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

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03/20/90

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES FILE DATA

PRIMARY NAME: REWARD

ALTERNATE NAMES:
PATENTED CLAIM MS 692
PHONODOREE SHAFT
GEORGE SHAFT
BAT TUNNEL
UNITED ARIZONA CU CO. PROP.
CHRISTMAS GIFT
CASA GRANDE DEV. CO. PROPERTY
LONDON ARIZ. CO. PROPERTY
VIRGINIA
SOUTH REWARD
COPPER WEDGE
EAST REWARD
COPPER SILVER
PHENOMENON
PETROCHIS CLAIM

PINAL COUNTY MILS NUMBER: 684B

LOCATION: TOWNSHIP 9 S RANGE 3 E SECTION 34 QUARTER SW
LATITUDE: N 32DEG 36MIN 01SEC LONGITUDE: W 112DEG 02MIN 35SEC
TOPO MAP NAME: KOHATK - 7.5 MIN

CURRENT STATUS: PAST PRODUCER

COMMODITY:
COPPER SULFIDE
ZINC SULFIDE
COPPER OXIDE
ZINC OXIDE
LEAD SULFIDE
GOLD
SILVER
IRON HEMA-MAGNE

BIBLIOGRAPHY:
ADMMR REWARD MINE FILE
TENNEY, J. "HIST OF MNG IN AZ" P 335-6;1927-9
TENNEY, J.B. "ECON GEOL RECONN OF CASA GRANDE MNG DIST" AZBM 1934
WAR MINERALS RPT 142 (ZINC,COPPER) USBM 1943
DENTON, T.C. "EXPL OF REWARD ZINC DPST, PINAL CO., AZ" USBM RI 3975; 1946
ADMMR CHRISTMAS GIFT FILE

CONTINUED ON NEXT PAGE

CONTINUATION OF REWARD

ARIZONA MNG JOURNAL, APRIL 1918, P 28
ADMMR U FILE
AEC PRELIM RECONN RPT 172-488, P 9, 16; 1953
ADMMR REWARD MINE COLVO FILE
USAEC PRELIM. RECONN. REPORT 172-488, 1953,
P. 9 & 16

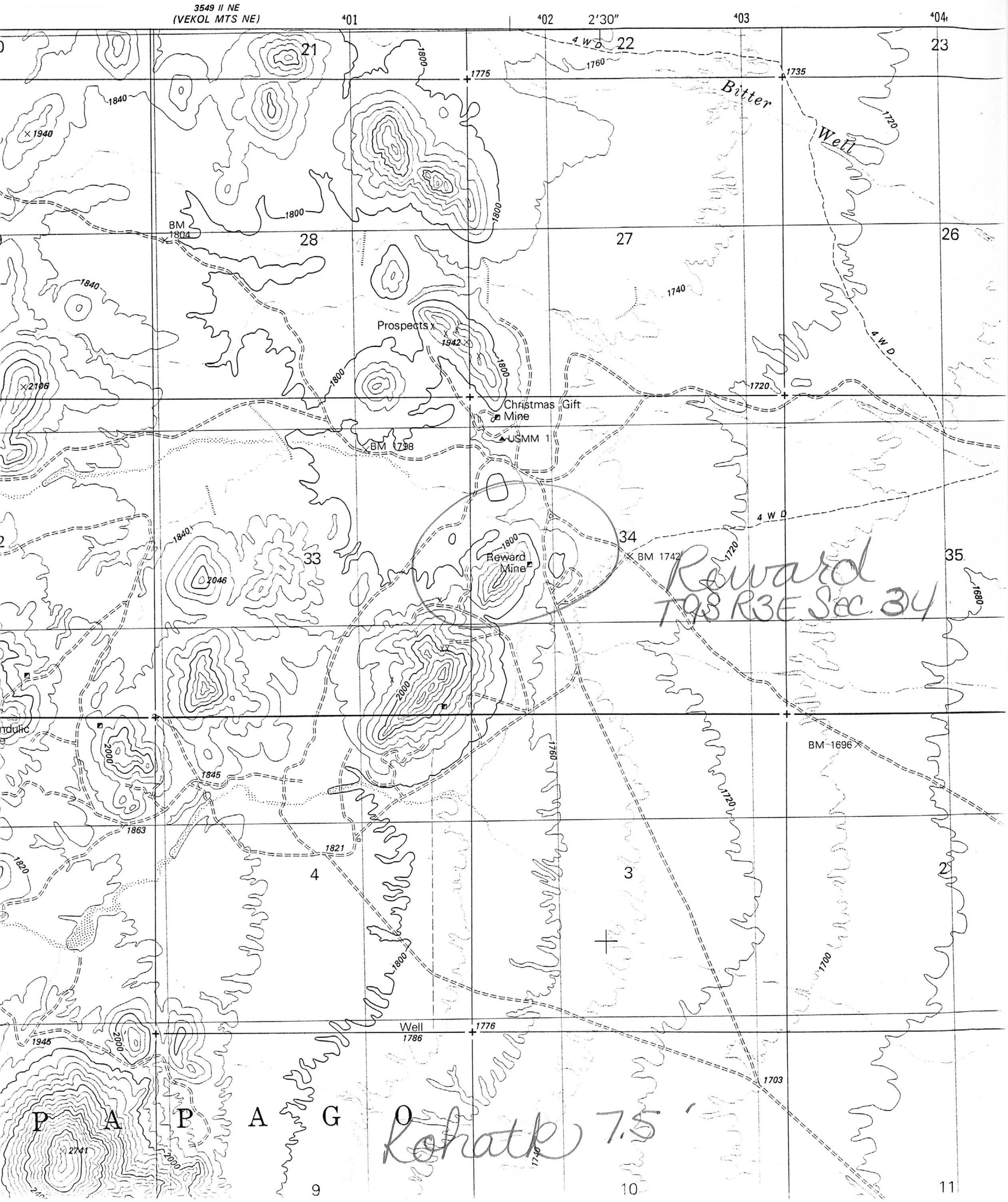
See: Arizona Mining Journal April 1918 p. 28

See: War Minerals Report, #142, 10 pages, Bureau of Mines, Dept. of Interior, (1942), 3/10/77, a.p.

See: Casa Grande (mines file) Casa Grande History Report

MAPS - Upstairs in the Drawer 4 - Flat File

*


3549 II NE
(VEKOL MTS NE)
401
402
2'30"
403
404
21
22
23
4 W D
1760
1775
1735
Bitter
Well
1720
1840
1940
1800
BM
1804
28
27
26
1840
1740
Prospects
1942
4 W D
2106
1720
Christmas Gift
Mine
USMM 1
BM 1798
4 W D
1840
2046
33
34
BM 1742
Reward
Mine
35
1680
2000
1760
1720
BM 1696
1845
1863
1821
1820
4
3
2
1700
1945
Well
1786
1776
1703
2000
P A P A G O
2741
1740
9
10
11
Reward
T9S R3E Sec. 34
Kohatk 7.5'

*GENERAL REFERENCES

REFERENCE 1 F1 < AGGMT - USBM FILE DATA

REFERENCE 2 F2 < AGGMT CLIPPINGS FILES

REFERENCE 3 F3 < ADMR FILE DATA

REFERENCE 4 F4 < BLM DISTRICT SHEET 552

L110 CONT. < DEVELOPMENT CO (1907-1908), REWARD MNG. CO. (VAN BROOKS)(1914-1916), K. POMEROY AND DR. SCHORNECK (1929), SKOUSEN BROS. (1940), R. H. VAN MARIEL (1941, 1939) M+S. COPPER (1955), L. GUINN, V.V. BURD AND D. CHISM (1951, 1960) >

F5< WAR MINERALS REPORT 142, USBM 1943 >

F6< TENNEY, JAMES, HISTORY OF MINING IN ARIZONA, 1927-29, P335-336 >

F7<TENNEY, J.B., ECONOMIC GEOLOGICAL RECONNAISSANCE OF CASA GRANDE MINING DISTRICT, AZ BUREAU OF MINES, 1934, P.9-11>

F8< DENTON, T.C. AND HAURY, EXPLORATION OF THE REWARD ZINC DEPOSIT, PINAL CO., AZ, USBM RI 3975, 1946 >

F9 < USGS MF 931 >

F10 < USAEC PRELIM RECONN REPORT 1953-54 >

F11 < HIGGINS, EDWARD, THE VEKOL COPPER DEPOSITS, ENGINEERING AND MINING JOURNAL, MARCH 4, 1911, P473 >

F12 < CHAFFEE, MAURICE A., GEOCHEMICAL EXPLORATION TECHNIQUES BASED ON DISTRIBUTION OF SELECTED ELEMENTS IN ROCKS, SOILS, AND PLANTS, VEKOL PORPHYRY COPPER DEPOSIT AREA, PINAL COUNTY, ARIZONA, USGS BULLETIN 1278-E, 1977 >

N40 < DEV — 6 >

N40A < MARTIN LIMESTONE >

U.S. CRIB-SITE FORM

RECORD IDENTIFICATION

*RECORD NUMBER B10 <

*RECORD TYPE B20 <X, 1 M>

DEPOSIT NUMBER B40 <

*REPORT DATE G1 <8, 2, 0, 0, 4> YR. MO.

