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Andy Sutherland

Granite Peak Secure Visits
NBZinc

Dave White
Idle skarn

303/444-6998

To JD Sell

Date 3/18/92 Time 8:41 ☐ AM ☐ PM

WHILE YOU WERE OUT

M Dave Wolf

of

Phone (303) 697-6372
Area Code Number Extension

TELEPHONED	✓	PLEASE CALL	✓
CALLED TO SEE YOU		WILL CALL AGAIN	
WANTS TO SEE YOU		URGENT	
RETURNED YOUR CALL			

Message Call the week of the 30th.

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POTENTIAL FOR OPEN-PIT COPPER-GOLD-SILVER ORE

GRANITE PEAK PROSPECT
Cochise County, Arizona

David A. Wolfe

This update on the potential at Granite Peak is based on the U. of A. MS thesis, 1979, Vern DeRuyter: Geology of the Granite Peak Stock, Whetstone Mtns., Arizona, and from discussions with Duval geologists who worked on the porphyry copper project during the late 1960's. Attached are portions of Vern's geologic map, Cross-sections A-A', B-B', and drill hole cross-section data. Ore reserve calculations and additional comments on economic potential are also included.

Based on the New Jersey Zinc and Duval drilling in the late 1960's, Vern calculates a drill-indicated reserve of approximately 30 mt at .3% Copper. Gold and silver were not assayed, but visable tetrahedrite in the mineralized interval suggests that gold-silver values could be comparable to those found in similar alteration and mineralization that occurs in the rhyodacite dike swarm, adjacent hornfelsed Bisbee, and skarns near the Mascot Mine—Nevada Mine area. Gold-silver values in this area range 100-400 ppb Au and 5-25 ppm Ag.

While some of Vern's tonnage estimate is speculative (dh-4 & dh-6), the overall tonnage potential within the favorable quartz monzonite and breccia units could be expanded to 70-130 million tons, with possible grades of .3-.5% copper, .01-.015 Au, & .5-1.0 oz Ag.

Plotting of the drill holes on Cross-sections A-A' & B-B' suggests that the superposition of breccia and quartz monzonite strongly influence copper grade, and that the breccia may have two components:

1. Tabular Sheet Component, with the outcrop between Broken Rock Saddle and the Black Oak Mine possibly representing the up-dip outcrop of a sheet dipping to the southwest.

2. Vertical "Hydrothermal Conduit" Component, as indicated by dh-5 & dh-8, where higher copper values persist to approx. 750 feet depth (Cross-section A-A').

   (Please note that Fig. 5, Drill hole log & assay cross-sections have been reduced 10% to fit 11X17 format)

Drill hole #5 was apparently collared in the footwall of the tabular breccia and intersected the vertical component of the breccia at depth. Drill hole #2, collared in the hanging wall of the tabular breccia zone, intersected the breccia at much shallower depth. Drill hole #8 was collared within the breccia zone and remained in mineralized breccia to cutoff depth at 520 feet. The lower portion of dh-5 remained in mineralized breccia to a depth of 750 feet.

No assays are available for dh-1, drilled by the property owner of that time period. However, the hole was collared in a downdropped fault block, and may have been terminated lass that 100 ft. from ore breccia in the uplifted block located NW and uphill from the Northeast structure that connects dh-2 & dh-3 (see drill hole cross-section and Cross-section B-B').

Unfortunately, the bearing and inclination of the drill holes have a unidirectional bias that leaves question marks in an evaluation of host rock--mineral relationships. The data suggests that the quartz monzonite, and possibly granodiorite, that lie west of the Black Oak Mine and south of Broken Rock Saddle may be entirely underlain at shallow depth by a gently dipping tabular breccia ore horizon. Vertical feeder systems such as that intersected in the Black Oak Mine area add substantially to the overall tonnage.

Alternatively, the entire breccia outcrop pattern may represent a vertical feeder system, with mineralization spreading laterally along shallow-dipping crush zones or zones of thrust faulting within the intrusive complex.

Additional open-pit potential may be present along the northern border of the intrusive, north of a line connecting the Nevada Mine and Mascot Mine. Where the rhyodacite dike swarm intruded the hornfelsed Bisbee group. both units contain numerous to abundant quartz veinlets with chalcopyrite, bornite and lesser tetrahedrite. This alteration typically assays 100-400 ppb Au and 5-25 ppm Ag.

In conclusion, even with the exclusion of mineralized intercepts in dh-4 & dh-6, past drilling at Granite Peak defines an indicated potential of 20-30 million tons, depending on geometry. The reserve is open at least in three directions, with untested potential underlying an area well in excess of the zone in which previous drilling was concentrated.

TO: File
FR: Vernon DeRuyter
DT: 24 February 1979
RE: Veinlet Mineralization in the Granite Peak Stock, Whetstone Mountains, Arizona (summary of thesis)

The eastern sector of the Granite Peak Stock is dominated by a NE-elongated quartz monzonite porphyry stock within the main mass of diorite. Except for various mineralized skarns in the sedimentary rocks, mineralization and alteration intensity centers on a small NE-trending quartz latite porphyry dike centrally located within the quartz monzonite porphyry stock (Figure 2 in thesis). Fracturing is largely unidirectional, NE-striking, and vertical. Sulfides are mostly restricted to narrow quartz-calcite veinlets bordered by narrow zones of K-feldspar and very minor sericite. Strong local development of argillic alteration is seen in outcrop, but is not apparent in drill core. Sulfides consist of pyrite, chalcopyrite, bornite, and molybdenite in a tentatively defined early stage of deposition followed by galena, sphalerite, and tetrahedrite in a later stage expressed in the more prominent veins up to 20 cm thick. The nonpervasive character of mineralization and alteration along unidirectional fractures suggests that only a weak hydrothermal system developed to deposit the early stage assemblage. The later stage minerals are associated with carbonate gangue minerals in the same fractures as the early stage, creating a telescoped assemblage. The later, peripheral-type mineralization may be related to a deeper-lying hydrothermal center for which the evidence is more obscure.

There are twelve drill holes in the area. Six of these are inclined across the NE strike of fracturing, two are vertical holes to depths of 753 feet and 520 feet, and the remaining four are shallow tests to 180 feet depth. I have compiled data from the inclined holes and the 753 feet deep vertical hole to arrive at a resource estimation of 29 million tons of 0.28% copper and 90 ppm molybdenum. The 520-feet deep hole is located at a site that I previously recommended, adjacent to the quartz latite porphyry dike (Figure 2). It contains 515 feet averaging 0.25% Cu and 131 ppm Mo. A suggestion of zoning is indicated by highest copper grade of 0.33% Cu in the interval 60-170 feet and highest molybdenum grade of 387 ppm in the interval 450-520 feet. Cross-section D of Figure 5 shows dh-5 contains comparable copper and molybdenum grades across the mineralized zone as well as decreasing copper with increasing molybdenum with depth. Supergene enrichment is virtually nonexistant cue to low pyrite content and the presence of neutralizing carbonates in the veinlets.

