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PRINTED: 03/06/2003

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES AZMILS DATA

PRIMARY NAME: LUCERO PROPERTY

ALTERNATE NAMES:
LACY-IRVIN
DEMETRIE WASH PROJECT

PIMA COUNTY MILS NUMBER: 718

LOCATION: TOWNSHIP 18 S RANGE 13 E SECTION 20 QUARTER C
LATITUDE: N 31DEG 50MIN 56SEC LONGITUDE: W 111DEG 02MIN 17SEC
TOPO MAP NAME: TWIN BUTTES - 15 MIN

CURRENT STATUS: UNKNOWN

COMMODITY:
COPPER OXIDE

BIBLIOGRAPHY:
ADMMR LUCERO PROPERTY FILE
ADDITION HOLDING IN SEC. 7-9, 16-18,21
28-31

08/19/86

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES FILE DATA

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DEMETRIE WASH PROJECT

PIMA COUNTY

C F & I STEEL, , DEMETRIE WASH PROJECT. DRILLING.

GWI WR 1/28/67

Mine Visit to CF&I Steel Co's Demetrie Wash Project - Drilling only.

GWI WR 4/1/67

HM WR 4/8/88: A report on the Demetrie Wash Project, Pima County was obtained for addition to the file. The prospect should be included into the oxide copper occurrence list. Although the only geophysical data included in the report is airborne magnetics, the prospecting is believed to have been based primarily on induced polarization surveys.

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MILS 718

DEMETRIE WASH

PIMA COUNTY, ARIZONA

RECEIVED
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MINERAL RESOURCES

DEMETRIE WASH

PIMA COUNTY, ARIZONA

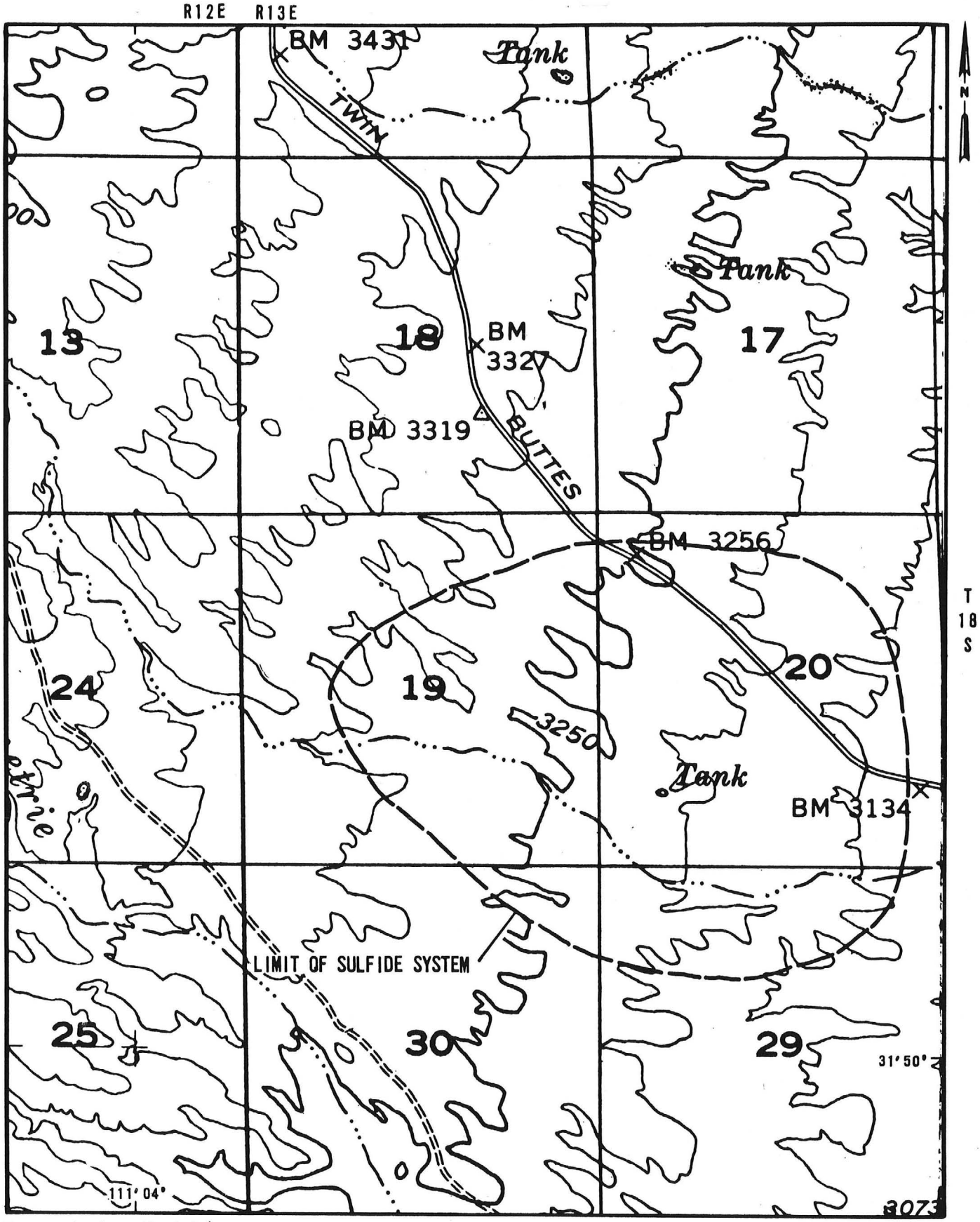
EXPLANATION

Qg	Alluvium on floodplains and low terraces; gravel, sand, and silt	QUATERNARY
Qgo	Alluvium on pediments and in basin, gravel	
Ttu	Formation of Tinaja Peak, upper volcanic member, rhyodacite flows and tuff breccia	TERTIARY
Ttl	Formation of Tinaja Peak, middle member, gravel	
Kd	Demetrie Volcanics, andesite and dacite breccia and some flows	CRETACEOUS

Subsurface geology (drill core determination)

Quartz monzonite (Ruby Star Granodiorite?)	TERTIARY AND/OR CRETACEOUS
Andesite agglomerate (Demetrie Volcanics, including Silverbell Volcanics?)	
Latite	
Arkose (Angelica arkose?)	

inferred contact



Topography from the Twin Buttes quadrangle, Arizona: USGS, 1957.

