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Phoenix, AZ 85007
602-771-1601
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Arizona Department of Mines and Mineral Resources Mining Collection

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PRINTED: 12/26/2001

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES AZMILS DATA

PRIMARY NAME: MARY BELL

ALTERNATE NAMES:
SILVER GLANCE TUNNEL
RANKIN TUNNEL
SOUTH TUNNEL
NORTH TUNNEL

MOHAVE COUNTY MILS NUMBER: 116E

LOCATION: TOWNSHIP 23 N RANGE 18 W SECTION 2 QUARTER SE
LATITUDE: N 35DEG 24MIN 38SEC LONGITUDE: W 114DEG 10MIN 21SEC
TOPO MAP NAME: CHLORIDE - 7.5 MIN

CURRENT STATUS: PAST PRODUCER

COMMODITY:
ZINC SULFIDE
LEAD SULFIDE
COPPER SULFIDE
SILVER
GOLD LODE

BIBLIOGRAPHY:
ADMMR MARY BELL GROUP MINE FILE
ADMMR MOHAVE CUSTOM MILL PROJECT
DINGS, M. "WALLAPAI MNG DIST, CRBT MTNS, AZ"
USGS BULL 978-E, P. 147
THOMAS, B.E. "GEOL. OF THE CHLORIDE QUAD"
P. 406 (ADMMR GEOLOGY FILE)
ADMMR MARY BELL CLAIMS COLVO FILE

03/20/90

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES FILE DATA

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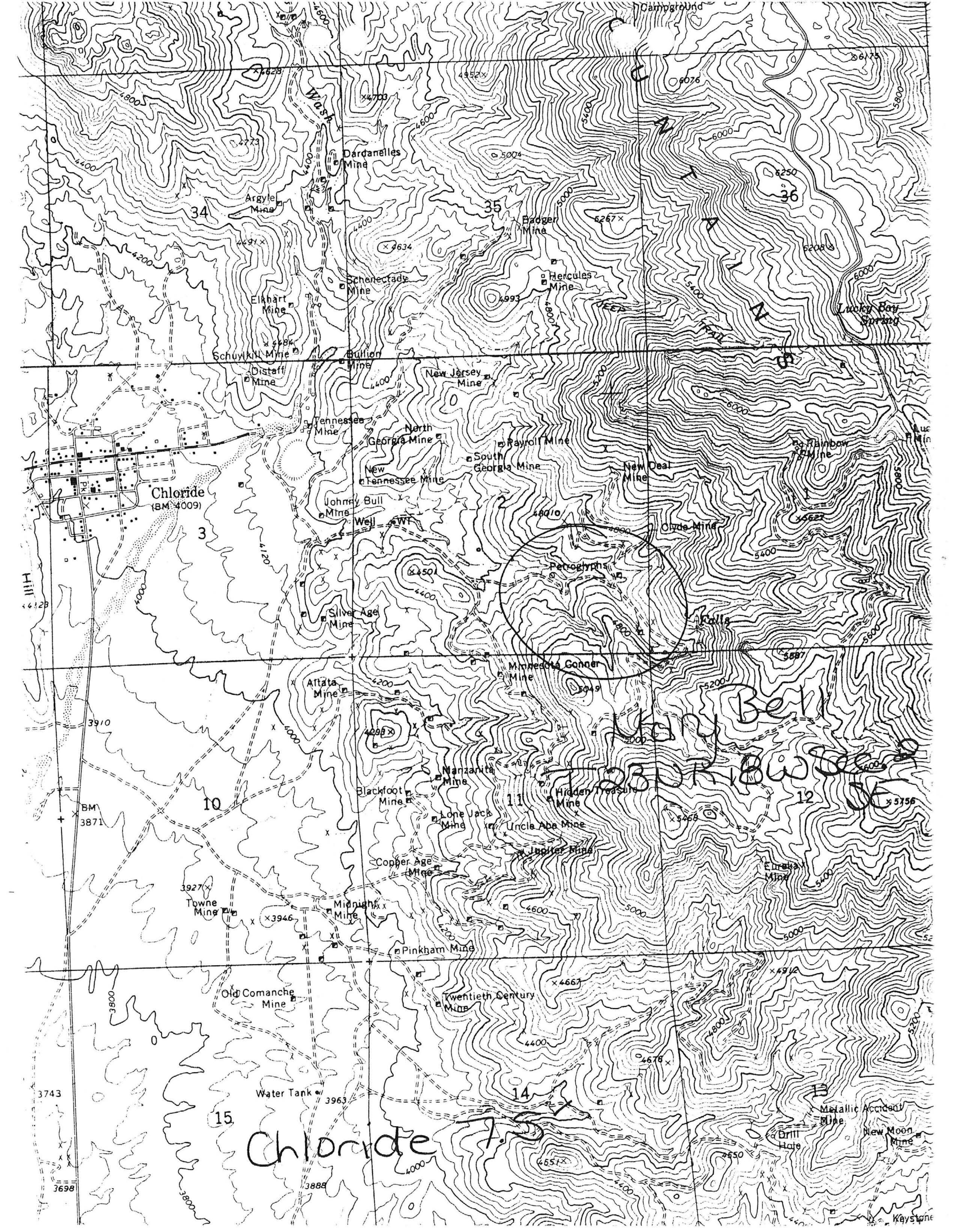