NJZ DRILL HOLE ASSAYS

	Interval	Thickness	Ave. Cu	Ave. Mo
Hole #1	10 - 100 =	90'	.09	.001
	100 - 500 =	400'	.33	.007
	500 - 666 =	166'	.08	.002
Hole #2	8 - 210 =	202'	.13	
	210 - 256 =	46'	.31	
	256 - 751 =	495'	.12	
Hole #3	10 - 407 =	397'	.07	
	407 - 529 =	122'	.28	
	529 - 646 =	117'	.06	
Hole #4	10 - 220 =	210'	.08	.011
	220 - 552 =	332'	.33	.024
	552 - 950.5 =	398.5'	.17	

Calculated by J. E. Shearer

DUVAL SIERRITA CORPORATION

CERTIFICATE OF ASSAY

GSB Mining

July 16, 1971

DH-8	Cu	Mo
5'-10'	.32	.001
10'-20'	.28	.002
20'-30'	.21	.002
30'-40'	.25	.002
40'-50'	.25	.003
50'-60'	.19	.002
60'-70'	.33	.004
70'-80'	.39	.011
80'-90'	.25	.001
90'-100'	.36	.001
100'-110'	.40	.023
110'-120'	.35	.014
120'-130'	.23	.002
130'-140'	.26	.003
140'-150'	.21	.001
150'-160'	.42	.002
160'-170'	.38	.015
170'-180'	.26	.007
180'-190'	.19	.002
190'-200'	.23	.026
200'-210'	.29	.003
210'-220'	.27	.002
220'-230'	.15	.002
230'-240'	.24	.002
240'-250'	.33	.007
250'-260'	.11	.001
260'-270'	.19	.002
270'-280'	.33	.002
280'-290'	.23	.004
290'-300'	.16	.015
300'-310'	.19	.062
310'-320'	.14	.007
320'-330'	.07	.003

CRM 311 M.L.

DUVAL SIERRITA CORPORATION

CERTIFICATE OF ASSAY

7-21-71

	Cu %	Mo %
330-340	.21	.003
340-350	.16	NIL
350-360	.27	.020
-370	.15	.019
-380	.22	.016
-390	.37	.025
-400	.36	.024
-410	.30	.019
-420	.34	.024
-430	.15	NIL
-440	.26	.020
-450	.15	.003
-460	.22	.038
-470	.24	.025
-480	.26	.036
-490	.21	.027
-500	.28	.040
-510	.17	.033
-520	.15	.032

FORM 311 M L.

J. T

CHAPTER 7

ECONOMIC POTENTIAL OF MINERALIZATION

In search for porphyry copper-scale orebodies, the decision to advance exploration efforts in an area such as Granite Peak depends on the level of encouragement generated by available data and the potential of the area based on similarities with known porphyry deposits. This comparison and evaluation will follow an evaluation of observed mineralization. Underground workings in the area of study are judged unsafe and the valuable geologic control they could provide is unfortunately lacking.

Tactite Mineralization

Chalcopyrite, pyrite, galena, sphalerite, bornite, and magnetite mineralization in tactite gangue assemblages of brown garnet, calcite, epidote, actinolite-tremolite, and wollastonite are found at the Nevada Mine, Mascot Mine, David Lee Mine, and in the Apache Canyon xenolith near the eastern end of the stock. Figure 2 shows that all of these mines are located near the contact of granodiorite with the impure carbonate beds of the Apache Canyon Formation. Perhaps much of the $105,000 worth of lead, copper, and silver mined from the Whetstone District during 1918-1929 came from these tactite deposits (Elsing and Heineman, 1936). Additional tactite mineralization may exist in Apache Canyon Formation north of the Mascot Mine where contact metamorphism of favorable carbonate beds

by both rhyodacite and granodiorite could have developed permeability for hydrothermal fluids. Very little tactite alteration or mineralization is seen on the surface in this area.

Veinlet Mineralization

As seen on the surface, veinlet mineralization consists of pyrite, chalcopyrite, minor bornite, molybdenite, galena, and spalerite in quartz, calcite, and clay gangue along steeply dipping northeasterly joints which are bordered by clay alteration, potassium feldspar flooding, and local silicification with minor sericite. Limonite, malachite, and minor azurite are the obvious oxidation products of these sulfides, as shown in Figure 18. Drill holes contain the additional minerals noted in Figure 5. Ankerite is generally restricted to the breccia.

The drill hole locations shown in Figure 2 and the data presented in Figure 5 permit a calculation of approximate reserve tonnage and grade. For this estimate, a 2000 parts per million (0.2%) copper (Cu) cutoff is used. Dotted lines in Figure 5 cross-sections A, C, D, and E outline perimeters of 2000 + ppm Cu reserve blocks. Projections of these lines to surface define the assumed reserve outcrop from which the area of influence for each drill hole is determined. Bases of reserve blocks are arbitrarily placed 100 m below the deepest 2000 + ppm Cu intercept. An exception is the vein system in drill hole 6 where only 50 m is used with half the area used for drill hole 4 (Figure 5E).

The formula used for tonnage calculation in Table 9 is: Metric Tons (MT) = Drill hole block surface area (m^2) x thickness (m) x 2.7 MT/m^3.

Table 9. Drill Hole Block Reserve Estimate

Figure	Hole	Area	Thickness	Density	Metric Tons	Cu(ppm)	Mo(ppm)
5A	dh-3	$9000m^2$	200m	$2.7MT/m^3$	4.8×10^6	2400	4
5C	dh-2	$10400m^2$	185m	$2.7MT/m^3$	5.2×10^6	3390	93
5D	dh-5	$13200m^2$	315m	$2.7MT/m^3$	11.3×10^6	2790	165
5E	dh-4	$11200m^2$	185m	$2.7MT/m^3$	5.6×10^6	2690	38
5E	dh-6	$5600m^2$	130m	$2.7MT/m^3$	2.0×10^6	2470	5
				Totals	$28.9 \times 10^6 MT$	2790ppm	90ppm

Average grade for Cu and Mo is simply a cumulative of individual intercept meters and ppm for each metal divided by total meters. No factors for dilution or waste are applied.

Table 9 shows an indicated 29 million metric ton reserve of about 0.28% Cu and 0.01% Mo. At a price of $2.21 per kilogram ($1.00 per pound) for copper and $11.05 per kilogram for molybdenum, each metric ton contains an average $6.20 of copper and $1.10 of molybdenum. The cash value of this reserve is about $212,000,000. Although the reserve outcrops and its hypogene ore is similar in grade to some producing porphyry deposits (Lowell and Guilbert, 1970), it lacks the higher grade supergene enriched tonnage that makes most porphyry deposits economically viable. The reserve is also only a tenth of the tonnage currently regarded as favorable for exploitation.

The copper values in chalcopyrite, the presence of calcite, low pyrite content, and questionable permeability of mineralized rock virtually eliminate acid leaching as a means to recover the metals without mining because chalcopyrite dissolves very slowly and calcite neutralizes sulfuric acid. Additional reserves of higher grade are needed to form an orebody.

Comparison With Porphyry Copper Model

It is evident from Figures 2 and 5 that the intensity center of the elongated mineralization zone occurs near the quartz latite porphyry exposure. The discussion to follow evaluates the potential of a deep vertical drill hole intersection of ore grade mineralization at this location.