*INFORMATION SOURCE B30 <1, 2>

*FILE LINK IDENT. B50 < USBM -004 021 1042

*REPORTER(SUPERVISOR) G2 < ROTH, FRANCES A. (last, first, middle initial) (GEST, DON (last, first, middle initial)

*REPORTER AFFILIATION G5 < AGGMT

*SITE NAME A10 < REWARD MINE

*SYNONYMS A11 <

LOCATION

*MINING DISTRICT/AREA A30 < VEKOL DISTRICT

*COUNTY A60 < PINAL

*STATE A50 <A, Z>

*COUNTRY A40 <U, S,

*PHYSIOGRAPHIC PROV A63 <1, 2,

*DRAINAGE AREA A62 <1, 5, 0, 5, 0, 3, 0, 6,

*LAND STATUS A64 <0, 0,

*QUADRANGLE NAME A90 < VEKOL MOUNTAINS (1, 9, 6, 3, 1)>

*QUADRANGLE SCALE A100 <6, 2, 5, 0, 0,

SECOND QUAD NAME A92 < ( )>

SECOND QUAD SCALE A91 <

*ELEVATION A107 <1, 8, 7, 5, F, T,>

UTM

*NORTHING A120 <3, 6, 0, 7, 3, 0, 0,>

*EASTING A130 <4, 0, 1, 8, 7, 0,>

*ZONE NUMBER A110 <1, 2>

*ACCURACY

ACCURATE ACC (circle)

ESTIMATED EST <

GEODETIC

*LATITUDE A70 < – – N,>

*LONGITUDE A80 < – – W,>

CADASTRAL

TOWNSHIP(S) A77 <0, 0, 9, S,

*RANGE(S) A78 <0, 0, 3, E,

SECTION(S) A79 < 24, 34

SECTION FRACTION(S) A76 < N2 OF SW

MERIDIAN(S) A81 < GILA AND SALT RIVER

POSITION FROM NEAREST PROMINENT LOCALITY A82 < ABOUT 9 MILES SOUTH EAST OF LITTLE TABLE TOP MOUNTAIN

LOCATION COMMENTS A83 < UTM MEASURED TO SHAFT SYMBOL LOCATED ON THE REWARD CLAIM AREA

ESSENTIAL INFORMATION
ESSENTIAL SOMETIMES OR HIGHLY RECOMMENDED

COMMODITY INFORMATION

*COMMODITIES PRESENT C10: C,U, | A,G, | A,U, | PB | Z,N,
*ORE MINERALS C30: CHRYSOCOLLA, CHALCOPYRITE, MALACHITE, AZURITE, SPALERITE, GALENA
COMMODITY SUBTYPES C41:
*GEN. ANALYTICAL DATA C43:
COM. INFO. COMMENTS C50:

* SIGNIFICANCE

	PRODUCER		NON-PRODUCER	
MAJOR PRODUCTS	MAJOR: C,U,		MAIN COMMODITIES PRESENT C11:	
MINOR PRODUCTS	MINOR: A,G, | A,U, | P,B, | Z,N,		MINOR COMMODITIES PRESENT C12:	
POTENTIAL PRODUCTS	POTEN:			
OCCURRENCES	OCCUR:		OCCURRENCES OCCUR:	

*PRODUCTION

PRODUCER	NON-PRODUCER
PRODUCTION (YES) (circle) PRODUCTION SIZE (SMALL) MED LGE (circle one)	PRODUCTION UND NO (circle one)

EXPLORATION OR DEVELOPMENT

*STATUS

PRODUCER	NON-PRODUCER
STATUS AND ACTIVITY A20: Y	STATUS AND ACTIVITY A20:

*DISCOVERER L20:
*YEAR OF DISCOVERY L10: 1879 *NATURE OF DISCOVERY L30: *YEAR OF FIRST PRODUCTION L40: 1885 *YEAR OF LAST PRODUCTION L45: 1960
*PRESENT/LAST OWNER A12: NEWMONT EXPLORATION LIMITED (1970)
*PRESENT/LAST OPERATOR A13: L. GUINN, V.V. BURD, AND D. CHISM (1960)
EXPL./DEV.COMMENTS L110: PATENTED CLAIMS INCLUDE THE REWARD AND VIRGINIA (MS692 AND 693); PREVIOUS OWNERS AND OPERATORS INCLUDE REWARD MINING CO. (1880'S), UNITED ARIZONA COPPER CO (1900'S), CASA GRANDE

DESCRIPTION OF DEPOSIT

*DEPOSIT TYPE(S) C40: REPLACEMENT
DEPOSIT FORM/SHAPE M10: LENSES
*DEPTH TO TOP M20: *UNITS M21: MAXIMUM LENGTH M40: *UNITS M41:
*DEPTH TO BOTTOM M30: *UNITS M31: MAXIMUM WIDTH M50: *UNITS M51:
*DEPOSIT SIZE M15(SMALL) M15(MEDIUM) M15(LARGE) (circle one) *MAXIMUM THICKNESS M60: 3 *UNITS M61: FT
*STRIKE M70: NE *DIP M80: 15 TO 20 W
*DIRECTION OF PLUNGE M100: *PLUNGE M90:
*DEP. DESC. COMMENTS M110: REPLACEMENT ALONG LIMESTONE BEDDING

DESCRIPTION OF WORKINGS

*Workings are: SURFACE M120 UNDERGROUND M130 BOTH M140 (circle one)
*DEPTH BELOW SURFACE M160: 1400 *UNITS M161: FT *OVERALL LENGTH M190: 600 *UNITS M191: FT
*LENGTH OF WORKINGS M170: 10,000 *UNITS M171: FT *OVERALL WIDTH M200: 300 *UNITS M201: FT
*OVERALL AREA M210: 180000 *UNITS M211: SQ. FT
DESC. OF WORK. COM: M220: OVER A DOZEN SHAFTS OF 100 FT OR MORE AND SEVERAL LONG TUNNELS; SOME OF THE WORKINGS INCLUDE THE REWARD SHAFT, THE BAT TUNNEL, AND THE PHONODOREE SHAFT

GEOLOGY

*AGE OF HOST ROCK(S) K1: PAL,
*HOST ROCK TYPE(S) K1A: LIMESTONE
*AGE OF IGNEOUS ROCK(S) K2: L,C,R,E,T,-,T,E,R,T,
*IGNEOUS ROCK TYPE(S) K2A: DACITE PORPHYRY, RHYODACITE PORPHYRY
*AGE OF MINERALIZATION K3: L,C,R,E,T,-,T,E,R,T,
*PERT. MINERALS (NOT ORE) K4: LIMONITE, GYPSUM MAGNETITE, GARNET, CALCITE
*ORE CONTROL/LOCUS K5: NE TRENDING DIKES; WEST DIPPING LIMESTONE BEDS
*MAJ. REG. TRENDS/STRUCT. N5: NE TRENDING DIKES; E-W AND NW TRENDING FAULTS; WEST DIPPING LIMESTONE BEDS
*TECTONIC SETTING N15:
*SIGNIFICANT LOCAL STRUCT. N70: E-W FAULT SYSTEM THROUGH MINE AREA, WITH SHORT NW TRENDING SIDE FAULTS
SIGNIFICANT ALTERATION N75: OXIDATION
*PROCESS OF CONC./ENRICH. N80:
FORMATION AGE N30: M,I,S,S,
FORMATION NAME N30A: ESCABROSA LIMESTONE
SECOND FM AGE N35: P,E,N,N,
SECOND FM NAME N35A: NACO LIMESTONE
IGNEOUS UNIT AGE N50:
IGNEOUS UNIT NAME N50A:
SECOND IG. UNIT AGE N55:
SECOND IG. UNIT NAME N55A:
GEOLOGY COMMENTS N85: TENNY REPORT MENTIONS PENNSYLVANIAN LIMESTONE. ME-931 SHOWS ONLY ESCABROSA AND MARTIN LIMESTONES IN AREA.

GENERAL COMMENTS

GENERAL COMMENTS GEN:

ARIZONA DEPARTMENT OF MINERAL RESOURCES
Mineral Building, Fairgrounds
Phoenix, Arizona

1. Information from: Lawrence (Larry Stubblefield) Mine Supt.

   Address: P. O. Box 606 Casa Grande

2. Mine: Reward-Christmas Gift 3. No. of Claims - Patented ?

   Unpatented ?

4. Location: North East side of Vekol Mts. Near village of Kohatk

5. Sec 33-34 etc 4 Tp 9S 10S Range 3E 6. Mining District Vekol

7. Owner: Newmonth

8. Address: San Manuel Arizona. or Expl. Geologist David H. Osborne at Toltec

9. Operating Co.: Centenial Development Company

10. Address: P. O. Box 606 Casa Grande

11. President: H. Spencer 12. Gen. Mgr.: ~~Supt. L. Stubblefield.~~

13. Principal Metals: 14. No. Employed: 15 will be 21 soon

15. Mill, Type & Capacity:

16. Present Operations: (a) Down ☐ (b) Assessment work ☐ (c) Exploration ☒
    (d) Production ☐ (e) Rate tpd.

17. New Work Planned: Have started sinking a 450' shaft, expect to do 3000' drifting and 1400'raising plus more drilling

    The shaft will be timbered two compartment 5'x5' & 4'x5' inside dimension.