Campground
Wash
Dardanelles Mine
Argyle Mine
34
35
36
Badger Mine
Hercules Mine
Schenectady Mine
Elkhart Mine
Schuylkill Mine
Bullion Mine
Distaff Mine
New Jersey Mine
Lucky Bay Spring
JEEP TRAIL
Tennessee Mine
North Georgia Mine
Payroll Mine
South Georgia Mine
New Deal Mine
Rainbow Mine
New Tennessee Mine
Chloride
(BM 4009)
Johnny Bull Mine
Well
Clyde Mine
3
2
1
Petroglyphs
Falls
Silver Age Mine
Minnesota Conner Mine
Altata Mine
Manzanita Mine
Blackfoot Mine
Hidden Treasure Mine
Lone Jack Mine
Uncle Abe Mine
Jupiter Mine
10
11
12
BM 3871
Copper Age Mine
Eureka Mine
Towne Mine
Midnight Mine
Pinkham Mine
Old Comanche Mine
Twentieth Century Mine
Water Tank
14
15
13
Metallic Accident Mine
Drill Hole
New Moon Mine
Keystone
Mary Bell
T23N R18W Sec 2 SE
Chloride 7.5'

NAME OF MINE: MARY BELL
OWNER:

COUNTY: MOHAVE
DISTRICT:
METALS: Pb,Zn,Ag

Date:	OPERATOR AND ADDRESS	Date:	MINE STATUS
3/47	Albin Larson & Frank Grannie, Chloride	3/47	Developing

NAME: MARY BELL (f) / COUNTY: MOHAVE

15 miles E of CHLORIDE Not to be confused.

T23 N R18 W SEC. 2 E. Central Elev. 4460 DISTRICT: WALLAPAI CHLORIDE

Mineralization: Pb Cu Zn Au Ag

Geology:

Type Operation:

Production: 26 oz Au 955 oz Ag 557 # Cu, 19,155 # Pb 28,733 # Zn. 1901 thru 1948

References: USGS 750 P 158 / Elton Geol Vol 44 P 690)

Heroy - Metals Economics Branch USBM Salt Lake City

USGS Bull 978-E, clipping file

Mohave Cty Card File

RIH

MM #3

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
OWNERS MINE REPORT

Date June 17, 1939

Mine Mary Bell

District Wallapai — Location Chloride

Former name

Owner J. G. Blackwell — Address Chloride

Operator — Address

President — Gen. Mgr.

Mine Supt. — Mill Supt.

Principal Metals Gold, silver, lead, zinc — Men Employed

Production Rate — Mill: Type & Cap.

Power: Amt. & Type

Operations: Present Not operating

Operations Planned

MARY BELL MINE

Au, Ag, Pb, Zn, Cu,

Mohave 8 - 7 T 22 N, R 18 W

J. G. Blackwell, Chloride '40

Number Claims, Title, etc. Three. Location and annual assessment work

Description: Topog. & Geog.

Mine Workings: Amt. & Condition Drifts and winzes in good shape

(over)

Geology & Mineralization

Ore: Positive & Probable, Ore Dumps, Tailings

Mine, Mill Equipment & Flow Sheet

Road Conditions, Route Good. One mile from Chloride

Water Supply

Brief History

Special Problems, Reports Filed

Remarks

If property for sale: Price, terms and address to negotiate. J. G. Blackwell,
Chloride, Arizona

Signed J. G. Blackwell

Use additional sheets if necessary.

ARIZONA DEPARTMENT OF MINERAL RESOURCES
MINERAL BUILDING, FAIRGROUNDS
PHOENIX, ARIZONA

April 7, 1958

To the Owner or Operator of the Arizona Mining Property named below:

Mary Bell Mine	Gold, silver, lead zinc
(Property)	(ore)

We have an old listing of the above property which we would like to have brought up to date.

Please fill out the enclosed Mine Owner's Report form with as complete detail as possible and attach copies of reports, maps, assay returns, shipment returns or other data which you have not sent us before and which might interest a prospective buyer in looking at the property.

