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03/20/90

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES FILE DATA

PRIMARY NAME: SOUTHERN BELLE GROUP

ALTERNATE NAMES:

MORNING STAR GROUP
CARELESS MS 4090, PATENTED
CROSS TOWN MS 2155-A, PAT.
APACHE GIRL MS 1837, PAT.
DOLPHIN MS 1837, PATENTED
APACHE PEAK CONS. MNG. CO.

PINAL COUNTY MILS NUMBER: 707

LOCATION: TOWNSHIP 10 S RANGE 16 E SECTION 20 QUARTER NW
LATITUDE: N 32DEG 33MIN 07SEC LONGITUDE: W 110DEG 44MIN 17SEC
TOPO MAP NAME: CAMPO BONITO - 7.5 MIN

CURRENT STATUS: PAST PRODUCER

COMMODITY:

GOLD
SILICON
COPPER
SILVER
MOLYBDENUM

BIBLIOGRAPHY:

BLM MINING DISTRICT SHEET 710
ADMMR SOUTHERN BELLE GROUP FILE
BROMFIELD, CALVIN S., GEOLOGY OF THE MAUDINA
MINE AREA NORTHERN SANTA CATALINA MTS PINAL
CO. AZ., MS UOFA 1950
ADMMR SANTA ROSA MINE FILE
CLAIMS EXTENT INTO SEC. 19
ADMMR SOUTHERN BELLE COLVO FILE

RETURN RECEIPT

Received from the Postmaster the Registered or Insured Article, the original number of which appears on the face of this Card.

Ms Elizabeth Bennett Wood

(Signature or name of addressee)

Pedro Roncillo

(Signature of addressee's agent)

Date of delivery _____, 19
Form 3811

U. S. GOVERNMENT PRINTING OFFICE

5-6116

Post Office Department

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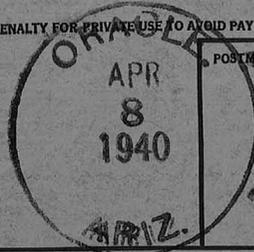
REGISTERED ARTICLE

No. 10978

INSURED PARCEL

No. _____

PENALTY FOR PRIVATE USE TO AVOID PAYMENT OF POSTAGE, \$300



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Return to Dept. of Mineral Resources
(NAME OF SENDER)

Street and Number, }
or Post Office Box, } State Capitol

PHOENIX,

ARIZONA.

26 March 1940

Mrs. Elizabeth Lambert Wood,
Oracle,
Arizona.

Dear Mrs. Wood:

I am enclosing herewith copy of Mine Owners
Report which you have filed in this office.

I am also enclosing copy of Report Upon the
Southern Belle Gold Property which you sent for our
examination.

With best wishes, I am

Yours very truly,

J. S. Coupal
Director

JSC-jrf
encls.

Reg Mail

SOUTHERN BELLE GROUP

PINAL COUNTY

NJN WR 7/29/88: Gary Parkinson (card) of Westmont Mining (card) reported that from a previous examination of the Southern Belle Group (file) Pinal County a mineralized, flat thrust fault 10 - 15' thick was revealed. Though not large enough to be of interest to Westmont, it could contain 2-3,000,000 tons of low-grade gold material.

* GENERAL REFERENCES

- REFERENCE 1 F1 < ABGMT-USBM FILE DATA
- REFERENCE 2 F2 < USGS BULLETIN 1218, 1967
- REFERENCE 3 F3 < ADMR SOUTHERN BELLE MINE FILE
- REFERENCE 4 F4 < BLM MINING DISTRICT SHEET 710

L110 < INCLUDE THE CARELESS, CROSSTOWN, APACHE GIRL, AND DOLPHIN. 12 PATENTED CLAIMS IN 1960 >

N5 < MINE LOCATED IN COMPLETELY FAULTED CAMBRIAN AND PRECAMBRIAN ROCKS, LESS THAN 1/2 MILE S OF THE WNW TRENDING MOGUL FAULT. N OF THE MOGUL FAULT IS PREC QUARTZ MONZONITE >

U.S. CRIB-SITE FORM

RECORD IDENTIFICATION

RECORD NUMBER B10 < _____ > RECORD TYPE B20 < X, I, M > DEPOSIT NUMBER B40 < _____ >
 REPORT DATE G1 < 8, 2, 8, 0, 4 > INFORMATION SOURCE B30 < 1, 2 > FILE LINK IDENT. B50 < USBM-0040210786 >
YR. MO.
 REPORTER (SUPERVISOR) G2 < STEINZIO, KATHRYN L. > (BEST DON E.
(last, first, middle initial) (last, first, middle initial)
 REPORTER AFFILIATION G5 < ABGMT > SITE NAME A10 < SOUTHERN BELLE MINE >
 SYNONYMS A11 < MORNING STAR PROPERTY >

LOCATION

MINING DISTRICT/AREA A30 < ORACLE DISTRICT >
 COUNTY A60 < PINAL > STATE A50 < AZ > COUNTRY A40 < U.S. >
 PHYSIOGRAPHIC PROV A63 < 1, 2, 8 >
 DRAINAGE AREA A62 < 1, 5, 0, 5, 0, 1, 0, 0, 8 >
 QUADRANGLE NAME A90 < CAMPO BONITO QUADRANGLE > LAND STATUS A64 < 4, 1, 8, 1, 8, 1, 9, 7, 9 >
(1, 9, 7, 2, 1) QUADRANGLE SCALE A100 < 24, 0, 0, 0 >
 SECOND QUAD NAME A92 < _____ > SECOND QUAD SCALE A91 < _____ >
 ELEVATION A107 < 5, 4, 0, 0, 8, F, T >

