

# CONTACT INFORMATION

Mining Records Curator Arizona Geological Survey 1520 West Adams St. Phoenix, AZ 85007 602-771-1601 http://www.azgs.az.gov inquiries@azgs.az.gov

The following file is part of the

Arizona Department of Mines and Mineral Resources Mining Collection

# ACCESS STATEMENT

These digitized collections are accessible for purposes of education and research. We have indicated what we know about copyright and rights of privacy, publicity, or trademark. Due to the nature of archival collections, we are not always able to identify this information. We are eager to hear from any rights owners, so that we may obtain accurate information. Upon request, we will remove material from public view while we address a rights issue.

# **CONSTRAINTS STATEMENT**

The Arizona Geological Survey does not claim to control all rights for all materials in its collection. These rights include, but are not limited to: copyright, privacy rights, and cultural protection rights. The User hereby assumes all responsibility for obtaining any rights to use the material in excess of "fair use."

The Survey makes no intellectual property claims to the products created by individual authors in the manuscript collections, except when the author deeded those rights to the Survey or when those authors were employed by the State of Arizona and created intellectual products as a function of their official duties. The Survey does maintain property rights to the physical and digital representations of the works.

# QUALITY STATEMENT

The Arizona Geological Survey is not responsible for the accuracy of the records, information, or opinions that may be contained in the files. The Survey collects, catalogs, and archives data on mineral properties regardless of its views of the veracity or accuracy of those data.

#### PRINTED: 07-27-2012

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES AZMILS DATA

PRIMARY NAME: TABLE MOUNTAIN

ALTERNATE NAMES:

TABLE MTN COPPER CO PROPERTY LOUISVILLE GRANDE DUKE COBRE GRANDE

PINAL COUNTY MILS NUMBER: 540A

LOCATION: TOWNSHIP 7 S RANGE 18 E SECTION 15 QUARTER SE LATITUDE: N 32DEG 49MIN 01SEC LONGITUDE: W 110DEG 29MIN 11SEC TOPO MAP NAME: OAK GROVE CANYON - 7.5 MIN

CURRENT STATUS: PAST PRODUCER

COMMODITY:

COPPER OXIDE GOLD SILVER VANADIUM BARIUM BARITE

**BIBLIOGRAPHY:** 

ADMMR TABLE MOUNTAIN MINE FILE TENNEY, J.B., "HIST MNG IN AZ", AZBM OFR; 1929 P 329-333 A.L. FLAGG, VANADIUM BOOK IV AND VIII SIMONS, FRANK S., GEOLOGY OF THE KLONDYKE QUAD GRAHAM AND PINAL CO. PP 461, P. 150-151 ADMMR "U" FILE ELEVATORSKI, AZ. IND. MIN. 1978, P. 53

#### TABLE MOUNTAIN MINE

PINAL COUNTY T7S R18E Sec 15 SE Sec 22 NE

1. J.

AKA: Table Mountain Copper Co. Property Louisville Grand Duke

MILS Index #540A

Book V-IV - A. L. Flagg vanadium reports, also Book VIII

"U" file

Maps - upstairs, 2 geolgic maps, 1 geophysical magnetic anamoly map

ABM 1927-29, p. 329

USGS Oak Grove Canyon 7.5 (Included in file)

USGS PP 461, p. 150

Az. Industrial Minerals, 1978, p. 53



#### TABLE MOUNTAIN MINE

#### PINAL COUNTY

GW WR 8/20/75: Jim Sterling, Indianapolis, called to learn the ownership of the Table Mt. Mine 15 miles east of Mammoth. A call to Ted indicated Archie Lee's wife in Mammoth may be one of the heirs to the estate of Mrs Young, one-time owner. Howard Morgan, 1265 West Navajo, Tucons, and a brother and sister inherited the property from their mother, Molly Morgan, formerly of Mammoth.

GW WR 8/28/75: Jim Sterling, Indianapolis, called to say he had made Morgan an offer of 15% royalty on his Table Mt. mine and had been refused. In addition, Morgan wants Sterling to build about 7 miles of mountain road. It was suggested his offer was more than liberal.

NJN WR 4/12/85: Harold and Beverly Best (c) visited and brought in reports and maps on three of their properties the Sunday Claim Group (f) Cochise Co., Puppy Dog (Black Butte (f)) Maricopa County and Table Mtn. (f) Pinal County.

KAP WR 9/4/87: Jon A. Stewart, Chairman, Rhyolite Resources, 300 - 535 Thurlow Street, Vancouver, B.C. V6E 3L2, phone (604) 685-6361 reported his company has optioned the Table Mountain Mine (file) Pinal County from Harold Best. They have made a preliminary 2 day evaluation of the property and plan more work.

NJN WR 11/27/87: Harold Best (card) and Beverly Henrichs visited and brought in reports prepared for Can Quest Resource Corp, dated 10/20/87, on the Table Mountain Property, (file) Pinal County.

NJN WR 8/19/88: Harold Best (card) reported he has leased the Table Mountain (file) Pinal County to a Mr. Hanson who is planning to reconstruct the road to the mine. He plans to ship dump material as siliceous flux to a copper smelter.

#### COBRE GRANDE MINE (Table Mountain Mine)

Frank Tapia and I drove first to the Table Mountain mine. Larry Drake, who represents Cuox Mining Inc., has made surface excavations to open up old workings at this mine. A hammer mill mounted on an old International truck and a caterpillar traxcavator are setting on the property. It was rumored some time ago that flux ore was to be shipped from this property, but the mine is not presently capable of producing silica flux. VBD WR 8/9/76

Harold Best reported that he is the owner of the Table Mt. Mine (Cobre Grande Mine file) in Pinal County. The mine is producing siliceous flux for the Asarco smelter at El Paso. Larry Drake of Cuox Inc., 2030 E. Broadway, Tucson, has a contract to mine the property. KAP report 12/22/76

GM/WR 12/18/78 - Mr. Best relayed the following information: The Teck Mining Group Limited, 1139 W. Heasting St., Vancouver, Canada V6E2K5, is drilling his property near New River, T6N, R4E, Sec. 32. He said that he has a ten mile strip through the area. The Canadian Company was interested in a zone 1000 feet wide and 4000 feet long and 300 feet deep. The ore averages 0.03  $U_30_8$ . The chief geologist is Bill Bergery. Mr. Best said for us to drop out if we wanted to. 6/6/79 a.p.

#### PINAL

COPIED. FOR TUCSON MOUNTAIN CLAIS MOUNTAIN () 775 - R-18E Sec. 15+22

PRELIMINARY EVALUATION

of the

), TABLE MOUNTAIN PROSPECT

Final County, Arizona

Prepared for

CANQUEST RESOURCE CORP.

By

Arthur J. Pansze, Ph.D.

October 20, 1987

CRUSON & PANSZE, GEOLOGISTS

#### INTRODUCTION

122

調査・通

and a

No.

题

and a

潮川道山

1

1

and and

25

1

The Table Mountain prospect is in the northern Galiuro Mountains in eastern Pinal County, Arizona. Twenty unpatented lode claims cover the southwestern part of Sec. 15 and northern part of Sec. 22, T7S, R18E. Access is by mediocre gravel road from Mammoth, on the west, or from the east via Aravaipa Creek and a poor gravel and bedrock road.

This preliminary evaluation was done for CanQuest Resource Corporation at the request of Messrs. Jon Stewart and John Dissett. A brief visit to the property was made in late August, 1987; the objective was to appraise the gold potential of the prospect. This report is based on the site visit, a concise literature review, and two unpublished reports (Bellis, 1982; Black, 1928).

Table Mountain mineralization was discovered in the 1870's. By 1900, the mine had produced 100,000-150,000 tons of ore averaging 0.2 or per ton (opt) gold. Approximately 2,000 ft of tunnels were driven to develop the ore. Attempts to process the ore on-site were unsuccessful; only a "few thousand tons" were smelted (Black, 1928, p. 2). An undetermined amount of work was later done in 1930 (1960 Ariz. Dept. Min. Res. rept.).

CRUSON & PANSZE, GEOLOGISTS

1

#### GEOLOGY

1.54

國際

の意味

2012

STATISTICS OF

調調

**唐**朝

63

卿

The Galiuro Mountains are an elongate range trending M20-25<sup>°</sup>W. The Galiuros are part of the basin-and-range province and are bounded by gravel-filled, graben valleys on the west (San Pedro Valley) and east (Aravaipa Valley). The main part of the range consists of Tertiary volcanic rocks of the Galiuro Formation. These volcanics include andesite lavas and breccias and a sequence of silicic lavas, tuffs, and epiclastic sediments. Older rocks, ranging from Precambrian to Laramide (late Cretaceous-early Tertiary), are exposed on the northwestern margin of the range.

Rock units in the immediate prospect area are Devonian Formation, Mississippian Escabrosa Formation, and hartin Oligocene Galiuro volcanics. The Martin is interbedded shales and limestones that do not outcrop on the claim block. 1 the Escabrosa is a 500-ft-thick carbonate unit, with three members. The lower member is massive, gray limestone abut 250 ft thick. The middle member consists of 200 ft of thinly interbedded (1-2 ft) siltstone, chert, limestone, and silty limestone. The middle Escabrosa contains large solution caverns (300 ft X 50-60 ft), jasperoid replacement bodies, and large zones of argillically altered limestone (talc ?). The middle member hosts much of the known mineralization. The upper Escabrosa is a massive, 50-ftthick limestone that has been altered to jasperoid. The jasperoid is gray, black, white, and red; brecciation is common within the jasperoid.

Previous geologic work has defined three fault sets in the area: north-northeast, north-northwest, and east-west. These faults undoubtedly control mineralization and alteration on the prospect. Details of, and age relationships among, these faults are not known.

and the

翻江

編に

1999 B-

67.0

Two principal types of alteration are evident on the Table Mountain prospect : argillization and silicification. Both are structurally controlled. Silicification occurs primarily as/ jasperoid replacing limestone. Jasperoid is daveloped adjacent/ to faults and in favorable Escabrosa strata. No details of alteration distribution are reported by former workers but it seems that extensive argillic alteration in the middle Escabrosa may underlie more pervasively jasperized zones. If so, there is vertical as well as horizontal (fault related) alteration zoning.

Copper, gold, silver, lead, and vanadium occur in Table Mountain ores. Vanadium is principally a vein mineral. Other metals are concentrated in jasperoid bodies. Both copper and silver are present as oxides; no sulfide minerals are described. Chrysocolla, azurite, end malachite are common. Black (1928, p. 3) described three modes of gold occurrence at Table Mountain:

- veins of "gold-bearing jasperoid quartz of considerable width" with grades up to 0.9 opt. Some high-grade "clear quartz" ore also existed.
- gold in brittle, red jasperoids "of entirely different character" from the large, high-grade copper ore zones. Grades of 0.25-0.9 opt gold equivalent (Au + Ag) are noted.
- 3. 7 lower gold and silver values are present in sandy clay material in "residual ores" resulting

CRUSON & PANSZE, GEOLOGIS'.

3

from metasomatism, oxidation, and weathering. Exact grades are not noted.

Black's descriptions are not geologically definitive but provide an idea of the types of gold ores and their geometries. Black believed the area had potential for "enormous reserves of ore" and reported dimensions of 200 ft thick, 400-600 ft wide, and 4000 ft long for the potential ore zone (1928, p. 2).