Frank P. Knight

FRANK P. KNIGHT,
Director.

DEPARTMENT OF MINERAL RESOURCES
State of Arizona
Mineral Building, Fairgrounds
PHOENIX, ARIZONA

REASON CHECKED
Unclaimed.... Refused....
Unknown.....
Insufficient address.....
Moved, left no address.....
No such office in state.....
Do not remail in this envelope
POSTAGE DUE 2 CENTS
DECEASED

PHOENIX, ARIZ.
APR 7 8:30PM
1958

Mr. J. G. Blackwell
~~Chloride,~~
~~Arizona~~

Kingman Mining
Project - 1 claim map

3 July 1940

Mr. J. G. Blackwell,
Chloride,
Arizona.

Dear Mr. Blackwell:

I thank you for the copy of Report by Oscar H. Hershey on your group of mines consisting of the Mary Bell, Tenby, Silver Glance and Silver Glance Fraction and the Mary Bell Millsite.

This report is being filed with Mine Owners Report covering the Mary Bell Mine.

With best wishes, I am

Yours very truly,

J. S. Coupal
Director

JSC-jrf

DEPARTMENT OF MINERAL RESOURCES

STATE OF ARIZONA
CAPITOL BUILDING
PHOENIX, ARIZONA

June 24, 1940.

REPLY TO

Mr. J. G. Blackwell,
Chloride,
Arizona.

Dear Mr. Blackwell:

I am enclosing herewith a copy of Mine Owners Report which you have filed with the Department of Mineral Resources covering your property.

If you have any additional information on this property, I should suggest that you forward it for filing with this report.

Assuring you of my desire to be helpful, and with best wishes, I am

Yours very truly,

J. S. Coupal

J. S. Coupal
Director

JSC-amh

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
OWNERS MINE REPORT

Date June 17th. 1939.

Mine Mary Bell

District Wallapai

Location Chloride

Former name

Owner J. G. Blackwell

Address Chloride

Operator

Address

President

Gen. Mgr.

Mine Supt.

Mill Supt.

Principal Metals Gold, silver, lead, zinc.

Men Employed

Production Rate

Mill: Type & Cap.

Power: Amt. & Type

Operations: Present Not operating

Operations Planned

Number Claims, Title, etc. Three. Location and annual assessment work.

Description: Topog. & Geog.

Mine Workings: Amt. & Condition Drifts and winzes in good shape.

(over)

Geology & Mineralization

Ore: Positive & Probable, Ore Dumps, Tailings

Mine, Mill Equipment & Flow Sheet

Road Conditions, Route Good. One mile from Chloride.

Water Supply

Brief History

Special Problems, Reports Filed

Remarks

If property for sale: Price, terms and address to negotiate. J. G. Blackwell,
Chloride,
Arizona.

Signed J. G. Blackwell

Use additional sheets if necessary.

MM-2

Kingman, Arizona, August 3, 1940.

To: J. S. Coupal, Director,

From: Elgin B. Holt, Field Engineer,

Subject: Mary Bell Mine - Owner: J. G. Blackwell, Chloride, Ariz.

Some time ago, Dr. J. G. Blackwell, of Chloride, Arizone, asked me to visit and look over this property, with a view to trying to help him place the property with people who would go ahead and develop it in a large way.

Last week I gave the mine the once over, in company with owner; and herewith is inclosed my report concerning it.

Dr. Blackwell states that he had already mailed you a complete report concerning this property by Oscar H. Hershey, dated April 24, 1929. So you should have this report in your files. I was also furnished a copy of this report.

As you will note, the Mary Bell vein is large and runs over a sharp ridge. Two tunnels are driven on this vein, one on South side, known as the South Tunnel and the other on the North side, known as the North Tunnel. Both of these tunnels are in ore, which is partly oxidized and part sulphide material. Also, the Ranking Tunnel - a cross-cut tunnel - cuts this same vein in ore according to Blackwell. However, this latter tunnel is caved and I could not get into it. The main thing necessary to be done is to sink to greater depth on this vein in order to get into straight sulphide ore, now showing in streaks in the upper tunnels mentioned.

Again, you will note that the Pay Roll mine, or mining claims cover the north extension of the Mary Bell vein; and that the Pay Roll mine is developed to a depth of 600 feet. Dr. Blackwell showed me an assay map of this property by Calvocoresses, with assay results outlined in my report.

All in all, I believe if these two mines could be developed in a large way and then equipped with a mill of goodly capacity, that a profitable operation would result. The main thing is that these mines are located near the Tenessee, the record of which is well known.