UTM ACCURACY GEODETIC
 NORTHING A120 < 3, 6, 0, 4, 1, 5, 7 > ACCURATE (circle) LATITUDE A70 < _____ N >
 EASTING A130 < 5, 2, 4, 5, 9, 3 > ESTIMATED EST < _____ > LONGITUDE A80 < _____ W >
 ZONE NUMBER A110 < 1, 2 >

CADASTRAL
 TOWNSHIP(S) A77 < 0, 1, 0, 5, 1, 8 > RANGE(S) A78 < 0, 1, 0, 6, 1, 8 >
 SECTION(S) A79 < 20 >
 SECTION FRACTION(S) A76 < SE OF NW >
 MERIDIAN(S) A81 < BILA AND SALT RIVER >

POSITION FROM NEAREST PROMINENT LOCALITY A82 < 2 1/10 MILES SOUTH OF AMERICAN FLAG HILL >
 LOCATION COMMENTS A83 < 1 MILE SOUTH OF CAMPO BONITO, 9 MILES SOUTH OF ORACLE. SECTION NOT SURVEYED >

ESSENTIAL INFORMATION
 ESSENTIAL SOMETIMES OR HIGHLY RECOMMENDED

COMMODITY INFORMATION

*COMMODITIES PRESENT C10 < P.B. A.U. A.G. >
 *ORE MINERALS C30 < GALENA, FREE GOLD >
 *COMMODITY SUBTYPES C41 < >
 *GEN. ANALYTICAL DATA C43 < >
 *COM. INFO. COMMENTS C50 < >

* SIGNIFICANCE

	PRODUCER	NON-PRODUCER
MAJOR PRODUCTS	MAJOR < P.B. A.U. >	MAIN COMMODITIES PRESENT C11 < >
MINOR PRODUCTS	MINOR < A.G. >	MINOR COMMODITIES PRESENT C12 < >
POTENTIAL PRODUCTS OCCURRENCES	POTEN < >	OCCUR < >
OCCURRENCES	OCCUR < >	OCCUR < >

*PRODUCTION

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

*STATUS

EXPLORATION OR DEVELOPMENT

PRODUCER	NON-PRODUCER
STATUS AND ACTIVITY A20 < 4 >	STATUS AND ACTIVITY A20 < >

*DISCOVERER L20 < >
 *YEAR OF DISCOVERY L10 < > *NATURE OF DISCOVERY L30 < B > *YEAR OF FIRST PRODUCTION L40 < > *YEAR OF LAST PRODUCTION L45 < 1964 >
 *PRESENT/LAST OWNER A12 < TULSON YNCA, 1960 >
 *PRESENT/LAST OPERATOR A13 < CARL PIERSON, ORACLE, 1960; GRADY HEERING >
 *EXPL./DEV.COMMENTS L110 < OPERATORS INCLUDED; WALKER AND PIERSON, ERNEST GARCIA, E.M. MARSHALL, SANDERSON AND WELLS, W.O. WELLS, MCKOM AND CO., O. BERRYMAN, GRADY L. HEERING APACHE PEAK CONSOLIDATED MINING CO. PROPERTY. CLAIMS >

DESCRIPTION OF DEPOSIT

*DEPOSIT TYPE(S) C40 < VEIN / SHEAR ZONE >
 *DEPOSIT FORM/SHAPE M10 < TABULAR >
 *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 < > *UNITS M61 < >
 *STRIKE M70 < > *DIP M80 < >
 *DIRECTION OF PLUNGE M100 < > *PLUNGE M90 < >
 *DEP. DESC. COMMENTS M110 < MAIN VEIN REPORTEDLY SUB HORIZONTAL WITH 20-30 DEGREE NE DIP >

DESCRIPTION OF WORKINGS

*Workings are: SURFACE M120 (UNDERGROUND M130) BOTH M140 (circle one)
 *DEPTH BELOW SURFACE M160 < > *UNITS M161 < >
 *LENGTH OF WORKINGS M170 < > *UNITS M171 < >
 *OVERALL LENGTH M190 < > *UNITS M191 < >
 *OVERALL WIDTH M200 < > *UNITS M201 < >
 *OVERALL AREA M210 < > *UNITS M211 < >
 *DESC. OF WORK. COM. M220 < 3 TUNNELS >

GEOLOGY

*AGE OF HOST ROCK(S) K1 < P.R.E.C. >
 *HOST ROCK TYPE(S) K1A < QUARTZITE >
 *AGE OF IGNEOUS ROCK(S) K2 < >
 *IGNEOUS ROCK TYPE(S) K2A < >
 *AGE OF MINERALIZATION K3 < LCRET-TERT. >
 *PERT. MINERALS (NOT ORE) K4 < QUARTZ, PYRITE >
 *ORE CONTROL/LOCUS K5 < QUARTZ VEINS + SHEARS - QUARTZITE IS EXTENSIVELY SHEARED >
 *MAJ. REG. TRENDS/STRUCT. N6 < DRIPPING SPRINGS QUARTZITE IN REGIONAL UNCONFORMITY WITH OVERLYING BOLSA QUARTZITE >
 *TECTONIC SETTING N15 < >
 *SIGNIFICANT LOCAL STRUCT. N70 < SERIES OF SHORT NW TRENDS PAULTS DIPPING GENERALLY N TO NNW TRENDS, E DIP 15-30 >
 *SIGNIFICANT ALTERATION N75 < GALENA AND PYRITE STRONGLY OXIDIZED >
 *PROCESS OF CONC./ENRICH. N80 < >
 *FORMATION AGE N30 < P.R.E.C. >
 *FORMATION NAME N30A < DRIPPING SPRINGS QUARTZITE >
 *SECOND FM AGE N35 < C.A.M.B. >
 *SECOND FM NAME N35A < BOLSA QUARTZITE >
 *IGNEOUS UNIT AGE N50 < >
 *IGNEOUS UNIT NAME N50A < >
 *SECOND IG. UNIT AGE N55 < >
 *SECOND IG. UNIT NAME N55A < >
 *GEOLOGY COMMENTS N85 < MINERALIZATION PROBABLY ASSOCIATED WITH LCRET-TERT INTRUSIVE PERIOD. THESE INTRUSIVE PORPHYRIES ARE EXPOSED 1 MILE SW OF THE MINE. >