The Granite Peak stock is a favorable host for porphyry type mineralization with respect to regional location. Its position adjacent to the San Pedro Rift is interior to the Arizona porphyry zone (Lowell, 1974). Laramide intrusions localized elsewhere along the Silver Bell-Bisbee discontinuity have associated copper and molybdenum mineralization in the Mule Mountains as well as the Empire, Tucson, Silver Bell, and Sawtooth ranges to the northwest (McCrory and O'Haire, 1961). Its sequence of intrusion from granodiorite through quartz monzonite to granite is highly favorable (Lowell and Guilbert, 1970), although the 74 m.y. age of granodiorite represents an older date than nearby porphyry deposit igneous host rocks which become younger southeastward in Arizona and northern Sonora. If an age of 60 m.y. is found for quartz monzonite porphyry, the true host to porphyry type mineralization in the Granite Peak stock, it would precisely fit the trend shown by Lowell (1974). The host dimensions of 1800 m by 450 m is closely comparable to the typical deposit. Brecciation is also typical, although the ankerite-rich type found in the stock is rare.

Well developed pervasive alteration and mineralization zonation patterns are lacking in the Granite Peak stock. Perhaps the absence of crackle fracturing along multiple directions disallowed the permeability for widespread hydrothermal alteration. Figure 5 shows that most of the orthoclase flooding and the single biotite alteration occurrence fall within the higher grade mineralization intercepts. This potassic alteration is typical of the innermost alteration zone where comparatively low total sulfides occur as pyrite, chalcopyrite, molybdenite, and bornite (Lowell and Guilbert, 1970). Sericitic alteration is also typical of the

innermost and inner alteration zones. It is seen in minor amounts in thin section and near the Black Oak Mine, but it is not found in any drill holes. Clay alteration is seen in outcrop, but is only a minor occurrence in drill holes. Abundant calcite and chlorite normally typify propylitic alteration and are found transecting potassic zone assemblages in the stock. Tetrahedrite is also typical of the propylitic zone, but its presence in four drill holes and the other evidence together suggests a sharp constriction and overlap of mineralization and alteration patterns exists in the stock. Particularly lacking is the pyrite-rich halo typical of the intermediate and inner alteration zones (Lowell and Guilbert, 1970). The comparatively narrow zone of richer mineralization intersected by drill holes 4 and 6 (Figure 5E) includes a vein containing tetrahedrite, sphalerite, and galena that, except for substantial orthoclase alteration also present, would form part of a peripheral zone around the Black Oak Mine area.

The constricted and overlapping alteration and mineralization patterns associated with quartz monzonite porphyry can be interpreted in three ways. First, a postulated major hydrothermal system was once present, but has since been eroded with only the deep core now exposed. Pervasive quartz-potassic alteration and disseminated pyrite-molybdenite mineralization is apparently typical of porphyry core zones, but these characteristics are inconsistent in the stock. The lack of pervasive alteration and disseminated pyrite within the stock and the absence of peripheral zone characteristics beyond and above the stock together largely eliminates this explanation. Second, a strong hydrothermal system failed to develop. The mineralization is merely "accessory" Cu, normal

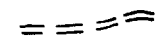
and consequent to crystallization of an intermediate composition hypabyssal pluton in the absence of an extensive hydrothermal system. Phyllic and peripheral alteration followed potassic in the same channels with concomitant sulfide mineralization in overlapping pattern. The available data supports this model which allows for additional reserves to be found under the Black Oak Mine area. Figure 5D shows evidence for possible vertical zonation of copper and molybdenum mineralization. The upper half of drill hole 5 averages 2330 ppm Cu and 57 ppm Mo whereas the lower half averages 1860 ppm Cu and 236 ppm Mo. The copper grade variation may reflect, in part, decreasing supergene enrichment with depth. Molybdenite is relatively stable in supergene environments (Blanchard, 1968). The four-fold molybdenum grade increase with depth probably reflects hypogene concentrations proximal to the quartz latite porphyry dike. Mineralization is likely to be restricted to deeper levels of the same 150 m-wide elongate zone of strong joints exposed on the surface and grade is dependent on the frequency of mineralized northeast striking veinlets.

The third interpretation is a speculation that the observed hydrothermal effects represent high level leakage from a major hydrothermal system at depth beneath the Black Oak Mine. The largest dimensions of the estimated reserve, the best grade, and the most intense alteration all center on the small quartz latite porphyry exposure. Figure 4 shows a postulated parent body to this dike. A 1000 m deep drill hole collared in this area may intersect a porphyry system associated with quartz latite porphyry. The vertical dimension of porphyry systems may reach 3000 m as at San Manuel (Lowell and Guilbert, 1970). For such depths,

post-mineral southwestward tilting of the range must be taken into account by location of very deep holes farther northeast.

Spring

Meteoric water trap and tank



Dirt road

Survey station

X

Prospect pit

Shaft

Adit

Vertical diamond drill hole

Inclined diamond drill hole, showing bearing and inclination

Drill hole	Driller	Bearing	Inclination	Total length	
dh-1	K-1	N40°W	45°	128 meters	420 feet
dh-2	NJZ-1	N60°W	30°	208 "	684 "
dh-3	NJZ-2	N32°W	30°	229 "	751 "
dh-4	NJZ-3	N56°W	30°	221 "	713 "
dh-5	NJZ-4	N65°W	60°	290 "	951 "
dh-6	D-1	N56°W	60°	400 "	1312 "
dh-7	D-2	vertical		230 "	753 "
dh-8		vertical			520 "

K = Kalaf

NJZ = New Jersey Zinc Company

D = Duval Corporation

A'

IGNEOUS ROCKS

Late Tertiary

- Trv — Rhyolite vitrophyre

Late Cretaceous or Early Tertiary

- Lbp — Basalt porphyry
- Lgr — Granite
- Breccia zone
- Lqlp — Quartz latite porphyry
- Lqmp — Quartz monzonite porphyry
- a — Aplite dikes (exaggerated thickness)

Late Cretaceous

- Kg — Granodiorite (K/Ar age: 74 m.y.)
- Kqg — Quartz gabbro
- Kgp — Granodiorite porphyry
- Kr — Rhyodacite
- ap — Alaskite porphyry xenolith (Precambrian?)

SEDIMENTARY ROCKS

Early Cretaceous

- Ks — Shellenberger Canyon Formation
- Ka — Apache Canyon Formation
- Kw — Willow Canyon Formation
- Rainvalley Formation
- Pch — Concha Limestone
- Scherrer Formation
  - Psu — upper sandstone member