Good mines like company, so these properties by all means warrant a careful investigation by anyone looking for meritorious partly developed mines on which to spend some money, with a view to opening up a lot of mill tonnage.

Hence, I am passing this matter on to you, suggesting that you do what you can in the way of finding a buyer for the properties.

E. B. H.

Write owner.

MM-7

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine MARY BELL GROUP Date July 30, 1940.

District Wallapai, Mohave County, Ariz. Engineer Elgin B. Holt

Subject:

SYNOPSIS REPORT

OWNER: J. G. Blackwell, Chloride, Arizona.

METALS: Gold, silver, lead zinc, copper.

LOCATION: Property located 2 miles East of Chloride, Arizona, and about ½ mile Easterly from the Tennesee-Schuylkill mine.

AREA: Property consists of 4 mining claims and one mill site.

GEOLOGY: Country rocks consists of granite-gneiss complex of pre-Cambrian age.

VEINS: Five veins, from 2 to 10 feet wide traverse property. The main vein, consisting of iron stained porous quartz, shows to be about 20 feet wide at the end of South Tunnel; but the ore vein along which the tunnel was driven lies along the foot wall of this vein. At the top of the ridge the vein zone, consisting of altered pegmatite granite, is about 135 feet wide. This vein then runs down the north side of ridge to North Tunnel.

DEVELOPMENT WORK consists of the South Tunnel, driven North 30 degrees West on the foot wall vein a distance of 330 feet; the North Tunnel, driven South 30 degrees East 222 feet along the said foot wall vein, at the same elevation as the South Tunnel; and the Rankin cross-cut tunnel was started at foot of hill and was driven South 89 degrees 30' East 775 feet, or to a point where it cuts the main vein 98.17 feet North 30 degrees West from the portal of North Tunnel and 217 feet deeper than that tunnel. Thence a drift was run on the foot wall vein South 30 degrees East 115 feet in ore. The face of this drift is in ore 5 feet wide carrying goodly zinc-lead values; but assay values not now available. The Rankin Tunnel is now caved and inaccessible.

ORE - ASSAYS: In the back half of the South Tunnel there are bands of sphalerite up to 6 inches wide, associated with galena, chalcopyrite and pyrite. At 142 to 148 feet from mouth of this tunnel is a winze 38 feet deep, penetrating a sulphide ore zone. Here Blackwell reports he sampled 6 feet 8 inches of ore that assayed: 0.06 oz. gold, 3.2 ozs. silver, 3.6% lead, 0.6% copper and 10.5% zinc.

In a 7 foot winze near back end of this tunnel, Blackwell took 3 samples that averaged: 0.12 oz. gold, 10 ozs. silver, 19% lead and 19% zinc.

From this same tunnel two lots of ore were shipped, giving following results: Lot No. 1: 30 tons carrying gold 0.172 ozs., silver 7.03 ozs, lead 11.6% and zinc 12.0%. Date of shipment Nov. 5, 1938. Lot No. 2: 27 tons, carrying gold 0.0163 ozs., silver 3.42 ozs., lead 2.3% and zinc 6.7%.

The North Tunnel had ore all along its course about one foot wide of sulphide material, assaying lead, zinc, gold and silver. These assays are from bands and bunches and do not represent much tonnage; but they show the ore to be of goodly grade and it is believed this class of ore will be found in quantity deeper and below the oxidized zone of the vein.

REMARKS: Attention is called to this property as it has all the earmarks of a large milling proposition in the making. This statement seems justified by the following facts:

1. In addition to data set forth in the first page of this report, the north extension of the Mary Bell vein is covered by the Pay Roll mining claims, two in number. This group is owned by the Thomas B. Scott Estate, for which J. G. Blackwell is agent.

The Pay Roll mine is developed by a working shaft sunk vertically in foot wall of vein 600 feet deep, with levels hundreds of feet in length at depths of 50, 200, 400 and 600 feet.

An assay map of this property by George M. Calvocoresses, of Phoenix, Arizona, of vein material on all the levels mentioned gives the following results:

Widths - ft.	Au oz.	Ag ozs.	Cu %	Pb %	Zn %
4.1	0.11	2.45	0.37	1.4	8.58

2. The Mary Bell property is located only 3,000 feet from the Tennessee-Schuylkill mine, with a reported record of $18,000,000, in the same metals as are found in the Mary Bell property. The Tennesse mine is developed to a depth of 1,400 feet and is now the largest active complex ore mine in the Chloride area. This property is equipped with a selective flotation mill, which treats daily and profitably 150 tons of ore carrying gold, silver, lead, zinc and copper values; the ore being sulphide material. Two marketable products are made: First: a zinc concentrate, which is shipped to Amarilla for refining; and, second, a lead concentrate, carrying the other metals mentioned and which is shipped to El Paso for treatment.