TOPOGRAPHIC MAP OF THE DEMETRIE WASH AREA
PIMA COUNTY, ARIZONA

Scale 1" = 2000'

PORPHYRY COPPER PROBABILITY STUDY
OCCURRENCE DESCRIPTION OUTLINE

I. SULFIDE SYSTEM

A. Name Demetrie Wash County Pima State Arizona

*B. Length: Exposed 0 ft; Extrapolated 8,000 ft.

*C. Width: Exposed 0 ft; Extrapolated 6,000 ft.

*D. Azimuth of Elongation 305 °; Sulfide Concentration 1-3 Vol. %

*E. Capping (circle one for each)

Oxidized Capping	(yes)	no		no data
Leached Capping	(yes)	no		no data
Intensity in Outcrop	subtle	apparent	obvious	(no data)
Color	red-brown	maroon	bleached-yellow	(no data)

*F. Absolute Age (m.y.); Min. _____; Max. _____; Average _____
Relative Age (bracket): _____

*G. Drillholes

1. Maximum Depth 1,173 ft.

2. Comments DW-19 258' to bedrock andesite

average depth of drilling approx. 400'

*H. Geologic Setting (age, host rocks, intrusive relationships, oldest to youngest formations, contacts, alteration halo to core zone).

(See back of page)

I. Reference:

See list.

*Note: See Rules and Conventions.

GEOLOGIC SETTING

"The detailed geologic picture at Demetrie Wash is not well developed" (J. L. Clark, 1962).

Cretaceous(?) arkose is locally overlain by latite breccia and fragmental andesite flow breccia intruded by monzonite porphyry dikes and sills overlain by rhyolite flow breccia or agglomerate. Several later intrusive masses have been cored.

ALTERATION

Strong chloritization in andesite
Clay-sericite in quartz monzonite porphyry
Minor black tourmaline
Quartz sericite intense
Kaolinization intense

Sulfide System Name Demetrie Wash

II. Diagnostic Reconnaissance Characteristics

A. District Prospect Zoning Outside of Sulfide System

1. Prospects/Mines

Metal/Type	Min. Diam. (feet)	(M) Mines (P) Prospects	Rock Types	Deposit Types
Cu X	35,000	M	q.m., Pz limestone	pcd Twin Buttes Esperanza
Pb-Zn				
Ag-Au				
Mn				
Other				
Other				

B. Dike Swarms

Rock Types	andesite porphyry			
Length (ft.)	nd			
Width (ft.)	4,000'?			
Azimuth (°)	0°			
Age	T-K			
* Spatial Rel.				
Contacts	nd			
Other	in outcrops E of Esperanza mines			

*C. Important Regional Structures (other than dike swarms)

Type	graben		
Length	30,000'+		
Azimuth (°)	45° ?		
Recognition Factors	thick fanglomerates		
Age	postmineral		
Spatial Rel.	prevalent in the district		
Contacts	nd, inferred?		
Other	inferred from gravity surveys		

*D. Other Reconnaissance: (See back of page)

See Twin Buttes notes.

RECONNAISSANCE

Brecciation of andesite seems to be significant.

Qal deepens to S with direction of increasing trend in alteration intensity and possible mineralization.

Sulfides definitely extend beyond the sulfide system.

Sulfide System Name Demetrie Wash

III. Center of Mineralization (zone of best copper)

A. Name none

*B. Copper Mineralization

1. Type	*%	Av. Grade	Rock Type	*Other Data
a. Primary X		<0.1		
b. Enriched X		0.2	andesite, q.m.	minor 100' thick
c. Skarn (replacement)				possible?
d. Oxide X				to 664'
e. Mixed				

2. Current Mineral Inventory

a. Tons 982,000 ; Av. Grade .26 %; Cutoff .2 %

b. Other Credits Zn Pb Mo

3. Past Production

a. Tons none ; Av. Grade ____ %; Cutoff ____ %

b. Other Credits ____

C. Cover

1. 0 % Exposed at time of discovery

2. Projected Post Mineral Cover

a. Thickness (ft.) 200-400' average 300'

* b. Formations Qal

* c. Estimated Δ elevation of base of cover to top of cc blanket (ft.) ____

3. Premineral Cover

a. Thickness (ft.) ____

b. Formations ____

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Anderson, J. A., 1961, Review of Demetrie Wash geochemical data: BCM-Coord. Unit.

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_____1963, Demetrie Wash, final report: BCM-SWD.

Clark, J., and Bryant, D. (ed.), 1965, Twin Buttes mining district, Pima County, Arizona: Porphyry Copper Data Reprot, KES-GRD (Alteration, table 4, -13

Norman, D. D., 1965, Exploration and evaluation report, Demetrie Wash area, Pima County, Arizona: Superior Oil Co. (for BCM).

Phillips, J. S., 1968, Review of Demetrie Wash examination: BCM.

Walthier, T. N., 1964, Demetrie Wash-,- Post Mortem: BCM-SWD.