GENERAL COMMENTS

GENERAL COMMENTS GEN < >

From ASMOA conference at Superior - 2-23-61

A. G.

Mr. Ray Vanderflute, 653 Brown St., Superior, reported that he is planning to drill his Southern Belle property near Oracle. A tunnel has disclosed some good capping which indicates chalcocite, chalcopyrite and molybdenum. He plans an access road to the drill sites but has encountered trouble with the forest service.

Hilzinger, J. George, 1897, Treasure Land:
Arizona Advancement Co., Tucson, 160p.

**Santa Catalina
Mts.**

East of Tucson, in the foothills of the Santa Catalina mountains, there have been some wonderful discoveries of precious mineral. Several of these have been extensively worked, notably in the vicinity of Mammoth, a mining camp near the San Pedro river. The Mammoth Gold Mining and Milling Company has a large mill here, which is now idle, owing to disagreement between the English and American stockholders. It has been a large gold producer in the past, and the signs are now favorable for extensive operations in the future. The Mohawk mines are on a continuation of the famous Mammoth mine, and are owned by The Mohawk Mining and Milling Company, whose headquarters are at Hartford, Conn. This company has pursued a conservative policy in developing its property before going to the expense of erecting works, having, by means of a horse whim, sunk a double compartment shaft 330 feet on the lead, and driven over 1,000 feet of crosscuts and drifts at different levels. The results proving highly satisfactory, machinery for hoisting works and a twenty-stamp mill were put up, and a three-inch pipe line laid to the pumping plant, five miles distant and 700 feet lower. The pump, a Riedler, with six-inch suction and five-inch discharge, has a capacity of 500,000 gallons per twenty-four hours.

The Southern Belle is another valuable gold property upon which work has been discontinued, owing to mismanagement. There is a good ten-stamp mill on the property.

On the north side of the range, the Canada de Oro has long been known for its valuable placers, and during the past few months Major H. C. Reno and Mr. Frank Newsam have taken up two square miles of ground, about thirty-two miles from Tucson. They now have twenty-five men at work building a dam at a considerable elevation for the storage of water. Upon the completion of this they expect, after the summer rains, to have a large supply of water with a pressure that will enable them to hydraulic the placers, and, from the known richness of the ground, their enterprise will probably be successful.

DEPARTMENT OF MINERAL RESOURCES

STATE OF ARIZONA

FIELD ENGINEERS REPORT

Mine Southern Belle Mine & Mill

Date Feb. 15, 1961

District Oracle (Old Hat District, Pinal County

Engineer Axel L. Johnson

Subject: Present Status. Information from various sources in Oracle, & visit to the mill.

References Reports of Dec. 14, 1960 and Aug. 3, 1960.

Present Status Engineer visited the mill at Oracle and found it closed down. Engineer inquired about the status of the mine, and was informed that mining operations had been closed down permanently, and that the lease had been terminated.

Reference: RI 5516, p. 53 (map) 1959

DEPARTMENT OF MINERAL RESOURCES

STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine Southern Belle Mine

Date Aug. 3, 1960

District Oracle (Old Hat) District) Pinal County

Engineer Axel L. Johnson

Subject: Field Engineers Report. Personal visit & information from Carl and Clarence Pierson.

Location About 9 miles south of Oracle. Take Mt. Lemmon road south from Oracle for a distance of about 7 miles. Turn right on mine road, and drive about 2 miles to the mine.

Number of Claims 12 patented claims.

Owners Tucson Y. M. C. A., under agreement from Mrs. Elizabeth Lambert Wood, Long Beach, Wash., by which Mrs. Wood receives all the royalties and proceeds from the property during her lifetime. Mr. Clermont D. Loper is the secretary of the Tucson Y. M. C. A.

Lessees Carl Pierson, Oracle, Ariz.
Clarence Pierson, Oracle, Ariz.
Lowery Walker, Pecos, Texas.
Wayne Spears, Roswell, N. Mex.
Lease calls for 10 % royalty on net smelter returns.

Principal Minerals Gold ore with high silica.

Present Mining Activity Building roads and cleaning out old adits, in preparation for mining operations. 2 men working --- Carl Pierson and Clarence Pierson.

Geology & Mineralization The gold occurs in quartz veins, from 1 ft. to 4 ft. thick, and dipping from 5 to 10 degrees to the east. Both the hanging wall and the footwall is slate. The richest gold ore is found in rolls of the quartz veins.

Ore Values Assays taken on the vein have run from \$ 18 to \$ 56 per ton in gold. Assays taken on some of the old dumps have run from \$ 4 to \$ 10 per ton in gold. Vein also contain some very high grade pockets, which are small and spotty.

Milling and Marketing Facilities Operators plan on trucking the ore to the Hayden smelter at Hayden for use as silica flux. They state that the A. S. & R. Co. will give them free smelting, except for a small charge for slag loss (about 25 cents per ton). The trucking distance to Hayden is about 42 miles. They are also planning on building a mill for treating the high grade gold ore, and only shipping the low grade ore to Hayden. If they do not build a mill to treat the high grade, they state that they will ship the high grade ore to the A. S. & R. smelter at El Paso.

Old Mine Workings 12 old adits, running into the mountain, 8 of these being from 300 to 500 ft. long, and the remaining 4 being from 100 to 150 ft. in length.