Select sampling by Energy Reserves Group in 1981-82 produced anomalous gold values from Escabrosa outcrops along both the east and west sides of the prospect (Virgus Canyon and Sycamore Canyon respectively) (Bellis, 1982). Limited sampling of surface outcrops during this study did not detect gold anomalies (4 samples).

Some tonnage of dump material still exists. Simons (1964, USGS Prof. Paper 461, p. 150) reports gold grades of 0.14-0.15 opt for the dumps. Two composite dump samples taken during my visit ran 0.073 and 0.078 opt gold. An assessment of dump volume was not made during this study. The amount of dump material present is not known but is certainly in the tens of thousand of tons range (X0,000 tons). Harold Best thinks there may be 150,000 tons in the dumps. Black (1928, p. 1-2) states that 150,000 tons of dre and waste was produced and only a few thousand tons was ever smelted; no record of the scale of work in the 1930's was found.

#### CRUSON & PAN LE, GEOLOGISTS

#### POTENTIAL

The Table Hountain prospect has good geologic potential as an exploration target. No drilling or subsurface evaluation has been conducted during the last 50-60 years. No proven or indicated ore reserves exist. An undetermined volume of dump material exists and contains local concentrations of ore-grade gold (i.e. greater than 0.05 opt Au).

The targets at Table Mountain are combination vein and replacement zones in altered middle "Escabrosa rocks. Mineralization is controlled by faults and by favorable lithology. Past in duction recorded grades of 0.2-0.9 opt gold trom these. Several faults cut the potential host rocks in the subsurface on the claim block. The faults, which are the key to any ore, have not been systematically mapped on the claim block.

There are no metallurgical test data on either vein or replacement ore to indicate amenability to leaching or other recovery processes. No sulfide minerals are reported but the copper present could create problems with leaching. Replacement cre observed on the dumps is mostly dense, brittle jasperoid; some visible free gold was observed. There is no reason to suspect silica encapsulation of gold; testing is needed to establish nominal gold particle size and distribution.

Samples of dump material should be collected for bottle-roll tests during the next phase of work. Other physical and metallurgical tests should be deferred until the drilling stage is completed.

R J ? AN DE, GEOLOGISTS

Remoteness of the property is a definite economic factor to be considered. Current access is unsatisfactory for any commercial operation but there are several options for improvement.

N. Carlos

「「「「

言語

A low to see the second

6

#### EXPLORATION PLAN

1.2 24

Exploration of the Table Mountain prospect should include initial mapping, sampling, and geophysics to define faults and target areas, and drilling to test these targets. Estimated time and costs for these operations is estimated below.

а.	geologic mapping at 1"=200'		
	14 days at \$300/day	22	\$4,200
•	field expenses	8100	1,000
	vehicle expenses	822	800
	maps, etc.	200	100
· · · · ·		•	6,100
b.	geochemical sampling		
	5 days at \$300/day		\$1,500
	field expenses	-	400
	vehicle expenses	-	100
	analyses (150 samples)	25	2,300
	bags, misc.	deap Ana	200
	그는 그 성장에서 잘 가지 않는 것이 없다.		4,500

c. geophysical survey : ground magnetics and VLF-EM (includes data processing, plotting, and interpretation) 8 days at \$300/day = \$2,400 field expenses 600 Comp vehicle expenses 100 525 equipment rental 202 1,000

d. maps and report 5 days at \$300/day drafting printing, reproduction, etc. = phone, postage, etc (for a-d)

\$2,600

4,100

800

200

100

= \$1,500

XIII

#### Sub-total (a-d) \$17,300

e. drilling : reverse circulation - 20 drill holes totalling 5000 ft at \$25/foot total cost (includes drilling, sampling, logging, assays, supervision)

# Sub-total (e) = \$125,000 Contingencies = 7,700 Total \$150,000

The drilling could be conducted in two phases but the remoteness and difficult access dictate it would be less expensive to do all the drilling at once and save on mobilization-demobilization costs.

8

#### CONCLUSIONS AND RECOMMENDATIONS

Examination of the Table Mountain property and literature yielded the following conclusions:

- 1. ore-grade gold concentrations of 0.05-0.90 opt occur on the property;
  - 2. two principal ore types are vein mineralization along faults and replacement ores in jasperoid and argillic zones in the middle Escabrosa Formation;
  - the prospect has not been systematically mapped or explored by drilling;
  - there are no proven or indicated ore reserves developed at this time;
  - 5. the property has good geologic potential as an exploration target;
  - the target consists of large, sub-horizontal zones of replacement ore with associated highergrade vein mineralization.

Dased on these conclusions, necommendations are:

1.

- the prospect should be geologically mapped in detail to identify faults, formational contacts, and various zones of alteration and mineralization;
- 2. ground magnetics and resistivity surveys should be conducted to delineate faults beneath postnineral volcanic cover;
- geochemical sampling of faults and altered areas should be done to define favorable targets in and adjacent to faults;
- any favorable targets should be tested by reversecirculation drilling;
- 5. selected metallurgical tests should be initiated to ascertain amenability of Table Mountain ores to gold recovery processes.

# Sample Descriptions

All samples are composite rock-chip samples taken on the surface.

- TM-1 Brecciated and strongly silicified Escabrosa Fm (originally lms). Some hematite. Silicification ranges from dense gray chalcedonic to red jasperoid. From prominent knob above road and south of, and below, dumps.
- TM-2 Brecciated and argillically altered Escabrosa ims. Some lms frags in matrix of talc (?); some zones of talc (?) with minor lms. Just E and S of bend in road.
- TM-3 Precolated and hematite 'stained Escabyosa from fault zone. Some silicification. Fault appears to trend N-S (?) and be steeply dipping and down to E? From south of dumps.
- TH-4 Strongly breccieted and silicified Escabrosa lms. with weak-mod hem. From o/c at bend in road.
- TM-5 Dump composite of Jasperoid with visible copper oxide staining t hematite.

TH-6 Dump composite of Jasperoid with hematite and little or no copper oxide.

1

「ない」の「ない」の「ない」のです。

の行き、

### CRUSON & FANSZE, GEOLOGISTS

15 14 DUM TM - 1  $TM - 4 O_{1}$   $TM - 2\overline{O} = =$   $TM - 2\overline{O}$ TM-3 4 500 FEET TABLE MOUNTAIN PROSPECT. SKETCH MAP 10/87 OF SAMPLE LOCATIONS . AJP

	GEOCHEMICALINC. 810 Dusli Streel, Sulte I Lakewood, Colorado 80215 (303) 232-8371	FIRE ASSAY	Job 1245 18-Sep-87 Page 1
	Mr. Art J. Pansze Cruson and Pansze 1019 Eth St., #300 Golden, CO 80401		PO # PROJECT
	SAMPLE NUMBER	OZ/TON OZ/TON GOLD SILVER	
	2M-1	6.005	
A. F. L. WALLS	TH-2 TM-3 TM-4 TM-5 TM-6	<pre>&lt;.005 <??05 &lt;.005 &lt;.05 &lt;.005 &lt;.05 0.078 0.50 0.073 0.84</pre>	



ţ÷

METHOD

1 AT 1 AT



#### CERTIFICATE

I, Arthur John Pansze, Jr., cf Golden, Colorado, U.S.A., do hereby certify that:

- 1. I am a consulting geological engineer with offices at 1019 Eighth Street, Suite 300, Golden, Colorado, U.S.A. 80401.
- 2. I am a graduate of the Colorado School of Mines with a degree of Geological Engineer (1963) and a Ph.D. in Geology (1971).
- 3. I have practiced my profession continuously since graduation (1971). I was employed by Expon Minerals Company for over six (6) years. I have been an independent geologist and partner in Cruson and Pansze, Geologists since 1971.
- 4. This report is based on a visit to the property and a brief literature review.
- 5. I have no interest, either direct or indirect, bin the properties of CanQuest Resource Corp., nor their subsidiaries, nor do I expect to receive or acquire any such interest.
- 6. I am a member in good standing in the Society of Independent Professional Earth Scientists (Certification No. 734) and the Division of Professional Affairs of AAPG (Certification No. 2346).

Arthur J. Pansze, Ph.D. October 14, 1987 Golden, Colorado U.S.A.



#### No. 28 by Raymond Grant

This is a story about an Arizona mineral collecting trip. We left early Saturday morning for the Table Mountain Mine near Mammoth. I had wanted to visit this mine for years and finally I was on the way with a former student whose father has a lease on the mine and Dan Helm. I had heard the road was bad, but several people had visited the mine recently, so it seemed like a

good possibility that we could make it. We did make it, but set a world's record; I think Three flat tires on one vehicle on a sixteen mile trip. The first one was a little out of Mammoth, so we went back and got it fixed. The second one was about 12 miles out, so we decided to go on to the mine. The third one was right at the mine. There we were with three good tires and two flats. We were lucky to have a second truck along, and the next day it was back to town to get the two tires fixed. Collecting at Table Mountain is not very good at present. All of the underground workings are caved in and the dumps have been picked over many times. We did get some chrysocolla, barite, wulfenite, vanadinite, mimetite, dioptase, and conichalcite. The minerals are mostly micro-material but the conichalcite is very interesting because it is very solid massive material which is being used for cutting material. Also, a little native gold was found and either plancheite or shattuckite. Yes, we did get back without any flat tires.

I didn't get to the main Tucson show this year, but I guess that I should have gone to see it. Everyone has been been telling me about the unbelievable Bisbee cuprite. I even got a letter from out of state asking me about it. The story I heard, was that it was collected very recently by Doug Graeme soft of Dick Graeme (who is the world's Bisbee expert). This cuprite specimen has been called the finest and most exciting specimen of the show. That's saying alot considering the specimens on exhibit at Tucson. Actually there were two specimens. One was a huge (I was told it was maybe 1.5 to 2 inches) deep red, translucent and lusterous cubic crystal on atacamite. The other was a large specimen of atacamite with a vug holding other similar cuprites. Here's a quote about this specimen, the large single crystal, "It was beyond anything one can dream about." What is amazing to me is that a specimen of this quality can still be found at one of Arizona's old and famous localities. Not only a good specimen, but what sounds to me to be one of the best ever found after 100 years of mining!

There is new <u>Glossary of Mineral Species</u> published by the <u>Mineralogical Record</u>. It is the fifth edition and updates the last edition from 1983. Every serious mineral collector needs this publication. Dave Shannon in Mesa has them for sale so you can buy one without mailing away and waiting for a month to get it.

MAY, 1987	ROCKHOUND RECORD	Page 7

#### DEPARTMENT OF MINERAL RESOURCES STATE OF ARIZONA FIELD ENGINEERS REPORT

Mine	Cobre Grande Mine	Date	April 22, 1964
District	Bunker Hill District, Pinal Co.	Engineer	Axel L. Johnson
Subject:	Field Engineers Report. Information	n from J. J. Strut	zel, Jr.

Location: On Miller's Ranch - 6 miles straight east of Mammoth.

Owners: J.J. Strutzel, Jr., 5110 E. Osborn Road, Phoenix - Phone WH 6-1200 Jack Pelletier, San Manuel Clint Anglin, Florence Richard Clark, Tucson Bill Mattheson, Mammoth

Option to Purchase: 'Phillips Petroleum Co.

Number of Claims: 15 unpatented claims located 2 years ago.

Principal Minerals: Copper

Present Mining Activity: No activity at present.

