystalline,
little pyrite.

Alteration: _____

Oxidation: _____

Conclusions and Recommendations: _____

Of no further interest.

Prospect Prospect D Former Name _____

Metal(s) of Interest Cu, Au ? Exam. by JWA Date 4-25-75

Location _____ County Pima State Ariz
center Sec. 3 ; T 15S, R 4W Map Ref. Tonoca NW prelim sheet
Mt Ajo 15' quad

Property & Owner On Organ Pipe Natl Mon

References, remarks, etc. Prospects are the same or very near the Lilly, Saguaro, & Empire mines briefly described in Ariz Bur Mines Bull 189.

Development Three or more inclined shafts, all about 30' deep. Large pile of screened material in east part of area. Numerous shallow pits & extensive dozer trenching

Remarks _____

Geology, Type Deposit: quartz - pyrite veins
Areal geology, rocks: _____

quartz - pyrite veins carrying small amounts of copper cut medium to coarse grained, holocrystalline granodiorite or quartz diorite, locally gneissic and schistose

Structure: Quartz veins range from 1 to 3 ft in thickness. In section 3 they trend NSW to N30E and dip 45 to 50 east. About 3000 ft NNE in SE Cor section 34 a similar vein strikes N20W and dips 70 E.

Minerals: quartz, massive crystalline, little pyrite. little chrysocolla & malachite.

Alteration: _____

Oxidation: _____

Conclusions and Recommendations: Of no further interest

Prospect Prospect E Former Name _____

Metal(s) of Interest Au ? Exam. by JWA Date 5-7-75

Location Papago Ind Res County Pima State Ariz
NW 1/4 Sec. 11; T 15S, R 4W Map Ref. Tonaca NW prelim sheet
Mt Ajo 15' quad

Property & Owner _____

References, remarks, etc. Briefly described as the Ajo Sunlight mine in
Ariz. Bur Mines. Bull 189.

Development one vert shaft, possibly 50' deep, caved & filled to 20' - few
shallow pits

Remarks _____

Geology, Type Deposit: quartz vein

Areal geology, rocks: _____

Two or more parallel massive quartz veins cut medium to coarse
grained, holocrystalline biotite quartz diorite or anandiorite.
Rock away from veins is barren and unaltered. E-W trending aplite
dikes cut the quartz diorite.

Structure: Veins strike N 75-80 W and are vertical.

Minerals: quartz, massive crystalline

Alteration: _____

Oxidation: _____

Conclusions and Recommendations: _____

of no further interest.

Prospect Prospect F Former Name _____

Metal(s) of Interest Cu, Au, W? Exam. by JWA Date 4-25-75

Location _____ County Papago Ind Res State Ariz
Pima

Common Cor Secs 1, 2, 11, & 12; T 15 S, R 4 W Map Ref. Tonaca NW prelim sheet
Mt Cjo 15' quad

Property & Owner _____

References, remarks, etc. Briefly described in part on the Black Bear and
Bullion Bar mine groups in Ariz Bur Mines Bull 189.

Development SW cor sec 1: one incline shaft ± 30', numerous pits for 400' east
SE cor sec 2: one incline shaft ± 70', one vert shaft ± 15' and several
shallow pits. NE cor sec 11: one shaft, caved, possibly ± 30'

Remarks _____

Geology, Type Deposit: quartz-pyrite-chalcopyrite veins

Areal geology, rocks: _____
veins cut medium to coarse grained, holocrystalline
quartz diorite or granodiorite. In some vein walls rock is
schistose parallel to vein. Numerous splite dikes cut the quartz
diorite in the area.

Structure: SW cor sec 1: incl shaft on 1' to 2' quartz vein N50W, 75S, pits
to east on several N75W, 50 to 60S veins. NE cor sec 11: fault (10')
zone lined with narrow, impersistent quartz veins, best copper
show in area, N70E, 60N. SE cor sec 2: quartz vein 1 to 2' wide
N78W, 65S.

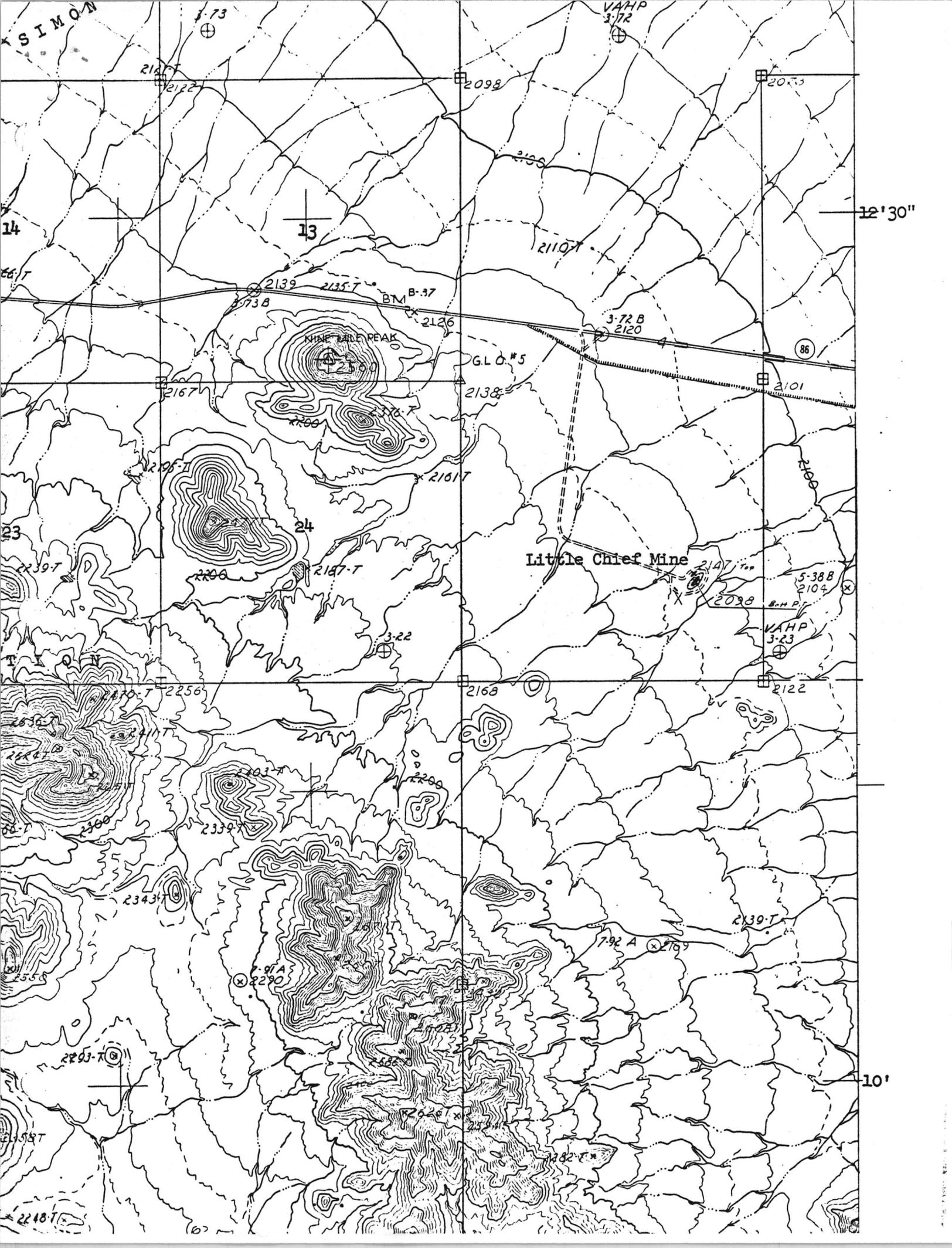
Minerals: quartz, pyrite, chalcopyrite (inferred)
scheelite (reported), little chrysocolla
and malachite

Alteration: _____

Oxidation: _____

Conclusions and Recommendations: _____

Of no further interest.