Review of Recent Operations Lease was obtained in Dec. 1959, and work was started in Jan. 1960. About 3 miles of road has been built, with another 3 miles remaining to be built. Some of the old adits have been cleaned out and sampled, with several more adits to be cleaned out and sampled. Some stoping was done in one of the adits and 21 tons of ore stoped out and trucked to the A. S. & R. smelter in El Paso as a test shipment. No returns have been received from this as yet. Equipment consists of a bulldozer, a double drum slusher, a compressor, one 12 ton truck and one smaller truck.

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
OWNERS MINE REPORT

Date 7/10/39

return
Mine So. Belle Group

District Old Hat

Location So. Belle Canyon

Former name

Owner Mrs. Elizabeth Lambert Wood

Address Oracle, Ariz

Operator

Address

President

Gen. Mgr.

Mine Supt.

Mill Supt.

Principal Metals Gold

Men Employed

Production Rate

Mill: Type & Cap. 10-stamp

Power: Amt. & Type

Operations: Present None

Operations Planned

Number Claims, Title, etc. Apache Girl, Southern Belle, Dolphin, Humming Bird,
Lewis Patented

Description: Topog. & Geog. Head of So. Belle Canyon. Fossils found nearby (corals of marine growth) indicate that the stratified rocks in which vein occurs are devonian or silurian; two of the older formations red sandstone, grey sandstone, quartzite and limestone, under-laid and uplifted by an intrusion of diorite.

Mine Workings: Amt. & Condition

Considerable - 1000 ft. or more, poor condition

Geology & Mineralization

Quartz vein - fairly uniformly impregnated with gold

Ore: Positive & Probable, Ore Dumps, Tailings

Probable - 200,000 tons

Mine, Mill Equipment & Flow Sheet

Road Conditions, Route

Via Oracle to So. Belle Canyon

Water Supply

Pepper Sauce Canyon - approx. 1 mile

Brief History

20,000 to 30,000 tons of quartz lode has been extracted

Special Problems, Reports Filed

Water

Remarks

If property for sale: Price, terms and address to negotiate.

Not for sale or lease

Signed Mrs. Elizabeth Lambert Wood
Per P. K. D.

Use additional sheets if necessary.

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
OWNERS MINE REPORT

Mine *So Belle Group*

Date *7/10/39*

District *Old Hat*

Location *So. Belle Canyon*

Former name

Owner *Mrs Elizabeth Lambert Wood*

Address *Oracle*

Operator *I. E. E.*

Address

President

Gen. Mgr.

Mine Supt.

Mill Supt.

Principal Metals *Gold*

Men Employed

Production Rate

Mill: Type & Cap. *10 stamp*

Power: Amt. & Type

Operations: Present *none*

Operations Planned

Number Claims, Title, etc., *Apache Girl, Southern Belle, Dolphin, Humming Bird, Lewis. Patented*

Description: Topog. & Geog.

*Head of So. Belle Canyon
Fossils found near by (corals of marine growth) indicate
that the stratified rocks in which vein occurs, are Devonian or
Silurian, two of the older formations. Red sandstone, grey sandstone, quartzite
limestone, undisturbed & uplifted by an intrusion of diorite.
1000 or more,*

Mine Workings: Amt. & Condition

Considerable, poor condition

Geology & Mineralization

Quartz vein - fairly uniformly impregnated with gold

Ore: Positive & Probable, Ore Dumps, Tailings

Probable - 200 000 Tons

Mine, Mill Equipment & Flow Sheet

Road Conditions, Route

via Oracle to So Belle Canyon

Water Supply

- Pepper Sauce Canyon - approx 1 mile

Brief History

20 000 to 30 000 tons of quartz lode has been extracted

Special Problems, Reports Filed

Water

Remarks

If property for sale: Price, terms and address to negotiate.

Not for sale or lease.

Signed

Mrs Elizabeth Lambert Wood
per P.K. D.

REPORT UPON THE
SOUTHERN BELLE GOLD PROPERTY

OLD HAT DISTRICT
PINAL COUNTY
ARIZONA

By

WILLIAM P. BLAKE

Geologist and Mining Engineer

April, 1906

SOUTHERN BELL GOLD PROPERTY.

The Southern Belle Gold Mines are situated at the head of the Southern Belle Canyon, gulch or arroyo, descending from the high ridges of the Santa Catalina Mountains on the North-eastern end of the range, in Pinal County, Arizona. They are in the Mining District known as the "Old Hat" and are accessible by wagon road or automobile from Tucson by way of Oracle, a distance of about forty-eight miles. This may be much lessened by the construction of a few miles of road through a low gap in the mountains.

The altitude is from 5,000 to 6,000 feet above sea, and the climate is extremely favorable to all mining operations.

EXTENT OF PROPERTY

The property consists of ten or more mining locations, some of which are secured by patent from the United States, and a ten stamp gold mill, and office and other buildings, besides a pumping plant and pipe line for the supply of water and the mill site.

One of the claims has been considerably worked in a desultory way, without adequate equipment or capital, and has been lying idle for some years past owing to the death of their owner and delays in the settlement of the estate.

There are two groups of locations or claims, the Southern Belle Group and the Morning Star Group, on the opposite or Northern side of the Southern Belle Ridge.

SOUTHERN BELLE GROUP OF CLAIMS:

Apache Girl	14.83 acres
Dolphin	19.37 "
Humming Bird	2.18 "
Southern Belle	19.77 "
Lewis	26.61 "

THE MORNING STAR GROUP:

Morning Star	20.35 acres
Happy Thot	20.35 "
Gold Bug	15.11 "
General Hancock	15.11 "
Total	153.68 "

The position of these several claims is shown upon the accompanying map, carefully made by Mr. Edward Dietrich from the surveys and notes upon the ground. It is upon the scale of feet to the inch, and shows the form and extent of the lode mined out, the position of the company's mill and other buildings.