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Private

DEPARTMENT OF MINERAL RESOURCES

STATE OF ARIZONA

FIELD ENGINEERS REPORT

Mine: Demetrie Wash Project — Date: Sept. 9, 1964

District: Pima (Twin Buttes) District, Pima Co. — Engineer: Axel L. Johnson

Subject: Field Engineers Report. Information from Ralph H. Wilpolt, Superior Oil Co.

References: Report of "Lucero Property" (American Metal Climax, Inc. Exploration) under date of July 13, 1960.

Location: East of Esperanza Duval tailings pond and south of Duval mine road, and on both sides of the Twin Buttes road. Sections 7, 8, 17, 18, 19, 20, 21, 28, 29, 30, & 31 in T 18 S - R 13 E, and Sections 24, 25, & 36 in T 18 S - R 12 E. The Federal claims are in Sec. 7 - T 18 S. - R 13 E.

Number of Claims: 4 Federal claims in Sec. 7 - T 18 S - R 13 E.

A number of State claims, covered by State leases ---- reported in the july 13, 1960 report to be 34 'type b' claims.

A large number of State Prospecting Permits in the area mentioned above, (except Sec. 7 - T 18 S - R 13 E.)

Owners: Paul Zaches, et. al., Tucson, Arizona are the owners of the 4 Federal claims, the holders of the State leases, and the State Prospecting Permits.

Lessees: Superior Oil Co., Minerals Division, 6520 E. 22nd St., Tucson, Ariz. Ralph H. Wilpolt, Manager.

Principal Minerals: Copper exploration

Present Activity: Diamond, Rotary and Churn Drilling.

Diamond drilling by Superior Oil Co. is reported to have started last summer, about in June. The following drilling companies are now on the project:

(a) Joy Manufacturing Co. drilling division has 2 diamond drills drilling on the property, with 1 more rig to start soon.

(b) Leon Whatley has 1 rotary-hammer drill operating.

(c) Robinson Drilling Co. has 1 churn drill, drilling on the property.

All are drilling on contract with Superior Oil Co.

Geology: See report of "Lucero Property" under date of July 13, 1960.

Past History: (1) American Metal Climax, Inc. acquired an option to lease most of the area ~~xx~~ located in T 18 S - R 13 E, as described above, in the spring of 1960, and drilled 4 diamond drill holes on contract to Boyles Bros. to depths of over 1250'. (See report of "Lucero Property" under date of July 13, 1960.)

(2) Bear Creek Mining Co., subsequent to this, located claims and did some exploration work in the area.

(Not for Publication at this time)

Superior Oil Company did renew or continue for another six months, their option with Mr. Paul Zaches on his Demetrie Wash Property that adjoins Anaconda to the south.

G. W. Irvin - WR 6/19/65

Not for publication

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine Lucerno Property Date July 13, 1960

District Pima (Twin Buttes) District, Pima Co. Engineer Axel L. Johnson

Subject: Field Engineers Report. Information from Pierce D. Parker & Philip Purdy.

Location About 3 miles SE of Twin Buttes, and about 30 miles south of Tucson, and located in the following sections --- Secs 7, 8, 9, 16, 17, 18, 20, 21, 28, 29, 30 & 31 -- T 18 S - R 13 E., the Federal lands being all in Sec. 7 - T 18 S - R 13 E.

Number of Claims

(a) Under option for purchase by American Metal Climax Inc., from previous locators --------- 4 Federal claims and 34 'type b' State claims, with State lease.

(b) Located by American Metal Climax, Inc -------- 18 Federal claims and 58 'typeb' claims, with State lease. Originally, American Metal Climax, Inc. held 278 'type b' claims on State land, but 220 of these have been allowed to lapse. However, to partly compensate for these, a few more claims are now being located.

Owners

(a) Paul Zachas, Grant Road, Tucson, together with a few silent partners, are the owners of the 4 Federal and 34 State claims, mentioned under par. (a) above. The American Metal Climax, Inc. has an option to purchase these claims. It is said to be a 3 year to 5 year standard option agreement.

(b) American Metal Climax, Inc., 1270 Avenue of the Americas, New York 20, New York ---(Tucson address 903 East Third St) are the owners of the 18 Federal claims and 58 'type b' State claims, mentioned in par. (b) above. In addition more claims are being located. Philip Purdy is the exploration manager for American Metal Climax.

Principal Minerals Copper

Present Mining Activity At the present time, the work is confined to geological mapping and locating additional claims.

4 diamond drill holes were recently completed by Boyles Bros., drilling on contract. These were from 1258 to 1492 feet in depth (1295, 1258, 1482, & 1492 resp.) These holes were located in Secs. 21 & 28 and quite close to the San Ignacio De La Canoa Land Grant, which extends on both sides of Highway # 89.

Mr. Parker stated that the company has no plans, for the present for the putting down of additional drill holes.

Geology For the geology of the area, consult U. S. G. S. Bulletin # 1112-C "Some Geologic Features of the Pima Mining District, Pima County, Arizona" by Dr. John R. Cooper.

Mr. Pierce informed me that the depth of the overburden is very variable, ranging from 200 to 600 ft. deep in Section 18 up to over 1,000 ft. in Sections 21 and 28. This depth to bed rock was determined by seismographic readings.

Additional According to a news report in the Tucson Daily Citizen of July 14, 1960, the 220 claims, which the American Metal Climax has allowed to lapse, have, in the last few days, been located by Bear Creek Mining Co.

Tucson Daily Star
June 24, 1960

CORRECTION

Lucero Property

On my report of July 13, 1960, the name of the property was spelled wrong. It should be Lucero.