18. Miscl. Notes:

*

Date: 2-19-70

(Signature) (Field Engineer)

REWARD

Cu, Zn

Pinal

11 - 5

T 9 S, R 3 E

Kent Pomeroy, 127 N. Hibbert, Mesa

'42

War Minerals Report 142 (1943)
(C.S.M. library)

*

THE MINING JOURNAL for JULY 15, 194[illegible]

[redacted]

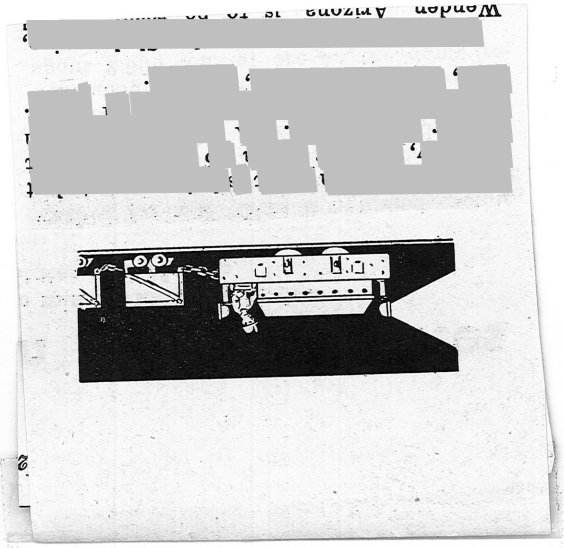
See: [redacted]

*

[illegible], 1966 REPUBLIC

obe Ore

County



Tues., Feb. 8, 1966 REPUBLIC

Drills Probe Ore In Pinal County

By VINCE TAYLOR
Pinal County Bureau

Pay Dirt 2-20-71

Reward Mine

R.L. 3975

September 28, 1942

Mr. A. J. Henneke,
900 West Congress
Tucson, Arizona.

Dear Dix:

I have your letter of the 26th and am mighty glad to learn that you are straightened out with Mr. Hedges and that everything is now O. K. on your work for the U. S. Bureau of Mines.

I am glad that you liked the letter which I wrote to the Governor. I have received no reply nor do I really expect one, but at least we have publicly offered to cooperate and there is nothing more that we can do.

I am much interested in your comment regarding the work which you did at the Reward mine and that is an example of exactly what I meant by scrapping the "Brass Hats" and let's get some of those with "Hard Hats" working. About 90 per cent of the work being done is compiling data for the files in Washington and not producing ore and we never are going to build ships or armament with the data in the files.

Now that you are in government employe you are going to get a real chance to see what red tape is like but stick with it as we know the time is coming when there is going to be a lot of short-cutting of the red tape. They are reaching a point where they must get more production.

Many thanks again for your letter and I hope that you will drop us a note once in a while.

With kindest personal regards, I am

Yours very truly,

CHARLES F. WILLIS
State Secretary

CFW:MH

Dear Charly— Tucson-8-26-

Well I got straightened out on the wage proposition with Mr Hedges to day. When I went to work on the 15th Mr Hedges was back east— and Mr Denton (pinch hitter) was not settleing any any thing on his own responsiability—

any way I am rated as sample foreman at 200$ per and eat myself— as the saying is— OK by me. Thanks a lot to you

Have just read latest— Gay Bert=

Noted your letter to Sid: Very cleverly written and if he was blessed with a thimble full of brains he would not fail to shake hands— but being as he is ?;; The artical on brass hats is out standing— to those in the know=

I have been at the Reward mine (3 inc— 38 miles SW of Casa Grande— since the 15th— no sampling— was chain man for a surveyor— Ran 10,000 feet of traverce along what is supposed to be "line of Mineralization"= (actual about 2000) then put about 50 bench marks all over the place— now all the cuts shafts and tunnels have to be mapped in O.K. for that= but that dont put no rock in the box

I believe, in my poor simple way— that if a crew spent the same amount of time= hunting ore— first= and getting it started to the smelter= and doing the mapping after the war: it would probaly increase production much faster— I do know that the copper production could be stept up one hell of a lot in next 60 days if the small mines that are producing could be studyed with increased production in mind— same as ship building or aeroplane increased productions are made—

2=
and there are several mines (plants) with ore (equipment) standing idle in Arizona that only need a road- or surface buildings - hoist or simple things like that - to start rolling -

if there is 20 tons or more - of good ore in sight = start it to moving - in most cases the 20 tons will prove to be much greater =

as far as labor is concerned = any camp or district can dig up plenty of "busted" boys with 10 years good work in them and it's darn little bossing they need = the insurance Company has had em behind the 8 ball so long = that they are afraid to "rustle" any more - so it's a case of hunt em up - don't ask em their age just judge it "around 50 = no reason what so ever for desperate shortage of strategic metals = a $5000 back log should start 2 or more to putting the ore into R.R. cars Monday - as I understand it = I will sample the shaft as far as it is timbered - around 180 feet = then I will be moved for a while to other place or places -

I sure hope so - for I like to feel that I am really accomplishing some thing with while in what ever I do = but when the drift is so darn full of red tape and arm chair bosses that you can't get any ways near the face - it's not only discouraging, it's also the S-hit -

Sincerely

Dick

to much Maggie
not enough Taggie -

DEPT. MINERAL RESOURCES
RECEIVED
REWARD
JUN 17 1942
PHOENIX, ARIZONA

20

MEMORANDUM

June 16, 1942

To: J.S.Coupal, Director, Dept. Mineral Resources
From: George A. Ballam

Kent Pomeroy, of the Reward, called this AM and asked me to look at a sack of zinc ore which he had brought down from the mine. This was obtained from the bottom of the shaft and he seemed to think it was different from the outcrops and tunnel. I went with him to the Ariz. Bureau of Mines and introduced him to Dr. Chapman, who called Mr. Crabtree in. The latter at once identified the ore as typical of the Reward marmititic zinc with ~~no~~ little iron in combination to cause difficulties. He had already done some testing for McDonald, a year or so ago, and said he would wait until they are ready for a mill, when he would prepare a test for flow sheet. He has made the previous reports available to Pomeroy.

Dr. Chapman also is directing a letter to the USGS who are doing preliminary work for projects by the US Bureau of Mines. Since the RFC had recommended diamond drilling of this property, he seemed to think it might be approached in this manner.

Since no plan has yet been evolved by the RFC and the owners of the Reward for development, and Pomeroy having signed a resolution to abide by such plan, I acted merely to introduce him to the State Bureau so that he might obtain a number of reports available on the property.

He is contacting Mr. Pratt and expects to take him up to the mine in a few days. He conveyed this information to Dr. Chapman.

George A Ballam

REWARD MINE PINAL COUNTY

CJH WR 11/4/83: Walter Heinrichs wanted what information we had on the Reward (Christmas Gift) Mine, Vekol Mtns., Pinal County. Pulled the mine file for him. He had heard that Newmont had prepared an Environmental Impact Statement on the area and wondered about its availability.

REWARD MINE PINAL COUNTY

Centennial Development Co. of Eureka Utah has started an exploration shaft at the Reward or Christmas Gift mine for Newmont. GWI QR 4-1-70

Newmont Mining Corp. was sinking an exploratory shaft at the Reward mine in the Vekol Mountains south of Casa Grande, during this quarter. FTJ QR 4-3-70

Centennial Development sinking mine shaft at Newmont's Reward mine. FTJ WR 4-10-70

Active Mine List May 1970 - 22 men - Louis Enright, Geol. in charge

At the Reward copper property of Newmont Mining Co. the vertical shaft was completed at 485 feet. A station will be cut at the 450 foot level and exploratory drifting, crosscutting and raising is to be initiated and bulk sampling of every round blasted will be continued in an effort to check the surface drilling. GW QR 7-1-70

Active Mine List Oct. 1970 - 22 men - Louis Enright

Visited Newmon't project at the Reward Mine. Mr. Enright, geologist, was in San Manuel, Mr. Crutchfield, supt. of Centennial Development Co., said his exploration work would be finished in a month or six weeks. Then MacPherson of Montrose, Colorado would do considerable underground diamond drilling. Crutchfield believes the project will continue as Newmont has drilled two 1000 ft. water wells for mill water. The first well tested 2500 gpm with a pulldown of about 100 ft. GW WR 11-6-70

Mr. Enright, of Newmont, wasn't available; but Mr. Crutchfield, supt. for Centennial Development Co., said his crew would be finished at the Reward mine in about a month. McPherson has cored about 15000 ft. underground with two machines but now has only one in operation and it will probably finish the contract in a couple of weeks. The two water wells have finished testing. Crutchfield says after the diamond drilling is completed his crew will backfill the shaft. And he anticipates stripping of overburden will commence in an area southeast of the shaft where the deposit is the closest to the surface. He thinks, ultimately, the pit will be in excess of 1200 ft. deep to the northwest. GW WR 1-22-71

The gate across Newmont's Reward road was locked. GW WR 3-15-71

As the gate to Newmont Mining Company's Reward project was locked in March, no definite information was available. However previous visits indicated the exploration has been completed as well as two 1,000 ft. water wells. It is anticipated thatplant construction and mining will commence in the near future. GW QR 4-8-71

Exploratory work on the Reward Copper deposit of Newmont Mining Company was finished and is being evaluated. They also drilled two 1000 ft. water wells about 5 miles east of the deposit. GW QR

---

* There has been no recent activity at the Reward copper deposit of Newmont Mining Company. GW QR 2/72

MEMO

REWARD MINE

VEKOL DIST.