SIMON

14

13

12'30"

24

Little Chief Mine

TI O N

10'

2248-T

PROSPECT DATA

Prospect Little Chief silica pit Former Name _____

Metal(s) of Interest silica flux Exam. by JWA Date 4-18-75

Location 49 mi SE of Ajo County Papago Ind Res Pima State Ariz
SE 1/4 Sec. 19 ; T 14S , R 2W Map Ref. mt Ajo 15'

Property & Owner unsurveyed

References, remarks, etc. mentioned in Ariz Bur Mines Bull 189

Development Large open cut of relatively recent vintage, about 800 ft long, up to 100 ft wide, and as deep as 50 ft - long axis of the cut strikes N65E

Remarks Produced silica flux for Ajo smelter

Geology, Type Deposit: quartz lenses & veins

Areal geology, rocks: irregular veins and lenses of massive, crystalline quartz occur in albite-feldspar gneisses and minor schist. Numerous dikes & irregular bodies of alabaster pegmatite occur in the area.

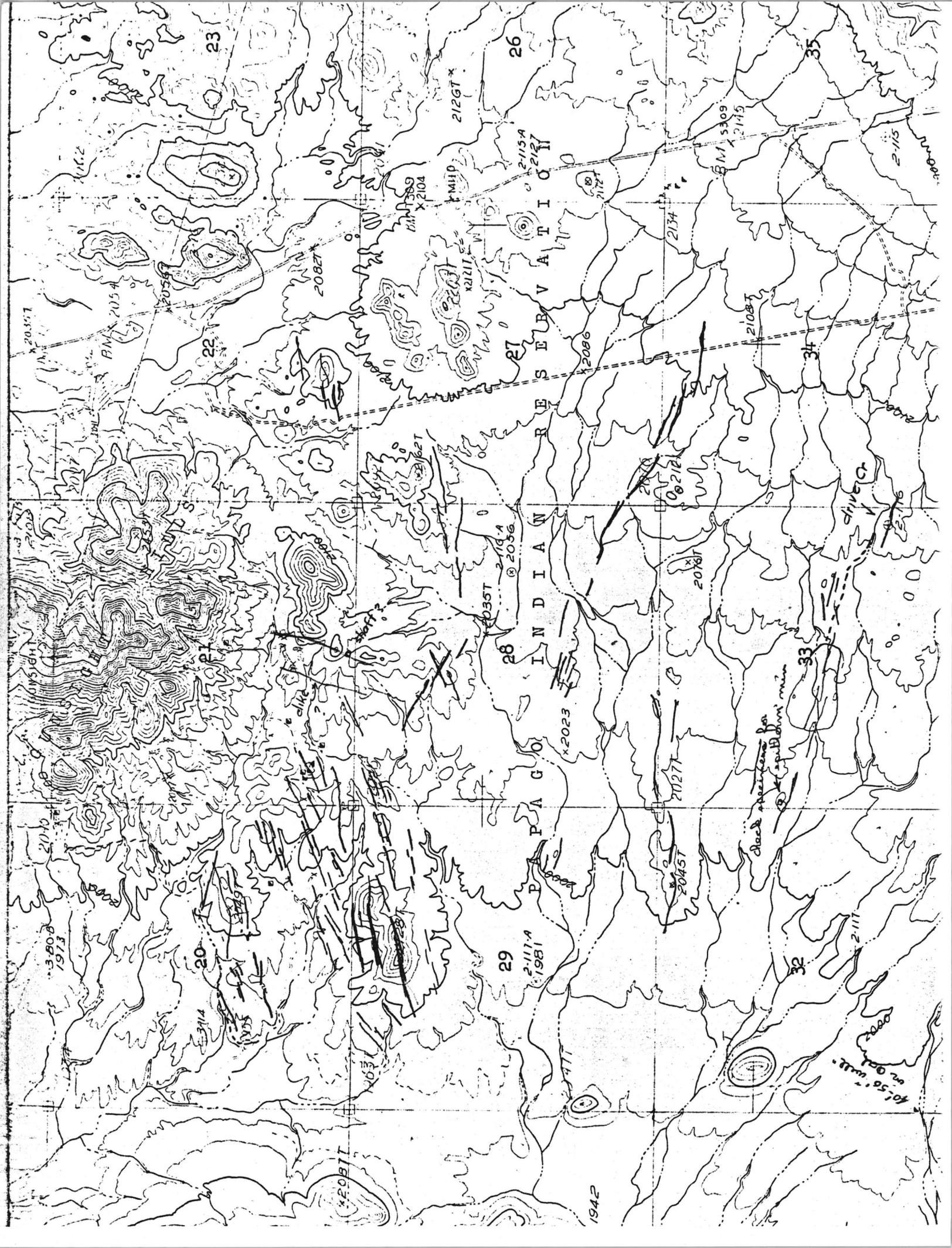
Structure: Foliation in the rocks trends N65E and dips 70 N. Quartz and pegmatite bodies occur concordant with the foliation and generally but locally discordant dikes and veins occur.