CONCLUSION: From facts herein given, it is believed if adequate capital can be found to develop and block out the main ore-bearing vein of the Mary Bell property to a depth of 600 to 800 feet from surface, and then equip the property with a suitable flotation mill, a profitable operation will result.

However, any company taking the Mary Bell should also secure control of and plan to develop the Pay Roll mine referred to.

WATER for milling can undoubtedly be secured in quantity from these mines, in the process of developing the same, as is the case with the Tennessee property above referred to.

Elgin B. Holt,
Field Engineer.

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine \ MARY BELL GROUP Date July 30, 1940

District Wallapai, Mohave County, Arizona Engineer Elgin B. Holt

Subject:

S Y N O P S I S R E P O R T

OWNER: J. G. Blackwell, Chloride, Arizona

METALS: GOLD, silver, lead zinc, copper.

LOCATION: Property located 2 miles east of Chloride, Arizona, and about 1/2 mile easterly from the Tennessee-Schuylkill mine.

AREA: Property consists of 4 mining claims and one mill site.

GEOLOGY: Country rocks consists of granite-gneiss complex of pre-Cambrian age.

VEINS: Five veins, from 2 to 10 feet wide traverse property. The main vein, consisting of iron stained porous quartz, shows to be about20 feet wide at the end of South Tunnel; but the ore vein along which the tunnel was driven lies along the foot wall of this vein. At the top of the ridge the vein zone, consisting of altered pegmatite granite, is about 135 feet wide. This vein then runs down the north side of ridge to North Tunnel.

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CONCLUSION: From facts herein given, it is believed if adequate capital can be found to develop and block out the main ore-bearing vein of the Mary Bell property to a depth of 600 to 800 feet from surface, and then equip the property with a suitable flotation mill, a profitable operation will result.

However, any company taking the Mary Bell should also secure control of and plan to develop the Pay Roll mine referred to.

WATER for milling can undoubtedly be secured in quantity from these mines, in the process of developing the same, as is the case with the Tennessee property above referred to.

Elgin B. Holt,
Field Engineer.

COPY.

HERSHEY & WHITE
Consulting Engineers
Crocker Building San Francisco, Cal.

GEOLOGICAL REPORT ON THE MARY BELL GROUP.
By
OSCAR H. HERSHEY

San Francisco, California,
April 24th. 1929.

Dr. J. C. Blackwell,
Chloride, Arizona.

Dear Sir:

Yesterday I made an examination of your mining claims, situated on the west slope of the Cerbat Range, about 1.5 miles from Chloride, Mohave County, Arizona. I regard the property as constituting an exceptionally attractive prospecting opportunity and hence I will discuss it in considerable detail.

The group consists of the Mary Bell, Tenby, Silver Glance and Silver Glance Fraction quartz mining claims and the Mary Bell mill-site. These claims are held by location and annual assessment work.

The strongest vein traverses the Mary Bell claim on a course about N. 30 W. and dips northeastward 75 to 80. The claim is 1367 feet in length. About 100 feet from the southeast end of the claim the dump of an old hole has a pile of oxidized porous quartz with lead carbonates and remnants of galena, derived from a small footwall band. You have told me that this material was sorted and the best ore shipped during the war. A streak of quartz and yellow dirt 6 to 8 inches thick may be traced southeastward to beyond the end line of the claim. About 50 feet across altered granite possibly seamed with quartz leads to the hangingwall band of what I am going to call the vein zone. This hangingwall band is soft, makes a slight depression partly filled with debris, and has been little prospected on your ground. From what I can see of it, it seems to be more strongly stained by iron and manganese oxides than is the footwall band and I suspect that it has less quartz, but more of an iron-bearing carbonate of intermediate composition, probably ankerite, and more pyrite than the footwall band. The latter outcrops strongly and the development has been practically confined to it. Yet I suspect that the hangingwall band may be the better.

Several hundred feet from the southeast end line the footwall quartz outcrops 6 feet wide and is much stained by iron oxide. Here it is 80 feet to the hanging wall band. The intervening rock is mostly an altered pegmatitic granite, sheeted, dipping northeastward 75. The wall rocks are rather fine textured, light colored granite that occupies a large area extending northeast and southwest. Thence to the south of the South tunnel the footwall band is strong and in places there is much porous limonite which may overlie an orebody. At the mouth of the tunnel there is a bold outcrop of iron-stained porous quartz 12 feet wide whose footwall is a small fault gouge that dips northeastward 80 and the hangingwall dips in the same direction 75, suggesting widening of the quartz downward. There is another quartz vein about 40 feet southwest of the mouth of the tunnel. This converges upon the main vein and meets it about 260 feet northwest.