Review of Recent Operations: Diamond drilling was done by Metler Bros. on contract shortly after Jan. 1st, and 2 diamond drill holes were put down. Diamond drilling was suspended about March 20th. A ONA DEPARTMENT OF MINER. RESOURCES Mineral Building, Fairgrounds Phoenix, Arizona

Address:	
Table Mt.	2 No of Claims Datastad none
///ine	Unpatented 17
Norm Mahla Mt	Pinel County
Location: Near lable ML	. Final county
Sec Tp7S	Range <u>18E</u> 6. Mining District <u>Bunker Hill or Copper Cre</u>
Owner: C. J. Anglin, J. S	trutzel, Dick Clarke Jr., Bill Matheson, Bob Baird.
Address: As above.	
Operating Co.: None	
Address :	
President:	12. Gen. Mgr.:
Principal Metals: Copp	er14. No. Employed:
Mill, Type & Capacity:	
Present Operations: (a) Dow (d) Production □	vn 🗌 (b) Assessment work 🏝 (c) Exploration 🗌 (e) Ratetpd.
Present Operations: (a) Dow (d) Production [] New Work Planned:	vn 🗌 (b) Assessment work 🏝 (c) Exploration 🗌 (e) Ratetpd.
Present Operations: (a) Dow (d) Production [] New Work Planned:	vn □ (b) Assessment work മ (c) Exploration □ (e) Ratetpd.
Present Operations: (a) Dow (d) Production New Work Planned: 	<pre>/n □ (b) Assessment work ▲ (c) Exploration □ (e) Ratetpd.</pre>
Present Operations: (a) Dow (d) Production New Work Planned: 	<pre>/n □ (b) Assessment work ▲ (c) Exploration □ (e) Ratetpd.</pre>
Present Operations: (a) Dow (d) Production New Work Planned: 	<pre>/n □ (b) Assessment work ▲ (c) Exploration □ (e) Ratetpd.</pre>
Present Operations: (a) Dow (d) Production New Work Planned: 	<pre>/n □ (b) Assessment work ▲ (c) Exploration □ (e) Ratetpd.</pre>
Present Operations: (a) Dow (d) Production New Work Planned: 	<pre>/n □ (b) Assessment work ▲ (c) Exploration □ (e) Ratetpd.</pre>
Present Operations: (a) Dow (d) Production New Work Planned: 	<pre>/n □ (b) Assessment work ▲ (c) Exploration □ (e) Ratetpd.</pre>
Present Operations: (a) Dow (d) Production New Work Planned: 	<pre>vn □ (b) Assessment work ▲ (c) Exploration □ (e) Ratetpd.</pre>
Present Operations: (a) Dow (d) Production New Work Planned: Miscl. Notes: Would	<pre>vn □ (b) Assessment work ▲ (c) Exploration □ (e) Ratetpd.</pre>
Present Operations: (a) Dow (d) Production New Work Planned: Miscl. Notes: Would	<pre>/n [ (b) Assessment work (c) Exploration [ (e) Ratetpd.</pre>
Present Operations: (a) Dow (d) Production New Work Planned: Miscl. Notes: Would	<pre>/n □ (b) Assessment work ▲ (c) Exploration □ (e) Ratetpd.</pre>
Present Operations: (a) Dow (d) Production New Work Planned: Miscl. Notes: Would	<pre>/n □ (b) Assessment work 점 (c) Exploration □ (e) Ratetpd.</pre>
Present Operations: (a) Dow (d) Production New Work Planned: Miscl. Notes: Would	<pre>/n □ (b) Assessment work ▲ (c) Exploration □ (e) Ratetpd.</pre>

TABLE (MIN (FIL) PINKL 6. Page \_ of

#### TABLE MOUNTAIN PROSPECT

April 26, 1982

ENERGY RESERVES GROUP, INC.

Southwest District Office

Doug Bellis, Exploration Geologist

DONATED HIRS BY HAROLD BEST

DEPARTMENT MINERAL RESOURCES MINERAL BLDG. FAIR GROUNDS PHOENIX, ARIZONA 85007

PLUS 3 MAPS

# TABLE OF CONTENTS

								Page
Introduction		• • •	• •	 				1
Stratigraphy				 • •	• • •			4
Alteration, Mineralization	and	Struc	ture	 			• • •	6
Potential Drill Targets .				 •••		•••		16
Conclusions	• •			 				16

# LIST OF ILLUSTRATIONS

5

Figures																				Page	
1	Location Map		•	•		,	•	•	•		•		•	•			•			2	
2	Area of Non-Compete .	•	•	۰.	•	•	•	•	•	•			•			٠	•	•	•	3	
3	Stratigraphic Column .	•	•	•	•	•		•		•					•		•	•	•	5	
4	Regional Geologic Map	•	•	•	•	•		•	•	•		•	•	•			•		•	In	Pocket
5	Prospect Geologic Map	•		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	In	Pocket
6	Anomaly Map	•			•	•		•	•	•	•						•	•		In	Pocket

Jegure 1

#### INTRODUCTION

The Table Mountain Prospect is located in Section 15, Township 7 South, Range 18 East in eastern Pinal County, Arizona (Figure 1). The property is best accessed from Mammoth, Arizona by taking the Copper Creek road for aproximately ten miles to the east to Rancher Exploration's Bluebird solution copper mine. At this point, a turn to the north on fairly rough drill roads and jeep roads for about five miles leads to a pass between Little Table and Table Mountain and the northwest corner of the prospect area. The TAB claim group consists of 40 unpatented claims that were located by Energy Reserves Group in October, 1981 (Figure 2). Negotiations on two patented mining claims in the area are in progress and are expected to be consummated at favorable terms in the near future.

The Table Mountain Prospect lies between 4,800 and 5,100 feet above sea level and the topography consists of large rounded hillsides with a few deeply incised canyons. Vegetation varies from grassland on most of the hills with abundant evergreen and deciduous trees in the canyons, gullies and on hillsides.

The general geology of the Table Mountain Prospect consists of flat-lying Mississippian Escabrosa limestone which has been faulted and mineralized by Laramide age events that silicified and argillized the Escabrosa and resulted in a variable mineral suite of gold-copper-lead-vanadium-barite-antimony. Throughout the property thick, flat-lying jasperoids that formed in the Cretaceous mark the top of the Escabrosa Formation. Erosion from late Cretaceous to the mid-Tertiary followed, forming an irregular topographic surface upon which the unaltered andesites of the Oligocene Galiuro volcanics were deposited.

Early development at the Table Mountain Mine, located in the southeast portion of Section 15, began in the 1870's when it was operated as a gold mine.



figure 3

During this period some very rich ore was reportedly extracted but there are no longer any production records. Twenty years later the mine was again worked on a larger, open pit scale with some 150,000 tons of ore and waste mined and approximately 2,000 feet of development work done in the form of tunnels into the orebody.

#### STRAT IGRAPHY

The youngest rocks exposed in the Table Mountain Prospect area are the Oligocene Galiuro volcanics (Figure 3). Throughout the prospect area only the lower member of the Galiuro volcanics, the Little Table Mountain andesite, has not been removed by erosion. Due to erosion, this andesite is of variable thickness and is generally dense and unaltered. This member was definitely deposited after the mineralizing event as the basal volcanic agglomerate contains rounded Escabrosa jasperoid pebbles.

Unconformably underlying the Galiuro volcanics is the Mississippian Escabrosa Formation. The Escabrosa is the only outcropping potential host rock on the claims. In measured section, the Escabrosa Formation consists of 508 feet of gray limestone, silt and chert. In the Table Mountain Mine area the upper 50 feet of the Escabrosa consists of a massive gray limestone member that has been the site of extensive jasperoid development. This jasper is often red, white and black in color, forms prominent ledges and is the erosional surface upon which the mid-Tertiary Galiuro volcanics were later deposited. Immediately below this upper massive limestone is a 200 foot sequence of 1 to 18 inch silty, limey and cherty interbeds. It is within this portion of the Escabrosa Formation that most of the mining has been done in the past and is referred to in old reports as being silicified "closely bedded limestone" with "jasperoid gold-bearing quartz." On outcrop, this 200 fcot interval is often extensively argillized for great thicknesses beneath the jasperoid caprock and occasionally contains less altered blocks of totally recrystallized limestone that show the affects of warm solution movement. In addition, large solution caverns, similar to those described at the disseminated gold mines at Jerritt Canyon, Nevada and Mercur, Utah, are reported to have been encountered in the old workings. Below the middle, thin-bedded portion of the Escabrosa Formation is an estimated 250 foot section of massive gray limestones. An adit located below the old smelter was driven into the lower unit but encountered only minor recrystallization of the limestone and some silicification.

Underlying the Escabrosa is the Devonian Martin Formation. While not exposed in the prospect area, a description of the section from three miles to the west indicates that the Martin is 150 to 200 feet of slope forming shales and limestones that range from two inches to four feet in thickness. It is felt that the Martin Formation represents a significant potential host and should probably be tested while drilling the Escabrosa host rocks.

#### ALTERATION, MINERALIZATION AND STRUCTURE

The geology around the Table Mountain Prospect area is dominated by the Cretaceous (Laramide) Copper Creek granodiorite which is located approximately two miles south of the claimblock (Figure 4). Surrounding the Copper Creek granodiorite are the Glory Hole volcanics which are intruded by and probably were extruded by events associated with the emplacement of the Copper Creek granodiorite. To the north of the Glory Hole volcanics and west of the Table Mountain Prospect the Paleozoic Escabrosa and Martin Formations outcrop from beneath the Glory Hole volcanics. The only other outcrop of Paleozoic rocks in the area are the Escabrosa outcrops found on the claimblock. Unconformable overlying all of these rocks is the Tartiary Galiuro volcanics.

Confined to the Paleozoic and Cretaceous rocks, a gradually shifting

alteration pattern can readily be identified. The most intense form of alteration is found in the Copper Creek granodiorite which often exhibits both potassic and quartz-sericite-tourmaline forms of alteration (Figure 4). Adjacent to and intruded by the Copper Creek granodiorite, the Glory Hole volcanics, a +1,000 foot thick pile of tuffs, ashflow tuffs, flows and flow breccias largely of dacitic and andesitic composition, are commonly propylitically and argillically altered. It is interesting to note that within the Glory Hole volcanics there are numerous explosion breccia pipes that exhibit the higher temperature quartz-sericite form of alteration. To the north and underlying the Glory Hole volcanics, the Martin and Escabrosa Formations outcrop. These Paleozoic limestones and shales show evidence of strong recrystallization, bleaching and argillic alteration. Although only briefly covered by the Tertiary Galiuro volcanics, the alteration patterns of the Paleozoic section found in the prospect area greatly differ from the above described alteration types found in the Escabrosa and Martin Formations. On the prospect area the majority of the Escabrosa limestones and shales appear to be relatively unaltered, except where adjacent to fault structures. In the vicinity of faults, the adjoining limestones are often silicified or recrystallized and the shales are argillized and affected by solution activity that has since resulted in extensive slumping.

It is felt that all of the above alteration patterns are the result of a single geologic event that ultimately leads back to the emplacement of the Copper Creek granodiorite. With the intrusion of the Copper Creek granodiorite into its own volcanic pile, the Glory Hole volcanics, convection circulation of meteoric waters was initiated. These waters were hottest near the granodiorite heat source and gradually cooled as they moved away from the intrusive. As these hot solutions circulated, they reacted with the granodiorite, the volcanics and Paleozoic rocks to form the alteration patterns we now see. In addition, these hot solutions were able to leach trace elements from these

5

rocks and carry them away to be reconcentrated in the various types of mineral deposits we now see throughout the Copper Creek district. As these solutions reached the edge of the convection zone it became more and more difficult to move through the rock and solutions began to preferentially move along fault zones which allowed greater solution movement. It is this type of mineralization, i.e., relatively cool fluids moving along and outward from fault zones that provided channels for the solution movement, that resulted in the mineralization found at the Table Mountain Mine.