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Spring

GRANITE PEAK

2260

Alpine Spring

Broken Rock

Saddle

2100

2000

1900

Mascot Mine

Nevada Mine

Black Oak Mine

U.S.L.M. 2246

dh-1

dh-2

dh-3

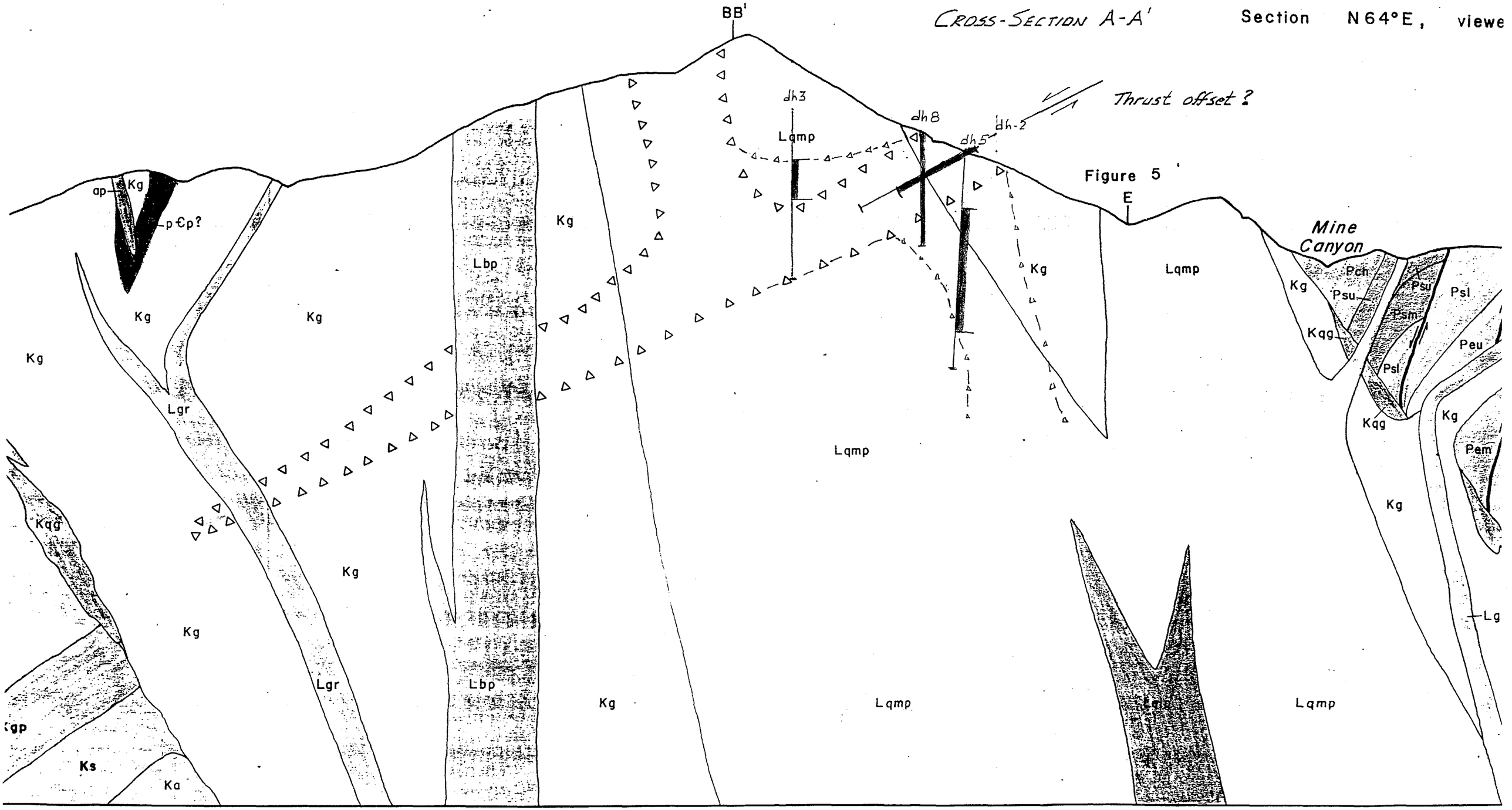
dh-4

dh-5

dh-6

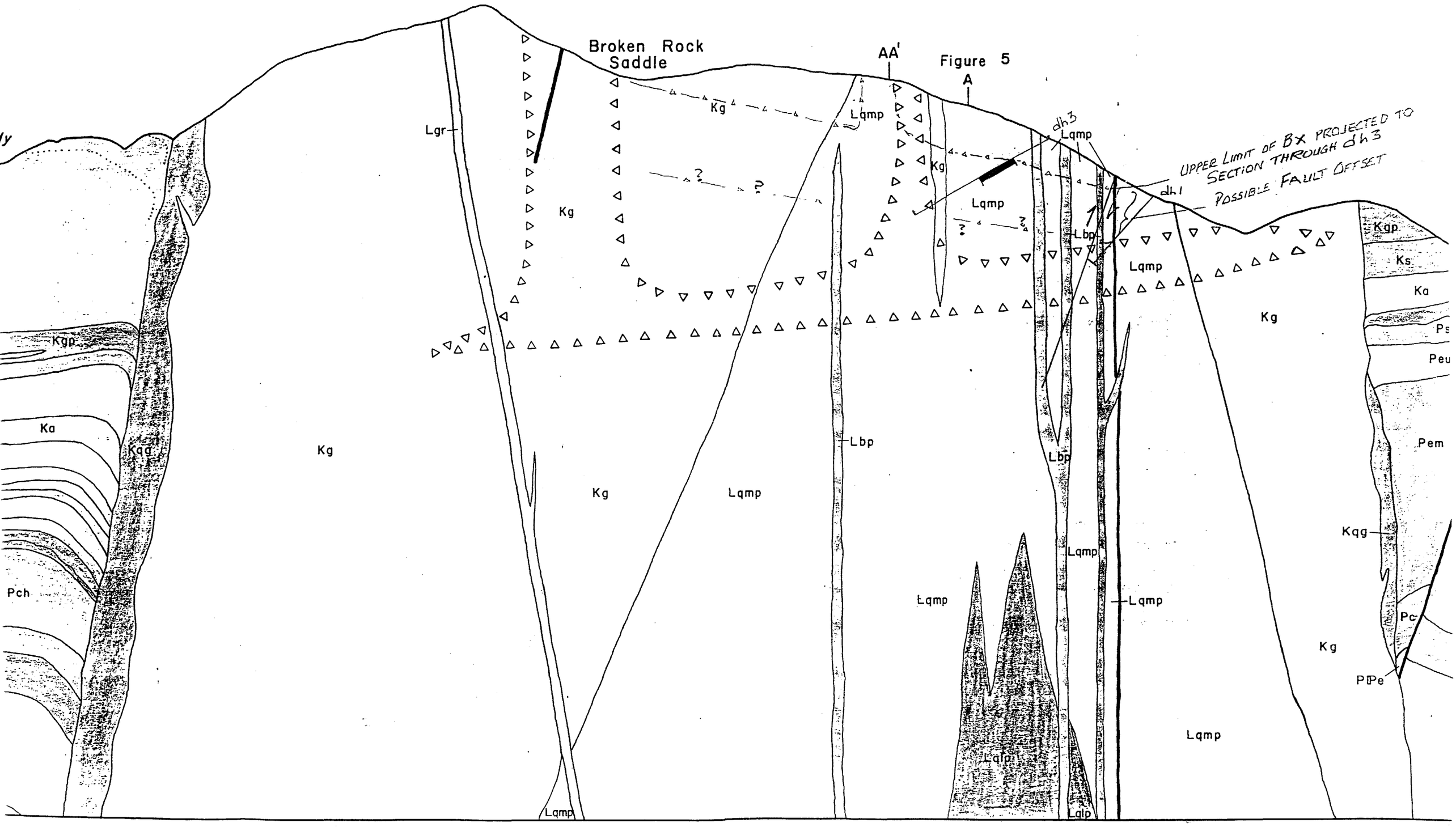
dh-7

CROSS-SECTION A-A' Section N64°E, viewe



CROSS-SECTION B-B'