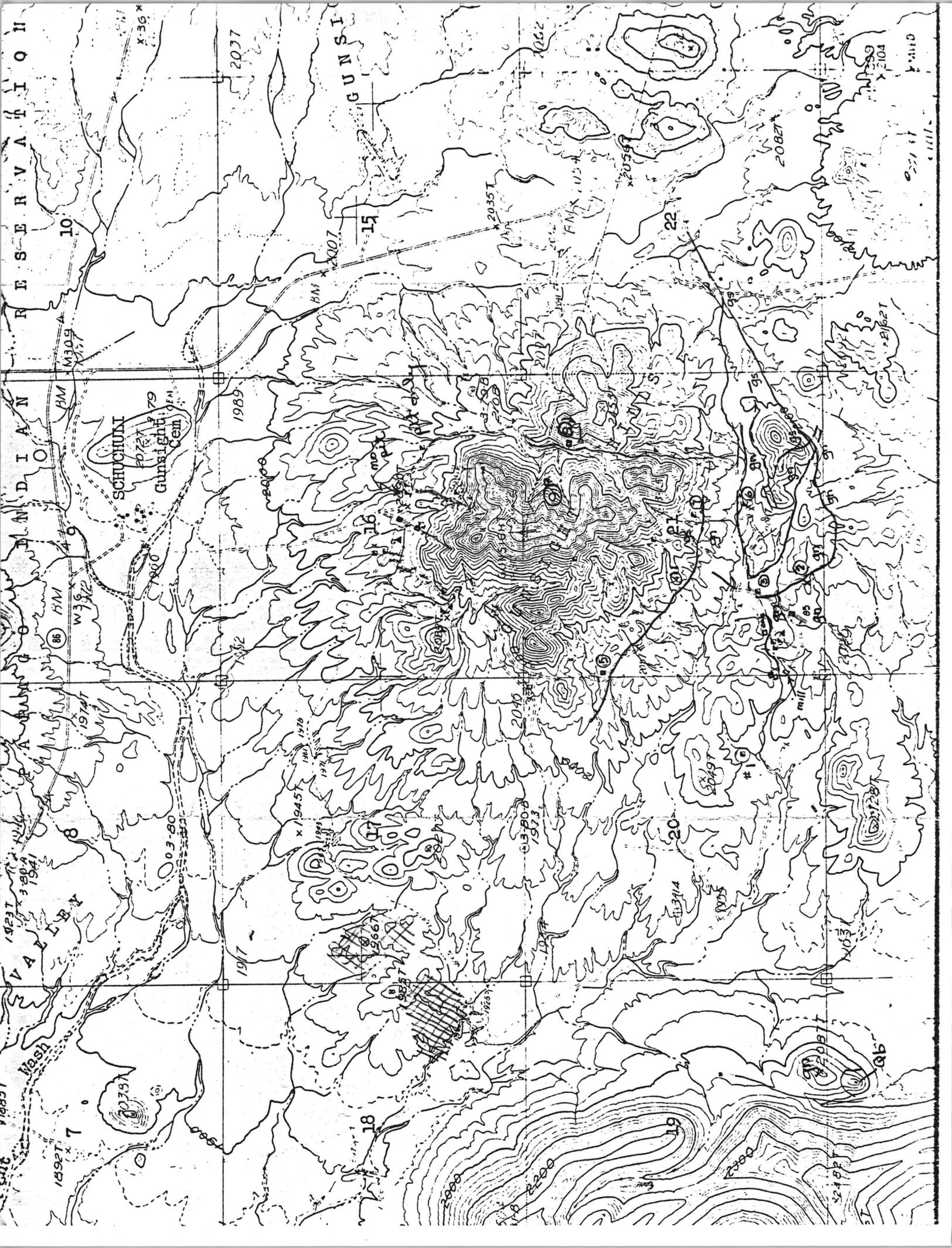
Minerals: quartz

Alteration: _____

Oxidation: _____

Conclusions and Recommendations: of no further interest







B-5/1020

GUNSIGHT MINE

The presently abandoned Gunsight mine is located in Pima Co., Arizona in the western part of the Pagago Indian Reservation about 16 miles SE of Ajo. The mine may be reached by turning south off State Highway No. 86 at the Indian village of Schuchuli and traveling south about one mile. The mine dumps are easily visible from the highway.

Apparently, the mine has had considerable development work done on it. One deep, four-compartment vertical shaft, which shows evidence of having once burned, is seemingly the major mine opening in the area. Elsewhere on the property, at least three fairly deep incline shafts, one long adit, and numerous prospect pits were seen. An old mill foundation and several ruined buildings may be seen.

Epithermal or "Teritary type" fissure veins cut grano-diorite at the Gunsight mine. The grano-diorite, exposed over a considerable area, is a medium to coarse grained, holocrystalline rock seemingly possessing good intergranular porosity. Other than the grano-diorite, a 20 ft wide dike of quartz porphyry is the only rock seen. The dike generally parallels the veins, and is exposed about 500 ft east of the main shaft.

Minerals seen in the vein outcrops (no underground workings were examined) are fluorite, quartz, barite, calcite, and traces of galena, chalcopryite, chrysocolla, malachite, azurite and limonite. Sulfate and carbonate of lead, though not obvious, are very probably present.

Two similar sub-parallel veins were seen, the eastern most of which strikes N10-15°E and dips about 65° east; the other, exposed about 400 ft to the west, strikes N25-30°E. The eastern vein is opened by the main shaft and is up to 15 ft wide in surface outcrop. The western vein has much less development than the eastern vein.

Vein structure and texture are characteristic of the type. Vein minerals are well banded and commonly show cockade structure and crustification around breccia fragments. In the surface outcrops, the veins have well-defined walls.

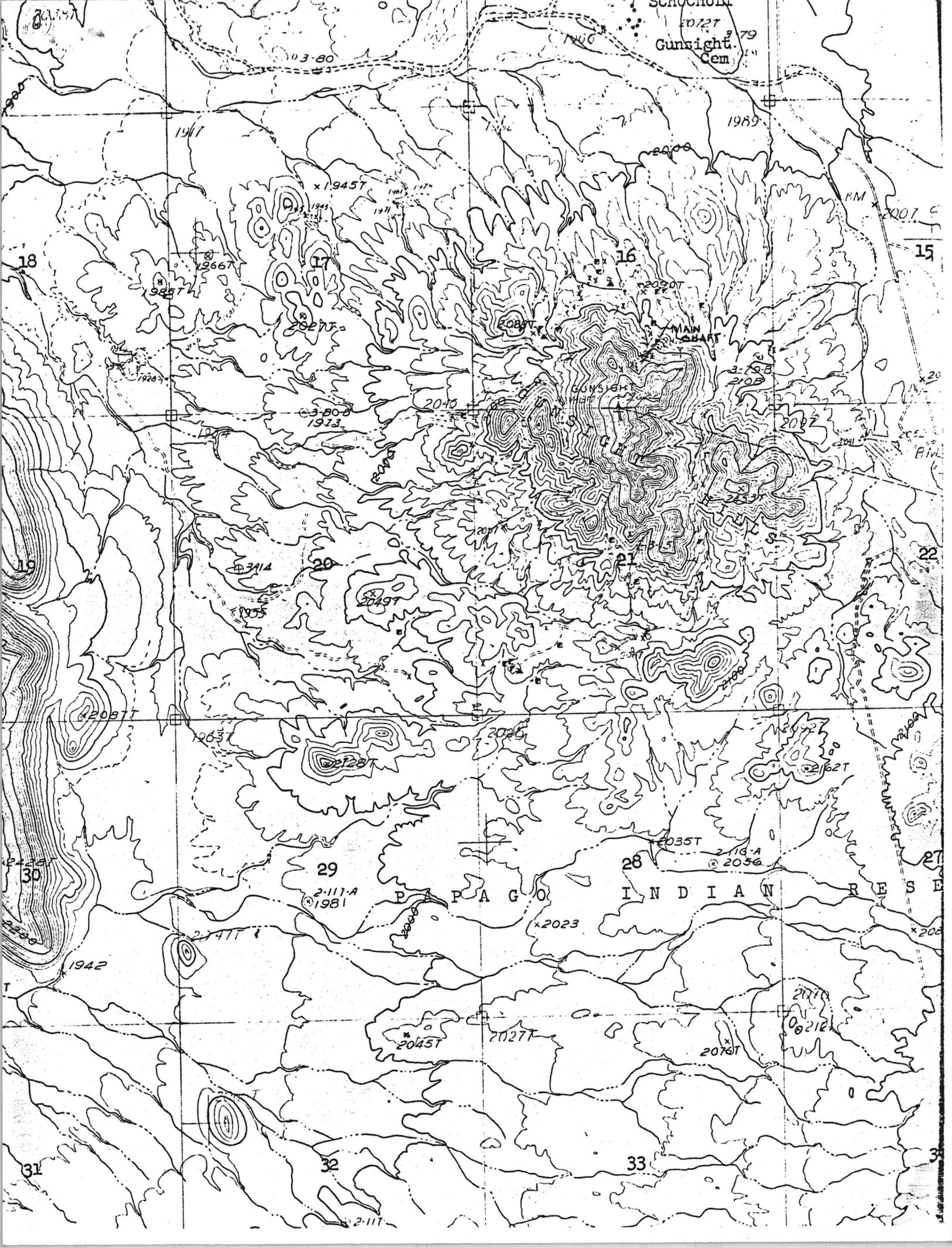
Strong argillic and/or sericitic alteration has affected the grano-diorite in the vicinity of the vein. The grano-diorite is generally weakly altered and is stained by biotite (?) - derived iron oxide.