The South tunnel, driven from the south side of Mary Bell hill, is about 265 feet long and is mostly in the soft altered granite on the footwall side of the quartz band. At 70 feet in, a crosscut goes 15 feet through the quartz but fails to reach the hangingwall. There is a little

sulphide in places. At 45 feet further in there is a crosscut to the left that shows vein matter 16 feet wide, dipping northeastward 75, probably the branch vein seen 40 feet southwest from the mouth of the tunnel. It is partly compact fine textured altered porphyry, but there are porous bands rich in limonite, good indication for ore below the zone of oxidation. About 10 feet further in the tunnel there is a right-hand crosscut that goes 10 feet through porous, iron-stained quartz with much limonite and a little malachite stain. You have told me that some of this material assays well in gold. The remaining 7 feet of the crosscut is in altered porphyry.

At 142 to 148 feet from the mouth of the tunnel an inclined winze has been put down 38 feet. It penetrates the sulphide zone and the lower portion shows an ore band 6 feet wide that dips northeastward 75. A sample that you took across 6 feet 8 inches assayed 0.06 oz. gold, 3.2 oz silver, 7.6% lead, 0.6% copper and 10.5% zinc. My impression is that this represents one of the poorer sections of ore-shoots that may be developed on the claim.

From the winze the tunnel runs 27 feet along the wall of the quartz band to a crosscut 20 feet through fine-grained altered porphyry with a little pyrite. At the end there is a band with some ore sulphides, but at the face there is a porous mass rich in limonite that may overlie a good orebody.

Next the present accessible tunnel has been driven along the hangingwall side of the quartz band where a sulphide streak develops that in about 45 feet becomes thick enough to be commercial and thence to the face, 45 feet, it may be 1 to 2 feet thick. It dips northeastward 75 to 80. It is 2 feet thick at the face, is rich in dark brown sphalerite and the best band 6 inches thick has considerable galena, a little chalcopyrite and pyrite. About 15 feet back from the face there is a winze 7 feet deep. You took three samples over this winze that averaged by assay 0.12 oz. gold, 10.00 ozs. silver, 19% lead and 19% zinc. A sample taken across a 6 inch streak in the winze assayed 1.05 ozs. gold, 19.6 ozs. silver, 3% copper, 25.2% lead and a small amount of zinc. But this is just part of an 18 inch band that was mined clean and placed on the dump. A sample from it assayed 0.68 ozs. gold, 14.1 ozs. silver, 0.4% copper, 34.7% lead and 21.6% zinc, according to a certificate by John Herman. These assays do not represent much tonnage but they demonstrate that the vein has has some very good grade ore. Of course, I cannot assume responsibility for any statements of values based on assays in this report, but I see no reason to question them as the material sampled has the appearance of containing the lead and zinc claimed.

This South tunnel is too high to make much showing of ore, but it reveals a lot of oxidized and leached material that is probably underlaid with milling grade ore and where it penetrates the sulphide zone it shows a narrow band of good-grade ore.

The iron-stained porous quartz outcrop runs from the mouth of the tunnel to the top of the ridge where it is about 20 feet wide over the end of the tunnel and 120 feet above it. Here the vein zone is 135 feet wide, chiefly somewhat altered pegmatitic granite. A dark gray gneissic rock appears in the footwall country.

Thence down to the North tunnel near the northwest end line of the claim the outcrop and float of the footwall quartz band are strong. There is a dark gray granodiorite on the footwall. The North tunnel, 140 feet long, has been driven in the gougy soft band on the footwall side of the quartz band, which dips northeastward 75 to 80. The gougy material has small pockets of sulphides, one with galena that yielded a small pile of ore on the dump. A 4 foot drill hole in the quartz band showed it oxidized and leached.