PINAL CO.

According to Mr. MacIver's letter: "Also a deal was finally closed for lease of Reward Mine 'Pima' county, to Keystone Chemical (William P. Haley), Rapid City, South Dakota. They are going to put in a leaching plant."

The last known activity at the Reward was a test drilling program by the U.S. Bureau of Mines which they reported in R. I. 3975 (1946). The mine was discovered in the 1880's and worked intermittently up to 1917, reportedly having produced 400,000 pounds of copper. Most of this came from the 600 foot inclined shaft and the copper ore was oxidized. This area is in the NE part of the claims,and workings now are largely inaccessible. Later a 325 foot vertical shaft was sunk in the SW portion of the zinc bearing area, and a 600 foot crosscut tunnel was driven (NE end of zinc area), but little zinc was ever produced. The Bureau of Mines drilled 5951 feet of diamond drill holes, 3864 feet of BX size and 2087 feet of AX size.

Owners at the time of this work (1946) included Kent B. Pomeroy and Dr. Harry L. Schornide of Phoenix and Mrs. Beulah P. Gibson of Mesa.

NICK

Note from Mr. Knight 9-8-64 & notes by L.A. Smith.

Mr. Freeman who has been doing assessment work on the Pinal Copper claims, said that no activity had yet occurred at the Reward or the Vekol.

Conference with George Freeman, Sept. 16, 1964 by L. A. Smith

REWARD MINE

June 19, 1942

Casa Grande (Vekol)

George A. Ballam

This property is situated in the Casa Grande (Vekol) distric, about 40 miles SW. Casa Grande. It consists of 31 claims, two of which are patented. The owners are Kent Pomeroy, 532 W. Virginia Ave., and Dr. Harry L. Schornick, 743 E. McDowell Rd., Phoenix. The owners have recently obtained a $20,000 "B" loan which is now ready for requisition.

During the period 1885-1929, 400,000 pounds of copper valued at $70,000 were shipped from the mine. At that time, the zinc values were ignored. More recently considerable work has been done opening up the zinc, but no shipments have been made. The old camp buildings, mine buildings, smelter, and all equipment have been removed from the property.

There are extensive workings on the east end of the group which was worked for copper, including a 1,000' shaft and several of 60' to 400' in depth. However, since the owners are at present interested in developing the zinc on the west end of the group, particular attention was paid to that area. Mr. O. Bishop of the U. S. Bureau of Mines accompanied Mr. Pomeroy and myself on a preliminary examination of the property. The Bureau is contemplating establishment of a project, perhaps with a view to diamond drilling as recommended by the R.F.C.

There is a tunnel cutting three beds of limestone dipping to the north into a mountain. These are overlaid by what is purported to be zinc carbonate which was sampled by Mr. Bishop. A fourth bed, dipping somewhat less than the others, traceable on the surface, has not been cut by the tunnel at 600'. About 2000' to the west, a vertical shaft 430' deep was sunk on the third outcrop. The shaft is dry and untimbered. This was sampled on the lower levels on each of which there was about 100' of drifting. Between the shaft and tunnel an inclined shaft about 50' deep had recently been sunk on one of the upper beds, and in this about 6' of sulfide running 21 per cent zinc has been exposed.

The owners plan to timber the shaft and sink on the incline as soon as funds are available for requisition, Mr. Pomeroy informed me however, that he had signed a resolution to abide by the decision of the R.F.C. relative to development.

The property is accessible by road and has good water supply, drilled well. About 2000 tons on the dump carry good zinc values.

*

By: George A. Ballam

REWARD MINE

June 19, 1942

Casa Grande (Vekol)

George A. Ballam

This property is situated in the Casa Grande (Vekol) distric, about 40 miles SW. Casa Grande. It consists of 31 claims, two of which are patented. The owners are Kent Pomeroy, 532 W. Virginia Ave., and Dr. Harry L. Schornick, 743 E. McDowell Rd., Phoenix. The owners have recently obtained a $20,000 "B" loan which is now ready for requisition.

During the period 1885-1929, 400,000 pounds of copper valued at $70,000 were shipped from the mine. At that time, the zinc values were ignored. More recently considerable work has been done opening up the zinc, but no shipments have been made. The old camp buildings, mine buildings, smelter, and all equipment have been removed from the property.

There are extensive workings on the east end of the group which was worked for copper, including a 1,000' shaft and several of 60' to 400' in depth. However, since the owners are at present interested in developing the zinc on the west end of the group, particular attention was paid to that area. Mr. O. Bishop of the U. S. Bureau of Mines accompanied Mr. Pomeroy and myself on a preliminary examination of the property. The Bureau is contemplating establishment of a project, perhaps with a view to diamond drilling as recommended by the R.F.C.

There is a tunnel cutting three beds of limestone dipping to the north into a mountain. These are overlaid by what is purported to be zinc carbonate which was sampled by Mr. Bishop. A fourth bed, dipping somewhat less than the others, traceable on the surface, has not been cut by the tunnel at 600'. About 2000' to the west, a vertical shaft 430' deep was sunk on the third outcrop. The shaft is dry and untimbered. This was sampled on the lower levels on each of which there was about 100' of drifting. Between the shaft and tunnel an inclined shaft about 50' deep had recently been sunk on one of the upper beds, and in this about 6' of sulfide running 21 per cent zinc has been exposed.

The owners plan to timber the shaft and sink on the incline as soon as funds are available for requisition, Mr. Pomeroy informed me however, that he had signed a resolution to abide by the decision of the R.F.C. relative to development.

The property is accessible by road and has good water supply, drilled well. About 2000 tons on the dump carry good zinc values.

By: George A. Ballam

REWARD MINE PINAL COUNTY

Reward - Centenial Development, sinking shaft - will drift and raise - Shaft 450-
Drift-3000 - Raise 1400' Note GWI 2/19/70

At the Reward Mine, Vekol project of the Newmont Mining Co. drilling continues with the prospect of future bulk sampling of the ore body. GWI Quarterly Report 2/27/70

*

ARIZONA DEPARTMENT OF MINERAL RESOURCES
Mineral Building, Fairgrounds
Phoenix, Arizona

1. Information from: Personal Visit

   Address:

2. Mine: Reward - Christmas Gift 3. No. of Claims - Patented ?

   Unpatented ? Indian Lease

4. Location: 3 miles WNW of Kohatk

5. Sec 34 Tp 9S Range 3E 6. Mining District

7. Owner: Newmont - Superior Oil Co & Papago Indian Tribe

8. Address:

9. Operating Co.: New Mont. Mining Co.

10. Address:

11. President: 12. Gen. Mgr.:

13. Principal Metals: 14. No. Employed:

15. Mill, Type & Capacity:

16. Present Operations: (a) Down ☐ (b) Assessment work ☐ (c) Exploration ☒
    (d) Production ☐ (e) Rate tpd.

17. New Work Planned:

18. Miscl. Notes: 3 drills operating — no one around except driller & drill foreman

*

Date: 10-22-69

G R Irwin
(Signature)

(Field Engineer)

ARIZONA DEPARTMENT OF MINERAL RESOURCES
Mineral Building, Fairgrounds
Phoenix, Arizona

RECEIVED
SEP 20 1969

1. Information from: David H. Osborne
   Address: P.O. Box "M" Casa Grande. & 607 SHIRA- Toltec.
2. Mine: (REWARD) ? 3. No. of Claims - Patented _____
   Unpatented _____
4. Location: East side of Vekol Mts. near village of KOHATK
5. Sec _____ Tp _____ Range _____ 6. Mining District _____
7. Owner: NEWMONT EXPLORATION LIMITED & SUPERIOR OIL COMPANY
8. Address: _____
9. Operating Co.: _____
10. Address: _____
11. President: _____ 12. Gen. Mgr.: _____
13. Principal Metals: _____ 14. No. Employed: _____
15. Mill, Type & Capacity: _____
16. Present Operations: (a) Down ☐ (b) Assessment work ☐ (c) Exploration ☒
    (d) Production ☐ (e) Rate _____ tpd.
17. New Work Planned: _____
18. Miscl. Notes: One drill, George Elliott, foreman for McPherson drilling Co. of Montrose, Colo. One drill operating. (Would probably have more if drillers were available.)