TO: Mr. [illegible] Harper

FROM: J. Douglas Bell

SUBJECT: Lacy-Irvin Claims, Pima County, Arizona (Lucero property)

DATE: 29 September 1959

Following our telephone conversation last Friday evening, Herb, I contacted by telephone Dr. Lacy, Walt Heinrichs, and William Foy. You are acquainted with Lacy and Heinrichs. Mr. Foy is a retired mining man who was responsible for much of the early development of the Mineral Hill and Twin Buttes areas. Of the 13 shafts sunk in the Twin Buttes area, he supervised the sinking of eleven. He has maintained records of many of the old mines, including some data on the Senator Morgan, which he said he would send to me. In the meantime, the results of our telephone conversation are included herewith.

My conversation with Dr. Lacy revealed the following information: The Betty-Ann claim area was chosen by Lacy as a good target area for a tactite replacement deposit of copper ore under geological conditions which have been proven in other mines in the district, i.e., the Mineral Hill, Daisy, Pima, Mission (AMAX), and the Twin Buttes group of mines, to have resulted in substantial tonnages of commercial copper mineralization. The conditions of mineralization in these mines are described in Arizona Guidebook No. 2, pages 189-211, which I have sent you, and which indicates to some extent Dr. Lacy's study of the East Sierrita (Pima-Twin Buttes) Mining District.

The conditions guiding Dr. Lacy's choice of this target area were three--the first and paramount being the southeasterly projection of the Senator Morgan Fault structure. In the Senator Morgan Mine, copper ores were produced from the surface to the 855-foot level, from a series of over-lapping lenses and pods occurring as replacements of a tactite zone associated with the major NW-SE Morgan Fault and an intersecting minor NE-SW tear fault. Records of Foy credit the Morgan Mine with a gross production of $2,035,306. Lacy estimated approximately 200,000 tons of 7-8% Cu ore were produced, although he stated that this figure is "only an estimate."

His second condition was the probable presence of Paleozoic limestones in the target area as indicated by limestones cut by Hanna Mining Company drilling in the area north of the Betty-Ann group and south of the Silver-Queen area. These limestones are indicated on the map, page 206, Guidebook No. 2, and such limestones are one of the requisites for the copper-tactite replacement ore bodies.

His third condition was the probable presence of Tertiary acidic intrusives in the Betty-Ann area. A north-south line of such intrusives, principally small quartz monzonite stocks and sills, is indicated by their presence in the Mission (AMAX) property, the Pima property, the vicinity of the Copper Glance Mine, and to the south of the limestones in the vicinity of the Bellion Mine. Projecting this line to the south, Dr. Lacy assumed that the Tertiary intrusives would be found in the target area. Such intrusives have been shown to be weakly mineralized in the

Mission property (p. 203, Guidebook 2), Pima property (p. 198), and the Duval property (p. 205), and are considered to be genetically associated with the copper mineralization. The relation of Tertiary intrusives to mineralization in the Morgan Mine is not clear, although Brown, in a thesis study of the mine in 1926, states that the ore is associated with a porphyry dike. The dike is probably related to the large Tertiary stock to the south. In the Betty-Ann area, Lacy states that the assumed presence of the intrusives is based on projection, and no drilling to the north, to his knowledge, has proved or disproved its presence.

These three conditions, then--the probable presence of Paleozoic limestone, intruded by a Tertiary pluton, and cut by a strong fault known to be ore-bearing to the NW--governed Dr. Lacy's choice of the area as potentially containing a copper ore deposit. Presence of Paleozoic limestones in the Senator Morgan area, the Glance-Queen area, and in the area immediately north of the Betty-Ann group suggest to Dr. Lacy that the Magee Road Anticline (see map, p. 206) is plunging to the SE. Although he states that the ground between the Betty-Ann group and the Morgan Mine is open, he did not consider this area as potential because of the probable presence of the underlying pre-Cambrian Sierrita granite (no association with mineralization) in contact with Cretaceous arkose along the Morgan Fault, and the probable absence of Paleozoic limestones in this intervening area. He stated that American Exploration Company had done some drilling along the Morgan Fault to the NW of the Betty-Ann group, but had cut only Cretaceous formations, and had found only weak mineralization. For these reasons, the intervening ground was not staked.

Following choice of the target area, the ground was staked, and the magnetometer survey was run, the results indicating at least a possible verification of Dr. Lacy's projections. It should be emphasized that the entire Betty-Ann area is covered by alluvium, and no surface geology is evident. However, Dr. Lacy's premises appear to be sound ones. The possibility of intersections of the Morgan Fault projection by NE-SW tear faults is indicated by the faults in the Copper Glance area, and in the Tertiary andesite area south of the Duval Road (p. 206, Guidebook 2). The roles of the two intrusives of different ages should be pointed out. The Magee Road Anticline has brought the pre-Cambrian Sierrita granite to the surface between the Morgan Mine area and the Queen Mine area. It has no association with the mineralization in the district, and where the ore bodies of the Morgan and Copper Queen Mines approached this granite at depths of 900 and 700 feet respectively, mineralization weakened and became uneconomic. The Sierrita Granite and all formations to and including the Cretaceous have been intruded by acidic plutons of Tertiary age, and it is with these intrusives that mineralization is associated.

Dr. Lacy considers Al Rugg to be a competent geophysicist. He is not employed by any company, working only in a consulting capacity. The instrument used was a hand-type magnetometer, but is a good instrument, according to Lacy. I neglected to inquire as to Laches' position in the combine, but suspect he is their land man.