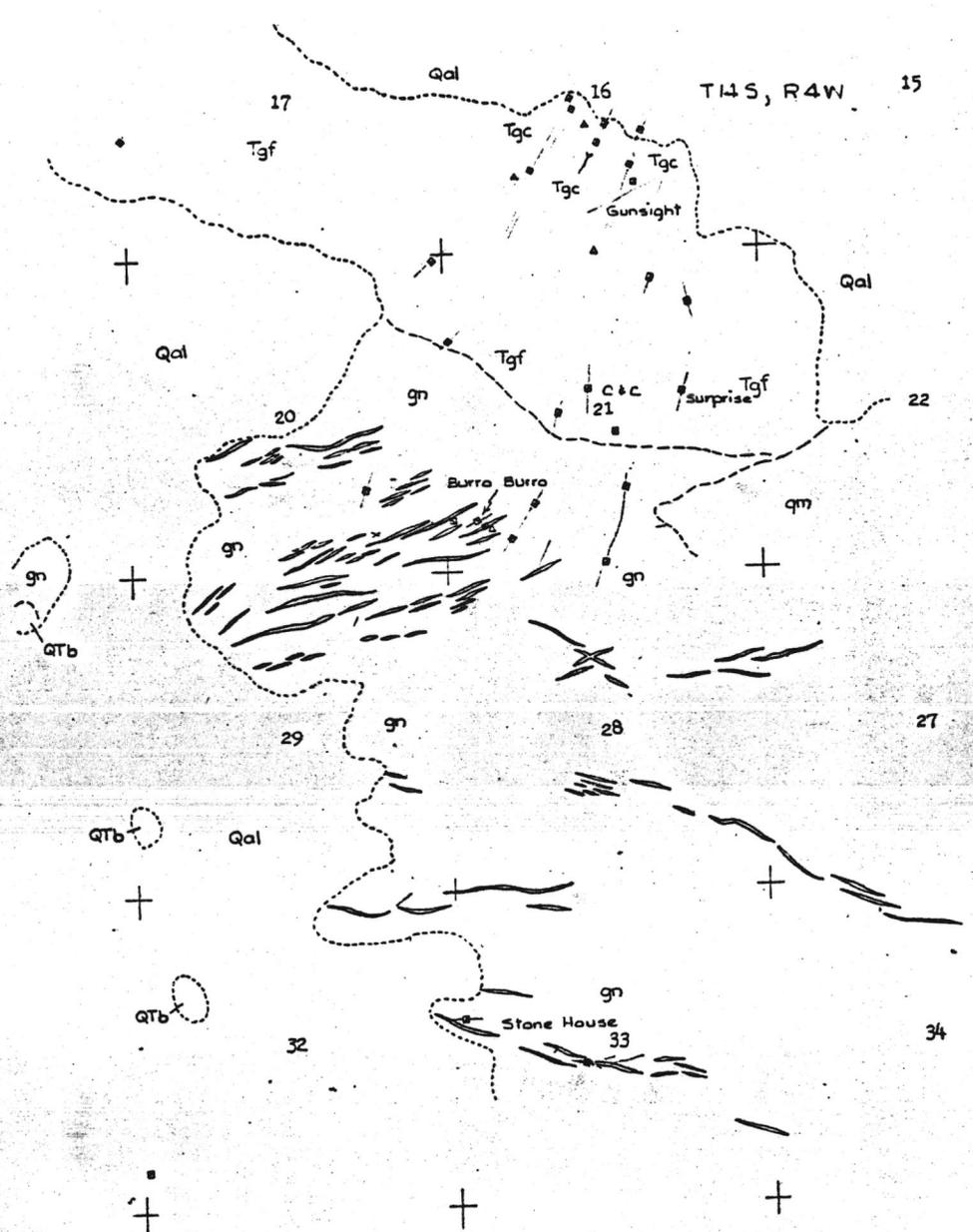
The following information is taken from The Mines Handbook-1924:

"The old Gunsight mine, bought at sheriff's sale in 1918. Reported to show a fissure vein in granodiorite, pay streak varying from 12" to 6' in width, with lead and silver value. Old workings said to show ore averaging above \$20 per ton."

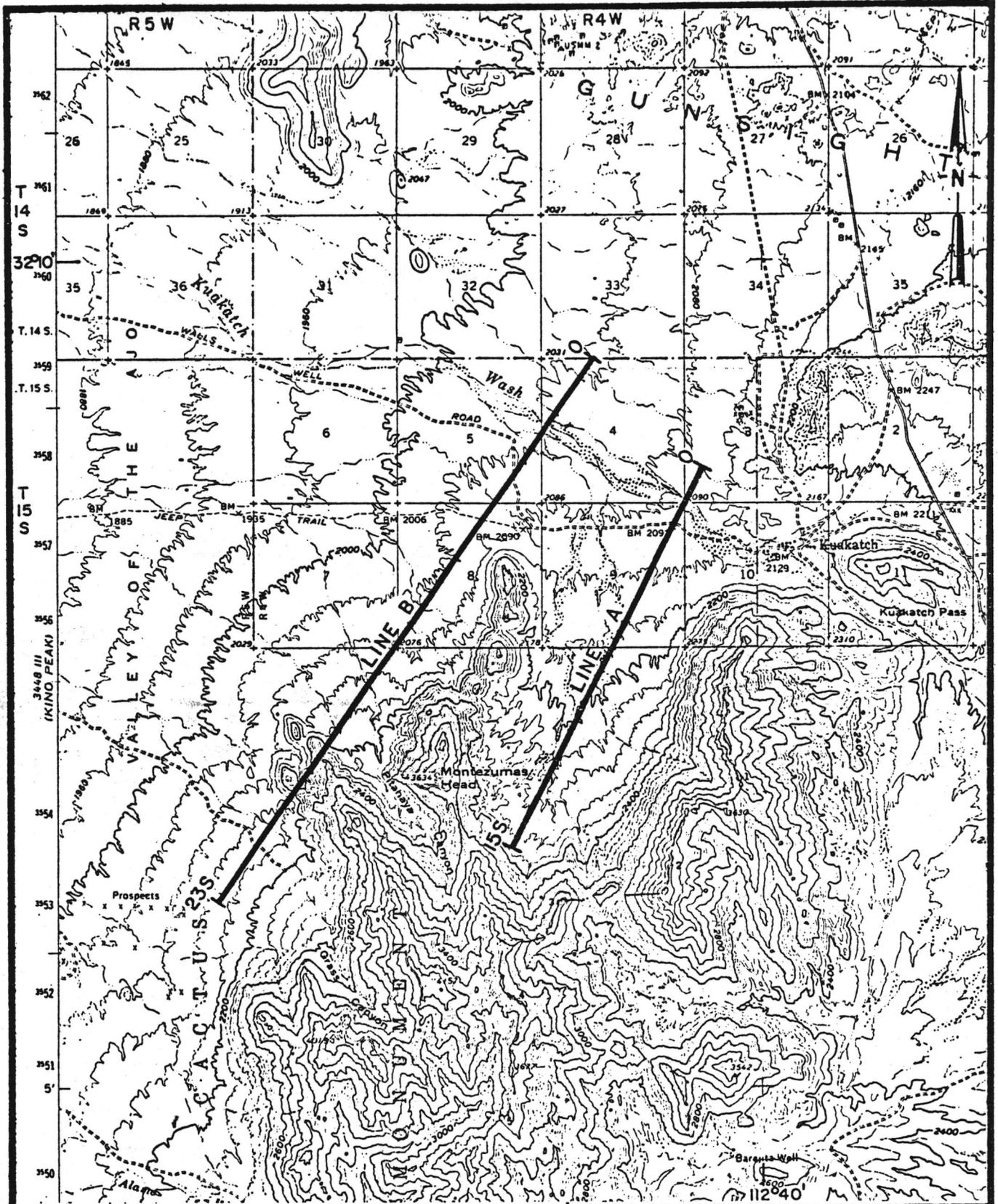
Rock is similar to Chico Shunie qtz. monz. at Ajo