Within the prospect area the most obvious form of alteration are the jasperoids which developed adjacent to and along the vertical feeder structures, jaspers that have replaced the massive, flat-lying upper 50 feet of the Escabrosa limestone away from the vertical feeder structures and jasperoids that have replaced irregular limestone units generally in the vicinity of major faults (Figure 5). All of these forms of jasperoid development can be found in contact with one another; however, the first two examples are by far the most important volumetrically. Nowhere on this property does any substantial jasperoid tend to be developed at a distance of more than 500 feet from any identifiable feeder structure. This includes the thick jasper developed at the top of the Escabrosa limestone.

Along with the strong jasperoid development, intense argillic alteration has affected the middle and upper members of the Escabrosa limestone. Where not silicified, even the most massive of limestones can be argillized where argillization is most strongly developed. As a result of this intense argillization and associated solution movement, collapse features and solution caverns have developed within the upper and middle Escabrosa units. Recent solution movements and settling of the argillized rocks since the Tertiary have resulted in the downdropping of the Table Mountain andesites into collapse zones to form an extremely irregular contact. In addition, recent solution

movements have resulted in the remobilization of some of the copper carbonates that were associated with the original phase of Cretaceous mineralization. In a few areas copper carbonates can be found coating these downdropped Tertiary breccia fragments. Argillization is at best poorly exposed and would not have been detected had it not been exposed in the Table Mountain mine open cut, in roadcuts, prospect pits or in adits. From the amount of argillic alteration mapped on the surface, the number argillite collapse zones exposed and noted in the adits located to the north of the open cut, and the quantities of argillite referred to in the old, now inaccessible adits, it becomes apparent that there are large tonnages of argillite despite its limited exposure on the surface. The argillite appears to occur immediately adjacent to jasperoids and can be found in simple solution collapse zones that may be related to unsilicified feeder structures.

Structure in the Table Mountain Prospect area is dominated by two sets of faults. These faults exhibit an east-west trend and a north-south trend, generally have throws of less than 100 feet and have largely controlled mineralization and alteration. Due to poor exposure, the easiest fault set to identify is the east-west trend. In the Table Mountain Mine area two such fault traces are marked by jasperoids that have developed in and adjacent to these faults (Figure 5).

Of the north-south faults, only one fault, developed along a consistent north trending zone of collapse, can be positively identified. Another parallel north trending fault structure is referred to in the old mine reports. This structure was reportedly almost vertical and as mining approached it, the amount and grade of mineralization increased. This would seem to indicate that this fault was the main feeder structure for the disseminated mineralization we find on outcrop in the Table Mountain Mine area and may indicate that the north-south set of feults were the major fluid conduits and that the east-west

1

set of faults were of less importance. However, fault intersections are no doubt important factors in ground preparation for mineral deposition. The projection of the north-south feeder structure described above is entirely under Tertiary volcanic cover but if the trend of the structure is correct, it is very possible that it connects with the major feeder structure mapped in the center of Section 15. This fault projection is shown on the geologic map (Figure 5). Within the immediate area of the Table Mountain Mine faulting, argillization and collapse structures are so prevalent and exposure so poor that it is believed that the structural picture is much more complex than two parallel north-south faults and a few east-west faults.

In the center of Section 15 a north-northeast trending strongly silicified feeder structure which appears to be over 3,000 feet in length was identified. This fault structure will be referred to as the Saddle Canyon fault. Jasperoid development along this fault is extremely variable and emplacment was probably strongly influenced by fault intersections. At the confluence of Saddle Canyon and Sycamore Canyon the jasperoid has replaced a wide, vertical zone of Escabrosa limestone. The reason that the jasperoid is so strongly developed here is possible due to the triple fault intersection of a major east-west structure, the intersection of the north-northwest trending Table Mountain Mine fault and the Saddle Canyon fault. A similar development of jasperoid formed in the southwest corner of Section 15 where an east-west trending fault which trends just north of the Table Mountain Mine intersects the north-northeast trending Saddle Canyon fault. At this intersection vertical fault replacement by jasperoid is quite strongly developed. However, away from this intersection, bedding replacement jasperoid prevails.

Mineralization found on outcrop at the Table Mountain Prospect consists primarily of jasperoid. Only along the outcropping jasperoids that parallel the north-northwest trending Table Mountain Mine fault from the mine northward

11

.

can minor copper oxides be noted in the jaspers. This is no doubt what lead the old miners to develop the Table Mountain Mine. However, anomalous gold values have been detected from many of the jaspers that outcrop across the property, none of which are associated with copper mineralization.

From old reports on the Table Mountain Mine several key factors have been learned. All ore produced was oxide ore as were all ore minerals. No sulfide minerals of pseudomorph casts of sulfide minerals have ever been identified. This lack of sulfides is why early attempts to smelt the ores, by what was then state of the art techniques, were doomed to failure. It should also be noted that all disseminated gold occurrences found in Paleozoic limestones and shales in similar settings in Nevada are oxide ores.

At several places copper mineralization has been observed on outcrop and for a short period around 1900 an attempt to selectively recover copper from the Table Mountain Mine was made. All copper mineralization was in the form of oxides that coated reactive boulders and breccia fragments in what is assumed to be the argillized and collapsed shales and limestones that lie beneath the jasper caprock.

Minor amounts of vanadium, barite and lead round out the unusual suite of minerals found at the Table Mountain Mine. Vanadinite reportedly occurs as "candy ore" in several small shoots that were cut by the old workings and as coatings on the walls of several solution caverns that were encountered. Vanadinite mineralization can be found throughout the dump material stockpiled at the old open pit. Although no lead minerals have been identified either on outcrop or in the mine dump rock, its occurrence is reported. Barite appears to be a very common gangue mineral at Table Mountain where significant amounts of white, coarsely crystalline barite have been thrown out on the dump and masses up to four feet across outcrop in the sides of the old open pit.

Gold mineralization, ranging from anomalous to .27 oz/ton gold, has been sampled from many areas across the property with the best results being in the Table Mountain Mine area (Figure 6). Almost every jasper sampled contains anomalous (>.05 ppm) to sub-ore grade (.038 oz/ton) gold. Gold mineralization, to .015 oz/ton, has also been detected in the argillically altered limestones and shales of the Escabrosa. Due to surface cover our sampling has been from outcrops of limestone, shale and jasperoid that are at least several hundred feet horizontally from the main north-south feeder faults. Although good showings of gold mineralization have been detected on these outcrops, the .27 oz/ ton gold sample taken from the dump is indicative of the grade of the gold mineralization found nearer the feeder structure. It should also be pointed out that the mineralization found throughout the area and in the dump rock contains few if any veins or veinlets. All types of mineralization identified thus far is of the replacement type. The mode of occurrence and types of mineralization found at the Table Mountain Prospect may be analogous to that found at the Atlanta Mine located in east-central Nevada. At the Atlanta Mine, gold is being mined from a wide jasperoid that has formed along a fault plane that places volcanic rocks over Paleozoic limestones and shales. The gold mineralization also occurs with a similar suite of elements that includes minor copper, lead, silver, vanadium, antimony and barite.

#### POTENTIAL DRILL TARGETS

The Table Mountain property has several potential drill targets to test, the most obvious of which is in the Table Mountain Mine area where the goldbearing argillites and jasperoids outcrop. The geology suggests that as the north-south feeder structure, located west of the portal entrance, is approached, the grade and thickness of the gold mineralization can be expected to increase. As a result, drilling should be concentrated in the area immediately west of

1. 2

.

the old mine portal and in a north-south direction along the feeder structure. While conducting this drilling, several holes could be drilled deep enough to test the potential of the underlying Martin Formation.

Two potential drill targets located along the 3,200 foot long Saddle Mountain fault have also been identified. Both potential targets have anomalous gold values and lie at the fault intersections previously described. Also, by collaring in the valley bottoms, the drilling of significant portions of the Escabrosa section could be omitted resulting in the ability to penetrate the underlying Martin Formation at shallow depths.

Several additional drill targets exist across the property but will require a minor amount of sampling and mapping to specifically locate drill sites. Also, due to the Tertiary volcanics in the area, geophysics may offer a cheap, viable method of identifying feeder structures that lie buried at shallow depths beneath the volcanic cover.

#### CONCLUSIONS

The Table Mountain Prospect represents a significant Carlin-type exploration prospect. The presence of gold-bearing jasperoid and argillites that formed in the epithermal environment, the replacement nature of the mineralization and the regional context under which this mineralization was emplaced strongly suggests the deposition of disseminated gold mineralization under conditions similar to those associated with the Nevada disseminated gold mines. In addition, geologic evidence suggests that sufficient tonnages and grade exist on the Table Mountain Prospect to allow the development of a very large, disseminated gold mine that could be exploited by open pit mining techniques.

-14-

PROSPECT_		TABL	E MOUN	TAIN				E	NERGY RESE	RVES GR	ROUP		COUNTY/STATE Pinal, Arizona
SAM-	100	MICN		COI -	1	1			RESU	JLTS			
NO TR	S	FNL	FEL	LEC-	DATE	Au (ppm)	Ag (ppm)	As (ppm)	Sb (ppm)				DESCRIPTION
131175 188	15	4900	1200	SS	8-18-81	.18	1.2	30	100	•			Argillite, jasperoid and siliceous rock
1	1				1								in adit 200' in and along fault,
	1	1	1	1									hematite staining, recrystallized
	1-		1		1								limestone and bats.
	1	1	1	1	1								
1312 " "		4900	1200	SS	ti	.19	1.6	30	71				Same as #1811.
	1	1											
1813 " "	•1	4900	1200	SS		.31	0.4	40	120				Same as #1811.
1	1		1										
1814 " "	.,	4900	1500	SS	11	.14	1.4	. 10	69				Sample along outcrop above and west of
	1				1								#1811. Samples white to hematite
	1	1		1								1	stained argillite and FeOx stained
	1										-		jasperoid. Argillite often occurs
	1	1	1		1								next to massive jasper or recrystall-
			1					1			1		ized limestone.
<u> </u>	1		1	Í		1		1					
1815 " "		5280	1200	SS	11	8.26	12.0	1080	672		-		Dump sample dominantly of jasper - no
	1	1						1					argillic material is present. Jasper
	1		İ										is breccia to massive, white to red
			1										with FeOx, CuOx, barite from main
	1					,					and the second		mine area.
1816 " "	11	5280	1250	SS	- 11	.48	2.8	40	81				Argillically altered rock, recrystall-
		i						1					ized limestone, jasperoids and fault
													gouge, some copper mineralization,
													hematite staining and some manganese
													in jasperoids above main mine portals.