Date: 9-17-69

GW Dunn
(Signature) (Field Engineer)

NEWMONT, et al REPUBLIC - REWARD - COPPEROSITY AND INDIAN LEASE PINAL COUNTY

Conference with Osborne, field engineer at Vekol - 6-7-66

According to Osborne, work continues on schedule and there are no especially new developments. At the Copperosity the drill has cut a considerable thickness of quartzsite and has not shown much mineralization to date. No drilling has yet been done on the Reward. The 5 drills are still working in the SE ¼ of the area. LAS Memo 6-7-66

Conference with H. D. Osborne, Box 731, Casa Grande, Arizona 9-21-66

Osborne stated that sites for drill holes had been prepared on the Reward Group. The five drills are now concentrated next to the south and southwest borders of the Reward Group. The four diamond drills are in the process of deepening holes previously sunk to the water level with rotaries. The drill that was on the Copperosity is now returned to the main site after rather unsatisfactory results. Several holes were completed since the last visit.

The lease renewal is still being kicked around in Washington. A brief visit was made to the property but no contact was made prior to the conference with Osborne.

The aerial photographer who did some detailed photographs of the Republic-Reward area showed a few of them. They were exceptional in detail. LAS Memo 9-21-66

Conference with V.O. Frye, Box 678, Casa Grande (Laboratory Technician) David Osborne, Field Engineer and Robert Fulton, Exploration V.P. for Newmont Corp. 10-4-66. Later with W.E. Jones, Wejco Distributing Co., 2020 West Grant, Phoenix and Ernie Fehr, Aerial Mapping Co., Phoenix and Boise, Idaho.

Drilling began in late Sept. at the Reward mine and nearly all of the drilling is an area immediately south and southwest of the Reward. Five drills are still working and 15 men are employed at the prospect. No conclusive word has been obtained about the lease status from the "Great White Fathers" in Washington. Osborne and Fulton had had contracts with J. J. Strutzel, 5110 E. Osborn, Phoenix and with David Jones, 1951 Constitution Ave., Washington, D.C. (202-343-5343) Valuation Engineer for the Bureau of Indian Affairs. LAS Memo 10-4-66

Interview with Reginald Skiles, Geological Engr. in charge of Exploration and Robert Fulton, Exploration V.P. for Newmont. 1-18-67

According to these men, drilling is continuing at the same rate (6 drills), with the emphasis on the Reward claims and nearby. The results, so far, are considered to be near marginal, considering the various factors of ore, depth, thickness and other factors - considerable waste lies above the zone. No final resolution of lease renewal has yet been accomplished. LAS Memo 1-18-67

Active Mine List April 1967 - Expl.

*

REWARD MINE

PINAL COUNTY
VEKOL DIST.

Conference with David Hartzel of Newmont. 4/5/66

Hartzel said that Lester Cox, Casa Grande and Sells, had left them to drill two test holes for a couple of Los Angeles men, near the main Reward Shaft. The operation reportedly did not go too well, and was down at present. He was not aware of results.

Mr. Hartzell said that some group had acquired part of the Reward patented ground next to the Newmont Lease.

Lester Cox could not immediately be contacted.

LAS MEMO 4/5/66

Conference with FranklinK. Gibson, attorney for owners, stated that the mine had been leased to:

Vernon K. Wulborg, Houston
Clara Sembritzha, Houston
Robt. Drusvhsk, 1922 Blodgett Ave., Houston, Texas
(who obtained the original lease about 1920-3)

These lessees hold a lease until 1968, but had defaulted and the property, in turn, leased to Newmont, pending settlement of the first lease.

The mine is now owned by: Mrs. Franklin K. Gibson,% Franklin K. Gibson,
Luhr's Towers, Phoenix, Arizona
Dr. Harry L. Schornick, Security Bldg., Phoenix
Kent Pomeroy.

According to Lester Cox he drilled two holes, with unsatisfactory results, on part of the Reward for a Los Angeles Group, who moved off.

MEMO LAS 5/11/66

See Report of Lewis A. Smith 5/18/66 in Newmont Lease (file).

F. NEAL BOSCO

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MEMO

REWARD MINE

PINAL COUNTY
VEKOL MTN DISTRICT.

Conference with Lew Billingsley 2/15/65

Lew Billingsley stated that Transamerican Minerals, Inc., had leased the Reward Claims and that he heads the group, along with Howard A. Skaad and a Mrs. B. Frined. The Company address is at the Sacaton Hotel, Casa Grande. George Freeman, Casa Grande, is sampling the dumps by trenching. The first sample ran 6% copper and is reported to contain payable silver and gold. George is slated to do some drilling and other work.

The specimen suite contained considerable malachite, chrysocolla, and cuprite, along with a strong impregnation of bright to crimson red limonite. Local vugs and fractures contain appreciable relief limonite that is a derivitive of the oxidation of chalcocite. The red limonites are derived from chalcopyrite and pyrite. The gangue contained some quartz crystals, calcite, and severely altered limestone that contains some epidote and chlorite. According to Billingsley the underground workings reportedly contain some good copper ore. The ore lies in a silicified limestone along a good fracture zone.

This portion of the claims contains copper, gold, and silver, whereas the other part of the claims predominates in zinc, according to the U. S. Bureau of Mines who tested it by drilling and other work in 1946 (RI 3975 p-42). According to Bureau Engineers the copper lies in the NE 1/3 of claims and the zinc in the SW portion.

LAS MEMO 2/15/65

Conference with Al Wilson 5/19/65

Wilson stated that it has been reported that a group were going to do some development, but up to now had done nothing.

Memo LAS 5/19/65

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
WASHINGTON 25, D. C.

Realty-Minerals
3557-61

BUREAU OF INDIAN AFFAIRS
RECEIVED
APR 17 1961
PHOENIX

File

Air Mail

Through: Area Director, Phoenix

The Chairman

Papago Council

APR 12 1961

Dear Mr. Chairman:

In reply to Mr. Higman's letter of March 16, we see that the Area Office has sent you a copy of the Geological Survey's memorandum report of May 11, 1956 with a map, which is the first item you requested. Since no prints of the second item are available now, we have requested the Survey to make a copy of J. B. Hadley's report and the accompanying set of the maps on the copper and zinc deposits in the Reward Area and will send it to you as soon as printed. The printing is expected to take two or three weeks.

On the same area, we have located a report made by the Bureau of Mines in 1943 entitled "Reward Property, Pinal County, Arizona." Although the report was never published, we have had a copy made and enclose it for your use.

Sincerely yours,

(SGD) E. J. UTZ
ASSISTANT

Commissioner

Enclosure

cc: Area Director, Phoenix, Arizona, w/copy of Bureau of Mines report
" Regional Mining Supervisor, Carlsbad, N. Mex.
" Superintendent, Papago Agency

WAR MINERALS REPORT

UNITED STATES DEPARTMENT OF THE INTERIOR – BUREAU OF MINES

W.M.R. 142 – Zinc, Copper March 1943

REWARD PROPERTY

Pinal County, Ariz.

SUMMARY

The Reward group of 2 patented and 28 unpatented mining claims is in the Papago Indian Reservation, about 40 miles south of Casa Grande, Ariz., a town on the Southern Pacific Railroad.

The claims cover a belt of intermittent mineralization several hundred feet wide, which has been explored in places for a length of about 5,000 feet. Mineralization is in limestone, which strikes northeasterly and dips northwesterly at about 45°. Sills, dikes, and irregularly shaped masses of acid rocks intrude the limestones and associated sediments.

Beginning at the southwestern end of the belt, and extending northeasterly about 2,600 feet, zinc is the chief economic metal to be found. With it are associated minor amounts of copper and lead. Copper predominates in the remainder of the belt. A little copper was obtained from the copper section. No zinc has been produced from the zinc section, but it has not been explored systematically.

Ore has not been developed on the property. The zinc minerals exposed, when considered in conjunction with the structure

and length of mineralization, are encouraging enough to warrant exploration of the section in the hope of finding and developing zinc ore.

Chiefly because of the narrow widths indicated, the copper section does not appear to warrant exploration.

The Reconstruction Finance Corporation has lent $20,000 for retimbering a shaft in the zinc section and for some exploring through the shaft.

The Bureau of Mines also plans to explore the zinc section.

Under the proposed program detailed geological mapping, sampling, trenching, and 3,000 feet of diamond drilling will be done first. An extensive campaign of intensive diamond drilling and underground work will be planned if this preliminary work indicates enough zinc ore to warrant it.

INTRODUCTION

The Reward group of 2 patented and 28 unpatented mining claims was examined by an engineer* of the Bureau of Mines in company with Kent Pomeroy of 532 West Virginia Ave., Phoenix, Ariz., in June 1942.

Pomeroy, Mrs. Beulah P. Gibson, of Mesa, Ariz., and Dr. Harry L. Scharnick, of Phoenix, Ariz., are the owners.

The property is on the Papago Indian Reservation in Pinal County, Ariz., about 40 miles south of Casa Grande, Ariz., a town on the Southern Pacific Railroad.

The claims cover a long, northeasterly trending zone of mineralization. Zinc is the principal economic metal in the southwestern half of the zone, hereinafter called the zinc section; copper predominates in the remainder, hereinafter called the copper section.

It is proposed to explore the zinc section. The copper section does not offer sufficiently attractive possibilities for the occurrence of ore to warrant exploration.

* Ottey M. Bishop and Thos. C. Denton, mining engineers.