JWA 11/12/56





GUNSIGHT MINING DISTRICT
 PAPAGO INDIAN RESERVATION
 PIMA COUNTY, ARIZONA
 SCALE 1:24,000
 5-12-75 JWA



ANOMALY LEGEND

- END OF LINE
- NO ANOMALY
- ANOMALY
- LINE OF SURVEY



KENNECOTT COPPER CORPORATION
EXPLORATION SERVICES GEOPHYSICS DIVISION

INDUCED POLARIZATION PLAN MAP
KUAKATCH WASH AREA
PIMA COUNTY, ARIZONA

SCALE: 1: 62,000

CONT. INTR.: 40'

DATA BY: McPHAR

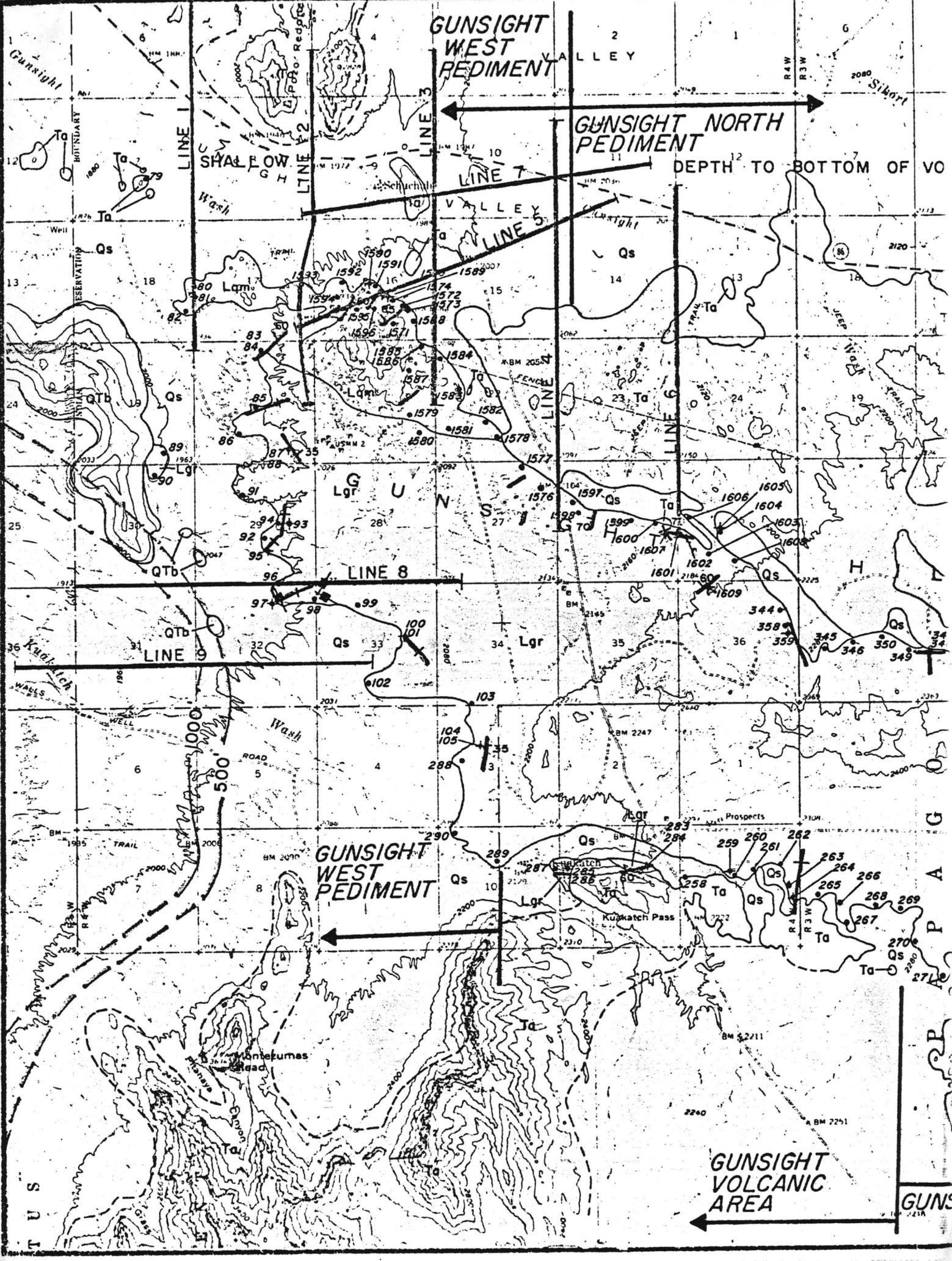
DATE: FEB, 1967

DRAWING NO.: A112-501

FILE:

T. 14 S

T. 15 S



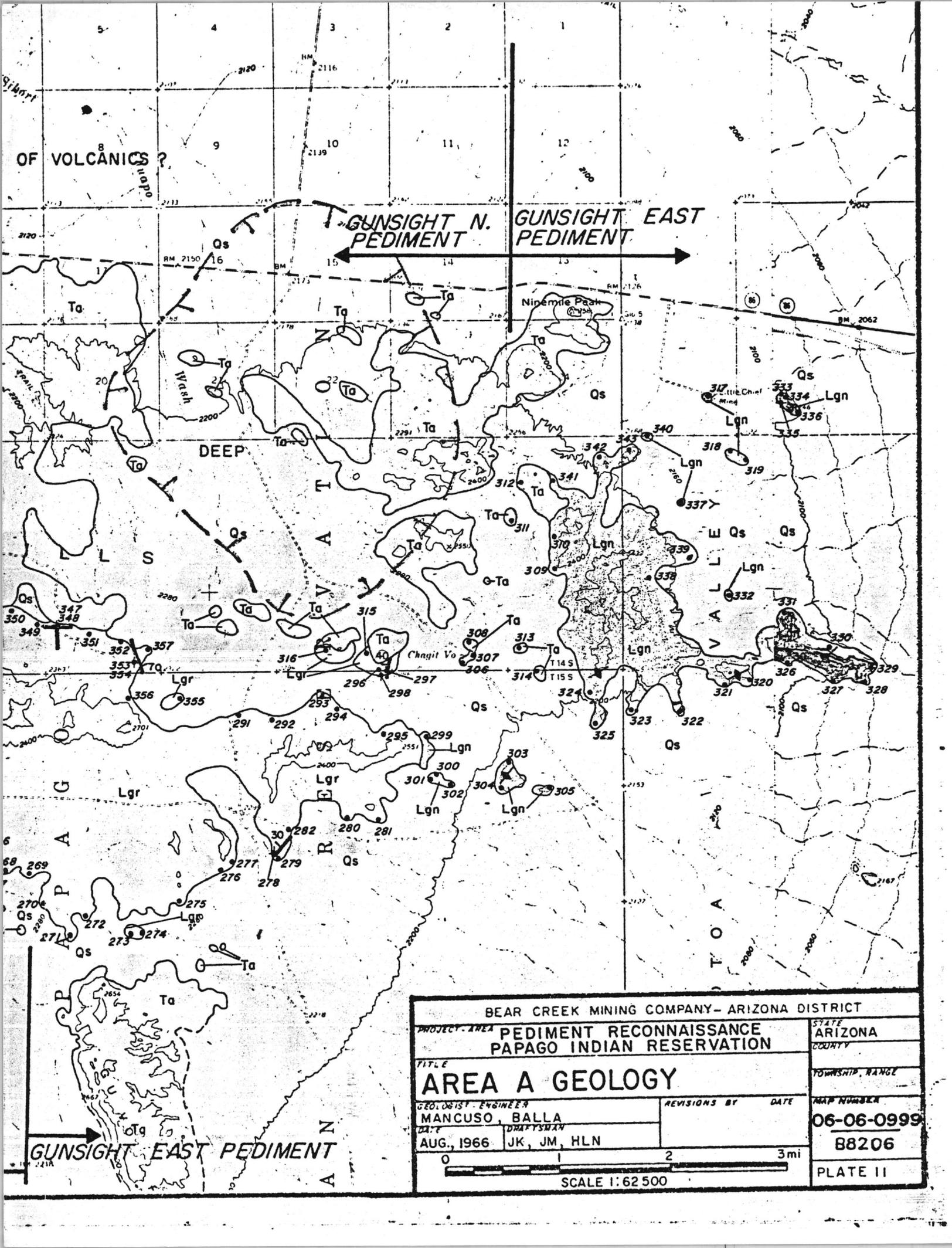
GUNSIGHT WEST PEDIMENT

GUNSIGHT NORTH PEDIMENT

GUNSIGHT WEST PEDIMENT

GUNSIGHT VOLCANIC AREA

GUNS



OF VOLCANICS ?

GUNSIGHT N. PEDIMENT GUNSIGHT EAST PEDIMENT

DEEP

BEAR CREEK MINING COMPANY - ARIZONA DISTRICT		STATE
PROJECT - AREA PEDIMENT RECONNAISSANCE PAPAGO INDIAN RESERVATION		ARIZONA
TITLE		COUNTY
AREA A GEOLOGY		TOWNSHIP, RANGE
GEOLOGIST - ENGINEER	REVISIONS BY	DATE
MANCUSO, BALLA		
DRAFTSMAN		
AUG., 1966	JK, JM, HLN	MAP NUMBER
		06-06-0999
		88206
		SCALE 1:62 500
		PLATE II