Section N 60°W,

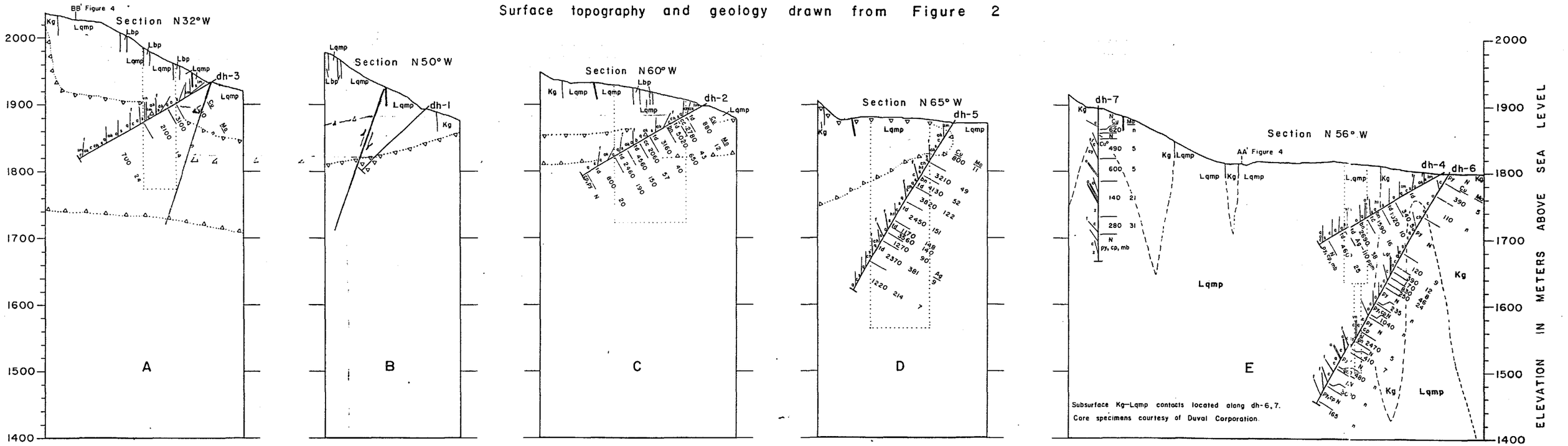


HORIZONTAL AND VERTICAL SCALE 1:5000

NORTHWEST

Cross—sections viewed toward northeast
Surface topography and geology drawn from Figure 2

SOUTHEAST



EXPLANATION

SULFIDE MINERALIZATION

Intervol average assays in parts per million for copper and molybdenum are shown to the right of each diogrammatic drill hole log. Sulfide minerals in assayed portions are largely pyrite, chalcopyrite, and molybdenite; others are noted where present. N=not assayed, n=none.

Cu=copper	Mo=molybdenum	Ag=silver
Cu°=native copper	gn=galena	sl = spholerite
cp=chalcopyrite	py=pyrite	mb=molybdenite
bn=bornite	cc=chalcocite	td=tetrahedrite

Neither the persons nor the companies involved with production of the data that is compiled into this figure assume responsibility for its accuracy. Assays courtesy of New Jersey Zinc Company and Duval Corporation.

HORIZONTAL AND VERTICAL SCALE 1:5000

0 500 1000
METERS

0 1000 2000 3000
FEET

EXPLANATION

STRUCTURES

- fault or shear
- dominant mineralized fracture orientation
- aplite dike
- vein
- breccia
- possible subsurface limit of brecciation

ALTERATION AND GANGUE

o = orthoclase	b = biotite	cy = clay
ch=chlorite	s = serpentine	lm = limonite
z = zeolite	q = quartz	ht = hematite
ok= ankerite	c = calcite	

= 2000+ ppm Cu Reserve Block limit

FIGURE 5. DRILL HOLE LOG AND ASSAY CROSS-SECTIONS, GRANITE PEAK STOCK AREA, WHETSTONE MOUNTAINS, ARIZONA

DeRuyter
Geosciences
Thesis
1979

Summary Report
GRANITE PEAK PROSPECT
Cochise Co., AZ

Introduction

The Granite Peak prospect is located in Sec. 17,18,19,& 20, T19S, R19E, Cochise County, Arizona. The property is located on the south end of the Whetstones Mtns., approximately 10 miles north-northwest of Sierra Vista. The geology of the area is published on the Benson 15' Quad, USGS Map I-470. The topo map is the Apache Peak 7.5' Quad.

The property can be reached from the St. Hwy. 82-90 intersection, by going west 1½ miles, then right at the Sands Ranch sign. Follow the dirt road to the ranch buildings and turn right and follow the National Forest signs to Copper Canyon.

The east-central portion of the granodiorite intrusive was drilled during the late 60's or early 70's as a possible porphyry copper target by Inspiration(?). A limited amount of hi-grade copper skarn ore was shipped prior to that date. No apparent work has been done since the porphyry drilling.

In March, 1989, anomalous gold-silver mineralization was identified in the skarns as well as the altered rhyodacite dikes and sills, and 44 claims were staked to cover the eastern ½ of the system. Another claim block holds the western half of the area, possibly for the weak copper-silver oxides found near the center of Sec. 24, T19S, R18E.

Geology, Alteration & Mineralization

The prospect is centered on a Cretaceous granodiorite--granodiorite porphyry intrusive that is intruded into the Cretaceous Bisbee--Permian Naco group sediments , and pre-intrusive rhyodacite sills and dikes.

The east-central portion of the granodiorite is characterized by local weak K-feldspar-enriched potassic alteration cut by abundant parallel quartz-chalcopyrite-bornite veinlets that prompted the porphyry drilling of 20 years ago. This alteration persists, with lesser amounts of copper, into the rhyodacite dikes to the north.

The skarns are best developed in the Bisbee and Permian Concha limestone, interlayered with and underlying the rhyodacite sills. The above section is floored by two westerly dipping thrust faults within the Scherrer-Epitaph section. The Scherrer-Epitaph section is considered a more favorable host

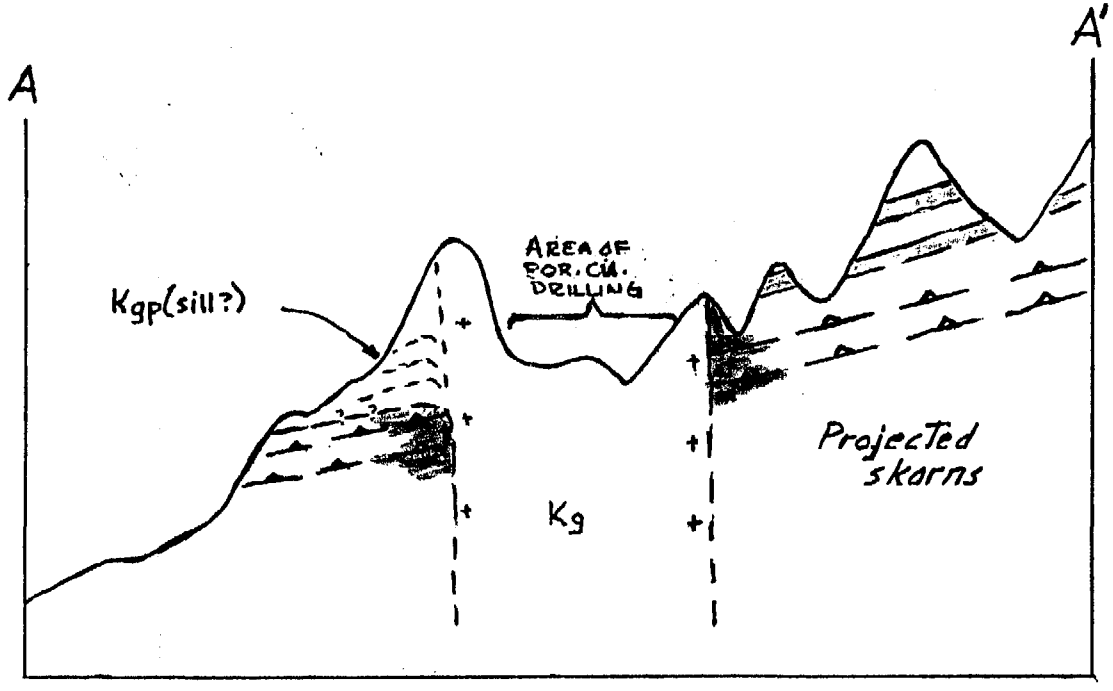
for substantial skarn development at depth, possibly enhanced by the double thrust as a host rock preparation event.