I then called Walt Heinrichs. Walt states that he had only a very casual look at Lacy's magnetometer survey map of the Betty-Ann area shown to him while Walt was visiting Lacy on other business. He doesn't recall noting any definite similarity to the Pima pattern (says Lacy may have confused the Mission property with Pima, and that no outsiders have

been the Mission maps), but thought the pattern looked "interesting." Without a more careful study of the geologic data assembled on the Betty-Ann, the magnetometer work done to the present, and a more definite knowledge of the claim locations, he does not feel he can categorically recommend a drilling program on the claims. He does state that, considering development of the Pima District in the past few years, we are not off base in considering exploration for hidden deposits to the east of known structures. He thinks some EM work might be valuable in confirming the magnetometer work, and suggests that a few self-potential lines might be helpful in delineating mineralization. Again, however, he would like to study the available data before recommending the extent of further geophysical work.

He mentioned that about ten years ago, he did some geophysical work in attempting to trace the extension of the Morgan Fault to the SE, although his work was concentrated in the vicinity of the Cretaceous outcrops, and west, he believes, of the Betty-Ann area. A few weak anomalies were obtained, but were not followed up. This may have been in the same general area drilled later by American Exploration.

It may be advisable to get our information together, and take it down to Walt for an examination and recommendations.

I then called William Foy. Mr. Foy, for many years, has operated various mines in the Twin Buttes district. His last operation, in 1947, was the Contention Cu-Zn property, about 1/4 mile north of the Senator Morgan. He informed me that mines under his direction in the Twin Buttes area have produced a total of about 600,000 tons, with a gross value of $10,000,000. It was through Foy that Bowman obtained the Banner properties in 1934.

While he did not have the figures at hand during our telephone conversation, it is Mr. Foy's recollection that the Senator Morgan produced a total of about 200,000 tons (checking Lacy) of ore averaging 5% Cu and 2.25 oz. Ag, with no Pb or Zn. Ore occurred in a series of overlapping lenses in the vicinity of the Morgan Fault. He said he would look over his files, and send me a note with more definite information. If Mr. Foy's recollection is correct, this ore would be valued at $32.06 per ton.

Regarding economics in other mines, Banner is apparently successfully mining 3-5% Cu ore by underground methods, although it would be well to check further with Bill Anderson regarding this, particularly regarding their production and costs in the Copper Glance Mine at Twin Buttes. Inconclusive evidence suggests that the ore bodies of the Twin Buttes area, although smaller than those of the Mineral Hill area, were higher in grade. I believe the figure of 400,000 tons of 11% Cu to 1917 was derived from Ransome's U.S.G.S. Bulletin 725, dated 1920.

As I suspected, Herb, I included all available reported assay information with my March 1958 report on the [illegible] District, derived from the various data studied. This has been my practice in any reports of this nature. There is undoubtedly other information in private files (as Foy's) which I did not obtain, and Foy's records offer our best hope for further data on the Senator Morgan. This will be forwarded as soon as it is received.

Regulations on Arizona State Leases are included. I hope I've answered most of your questions, Herb.

Sincerely yours,

J Douglas Bell
Geologist, Exploration

Enclosure: Lease Data

Telephone conversation with Dr. Lacy on Feb. 16, 1960 learned that American Metals - Climax has taken option on this property + Phil Purdy is presently doing a geophysical survey on same area

TO: Mr. [illegible] Harper

FROM: J Douglas Bell

SUBJECT: Lacy-Irvin Claims, Pima County, Arizona

DATE: 27 May 1959 Lucero property

Property

The Lacy-Irvin claim group was offered for our consideration during my recent visit to the Tucson area. The property consists of six unpatented United States mining claims, the Betty No. 1-6, and sixteen State of Arizona Lease Type "A" claims, the Ann No. 1-16. The federal claims are of the standard 600' x 1500' dimension, although the north portions of the Betty Nos. 3 and 4 overlap claims owned by Banner Mining Company which are prior. The Arizona "A" type claims are 660' x 1320' in dimension, and are subject to the $100 per year assessment provision, a yearly rental of $15 per claim, and a royalty of 5% on the net value (gross value after processing).

The claim group is located about 35 miles south of Tucson and about 7 miles west of the Santa Cruz River, and is accessible via paved highway. The disseminated porphyry copper deposit of the Duval Potash Company lies about 3 miles due west from the claims, while the Copper Glance property of Banner Mining Company is about 1½ miles to the north. The claims are located on the pediment sloping easterly from the Sierrita Mountains, in Sections 7, 8, 17, and 18, T 18 S, R 13 E, N.M.P.M.

The group is owned by Dr. W. C. Lacy, now Professor of Geology at the University of Arizona and formerly chief geologist for Cerro de Pasco for nine years, G. W. Irvin, mining engineer at the San Xavier Mine, Paul Zechen, and A. Rugg.

Geology

The entire claim area is covered by gently sloping and rolling hillocks of alluvium, estimated by Dr. Lacy to be about 200 feet thick. No surface geology is evidenced. About 1½ miles to the northwest, a wedge of Paleozoic limestones, largely of carboniferous age, outcrops. They are flanked on the southwest, in fault contact (Morgan Fault), by Cretaceous sediments and volcanics which are, in turn, flanked by a granitic intrusive of Tertiary age. To the north and northeast, the limestone wedge is flanked by pre-Cambrian granite forming the axial portion of the Morgan Anticline, while northeast of the pre-Cambrian rocks, the Paleozoic limestones and quartzites of the Copper Glance area outcrop on the northeast flank of the anticline. Within the limestones on the southwest flank of the fold, the Senator Morgan Mine was located. This is an old producer of copper and lead ores, credited with a production valued at $2,035,306 prior to 1917. The ore zone, localized along the Morgan Fault zone, strikes N 86 W, and dips 47° southwesterly. Chalcopyrite and galena mineralization, localized at fault intersections, replaced Pennsylvanian Naco limestone

in the footwall of the fault. The Naco is separated from the Cretaceous quartzites of the hanging wall by a short width of calcareous shale. The limestones of the ore zone are characterized by garnet alteration. Sulphides were mined to the 855 foot level, where the grade became uneconomic, and the underlying granite was cut at 900 feet. The lower levels were abundantly mineralized with pyrite and magnetite.