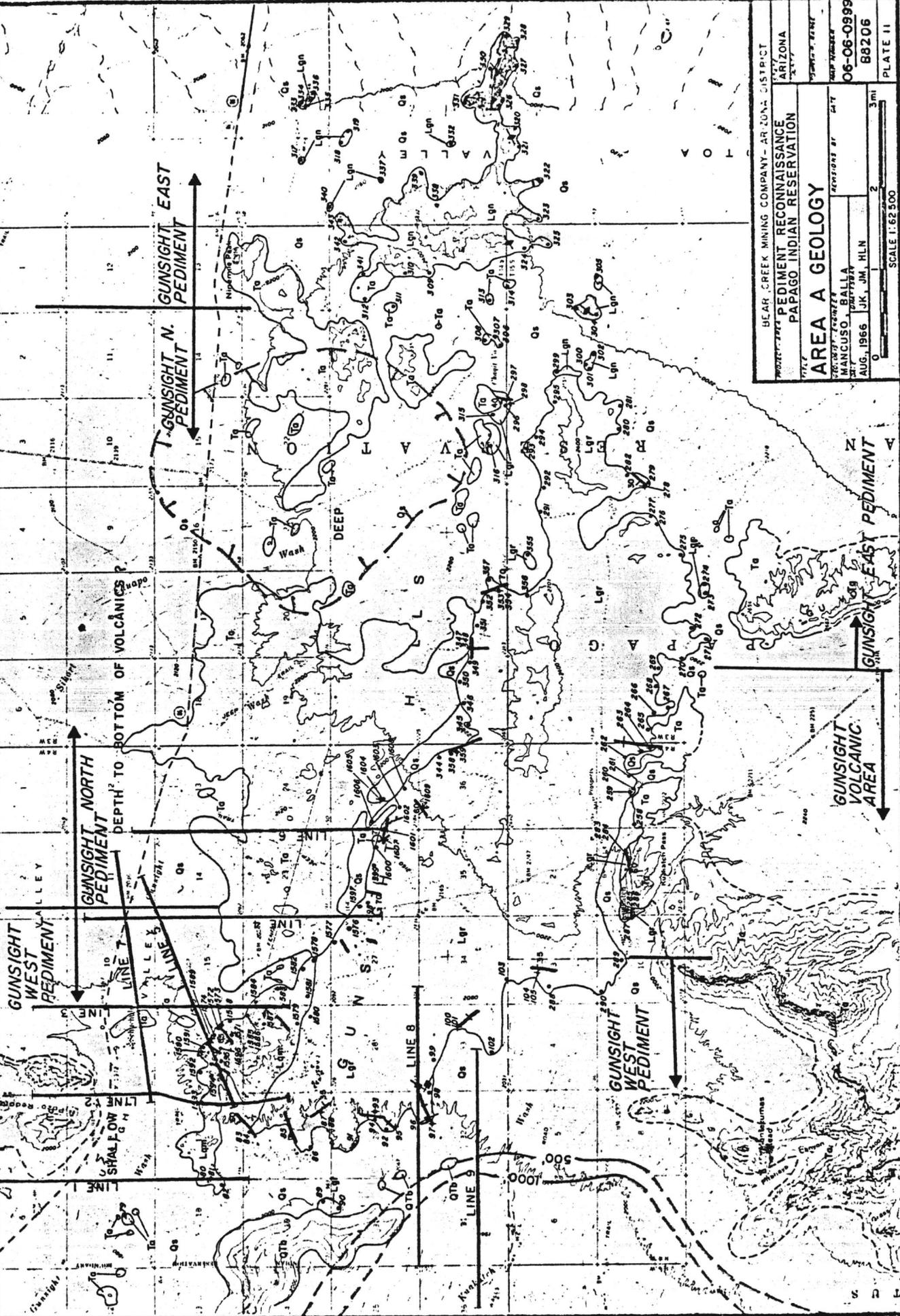
R. 2 W

R. 3 W

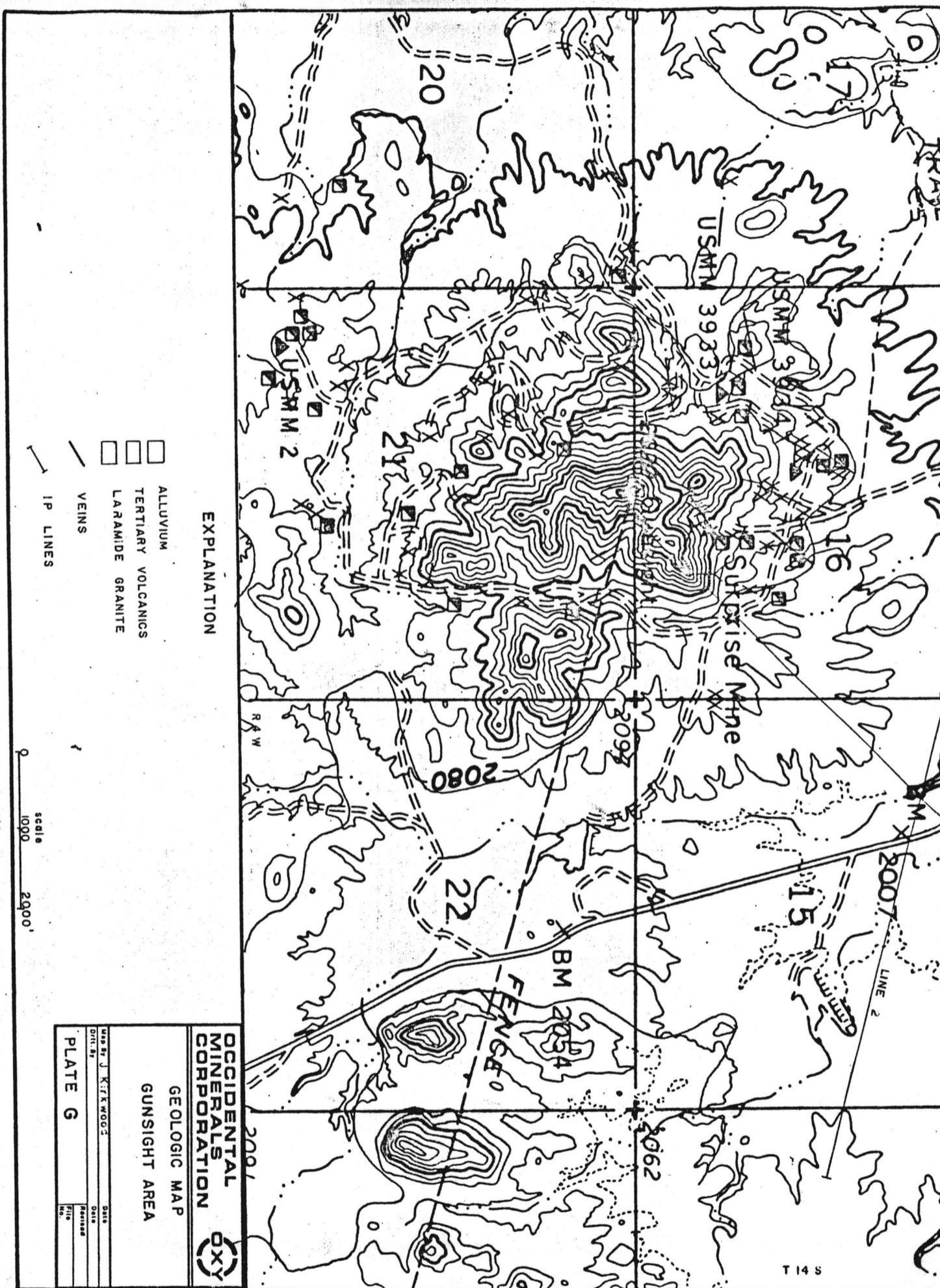
R. 4 W

T. 14 S

T. 15 S



BEAR CREEK MINING COMPANY - ARIZONA DISTRICT	
PEDIMENT RECONNAISSANCE	
PAPAGO INDIAN RESERVATION	
AREA A GEOLOGY	
PROJECT NO. 7727	REVISIONS BY
DATE 7-7-66	DATE
MANCUSO, BALLA	
AUG, 1966	J.K. JM, HLN
0	2
0	3mi
SCALE 1:62,500	
06-06-0999	PLATE II
88206	



- EXPLANATION**
- ALLUVIUM
 - TERTIARY VOLCANICS
 - LARAMIDE GRANITE
 - VEINS
 - IP LINES

scale
0 1000 2000'

