CONTACT INFORMATION
Mining Records Curator
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Tucson, Arizona 85701
520-770-3500
http://www.azgs.az.gov
inquiries@azgs.az.gov

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James Doyle Sell Mining Collection

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FORM SL-1035-A 1 M 4-68

KEEP THIS ON TOP

File No. Aa-16.0.16

From 1969 **to**

Subject: PAPAGO CENTRAL PROJECT
Pima and Pinal Cos. Arizona
GENERAL

See also: PAPAGO CENTRAL PROJECT - Copperosity Area, Sheridan-Cimarron Mtns.
Southern Slate Mountains
Santa Rosa Mountains
Greenback Area

AMERICAN SMELTING AND REFINING CO.

EL PASO ORE TESTING AND ASSAY LABORATORY

ASSAY CERTIFICATE

DATE June 24 1969

MARKED TUCSON OFFICE SAMPLES

SRDavis 5/29/69

LOT NO. UNIT	LOT NO. SMELTER	GOLD OZ	SILVER OZ	Cu %	Pb %	Zn %	Cd %	Fe %	Mn %	%	S %	SiO_2 %	CaO Total %	CaO Avail. %	%
					Cu-ppm		Pb-ppm		Zn-ppm		Mo-ppm				
NK-S	1	Nil	Tr		35		495		230		1.1				
	2	Nil	Tr		31		468		620		1.1				
	3	Nil	Tr		342		2050		520		1.7				
	4	Nil	Tr		63		1160		144		1.1				
	5	Nil	.28		68		256		970		.88				
	6	Tr	.16		440		508		144		1.7				
NK-D	1	Tr	.10		28		930		220		1.4				
	2	Tr	.10		67		244		600		1.4				
	3	Tr	.06		112		302		41		1.7				
	4	Tr	.10		39		480		59		1.4				
	5	Tr	.09		20		880		26		.88				
	6	Nil	.08		20		775		77		1.4				
	7	Tr	.07		66		640		206		1.4				
	8	Tr	.06		60		845		32		3.7				
	9	Nil	.10		65		441		94		1.7				
	10	Nil	.08		11		216		51		.88				
	11	Nil	.08		36		336		19		4.9				

SRDavis 2x
VKudryk
GWBossard
File

HILL PRINTING CO.—EL PASO

BY _____ A. Jiménez S. CHIEF CHEMIST

AMERICAN SMELTING AND REFINING COMPANY
Tucson Arizona

J. H. C.
JUN 23 1969

June 19, 1969

TO: J.H. Courtright

FROM: R.D. Karvinen

Papago Central Project
Pima - Pinal Cos., Arizona

SUMMARY

On January 9, 1969, J.D. Sell suggested the above program, the purpose of which was to examine several attractive prospect areas in the Papago Indian Reservation in a manner to best utilize the time granted by permit from the B.I.A. Most of the geological field work commenced in mid-January and was essentially concluded in mid-March. This work was intermittent and was done by J.D. Sell, J.E. Kinnison, S.R. Davis, L.J. Jansen and R.D. Karvinen. The nature of the program was one of reconnaissance geology and extensive geochemical sampling. Detailed reports of the various areas are appended.

The south Slate Mountains were sampled to determine if any surficial indicators existed which could be used in locating wholly concealed mineral deposits, such as the newly discovered Lakeshore porphyry copper deposit. Evaluation of the data compiled to date shows a lack of surface indicators to the existence of the Lakeshore porphyry.

A very weakly altered area in the south Slates shows no definitive geochemical anomalism and to date the only geophysics response has been an aeromagnetic low.

A monzonite porphyry dike swarm in Laramide granite in the north Santa Rosa Mountains was mapped and sampled. A nebulous geochemical indication of enrichment trending to the northeast under alluvial cover did not have an I.P. response.

Reconnaissance peripheral to all but the east central portion of the Santa Rosas was negative, though some exotic copper mineralization was noted in the southwest sector. This was deemed insignificant by Kinnison. Minor clay alteration is noted in the southeast sector in the volcanics and granites that have subdued outcrops through the alluvium, but no indicators of mineralization were evident. The east central sector was not accessible and a helicopter flight there has yet to be programed.

The Sheridan - Drew Springs area in the Cimarron Mountains offered no indications of porphyry copper mineralization. The manganiferous deposits of the Drew Springs area were examined for possible zonal changes to argentiferous environments. Silver assays returned nil and no further work is warranted.

Weak alteration and moderate geochemical anomalism in the Greenback Mine area provided the best exploration target, but a complex and conflicting land and mineral ownership status precludes further work at this time.

The area between the Papago mine and the Copperosity mine has yet to be examined.

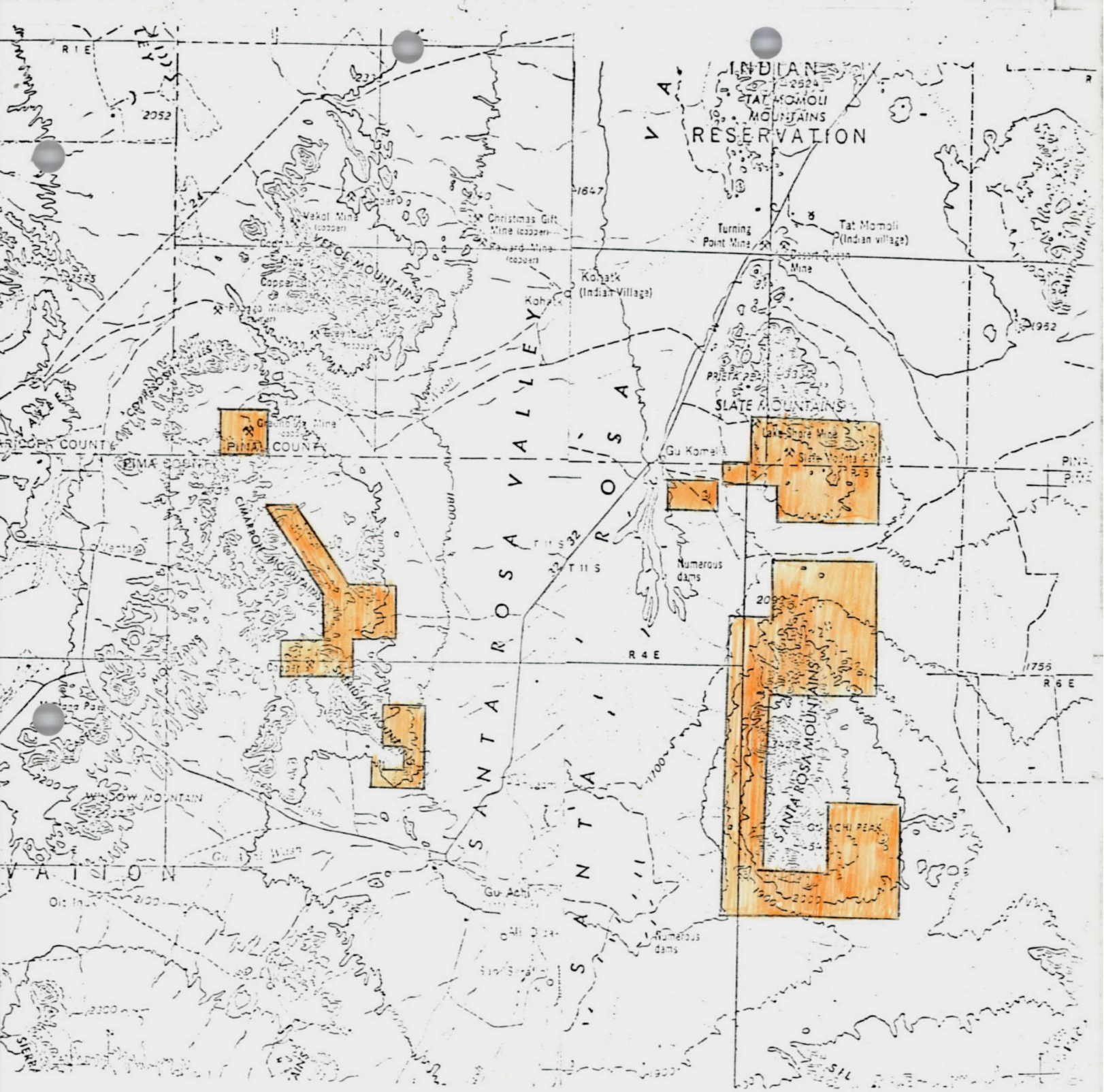
A copy of the Stebbins Mineral Survey report on the Papago Reservation was secured and is on file.

Some of the attachments are interim reports and memoranda that have been previously submitted, but are herein included to incorporate all project data into one package.

Only a minor portion of the total land area was examined and at least one of the sites (Greenback) merits continued surveillance.

R.D. Karvinen

RDK:lzb
Encl.



INDEX MAP

PAPAGO CENTRAL PROJECT

EXAMINED AREAS

Aa-16.0.16

AMERICAN SMELTING AND REFINING COMPANY
EXPLORATION DEPARTMENT
SOUTHWESTERN UNITED STATES DIVISION
P. O. BOX 5795, TUCSON, ARIZONA 85703

J.H.C.
JUN 2- 1969

S. I. BOWDITCH
PROPERTY MANAGER

1150 NORTH 7TH AVENUE
TELEPHONE 602-792-3010

June 2, 1969

Mr. Joseph M. Lucero, Superintendent
Papago Indian Agency
Bureau of Indian Affairs
Sells, Arizona 85634

Your File - Real Property Management
331 - Papago

Dear Sir:

We wish to extend our Prospecting Permit H54-10-66 for still another month, and accordingly I am enclosing our check for $500.00, payable to The Papago Tribe.

Yours very truly,

S. I. Bowditch

S. I. Bowditch

SIB:kc
Enclosure
cc: JHCourtright
KvdSteinen

J.H.C.

JAN 9 1969

AMERICAN SMELTING AND REFINING COMPANY
Tucson Arizona

January 10, 1969

FILE MEMORANDUM

Suggestions for Mapping and Sampling
Papago Central Project

Attention should be brought to the ASARCO file copy #13.19.7C (Guidelines for the Use of Color, Symbols, and abbreviations in Mapping, Note, and Core Logging. Memo to W.E. Saegart, April 25, 1968), as a guide to conformity in field mapping.

Rock units most likely to be encountered include:

1). Post-mineral volcanics, QTv and Tv (violet 742)
2). Laramide intrusives, Li & Tgr (vermilion 750)
3). Premineral volcanics, Lv (orange 737)
4). Younger Precambrian through Mesozoic Sediments, Sed (ultramarine 740)
 4a). Or Younger Precambrian, A, (grey 734½)
 Paleozoic, P, (ultramarine 740)
 Mesozoic, M, (True Green 751)
5). Precambrian intrusives, granite, diorite plutonics, gr, di, (golden brown 755) with diabase, db (golden brown 755)

6). Precambrian metamorphics, gn, sch (lead pencil)
 faults in dark ultramarine blue (740) with mineralization in Carmine red (745). Alteration limits outlined with Carmine red (745) or outlined as overlay shown in Guideline section.

Samples taken should use the code initial of Papago Central-Samplers Last Initial-Area Initial- followed by continuous numbers. (To save some confusion, Karvinen might use R for Ron so as not to miss K for Kinnison). Area Initials include L for Lakeshore-area, R for Santa Rosa range, S for Sheridan area, and C for Copperosity area. This will help track down areas and sampler when questions come up on plotting data. Example: PC-RL-15 suggests that the sample belongs to the Papago Central Project, was cut by Ron Karvinen in the Lakeshore area and was sample number 15. Two handy forms for keeping track of the samples are: 1) NW Mexico Exploration form and, 2) Hawley and Hawley form (Copies are attached). Naturally all samples and lines must be placed on topo sheets with notes on intervals etc. Copper-moly will be determined for each sample with other values as deemed suggestive. Samples should be composited in groups and re-assayed for Cu-Mo-Au-Ag. Some composites or new composites should be listed for spectrographic analysis.

There is a very low probability that a direct lead will be found during this reconnaissance geologic-geochemical study, but close attention should be given to subtle changes in alteration intensity, geochemical values, dike and fault trends, mineral and alteration trends, checking valley side conglomerates, etc, with the constant emphasis on development of the regional geologic and mineralization history of the study region. The development of permissive target areas for more detailed study, geochemical, and geophysical work should develop from the reconnaissance study.

Jim

Suggest you make copies for all concerned with copies of reference in first ¶

Completed & distributed to

Ze Ron K
John K
Lauran
S. [illegible]

Initial concept is to completely tie together all knowledge of the area, including present material in the files, so each field party should be prepared to write up his particular study area for incorporation into the final report.

James D. Sell

James D. Sell

~~JEK~~, ~~SRD~~

J. E. K.

JAN 10 1969

AMERICAN SMELTING AND REFINING COMPANY
Tucson Arizona

January 9, 1969

J. H. C.

JAN 9 1969

TO: J.H. Courtright

FROM: J.D. Sell

Papago Central Project
Pima-Pinal Counties, Arizona

The Papago Central Project is established to thoroughly check four areas near the Lakeshore area. The study will be reconnaissance geology coupled with extensive geochemical sampling and study of alluvial contact.areas.

A fixed-wing reconnaissance on January 8, 1969, with R.D. Karvinen, indicated that most of the projected work can be accomplished without the involvement of a helicopter. Features noted and to be followed-up include:

1). The Tertiary intrusive granite exposed east of Lakeshore appears to plunge to the southeast and may extend under the surface rock units in this direction. From the air very little color effects are noted at the granite-schist contact zone.

2). On the north end of the Santa Rosa Mountains the banding or parallel dikes striking northeast are very evident and some workings have been placed along them. The area has a mottled color effect. Several other color zones were noted along the east side further south. On the southwest side a color zone has been ringed by a road system taking off from a new road constructed south from the village of Gu Komelik.

3). The Sheridan-Drew Springs area on the east side of the Cimarron Mountains is not impressive from the air. East of the Montazona Mine an intrusive granite is well exposed and also noted were numerous east-wes striking dikes from the granite. The east face of the long ridge northward from the Montazona Mine shows very little color whereas the basin area to the north on the west side of the ridge shows abundant but weak color changes.

4). At the Greenback area the alteration-mineralization features are very poorly expressed from air observations. The middle of the valley to the north and northwest shows an increased brownish tone suggesting more pyritic values. The increased coloration to the northwest before passing under good volcanics may be from colored volcanic units rather than granitic rocks but all leads should be checked. Northeastward, across Kahatk Valley, in the basin northwest of the Copperosity Mine, the color tones are heavy oranges and brownish-reds in sedimentary units ranging from Precambrian to Cretaceous.

James D. Sell

James D. Sell

JDS:ir
cc: RDKarvinen

X

Ron

AMERICAN SMELTING AND REFINING COMPANY
Tucson Arizona

January 9, 1969

TO: J.H. Courtright

FROM: J.D. Sell

Papago Central Project
Pima-Pinal Counties, Arizona

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James D. Sell

JDS:ir
cc: RDKarvinen

Notice:

The ASARCO Prospecting Permit for working on the Papago Indian Reservation is number H54-10-66.

The permit is probably good through the ~~middle of~~ February 5, 1969.

Southern Slate Mountains

A study should be made in the area east and southeast of the Lakeshore property. The schist needs to be included as the sericite content might be misleading. Elsewhere the extension of the poorly mineralized tactite limestones, occurrence of pyrite in volcanic sediments of the Silver Bell type, and the southeast trending contact of the Lakeshore granite outcrop, suggest continued reconnaissance.

Silver Reef 15' Quad.
Santa Rosa Mountains 15' Quad.
Tucson AMS Sheet
Pinal County Geologic Map.
Pima County Geologic Map.

ASARCO Files 16A.19.8 House Group
ASARCO Files 16A.22.15 Lakeshore folders.
Lakeshore Copper deposits RI 4706 (1950).
Files of Bur. Ind. Affairs, Sells, Arizona on all work done by Hunting Group.
Spec. Collect of Map Library-U of A. All photos used by Hunting Group.
Recon. of the Casa Grande Mining Dist, by J.B. Tenney. (1934, C.G. Chamber of Commerce).

Others include:

USBM RI. 3975 . Exploration for lead-zinc--copper at Vekol (Reward).
ASARCO File Aa-16A.22.22 Vekol (Reward).
ASARCO File Aa-16A.10.18 Reward Mine. Newmont-New Jersey Results.

Santa Rosa Mountains

The range contains multiple intrusive types. It has a NE-trending quartz dike swarm w/minor copper reported on the northeast side. The range could be the offset portion from the Slate Mountains based on the concept of a regional fault going between the two.

Santa Rosa Mountains 15' Quad.
Tucson AMS Sheet
Pima County Geologic Map.

ASARCO Files 16A.3.3G. Copper Mountain Group.
ASARCO Files 16.17.0 Quijotoa District, general.
Files of BIA (See Southern Slate Mountains note).
Photo collection at U of A (See So. Slate Mtn note).

Cimarron Mountains (Sheridan Prospect).

On the east side, Blucher mapped part of an intrusive mass containing weak alteration features. With alluvium to the east and some late volcanic cover on the west, the edges should be carefully studied.

Gu Achi 15' Quad.
Ajo AMS Sheet
Pima County Geologic Map.

ASARCO Files As-16.19.20A. Sheridan District
Blucher's report, dated July 10, 1957, in above file.
ASARCO File Aa-16.3.H. Copper Union Mining Co. (So. of Drew Springs).
Files of BIA. (See So. Slate Mtn).
Photo Collection at U of A. (See So. Slate Mtn.)

Note: Drew Springs area is in the altered area zone, see Drew Springs reference section for items on manganese.

Copperosity (Greenback).

The property has been under study by El Paso Nat. Gas in recent years. It has also been drilled by several companies in the past but only low-grade values found. The alteration is weak and the dominant phase is silicification. During the helicopter program it was noted that an increase in color-alteration features was somewhat evident just before the exposed granite passed under volcanics on the Northwest side. Preliminary work also suggests that the volcanics are near the base of the post-mineral sequence.

Gu Achi 15' Quad.
Vekol Mtns. 15' Quad.
Ajo AMS Sheet
Pima County Geol. Map
Pinal County Geol Map
Maricopa Geol. Map.

ASARCO Files 16A.3.7B. Greenback Mining Company
ASARCO Files 16A.3.16A. Papago Mine.
ASARCO Files 16A.10.16 Pinal Grande Group.
RH Carpenters PhD thesis on Vekol Mtns (Stanford 1947)
J.B. Tenney Geol. Report of C.G. Mining Dist. (1934) in ASARCO file Aa-16A.3.0.

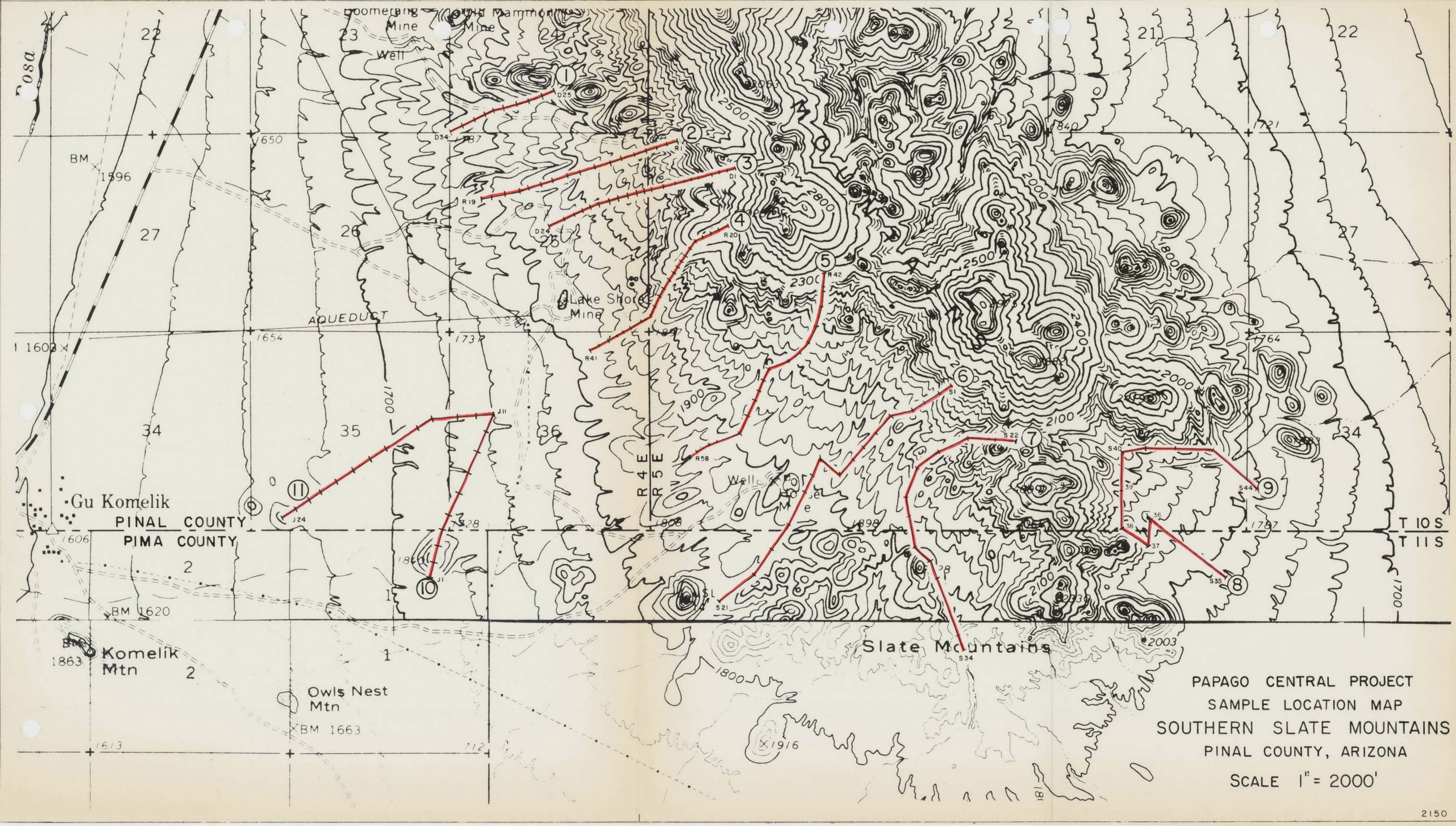
Drew Springs Manganese

In the southern part of the Cimarron Mtns. (Sheridan Prospect) area is a strong vein of high-grade manganese. Although no specific study has yet been made on the deposit, it is undoubtably a primary hypogene manganese deposit.