To the southeast, between the Morgan Line and the Lacy-Irvin claims, Paleozoic limestone is reported from one drill hole. For a more regional picture, please refer to my report of March 11, 1958, on the Pima District, and to Southern Arizona Guidebook II (1959), Page 185 (excerpt enclosed).

A magnetometer survey has been run on a portion of the Lacy-Irvin claims by Mr. Hugg, one of the owners. A map showing the results is enclosed. Dr. Lacy interprets the map as follows: Large amplitude contours on Betty Nos. 1, 2, and 3 indicate Paleozoic sediments possibly mineralized; short amplitude contours on Ann Nos. 2 and 3 indicate Cretaceous sediments and volcanics; relatively even area on Ann No. 1 and Betty No. 4 indicate the Tertiary granite; the southeasterly-trending zone of lows indicates the Morgan Fault zone, in which most of the iron content is now probably in the hematite form. Walt Heinrich has seen the map of the magnetometer survey, and informed Lacy that the pattern over the suspected Paleozoic area is similar to that over the ASAR East Pima (Mission) area.

On the basis of similarity of this area to that of the Mineral Hill area in the northern end of the district, Dr. Lacy believes this claim group is worthy of exploration, although it is a "wildcat." The combination of normal faulting, Paleozoic limestones, and Tertiary intrusives characterizes the mineralization of the Mineral Hill area, and a similar combination is suspected here. It appears possible that a zone of higher grade copper-lead ore may occur along the projection of the Morgan Fault zone, while larger low-grade ore bodies may be found in a tactite zone adjacent to the underlying intrusive. Proximity to nearby properties with production records, relation to mineralized structure, and location within a broad area of mineralization are other factors favoring exploration in this area.

Acquisition

Because Dr. Lacy and his group recognize the wildcat aspect of this type of exploration, and because they believe the property should be drilled, they offer what appears to be a reasonable deal. A six-month free drilling option is offered, providing drilling commences within 30 days of the signing of the agreement. A minimum royalty (to be agreed upon) to commence at the end of six months, with a production royalty on a sliding scale from 3% to 7%, is suggested.

Suggested Exploration

It would appear that three vertical cored holes would adequately test this area on a preliminary basis. The locations are shown on the small pencil map. Hole Nos. 1 and 2, located southwest of the suspected fault zone (magnetometer survey map shows geology of bedrock), would cut an estimated 200 feet of alluvium, 200 feet of Cretaceous sediments (providing the fault maintains a 47° SW dip), and pass through the fault into Paleozoic limestones, reaching granite at a depth which should not be much more than 1000 feet. Both the potential ore zone along the fault and the possible tactite zone would be tested by these holes. Hole No. 3 would test the small magnetic high north of the section corner, and would test only the possible tactite zone. Coring should commence at the caliche conglomerate at the base of the alluvium.

I contacted Vought and Closter, Drill Contractors, in Tucson to determine possible drilling costs. Their rate for drilling alluvium is $2.00-$2.50 per foot, and for coring ranges from $3.50 to $7.00 per foot, depending on the conditions. Over 500 feet depth, a cost of $1.50 per foot is added. A wire-line rig is used, and BX core is taken. Mr. Closter assured me that every effort would be made to keep the rates as reasonable as possible. It appears that $5 per foot might be an average figure, and for three 1000-foot holes, the total cost should be about $15,000.