ROSPECT		TAB	LE MOU	NTAIN				E		s group		COUNTY/STATE Pinal, Arizona
			<del></del> T	co! -	<u> </u>		And the second se		RESULTS			DESCRIPTION
	SI	FNL	FEL	LEC.	DATE	Au (ppm)	Ag	As	Sb			
	1	5000	800	22	8-18-81	.23	1.4	120	186			Sample of silica and jasperoids in
S1//S 18E 1	13	5060	800		0 10 01							limestone on romp to smelter, hematite
												staining, brecciated.
	+							A 1997 - 1917 - 1 10 10 10 10 10 10 10 10 10 10 10 10 1				
		(00)	500	ee.		.01	0.4	5 10	< 10			Heavily argillized material white to
315		400	500	33				and the second				orange outcropping along road cut
												good looking and lots of it.
	T				1							Densible are food to mill. Some
819 " "	15	5100	950	SS	11	1.0	6.6	420	792			Possible ofe feed to mill other
	1						(.80z/t)					jasper much argilitte with clox,
					1							FeOx, MnO.
		artal and products										
010 11 11		5100	800	SS		05	2.0	10	71			Slag sample from below mill. Mill
18-2U	-	3100	000			u						reportedly did not work well. May
												give indication of ore grade of later
	_											copper and gold recovery operations.
	_											Recrystallized limestone, buff w/red
2811 " "	"	3300	600	RR	8-23-81	.03	_1.6	< 10	<10			ing limestone.
									+			Limestone w/slight alteration(argillic)
				RR		× .01	.1	< 10				believed to be indication of thrust
												Jasperoid, gray limestone breccia in vois
5- 11 11	11	3800	3700	sn	8-22-81	.04	4		610-			ematite drusy.
												Large jasperoid & siliceous breccia arce
4455 " "	n	3300	1800	MKP	8-23-81	.05	3.4	180				argillically altered to black & dk.red
												hematite stains in places As & MnOx too
												hedichite isoneraid par as altered or
4456 " "		3050	1700	11				30				mineralized as #4455,mod, hematite stain
	-	(	· \ E.	OF A	SSAY R	ESULTS					and and and and	prosy, more sorrary strict. ter.

1

,

SAM. PLE         LOCATION         COL T         R         S         FNL         FEL UEC         DATE (02/1)         Au (02/1)         As         Sb         D         Description           3347         75         18E         15         0         5000         DKB         4-3-82         0.001         .1         Brecciated Med-Dk.gray V/ainor Lt.gray           1         1         1         1         1         1         1         1         Abund. Fe & Mn in veinlets, minor vugs           3147         75         18E         15         0         5000         DKB         4-3-82         0.001         .1         Au         Abund. Fe & Mn in veinlets, minor vugs           1         1         1         1         1         1         1         Abund.fe abund.stica veinlets.           1348         " " " 3530         4500<"""" " No.001         0.1         1         1         0range-brown jasper locally replacing or ange-brown jasper locally replacing to the stand druzy quartz filled           1343         " " 16         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1	
Local Matrix	
1.0       1       K       5       FRL       FRL <th></th>	
33.7       /s       <	
1       1	
1       1	
3)+8       """"" 3330       4500       """ 40.001       0.1       Image: constraint of the state o	
333       1	
Image:	
Image:	
1       1	
3349       "       "       16       2700       3780       "       "       0.001       0.1       Med.brown to med.gray fractured, bre- cciated jasper. Minor Mn staining in vugs. Abund. Fe stain, vugs intermed.         1       1       1       1       1       1       1       1       1       1       1         1       <	
3349       "       "       16       2700       3780       "       "       0.001       0.11       cciated jasper. Minor Mn staining in vugs. Abund. Fe stain, vugs intermed.         1<	
Image: Solution of the stain in the sta	
Image: Solution of the state of the sta	
3350       "       "       22       720       380       "       "       .004       0.1       Red to lt.gray strongly brecciated, Fe         3350       "       "       22       720       380       "       "       .004       0.1       Red to lt.gray strongly brecciated, Fe         3350       "       "       0.04       0.1       Image: constraint of the stained jasper replacing Me by fault.         3351       "       "       15       4650       1030       "       "       0.001       .6       Strongly copper stained, partially silicified, Ne, limestone out of shaft.         3352       "       "       4630       1030       "       "       .038       .3       Image: constraint of the stained drug quart drug q	
3350       "       2       720       360       100       100       100       stained jasper replacing Me by fault.         3351       "       "       15       4650       1030       "       0.001       .6       Strongly copper stained,partially         3352       "       "       "       0.038       .3       ItMed.brown to med.gray brecciated,         3352       "       "       "       0.038       .3       ItMed.brown to med.gray brecciated,         3352       "       "       "       0.038       .3       ItMed.brown to med.gray brecciated,	
3351       "       "       0.001       .6       Strongly copper stained, partially         3351       "       "       0.001       .6       Strongly copper stained, partially         3352       "       "       "       0.038       .3       LtMed.brown to med.gray brecciated,         3352       "       "       "       0.038       .3       Image: Complex control of the complex contreleee complex contreleee complex contreleee c	
3351       " 15       4650       1030       0.001       10       silicified, Me, limestone out of shaft.         3352       " " " 4630       1030       " " 0.038       .3       LtMed.brown to med.gray brecciated,         3352       " " " 4630       1030       " " 0.038       .3       Image: transform output to med.gray tracticed,         3352       " " " 4630       1030       " " 0.038       .3       Image: transform output to med.gray tracticed,         Image: transform output to med.gray tracticed,       Image: transform output to med.gray tracticed,       Image: transform output to med.gray tracticed,	
3352       "       "       4630       1030       "       "       .038       .3       LtMed.brown to med.gray brecciated,         3352       "       "       "       .038       .3       LtMed.brown to med.gray brecciated,         3352       "       "       "       .038       .3       Image: constraints of the state	
vuggy jasper w/abund. druzy quartz in	
minor fractures from outcrop by shaft.	
Brecciated, Fe stained, Lt-Med.Dk.gray	
jasper, w/abund Fe, minor druzy quartz	
Trace Mn, intermed. vugginess, Minor Cu	
stain on outcrop and a few pieces in	
sample. Jasper replaces Me from bed by	
fault.	

- OSPEC	ī	TA	BLE MO	UNTAINS	i			-	Q	>		COUNTY/STATE Pinal, Az
M .				1 co	Y				RES	LTS		DESCRIPTION
	3 5	FNI	FEL	LEC-	DATE	. Au	Ag (nom)	As (ppm)	Sb (ppm)			result fording a spanich array figetile shale
178 15	188 24	100	4200	wsp	8-81	(.01	<.1	< 10	<10			efvor, on partings surfaces, minor
4/3 25	1013 -0	100	1									Diedching,
			0000			× 01	1 < 1	< 10	< 10			Kv-nighty breached a panky.
474		200	2900			01	< 1	<10	< 10			Kv-intrusive,limonite after pyrite,10%
±25 "		5150	1500		11	1.01	< 1	< 10	× 10-			As #4475, but more hematite stained.
477 "		1700	1950	"	"	× .01	< <u>.1</u>	< 10	< 10		·	Kv-silicified but otherwise only slight alteration (feldspar fresh)
1												Hematite stained, breccia-pipe in Kv,
478 "	" "	1800	1000		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	<.01	.2	20	< 10			minor Pz component.
				<u> </u>			1	. 10	5.10			As #4478,more hematite stained.
479 "		1850	900		1	.01		10	< 10			Ky-vertically sheared hematite stained
-80 "		3100	600		+	.01		1 10	19		1	intrusive? silicified brecciated.
31 "	n n	3800	1100	11		<.01	<u>1</u>	10	< 10			Breccia pipe material-limonite, jaro- site staining, some hematite, No FZ COB-
482 "	11 h	3800	1800	11	11	< .01	< .1	10	< 10			Kv-intrusive porphyry.w/limonite after pyrite & jarosite staining.
								10	510			Near #4481, but more intensely altered
	11 II	4100	1400			5.01	<u> </u>	10	<u></u>			Jasperoid-white silicic limestone frags in red silicic matrix, may be assoc.w/
	" 22	500	900		11	< .01	1.7	180	81	· · · · · · · · · · · · · · · · · · ·		Jasperoid developed along fault contact between Pz and Kv.southernmost mine
							-			+		J2sperol200
							-		1			
						-	-					
						-	-		1			· · · · · · · · · · · · · · · · · · ·
		1					-					

a.

ROSPECT	E	<u>ABLE M</u>	OUNTAIN	IS				C	CINEMUS NED	D D	iur		COUNTY/STATE Limit, Aniguna
	100	ATION		COL- LEC-	DATE	Au	(Ag	As (new)	Sb (ppm)	io <u>l</u> ts	1		DESCRIPTION
	S	PN_	1750	MER	8-23-81	05		30	<u><u><u></u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u></u>				Mematite banded andesite, andesite is med.gray, has bands 5"-1" thick of hem.
458 " " 4		2450	1800			,03	$\frac{2.1}{1(.302/t)}$	60	10				Jasperoid on top of hill, gravish-red drusy in places, med-ahmut ligenite hematite, mod. MnOx. Argiliized slight-
59 " "	11	2550	2000		<u>י</u>	.05	<u> </u>	<u>&lt; 10</u>	< 10			_	"Baked" limestone or volcanics(?)fizz- "Baked" limestone or volcanics(?)fizz- es in places, buggy, clacite veins,abun hematite & limonite argillized slichtly
•• • 00•	11	3900	3100	11	8-24-81	.08	.5	<u>&lt;10</u>	31		· .		lure jasperoid.dk.redågray.drusy.mod. limonite & hematite minor to mod. Mn0 no visible copper mineralization or
+61 " "	11	3600	3250	11	11	. 04	.3	<u>&lt; 10</u>	<u> &lt; io</u>				NE side of large jasperoid,its a sill- cified limestone & chert breccia, dk,red & med.gray pieces of limestone & chert in white to red matrix doesn't fizz.mod breather micor limente minor Mod
02 " "	и	1900	3600	11		.06	.6	< 10	< 10				N part of jasperoid ridge, redógray silicified limestone breccia, mod-ahund limonite & hematite, small quartz crystak- argillized in places.
103 " "	11	1900	2600					<u>&lt;10</u>	< 10				Jasperoid above spring,collected dk.red gray&white limestone,silicilied treectia mod-abund, lim, & hem, mod.Mad, a lew pieces of very argillized buck red material.
D " "	.,	3000	3200	17	11	.08	.5	20	< 10				Middle of big jasperoid, red&gray, mod- heavy hematite, mod. limenite, drusy in places.
05 " "	11	4850	4850		11	.05	<u></u>	<u> </u>	<u> </u>				thire issperaid ir _mod_limanire stain, smells like flint, breecia, gray o white inclusions, massive not diamy located by stream.
.09 " "	29	800	5000	WSD	11	.02	.4	20	<10				Jasperoid developed at contact of KV & P6 limestone.
70 " "		300	3800	11	11	.01	.5	30	<10				Argillized Martin Fmn. Jasperota developed in P2 limestone,grg breeciated,FeSMn staining,breecia pipe?
71 " " 71 " "	**	400 250	1850 500	11		.02 4.01	<u>&lt;.1</u> <.1	< 10 < 10	$\times 10$				Argillically altered thick bedded lime- stone,P2.
	_												

6

ł

#### THE TABLE MOUNTAIN GROUP OF MINES

1-18: 42

Ch. P.J.

The above group is comprised of nine claims in all, "Table Mountain" Nos. 1 to 9 inclusive, and may be described as follows:

Location notices of numbers one and two are recorded in Book 39 in Record of Mines, at pages 519 to 520 respectively, in the County Recorder's office, County of Pinal, Arizona.

Numbers three to nine inclusive, adjoin numbers one and two and comprise with them a consolidated block of about 180 acres.