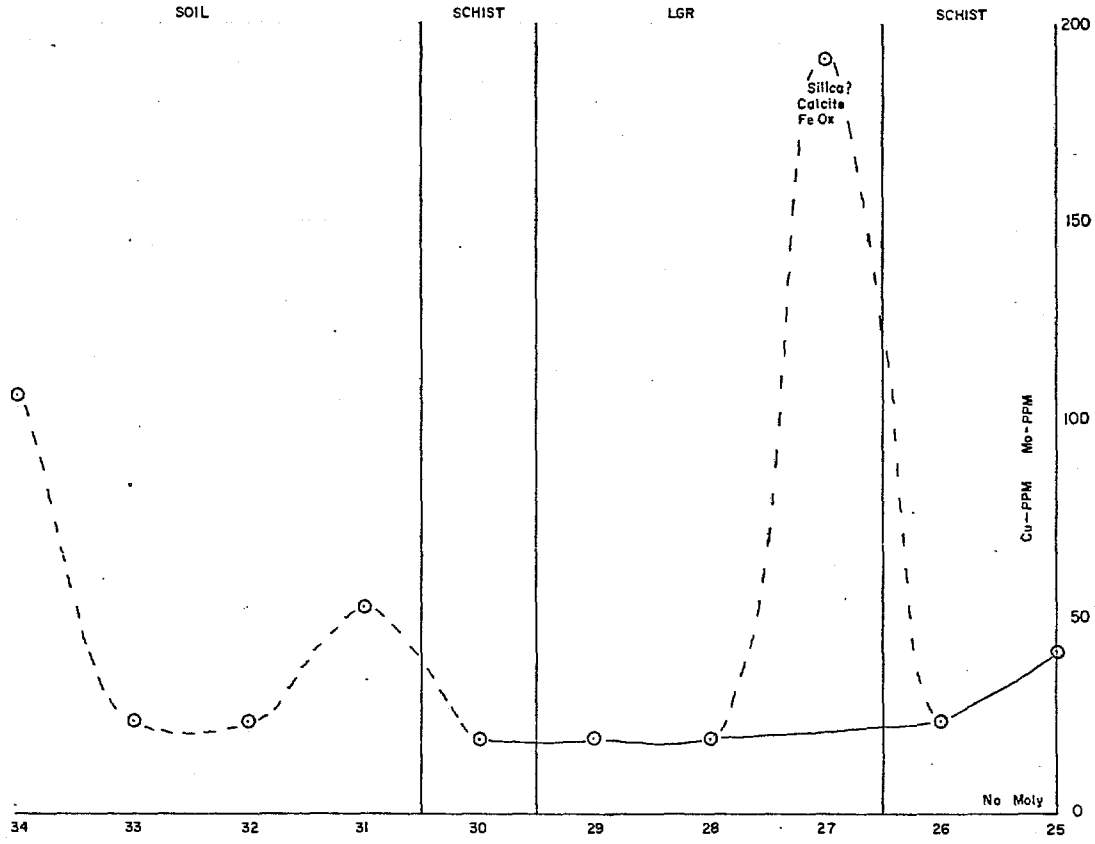
The limestones in the area are metamorphosed probably as a result of the nearby intrusive. Some study of the area is proposed to possibly gleam some thoughts on the possibility of a silver-area being present as suggested in Hewett's manganese barite-silver concept (USGS Circular 553).

Gu Achi 15' Quad.
Ajo AMS sheet
Pima County Geol Map.

USGS Circular 553. Silver in Veins of Hypogene Manganese. Oxide, by D.F. Hewett (1968).
D.F. Hewett, Veins of Hypogene Manganese Oxide Minerals in the SW United States. Econ. Geol., Vol. 59, No. 8, p. 1429-1472 (1964)
D.F. Hewett. Deposits of the Manganese Oxides. Econ. Geol. vol. 55, no. 1, p. 1-55 (1960).
D.F. Hewett. Deposits of the Manganese Oxides _ A Supplement. Econ. Geol, vol. 58, no. 1, p. 1-51 (1963).
L.L. Farnham. Manganese deposits of Eastern Arizona. USBMIC 7990 (1961).


PAPAGO CENTRAL PROJECT
SAMPLE LOCATION MAP
SOUTHERN SLATE MOUNTAINS
PINAL COUNTY, ARIZONA
SCALE 1" = 2000'
Slate Mountains
Gu Komelik
Komelik Mtn
Owls Nest Mtn
PINAL COUNTY
PIMA COUNTY
AQUEDUCT
Lake Shore Mine
Boomerang Mine
Well
BM 1596
BM 1620
BM 1663
BM 1863
T 10 S
T 11 S
R 4 E
R 5 E
1 2 3 4 5 6 7 8 9 10 11

2150



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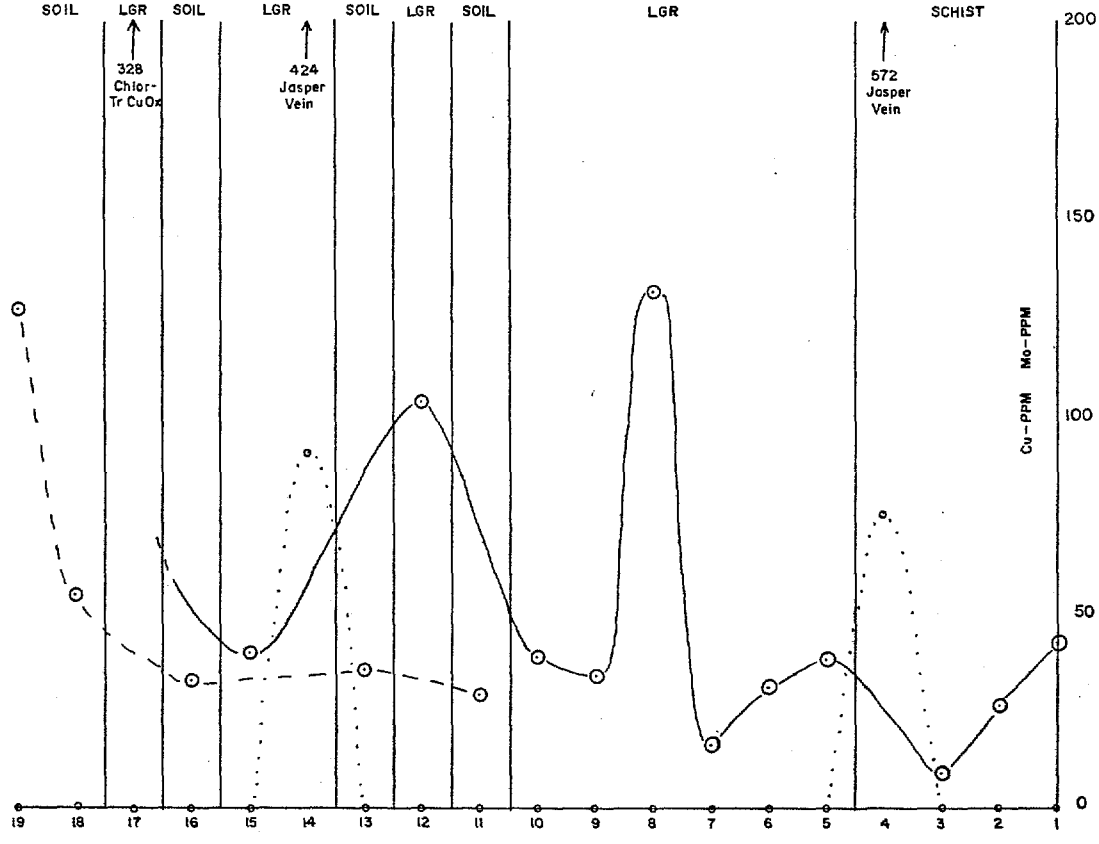
Sample No's. (PC-DL)

looking Northwest



LINE NO. 2

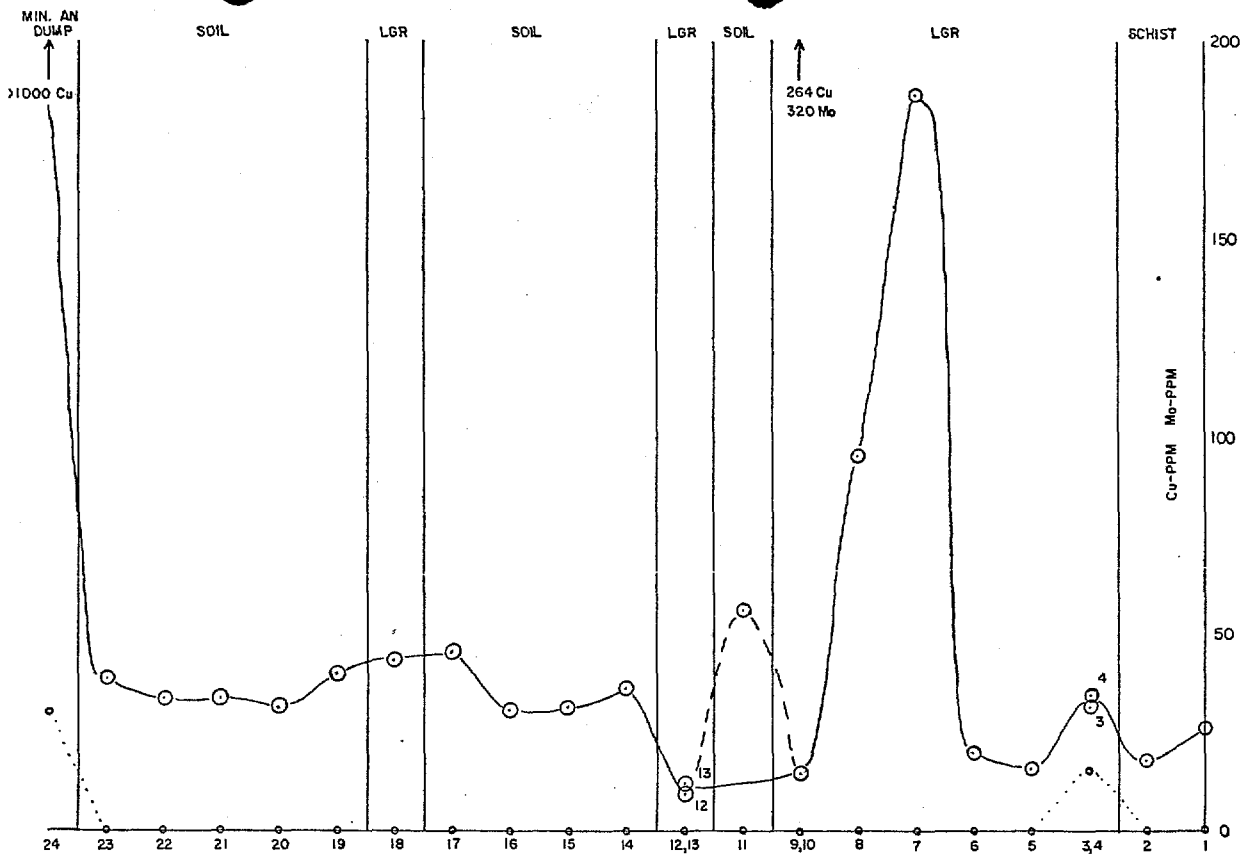
Sample No's. (PC-RL)

looking Northwest

PAPAGO CENTRAL PROJECT

S. Slate Mtns. (Lakeshore)

NO HORIZONTAL SCALE



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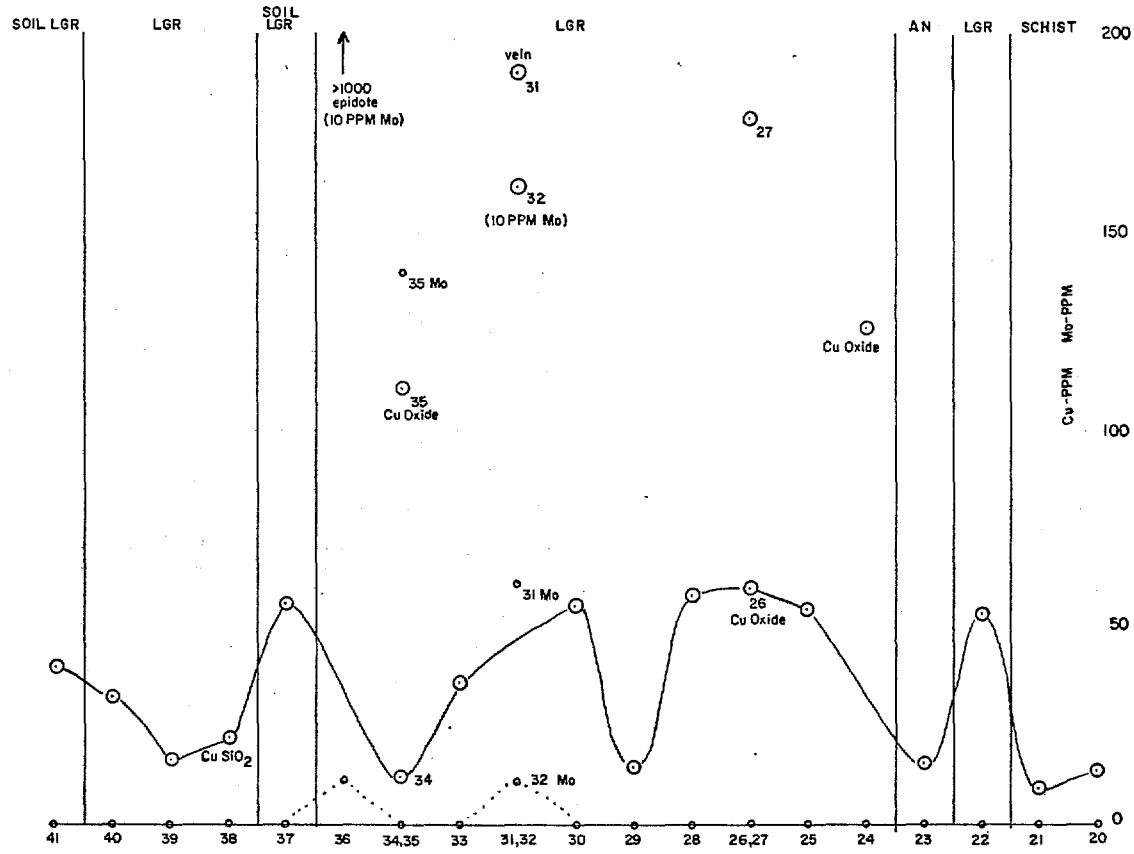

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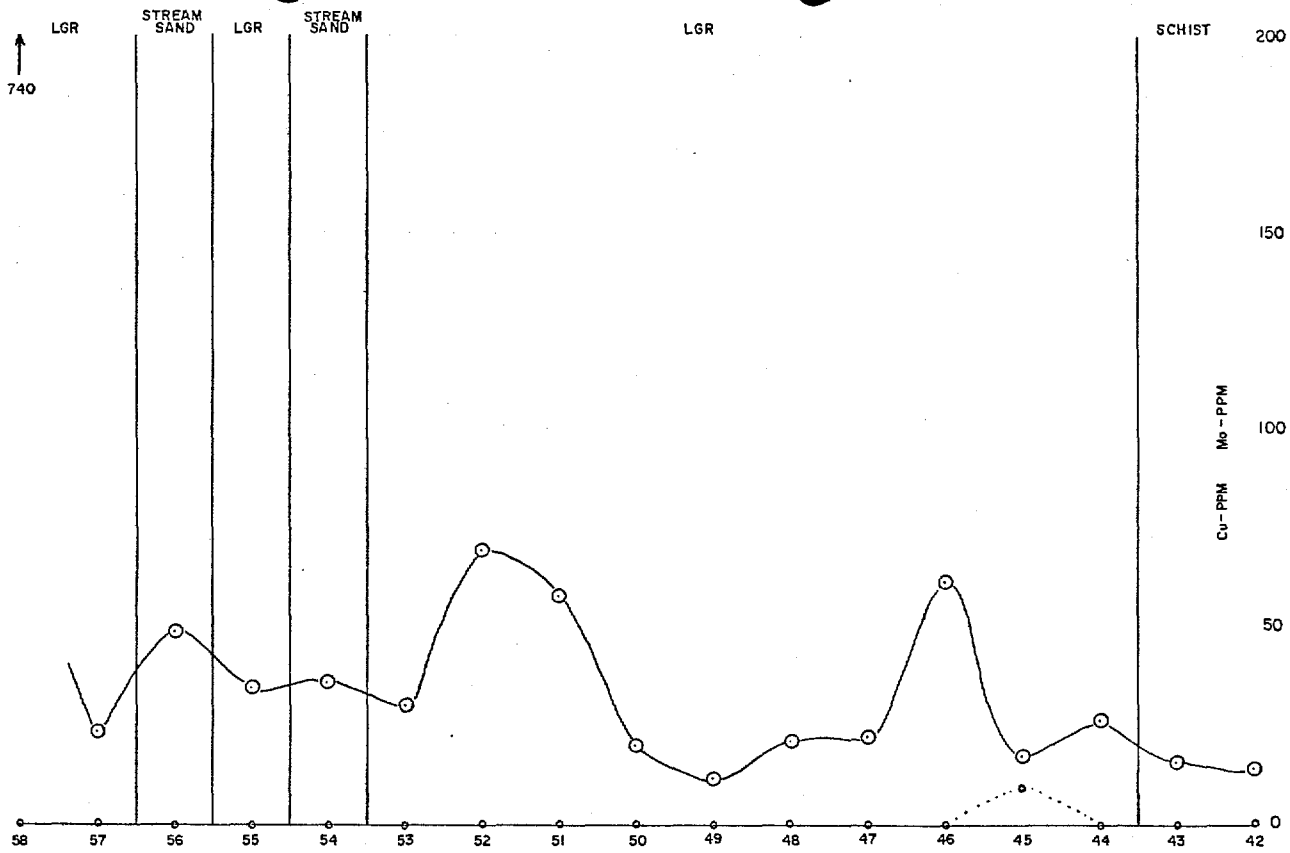
PAPAGO CENTRAL PROJECT
S. Slate Mtns. (Lakeshore)
NO HORIZONTAL SCALE