Some years ago a tunnel was begun on the Mary Bell mill-site and driven across a corner of the Pay Roll claim about 775 feet to the presumed hangingwall of the Pay Roll-Mary Bell vein. This is now known as the Rankin tunnel and is in good condition except that it ought to have heavier timbers near the mouth and it has caved at the vein. It passes through gneissic granite with pegmatite and aplite dikes and cuts an altered zone or vein that is said to be barren. The face of the tunnel is in Pay Roll ground about 100 feet from the Mary Bell end line. In a small side crosscut and short drift to the left of the tunnel the vein is 20 feet wide and its hangingwall dips northeastward 70. About 6 f feet from the hangingwall there is a dark gray fault gouge several inches thick that dips northeastward 75. Between it and the hangingwall is the presumed hangingwall band of quartz, the iron-bearing carbonate and thin bands of sulphides, chiefly sphalerite, some galena, pyrite and chalcopyrite, probably low-grade ore. The remainder of the vein is altered gneiss streaked with quartz and carbonate and with scattered bunches of sulphides. A 2 to 4 inch streak of sulphide ore along the footwall dips southwestward 85. It may represent the footwall quartz band in a greatly pinched place. In fact, the entire vein zone is greatly pinched here, probably due to a dike of light-colored rock that is said to trend more eastward than does the vein zone and leaves it going southeast. This dike is soft and has caused the caving in the main tunnel. You have told me that you drove along the footwall strek 98 feet to the end line and 15 feet into the Mary Bell claim and that in a short crosscut you had 2 feet of ore, practically pure sphalerite and galena, and did not go through it. The ore on the dump is chiefly dark brown sphalerite, with some galena, chalcopyrite and pyrite.

The Pay Roll claim covers the vein northwest from the Mary Bell claim. Holes dug on the vein in the first 500 feet in that claim seem to be on the hangingwall band which is more porous and iron-stained than the footwall band and may have more ore. Kernels of galena are usually present in the material from these holes. This becomes a boldly outcropping iron-stained porous quartz vein 20 feet thick on the top of the ridge and leads to near the Pay Roll main shaft 625 feet deep. A longitudinal section prepared in 1919 by C. E. Major of Prescott, Arizona, shows this shaft 1120 feet from the face of the Rankin tunnel, a 50 foot level driven 340 feet toward the Mary Bell, a 200 foot level driven 205 feet and a 400 foot level driven 325 feet in that direction. A leasing company is now driving a 600 foot level toward the Mary bell and you have told me that it is 370 feet long, with the ore getting better and that the last time you saw it it was 6 feet wide. I did not get a chance to go underground here but while I was on the dump a carload of ore that came up from the 600-foot level was rich in pyrite and had considerable galena and chalcopyrite with some sphalerite. You say there is less gold and silver in the Pay Roll mine than in the Mary Bell and give the dike as the dividing line. Perhaps, however, the difference is due to the Pay Roll workings being on the hangingwall band and your workings on the footwall band.

In "Mineral Deposits of the Cerbat Range, Black Mountains, and Grand Wash Cliffs", published in 1909 as Bulletin 797 of the United States Geological Survey Publications, Mr. F. C. Schrader describes the Pay Roll as one of the large veins in the Chloride region. He says: "As shown by its persistent croppings it has a horizontal extent of nearly a mile, but is reported to be somewhat broken in the bottom of the mine. It varies from 6 to nearly 100 feet in thickness, 10 feet being perhaps a fair average, and contains in places a fair grade of concentrating ore. The gangue is mainly quartz, and the vein is in places separated from the wall rock by a thick sheet of argillaceous or talcose gouge.

"Near the mine, as shown in figure 4, the vein is joined by the Redemption Clyde vein, which probably enriches the Pay Roll ore shoots. The ore in the persistent pay shoots consists of lead carbonates and galena, with some pyrite and chalcopyrite; it contains both gold and silver. The total production of the mine was not learned, but it is reported to include many carloads of rich shipping ore that run about $80 a ton.

mostly in gold, derived principally from the surface workings, excellent values being found in the south shaft. So far as can be judged at present the deposit is a good-sized body of low grade ore."

That was written at a time that the zinc content of the Chloride veins was a detriment instead of an asset. The leasing company that is now developing the Pay Roll 600-foot level is erecting a 50-ton selective flotation plant. My guess is that they ought to have at least a 100-ton per day plant.

In the gulch beyond the main shaft, the vein seems to end abruptly. Schrader says by being cut off on the northwest by a raised fault block of black hornblende schist, or is sharply bent down the gulch as you think.

Returning to your property: The Silver Glance tunnel has been driven about 100 feet on a band of porous, honey-combed quartz 6 inches to 3 feet thick, in a zone of altered and quartz-seamed rock (granite apparently) at least 25 feet wide. At one place the quartz had galena and lead carbonate and you took a sample that assayed 2.1 ozs. gold, 14 ozs. silver, and 54.2% lead. There is very little of such material in sight, but at depth the vein might be found to have a large body of low-grade milling ore. The vein stands nearly vertical with a slight tendency to dip southwestward. At a cut on the vein S. 60 E. from the tunnel the vein zone is 6 feet wide. Further southeast a shallow shaft has seams rich in fine grained, or so-called steel, galena in the wide mineralized zone. Traces of the vein continue southeast to the end of the claim. Then the vein is relatively weak in the Tenby claim.