Both the rhyodacite sills and Concha skarns assay 100-300 ppb Au and 5-25 ppm Ag in the hanging wall of the thrust, with only limited sample data available to date. The Bisbee hornfelsed calcareous chales along the western margin of the intrusive contain little to no gold. .However, at the adit symbol on the southeast flank of the intrusive, the Epitaph lms. is anomalous(160 ppb Au, 8.0 ppm Ag), while the overlying intensely altered Bisbee is not(6 ppb Au, .4 ppm Ag). The relationship suggests that the more reactive limestones are trapping mineralization below the Bisbee shales. Hence, the more extensive outcrops of Bisbee may require trace-element geochem to evaluate the underlying potential.

In outcrop, skarn development is limited to 50-200 foot widths along the south and north flanks of the intrusive, primarily within the massive, pure carbonates of the Concha. The exploration target is visualized as more substantial skarn development in the Permian section at depth, enhanced by thrust fault brecciation. The possibility of skarns beneath the suggested granodiorite porphyry sills to the south are also worth considering.

GRANITE PEAK

GENERALIZED CROSS-SECTION



hor. scale 1"=2000' vert. scale 1"=500'

SAMPLING SUMMARY

STATE ARIZONA
AMS SHEET NOGALES
TOPO MAP APACHE PEAK 7.5'
AREA Granite Peak
PROJECT # AZ89-2

S: Soil HG: High Grade
C: Chip CH: Channel
D: Dump SS: Stream
T: Talus CO: Core
G R: Grab P: Panned Con.
F: Float

Sample #	Location Qtr., Sec., Twp., Rg.	Remarks	Lab Results: Sampler	TYPE	Geochem (ppm) Ag	Geochem (ppm) Au	Assays (oz/t) Ag	Assays (oz/t) Au
AZ125	S.20, T19S, R19E	Bio. QTZ. DIORITE w/30-40 parallel qtz-cpy-bor-py vlts/4ft	D	G	.6	.017		
AZ126	" " "	SKARN, garnet-epidote w/strong bor>> cpy, no py.	D	G	23.0	.300		
AZ127	" " "	Pervasive orange-brown gossan w/ 1-3% remnant bornite & cpy — lms & ss. bx	D	G	25.0	.220		
AZ128	" " "	OVER ADIT (LOWER) in shale, hnflsed, intense shattering w/1-4 py on fr.	4'	CH	.6	.006		
AZ129	" " "	Taken in cut above shale contact — calc-silicate, 1-3% qz, 1-3 cpy-bor-py., abund. CuOx	5'	CH	9.0	.060		
AZ130	" " "	40ft. west of Z129: vhy w/2-4% parallel qtz.-cpy-bor-py. vlts.	4'	CH	8.0	.220		
AZ131	" " "	SKARN AT QTZ. DIOR. CONTACT - perv. ep-gar-clay-qtz vlt-cpy-bor, wk CuOx		G	5.0	.095		
AZ132	" " "	Dump of adit, QTZ. DIOR., K-feld(?)-bio-qtz. vlts w/cpy, minor bor., wk. py on qtz. vlts.	D	G	5.4	.004		

SAMPLING SUMMARY

STATE Arizona
AMS SHEET NOGALES
TOPO MAP Apache Pk. 7.5'
AREA Granite Peak
PROJECT # AZ 89-2

S: Soil HG: High Grade
C: Chip CH: Channel
D: Dump SS: Stream
T: Talus CO: Core
G: Grab P: Panned Con.
F: Float