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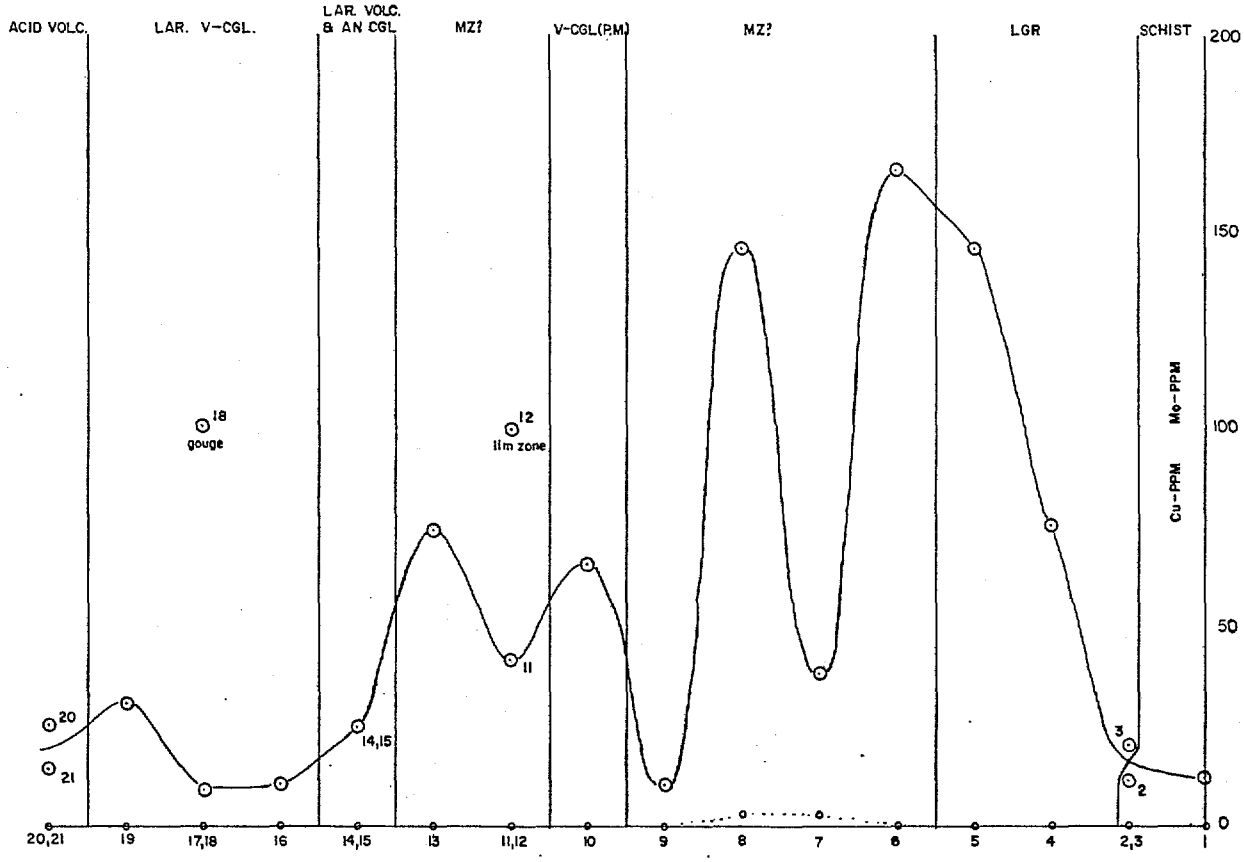
looking Northwest



LINE NO. 6

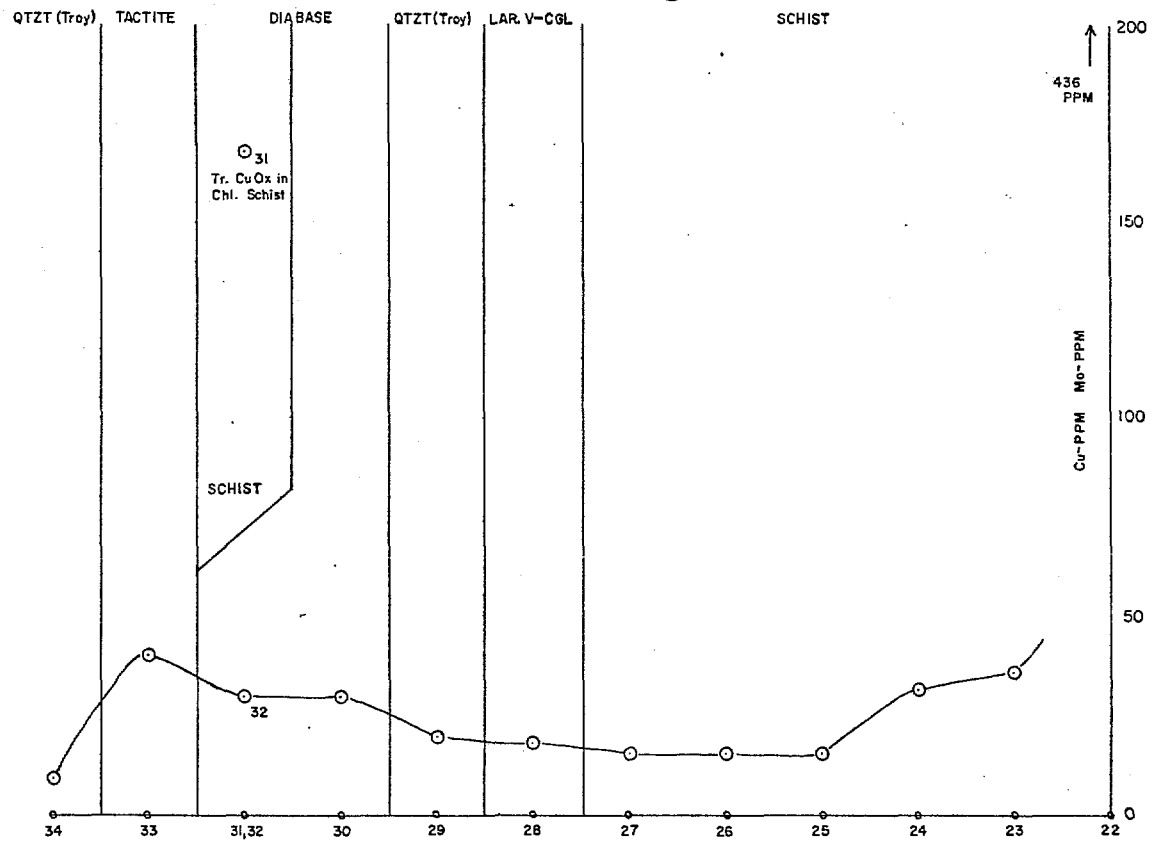
Sample No's. (PC-SL)

looking Northwest

PAPAGO CENTRAL PROJECT

S. Slate Mtns. (Lakeshore)

NO HORIZONTAL SCALE



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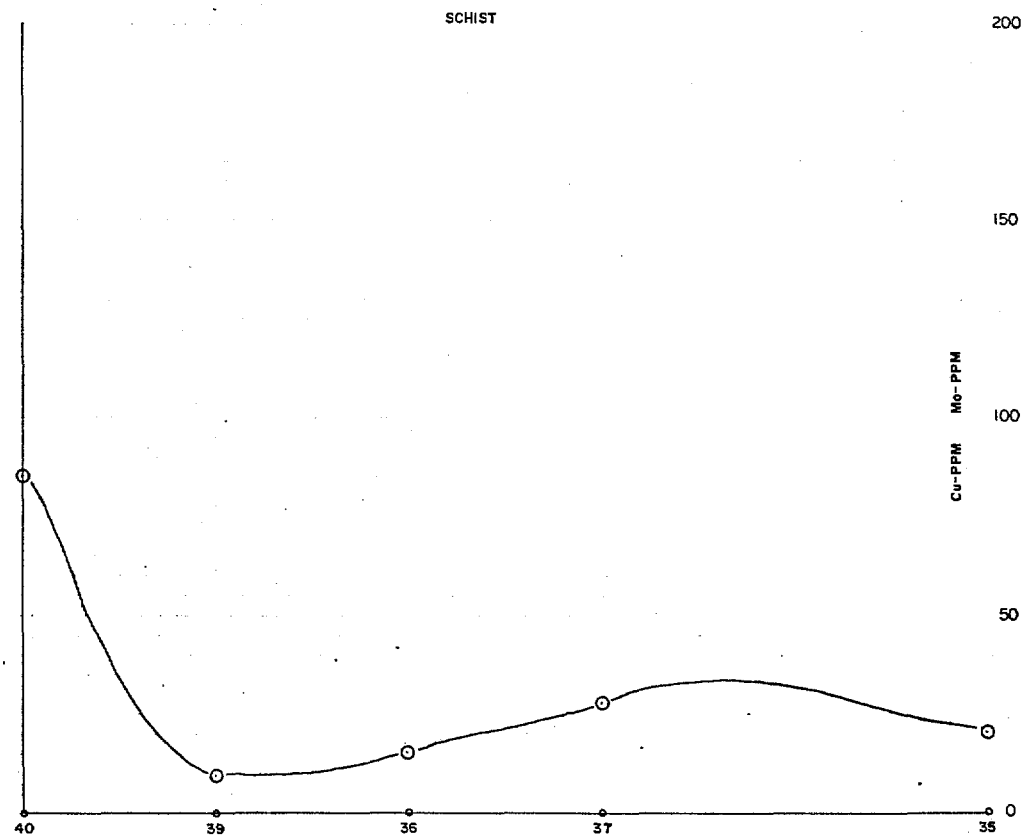
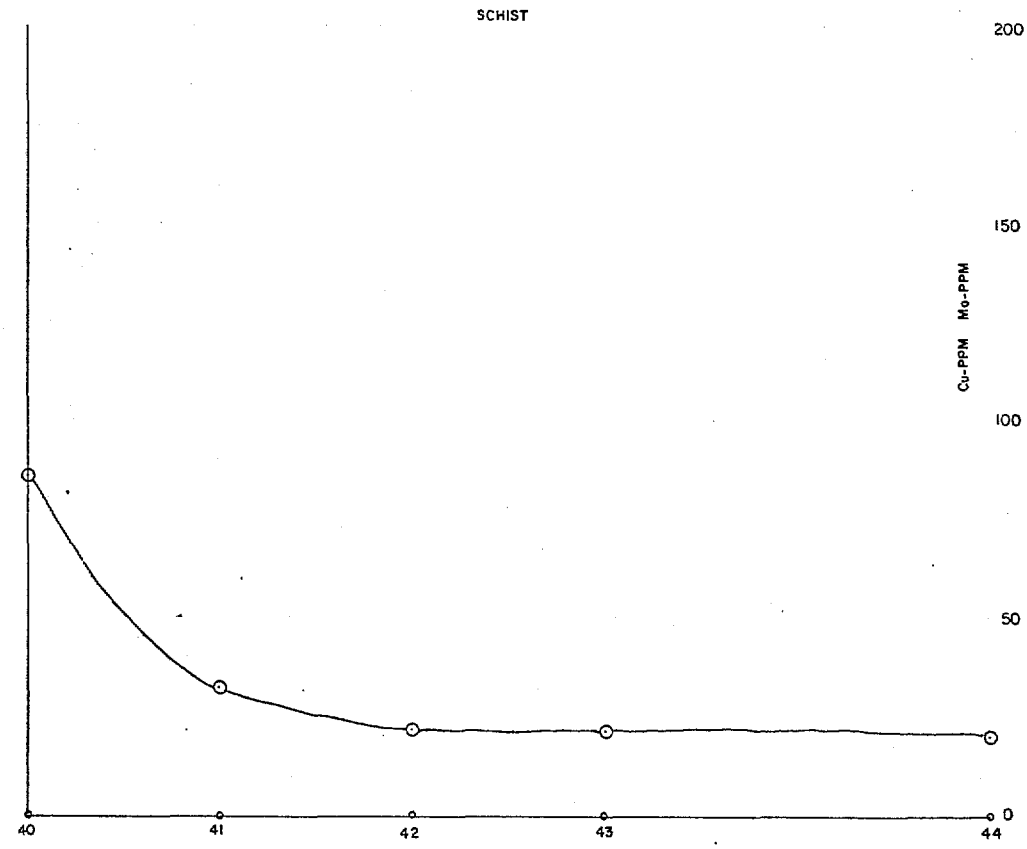


LINE NO. 8
Sample No's. (PC-SL)
looking North

PAPAGO CENTRAL PROJECT
S. Slate Mtns. (Lakeshore)
NO HORIZONTAL SCALE



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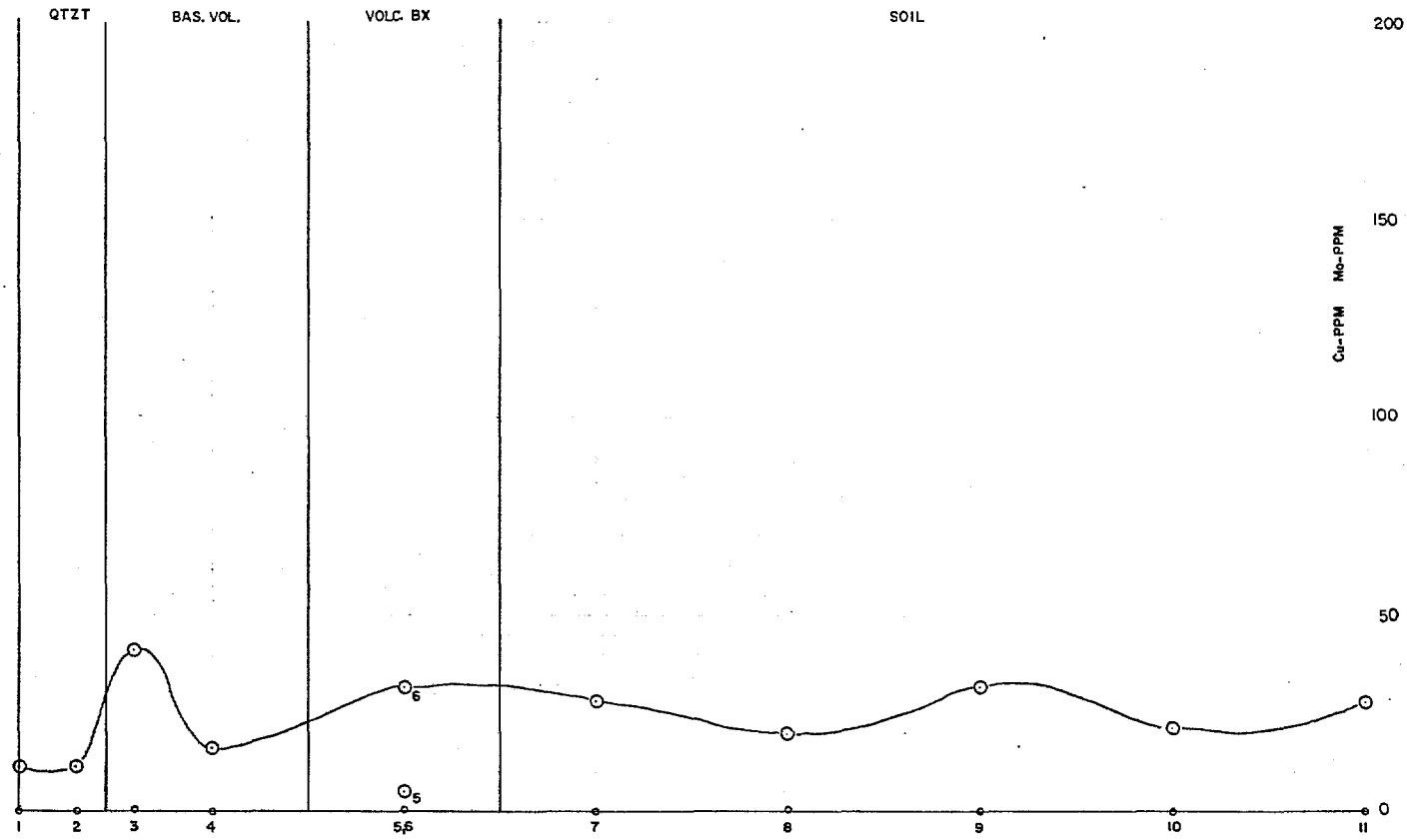
Sample No's. (PC-SL)

looking North



LINE NO. 10

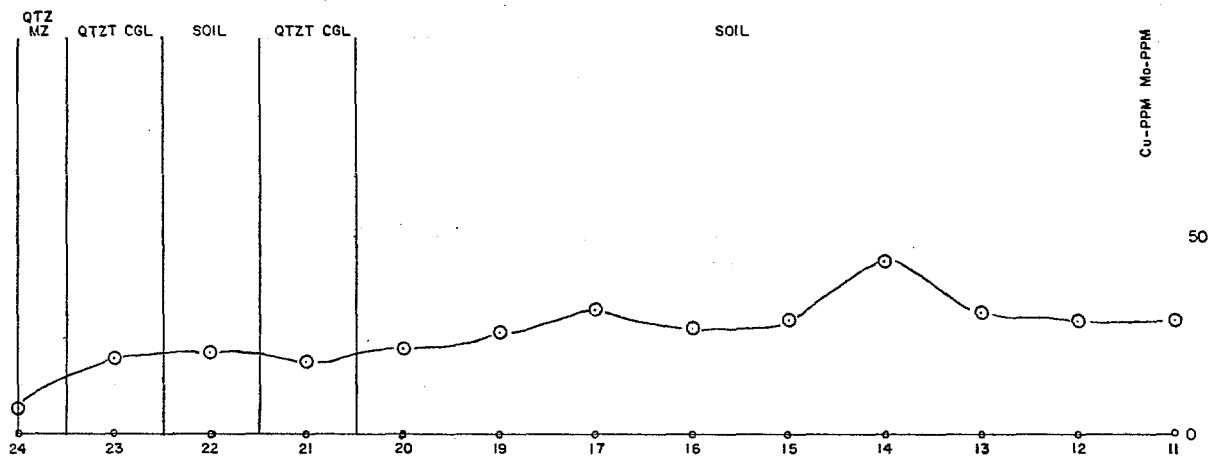
Sample No's. (PC-JL)

looking Northwest

PAPAGO CENTRAL PROJECT

S. Slate Mtns. (Lakeshore)

NO HORIZONTAL SCALE



LINE NO. 11
Sample No's. (PC–JL)
looking Northwest

PAPAGO CENTRAL PROJECT
S. Slate Mtns. (Lakeshore)
NO HORIZONTAL SCALE

for JHC
From JEK

Nov 22 67

Citizen

Radio
Television

PAGE 11

NEWMONT PRESIDENT SAYS

Papago Mining Not Justified Now

The Newmont Mining Corp. says the 75 million tons of copper ore it has discovered on the Papago Indian Reservation cannot be mined under present economic conditions.

In a speech to the New York Society of Security Analyists, Newmont President P. Malozemoff revealed the tonnage estimate and said the grade ore averages 0.6 per cent.

But while mining is not justified now, Newmont still looks on the Papago property as one of three "potential open pit mines" it has.

Newmont paid the Papago Tribe a $50,000 bonus on signing an 8-year lease on the property in April.

At that time, tribal leaders said they anticipated $1 million in annual royalties from the lease along with a 15,000 ton-a-day operation requiring 250 employes, to be mostly Indians.

The property covers 2,800 acres in the Vekol Hill area, 27 miles southwest of Casa Grande, and 60 airline miles northwest of Tucson.

John Artichoker, tribal superintendent, said: "We have had very little contact with Newmont since the lease was signed.

"Things have been quiet. We don't know what this means. But I suppose one would have to assume the development of this ore body would have to be related to the price of copper."

Another potentional Newmont mine is near Copper Creek. In this case, Newmont, with its affiliate, Magma Copper Co., has found ore-grade copper-molybdenum mineralization 2,000 feet deep.

Malozemoff said that, because of the depth of this ore body, very large tonnage would be required to produce a mine, and that drilling is going on now to determine the dimensions of the deposit.

Also in the case of Magma, Malozemoff confirmed that the company has nearly 9 million tons of better than 5 per cent copper ore at its Superior Mine and is considering a $20 million modernization and expansion program there.

A third potential open pit described by Malozemoff is a 40 million-ton ore body averaging 0.7 per cent grade that Newmont has drilled near Princeton, British Columbia.

The company plans further drilling costing about $1.8 million, and will decide late in 1968 whether to undertake production of the Canadian property.

1 Papago Near Reward area
2 Copper Creek
3 Magma Mine, Superior Ariz
4 Near Princeton, B.C.

AMERICAN SMELTING AND REFINING COMPANY
Tucson Arizona

File: Aa 16A.22.22
~~Aa 3.20.20A~~

October 11, 1967

"Reward Mine (Vekol Mts.)"
"Papago Ind. Res."

Mr. C. P. Pollock, Vice President
ASARCO - New York Office

Newmont Mining Corporation
Vekol Mountains Prospect

Dear Sir:

In reply to your telephone request I am enclosing copies of News releases on Newmont's Vekol Mountains prospect. Also enclosed is a report and map by J. E. Kinnison in case it cannot be located in the New York files.

Drilling on the prospect was terminated about two months ago. There is currently no activity of any kind on the property. As observed from the air, around 200 holes on 100 to 200' spacing have been drilled in an area of about three-quarters of a square mile. It is rumored that the copper mineralization (in the Mescal limestone and in diabase sills) is spotty and discontinuous. This condition is suggested by the close spacing of the drill pattern. The local consensus is that the deposit is marginal and that plans for production have been deferred.

As reported by Mr. Kinnison, the first hole cut 90' of 1% copper in the Mescal limestone (garnetized). According to the Papago News release, a 15,000 TPD operation would produce 50 million pounds of copper per year. This indicates about 10 pounds recovered per ton, or a head grade of around .57% copper. Figures quoted in another News release, which I do not have now at hand, indicated 9 lbs. copper per ton.