Recommendations

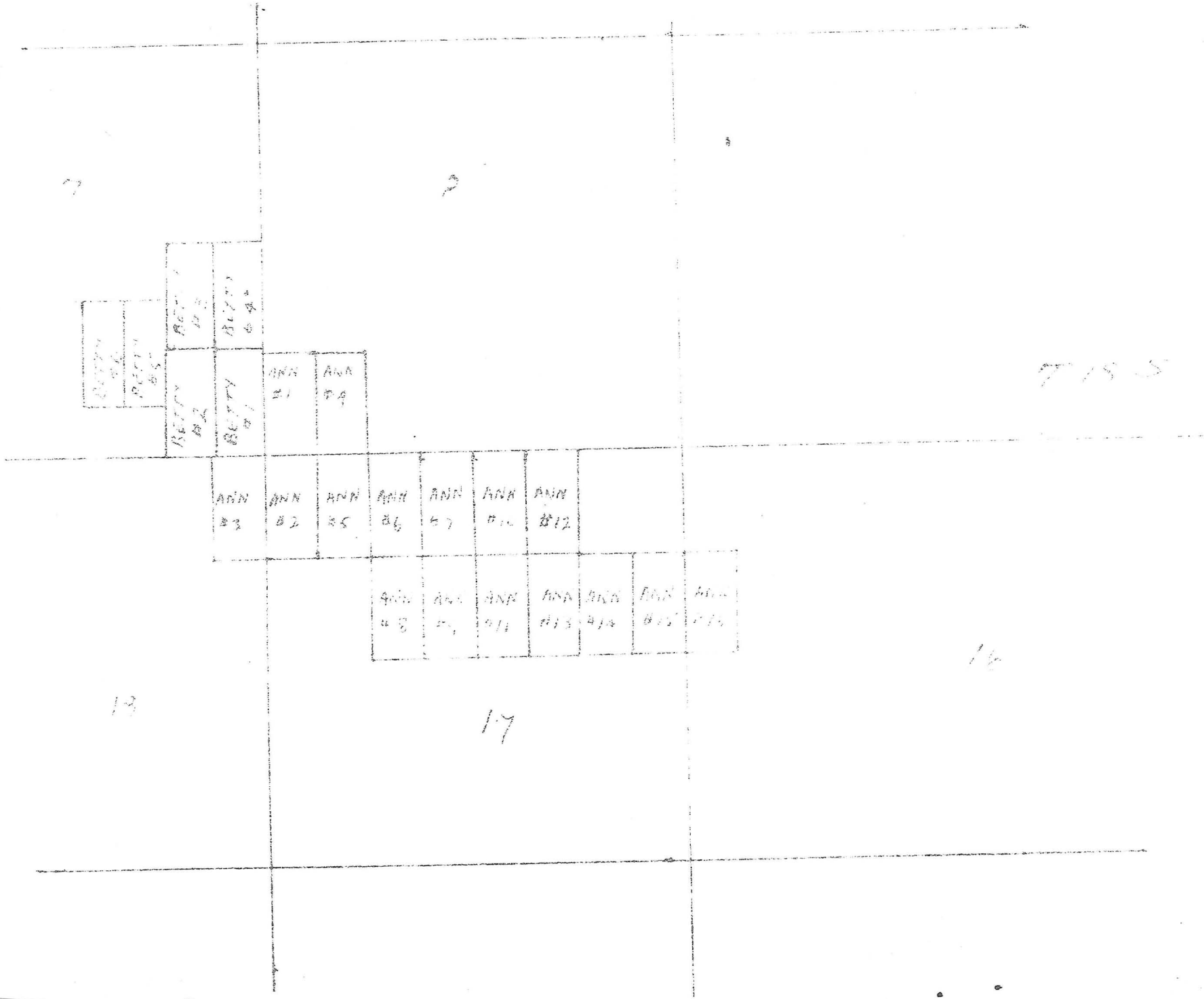
This looks like a reasonable exploration gamble to me, Herb. The area is covered, and there is not too much to go on, but the combination of projected structure and the magnetometer evidence suggest that the three holes described above are warranted. I believe Hecla should tackle an occasional prospect of this nature. If you agree, and the project is approved, it might be well to have Mr. Morning draw up an agreement along the lines suggested. Also let me know, and I'll get in touch with Dr. Lacy.