OCCIDENTAL MINERALS CORPORATION

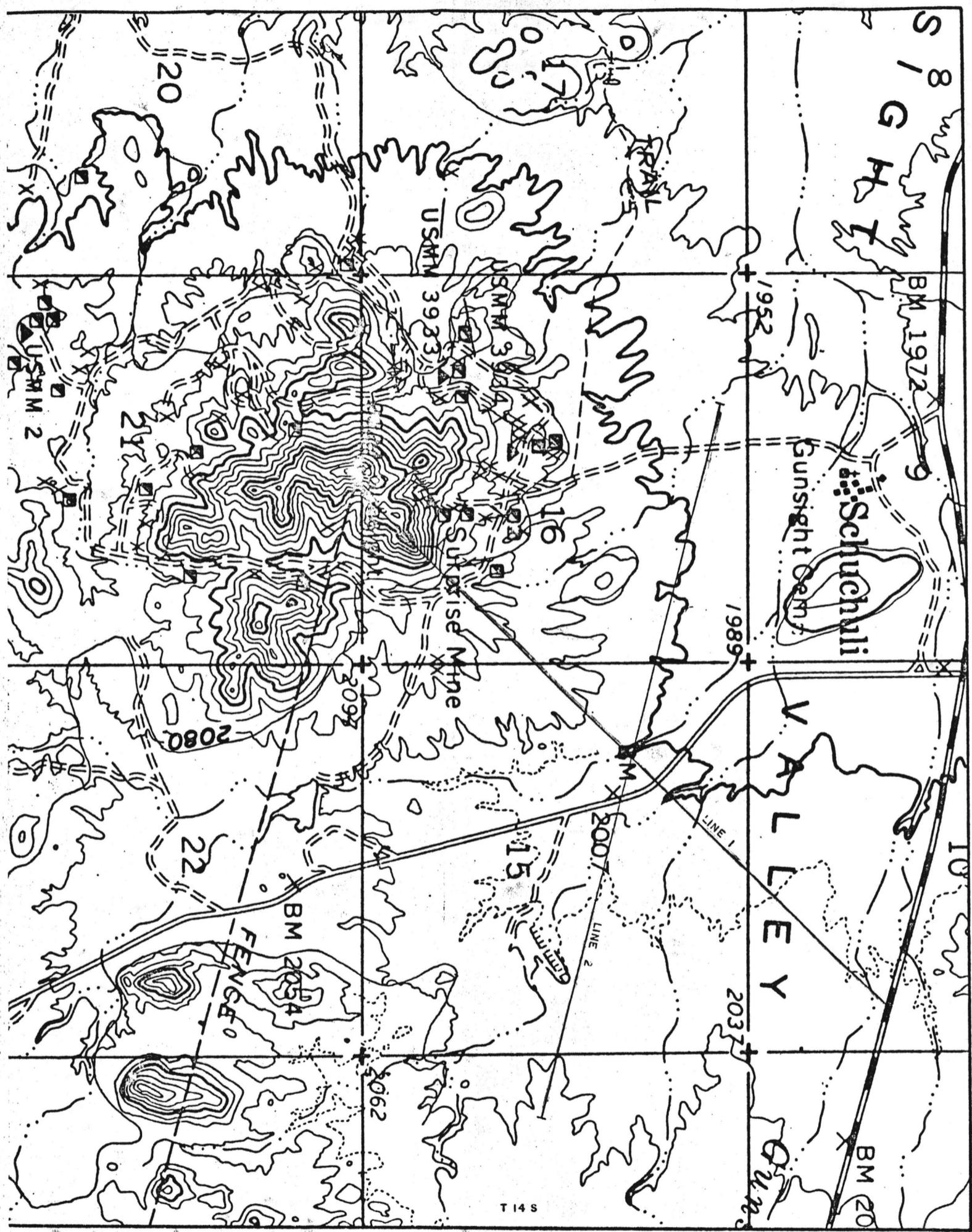
GEOLOGIC MAP GUNSIGHT AREA

OX

Map by J. KIRK WOODS	DATE
DRAWN BY	DATE
REVISED	DATE
NO. 1	DATE

PLATE G

T 14 S



T 14 S

General Geology of the Northern Part
of the Ajo Range, Pima Co. Ariz.

William C. Jones.

granite underlying Childs Latite.
39.4 ± 0.6 my. to 39.1 ± 0.6 my.

base of Organ Pipe Volc.
16.0 ± 0.3 my. and 17.1 ± 0.7 my.

Top " " " " " "
14.7 ± 0.5 my. and 15.4 ± 0.3 my.

overlying basalt
15.0 ± 0.4 my.

Childs latite → possible age is 25 my (Damon '71)

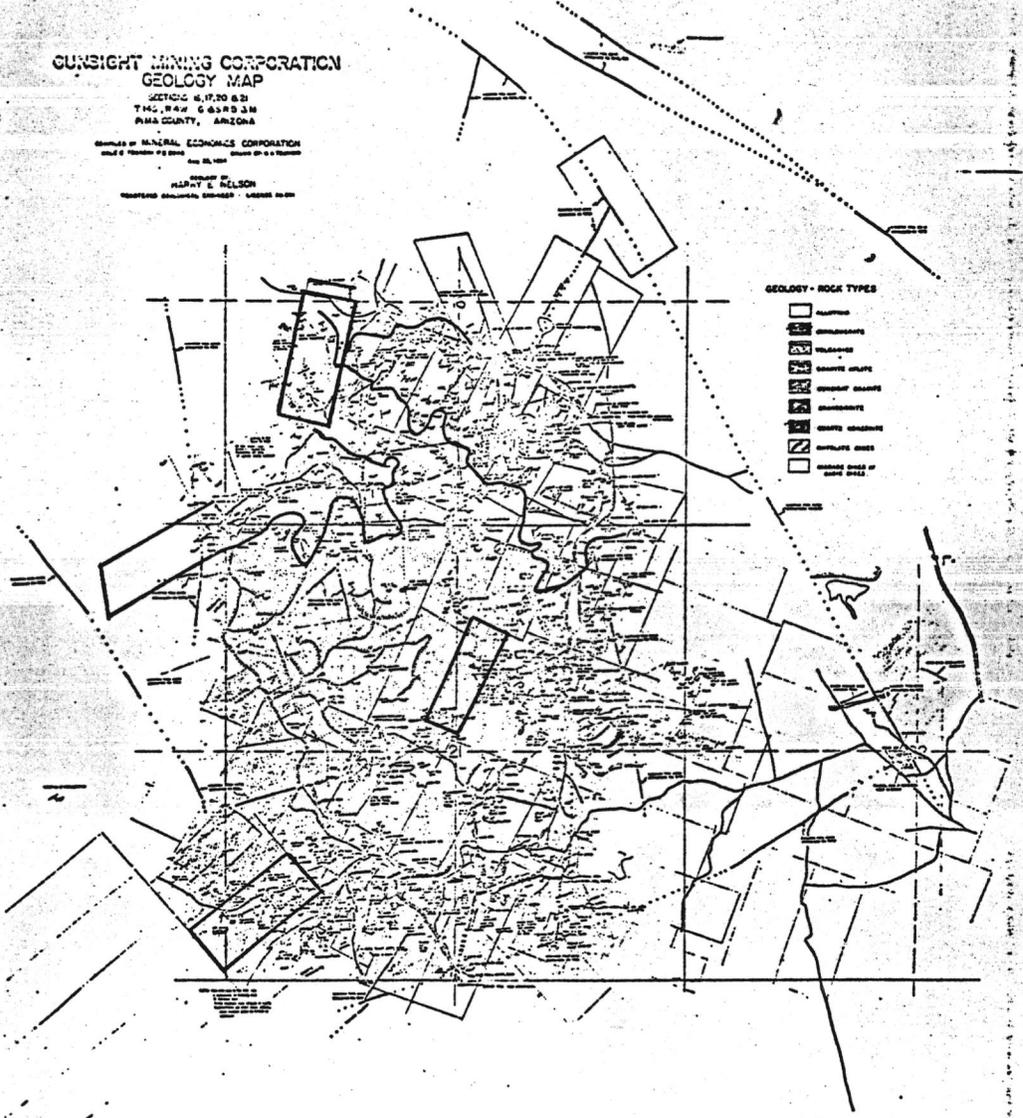
CUNTSIGHT MINING CORPORATION

GEOLOGY MAP

SECTION 6, 17, 20 & 21
T14S, R4W, G63RD3M
PIMA COUNTY, ARIZONA

MEMBER OF MINERAL ECONOMICS CORPORATION
5015 N. 16th Street, Phoenix, Arizona 85018

PREPARED BY
RALPH E. NELSON
REGISTERED GEOLOGICAL ENGINEER - LICENSE NO. 12345



65% on Xerox

**GUNSIGHT MINING CORPORATION
PROPERTY MAP**

SECTIONS 16, 17, 20 & 21
T.4S., R.4W. G. & S.R. & M.
PIMA COUNTY, ARIZONA
SCALE OF 1" = 300'
PREPARED BY MINERAL ECONOMICS CORPORATION
MAY 15, 1958 P. 2 2048