It is to be noted that in a subsequent release, Newmont labeled as "erroneous" any implication that they are proceeding or have agreed to proceed with a mining project.

The negotiated royalty to the Papagos amounts to 5% on ores having a net smelter return of $4/ton or under, with an increase of 1% for each $0.25/ton net value increase up to $5 N.S.R., and 10% royalty on $5 to $7 N.S.R.

Incidentally, New Jersey Zinc and Newmont each have a 38% interest, the remaining 22% being held by the Papago Exploration Company, a Minneapolis group.

Yours very truly,

JHC:lml

J. H. Courtright

Encls.

Papago Indian Res
also Vekol Mts (Rivard Mine)

Pay Dirt 4-21-67

VEKOL HILLS LEASE SIGNED BY NEWMONT AND THE PAPAGOS

Leases on approximately 2,800 acres of Papago Indian Reservation land have been negotiated between the Papago Indian Tribal Council and Newmont Exploration, Ltd., of New York. The property is in the Vekol Hills, 27 miles southwest of Casa Grande, Arizona, and 50 miles northwest of Sells, the tribal capital.

According to the announcement by Tribal Chairman Robert Mackett, who signed for the Papago Indians, the eight-year leases call for an initial bonus payment of $50,000 and an advance royalties payment of $50,000 for the first year. Similar yearly advance royalty payments, he said, are to be made until production begins. Mackett described the contract as "a turning point in the tribe's history," giving the Papagos a chance to develop "from the poorest tribe in the nation to an economically self-sufficient people." He confidently predicted that Newmont would have the "mine" in full production within three to four years, handling 15,000 tons of copper ore per day.

On the other hand, Newmont Exploration, Ltd., labeled as "erroneous" any statement or implication that Newmont is proceeding or has agreed to proceed with any mining project or operation at the Papago property. The company stated: "Results of work done to date on the property indicate an appreciable tonnage of marginal grade copper ore minable by open-pit methods. Further work and evaluation will be necessary to determine whether or not this property should be brought into production."

The current negotiations modified an earlier lease acquired by Newmont in 1965, and cover the remaining eight years of the original standard 10-year lease. Most of Newmont's exploration to date has been by drill hole testing and sampling and this work is to continue.

zona Daily Star

FINAL

TEN CENTS

Papago Del Rey.

"The Arizona Daily Star"
April 7, 1967

AMERICAN SMELTING AND REFINING COMPANY
Tucson Arizona

J. H. C.

SEP 8 1961

July 13, 1961

MEMO FOR K. E. RICHARD

Area Open for Competitive Bid - Chuichu, Papago Reservation

It was brought to my attention by A. C. Hall that three tracts of land are up for bid in the subject area, which includes the mountain chain of the Silver Reef, Tat Momoli, and Slate Mountains. These lie south of the village of Chuichu (pronounced Choo-choo --- also spelled Chui Chuishu), some 10 - 25 miles southwest of Casa Grande.

On the basis of a few days reconnaissance, I conclude that no bid should be offered. The attached sketch shows the salient geologic features. I have not seen the Lakeshore mine, but Courtright recently reviewed the whole matter of exploration at this property and rejected it.

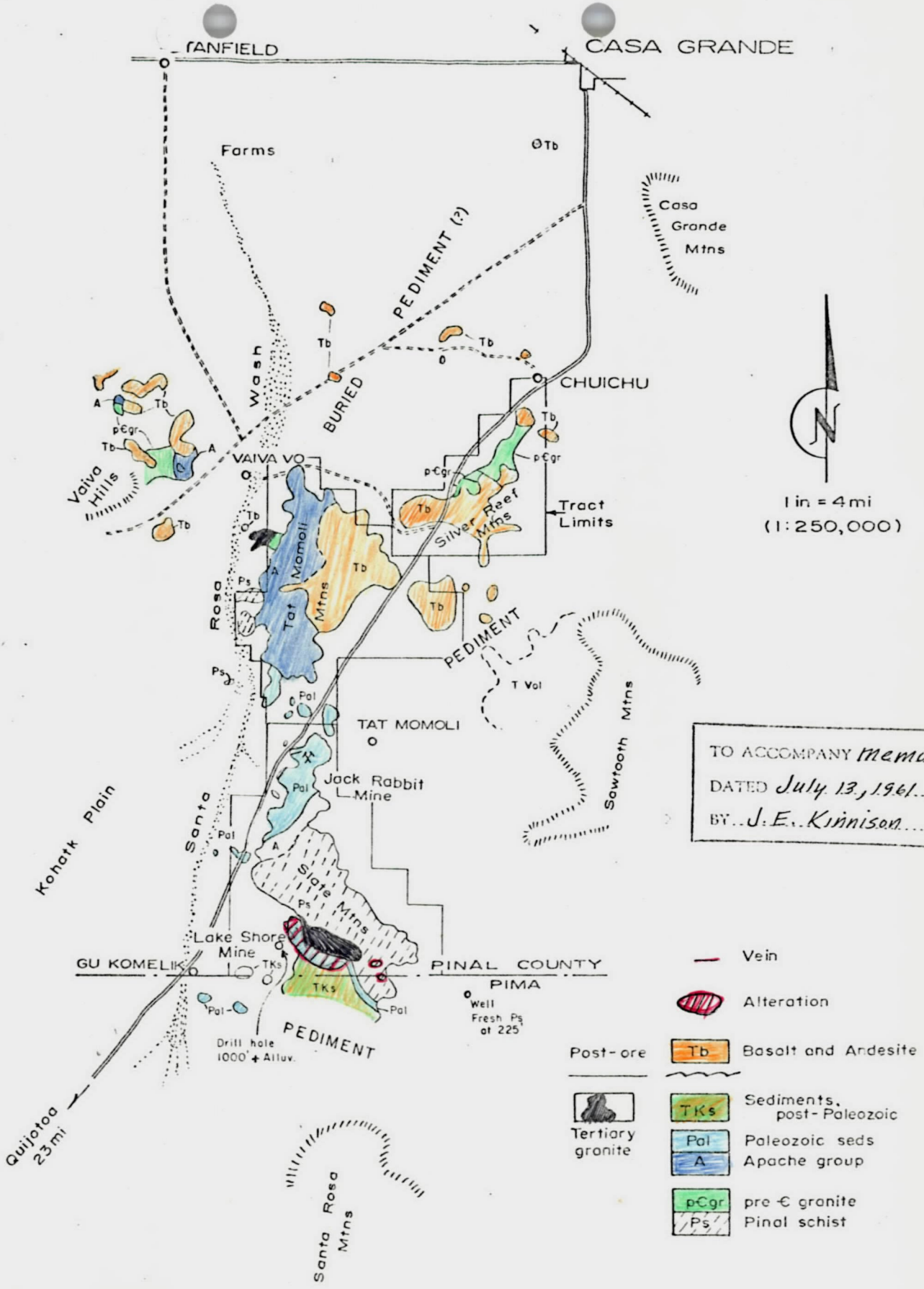
I found no mineralization of "porphyry copper" type except a weak zone on the southwestern flank of the Slate Mountains, which is not a target in itself nor is there a direct lead under cover. Any repetition along the strike of this zone under cover is outside the bid area. There are no other mineral possibilities of Company interest.

ORIGINAL SIGNED BY
JOHN E. KINNISON

JOHN E. KINNISON

JEK/z
Att: sketch
cc: JHCourtright
AGBlucher
JEKinnison

File copy routed to:
TASnedden
ACHall
WESaegart



GEOLOGIC RECONNAISSANCE
South of Chuichu
Papago Country

J.E.K July, 1961

FORM SL-1035-A 1 M 4-68

KEEP THIS ON TOP

File No. Aa-16.0.16

From 1969 to

Subject: PAPAGO CENTRAL PROJECT
Greenback Area
Pinal County, Arizona

AMERICAN SMELTING AND REFINING COMPANY
Tucson Arizona

June 9, 1969

TO: J.H. Courtright

FROM: S.R. Davis & J.E. Kinnison

Papago Central Project
Greenback Area
Pinal County, Arizona

SUMMARY AND RECOMMENDATIONS

The subject property, located approximately 35 miles southwest of Casa Grande, has been known to have a moderate sized zone of weak alteration, mineralization, and exotic copper staining for several years. It had remained as a very low-priority prospect for copper and possibly gold-silver. During the course of reconnaissance on the Papago Reservation, it was mutually agreed by Messrs. Sell, Saegart and Kinnison that a detailed study was now appropriate.

The known alteration and mineralization zone had not been interpreted to have derived from ore grade mineralization; however a possible extension of the two square mile zone under cover could have concealed significant mineralization. Alluvium and post-mineral volcanics lie to the northwest, north and northeast, and alluvium limits exposure to the east. Essentially unaltered Pinal schist and andesite porphyry lie south and west of the altered zone.

The limits of alteration, rock types, and leached capping were mapped by Kinnison and Davis, and geochemical samples were cut by Davis, Karvinen and others. Gravity and magnetic geophysical traverses were run under Mr. Farley's supervision. This work has shown that no extension into covered areas is probable, and that the only exploration lead open is a wildcat speculation that the grade of copper would increase with depth. At the conclusion of field work, Mr. Bowditch and Mr. Saegart determined that the block of claims covering the mineralized outcrops was in disputed ownership with several other parties (refer to S.I.Bowditch's memo dated March 25, 1969) and the prospect was dropped. No further recommendations are now offered.

LOCATION

The subject area is located approximately 35 miles southwest of Casa Grande and lies in sections 28, 29, 30, 31, 32 and 33, T10S, R2E, Pinal County. Relative to other known mineral occurrences, the

Greenback area lies 8 miles southwest of the Newmont-Superior Oil Vekol porphyry copper deposit and 16 miles west of El Paso Natural Gas Company's new Lakeshore copper deposit.

Access is by way of the Papago highway south from Casa Grande to the Kohatk Indian Village road and thence west approximately 15 miles on graded dirt roads to the old Greenback Camp and Pinal shaft. The graded roads are subject to seasonal changed and washouts, but in their present condition can be driven at reasonable speeds, averaging approximately one hour and fifteen minutes from Casa Grande to Greenback.

GENERAL

On the basis of company correspondence records and earlier sampling and reconnaissance by ASARCO personnel which indicated low grade assays of gold and silver, a program of bulk sampling was initiated in the central area occupied by massive silicified zones. With Messrs. R.D. Karvinen, J.E. Kinnison, S.R. Davis and L.J. Jansen, sampling and mapping began February 12 on a 300' coordinate grid. Five to ten pound samples were taken through March 16 and fire assayed for gold, silver, copper and molybdenum. February 16 through February 19 were devoted to collecting one pound geochem samples in the surrounding area. By February 20, the central area had been mapped and sampled, and the samples were submitted to Hawley & Hawley for analysis on February 19, 20 and 21.

Results of the assays and geochemical analysis indicated lack of gold or silver, most of the samples assayed nil, the highest being 0.02 Oz gold and 0.06 Oz silver. A pronounced copper-moly anomaly existed over the area of strongest alteration and silicification, a second and weaker anomaly was open-ended at the west end of the sampled area and outside the mapped area. Copper values ranged from a low of 12 ppm to a high of 1.65% and averaged 1,000 ppm within the two anomalies. Background copper averaged approximately 50 ppm. Molybdenum values varied from 5 ppm to 90 ppm, the average in the anomalous areas being approximately 15-20 ppm. Background molybdenum averages 5 ppm.

As a follow-up to the west anomaly being open-ended and outside the mapped area, S.R. Davis returned to the area on March 3, and mapped further south and west also taking additional geochemical samples of the extended area. By March 14, sufficient mapping and sampling had been done to close off the area on all sides. Gravity and magnetic geophysical surveys were recommended for the surrounding area as a further means of determining any possible extension. The geophysical surveys were carried out by D.Hedricks and under the supervision of W.G. Farley, shortly after the completion of mapping. Attachment "A" shows the location of samples and sample numbers, Attachment "B" shows values in ppm of copper and molybdenum and contours of the two principal anomalies. The geophysical surveys revealed a low over the central area of alteration and a weaker low about one mile northwest in section 29, both within the disputed property. (Refer to W.G.Farley's first quarter report dated April 9, 1969).

GEOLOGY, ALTERATION AND MINERALIZATION

Geology, along with strength of alteration and mineralization is shown on Attachment "C". Rock types consist of a latite-monzonite porphyry complex, andesite and andesite porphyry, intruding essentially unmineralized Pinal schist and in very limited occurrences Pre-Cambrian granite. The best alteration and mineralization occurs in the latite-monzonite porphyry and the entire zone is restricted to the latite monzonite porphyry, andesite and andesite porphyry and in one small area, the Pinal schist. Alluvium and volcanics of the Copperosity Hills overlie the area to the north, west and east, Pinal schist forms the hills to the south. The breccia zones shown in the southwest corner of the altered zone are apparently post-mineral and do not reflect increased mineralization.

The zone of alteration described is one mile wide by two miles long, striking west. The alteration is akin to,but does not have some features of a porphyry copper deposit. It is, however, a pervasive zone of low total sulfides and propylitic alteration. The principal area, west of the old Greenback Mine, is strongly silicified and contains in one central area, copper stains. This central area of capping is indicated also by the main geochemical anomaly of copper and molybdenum, but is not interpreted to have been formed from ore-grade copper sulfides. Bulk samples in this area were fire assayed for gold and silver with essentially negative results. Several small zones within the larger pyritic zone displayed hematite resembling live limonite, but assay values discounted any anomalous copper content.

Gravel cover laps around the very weak peripheral alteration on the east and north, while the west end, although containing some better silicified capping, is spotty and appears to be "breaking up". Unmineralized schist is on the south. Magnetic and gravity profiles did not indicate the presence of any strong lineations through or from the altered zones. Thus, no extensions under cover or outside the disputed property are indicated.

S.R. Davis

S.R. Davis

J.E. Kinnison

JOHN E. KINNISON

SRD:lzb
Encl.

cc: WESaegart, w/encl.
RDKarvinen, w/encl.

ATTACHMENT A

LEGEND

● Bulk Samples

○ Geochem Samples

PAPAGO CENTRAL PROJECT

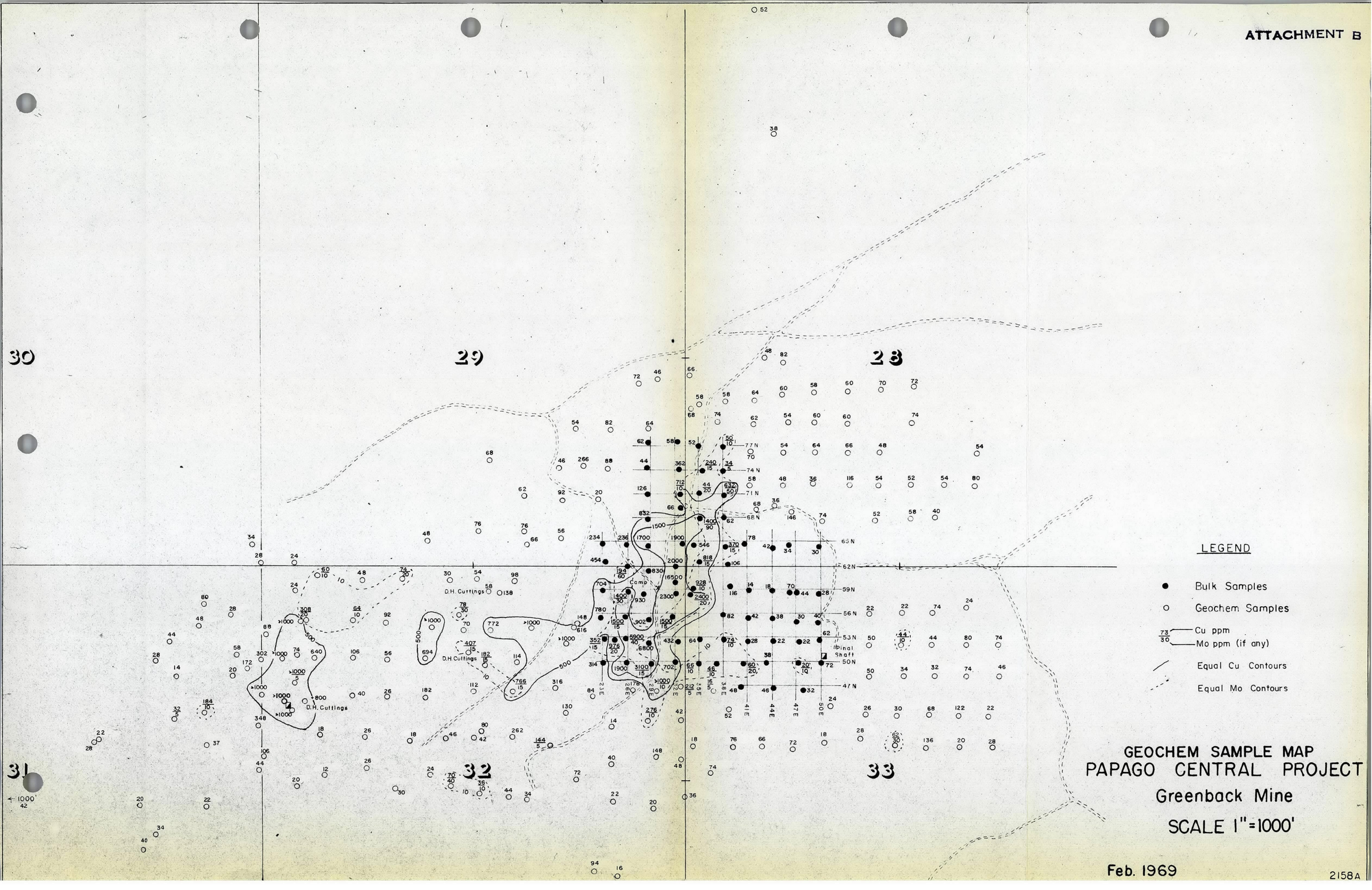
Greenback Mine

SCALE 1:1000

Feb. 1969

2158

ATTACHMENT B

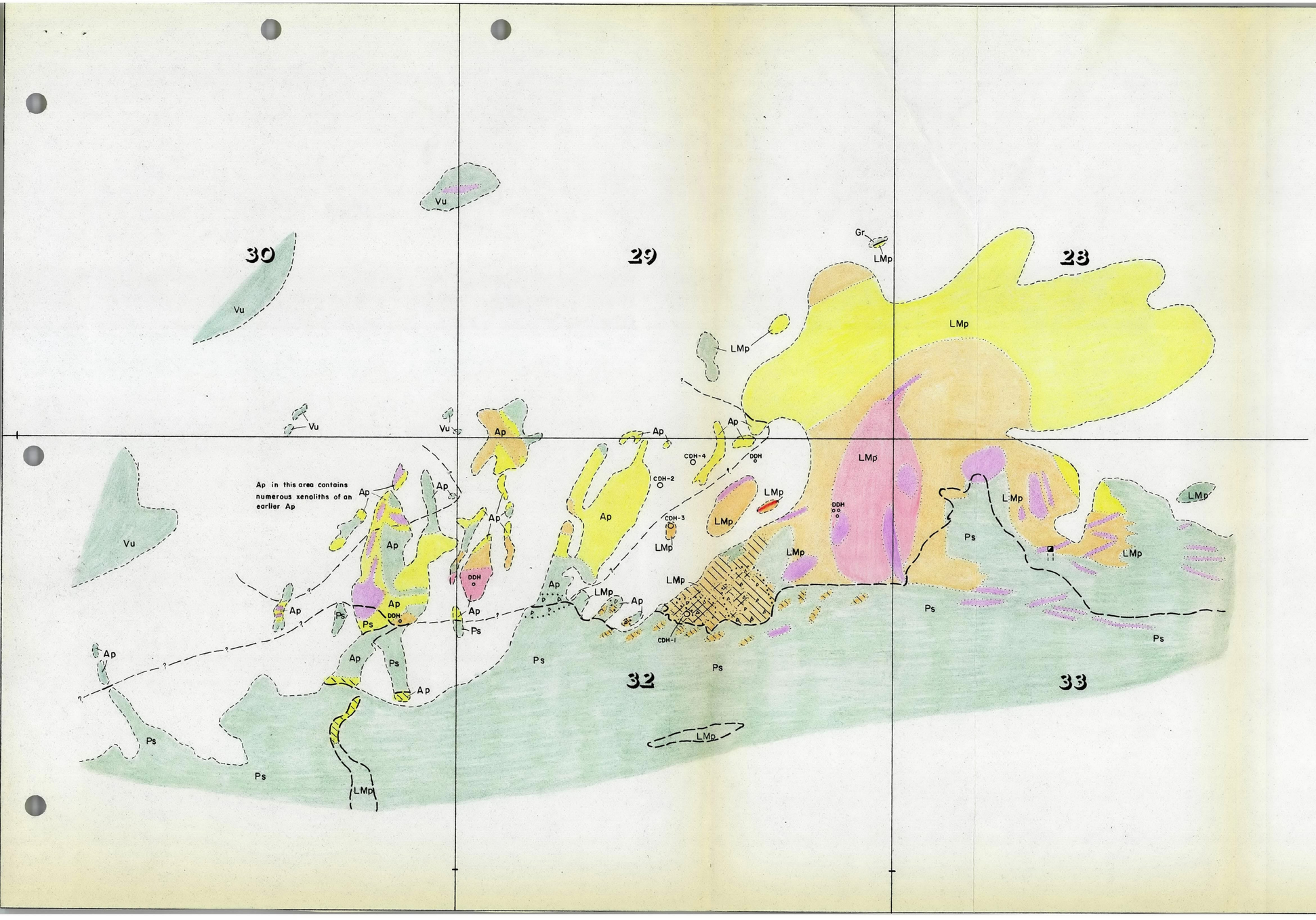


GEOCHEM SAMPLE MAP
PAPAGO CENTRAL PROJECT
Greenback Mine
SCALE 1"=1000'

Feb. 1969

2158A

ATTACHMENT C



EXPLANATION

Contact

Possible Contact

Limit of Outcrop

Limit of Alteration–Mineralization

CDH — Churn Drill Hole

DDH — Diamond Drill Hole

ROCK TYPES

Vu — Volcanics, Undifferentiated

POST MINERAL / PRE MINERAL

Ap — Andesite and Andesite Porphyry

LMp — Latite and Monzonite Porphyry Complex

Ps — Pinal Schist

Gr — Granite, Pre-Cambrian

Silicified Zone—Massive Quartz

Breccia Zone

ALTERATION — MINERALIZATION

Strong Alteration—Silicification, Pervasive CuOx Staining

Moderate Alteration—Mineralization

Weak Alteration—Mineralization

Barren Alteration—Mineralization

2-4% FeOx After Sulfides

Limonite Closely Resembles Live Limonite

GEOLOGY AND ALTERATION—MINERALIZATION

PAPAGO CENTRAL PROJECT
GREENBACK AREA

PINAL CO., ARIZONA

SCALE: 1" = 1000'

June 1969 SRD, JEK

2158

Aa-16A.3.0

J. H. C.

APR 8 1966

AMERICAN SMELTING AND REFINING COMPANY
Tucson Arizona

April 8, 1966

W.E.S.
APR 8 1966

TO: J. H. COURTRIGHT

FROM: J. E. KINNISON

Greenback Prospect (Newmont)

~~NEWMONT PROSPECT~~
VEKOL MOUNTAINS
PINAL COUNTY, ARIZONA

In regard to the subject property I have obtained the following information from Jack Clark of Bear Creek Mining Company in Tucson. This will supplement the memorandum of 3/1/66 by Mr. Collins, in which he describes the location of this property as determined by an aerial reconnaissance which he and I made February 22.