The Table Mountain mine is located at a considerable elevation on the East shoulder of Table Mountain, a prominent land-mark distant 15 miles east from Mammoth on the San Pedro River, and some twenty miles in a direct line from the copper smelter of Hayden at Winkelman on the S. P. R. R.

No adequate means exist of transport at the present. A feasible route has been reconnoitered to Winkelman, of which the four miles nearest the mine present considerable construction al difficulty. An early road was constructed from Wilcox to some 90 miles to the Southwest and is greatly out of repair. Railway connection can be made with the S. P. R'y near Safford entailing a haul of 30 miles, of which the ten to twelve miles nearest the mine would be over the early road. To rebuild this portion of the road would entail an expenditure of around \$13,000.00.

The mine in common with many other mines of Arizona has a somewhat long and romantic history. Its practical and more recent record began some fifty years ago, when it was operated as a gold mine, some very rich ore being extracted. Inexperienced mining and poor timbering closed the rich stopes and little, if any, attempt was made to reopen them. Some records were made of gold obtained, and such are still available.

Some twenty years later the mine was worked on a larger scale, the ore being open cut over a large area; the road being built at this stage from Wilcox; heavy machinery, including two hundred horse power boilers, engines, copper blast furnace, crushers, blowers, etc., being installed; also adequate water supplies, tanks, office and assay office, and living quarters. Some one hundred and fifty thousand tons of ore and waste were mined and some 2000 feet of development done, almost entirely in the form of tunnels into the ore body. A considerable amount of copper ore was smelted for black copper, (Metallic) using the local ironstone as flux. As the ore contained no sulphur, no concentration of the gold, silver and copper could be made in a matte, and no attempt was made to secure pyritic ore as flux. The attempt to smelt the oxidized ore to metallic copper was inevitably a failure, owing to the continual freezing of the furnace. No method was known at the time of treating oxidized ore in limestone, and operations were suspended. From time to time small parcels of ore, amounting to a few hundred tons, were hand picked and shipped out by packing. The road having been allowed to get into disrepair. The ore still in the bins is of good quality, assaying 8% copper, \$4.00 in gold and 3 ounces of silver per ton. The amount of ore smelted did not exceed a few thousand tons of 7 to 9 percent copper ore.

The surrounding country is high and deeply scored with deep gorges and canons. The high peaks, flat topped, form spectacular land-marks visible upwards of one hundred miles. These cappings are remnants from the denudation of acid lava flows of a comparatively recent age. These lavas associated with tuffs and limestone are the prominent local geological features. The ore deposits occur in almost horizontally bedded limestone of probably Ordiviciar age, capped immediately by the andesite, and to the South in rault contact with a more basic intrusive.

The closely bedded limestone shows the usual silicification consequent upon metasomatic deposition of ore, and to a minor extent the development of a jasperoid gold-bearing quartz. No marmorization is in evidence even in the contact with the overlying lavas. The mineral bearing solutions were probably due to a dyke or dykes cutting the limestone in a general North and South direction parallel to the strike. No evidence is known of mineralization West of this intrusion, and little alteration is observable at the immediate contact, any crushed or brecciated limestone having been dissolved and removed or redeposited as calcite. The line of mineralization is very sharp. A tunnel less than 100 feet below the ore deposit shows little alteration beyond silicification. The ore hody is probably only a remnant of what it was before being denuded, but still gives evidence of enormous reserves of ore. The vertical thickness is apparently more than 200 feet, and may be much more, giving a cross-section of this height by a breadth of from 400 to 600 feet, and for a length on the strike of about 4000 feet, exclusive of its Northerly extension over two claims.

The ore body is immediately overlain by characteristic hornstone (silicified limestone). Much of the ore body consists of residual and more insoluble ore together with a brecciated cherty material, with the usual residual material consequent upon the weathering and leaching of the ore body and accompanying limestone. The foregoing is more characteristic of the Northern part of the ore body, which is strongly slumped; further South the ore, better protected by the over-burden, shows less evidence of leaching, but is very cavernous. One cave, at least, reached by a tunnel driven 300 feet into the ore body is as far as explored some 50 to 60 feet wide and 300 feet in length. This will be referred to later.

-2-

The ore as originally deposited was of metasomatic origin, and due to ascending solutions which selected the soft and nearly parallel bedded limestone as a means of egress and replacement, the more massive limestone below being but slightly acted upon. Weathering and the free access of surface waters at a later stage brought about complete oxidation, concentrating the small amount of lead derived from the limestone in the resulting residual sandy clays. This lead collected and retained vanadium derived from the volcanics. Associated with this residual mass is much unaltered silicified limestone ore, impregnated with copper silicate and carbonate. In the immediate vicinity of the contact with the intrusive is a certain amount of barytes, and closely adjacent to the contact is a vertical vein of gold-bearing jasperoid quartz of considerable width. In places this is associated with a clear quartz, which is extremely rich. In the immediate vicinity of the contact associated with the calcite, introduced apparently by surface waters, is a most unusual deposit of partially crystalline masses of vanadinite intergrown with a clear glassy quartz. This vanadinite of varying shades of orange, lemon and red, is a very beautiful mineral, at times approaching eosite in composition, at other times corresponding to pure vanadinite. Its general tenor is from 5 to 8% vanadic acid, the balance mainly quartz and lead.

Reference has been made to caves. It is recorded that the walls of these caves exhibited remarkable color effects of yellow and red. It is probable that this is due to a deposit of this vanadinite.

The massive and to some extent residual limestone of the ore body carry a certain amount of silicate and carbonate of copper, and lends itself to selective mining, a proportion being of shipping grade, a larger proportion being of lower tenor. The ore body for a small and varying depth requires stripping of the more leached material, which contains some high grade copper carbonate. The jasperoid quartz associated with gold is an ore of entirely different character, being red, hard and brittle, carrying, when not associated with high values, from \$5.00 to \$18.00 in gold, 2 to 3 Quarces in silver, three to four percent lead, one to two percent vanadic acid. This gold ore, and ore in its vicinity, will require special treatment. Coarse gold can be shown by dishwashing along the strike, and even on the roadway into the mine.

The brecciated and residual ores, already referred to, are of a different class, and exist on a very large scale. Little, if any, values exist in the cherty material; copper occurring in masses and boulders from time to time in silicified limestone. The essential values are in the residual somewhat sandy clay material. This includes the fines and even the surface soil. Whilst values vary, an average is one half of one percent vanadic acid, three percent lead and a little silver and gold. The cherty material, 60 to 70 percent by weight can be removed by screening after some attrition at a fine mesh, the balance carrying practically all the values other than those recoverable by hand picking on belts or other appliances. This lead vanadinite lends itself, though finely crystalline, to ordinary concentration. The ore is therefore, of several distinct classes, high and low grade copper carbonates, low grade vanadium bearing residual ores associated with copper bearing ore in boulders and in isolated masses, gold, and leadvanadium quartz ore, and finally the massive vanadinite locally called "candy ore" on account of its attractive appearance. A further feature is the presence of vanadium associated with the copper throughout the whole ore body to the extent of from one half percent to three percent vanadic acid. The recovery of this is a metallurgical problem to be solved.

The probable ore amounts to millions of tons. The ore actually in sight may be regarded as approximately one million tons of ore, which in some form or another lends itself to payable treatment. The ore actually mined and on ore and spoil banks amounts to one hundred and fifty to one hundred and sixty thousand tons, of which one third may be regarded as waste, the balance being an ore of milling grade, and yielding around <u>one fifth of ore of shipping grade</u>, if hand picked, after washing, on tests, the balance treatable as copper and concentrating ore. The latter with reference to the goldlead-vanadium content.

As may be already gathered, the ore does not lend itself to copper concentration, nor to smelting on the spot. The copper ore can be efficiently and cheaply treated by the ammonia process, associated minerals being recoverable in part by subsequent concentration. As stated, the residual sandy clay ores present no difficulty. Finally the massive vanadinite can be recovered by selective mining and hand-picking in the main, the balance by simple concentration. This hand-picked ore can be easily separated from its associated quartz by crushing and tabling, yielding a very high grade lead vanadium concentrate.

The blast furnace, including boilers, engines, blowers, crusher, running gear, tanks, cars, as well as many unroofed buildings and sundries, constitute a valuable asset and would be of great use in case of establishing a crushing, ammonia leaching, and concentration plant.

Development has been incidentally described in the foregoing, consisting mainly in open cutting and some 2000 feet of tunneling. A shaft was originally sunk 125 feet on the gold ore, and 40 feet wide. The shaft was sunk from the 700 foot tunnel driven some 35 feet below the upper Nos. 1, 2, and 3 tunnels, and 100 feet above the level of the lower tunnel No. 5, which has been driven in limestone at right angles to the strike of the ore body, some 500 feet, and should cut the dyke within 200 feet. Tunnels Nos. 1, 2, and 3 are driven at divergent angles at the same level from different points, 135 feet above No. 5 or lowest; No. 1 being driven Southwest 300 feet to the large cave; No. 2 at a more obtuse angle 530 feet to contact. No. 3 driven to, and extends past the shaft. No. 4 tunnel at an intermediate level and at a slight angle to the strike has been driven some 700 feet through copper ore and brecciated vanadium bearing material associated with some high grade copper bearing boulders of unleached ore. In each case these tunnels have cut the high grade band of vanadinite at varying distances from the portals. These portals are at present closed with one exception, No. 1, owing to slides of ore and waste, otherwise the tunnels are believed to be in good order.

As stated, the ore is of several classes, all of which are payable in varying degrees, including even the weathered surface soil. The bulk consisting, as already described, of a loosely coherent material carrying low values of vanadium, lead, and precious metals, is amenable to washing, discarding all but the fine material below 20 mesh, after belt picking of the coarser copper-bearing ore. This fine material can be efficiently and cheaply tabled to a high grade concentrate. The highest grade copper ore is suitable for shipping, the intermediate and low grade lend themselves ideally to ammonia leaching. One of the most important features of the ore is undoubtedly the high grade massive "candy ore". A considerable deposit of this material is indicated in a band up to 10 feet in width parallel to the strike and fault contact. This has been cut in every case by the tunnels at the expected point. The cave deposits of this ore may be of the utmost importance.

It is advised to make a survey of, and effect the repairs of the road required to be made to Klondyke to the east, an intermediate point between the mine and the S. P. R'y. A further reconnaisance might be made of an alternate route towards Winkelman.

Certain mine equipment is required, including compressor and machine drills, before commencing operations, and repairs are required to the various unroofed buildings. Repairs are also required to the engines. The boilers are apparently in good condition. It would be advisable whilst carrying out a policy of general development, largely exploratory, to extend the lower tunnel and put up raises at, and before, reaching the contact. It is a point to be decided whether the ore be won from below by gloryholing from a series of raises to the horizontal ore body, or by simple open cutting. In any case, it will probably be advisable to selectively mine the gold and high grade vanadium ore.

The large amount of ore of varying grades already mined warrant the installation of a mill on a moderate scale. Such a milling plant might take the form of belt picking of the ore and spoil banks, the high grade ore shipped, the lower grade crushed and leached, the waste discarded, the fine material concentrated on tables. This procedure while profitable would afford information as to treatment on a large scale. Development would simultaneously be carried on and the mine opened for larger production. The grade of copper ore ranges up to 18 percent and carries gold and silver from \$3.00 to \$8.00. This in part may be recovered by concentration, but preferably by smelting where grade of copper permits. The large ore and spoil banks, from a number of average samples, evidence contents of more or less recoverable values of around \$12.00 per ton. Some 400 to 600 tons of selected ore from this source have been shipped from time to time, of a grade exceeding 14% copper.