HISTOPY

The Reward property probably was worked first in the early 1880s by the London Arizona Co.

In the zinc section on the Phonodoree claim the company sank a 1½-compartment vertical shaft, known as the Phonodoree, to a depth of about 325 feet. An aggregate few hundred feet of lateral work was done from the shaft on four levels.

In the copper section, on the Reward claim, the company sank an inclined shaft to a depth of 500 to 600 feet.

By the end of 1885 operations were suspended. The company had erected a small blast furnace and produced 19 tons of black copper.

In 1902 the United Arizona Copper Co. reopened the mine and increased the smelter capacity to 30 tons a day. In 1903 some copper was produced.

The United Arizona Copper Co. was succeeded by the Casa Grande Development Co., which was succeeded by the Reward Mining Co. Then followed the Casa Grande Arizona Mining Co. and the Hater Copper Co. Each of these explored and developed the property by trenching, test-pitting, and underground work. The most important development was a 560-foot tunnel in the zinc section known as the Bat tunnel. None of these companies appear to have attempted to produce zinc. They may have produced copper.

In 1924 the Pomeroy-Scharnick interests purchased the claims at a sheriff's sale. Pomeroy is reported to have shipped 4,000 tons of slag assaying 5 percent copper. They have maintained their title to the present.

To summarize: From 1880 to date both the zinc and copper sections have been explored intermittently. Sustained profitable operation appears not to have been realized. A total of 400,000 pounds of copper has been produced, from the copper sec-

tion, according to the University of Arizona Bulletin on Arizona Metal Production. The zinc section has not been explored intensively. No attempt appears to have been made to produce zinc.

PHYSICAL FEATURES

The claims lie on the southeastern slope of a northeasterly trending ridge of the Vekol Mountains, which rises abruptly from the desert floor.

That part of the ridge with which this report is concerned is divided by a transverse fault into two hills known as South Mountain and North Mountain. The zinc section occupies South Mountain and the copper section, North Mountain.

The altitude of the collar of the Phonodoree shaft is about 1,857 feet. The highest point on the ridge is about 2,200 feet.

Although the area is arid, there is a cased 6-inch well on the property said to be 820 feet deep, in which water stands at about 325 feet below the collar. As much as 75,000 gallons a day is said to have been pumped from the well without lowering the water.

No buildings or usable equipment exist on the claims.

From Casa Grande the property can be reached by traveling south on good, graded, graveled road 28 miles to Quajote Junction, thence 8 miles westerly and northerly to Quajote, and thence 4.3 miles westerly by poor desert road to the property.

LABOR

Papago Indians are the only local source of labor. They are reported to become fair workmen after a period of training.

DESCRIPTION OF ZINC OCCURRENCES

Every zinc exposure above 150 feet in the Phonodoree shaft consists of oxidized zinc minerals. With these are associated limonites, gypsum, carbonates of calcium and magnesium, magnetite,

and garnet. A little zinc sulfide is visible in places. To a slight degree, oxidized copper and lead minerals also occur.

Below 150 feet in the Phonodoree shaft, zinc occurs as the sulfide. With it, in places, are associated pyrite, pyrrhotite, chalcopyrite, galena, magnetite, and garnet.

As yet, not enough work has been done to determine the size and shape of the zinc occurrences. The zinc minerals are in or associated with limestone. They occur in a number of ways — as replacements, filling steep cross fractures, and in a shear zone dipping steeply against the dip of the limestone beds.

The limestones — some of them impure — strike northeasterly and dip northwesterly at about 40°. They are overlain by quartzite and conglomerate. Sandstones appear to underlie them. Sills, dikes, and irregularly shaped masses of acid intrusives cut the sediments.

SAMPLING

Wm. B. Gohring, of the Reconstruction Finance Corporation, examined the property in March 1942. The $20,000 loan made by the R. F. C. was based upon this examination. He took a number of samples in the Phonodoree shaft and in the Bat tunnel and one sample in an inclined shaft halfway between them, as follows:

Sample	Length of cut, feet	Assay, zinc, percent	Description
			Phonodoree shaft
1	20	20.75	All black sulfide, 8 vertical cuts combined, in drift 300-foot level.
2	23	18.91	All black sulfide, in shaft for 23 feet above 300-foot station.
3	8	18.23	Black sulfide, some lime, 8-foot vertical cut in pocket above 200-foot station.
4	8	19.40	All black sulfide, 8-foot vertical cut in pocket above 200-foot station.

Sample	Length of cut, feet	Assay, zinc, percent	Description
			Phonodoree shaft
5	15	15.52	All black sulfide, 15-foot vertical cut in shaft below 160-foot station.
6	8	5.82	Mixed lime, sulfide, and oxide, 8-foot vertical cut in crosscut in 160-foot level.
7	23	5.43	23-foot horizontal cut on side of 50-foot level crosscut, all oxidized.
			Bat tunnel
8	32	2.43	Horizontal 23-foot cut from face of tunnel toward portal; shows silicate.
9	33	5.32	Horizontal 33-foot cut in second ore zone back from tunnel face; some garnet.
10	21	10.19	21-foot horizontal cut in 3d ore bed; much iron oxide, zinc silicate, ribs of lime.
11	13	11.64	13-foot cut in 4th ore bed; red iron oxide, some zinc silicates.
12	63	5.82	63-foot cut in 5th ore zone, 200 feet in from portal; oxide iron, some zinc.
			Inclined shaft
13	8	16.00	8 feet across formation in bottom of 32-foot shaft; white material with zinc silicates.

POSSIBLE ORE RESERVES

The property contains no developed ore. Zinc-bearing mineralization, however, is exposed at irregular but relatively close intervals for a strike length of more than 2,200 feet. Vertically, at intervals, in the Phonodoree shaft, it is exposed for 300 feet. In a number of places mineralization is intense, wide, and of fair to good grade. No systematic attempt has yet

been made to develop it where exposed. The structure in which zinc occurs is long and strong and can be expected to continue down the dip for 1,000 feet or more.

In the opinion of Bureau of Mines engineers, systematic exploration of this zinc section may result in finding and developing a worth-while tonnage of fair to good-grade sulfide zinc ore.

PROPOSED EXPLORATION BY BUREAU OF MINES

Only Part I of the proposed program outlined below will be carried out now. The decision as to whether Part II should be undertaken must be based upon the results obtained from Part I and from underground work to be done by the R. F. C.

Part I

1. Make a detailed geological study and map of the occurrence and immediate vicinity.
2. Sample all significant mineralization.
3. Trench for extensions of exposed mineralization.
4. Diamond drill for extensions of exposed mineralization both in depth and laterally and for structure.

Part II

1. Intensively diamond drill the most promising areas to outline and determine the grade of ore shoots as far as possible.
2. Wherever diamond drilling fails to make clear, within reasonable limits, the boundaries and grade of a shoot, sink a small shaft and develop underground.

APPROXIMATE CAPITAL EXPENDITURES

The figures below and those in the time schedule assume the following:

1. That men, machines, materials, and supplies will be available as needed.

2. That the results of 500 feet of trenching and about 3,000 feet of diamond drilling done under Part I of the proposed exploration program will be sufficiently encouraging to justify exploration and development proposed in Part II.

3. That exploration and development will be successful in outlining 550,000 tons of good-grade ore in one or more shoots (a 3-year supply for a 500-ton mill), but that ore bodies will be irregular in outline and much underground excavation will be necessary to develop them.

4. That no mill will be constructed unless and until a 550,000-ton ore supply is reasonably assured.

5. That the mill will have a capacity of 500 tons in 24 hours.

PRELIMINARY EXPLORATION

Part I

Surveying and mapping	$1,000	
Construction of camp	1,000	
500 feet of trenching at $4 per foot	2,000	
3,000 feet of diamond drilling at $4 per foot	12,000	
Supervision, sampling, freight, and analyses	2,600	$18,600

Part II

Intensive exploration to develop 550,000 tons of ore.

Construction of camps, power and hoist houses, water supply, etc.	16,000		
10,000 feet of diamond drilling at $3 per foot	30,000		
Supervision, sampling, freight, and analyses (60 percent of above)	18,000	$64,000	
600 feet of prospect shaft sinking at $60 per foot		36,000	
10,000 feet of drifting, crosscutting, raising, and winzing at $16 per foot		160,000	
Sinking and equipping one or more working shafts, 600 feet at $100 per foot		60,000	320,000

Additional housing construction, sanitary facilities, water supply, etc.	50,000
Power facilities (power lines or power plant)	80,000
500-ton differential flotation concentrator at $800 per ton-day capacity	400,000
Compressors, rock drills	100,000
Contingencies	200,000
	1,168,600

TIME REQUIRED TO START PRODUCTION

Part I	Months	Accumulative total months
Surveying, mapping, preliminary sampling	2	-
Trenching and 3,000 feet of diamond drilling at 800 feet per month (1 machine).	4	6
Part II		
10,000 feet of diamond drilling, 2 machines, at 1,600 feet per month (6 months simultaneously with preparation and shaft sinking).		
To prepare for shaft sinking and underground development	2	8
Shaft sinking, 600 feet at 150 feet per month	4	12
10,000 feet of development, 6 machines, 12 machine shifts per 24 hours, 1,300 feet per month	8	20
To build the mill	6	26

PROPOSED DISPOSITION OF PRODUCT

If production should result from the exploration and development outlined, the sulfide ore probably would have to be treated by differential flotation on the property. The sulfide ore contains approximately 1 percent lead and some copper, which should be separated from the zinc concentrate and would be a source of revenue when so removed. The zinc oxides in the Bat tunnel are not commercial. It is possible that high-grade oxides may be discovered that could bear the cost of freight to the plant of the Ozark Lead & Zinc Co. at Coffeeville, Kans. The zinc and lead sulfide concentrates could be shipped to any of several smelters in Utah or Texas.