NATURE OF THE VEIN:

The claims of the Southern Belle Group cover the larger part of the gold-bearing quartz vein of the same name, from which a large amount of gold has been taken out from one claim alone. It is a flat or "blanket" vein, cutting through the hills in a nearly horizontal plane, and cropping out in the hill sides in such a way as to be readily reached and opened by tunnels and drifts from the surface, without the need of shafts, pumps and other hoisting appliances. The slight dip of inclination of the vein, about 20 to 30 degrees in a northeasterly direction towards the mill, facilitates the extraction of ore and invites the mining by a succession of tunnels.

Three tunnels have been run in from the Southern Belle Canyon and upwards of 18,666 tons of quartz have been extracted from this claim and worked at the company's mill in the canyon below, averaging, so far as can be ascertained, about ten dollars a ton. It is simple, free milling quartz without injurious element, and the gold is easily amalgamated on plates.

THE UPPER VEIN.

In the main stope of the Southern Belle Mine, extending into the Careless Claim ground, the mining has revealed the existence of an upper layer, or vein of quartz separated from the lower vein by a few inches, or fact, in thickness of slate or shale. It is particularly evident in the highest stope, but has not been much mined. It is again well shown at the surface in a shallow cutting or pit above the entrance to tunnel No. 1, where it is five feet or more in thickness. Sample No. 10 was taken there, over two feet of the thickness, and showed a value of \$15.00 per ton.

In many places the quartz of the lode is more or less singled with the slaty wall rocks, and as the included layers of slate thick down the layers of quartz are united and the upper and lower veins become blended or merged in one.

The general thickness is over six feet, about four feet of quartz below and two feet above a parting layer of red shale.

In the estimate of the total thickness of the vein the general existence of an upper and lower layer is considered in averaging the thickness at five feet.

AMOUNT OF ORE MINED:

The extent of the extraction of ore is ascertained approximately by the measurement of the space left by the removed ore. The space or stope extends northerly and easterly through the Southern Belle Claim and into an adjoining claim known as the "Careless". The total length of the stope across the two claims is about 500 feet, and its width 160 feet in its widest part. Computing the area by squares of forty feet each and taking the average thickness of the quartz taken out at five feet and its weight at twelve cubic feet to the ton, we reach the total tonnage of 18,666 tons.

AMOUNT OF VEIN STANDING:

By a similar method of measurement the horizontal area and the tonnage upon all the claims is ascertained. It amounts to 637,500 tons. Subtracting the 18,666 tons mined, leaves 618,800 tons in round numbers as the amount standing in the vein within the present ascertained limits. There is reason to believe that the vein has greater extension and area in the Delphin Claim, not yet de-

veloped. It may extend southward through the main ridge under the great thickness of quartzite, which there forms the summit between the head of the Southern Belle Canyon and the upper tributaries of the Pepper Sauce Gulch.

VALUE AND EXTENT OF ORE.

The value of the ore has already been indicated in a general way as shown by the working of the mill. It is regrettable that no record has been kept of the full number of tons worked and of the yield in gold per ton, or, if kept in any form, such records have been lost or destroyed. From W. Brzjevitch I learn that 713 tons of the quartz of this lode, packed over to a five stamp mill in Pepper Sauce Gulch in 1844, averaged \$15.75 per ton. This was no doubt selected quartz and above the average in value. The gold was valued at \$14.75 per ounce.

I am also informed that a trial run of 1,200 tons of quartz from the lode was made in the Southern Belle Mill by Wm. Brzjevitch. Of this lot 1,000 tons was first class selected ore, and 200 tons were from the low grade portions; the 1,000 tons averaged \$9.33 per ton of gold saved.

Sampling upon such a vein is eminently unsatisfactory, inasmuch as large quantities of the quartz are required to gain an average. Mill tests of fifty or one hundred tons are far more reliable as regards an average.

Numerous tests by panning portions of the loose, broken ore were made, especially along the outcroppings upon the Apache Girl and the Crosstown at the higher croppings. Such tests were very satisfactory in showing the general presence of the metal in paying quantities at each of the openings. The gold is generally fine and free, any pyrites which formerly existed having been fully oxidized.

The heavy white powder which is formed with the gold by panning is the carbonate of lead resulting from the oxidization of the galena. It has been observed from the traces of lead ore are most abundant, the quartz is richer in gold than where there is no lead.

It is evident that in this mine and vein, as in all other gold bearing veins, the gold is most uniformly spread. It is not found in equal quantities everywhere in all portions of the lode. There are portions of the vein in streaks and patches consisting of high grade quartz, together with low grade portions which will not pay to extract. Consequently in mining and milling attention is given to the selection of the ore, such portions only as will pay being stoped and sent to the mill, while the barren quartz and any rock is used as filling.

As a rule, in the Southern Belle Mine, with but few exceptions the hard parts of the lode left standing in the tunnels and in some places in the stopes are low grade, and for this reason were not mined out.

The higher values are found in the upper stopes and upon the upper vein and at the croppings of the unworked vein on the Crosstown and Apache Girl Claims.

In the upper stope on the Careless, the samples showed a value of \$11.40 per ton for thirty inches of quartz; another point five feet of quartz was found to be worth \$4.40 per ton.

The coppings of the upper vein on the hill above Tunnel No. 1 were sampled for thickness of two feet and yielded at the rate of \$15.00 per ton. This quartz also showed good value, indicating from \$15.00 to \$20.00 by the panning test. It is well to note that the average of four assays above given is \$9.70.