The average value of the ore and waste in ore and spoil banks, coupled with the value of the ore already shipped and smelted, may be taken as it were, as a cross section of the assay value of the ore body, a value difficult to arrive at by sampling in situ.

Whilst mining will be in the cheapest possible class, open cutting or gloryholing, consideration must be taken of the cost of stripping and the disposal of this overburden. <u>Mining</u> costs alone should be under \$1.00 (one dollar) per ton. Onesixth of the whole will probably be overburden waste to be stripped.

Cost of treatment, including ammonia leaching, and special treatment of gold and vanadium ores, should not exceed \$2.50 (two and one half dollars) and maybe less. Extraction percentage cannot be closely estimated in advance. Copper recovery would almost certainly exceed 80% - a high recovery would be made of the "candy ore" vanadium contents.

Whilst the impressive size of the ore body would appear to necessitate large capital it will be noted that the ore is oxidized and lends itself to simple crushing and leaching and subsequent concentration for values other than copper. This higher grade ore lending itself eminently to selective mining, a moderate initial capital not exceeding \$60,000.00 might be employed with advantage, larger capital being introduced when the ore deposits are more thoroughly opened by development. The ore contained in the spoil banks alone amply warrants the above suggested expenditure.

> R. A. Black, M.E. Tombstone, Arizona. December 14th, 1928.

Edwin A. Stone 6-8-38

## CONCLUSIONS CONCERNING MINING PROPERTIES EXAMINED IN SOUTHERN ARIZONA

#### Teble Mountain Group, north of Copper Creek, Arizona

The mineralization consists of barren-looking jespery silica, stained with iron from pyrite, and with irregular narrow seems of copper """"""" that occur sporadically. The jasperoid makes on nearly vertical fractures primarily, but the flat dipping contact of Paleozoic limestone and overlying volcanics is silicified between adjoining steep fractures. The last mentioned type of silicification is very prominent in places. Unless this silicified contact and the silicified limestone along the steep fractures carries gold and silver in economic amount, there is no value to the property. Three representative samples were taken with the following results: Sample #1---Au: Tr ; Ag: 0.3. Cu: .08% Semple #2---Au: Tr ; Ag: 0.3. Cu: .12.7

Semple #2----Au: Tr ; Ag: 0.3 ; Cu: .12 % Semple #3----Au:0.14 ; Ag: 0.5 ; Cu:/.60%

The early work on this property consisted of sorting the narrow sporadic copper stained streaks from a large amount of waste. This was obtained mainly from open hillside cuts just above the smelter. Apparently the smelter operated only a few days for only 50-75 tons of slag on dump. Fusion appeared to be good. Expect the sorted ore was too low grade and caused shutdown. Still some sorted ore on dump-10 or 20 tons. 50 cords of wood still piled at smelter.

The property was connected to Ariveipa creek by a wagon road. Country rough and transportation is an important problem. Estimate road to be 10 miles long.

Don't consider this property to have any value unless the barren-looking silica carries values, in gold and/or silver. Reymert much better.

#### Tower Lake Prospect.

The Tower Lake Prospect consists of approximately 14,730 acres which are divided into the "Tower A" area (approximately 8,170 acres) and the Tower B area (approximately 6,560 acres). The Company has maintained the right to earn a  $38\frac{1}{2}\%$  interest in the Tower A area and a 40% interest in the Tower B area by expenditure of approximately \$98,000 (Canadian) in exploration costs prior to December 31, 1984. This property is subject to a joint venture agreement with Saskatchewan Mining Development Corporation ( $38\frac{1}{2}\%$  partner in Tower A and 40% partner in Tower B), Golden Rule Resource Ltd. (18% partner in Tower A and 20\% partner in Tower B) and Comaplex Resources (5% partner in Tower A).

#### Waddy Lake Prospect.

The Waddy Lake Prospect consists of approximately 4,028 acres in which the Company owns a 25% interest. This property is subject to a joint venture agreement with Waddy Lake Resources Ltd. (75% partner).

#### Table Mountain Prospect.

The Table Mountain Prospect consists of 40 unpatented lode mining claims and mining leases covering interests in two patented lode mining claims located in Pinal County, Arizona and covering approximately 750 acres.

#### Tidal Wave Prospect.

The Tidal Wave Prospect consists of 96 unpatented lode mining claims owned by the Company which cover approximately 1,600 acres located in Madison County, Montana. The properties in this prospect are subject to an agreement with Houston Oil and Minerals Exploration Company ("HOMEX") pursuant to which HOMEX must expend \$200,000.00 within 2 years to earn a 51% interest in the prospect as the Company's joint venture partner. If the Company does not elect to participate in a joint venture, HOMEX can lease the property by expending an additional \$200,000.00 by the end of the third year. Under the lease arrangement, if exercised, HOMEX is required to pay the Company a 5% net return production royalty until the Company receives \$1,500,000.00, at which time its interest in the prospect will terminate. If HOMEX fails to fulfill its expenditure requirements under the agreement, its interest in the properties will revert to the Company, without recourse to HOMEX.

#### West Tintic Prospect.

The West Tintic Prospect consists of approximately 3,720 acres located in Juab and Tooele Counties, Utah. The Company owns the following mineral interests in this prospect: 113 unpatented lode mining claims; a mining lease covering 1,440 acres which reserves to the lessor a production royalty of 6% of the net smelter returns from ores produced from the leased properties; and a Utah State lease covering approximately 80 acres which provides that the state will receive a production royalty equal to 4% of the amount received by lessee, less transportation costs, from the sale of ores produced from the leased premises.

#### The Winkler Prospect.

The Winkler Prospect consists of 78 unpatented lode mining claims covering approximately 2,066 acres located in Hidalgo County, New Mexico. The Company has a lease covering 7 of these claims which provides the lessor with a 5% net smelter return royalty on ores produced from the leased properties and a lease covering 71 claims which provides lessor with a  $12\frac{1}{2}\%$  net proceeds royalty from ores produced from the leased properties.

#### Other Prospects held by Goldsil Resources, Ltd.

The following are brief descriptions of other prospects held by Goldsil Resources which are currently being evaluated and for which the Company has committed no funds.

FROM: GOLDSIL MINING AND MILLING

1

\*\*\*

42

INC.

Phospectus 1983



#### DEPARTMENT OF MINERAL RESOURCES STATE OF ARIZONA FIELD ENGINEERS REPORT

Mine Table Mountain Mine Date July 13, 1960 & July 27, 1960

District Saddle Mountain District, Pinal Co. Engineer Axel L. Johnson

Subject: Field Engineers Report. Information from Mrs. Mattie E. Young & Ben G. Messer

Location On Table Mountain, about 12 miles N. of Mammoth by airline & 30 miles by road.

Number of Calims 10 unpatented claims.

Owners Mrs. Mattie E. Young, Box 75, Mammoth, and daughter Mrs. Molly Morgan, Mammoth

Lessee Henry W. Nichols, Oracle

Option to Purchase + Duval Sulphur & Potash Co., Box 11277, Tucson 2, Ariz.

Principal Minerals 'Copper ores, with some wulfenite and vanadinite

Present Mining Activity Exploration work, consisting of geological field work and mapping, sampling the old tunnels, etc. Also some road building. 2 men working.

#### Past History and Production

The past history is very vague. The property is reported as having been located in 1875. It was purchased by George G. Young, late husband of Mattie E. Young in 1923. Worked last in 1930.

No records available on past production.

#### Old Mine Workings

Principal old workings are 1 adit about 450 ft. long, called the upper tunnel, and one adit also about 450 ft. long, called the lower tunnel.

#### Proposed Plans

E. atured 1196

Ben G. Messer of Duvàl Sulphur and Potash Co. states that they plan on doing additional exploration work on the property with some diamond drilling.

Mrs. Mattie E. Young dec'd May 21, 1969 (Pay Dirt 6/23/69)

# THE TABLE MOUNTAIN GROUP OF MINES

1-18-22

CH. AU.A.

The above group is comprised of nine claims in all, "Table Mountain" Nos. 1 to 9 inclusive, and may be described as follows:

Location notices of numbers one and two are recorded in Book 39 in Record of Mines, at pages 519 to 520 respectively, in the County Recorder's office, County of Pinal, Arizona.

Numbers three to nine inclusive, adjoin numbers one and two and comprise with them a consolidated block of about 180 acres.

The Table Mountain mine is located at a considerable elevation on the East shoulder of Table Mountain, a prominent land-mark distant 15 miles east from Mammoth on the San Pedro River, and some twenty miles in a direct line from the copper smelter of Hayden at Winkelman on the S. P. R. R.

No adequate means exist of transport at the present. A feasible route has been reconnoitered to Winkelman, of which the four miles nearest the mine present considerable constructional difficulty. An early road was constructed from Wilcox to some 90 miles to the Southwest and is greatly out of repair. Railway connection can be made with the S. P. R'y near Safford entailing a haul of 30 miles, of which the ten to twelve miles nearest the mine would be over the early road. To rebuild this portion of the road would entail an expenditure of around \$13,000.00.

The mine in common with many other mines of Arizona has a somewhat long and romantic history. Its practical and more recent record began some fifty years ago, when it was operated as a gold mine, some very rich ore being extracted. Inexperienced mining and poor timbering closed the rich stopes and little, if any, attempt was made to reopen them. Some records were made of gold obtained, and such are still available.

Some twenty years later the mine was worked on a larger scale, the ore being open cut over a large area; the road being built at this stage from Wilcox; heavy machinery, including two hundred horse power boilers, engines, copper blast furnace, crushers, blowers, etc., being installed; also adequate water supplies, tanks, office and assay office, and living quarters. Some one hundred and fifty thousand tons of ore and waste were mined and some 2000 feet of development done, almost entirely in the form of tunnels into the ore body. A considerable amount of copper ore was smelted for black copper, (Metallic) using the local ironstone as flux. As the ore contained no sulphur, no concentration of the gold, silver and copper could be made in a matte, and no attempt was made to secure pyritic ore as flux. The attempt to smelt the oxidized ore to metallic copper was inevitably a failure, owing to the continual freezing of the furnace. No method was known at the time of treating oxidized ore in limestone, and operations were suspended. From time to time small parcels of ore, amounting to a few hundred tons, were hand picked and shipped out by packing. The road having been allowed to get into disrepair. The ore still in the bins is of good quality, assaying 8% copper, \$4.00 in gold and 3 ounces of silver per ton. The amount of ore smelted did not exceed a few thousand tons of 7 to 9 percent copper ore.

31.53 9000.

The surrounding country is high and deeply scored with deep gorges and canons. The high peaks, flat topped, form spectacular land-marks visible upwards of one hundred miles. These cappings are remnants from the denudation of acid lava flows of a comparatively recent age. These lavas associated with tuffs and limestone are the prominent local geological features. The ore deposits occur in almost horizontally bedded limestone of probably Ordiviciar age, capped immediately by the andesite, and to the South in rault contact with a more basic intrusive.