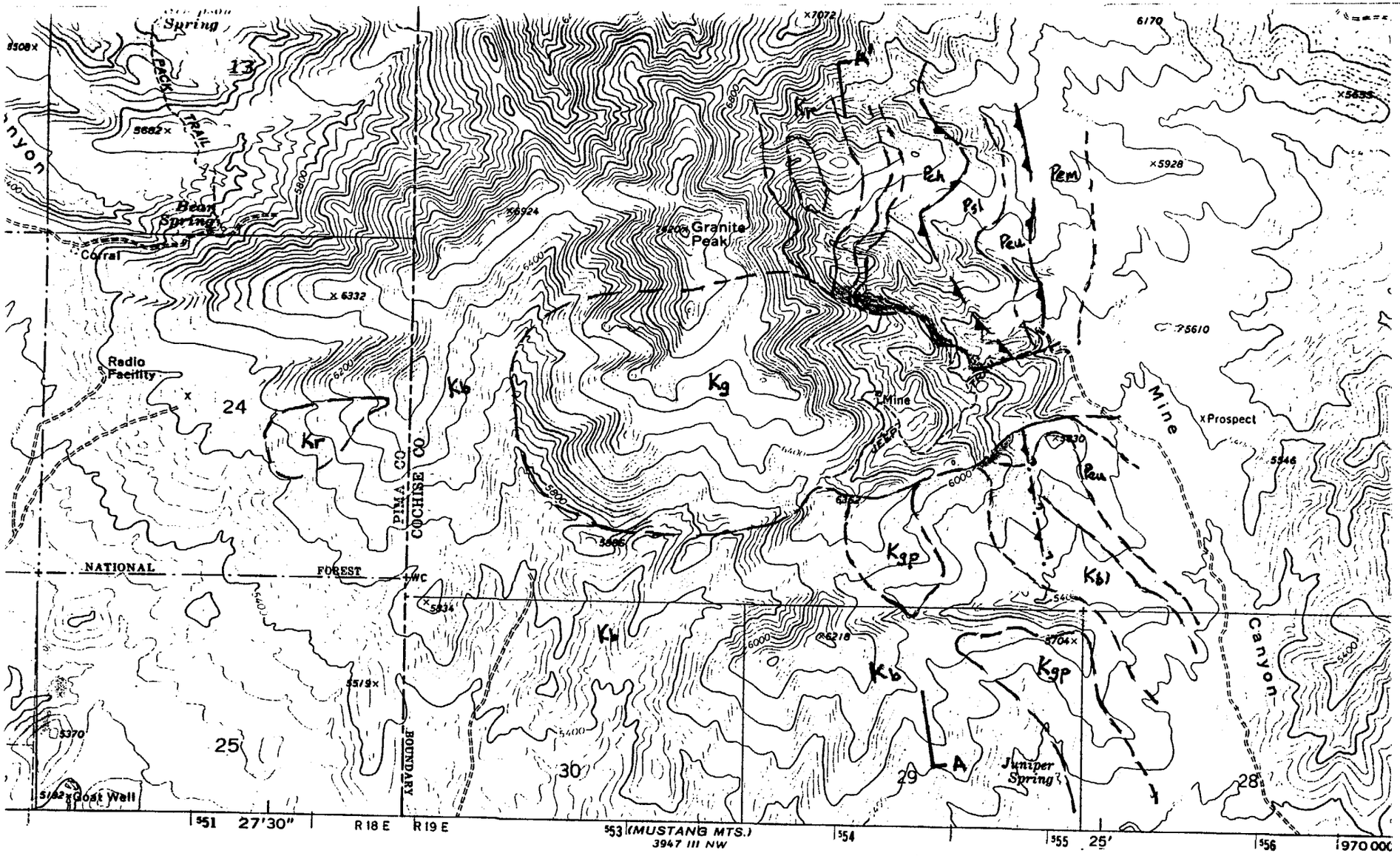
Sample #	Location Qtr., Sec., Twp., Rg.	Remarks	Sampler	TYPE	Lab Results: Geochem (ppm) Ag	Au	Assays (oz/t) Ag	Au
AZ189	S. 18, T19S, R19E	Kb congh, silicic to hnflsed w/2-4 py, 100 oxidized to goe. + minor jar.		G	<.2	.004		
2190	" " "	Kb qTzite, silicic hnfls, shattered, 2-4 goe + hem + jar		G	<.2	.604		
2191	" " "	Kb qTzite, dk. gray int. hnfls, 1-3 py predominantly on fracts.		G	<.2	<.002		
2192	" " "	Kb dirty lime, calcic hnfls, carb + dk. gray-green amph., 2-4 py		G	<.2	<.002		
2193	" " "	Kb dirty lime, calcic hnfls, 5-10 carb. leached & vuggy, 1-2 py		G	<.2	<.002		
2194	" " "	Kb qTzite, hnfls, shattered, goe + jar on all fracts.		G	<.2	<.002		
2195	" " "	Kb qTzite, hnfls, intense fracts w/strong jar - near TKgr contact (py-sericite alt)		G	<.2	<.002		
2196	" " "	Kb ss + sh, hnflsed, breccia, intense stkwk goe-hem-jar, silicified		C	<.2	<.002		
2197	" " "	Kb qTzite, hnflsed, shattered, 1-3 goe + hem		G	<.2	<.002		
2198	" " "	Kb c-s hnfls dirty lime, vuggy w/ carb. leaching, 1-3 dissem. py		G	<.2	<.002		
2199	" " "	Kb sandy sh. hnfls. adj. to calc-silicate, shattered, 2-3 py (marcasite?) on fracts		G	<.2	<.002		
2200	" " "	Kb dirty lms, dk. gray, nexl. w/variable hnflsed silicate lenses, little to no sulf.		G	<.2	<.002		
2201	" " "	Kb shale, above 2200, shattered to bx w/ 3-10 goe + hem, hnflsed frags, argillic matrix		G	.6	.085		
2202	" " "	Kb qTzite, adj to 2201 - int. goe stkwk		G	<.2	.004		

SAMPLING SUMMARY

STATE Arizona
AMS SHEET NOGALES
TOPO MAP Apache Pk. 7.5'
AREA Granite Peak
PROJECT # AZ89-2

S: Soil HG: High Grade
C: Chip CH: Channel
D: Dump SS: Stream
T: Talus CO: Core
G: Grab P: Panned Con.
F: Float

Sample #	Location Qtr., Sec., Twp., Rg.	Remarks	Sampler	TYPE	Lab Results: Geochem (ppm) Ag	Au	Assays (oz/t) Ag	Au
AZ203	S. 18 T9S R19E	Kb sh-qTzite bx, hnflsed frags, silicic matrix w/wk clay, 5-10 goe+hem+jar		F	.6	<.002		
AZ204	" " "	Kb - dirty sandy sh to ss adj to calc-silicate, 1-3 goe w/str. brownish orange color		G	<.2	.004		
Z205	" " "	Kb ss, wkly hnflsed, <1 to 1 py on fracts		G	<.2	<.002		
Z206	" " "	Kb sh + lime, calc-silicate hnflg, intense vuggy nature (carb. leach) 1-2 py		G	<.2	<.002		
Z207	" " "	Kb limey sh, int. hnflg, stkwk sulf. vlts		G	<.2	<.002		
Z208	S.24 " 18E	Kb congl., bleached white, wk clay-ser. w/mod. CuOx (supergene ?)	D	G	18.0	<.002		
Z208A	S.19 " 19E.	Pal. lms. skarn + int. rexl. lms, minor cpy-bor 100 ox to CuOx - lower adit	G	D	8.0	.160		
Z209	" " "	Kb - ? qTzite - sh. breccia, healed w/wkly. xlline to cryptoxl. silica, var wk-mod. goe+hem+jar.		G	.4	.006		
Z210	" " "	Kb(?) qTzite bx w/minor sh frags, 1 qvet hem, rehealed w/xlline to cryptoxl. silica		G	<.2	<.002		
Z211	" " "	Upper adit above Z208A sh-qTzite ? bx ?, beneath skarn, argillic sandy sh. bleached w/strong goe-hem plus stkwk bor parallel stringers of vuggy cryptoxlline silica w/poss. sulf. remnants, vuggy w/intense goe-hem-jar (possible more argillic equivalent of Z209-Z210).	5'	CH	2.2	.008		



GRANITE PEAK PROSPECT

COCHISE CO., AZ.

SEC. 18, 19, 20, 17

T19S R19E

Kg-gp - Granodiorite & G. por (sills?)

Kr - Rhyodacite

Kb-bl - Bisbee Fm. - sh, lms.

Pch - Concha lms.