The drilling to date has outlined a copper deposit, probably in sediments (tactites ?), which is larger than the I. P. anomaly above it. The grade is quoted as being 1% plus, and the tonnage as being large and having significant vertical extent. Clark does not know whether chalcocite enrichment is an appreciable factor, but he understands that much of the copper occurs as chalcopyrite.

The prospect is reported to result from an I. P. anomaly located by the Stebbens group, formerly Hunting--which passed the prospect directly to Newmont at the end of their Papago investigation. The I. P. anomaly was described by Clark as originally "open" on one end, and completely covered by alluvium. I. P. response over bedrock outcrops (which we already knew to be barren) is described as negligible; but that the anomaly in the alluvial basin was significant with respect to background. Subsequently Newmont made more I. P. surveys and closed the open end.

Newmont has been drilling in this area approximately 8 months. This time can be fixed because I was at the Lake Shore mine last August, when the caretaker discussed selling water to Newmont with Mr. Freemen, Manager of the Lake Shore. The spacing of the drill holes which Mr. Collins and I observed from the air, bears out the fact that they have prospected a rather large area in the alluvial basin south of the old Reward Mine. The Reward, as you will recall, is of the tactite type--although it is there restricted to narrow bands of zink and copper sulfides, rather than being pervasive.

John E. Kinnison
JOHN E. KINNISON

JEK/pjc
cc: JJCollins

J. H. C.

MAR 24 1969

AMERICAN SMELTING AND REFINING COMPANY
Tucson Arizona

March 25, 1969

To: Mr. W. E. Saegart

From: Mr. S. I. Bowditch

Greenback Mine
Pinal County, Arizona

The following affidavits of labor have been filed for claims in the Greenback area.

1) Docket 561, page 179 - Garth S. Black, 409 E. Malibu Drive, Tempe, Arizona, for Pinal Copper Corporation - work done at the expense of Pinal Copper Corporation between August 31, 1968, and November 30, 1968, dated February 12, 1969.

Names	Docket	Page
Big Ike No. 1 & 2	47	203,204
Kickback Nos. 1-3	47	186-188
" 4-6	47	189-191
" 10-13	47	195-198
Copper King Nos. 1&2	98	477-478
Gold Bell	98	476
North Copper 4 & 5	99	538,539
West End 1-3	100	337-339
" " 4 & 5	101	508-509
Copper Flat	101	237
Kickback 1 & 2 (Ficket)	126	31,32
Pinal Copper & Uranium Ex 1-7	126	33-39
Golden Hills South No. 5	127	33
Shiprock 1-3	126	77-79
Copper Hill No. 4	107	400
South Copper 1,3,4	107	550,552,553
South Side No. 2	107	551
Copper Hill Ext 1-5, 7-10	109	59-63, 393-396
Good Copper No. 1	96	340
Good Copper	96	342
Good Gold	96	339
West Side	96	341
Copper Bell 1-20	118	371-380

74 claims

2) Docket 561, page 160 - Garth S. Black for Paul Hinshaw and Clarence Black - Dated February 12, 1969 - work done at expense of owners - August 31, 1968 to October 30, 1968

Titian #1	126	101
" #3	126	103
" #4	126	109

Titian #5	126	108
" #6	126	107
" #7	126	106
Iron Cap #1	127	34
South Gold	96	338
Golden Hills #1-5	127	35-39
Gold King No. 5	119	332
" " No. 9	121	273

15 claims

Therefore at least 89 claims, located before the Papago Reservation was closed to prospecting, are being kept alive in this area. The descriptions on the location notices are too vague to plot.

S. I. Bowditch

S. I. Bowditch

SIB:kc
cc: JHCourtright
JEKinnison

J.H.C.
MAR 12 1969

AMERICAN SMELTING AND REFINING COMPANY
Tucson Arizona

March 12, 1969

TO: W.E. Saegart

FROM: J.E. Kinnison

Papago Central Exploration
Greenback Area

Mr. Sell and you visited the Greenback area with me on February 11, 1969, and examined live limonite in a bleached porphyry about ½mile southwest of the Greenback town. You will recall that there was a churn drill hole at this location and that we had lunch there.

I tested the maroon limonite at the Arizona Bureau of Mines on the visual spectograph, which showed that no copper was present. Therefore, the limonite is not likely to have been derived from copper sulfide, a conclusion more in keeping with the drill hole cuttings which showed pyrite only.

J.E. Kinnison

JEK:lzb

cc: JHCourtright
JDSell

FORM SL-1035-A 1 M 4-68

KEEP THIS ON TOP

File No. Aa-16.0.16

From 1969 to

Subject: PAPAGO CENTRAL PROJECT
Southern Slate Mountains
Summary Report

838-5939
870-3749

PACIFIC SPECTROCHEMICAL LABORATORY, INC.

CHEMICAL AND SPECTROGRAPHIC ANALYSIS
RESEARCH
2558 Overland Avenue
Los Angeles, California 90064

K.V.D.S.
FEB 18 1969

February 13, 1969

Report of semiquantitative spectrographic analysis of samples submitted by

Hawley & Hawley
P. O. Box 5934
Tucson, Arizona 85703

	342151-231 Granite Comp.	342151-232 Schist Comp.	342152 P-79(1000)	342153 CR Cgl Comp.
Silicon-	24.%	22.%	24.%	19.%
Aluminum-	8.9	11.	8.9	11.
Sodium-	4.4	2.9	5.2	3.9
Iron-	1.4	2.5	1.1	2.0
Magnesium-	1.0	1.2	0.75	1.1
Calcium-	2.1	0.40	0.55	3.1
Potassium-	11.	11.	10.	13.
Barium-	trace	trace	trace	trace
	less than 0.05----------			
Titanium-	0.58	0.92	0.98	0.93
Lead-	not detected	trace	not detected--------	
	less than 0.01----------			
Gallium-	0.0069	0.0082	0.0058	0.0082
Manganese-	0.074	0.068	0.031	0.036
Chromium-	0.0074	0.028	0.0082	0.018
Nickel-	0.0018	0.0068	0.00099	0.0014
Vanadium-	0.0089	0.012	0.011	0.012
Copper-	0.0080	0.0040	0.12	0.0058
Zirconium-	0.018	0.033	0.027	0.035
Cobalt-	0.0044	0.0079	not detected less than 0.001	0.015
Ytterbium-	not detected less than 0.004	0.0078	not detected less than 0.004-----	trace
Rhenium-	not detected---------- less than 0.005----------			
Strontium-	0.084	0.076	0.063	0.077

Papago Central Proj.
Lakeshore area
Pinal Co Ariz

continued - Page 2.

THIS REPORT IS SUBMITTED TO THE ADDRESSED CLIENT FOR HIS EXCLUSIVE USE. AS A PROTECTION TO THE CLIENT, THE PUBLIC AND THIS LABORATORY, THIS REPORT MAY NOT BE USED IN WHOLE OR IN PART FOR ADVERTISING, PUBLICITY OR PROMOTION WITHOUT WRITTEN AUTHORIZATION.

K.V.D.S.
FEB 18 1969

February 13, 1969

342151-231, 342151-232, 342152, and 342153

Antimony-	not detected	- less than	0.008%	- all samples
Arsenic-	"	"	0.05	"
Beryllium-	"	"	0.0003	"
Bismuth-	"	"	0.001	"
Boron-	"	"	0.002	"
Cadmium-	"	"	0.006	"
Cesium-	"	"	0.20	"
Columbium-	"	"	0.02	"
Germanium-	"	"	0.003	"
Gold-	"	"	0.001	"
Hafnium-	"	"	0.05	"
Indium-	"	"	0.007	"
Lithium-	"	"	0.02	"
Mercury-	"	"	0.09	"
Molybdenum-	"	"	0.002	"
Platinum-	"	"	0.002	"
Phosphorus-	"	"	0.50	"
Ruthenium-	"	"	0.01	"
Rubidium-	"	"	0.20	"
Silver-	"	"	0.0001	"
Tantalum-	"	"	0.05	"
Tellurium-	"	"	0.04	"
Thallium-	"	"	0.10	"
Tin-	"	"	0.003	"
Tungsten-	"	"	0.05	"
Zinc-	"	"	0.03	"
Other Rare Earths-				nil

Respectfully submitted,

Hal W Johnson

PACIFIC SPECTROCHEMICAL LABORATORY, INC.

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J.H.C.
FEB 10 1969

AMERICAN SMELTING AND REFINING COMPANY
Tucson Arizona

February 7, 1969

TO: J.H. Courtright

FROM: R.D. Karvinen

Papago Central Project
Southern Slate Mountains
Summary Report

Geologic reconnaissance and geochem sampling was conducted in the subject area in mid-January with Asarco's J.D. Sell, J.E. Kinnison, S.R. Davis and L.J. Jansen.

Prime consideration was given to sampling of the rock exposures northeast of what is now the new porphyry copper deposit at Lakeshore. The intent of this work was to determine if any trace element analyses would indicate the existence of the Lakeshore ore body. Interpretation of the results must acknowledge the post-ore fault which terminates the ore body to the east and therefore clouds the spacial relationship of the sampled area when equated to its position at time of mineralization. Another factor to be considered is the distance ($+\frac{1}{2}$ mile) of nearest outcrops to the east edge of the ore zone.

Appended are maps and assay profiles of the sampled areas. The profiles are mostly on copper results, and as can be noted no discernible trend is indicated. Values shown at the same location but with differing results are the result of special sampling of some unique (limonite veinlets, epidote, etc.,) feature at or near a standard rock chip sample.

An assay-plan map is also appended and is so presented because of the random spacing of sample sites over the newly found alteration zone mentioned below.

At the south central extremity of the Slate Mountains, J.E. Kinnison discovered a zone of alteration and iron oxide concentrations which appear to have been derived from sulphide mineralization. A window of this zone is exposed for about 1000 feet N-S and 500 feet E-W. The host rock is thought to be Clafflin Ranch Conglomerate. Mineralization, if present, would be delimited to the north and the east where barren, unaltered sediments and volcanics are exposed. West and southwest of the exposure, the zone, if greater than in outcrop, could extend under alluvial cover and/or under the possible post-ore* volcanics which lie to the west.

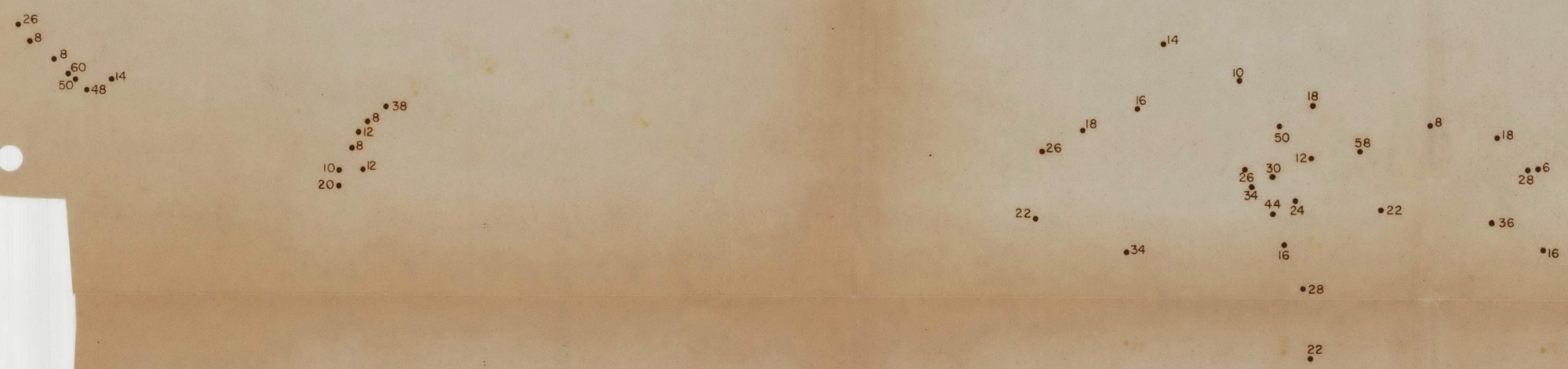
* Kinnison believes the unmineralized volcanics and conglomerates to the north and west are pre-ore.

Geochem results are not encouraging for this area, in that maximum Cu-Mo returns were 50 & 20 ppm, respectively, which is not much above background. Other negating features are 1) weak, spotty alteration and indicated low total sulphides; 2) lack of any copper staining, and 3)the limonites which appear to be derived only from pyrite. However, the possibility of this being a fringe area of a mineralized zone still exists and the covered area warrants some type of sub-surface exploration. Judging from the relatively poor assay showings, this prospect deems only second rate priority.

R.D. Karvinen

RDK:lzb
Encl.

cc: WESaegart
JEKinnison
JDSell



ASSAY OVERLAY

Papago Central Project

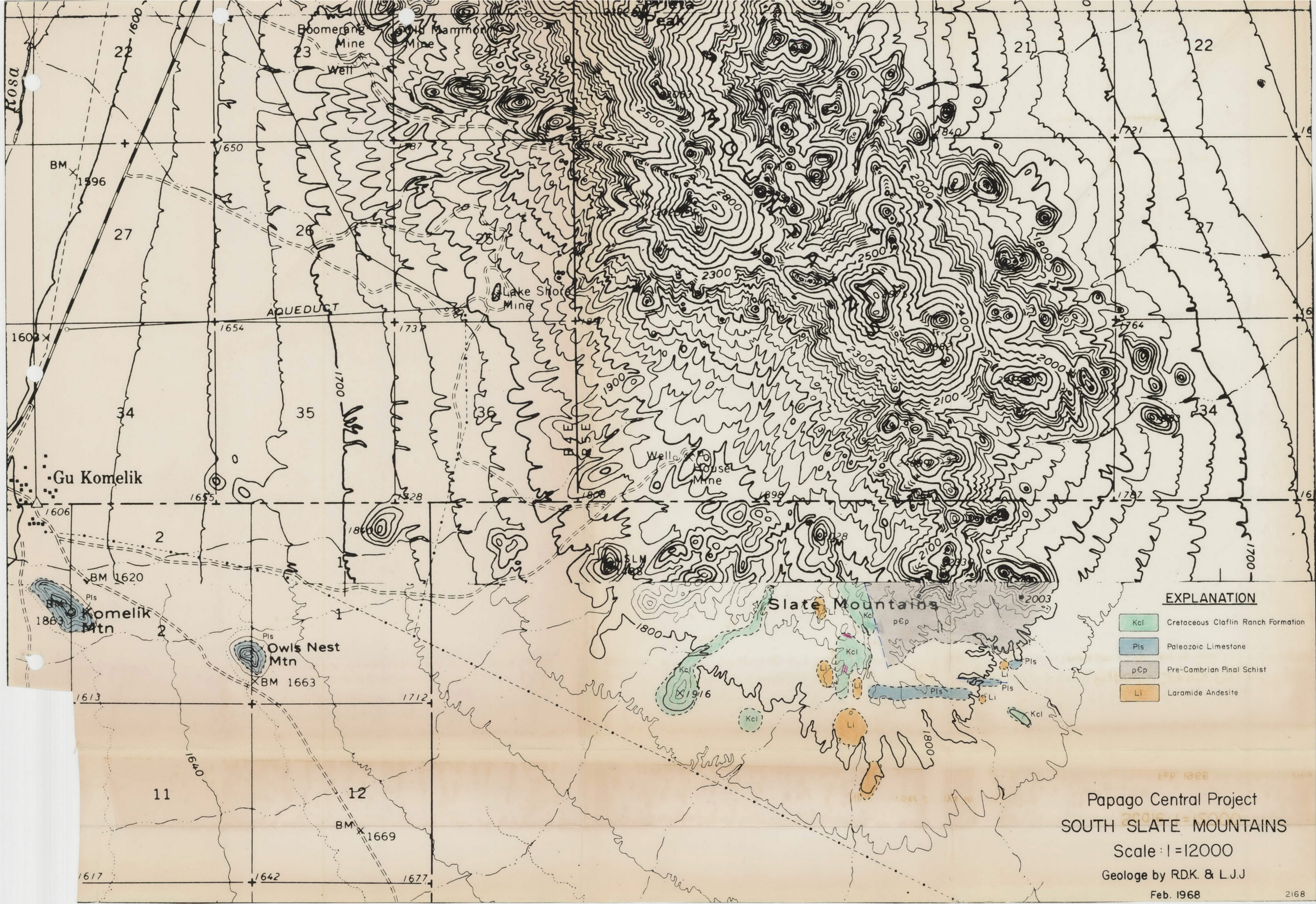
SOUTH SLATE MOUNTAINS

Scale: 1 = 12000

Note: Copper Assays in ppm

Feb. 1968

2169


Rosa
Boomerang Mine
Gold Mammoth Mine
Well
Peak
Lake Shore Mine
AQUEDUCT
Well
Mine
Gu Komelik
Komelik Mtn
Owls Nest Mtn
BM 1620
BM 1663
BM 1669
BM 1596
BM 1863
Slate Mountains
Kcl
Pls
pЄp
Li
EXPLANATION
Kcl Cretaceous Claflin Ranch Formation
Pls Paleozoic Limestone
pЄp Pre-Cambrian Pinal Schist
Li Laramide Andesite
Papago Central Project
SOUTH SLATE MOUNTAINS
Scale: 1 = 12000
Geologe by R.D.K. & L.J.J
Feb. 1968
2168

HAWLEY & HAWLEY
ASSAYERS AND CHEMISTS, INC.
1700 WEST GRANT ROAD - TELEPHONE 622-4836 - POST OFFICE BOX 5934
TUCSON, ARIZONA 85703
Registered Assayers

THE SOUTHWEST'S LEADING ASSAYERS AND REPRESENTATIVES

Branch Representatives at Buyer's Plants:
Phelps Dodge Corp., Douglas, Arizona; ASARCO, El Paso, Amarillo, Texas and Hayden, Arizona