The Tenby vein is supposed to pass obliquely from the Silver Glance to the Pay Roll vein. Where first seen it strikes N. 60 W. and has a tendency to dip steeply northeastward, in places nearly vertical. The vein material is a very porous, coarsely crystallized quartz, rich in limonite and lead carbonate, with kernels of galena and traces of chalcopyrite remaining in places. This occurs in one or two places in two small veins. They will go down into narrow streaks rich in sulphides, probably chiefly pyrite and chalcopyrite with considerable galena, and may carry good gold and silver values.

Going southeastward in the Tenby claim there is considerable float of quartz with lead, copper and iron stains. Then in a cut the vein is a foot wide and dips northeastward 75, cutting gray granodiorite. In a tunnel in a small gulch the Tenby vein, 6 inches wide and standing vertical, is supposed to reach the Silver Glance vein, dipping southwestward 80. The latter is narrow and continues S. 40 E. across the gulch and in a cut and small tunnel it has 1 to 2 feet of quartz and limonite banded ground that will go down into lead-silver ore. It dips southwestward 80. This is supposed to be the Tenby vein and to become the Redemption vein on the adjoining property. No more work has been done on the vein in your ground but you say it improves in size in that direction.

Schrader says the Redemption Clyde in the Redemption mine strikes N. 60 W. and dips 85 northeast and is known to have an extent on the surface equal to the length of at least four claims. The vein is about 4 feet thick and the ore shoot is about 18 inches thick. The ore contains chalcopyrite in quartz and carries about 8 per cent of copper, 1 to 2 ounces of silver to the ton, and some gold. The production amounts to 200 tons of ore.

I suspect the vein of being better in the Tenby claim but because of its small size I do not recommend immediate further development of it. The same recommendation applies to the Silver Glance vein.

The big chance in the property is in the Pay Roll-Mary Bell vein. I am surprised that it has remained so nearly undeveloped to this late date. However, an important portion of its metal content is zinc,

and, until recent times, mining operators were not anxious to develop the zincy ores of the Chloride district. Now things are different and you ought to have no difficulty either in selling the property if you will give long time for development or in financing exploration on some other basis.

It appears to be a very easy prospecting proposition. A railroad is within one mile (It has been taken up) and a power line within 3000 feet. I would carry a power line to the mouth of the Rankin tunnel, install the necessary machinery, strengthen the timbering in the outer part of the tunnel, clean up and timber the caved ground at the vein and then drive your drift on the footwall quartz band the entire length of the Mary Bell claim, about 1700 feet. The Major longitudinal section indicates that this drift would pass 217 feet below the North tunnel and 223 feet below the South tunnel. It will be deep enough to develop entirely in the sulphide zone. I would drive a few crosscuts to the hangingwall band and if it appeared encouraging I would drive along it. Say at most 3500 feet of driving on the Rankin tunnel level would thoroughly explore the vein zone in the Mary Bell claim. If that will not yield a large tonnage of milling grade ore and a series of small bodies of good grade ore such as is in the South tunnel I will be very greatly surprised.

The cross-section of ore shoots determined on the Rankin tunnel level, the ore can be expected to extend very deep. Ore in the neighboring Tennessee mine has been developed to a depth of 1400 feet or more. The geology is favorable to commercial ore extending much deeper in the district. Thus the possibilities at the Mary Bell run into rather large figures, though it would be foolish for me to ~~M~~ attempt to be more specific.

At some later date with a mill in operation to pay for the work the Rankin tunnel can be driven ahead into the Mary Bell ground and then turned northeast and driven to the Tenby vein, a distance of probably 450 feet. An additional 450 feet will take it to the Silver Glance vein in the Silver Glance claim. Both veins may be cut about 400 feet deep. Considerable driving on them would perhaps bring this prospecting campaign to an aggregate of 3000 feet of work. Thus 6500 feet of driving on the Rankin tunnel level may be required to prospect the property as it deserves prospecting but I contemplate only work on Pay Roll-Mary Bell vein as a requisite to determining the value of the property.

Deep development will probably solve the water problem as suggested by Schrader. Climatic conditions are favorable to continuous and relatively cheap operation. Nearness to Chloride precludes the necessity of constructing bunk and boarding houses. Nearness to the railroad solves the problem of transportation. The only question that remains somewhat in doubt is that of disposing of the zinc concentrates at a profit. That is a problem that will have to solved for the district as a whole, but there is so much zinc-lead ore in the district that I am satisfied that by the time the Mary Bell has been properly developed, and equipped with a selective flotation plant, a market for the zinc concentrate will be in sight.

Respectfully submitted

(Signed) Oscar H. Hershey.