Respectfully submitted,

J Douglas Bell
Geologist, Exploration

JDB:jan

Enclosures: Map showing claims and geology
Magnetometer Survey Map
Excerpt from Guidebook II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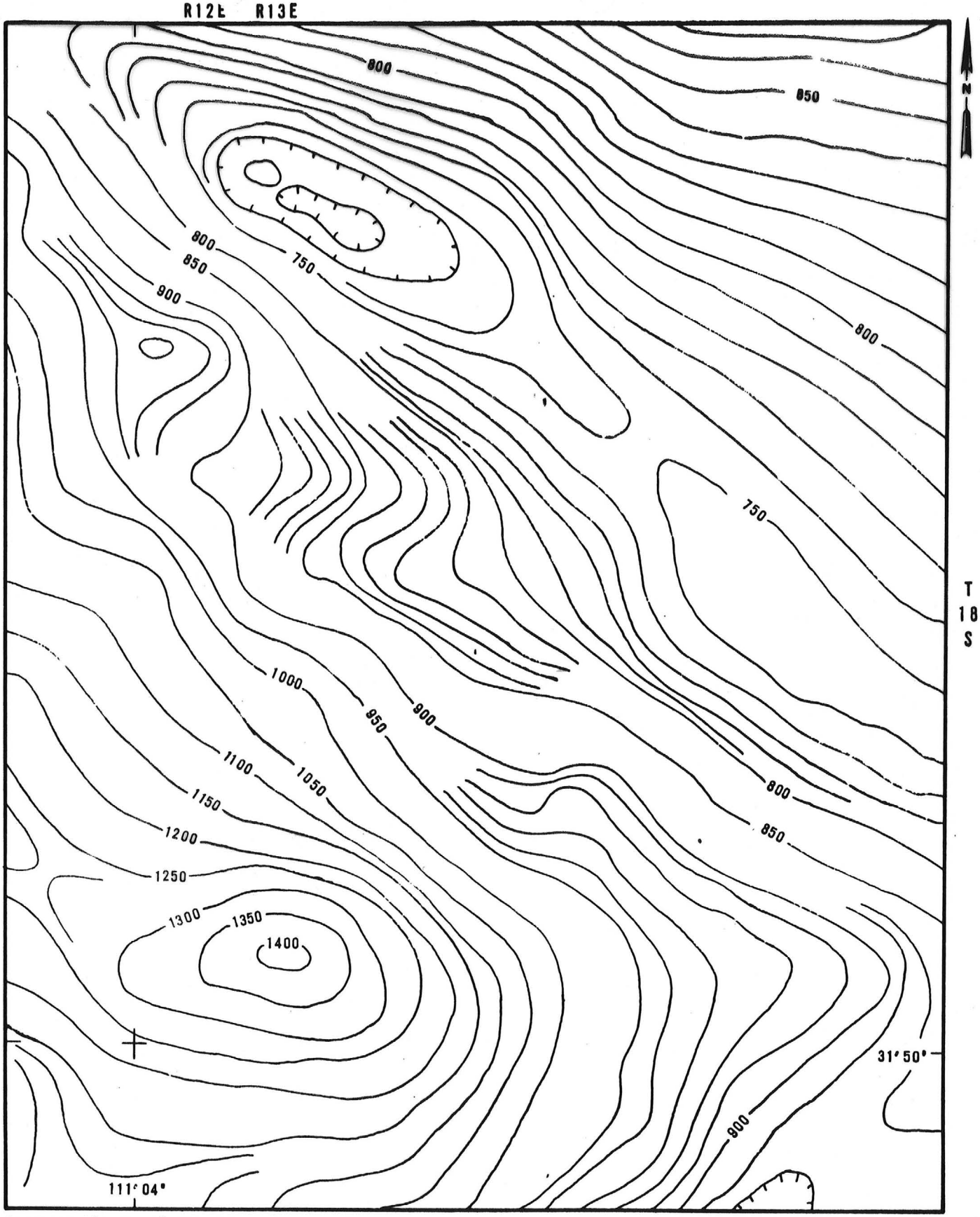
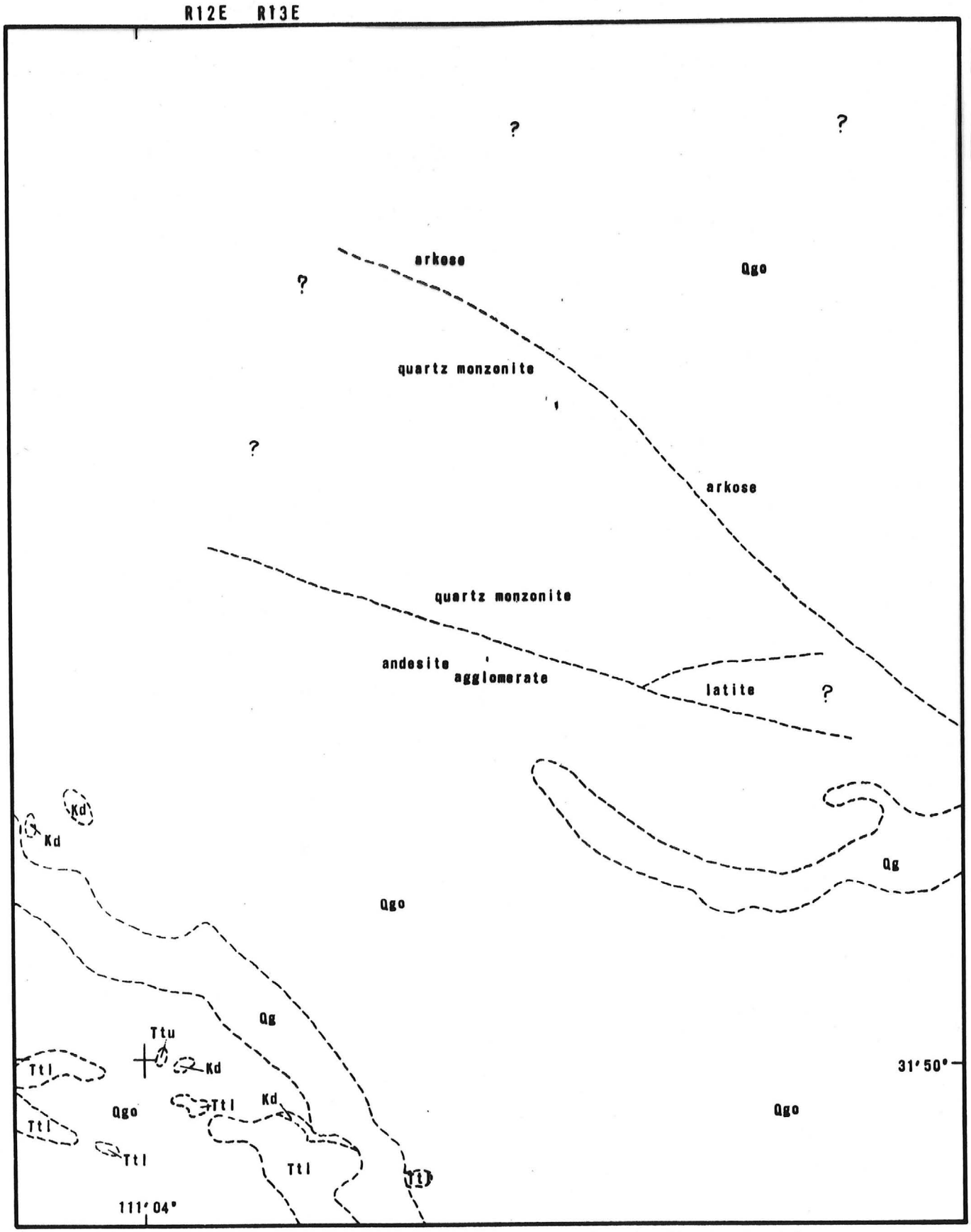


Aeromagnetic map of Area 30, Arivaca, Arizona:
BCMC Geophysics Div., no.AZ7-301, sheet 1 of 2, 1970.

AEROMAGNETIC MAP OF THE DEMETRIE WASH AREA
PIMA COUNTY, ARIZONA

Scale 1" = 2000'
Contour interval 10 and 50 gammas

TC 500', Fl 1/3 mile, NE-SW.



Cooper, J.R., 1970, Preliminary geologic map of the Twin Buttes quadrangle, Pima County, Arizona: USGS, open file and Clarke, J., 1961, Annual progress report of Demetrie Wash, Arizona: BCMC SW Dist.

GEOLOGIC MAP OF THE DEMETRIE WASH AREA
PIMA COUNTY, ARIZONA

Scale 1" = 2000'