ESTIMATED RATE OF PRODUCTION

The mill proposed would have an annual capacity of about 180,000 tons of ore per year. No data are available regarding the average grade of ore that might be developed. Assuming that no mill would be built unless recoverable zinc in the ore were 10 percent or better, the minimum output would be 18,000 tons or 36,000 pounds of zinc a year for not less than 3 years.

CONCLUSIONS

The indications that ore can be found are sufficient to warrant undertaking Part I of the proposed exploration program.

The Bureau of Mines plans to do this preliminary exploration work at a cost of $18,600.

oOo

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine Reward Mine

Date 6/19/42

District Casa Grande (Vekol)

Engineer George A. Ballam

Subject:

This property is situated in the Casa Grande (Vekol) district, about 40 miles SW. Casa Grande. It consists of 31 claims, two of which are patented. The owners are Kent Pomeroy, 532 W. Virginia Ave., and Dr. Harry L. Schornick, 743 E. McDowell Rd., Phoenix. The owners have recently obtained a $20,000 "B" loan which is now ready for requisition.

During the period 1885-1929, 400,00 pounds of copper, valued at $70,000 were shipped from the mine. At that time, the zinc values were ignored. More recently considerable work has been done opening up the zinc, but no shipments have been made. The old camp buildings, mine buildings, smelter, and all equipment have been removed from the property.

There are extensive workings on the east end of the group which was worked for copper, including a 1,000' shaft and several of 60' to 400' in depth. However, since the owners are at present interested in developing the zinc on the west end of the group, particular attention was paid to that area. Mr. O. Bishop of the U. S. Bureau of Mines accompanied Mr. Pomeroy and myself on a preliminary examintation of the property. The Bureau is contemplating establishment of a project, perhaps with a view to diamond drilling as recommended by the RFC.

There is a tunnel cutting three beds of limestone dipping to the north into a mountain. These are overlaid by what is purported to be zinc carbonate which was sampled by Mr. Bishop. A fourth bed, dipping somewhat less than the others, traceable on the surface, has not been cut by the tunnel at 600'. About 2000' to the west, a vertical shaft 430' deep was sunk on the third outcrop. The shaft is dry and untimbered. This was sampled on the lower levels on each of which there was about 100' of drifting. Between the shaft and tunnel an inclined shaft about 50' deep had recently been sunk on one of the upper beds, and in this about 6' of sulfide running 21 percent zinc has been exposed.

The owners plan to timber the shaft and sink on the incline as soon as funds are available for requisition, Mr. Pomeroy informed me however, that he had signed a resolution to abide by the decision of the RFC relative to development.

The property is accessible by road and has good water supply, drilled well. About 2000 tons on the dump carry good zinc values.

Signed:

George A. Ballam.

*

6-19-42

DEPT. MINERAL RESOURCES
RECEIVED
JUN 26 1942
PHOENIX, ARIZ.

MEMORANDUM

REWARD MINE

To: Director, Dept. Mineral Resources
From: George A. Ballam

This property is situated in the Casa Grande (Vekol) district, about 40 miles SW. Casa Grande. It consists of 31 claims, two of which are patented. The owners are Kent Pomeroy, 532 W. Virginia Ave., and Dr. Harry L. Schornick, 743 E. McDowell Rd., Phoenix. The owners have recently obtained a $20,000 "B" loan which is now ready for requisition.

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George A Ballam

*

June 7, 1942

MEMORANDUM

DEPT. MINERAL RESOURCES
RECEIVED
JUN 8 1942
PHOENIX, ARIZONA

REWARD MINE
(Casa Grande)

To: Director, Dept. Mineral Resources

From: George A. Ballam

Kent Pomeroy, co-owner with Dr. Schornick of Phoenix. of the Reward mine, 35 miles SW Casa Grande, informed me that they have been granted a $20,000 "B" loan, this information being contained in a letter from Sen. Hayden.

He desired information on quota, priorities, etc., and I gave him this information.

He is anxious to get a small mill on the property, and apparently such a plan has been favored by the RFC. It is a copper-zinc property.

He is planning on completing his audit of the University this month, when he will return to the State Auditor's office. He promised to make a substantial donation to the Washington Fund, and also to avail himself of the services of this department. He is submitting a mine owners report, and will contact the Phoenix headquarters to make his donation, and to obtain membership in the ASMOA, was referred to the Phoenix Council.

The letter from Sen. Hayden stated that the loan was ready for disbursement, but he prefers to wait until everything is completed before releasing the publicity. Apparently there is an offer to purchase the property, from a group of which Casey Abbott is a member. Pomeroy wishes to operate the property. Under the circumstances, I referred him to the Phoenix office which will be in closer touch with developments.

George A Ballam

REWARD MINE PINAL COUNTY

April 3, 1942

Kimball Pomeroy, Mesa, Arizona - Zinc.

"I am afraid that all the ore is very irregular and spotted in its occurence. From the short visit that I made, it was not apparent to me as to just what should be done or where it should be done to develop the ore reserves." (E. D. Morton.)

May 15, 1958.

To: Mr. R. Druschke,
1922 Blodgett Ave.,
Houston, 4, Texas.

REWARD MINE.

Per your request I have made an examination of the Reward Mine and will submit herewith my findings and recommendations. The purpose of the examination was to determine the possibly of obtaining profitable production from the Reward, and what it would take to do it.

The Reward Gouup consists of 30 mining claims, at least two of which are patented. The group lies within the Papago Indian Reservation, about 36 miles southwest from Casa Grande, Arizona. Title antedates any rights of the Papagos but present ownership or title was not checked. The road from Casa Grande toaa point 4 miles from the mine is fair. From there a new road to the mine should not cost over $2,000. and should be constructed before much work at the mine is undertaken.

History.

The Reward is an early day mine, and though it is rumored that it was worked by the Spaniards it is very doubtful if any work was done before the advent of Americans in the early 60s. In fact the earliest known work was in the late 70s. In 1883 the property was acquired and partly developed by the Reward Mining Company.

In 1884 water was developed in an 800 ft well and a small water jacketed blast furnace was installed. According to records this produced 37,660 lbs of copper in 1884-5. The price of copper had been high in the previous years, but in 1885 the price dropped and the mine was closed.

There was no further activity until 1902 when the mine was acquired by a British company which called themselves the United Arizona Copper Company. A new and larger smelter was built, having a capacity of 30 tons per day, which operated intermittently during 1903, when it was again closed. In 1905 copper was again booming and the mine was optioned to a Bisbee and Duluth organization which called themselves the Casa Grande Development Company. They did not try to smelt on the ground but did considerable development, and shipped a moderate amount of crude ore to El Paso. The mine was again closed after copper dropped in 1908, and the Casa Grande'Comapny's option was relinquished in 1910.

Subsequently, several companies had a hand in exploring and operating the Reward. During World War I special attention was given to produce for the war needs. Considerable development was done and some ore shipped. Those shipments are a matter of record. In 1929 a lessee shipped about 1000 tons of the old smelter slag.

The mine was idle during the depression years, but during World War II an agency of the U.S. Government carried on a very extensive exploration program in search for zinc orebodies, in the southern portion of the property. This exploration for zinc will be discussed in more detail later.

All told, records show a production of about 450,000 lbs of copper from the RewardNo other metals are recorded as having been produced. It is not unusual that recorded production is somewhat less that actual production - especially before the tirn of the century. In the case of the Reward it would seem that actual production may well have been at least 3 times the above records - but not greater than that. The total dollar production would therefore have been somewhere between $75,000 and $200,00.

I have gone into the history of the Reward in some detail as it has an important bearing on the future outlook.

Geology.

In general, the terrain consists of tilted beds of limestone, containing quartzite and shale phases. Into these old sedimentary beds intrusions of porphyry and diorite have been injected, possibly contributing to the tilting, and to the faulting. (See picture next page). There are three prominent faults with throws up to 900 ft, and several minor faults. Mineralization is in bodies r replacing the limestone, and is controlled by the mineralizing intrusives or the faults. The main fault, called the Reward Fault courses northeast and southwest and practically divides the group into two halves. Zinc predominates in the southwest sector, while copper is the chief economic mineral northeast of the fault.

As will appear later under "Recommendations", a detailed study of the geology, and those factors that controlled ore deposition, are of prime importance in considering any future plans regarding the Reward.

Looking north from the Reward dump, the tilted layers of the old sediments can be seen, dipping west. This general tilt and dip pertains throughout the area, but is complicated in places by faulting.