Samples from the croppings of the eastern and of the Crosstown claim gave high results. At the north opening a thickness of two and a half feet of quartz, where free gold was seen, yielded at the rate of \$30.40 per ton. A sample from the central opening (a photograph of which was taken) yielded at the rate of \$164.20 per ton. This is exceptional and above the working average. Another sample of the southern opening, where the quartz is very hard and not much mineralized, gave only a trace. The average of the twenty-three samples from the ore ground is \$10.80 per ton. I prefer, however, not to estimate the value at a higher figure than \$8.00 per ton for the milling ore, a figure which I believe to be moderate and conservative and likely to be more than realized with proper working.

ORE OUT:

A large amount of the ore is available for immediate working, not along the stopes above the old mine, but in the upper vein near Tunnel No. 1 and at the open cuts at the lower end of the Crosstown claim, and around other workings.

It is believed to be possible to open into the lower portions of the vein on the Careless claim by a short tunnel run in from the ravine north of the mill, at a distance of only ninety-five feet, and part of this through the rotten diorite rock, easily excavated. The position of this suggested tunnel and tramway or chute to the Crusher floor of the mill is indicated by the red lines upon the map. It will not only provide a shorter and more economical and convenient outlet for the mine, but will also have the greatest advantage of being put below the mouths of tunnels upon the claim known as the Humming Bird, where good quartz is exposed.

It is not possible to exactly compute the value of the large area of unworked vein in the two claims extending up the hill to the croppings to the westward (the Crosstown Claim and the Apache Girl). The vein at the croppings at both ends and where exposed along the hillside prospects assays well, and it is fair to assume that the pay is continuous from one end to the other of this exposure. Not, however, limiting the estimate to these two claims, but including the whole of the unworked area of 618,000 tons and allowing one half of it for barren ground, we have approximately 309,400 tons worth, gross, at \$8.00 per ton, \$2,475,200.

COST OF MINING AND MILLING:

In the future working of the property I strongly advise beginning the mining at the lowest point and the extension of the mining upwards and backwards from the main outlet, much in the manner of coal mining or drift mining, piling the waste quartz and rock behind, thus largely avoiding the use of timbers, while the roof is well supported by the filling.

Transportation to the mill may be by tramway, or by an aerial tramway, or by wire transmission. With these and other labor saving adjuncts and the complete equipment of the mill, the cost of mining and milling should not exceed \$4.00 per ton.

THE MILL:

The company's mill of ten stamps of modern construction is conveniently located below the chief part of the mines on the main arroyo or gulch of the Southern Belle. It is so placed that ore from the lowest tunnels can be delivered by a chute to the top of the mill, high enough for a rock breaker or crusher and the required grizzlies and a bin above the self feeders, of which there are two.

There is no rock breaker but one is essential to successful, economical work. The needed pulleys are there and a counter shaft and breaker can be readily installed.

The mortars appear to be in good order. The amalgamated aprons are in good condition. There are two at each end of the battery, each twelve feet long.

The power is supplied by a 40 h.p. steam engine. The boiler is tubular, of locomotive type, and is set in adobe. Wood, which can be had in abundance at from \$4.00 to \$5.00 per cord, is used for fuel. The boiler should be inspected and tested before using.

There are many tools and adjuncts of the mill, among them a differential pulley, dies for cutting threads on pipes, blacksmiths tools, some carpenter's tools and many striking hammers, drills, bars, picks and gads for mining.

Additional belting will be required for the mill when the rock breaker is added, and when a breaker is added the capacity per stamp per day of twenty-four hours should at least be three tons.

The general arrangement of the interior of the mill and its appearance is well shown by the annexed photograph taken by Mr. Frank Dietrich, by the aid of the magnesium flash light.

It will be necessary to renew the battery blocks, which are badly decayed. It would be well to make a substantial concrete grouting block to take the place of the wood without the necessity of moving the mortars from the place; all the decayed wood being removed while the mortars are blocked up or otherwise supported by the frame during the making of the cement block.

WATER SUPPLY:

The water for the mill is obtained at the Southern Belle Millsite from a well and underground flow in the gulch known as Pepper Sauce, about a mile northeast, where there is a good flow throughout the year. The location is picturesquely chosen in a dense grove of sycamore, ash, walnut, mulberry, cottonwood, and other trees, which, by their size and luxuriant growth, bear witness to an abundant and continuous water supply.

Pepper Sauce Creek drains the extensive water shed between Mt. Rice and Apache Peak, opposite to the sources of the Canada del Oro. The amount of water flowing at the time of my visit, visibly, was two feet wide and a depth of one inch. This, of course, did not show the amount of the underground flow. The well, sunk at one side of the channel, is cribbed and planked, but requires repairs and cleaning. I believe that there is water sufficient for the ten stamp mill.

The pump, a Worthington Duplex, No. 18,760 is 7 1/2 inches by 3 by 10 inches. It is in fair condition but needs to be taken apart and cleaned and oiled. It rests upon a timber foundation a few feet higher than the top of the well and is operated by steam from a wood burning locomotive boiler. There are from twenty to twenty-five cords of seasoned wood on hand.

The barometer at the well and pump indicates a difference of 600 feet below the mill. The summit pump on the pipe is said to be 750 feet above the pump. From that point the water descends to the mill by gravity.

The three inch wrought iron pipe is, in part, in poor condition and requires

renewing. There are some twenty-five lengths of unused pipe on hand.

GEOLOGY OF THE SOUTHERN BELLE:

The geological structure of the ridge out by the Southern Belle gold ledge is extremely interesting, and taken in connection with the adjoining areas, forms a very instructive chapter in the history of the earth.

From the testimony of fossils found by me near the Southern Belle (chiefly corals of marine growth) it appears that the stratified rocks in which the vein occurs are Devonian or Silurian, two of the older formations of the globe. These rocks in the Southern Belle Canyon consist of a series of shales, red sand stones, grey sandstone, quartzite and limestone, underlaid and apparently uplifted by an intrusion of diorite. This rock rising from the depths of the earth has hardened and altered the softer formation with which it came in contact, and appears to have caused the quartz vein and its impregnations with gold.