K.V.D.S.
FEB 20 1969

IDENTIFICATION	Gold ozs.	Silver ozs.	Lead %	Copper %	Zinc %	Mo. %			
				ppm		ppm			
PD-DR Series									
1				212		< 5			
1S				338		< 5			
1N				162		< 5			
2				> 1000		< 5			
3				> 1000		< 5			
3S				> 1000		< 5			
3N				242		< 5			
4				180		< 5			
4S				120		< 5			
4N				116		< 5			
5				80		< 5			
5S				224		< 5			
5N				134		< 5			
7				126		< 5			
8				> 1000		< 5			
9				> 1000		< 5			
10				152		< 5			
11				238		< 5			
12				202		< 5			
13				86		< 5			
14				582		< 5			
15				52		< 5			
16				> 1000		< 5			
17				148		< 5			
18				672		< 5			

CC. American Smelting & Refining Co.
ADD: Attn: Mr. Steven R. Davis
CITY: P. O. Box 5795
ADD: Tucson, Arizona 85703
CITY:

REMARKS:
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THE SOUTHWEST'S LEADING ASSAYERS AND REPRESENTATIVES
Branch Representatives at Buyer's Plants:
Phelps Dodge Corp., Douglas, Arizona; ASARCO, El Paso, Amarillo, Texas and Hayden, Arizona

IDENTIFICATION	Gold ozs.	Silver ozs.	Lead %	Copper %	Zinc %	Mo. %			
				ppm		ppm			
PD-DR Series									
19				100		< 5			
20				> 1000		< 5			
21				214		< 5			
22				> 1000		< 5			
23				212		< 5			
24				196		< 5			
25				48		< 5			
26				562		< 5			
27				50		< 5			
28				70		< 5			
29				54		< 5			
30				154		< 5			
31				52		< 5			
32				282		< 5			
33				60		< 5			
34				50		< 5			
35				16		< 5			
36				16		< 5			
37				22		< 5			
38				38		< 5			
39				38		< 5			
40				112		< 5			
41				92		< 5			
42				78		< 5			
43				92		< 5			

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THE SOUTHWEST'S LEADING ASSAYERS AND REPRESENTATIVES

Branch Representatives at Buyer's Plants:
Phelps Dodge Corp., Douglas, Arizona; ASARCO, El Paso, Amarillo, Texas and Hayden, Arizona

IDENTIFICATION	Gold ozs.	Silver ozs.	Lead %	Copper %	Zinc %	Mo. %			
				ppm		ppm			
PD-DR Series									
44				154		< 5			
45				38		< 5			
46				92		< 5			
47				80		< 5			
48				82		< 5			
49				62		< 5			
50				80		< 5			
51				64		< 5			
52				100		< 5			
53				102		< 5			
54				98		< 5			
55				74		< 5			
56				762		< 5			
57				406		< 5			
58				114		< 5			
59				46		< 5			
60				56		< 5			
61				58		< 5			
62				56		< 5			
63				48		< 5			
64				50		< 5			
65				48		< 5			
66				48		< 5			
67				46		< 5			
68				44		< 5			

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THE SOUTHWEST'S LEADING ASSAYERS AND REPRESENTATIVES

Branch Representatives at Buyer's Plants:
Phelps Dodge Corp., Douglas, Arizona; ASARCO, El Paso, Amarillo, Texas and Hayden, Arizona

IDENTIFICATION	Gold ozs.	Silver ozs.	Lead %	Copper %	Zinc %	Mo. %			
				ppm		ppm			
PD-DR Series									
69				712		< 5			
70				76		< 5			
71				52		< 5			
72				46		< 5			
73				562		< 5			
74				54		< 5			
75				62		< 5			
76				362		< 5			
77				> 1000		< 5			
78				> 1000		< 5			
79				82		< 5			
80				84		< 5			
81				108		< 5			
82				32		< 5			
83				46		< 5			
90 samples crushed, split, Pulverized @ .85						76.50			
90 Geochem Cu @ 1.00 = 90.00 - 18% discount						73.80			
90 Geochem Mo @ 1.50 = 135.00 - 18% discount						110.70			
						261.00			

REGISTERED ASSAYER
QUALIFICATE NO. 6784
H. E. RICHARD
Date Signed
Arizona U. S. A.

CC: American Smelting & Refining Co.
ADD: Attn: Mr. Steven R. Davis
CITY: P. O. Box 5795
ADD: Tucson, Arizona 85703
CITY:

REMARKS:
Page 4
Geochem

Analysis Cert. B

Preparation $ 76.50
Analysis $ 184.50

ACC: AMERICAN SMELTING & REFINING CO | Date Spl. Received 2/14/69 | Date Compl. 2/19/68 | TUC 342367 | $ 261.00

HAWLEY & HAWLEY
ASSAYERS AND CHEMISTS, INC.
1700 W. GRANT RD. • BOX 5934 • 622-4836
TUCSON, ARIZONA 85703

BRANCHES
DOUGLAS, ARIZONA
HAYDEN, ARIZONA
EL PASO, TEXAS
AMARILLO, TEXAS

IDENTIFICATION	GOLD OZS	SILVER OZS	LEAD %	COPPER %	ZINC %	MO. %	IRON %		
				ppm		ppm		Research Spectrograph	
CR Cgl Composite PC - RL 81, 83, 71, 68 PC - KL 8, 9, 10, 11, 12	None	None		34		< 5		**	
				9	samples	composited @		20	1.80
				1	Verified	Au & Ag			6.50
				1	Geochem	Cu			1.00
		** to	follow	1	Geochem	Mo			1.50
									10.80

CC: American Smelting & Refining Company
ADD: P. O. Box 5795
CITY: Tucson, Arizona 85703
DD: Attn: Mr. R. D. Karvinen
CITY:

REMARKS:
Geochem
Verified

ANALYSIS CERT. BY

Compositing $ 1.80
PREPARATION $
ANALYSIS $ 9.00

ACC: AMERICAN SMELTING & REFINING CO - TUC | DATE SPL. RECEIVED 1/24/69 | DATE COMPL. 1/31/69 | TUC 342153 | $ 10.80

HAWLEY & HAWLEY

ASSAYERS AND CHEMISTS, INC.

1700 WEST GRANT ROAD - TELEPHONE 622-4836 - POST OFFICE BOX 5934

TUCSON, ARIZONA 85703

Registered Assayers

THE SOUTHWEST'S LEADING ASSAYERS AND REPRESENTATIVES

Branch Representatives at Buyer's Plants:
Phelps Dodge Corp., Douglas, Arizona; ASARCO, El Paso, Amarillo, Texas and Hayden, Arizona

IDENTIFICATION	Gold ozs.	Silver ozs.	Lead %	Copper %	Zinc %	Mo. %	Research Spectrograph	
				ppm		ppm		
Granite Composite PC - SL 4, 5 PC - DL 5, 6, 7, 8 27, 28, 29 PC - RL 5 thru 10 25 thur 20 44 thur 53	None	None		50		< 5	**	
Schist Composite PC - RL 1, 2, 20, 21, 42, 43 PC - SL 1, 2, 26, 27, PC - DL 1, 2, 25, 26	None	None		16		< 5	**	
	** to follow							
	229 samples pulverized @ .60 = 137.40							137.40
	45 samples composited @ .20 = 9.00							9.00
	231 Geochem Cu @ 1.00 = 231.00 - 30% discount							161.70
	231 Geochem Mo @ 1.50 = 346.50 - 30% discount							242.55
	2 Verified Au & Ag @ 6.50 = 13.00							13.00
								563.65

REGISTERED ASSAYER CERTIFICATE NO. 6734 H. E. RICHARD

CC: American Smelting & Refining Company
ADD: P. O. Box 5795
CITY: Tucson, Arizona 85703
ADD: Attn: Mr. R. D. Karvinen
CITY:

REMARKS:
Geochem
Verified
Page 10
30% discount

Analysis Cert. By.

Compositing 9.00

Preparation $ 137.40

Analysis $ 417.25

ACC: AMERICAN SMELTING & REFINING CO -TUC

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Date Compl. 1/31/69

TUC 342151

$ 563.

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THE SOUTHWEST'S LEADING ASSAYERS AND REPRESENTATIVES

Branch Representatives at Buyer's Plants:
Phelps Dodge Corp., Douglas, Arizona; ASARCO, El Paso, Amarillo, Texas and Hayden, Arizona

IDENTIFICATION	Gold ozs.	Silver ozs.	Lead %	Copper %	Zinc %	Mo. %			
				ppm		ppm			
PC - RL 1				42		< 5			
PC - RL 2				26		< 5			
PC - RL 3				8		< 5			
PC - RL 4				572		75			
PC - RL 5				38		< 5			
PC - RL 6				30		< 5			
PC - RL 7				16		< 5			
PC - RL 8				132		< 5			
PC - RL 9				34		< 5			
PC - RL 10				38		< 5			
PC - RL 11				28		< 5			
PC - RL 12				104		< 5			
PC - RL 13				36		< 5			
PC - RL 14				424		90			
PC - RL 15				40		< 5			
PC - RL 16				34		< 5			
PC - RL 17				328		5			
PC - RL 18				54		< 5			
PC - RL 19				126		< 5			
PC - RL 20				14		< 5			
PC - RL 21				10		< 5			
PC - RL 22				54		< 5			
PC - RL 23				16		< 5			
PC - RL 24				126		< 5			
PC - RL 25				54		< 5			
PC - RL 26				60		< 5			

CC: American Smelting & Refining Company
ADD: P. O. Box 5795
CITY: Tucson, Arizona 85703
ADD: Attn: Mr. R. D. Karvinen
CITY:

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THE SOUTHWEST'S LEADING ASSAYERS AND REPRESENTATIVES

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Phelps Dodge Corp., Douglas, Arizona; ASARCO, El Paso, Amarillo, Texas and Hayden, Arizona

IDENTIFICATION	Gold ozs.	Silver ozs.	Lead %	Copper %	Zinc %	Mo. %			
				ppm		ppm			
PC - RL 27				178		< 5			
PC - RL 28				58		< 5			
PC - RL 29				14		< 5			
PC - RL 30				56		< 5			
PC - RL 31				190		60			
PC - RL 32				162		10			
PC - RL 33				36		< 5			
PC - RL 34				12		< 5			
PC - RL 35				110		140			
PC - RL 36				> 1000		10			
PC - RL 37				56		< 5			
PC - RL 38				22		< 5			
PC - RL 39				16		< 5			
PC - RL 40				32		< 5			
PC - RL 41				40		< 5			
PC - RL 42				14		< 5			
PC - RL 43				16		< 5			
PC - RL 44				26		< 5			
PC - RL 45				18		10			
PC - RL 46				62		< 5			
PC - RL 47				22		< 5			
PC - RL 48				22		< 5			
PC - RL 49				12		< 5			
PC - RL 50				20		< 5			
PC - RL 51				58		< 5			
PC - RL 52				68		< 5			

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TUCSON, ARIZONA 85703
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THE SOUTHWEST'S LEADING ASSAYERS AND REPRESENTATIVES
Branch Representatives at Buyer's Plants:
Phelps Dodge Corp., Douglas, Arizona; ASARCO, El Paso, Amarillo, Texas and Hayden, Arizona

IDENTIFICATION	Gold ozs.	Silver ozs.	Lead %	Copper %	Zinc %	Mo. %			
				ppm		ppm			
PC - RL 53				30		< 5			
PC - RL 54				36		< 5			
PC - RL 55				34		< 5			
PC - RL 56				48		< 5			
PC - RL 57				24		< 5			
PC - RL 58				740		< 5			
PC - RL 59				16		< 5			
PC - RL 60				28		< 5			
PC - RL 61				22		< 5			
PC - RL 62				442		15			
PC - RL 63				22		< 5			
PC - RL 64				18		< 5			
PC - RL 65				8		5			
PC - RL 66				58		< 5			
PC - RL 67				56		< 5			
PC - RL 68				24		< 5			
PC - RL 69				12		< 5			
PC - RL 70				18		< 5			
PC - RL 71				44		< 5			
PC - RL 72				34		< 5			
PC - RL 73				22		< 5			
PC - RL 74				26		< 5			
PC - RL 75				18		< 5			
PC - RL 76				34		< 5			
PC - RL 77				26		5			
PC - RL 78				16		< 5			

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THE SOUTHWEST'S LEADING ASSAYERS AND REPRESENTATIVES

Branch Representatives at Buyer's Plants:
Phelps Dodge Corp., Douglas, Arizona; ASARCO, El Paso, Amarillo, Texas and Hayden, Arizona

IDENTIFICATION	Gold ozs.	Silver ozs.	Lead %	Copper %	Zinc %	Mo. %			
				ppm		ppm			
PC - RL 79				14		< 5			
PC - RL 80				10		< 5			
PC - RL 81				50		< 5			
PC - RL 82				30		20			
PC - RL 83				106		< 5			
PC - RL 84				8		< 5			
PC - RL 85				12		< 5			
PC - RL 86				8		15			
PC - RL 87				12		< 5			
PC - RL 88				10		< 5			
PC - RL 89				20		< 5			
PC - RL 90				38		< 5			
PC - RL 91				14		< 5			
PC - RL 92				48		< 5			
PC - RL 93				50		< 5			
PC - RL 94				60		< 5			
PC - RL 95				8		< 5			
PC - RL 96				8		< 5			
PC - RL 97				26		< 5			
PC - RL 98				84		< 5			
PC - RL 99				36		< 5			
PC - RL 100				16		< 5			
PC - RL 101				28		< 5			
PC - RL 102				6		< 5			
PC - SL 1				12		< 5			
PC - SL 2				12		< 5			

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Phelps Dodge Corp., Douglas, Arizona; ASARCO, El Paso, Amarillo, Texas and Hayden, Arizona

IDENTIFICATION	Gold ozs.	Silver ozs.	Lead %	Copper %	Zinc %	Mo. %			
				ppm		ppm			
PC - SL 3				20		< 5			
PC - SL 4				76		< 5			
PC - SL 5				146		< 5			
PC - SL 6				166		< 5			
PC - SL 7				38		5			
PC - SL 8				146		5			
PC - SL 9				10		< 5			
PC - SL 10				66		< 5			
PC - SL 11				42		< 5			
PC - SL 12				100		< 5			
PC - SL 13				74		< 5			
PC - SL 14				24		< 5			
PC - SL 15				24		< 5			
PC - SL 16				10		< 5			
PC - SL 17				8		< 5			
PC - SL 18				100		< 5			
PC - SL 19				30		< 5			
PC - SL 20				24		< 5			
PC - SL 21				14		< 5			
PC - SL 22				436		< 5			
PC - SL 23				36		< 5			
PC - SL 24				32		< 5			
PC - SL 25				16		< 5			
PC - SL 26				16		< 5			
PC - SL 27				16		< 5			
PC - SL 28				18		< 5			

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THE SOUTHWEST'S LEADING ASSAYERS AND REPRESENTATIVES
Branch Representatives at Buyer's Plants:
Phelps Dodge Corp., Douglas, Arizona; ASARCO, El Paso, Amarillo, Texas and Hayden, Arizona

IDENTIFICATION	Gold ozs.	Silver ozs.	Lead %	Copper %	Zinc %	Mo. %			
				ppm		ppm			
PC - SL 29				20		< 5			
PC - SL 30				30		< 5			
PC - SL 31				168		< 5			
PC - SL 32				30		< 5			
PC - SL 33				40		< 5			
PC - SL 34				10		< 5			
PC - SL 35				22		< 5			
PC - SL 36				16		< 5			
PC - SL 37				28		< 5			
PC - SL 38				22		< 5			
PC - SL 39				10		< 5			
PC - SL 40				86		< 5			
PC - SL 41				32		< 5			
PC - SL 42				22		< 5			
PC - SL 43				22		< 5			
PC - SL 44				22		< 5			
PC - DL 1				26		< 5			
PC - DL 2				18		< 5			
PC - DL 3				32		15			
PC - DL 4				34		< 5			
PC - DL 5				16		< 5			
PC - DL 6				20		< 5			
PC - DL 7				186		< 5			
PC - DL 8				96		< 5			
PC - DL 9				264		320			
PC - DL 10				14		< 5			

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ASSAYERS AND CHEMISTS, INC.
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TUCSON, ARIZONA 85703
Registered Assayers

THE SOUTHWEST'S LEADING ASSAYERS AND REPRESENTATIVES

Branch Representatives at Buyer's Plants:
Phelps Dodge Corp., Douglas, Arizona; ASARCO, El Paso, Amarillo, Texas and Hayden, Arizona

IDENTIFICATION	Gold ozs.	Silver ozs.	Lead %	Copper %	Zinc %	Mo. %			
				ppm		ppm			
PC - DL 11				56		< 5			
PC - DL 12				20		< 5			
PC - DL 13				22		< 5			
PC - DL 14				36		< 5			
PC - DL 15				32		< 5			
PC - DL 16				32		< 5			
PC - DL 17				46		< 5			
PC - DL 18				44		< 5			
PC - DL 19				40		< 5			
PC - DL 20				32		< 5			
PC - DL 21				34		< 5			
PC - DL 22				34		< 5			
PC - DL 23				38		< 5			
PC - DL 24				> 1000		30			
PC - DL 25				42		< 5			
PC - DL 26				24		< 5			
PC - DL 27				192		< 5			
PC - DL 28				18		< 5			
PC - DL 29				18		< 5			
PC - DL 30				18		< 5			
PC - DL 31				52		< 5			
PC - DL 32				24		< 5			
PC - DL 33				24		< 5			
PC - DL 34				106		< 5			
PC - JL 1				12		< 5			
PC - JL 2				12		< 5			

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1700 WEST GRANT ROAD - TELEPHONE 622-4836 - POST OFFICE BOX 5934
TUCSON, ARIZONA 85703
Registered Assayers

THE SOUTHWEST'S LEADING ASSAYERS AND REPRESENTATIVES
Branch Representatives at Buyer's Plants:
Phelps Dodge Corp., Douglas, Arizona; ASARCO, El Paso, Amarillo, Texas and Hayden, Arizona

IDENTIFICATION	Gold ozs.	Silver ozs.	Lead %	Copper %	Zinc %	Mo. %			
				ppm		ppm			
PC - JL 3				42		< 5			
PC - JL 4				16		< 5			
PC - JL 5				6		< 5			
PC - JL 6				32		< 5			
PC - JL 7				28		< 5			
PC - JL 8				20		< 5			
PC - JL 9				32		< 5			
PC - JL 10				22		< 5			
PC - JL 11				28		< 5			
PC - JL 12				28		< 5			
PC - JL 13				30		< 5			
PC - JL 14				44		< 5			
PC - JL 15				28		< 5			
PC - JL 16				26		< 5			
PC - JL 17				30		< 5			
PC - JL 18	No sample								
PC - JL 19				24		< 5			
PC - JL 20				22		< 5			
PC - JL 21				18		< 5			
PC - JL 22				20		< 5			
PC - JL 23				18		< 5			
PC - JL 24				6		< 5			
PC - JL 25				86		< 5			
PC - JL 26				10		< 5			
PC - JL 27				12		< 5			
PC - JL 28				18		< 5			

CC:
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CITY:
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REMARKS:
Geochem
Page 8

Analysis Cert. By

Preparation $
Analysis $

ACC: AMERICAN SMELTING & REFINING CO -TUC

Date Spl. Received 1/24/69

Date Compl. 1/29/69

TUC 342151

$

HAWLEY & HAWLEY
ASSAYERS AND CHEMISTS, INC.
1700 WEST GRANT ROAD - TELEPHONE 622-4836 - POST OFFICE BOX 5934
TUCSON, ARIZONA 85703
Registered Assayers

THE SOUTHWEST'S LEADING ASSAYERS AND REPRESENTATIVES

Branch Representatives at Buyer's Plants:
Phelps Dodge Corp., Douglas, Arizona; ASARCO, El Paso, Amarillo, Texas and Hayden, Arizona

IDENTIFICATION	Gold ozs.	Silver ozs.	Lead %	Copper %	Zinc %	Mo. %			
				ppm		ppm			
PC - JL 29				30		< 5			
PC - JL 30				26		< 5			
PC - KL 1				8		< 5			
PC - KL 2				8		< 5			
PC - KL 3				16		< 5			
PC - KL 4				38		< 5			
PC - KL 5				12		< 5			
PC - KL 6				22		< 5			
PC - KL 7				22		< 5			
PC - KL 8				16		< 5			
PC - KL 9				16		< 5			
PC - KL 10				48		< 5			
PC - KL 11				8		< 5			
PC - KL 12				30		< 5			
PC - KL 13				16		< 5			
PC - KL 14				54		< 5			
PC - KL 15				36		< 5			
PC - KL 16				66		< 5			
PC - KL 17				44		< 5			
PC - KL 18				18		< 5			
PC - KL 19				16		< 5			
PC - KL 20				10		< 5			

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Geochem
Page 9

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Date Spl. Received 1/24/69

Date Compl. 1/29/69

TUC 342151

$

J.H.C.
JAN 20 1969

AMERICAN SMELTING AND REFINING COMPANY
Tucson Arizona
January 20, 1969

W.E.S.
JAN 22 1969

MR. WES
READ AND RETURN
PREPARE ANSWERS HANDLE
FILE INITIALS

TO: Mr. J.H. Courtright

FROM: Mr. J.D. Sell

Altered Area-Geophysical Request
Papago Central Project
South Slate Mountains
Pima County, Arizona

A small area (700 x 1500 feet) of weak pervasive alteration and pyritic mineralization was found in Claffin Ranch-type sediments. The area is in the S$\frac{1}{2}$, Section 3, T11S, R5E, in the southern part of the Slate Mountains and is located approximately three miles southeast of the Lakeshore Mine area. The location is shown on the following attachment.