Development.

A great amount of development work has been done under the various ownerships. There are over a dozen shafts upward of 100 feet deep9(deepest one reported at 1400 ft0, several long tunnels, and a myriad of miscelleanous work. Most of the old work is caved, although some of it can still be entered.

A rough summary would indicate that there must have been over 8000 ft of shafts; 10,000 ft of tunnels and drifts; plus an uncountable number of small openings. Altogether at least one and one-half million dollars must have been spent in exploration and attempts to find more ore, in addition to the actual cost of mining.

Special Situations.

Zinc. As stated above the U.S.Bureau of Mines carried on an extensive exploration of that part of the Reward where zinc predominates. This was done during World War II in an effort to find new zinc deposits to augment the nation's zinc supply.

The results of this program are written up in great detail in a 46 page Report of Investigations # 3975, Nov 1946. Fourteen diamond drill holes were put down from the

surface, totalling 5951 ft. Twenty trenches were also dug across outcrops. All drill holes and trenches were carefully sampled and mapped.

Many of the holes cut bands or bodies of fair grade zinc ore, but were considered too small or too irregular to warrant preparations for mining and concentrating. This concept would be even more true today, as zinc is now in over supply and the price is depressed. In no case, in this zinc area were values in gold, silver, or copper, of importance.

Anyone having any interest in the Reward should obtain a copy of this report. It is probably out of print, but sometimes one's congressman or friend in Washington can help. As a last resort you might have the Library of Congress make a photostatic copy.

The dump of the zinc shaft has been mentioned as possibly constituting a valuable fertilizer. There should be from 750 to 1000 tons in this dump. Although I took a sample of this dump it is of little use to have it analysed chemically. It evidentally contains considerable oxidized zinc and iron, with small amounts of copper and several other elements. Some of these are the trace elements needed for plant life, and because of the action of the once contained sulphur, and the atmosphere, these elements have been changed to a form readily assimilated by plants. You would probably have difficulty in selling this material on the strength of its chemical analysis. It would need to be demonstrated in practice and that might take two or three years. The best procedure would be to have samples taken and practical tests made by such an authority as the University of Arizona. If they found it of special value you might then interest some fertilizer company, who could then use the test results in their ads, or you might make more by retailing it yourselves. I can merely say that you can count on from 750 to 1000 tons and that it contains iron and zinc and other trace elements in soluable form.

Bat Tunnel.

This tunnel is supposedly 561 ft long. The Bat Tunnel Fault, having a northerly course was cut at about 170 ft. On the other side of the fault two orebodies were encountered. A small amount of zinc-copper ore had been stoped out by the old timers.

The U.S.Bureau of mines sampled the entire tunnel, from the 170 ft point to the face in 5 ft sections. Some

fair zinc values were encountered at four different spots. Copper values were nominal, and gold and silver were in traces only.

The question has been brought up regarding the amount and value of the bat guano in the tunnel. As far as the tunnel itself is concerned there is no quantity. The guano is from ½" to 2" deep on the floor of the tunnel from about 180 feet to the face. This would only total between one and two tons. At one spot in the tunnel the bats were swarming in and out of a hole in the tunnel roof that led up to an old stope or cave. This is inaccessable, but it is very doubtful if any chamber up there would contain enough guano to be worth the cost of getting to it.

As a rule commercial deposits of bat guano have only occurred in caves that were formed long before the advent of man. It takes long periods of time for any thickness to accumulate, and bats existed long before hard rock miners. The value of guano depends on its nitrogen content, which in turn depends on how much it has been leached. Considering the very small amount available in the Bat Tunnel, I did not have a sample analysed.

Reward Workings.

The Reward Workings consist of a crosscut tunnel 100 ft into the hill, from which an inclined shaft extends downward at a 27 degree angle. The first 600 ft of this incline was in copper ore which bottomed at that point. The shaft was then continued at a steeper angle, ending up vertical at a depth of 225 feet below the bottome of the ore. The additional work, below the 600 ft point disclosed no new ore. The orebody disclosed per above, had an average length of 90 ft from the collar of the incline to the 600 level. It is reported to have been completely mined out, and further exploration disclosed no new ore.

This condition was reported in the above mentioned Bureau of Mines report. The ladders in the incline looked a bit too precarious to be trusted by this examiner at present, but the depths of the incline could probably be examined by a trained crew with proper equipment.

Gold Values.

Having been informed that the red sandy ore which fills some of the crevices in the Reward Workings contained high gold values, I took a combined sample from several such places. The assay result however showed only $.35 per ton (assay certificate attached). There is no evidence of any high gold values anywhere on the Reward holdings.

The Reward dump shows more copper than any of the other dumps on the group. It contains about 6000 tons of material, exclusive of the portion which is pure waste from dead work. An accurate sample would require the work of a crew of men for several days. And a trained eye guess is better than a short cut sample or grab. My guess would be about 1.0% copper. It can have no concievable value as it cannot be shipped " as is"; would not pay for the labor of sorting; and there is no simple cheap method of extracting the copper on the ground.

Reward dump from below looking north. At lower center and right is site of old smelters, most of the slag from which was shipped in later years.

George Claim.

There are several deep shafts and large dumps on this claim, showing that extensive exploration was undertaken. This work is now caved and inaccessable but there is no evidance that any quantity of commercial ore was encountered.

The above mentioned Bureau of Mines report mentions that two diamond drill holes were put down in this vicinity in 1917 by the Casa Grande Arizona Development Co, with negative results. A third hole, put down at the same time, on or close to the Copper Wedge claim, cut 5½ feet of 2.5% copper ore at 190 ft. This would not be commercial, but could lead to a larger body.

Extracting Values on the Ground.

It has been suggested that the valuable metals in the ore can be extracted on the ground by some simple washing or leaching method. This is entirely untrue to the best of present day knoledge.

Oxidation is deep throughout the Reward property. Oxidized zinc mineralscannot be economically concentrated by any known method, to a degree required for marketing. Sulphide zinc minerals are amenable to the flotation process but in thanRewardplan Bamias proved, they lie at great depths,and in thin irregular bodies. The cost of preparation for mining, and installation of a flotation plant would be prohibitive under the present market for zinc. Thought should always be held however, that the zinc situation might change in the future.

Oxidized copper minerals can only be extracted by leaching, and as above said, oxidation extends to great depths. The presence of lime is very detrimental to acid leaching, and the Reward copper ore is in limestone. It also takes very large tonnages of proved ore to justify a leaching plant.

Gold and silver values are too low throughout to warrant any consideration.

Recommendations
and
Conclusion.

We must consider that probably at least one and one half million dollars has been spent on exploration and development of the Reward. In face of this less than $200,000 gross was ever produced. These old operators were not infallable - no miner ever is - but at the same time they were not entirely dumb.As each operator succeeded the previous one he naturally gleaned anything on which he could make a dollar. And gleaning is much more expensive, relative to the price of metals than it was years ago. At the same time they could well have overlooked a key place to find an enlarged ore continuation.

I cannot conceive of any way in which a quick, easy, profit can be made from the Reward. Known ore has been mined out,and the old timers have beaten you to the draw on anything gleanable. There are however some larger concepts that could lead to the making of a much greater and more permanent mine.

We must not forget that Bisbee, in a quite similar geological situation, went through several periods of threatened abandonment. Finally a trend of blind orebodies, coursing downward in the limestone, controlled by faults and mineralizing intrusives, was established. Then Bisbee became one of the greatest copper camps in the world.

The approach should be to first have a detailed geological study made by a geologist especially trained in limestone replacement deposits. All pertinent data should be made available to him. He should then trace out and map the faults, mineralizing intrusives, and channels of circulation, and correlate them with known ore occurrances.

After such a study he may or may not come up with definate suggestions as to where key drill holes might be put down to find continuations or extensions of ore - or possibly a new field of ore somewhere else on the group.

You should bear no hope that by the mere drilling of some undirected holes, or the installation of labor saving devices, or any simple milling scheme, that you will ever get anywhere.

My conclusion therefore is that you have a fair chance for a new "reward" by taking a calculated risk and proceeding with a program as above outlined.

Respectfully Submitted

Chas. H. Downing

May 17, 1958.

ATL
ARIZONA TESTING LABORATORIES
A DIVISION OF CLAUDE E. McLEAN & SON LABORATORIES, INC.
PHONE AL 3-6272 817 WEST MADISON ST. P O. BOX 1888 PHOENIX
Chemists . . . Engineers

For Mr. C. H. Dunning Date May 12, 1958

Sample of Ore Received: -

Submitted by: Same

ASSAY CERTIFICATE

Gold figured at $35.00 per ounce. Silver figured at $ 0.90 per ounce.

Lab. No.	Identification	Gold		Silver		Percentages	
		Oz. per Ton	Value	Oz. per Ton	Value		
142817	No Mark	0.01	$ 0.35				

REGISTERED ASSAYER CERTIFICATE EXPIRES CLAUDE E. McLEAN DEC. 31, 19 58 ARIZONA, U. S. A.

*

Respectfully submitted,
ARIZONA TESTING LABORATORIES
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Charges: $ 3.00

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