The existing conditions warrant the conclusion that the Southern Belle lode formerly had a much wider extension than we now find, that it extended over a large part of the region drained by the present canyon following generally the plains of contact of the lower shales with the diorite, and that it has been cut through, eroded and denuded by the drainage of the main canyon and its branches, leaving the edges of the blanket ledge exposed as we find them, while the portions of the ledge cut away have been carried to lower levels, broken up and the gold dislodged to form the placer deposits which line the canyon from the summit of the vein to the mesa, two miles away.

This cutting out by the canyon forms a fine section of the rock formation from one end of it to the other, showing the edges of the uplifted strata, below and above the vein, all dipping regularly eastward, at from 15 to 25 degrees. This is the best illustrated by a section from the summit of the mountain to the mesa, a reduced copy of which is herewith presented.

SECTION OF THE FORMATION AS SHOWN IN THE SOUTHERN BELLE CANYON

I also append a geological map of the Old Hat Mining District from my own exploration and observation, made during my recent and former visits. This shows the topographical distribution of the formations and their relations to the Southern Belle and other groups of mines.

The lowest substratum or foundation for the strata is the coarse, grey, porphyritic granite of Oracle, the "oracle granite", which covers a wide area in the northern and central parts of the Old Hat District. This is traversed by heavy intrusive masses or dykes of diorite, by which the stratified formations have been uplifted, and to a varying degree altered by hardening and by the flow of silicious water forming the quartz veins.

THE MORNING STAR GROUP:

This group of several claims is north and west of the Southern Belle lode, and the claims cover a different system of lodes. I find there a series of massive croppings of quartz resembling reefs of quartzite at and near the contact of the older limestone and granite.

These claims have little development and are in the conditions of prospects.

(Signed) Wm. P. Blake

COPY OF REPORT

ON

THE APACHE PEAK CONSOLIDATED

MINING CO'S

SOUTHERN BELLE GROUP

PINAL COUNTY

ARIZONA

FORMING A PART OF THE INTERLOCKING GROUPS OF TWENTY-ONE GOLD
PROPERTIES, CONSOLIDATED MARCH 1924, UNDER THE OWNERSHIP OF
CAPTAIN W. L. RUCKER AND ASSOCIATES.

BY--WILLIAM P. BLAKE,

GEOLOGIST & MINING ENGINEER.

April 1906

SOUTHERN BELLE GOLD PROPERTYLOCATION.

The Southern Belle Gold Mines are situated at the head of the Southern Belle Canyon, gulch or arroyo, descending from the high ridges of the Santa Catalina Mountains on the northeastern end of the range, in Pinal County, Arizona. They are in the mining district known as the "Old Hat" and are accessible by wagon road or automobile from Tucson by way of Oracle, a distance of about forty-eight miles. This may be much lessened by the construction of a few miles of road through a low gap in the mountains.

The altitude is from 5,000 to 6,000 feet above sea, and the climate is extremely favorable to all mining operations.

EXTENT OF PROPERTY.

The property consists of nine mining locations, some of which are secured by patent from the United States.

One of the claims has been mined considerably in a desultory way, with-out adequate equipment or capital, and has been lying idle for some years past owing to the death of their owner and delays in the settlement of the estate.

There are two groups of locations or claims. The Southern Belle Group and the Morning Star Group, on the opposite or northern side of the Southern Belle Ridge.

SOUTHERN BELLE GROUP OF CLAIMS.

Apache Girl	--	14.83	acres
Dolphin	--	19.37	"
Humming Bird	--	2.18	"
Southern Belle	--	19.77	"
Lewis	--	26.61	"

THE MORNING STAR GROUP

Morning Star	--	20.35	"
Happy Tot	--	20.35	"
Gold Bug	--	15.11	"
General Hancock	--	15.11	"
Total		153.68	"

The position of these several claims is shown upon accompanying map.

NATURE OF THE VEIN.

The claims of the Southern Belle Group cover the larger part of the gold-bearing quartz vein of the same name, from which a large amount of gold has been taken out from one claim alone. It is a flat or "blanket vein," cutting through the hills in a nearly horizontal plane, and cropping out in the hillsides in such a way as to be readily reached and opened by tunnels and drifts from the surface, without the need of shafts pumps and other hoisting appliances. The slight dip or inclination of the vein, about 20 to 30 degrees in a northeasterly direction towards the mill, facilitates the extraction of ore and invites the mining by a succession of tunnels.

Three tunnels have been run in from the Southern Belle Canyon and upwards of 18,666 tons of quartz have been extracted from this claim and worked at the company's mill in the canyon below, averaging, so far as can be ascertained, about ten dollars a ton. It is simple, free milling quartz without injurious element, and the gold is easily amalgamated on plates.

THE UPPER VEIN.

In the main stope of the Southern Belle Mine, extending into the Careless Claim ground, the mining has revealed the existence of an upper layer, or vein of quartz, separated from the lower vein by a few inches, or feet, in thickness of slate or shale. It is particularly evident in the highest stope, but has not been much mined. It is again well shown at the surface in a shallow cutting or pit above the entrance of Tunnel No. 1, where it is five feet or more in thickness. Sample no. 10 was taken there, over two feet of the thickness, and showed a value of \$15.00 per ton.

In many places the quartz of the lode is more or less mingled with the slaty wall rocks, and as the included layers of slate thin down the layers of quartz are united and the upper and lower veins become blended or merged in one.

The general thickness is over six feet, about four feet of quartz below and two feet above a parting layer of red shale.

In the estimate of the total thickness of the vein, the general existence of an upper and lower layer is considered in averaging the thickness at five feet.