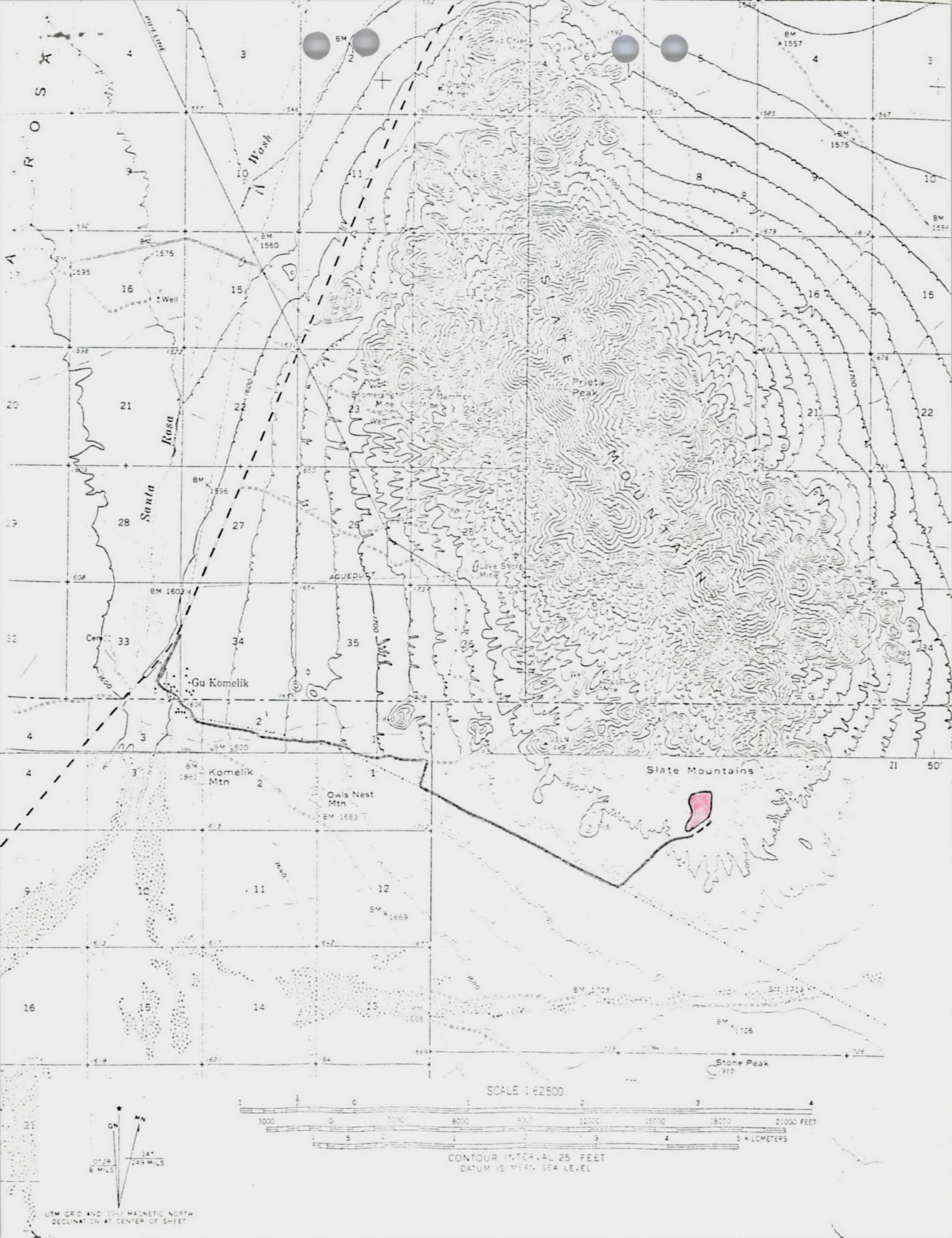
The area is exposed mainly in the arroyos cutting through the low rolling hills in this sector which often have a covering of outwash material from the main mountains.

A geophysical study is requested to trace the extent and significance of the exposure.

James D. Sell

James D. Sell

JDS:ir
cc: WGFarley w/att.


Santa Rosa Wash
Prieta Peak
Gu Komelik
Komelik Mtn
Owls Nest Mtn
Slate Mountains
Stone Peak
AQUEDUCT
PIPELINE
SCALE 1:62500
CONTOUR INTERVAL 25 FEET
DATUM IS MEAN SEA LEVEL
UTM GRID AND 1958 MAGNETIC NORTH
DECLINATION AT CENTER OF SHEET

FORM SL-1035-A 1 M 4-68

KEEP THIS ON TOP

File No. Aa-16.0.16

From 1969 to

Subject: PAPAGO CENTRAL PROJECT
Santa Rosa Mountains

AMERICAN SMELTING AND REFINING COMPANY
Tucson Arizona

May 12, 1969

FILE MEMORANDUM

Papago Central Project
Santa Rosa Mountains

Reconnaissance peripheral to most of the Santa Rosa Mountains did not disclose significant targets for further mineral exploration. Primary attention was given to bedrock exposures near the alluvium contacts. No leach capping or primary mineralization was encountered.

In the southwest sector of the mountains, coatings of copper silicate minerals were found locally on some Cretaceous (?) sediments. A Mr. Clarence Black of Fremont, California, has 4 claims in the area which are pre-Indian Reservation. Collars of three drill holes were noted, the relic cuttings of which did not show sulfide mineralization. Mr. Bob Holt, Tucson Consultant, was reported to have directed drilling. Kinnison examined these showings and deemed them insignificant.

Light colored exposures in the south foothills of the Santa Rosa Mountains proved to be locally bleached zones in an extensive outcropping of Pinal schist. No other alteration-mineralization features existed.

Coloration changes in the southeast area were due to rock changes rather than alteration halos. The more orange exposures reflected a fresh rhyolite whereas the darker red rocks were conglomerates with a rhyolitic matrix. Prospect pits were localized on ferruginous quartz seams.

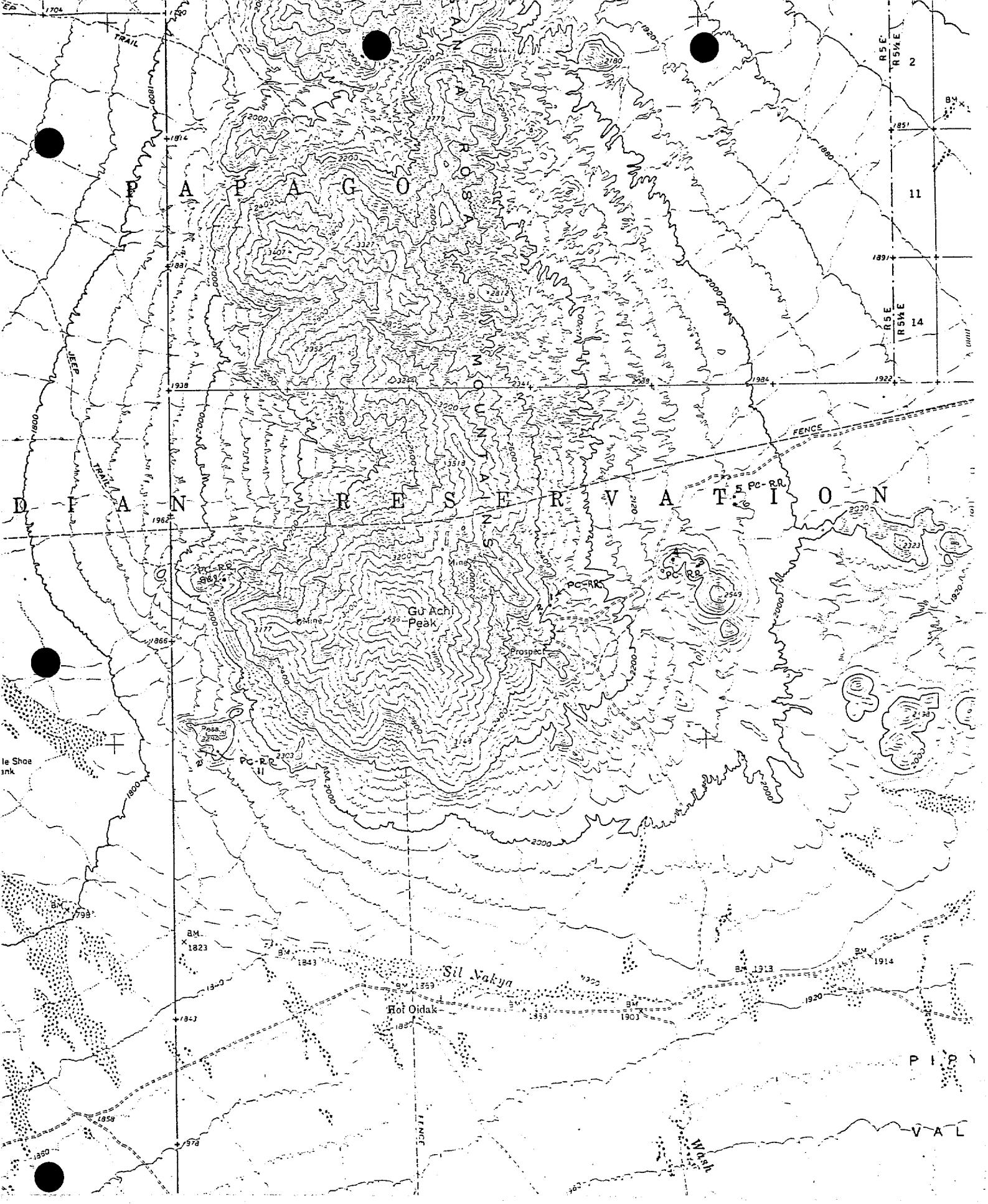
Somewhat removed to the southeast, andesites are exposed which appear relatively fresh. Thence, about one-half mile north, subdued exposures of granite can be found. Slight clay alteration could be noted but no evidence of mineralization was seen.

An exposure of quartzite protrudes the alluvium some 3 miles east of the north end of the Santa Rosas. No evidence of mineralization could be seen though a geochem sample was taken.

The east central sector of the Santa Rosas was not accessible to 4 wheel drive vehicles. Tentative programs schedule helicopter reconnaissance for the area at some future date.

RDK:lzb

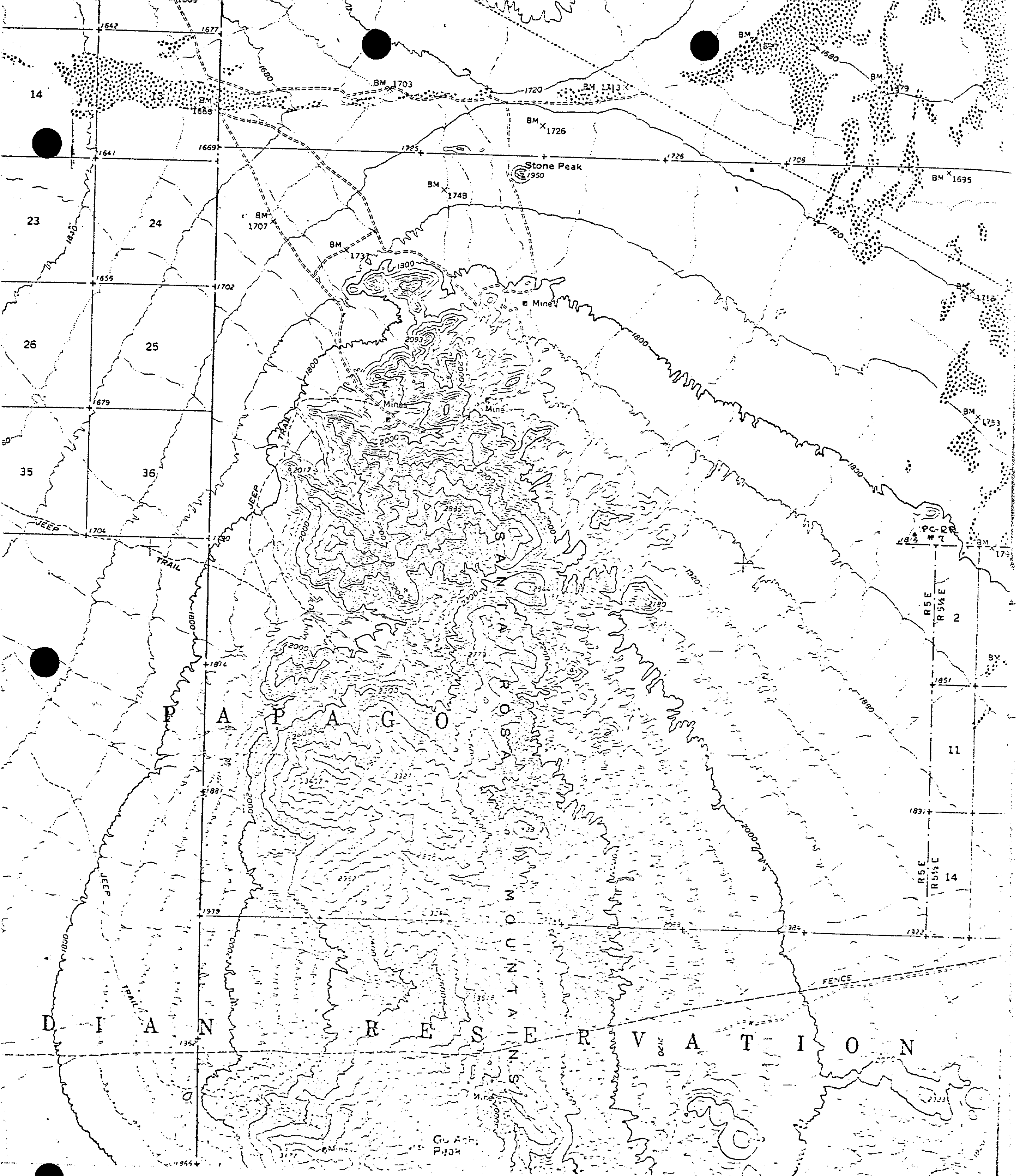
R.D. Karvinen



Papago Central Project

Sample Locations

S. Santa Rosa Mtns



Papago Central Project

Sample Locations

Santa Rosa Mtns

HAWLEY & HAWLEY

ASSAYERS AND CHEMISTS, INC.

Registered Assayers

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TUCSON, ARIZONA 85703

THE SOUTHWEST'S LEADING ASSAYERS AND REPRESENTATIVES

Branch Representatives at Buyer's Plants:
Phelps Dodge Corp., Douglas, Arizona; ASARCO, El Paso, Amarillo, Texas and Hayden, Arizona

K.V.D.S.
APR 3 1969

IDENTIFICATION	Gold ozs.	Silver ozs.	Lead %	Copper %	Zinc %	Mo. %		
PC - DR Series:								
2				8.22				
3				0.13				
3S				0.56				
8				0.11				
9				0.39				
16				0.22				
20				0.11				
22				0.34				
77				0.45				
78				0.24				

CORRECTED COPPER RESULTS

CC: American Smelting & Refining Company
ADD: P. O. Box 5795
CITY: Tucson, Arizona 85703
ADD: Attn: Steven R. Davis
CITY:

REMARKS:

Singles

Analysis Cert. By

REGISTERED ASSAYER
CERTIFICATE No. 784
Date Signed
Arizona U. S. A.

Preparation $
Analysis $

ACC:	Date Spl. Received	Date Compl.		$
AMERICAN SMELTING & REFINING COMPANY	2/24/69	4/1/69	TUC 342415-A	N/C

HAWLEY & HAWLEY

ASSAYERS AND CHEMISTS, INC.

1700 WEST GRANT ROAD - TELEPHONE 622-4836 - POST OFFICE BOX 5934

TUCSON, ARIZONA 85703

Registered Assayers

THE SOUTHWEST'S LEADING ASSAYERS AND REPRESENTATIVES

Branch Representatives at Buyer's Plants:
Phelps Dodge Corp., Douglas, Arizona; ASARCO, El Paso, Amarillo, Texas and Hayden, Arizona

IDENTIFICATION	Gold ozs.	Silver ozs.	Lead %	Copper %	Zinc %	Mo. %
	ppm	ppm				
PC - DR Series						
2	0.010	0.24		0.01		
3	None	None		0.02		
3 S	None	None		< 0.01		
8	None	None		0.11		
9	None	0.03		0.39		
16	< 0.005	None		0.22		
20	None	None		0.11		
22	None	None		0.34		
77	< 0.005	0.10		0.45		
78	< 0.005	0.04		0.24		
	10 Au - Ag geochem @ 2.50				= 25.00	
	10 Cu single @ 1.75				= 17.50	
					42.50	

REGISTERED ASSAYER CERTIFICATE NO. 6784 H. E. RICHARD State of Arizona

CC: American Smelting Refining Company
ADD: P. O. Box 5795
CITY: Tucson, Arizona 85703
ADD: Attn: Mr. Karvinen
CITY:

REMARKS:

Geochem
Single

Analysis Cert. By

Preparation $
Analysis $ 42.50

ACC: AMERICAN SMELTING & REFINING CO. | Date Spl. Received 2/24/69 | Date Compl. 2/27/69 | TUC 342415 | $ 42.50

HAWLEY & HAWLEY

ASSAYERS AND CHEMISTS, INC.

1700 WEST GRANT ROAD - TELEPHONE 622-4836 - POST OFFICE BOX 5934

TUCSON, ARIZONA 85703

Registered Assayers

THE SOUTHWEST'S LEADING ASSAYERS AND REPRESENTATIVES

Branch Representatives at Buyer's Plants:
Phelps Dodge Corp., Douglas, Arizona; ASARCO, El Paso, Amarillo, Texas and Hayden, Arizona

K.V.D.S.
FEB 20 1969

IDENTIFICATION	Gold ozs.	Silver ozs.	Lead %	Copper %	Zinc %	Mo. %			
				ppm		ppm			
PD DR Series									
1				212		< 5			
1S				338		< 5			
1N				162		< 5			
2				> 1000		< 5			
3				> 1000		< 5			
3S				> 1000		< 5			
3N				242		< 5			
4				180		< 5			
4S				120		< 5			
4N				116		< 5			
5				80		< 5			
5S				224		< 5			
5N				134		< 5			
7				126		< 5			
8				> 1000		< 5			
9				> 1000		< 5			
10				152		< 5			
11				238		< 5			
12				202		< 5			
13				86		< 5			
14				582		< 5			
15				52		< 5			
16				> 1000		< 5			
17				148		< 5			
18				672		< 5			

CC: American Smelting & Refining Co.
Attn: Mr. Steven R. Davis
ADD: P. O. Box 5795
CITY: Tucson, Arizona 85703
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CITY:

REMARKS:
Page 1
Geochem

Analysis Cert. By

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Analysis $

ACC: AMERICAN SMELTING & REFINING CO. | Date Spl. Received 2/14/69 | Date Compl. 2/18/69 | TUC 342367 | $

HAWLEY & HAWLEY

ASSAYERS AND CHEMISTS, INC.

1700 WEST GRANT ROAD - TELEPHONE 622-4836 - POST OFFICE BOX 5934

TUCSON, ARIZONA 85703

Registered Assayers

THE SOUTHWEST'S LEADING ASSAYERS AND REPRESENTATIVES

Branch Representatives at Buyer's Plants:
Phelps Dodge Corp., Douglas, Arizona; ASARCO, El Paso, Amarillo, Texas and Hayden, Arizona

IDENTIFICATION	Gold ozs.	Silver ozs.	Lead %	Copper %	Zinc %	Mo. %			
				ppm		ppm			
PD-DR Series									
19				100		< 5			
20				> 1000		< 5			
21				214		< 5			
22				> 1000		< 5			
23				212		< 5			
24				196		< 5			
25				48		< 5			
26				562		< 5			
27				50		< 5			
28				70		< 5			
29				54		< 5			
30				154		< 5			
31				52		< 5			
32				282		< 5			
33				60		< 5			
34				50		< 5			
35				15		< 5			
36				16		< 5			
37				22		< 5			
38				38		< 5			
39				38		< 5			
40				112		< 5			
41				22		< 5			
42				78		< 5			
43				92		< 5			

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REMARKS:
Page 2
Geochem

Analysis Cert. By

Preparation $
Analysis $

ACC: AMERICAN SMELTING & REFINING CO. | Date Spl. Received 2/14/69 | Date Comp. 2/19/69 | TUC 342367 | $

HAWLEY & HAWLEY

ASSAYERS AND CHEMISTS, INC.