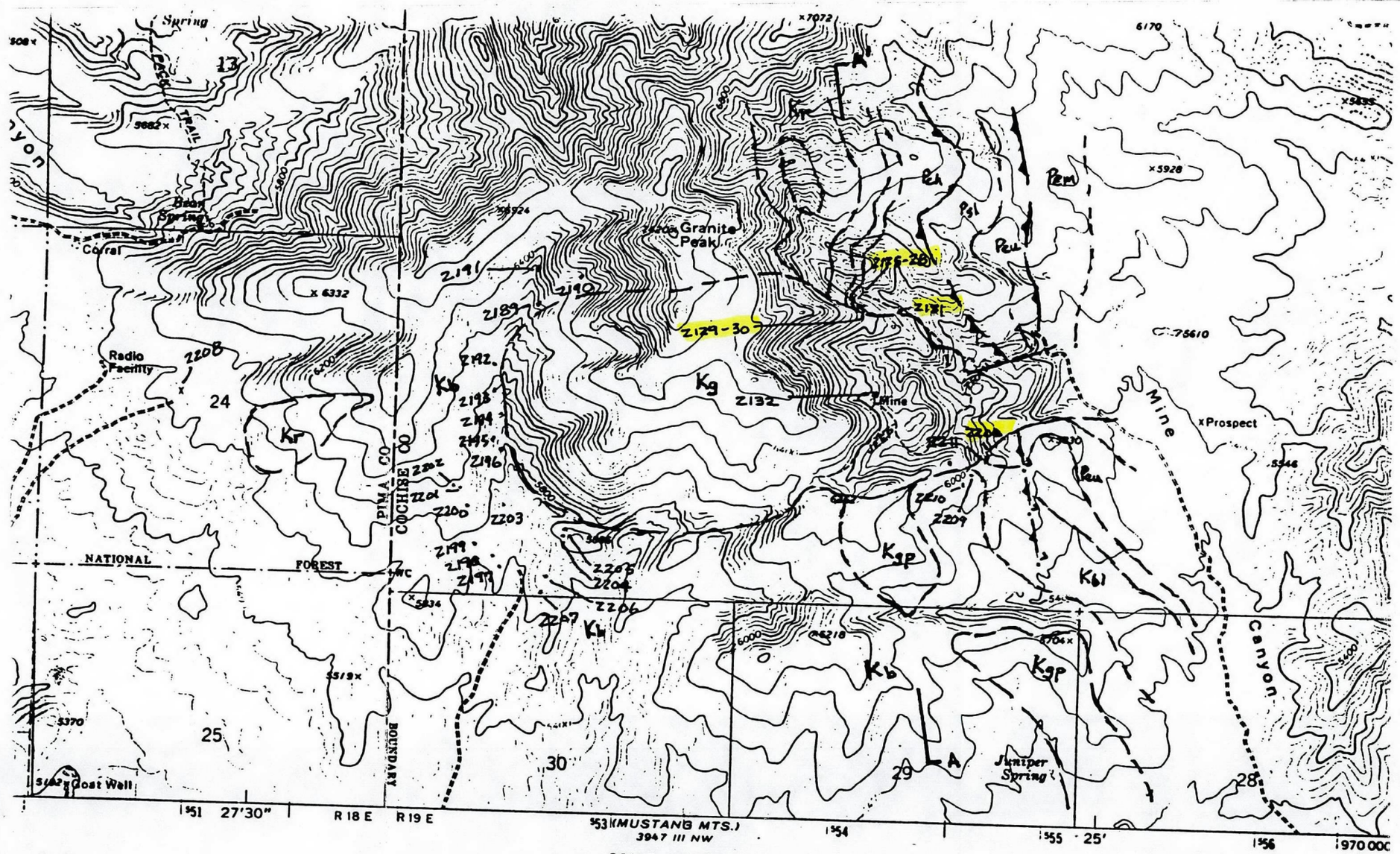
Psl - Stherrer

Peu-em - Epitaph

THRUST

Skarn outcrop

APACHE PEAK 7.5'



R18E 27'30" R19E (MUSTANG MTS.) 3947 III NW 25'

970 000

GRANITE PEAK PROSPECT
COCHISE CO., AZ.

SEC. 18, 19, 20, 17
T19S R19E

Kg-gp - Granodiorite & G. por (sills?)

Kr - Rhyodacite

Kb-bl - Bisbee Fm. - sh, lms.

Pch - Concha lms.

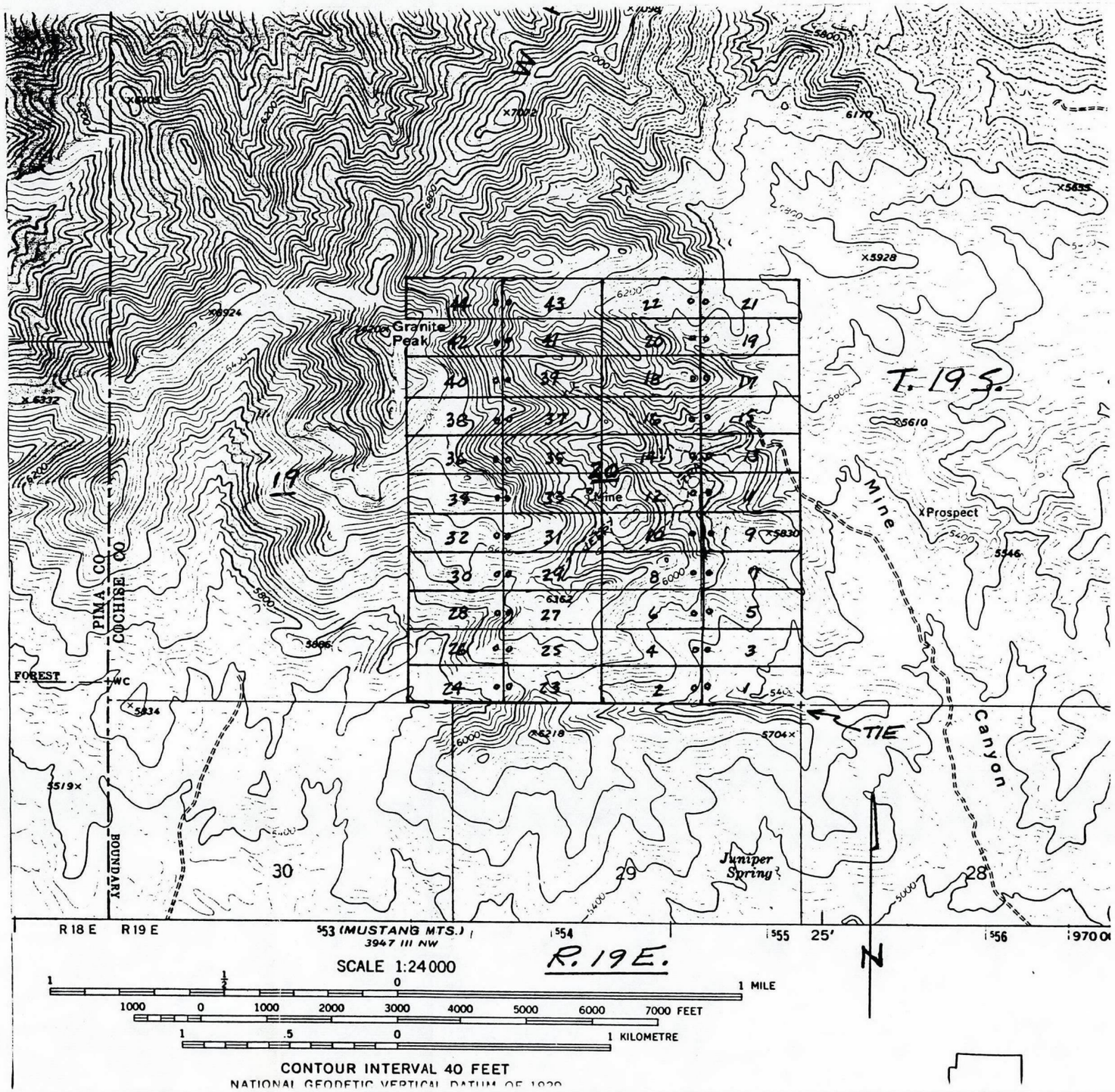
Psl - Scherrer

Peu-em - Epitaph

THRUST

• 2209 GEOCHEM SAMPLE LOCATIONS

APACHE PEAK 7.5'



INDEX MAP
GR#1 TO GR#44
LODE CLAIMS

SEC. 17, 18, 19, 20
T.19S. R19E

DUGAN PRODUCTION CORP.
P.O. BOX 420
FARMINGTON, N.M. 87499

DAVID A. WOLFE, AGENT

SCALE 1" = 2000'

DISCOVERY MONUMENT