The closely bedded limestone shows the usual silicification consequent upon metasomatic deposition of ore, and to a minor extent the development of a jasperoid gold-bearing quartz. No marmorization is in evidence even in the contact with the overlying lavas. The mineral bearing solutions were probably due to a dyke or dykes cutting the limestone in a general North and South direction parallel to the strike. No evidence is known of mineralization West of this intrusion, and little alteration is observable at the immediate contact, any crushed or brecciated limestone having been dissolved and removed or redeposited as calcite. The line of mineralization is very sharp. A tunnel less than 100 feet below the ore deposit shows little alteration beyond silicification. The ore body is probably only a remnant of what it was before being denuded, but still gives evidence of enormous reserves of ore. The vertical thickness is apparently more than 200 feet, and may be much more, giving a cross-section of this height by a breadth of from 400 to 600 feet, and for a length on the strike of about 4000 feet, exclusive of its Northerly extension over two claims.

The ore body is immediately overlain by characteristic hornstone (silicified limestone). Much of the ore body consists of residual and more insoluble ore together with a brecciated cherty material, with the usual residual material consequent upon the weathering and leaching of the ore body and accompanying limestone. The foregoing is more characteristic of the Northern part of the ore body, which is strongly slumped; further South the ore, better protected by the over-burden, shows less evidence of leaching, but is very cavernous. One cave, at least, reached by a tunnel driven 300 feet into the ore body is as far as explored some 50 to 60 feet wide and 300 feet in length. This will be referred to later.

The ore as originally deposited was of metasomatic origin, and due to ascending solutions which selected the soft and nearly parallel bedded limestone as a means of egress and replacement, the more massive limestone below being but slightly acted upon. Weathering and the free access of surface waters at a later stage brought about complete oxidation, concentrating the small amount of lead derived from the limestone in the resulting residual sandy clays. This lead collected and retained vanadium derived from the volcanics. Associated with this residual mass is much unaltered silicified limestone ore, impregnated with copper silicate and carbonate. In the immediate vicinity of the contact with the intrusive is a certain amount of barytes, and closely adjacent to the contact is a vertical vein of gold-bearing jasperoid quartz of considerable width. In places this is associated with a clear quartz, which is extremely rich. In the immediate vicinity of the contact associated with the calcite, introduced apparently by surface waters, is a most unusual deposit of partially crystalline masses of vanadinite intergrown with a clear glassy quartz. This vanadinite of varying shades of orange, lemon and red, is a very beautiful mineral, at times approaching eosite in composition, at other times corresponding to pure vanadinite. Its general tenor is from 5 to 8% vanadic acid, the balance mainly quartz and lead.

Reference has been made to caves. It is recorded that the walls of these caves exhibited remarkable color effects of yellow and red. It is probable that this is due to a deposit of this vanadinite.

The massive and to some extent residual limestone of the ore body carry a certain amount of silicate and carbonate of copper, and lends itself to selective mining, a proportion being of shipping grade, a larger proportion being of lower tenor. The ore body for a small and varying depth requires stripping of the more leached material, which contains some high grade copper carbonate. The jasperoid quartz associated with gold is an ore of entirely different character, being red, hard and brittle, carrying, when not associated with high values, from \$5.00 to \$18.00 in gold, 2 to 3 <u>ounces in silver, three to four percent lead, one to two percent</u> vanadic acid. This gold ore, and ore in its vicinity, will require special treatment. Coarse gold can be shown by dishwashing along the strike, and even on the roadway into the mine.

The brecciated and residual ores, already referred to, are of a different class, and exist on a very large scale. Little, if any, values exist in the cherty material; copper occurring in masses and boulders from time to time in silicified limestone. The essential values are in the residual somewhat sandy clay material. This includes the fines and even the surface soil. Whilst values vary, an average is one half of one percent vanadic acid, three percent lead and a little silver and gold. The cherty material, 60 to 70 percent by weight can be removed by screening after some attrition at a fine mesh, the balance carrying practically all the values other than those recoverable by hand picking on belts or. bearing ore in boulders and in isolated masses, gold, and leadvanadium quartz ore, and finally the massive vanadinite locally called "candy ore" on account of its attractive appearance. A further feature is the presence of vanadium associated with the copper throughout the whole ore body to the extent of from one half percent to three percent vanadic acid. The recovery of this is a metallurgical problem to be solved.

The probable ore amounts to millions of tons. The ore actually in sight may be regarded as approximately one million tons of ore, which in some form or another lends itself to payable treatment. The ore actually mined and on ore and spoil banks amounts to one hundred and fifty to one hundred and sixty thousand tons, of which one third may be regarded as waste, the balance being an ore of milling grade, and yielding around one fifth of ore of shipping grade, if hand picked, after washing, on tests, the balance treatable as , copper and concentrating ore. The latter with reference to the goldlead-vanadium content.

As may be already gathered, the ore does not lend itself to copper concentration, nor to smelting on the spot. The copper ore can be efficiently and cheaply treated by the ammonia process, associated minerals being recoverable in part by subsequent concentration. As stated, the residual sandy clay ores present no difficulty. Finally the massive vanadinite can be recovered by selective mining and hand-picking in the main, the balance by simple concentration. This hand-picked ore can be easily separated from its associated quartz by crushing and tabling, yielding a very high grade lead vanadium concentrate.

The blast furnace, including boilers, engines, blowers, crusher, running gear, tanks, cars, as well as many unroofed buildings and sundries, constitute a valuable asset and would be of great use in case of establishing a crushing, ammonia leaching, and concentration plant.

Development has been incidentally described in the foregoing, consisting mainly in open cutting and some 2000 feet of tunneling. A shaft was originally sunk 125 feet on the gold ore, and 40 feet wide. The shaft was sunk from the 700 foot tunnel driven some 35 feet below the upper Nos. 1, 2, and 3 tunnels, and 100 feet above the level of the lower tunnel No. 5, which has been driven in limestone at right angles to the strike of the ore body, some 500 feet, and should cut the dyke within 200 feet. Tunnels Nos. 1, 2, and 3 are driven at divergent angles at the same level from different points, 135 feet above No. 5 or lowest; No. 1 being driven Southwest 300 feet to the large cave; No. 2 at a more obtuse angle 530 feet to contact. No. 3 driven to, and extends past the shaft. No. 4 tunnel at an intermediate level and at a slight angle to the strike has been driven some 700 feet through copper ore and brecciated vanadium bearing material associated with some high grade copper bearing boulders of unleached ore. In each case these tunnels have cut the high grade band of vanadinite at varying distances from the portals. These portals are at present closed with one exception, No. 1, owing to slides of ore and waste, otherwise the tunnels are believed to be in good order.

As stated, the ore is of several classes, all of which are payable in varying degrees, including even the weathered surface soil. The bulk consisting, as already described, of a loosely coherent material carrying low values of vanadium, lead, and precious metals, is amenable to washing, discarding all but the fine material below 20 mesh, after belt picking of the coarser copper-bearing ore. This fine material can be efficiently and cheaply tabled to a high grade concentrate. The highest grade copper ore is suitable for shipping, the intermediate and low grade lend themselves ideally to ammonia leaching. One of the most important features of the ore is undoubtedly the high grade massive "candy ore". A considerable deposit of this material is indicated in a band up to 10 feet in width parallel to the strike and fault contact. This has been cut in every case by the tunnels at the expected point. The cave deposits of this ore may be of the utmost importance.

It is advised to make a survey of, and effect the repairs of the road required to be made to Klondyke to the east, an intermediate point between the mine and the S. P. R'y. A further reconnaisance might be made of an alternate route towards Winkelman.

Certain mine equipment is required, including compressor and machine drills, before commencing operations, and repairs are required to the various unroofed buildings. Repairs are also required to the engines. The boilers are apparently in good condition. It would be advisable whilst carrying out a policy of general development, largely exploratory, to extend the lower tunnel and put up raises at, and before, reaching the contact. It is a point to be decided whether the ore be won from below by gloryholing from a series of raises to the horizontal ore body, or by simple open cutting. In any case, it will probably be advisable to selectively mine the gold and high grade vanadium ore.

The large amount of ore of varying grades already mined warrant the installation of a mill on a moderate scale. Such a milling plant might take the form of belt picking of the ore and spoil banks, the high grade ore shipped, the lower grade crushed and leached, the waste discarded, the fine material concentrated on tables. This procedure while profitable would afford information as to treatment on a large scale. Development would simultaneously be carried on and the mine opened for larger production. The grade of copper ore ranges up to 18 percent and carries gold and silver from \$3.00 to \$8.00. This in part may be recovered by concentration, but preferably by smelting where grade of copper permits. The large ore and spoil banks, from a number of average samples, evidence contents of more or less recoverable values of around \$12.00 per ton. Some 400 to 600 tons of selected ore from this source have been shipped from time to time, of a grade exceeding 14% copper.

The average value of the ore and waste in ore and spoil banks, coupled with the value of the ore already shipped and smelted, may be taken as it were, as a cross section of the assay value of the ore body, a value difficult to arrive at by sampling in situ.

Whilst mining will be in the cheapest possible class, open cutting or gloryholing, consideration must be taken of the cost of stripping and the disposal of this overburden. Mining costs alone should be under \$1.00 (one dollar) per ton. Onesixth of the whole will probably be overburden waste to be stripped.

Cost of treatment, including ammonia leaching, and special treatment of gold and vanadium ores, should not exceed \$2.50 (two and one half dollars) and maybe less. Extraction percentage cannot be closely estimated in advance. Copper recovery would almost certainly exceed 80% - a high recovery would be made of the "candy ore" vanadium contents.

Whilst the impressive size of the ore body would appear to necessitate large capital it will be noted that the ore is oxidized and lends itself to simple crushing and leaching and subsequent concentration for values other than copper. This higher grade ore lending itself eminently to selective mining, a moderate initial capital not exceeding \$60,000.00 might be employed with advantage, larger capital being introduced when the ore deposits are more thoroughly opened by development. The ore contained in the spoil banks alone amply warrants the above suggested expenditure.

> R. A. Black, M.E. Tombstone, Arizona. December 14th, 1928.

Edwin A. Stone 6-8-38

## CONCLUSIONS CONCERNING MINING PROPERTIES EXAMINED IN SOUTHERN ARIZONA

# Table Mountain Group, north of Copper Creek, Arizona

The minerelization consists of barren-looking jaspery silica, stained with iron from pyrite, and with irregular narrow seems of copper and that occur sporadically. The jasperoid makes on nearly vertical frectures primarily, but the flat dipping contact of Peleozoic limestone end overlying volcanics is silicified between adjoining steep fractures. The last mentioned type of silicification is very prominent in places. Unless this silicified contact and the silicified limestone along the steep fractures carries gold and silver in economic amount, there is no value to the property. Three representative samples were taken with the following results: Sample #1---Au: 7r : Ag: 0.3 : Cu: .08% Sample #2---Au: 7r : Ag: 0.3 : Cu: ./2% Sample #5----Au:0./4 : Ag: 0.5 : Cu:/,60%

The early work on this property consisted of sorting the narrow sporadic copper stained streaks from a large amount of waste. This was obtained mainly from open hillside cuts just above the smelter. Apparently the smelter operated only a few days for only 50-75 tons of slag on dump. Fusion appeared to be good. Expect the sorted ore was too low grade and caused shutdown. Still some sorted ore on dump-10 or 20 tons. 50 cords of wood still piled at smelter.

The property was connected to Ariveipa creek by a wagon road. 'Country rough and transportation is an important problem. Estimate road to be 10 miles long.

tent problem. Estimate road to be 10 miles long. Don't consider this property to have any value unless the barren-looking silica carries values, in gold and/or silver. Reymert much better.