1700 WEST GRANT ROAD - TELEPHONE 622-4836 - POST OFFICE BOX 5934

TUCSON, ARIZONA 85703

Registered Assayers

THE SOUTHWEST'S LEADING ASSAYERS AND REPRESENTATIVES

Branch Representatives at Buyer's Plants:
Phelps Dodge Corp., Douglas, Arizona; ASARCO, El Paso, Amarillo, Texas and Hayden, Arizona

IDENTIFICATION	Gold ozs.	Silver ozs.	Lead %	Copper %	Zinc %	Mo. %			
				ppm		ppm			
PD-DR Series									
44				154		< 5			
45				38		< 5			
46				92		< 5			
47				80		< 5			
48				82		< 5			
49				62		< 5			
50				80		< 5			
51				64		< 5			
52				100		< 5			
53				102		< 5			
54				98		< 5			
55				74		< 5			
56				762		< 5			
57				406		< 5			
58				114		< 5			
59				46		< 5			
60				56		< 5			
61				58		< 5			
62				56		< 5			
63				48		< 5			
64				50		< 5			
65				48		< 5			
66				48		< 5			
67				46		< 5			
68				44		< 5			

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REMARKS:
Page 3
Geochem

Analysis Cert. By

Preparation $
Analysis $

ACC: AMERICAN SMELTING & REFINING CO. | Date Spl. Received 2/14/69 | Date Compl. 2/19/69 | TUC 342367 | $

HAWLEY & HAWLEY

ASSAYERS AND CHEMISTS, INC.

1700 WEST GRANT ROAD - TELEPHONE 622-4836 - POST OFFICE BOX 5934

TUCSON, ARIZONA 85703

Registered Assayers

THE SOUTHWEST'S LEADING ASSAYERS AND REPRESENTATIVES

Branch Representatives at Buyer's Plants:
Phelps Dodge Corp., Douglas, Arizona; ASARCO, El Paso, Amarillo, Texas and Hayden, Arizona

IDENTIFICATION	Gold ozs.	Silver ozs.	Lead %	Copper %	Zinc %	Mo. %			
				ppm		ppm			
PD-DR Series									
69				712		< 5			
70				76		< 5			
71				52		< 5			
72				46		< 5			
73				562		< 5			
74				54		< 5			
75				62		< 5			
76				362		< 5			
77				> 1000		< 5			
78				> 1000		< 5			
79				82		< 5			
80				84		< 5			
81				108		< 5			
82				32		< 5			
83				46		< 5			
90 samples crushed, split, Pulverized @ .85						76.50			
90 Geochem Cu @ 1.00 = 90.00 - 18% discount						73.80			
90 Geochem Mo @ 1.50 = 135.00 - 18% discount						110.70			
						261.00			

CC: American Smelting & Refining Co.
ADD: Attn: Mr. Steven R. Davis
CITY: P. O. Box 5795
ADD: Tucson, Arizona 85703
CITY:

REMARKS:
Page 4
Geochem

Analysis Cert. By

Preparation $ 76.50
Analysis $ 184.50

ACC: AMERICAN SMELTING & REFINING CO | Date Spl. Received 2/14/69 | Date Compl. 2/19/68 | TUC 342367 | $ 261.00

AMERICAN SMELTING AND REFINING COMPANY
Tucson Arizona

April 11, 1969

FILE MEMORANDUM

Papago Central Project
North Santa Rosa Mountains
Pima County, Arizona

SUMMARY AND RECOMMENDATIONS:

Reconnaissance geology and wide-spaced geochemical sampling have indicated a considerable zone of weak to moderate alteration and mineralization in the north Santa Rosa Mountains, 35 miles south of Casa Grande. The zone is approximately two square miles in area, being one mile northerly and two miles easterly.

Although not intense, the type and size of alteration could be the propylitic zone of a porphyry type deposit lying nearby but under cover. Extension of this zone under shallow cover appears best to the north and northeast. With the exception of a small topographic re-entrant to the northwest, the west face of the mountains appear to be bordered by a frontal fault with possibly deep alluvial cover.

Principal alteration products are chlorite, epidote and specularite. Sericite and clay alteration were also observed, but in very limited occurrences. Specularite occurs in the southern half of the zone with increasing amounts as the southern limit is approached. Ninety per cent of the weakly altered rock is granite, intruded by parallel northeast dikes of monzonite porphyry--generally very weakly altered. Pyrite was identified in only one area and there is generally little evidence to indicate the presence of sulfides. The iron staining at and near the surface seems to be transported.

Copper mineralization is principally chrysocolla, malachite and undetermined copper oxides. Rock chip assays ran as high as 0.56% Cu, with an average geochemical content of ±400 ppm in the granite. (Background count in the granite is approximately 80 ppm, in the monzonite porphyry is approximately 50 ppm). Extension of the anomalous values appears best under alluvium to the north and east. Less mineralized granite lies on the south and west.

and N.W.?

Probably the most beneficial means of further exploring this area would involve reconnaissance I.P. in the shallow areas to the north and northeast of the area of anomalous copper values and weak alteration. Pending results of the I.P., the area should be assigned a low priority.

SUMMARY OF WORK:

Investigation of the area was undertaken by L.J.Jansen and S.R.Davis on January 27, 1969. Geochemical sampling was carried out on January 28, 29 and 30 and after a review of the collected data, several additional samples were taken on February 12. Sample lines were spaced at approximately 1,500 to 2,000 feet and paralleled the northeast structure pattern. Samples were collected at 500 and 1,000 foot intervals.

Geochemical analyses were run by Hawley and Hawley of Tucson for copper and molybdenum. Attachment "A" is a contoured overlay showing copper values in ppm; solid contours represent Cu in granite, dashed contours are copper in soils. No molybdenum anomalies were found. Attachment "B" is a simplified geological map with control based on contours from the Santa Rosa Mountains 15' Quadrangle.

GEOLOGIC DESCRIPTION:

Area geology consists of a presumably Laramide, medium grained, granite stock, intruding Mesozoic sediments which are now metasediments, chiefly quartzite and quartzite pebble conglomerate. Later intrusive activity has injected monzonite porphyry dikes into what are presumably joint or fault oriented northeast trending fractures. The monzonite porphyry dikes vary from 10 to 40 feet wide, are near vertical and generally trend N50°E. However, due to an en echelon emplacement pattern the topographic expression is that of a N 70°-80°E dike swarm.

The granite has undergone a greater degree of alteration and mineralization than the blocky weathering, rather fresh, monzonite porphyry. Epidote and chlorite are usually oriented along at least three joint sets, the predominant two sets being N50°E and N80°E, both near vertical. Concentrations of epidote and chlorite are usually weak to moderate with occasional strong zones in the granite and generally very weak to weak in the monzonite porphyry dikes. Specularite as seen in the southern half of the stock is limited to the granite, occurring as veins of up to 6 inches width and being most abundant within 1,000 feet of the southern contact.

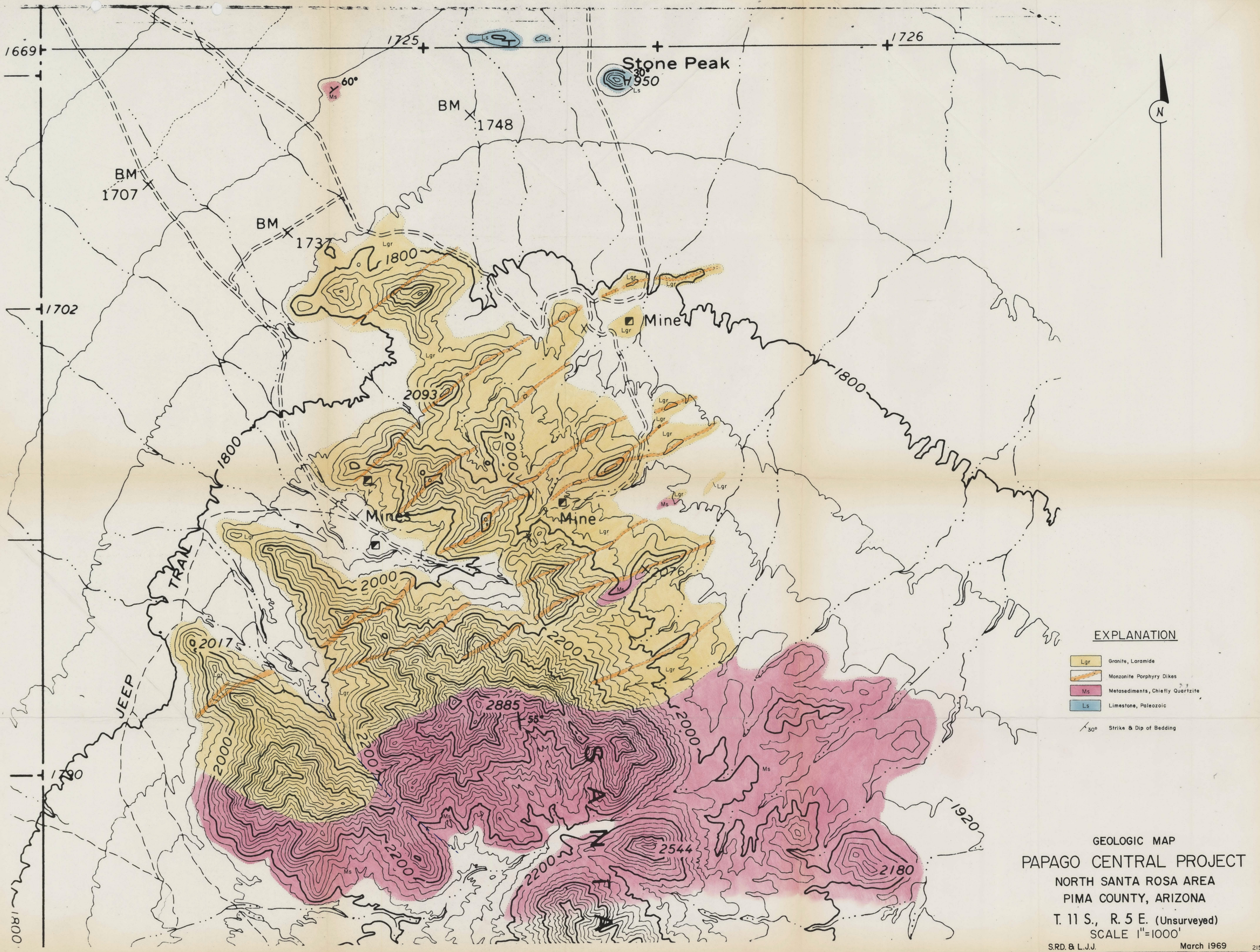
Pyrite and sericite in association with a small zone of secondary orthoclase, were found in one instance, but they represented less than one per cent of the subject area. Strong clay alteration was limited to a single 8 by 30 foot zone. Hematite and limonite occurred rarely and were predominately transported rather than residual.

Copper mineralization is largely chrysocolla and malachite with probable other copper present as unidentified oxides. No live limonite was found and in general all copper mineralization appears to be transported. None of the several old prospect pits and small mines in the area appear to have penetrated below the oxide zone.

S.R. Davis

S.R. Davis

SRD:lzb
Encl.
cc: JHCourtright,w/encl.
JDSell, w/encl.
JEKinnison,w/encl.
RDKarvinen, w/encl.
LJJansen, w/encl.


1669
1702
1780
1800
1725
1726
Stone Peak
1950
30°
60°
Ls
Ms
BM
1748
BM
1707
BM
1737
1800
Lgr
Mine
1800
2093
2000
Mines
Mine
2076
2000
2200
2017
JEEP
TRAIL
2885
58°
2000
2200
2544
2180
1920
N
EXPLANATION
Lgr Granite, Laramide
Monzonite Porphyry Dikes
Ms Metasediments, Chiefly Quartzite
Ls Limestone, Paleozoic
30° Strike & Dip of Bedding
GEOLOGIC MAP
PAPAGO CENTRAL PROJECT
NORTH SANTA ROSA AREA
PIMA COUNTY, ARIZONA
T. 11 S., R. 5 E. (Unsurveyed)
SCALE 1"=1000'
S.R.D. & L.J.J.
March 1969
2156

EXPLANATION

LINES OF EQUAL COPPER CONCENTRATION

200 — In Granite

80 — In Soil

Sample Numbers — 32/33 ○ 282/62 — Cu ppm in Granite; Cu ppm in Monzonite Porphyry Dikes

60 ⊖ 56 — Cu ppm in Soil

Geochemical Overlay (ppm Copper)

PAPAGO CENTRAL PROJECT

NORTH SANTA ROSA AREA

PIMA COUNTY, ARIZONA

T. 11 S., R. 5 E. (Unsurveyed)

S.R.D. & L.J.J. March 1969

2157

J. H. C.
FEB 4 1969

W.E.S.
FEB 6 1969

AMERICAN SMELTING AND REFINING COMPANY
Tucson Arizona

MR. WES
READ AND RETURN
PREPARE ANSWERS HANDLE
FILE INITIALS

February 4, 1969

W.E.S.
FEB 6 1969

TO: J.H. Courtright

FROM R.D. Karvinen

Progress Report
Papago Central Project
North Santa Rosa Mtns.

Field investigation of subject area began January 27, 1969, and was conducted with S.R. Davis, and L.J.Jansen. As noted in J.D.Sell's letter of January 9, a subparallel system of northeast trending dikes occur in the north end of the Santa Rosa Mountains. These dikes are monzonite porphyry intrusions in a granite host considered to be of Laramide age, but is not the typical Coolidge Granite as seen in the Slate Mountains.

Dikes of significant size and continuity occur about five to the mile, strike about N50E, and are near vertical. The dikes are arranged in en echelon pattern so that the overall outcrop expression trends N80E. Only the more prominent and continuous dikes were sampled, however, adjacent exposures of the granite were simultaneously sampled since alteration features, though weak, were more evident in the granite than in the dikes. The major dikes range from 10 to 40 feet in thickness maintaining their thickness uniformly along strike. Sample spacings are at roughly 500 & 1000 feet, with sample lines on about one-half mile intervals.

The samples have not been submitted for analyses pending completion of three more sample lines.

Megascopic observations show a slight increase in alteration and mineralization in the dikes toward the northeast. Frequent showings of chrysocolla have been mined along these dikes, mostly at the north end where they disappear under the alluvial cover.

Alteration is neither intense nor pervasive but local sericite is evident as is chloritization, and kaolinization. Epidote is also abundant throughout the area. A covered area to the north is large enough to conceal a sizeable ore body and further work is warranted if the geochem analyses confirm enrichments trending northward.

The south portion of the area does not appear attractive. The dikes and the granite are fresher and lack signs of mineralization.

Three more lines are planned in the north area, following which will be investigations of several coloration changes on the southwest and south end of the range. Efforts are underway to obtain information resulting from exploration drilling in the southwest sector of the Santa Rosa Mountains. The east central sector of the mountains and the southern peaks will be more fully investigated when a helicopter is utilized.

R.D. Karvinen

RDK:lzb

cc: JDSell
JEKinnison

FORM SL-1035-A 1 M 4-68

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File No. Aa-16.0.16

From 1969 to

Subject: PAPAGO CENTRAL EXPLORATION
Copperosity Area
Drew Spring Manganese
Sheridan - Cimarron Mtns.
Pima County, Arizona

WES

READ AND RETURN _____

PREPARE ANSWERS ____ HANDLE ____

FILE _____ INITIALS _____

AMERICAN SMELTING AND REFINING COMPANY
Tucson Arizona

March 11, 1969

J. H. C.

MAR 11 1969

FILE MEMORANDUM

W.E.S.
MAR 17 1969

Papago Central Exploration
Copperosity Area
Drew Spring Manganese
Sheridan - Cimarron Mtns.
Pima County, Arizona

Mr. Sell has noted that the Drew Spring area has been a major Arizona manganese producer, and he proposed consideration of possible zonal change to a silver environment---in accordance with a theory postulated recently by DF Hewitt of the USGS.

Accordingly, Mr. R.D.Karvinen and I sampled concentrates, crushed mill products, tails, and stocked crude mill feed at the abandoned Drew Spring mill site, and assayed them for gold, silver, and manganese, which same see appended. Complete absence of silver in the samples suggest that these manganese deposits are not the upper zonal "cap" of a silver deposit at depth. No further work is recommended.

John E. Kinnison

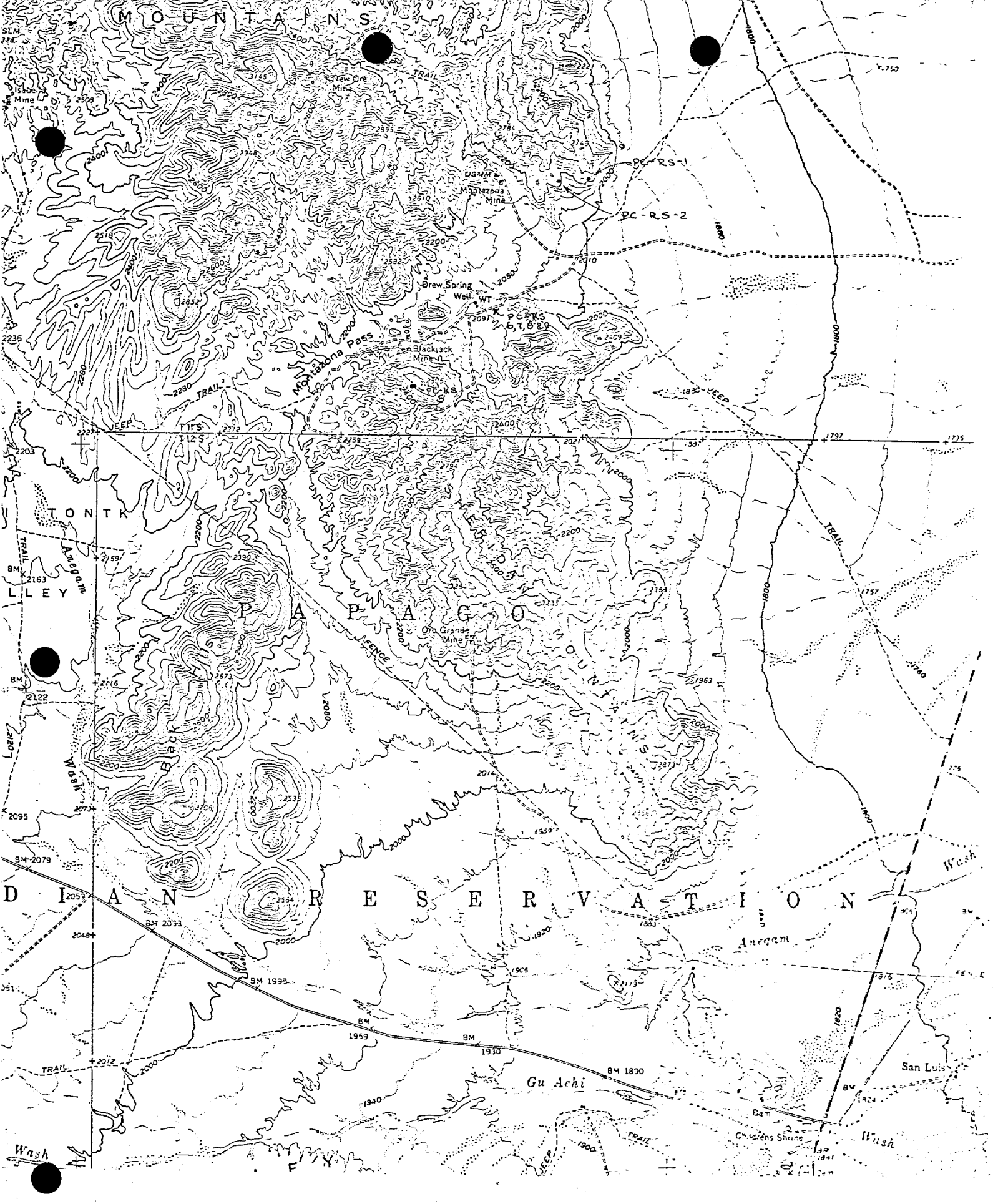
John E. Kinnison

JEK:lzb

cc: JDSell
JHCourtright
RDKarvinen
SRDavis

DREW SPRING MILL SITE ASSAYS

Sample	Au oz/ton	Ag oz/ton	Mn %	Description
PC-KS-6	Nil	0.01	6.00	Crude Manganese Ore
PC-KS-7	Nil	Nil	26.65	Concentrate
PC-KS-8	Nil	Nil	21.39	Minus 1/8" crushed mill product
PC-KS-9	Nil	Nil	20.98	Minus 1/8" crushed mill product rejected as tails



Papago Central Project

Sample Locations

Sheridan Mtns