AMOUNT OF ORE MINED.

The extent of the extraction of ore is ascertained approximately by the measurement of the space left by the removed ore. The space or stope extends northerly and easterly through the Southern Belle Claim and into an adjoining claim known as the "Careless." The total length of the stope, across the two claims,

is about 500 feet, and its width 160 feet in its widest part. Computing the area by squares of forty feet each and taking the average thickness of the quartz taken out at five feet and its weight at twelve cubic feet to the ton, we reach the total tonnage of 18,666 tons.

AMOUNT OF VEIN STANDING.

By a similar method of measurement, the horizontal area and the tonnage upon all the claims is ascertained. It amounts to 637,500 tons. Subtracting the 18,666 tons mined, leaves 618,800 tons in around numbers as the amount standing in the vein within the present ascertained limits. There is reason to believe that the vein has greater extension and area in the Dolphin Claim, not yet developed. It may extend southward thru the main ridge under the great thickness of quartz-site, which there forms the summit between the head of the Southern Belle Canyon and the upper tributaries of the Pepper Sauce Gulch.

VALUE AND EXTENT OF ORE.

The value of the ore has already been indicated in a general way as shown by the working of the mill. It is regrettable that the record has not been kept of the full number of tons worked and of the yield in gold per ton, or, if kept, in any form, such records have been lost or destroyed. From W. Brajevich, I learn that 713 tons of the quartz of this lode, packed over to a five stamp mill in Pepper Sauce Gulch in 1884, averaged \$15.75 per ton. This was, no doubt, selected quartz and above the average in value. The gold was valued at \$15.75 per ounce.

I am also informed that a trial run of 1,200 tons of quartz, from the lode was made in the Southern Belle Mill by Wm. Brajevich. Of this lot, 1,000 tons was first class selected ore, and 200 tons were from the low grade portions; the 1,000 tons averaged \$9.53 per ton of gold saved.

Sampling from such a vein is eminently unsatisfactory, inasmuch as large quantities of quartz are required to gain an average. Mill tests of fifty or one hundred tons are far more reliable as regards an average.

Numerous tests by panning portions of the loose, broken ore were made, especially along the outcroppings upon the Apache Girl and the Crosstown at the higher croppings. Such tests were very satisfactory in showing the general presence of metal in paying quantities at each of the openings. The gold is generally fine and free, any pyrites which formerly existed having been fully oxidized.

The heavy fine powder, which is formed with the gold by panning, is the carbonate of lead resulting from the oxidization of the galena. It has been observed where the traces of lead are most abundant, that the quartz is richer in gold than where there is no lead.

It is evident that in this mine and vein, as in all other gold-bearing veins, the gold is not uniformly spread. It is not found in equal quantities everywhere in all portions of the lode. There are portions of the vein in streaks and patches consisting of high grade quartz, together with low grade portions which will not pay to extract. Consequently, in mining and milling attention is given to the selection of the ore, such portions only as will pay being stoped and sent to the mill, while the barren quartz and any rock is used as filling.

As a rule, in the Southern Belle Mine, with but few exceptions, the hard parts of the lode left standing in the tunnels and in some places in the stopes are low grade, and for this reason were not mined out.

The higher values are found in the upper stopes and upon the upper vein and at the croppings of the unworked vein on the Crosstown and Apache Girl Claims.

In the upper stope on the Careless, the samples showed a value of \$11.40 per ton for thirty inches of quartz: at another point five feet of quartz was found to be worth \$4.40 per ton.

The croppings of the upper vein, on the hill above Tunnel No. 1, were sampled for a thickness of two feet and yielded at the rate \$15.00 per ton. This quartz also showed good value, indicating from \$15.00 to \$20.00 by the panning tests. It is well to note that the average of four assays above given is \$9.70.

Samples from the croppings of the eastern end of the Crosstown claim gave high results. At the north opening a thickness of two and a half feet of quartz, where free gold was seen, yielded at the rate of \$30.40 per ton. A sample from the central opening yielded at the rate of \$164.20 per ton.

This is exceptional and above the working average. Another sample of the southern opening, where the quartz is very hard and not mineralized, gave only a trace. (THE AVERAGE OF THE TWENTY-THREE SAMPLES FROM THE ORE GROUND FIGURE \$10.00 PER TON. I PREFER, HOWEVER, NOT TO ESTIMATE THE VALUE AT A HIGHER FIGURE THAN \$1.00 PER TON FOR THE MILLING ORE, A FIGURE WHICH I BELIEVE TO BE MODERATE AND CONSERVATIVE AND LIKELY TO BE MORE THAN REALIZED WITH PROPER WORKING). -88°

ORE OUT

A large amount of the ore is available for immediate working, not along the stopes above the old mine, but in the upper vein near Tunnel No. 1, and at the open cut at the lower end of the Crosstown claim, and around other workings.

It is believed to be possible to open into the lower portions of the vein on the Careless Claim by a short tunnel in from the ravine north of the mill, at a distance of only ninety-five feet, and part of this thru the rotten diorite rock, easily excavated. It will not only provide a shorter and more economical and convenient outlet for

the mine, but will also have the greatest advantage of being put below the mouths of tunnels upon the claim known as the Humming Bird, where good quartz is exposed.

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COST OF MILLING AND MINING.

In the future working of the property, I strongly advise beginning the mining at the lowest point and the extension of the mining upwards and backwards from the main outlet, much in the manner of coal mining or drift mining, piling the waste quartz and rock behind, thus largely avoiding the use of timbers, while the roof is well supported by the filling.

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WATER SUPPLY.

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SECTION OF THE FORMATION AS
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This cutting out by the canyon forms a fine section of the rock formation from one end of it to the other, showing the edges of the uplifted strata below and above the vein, all dipping regularly eastward, at from 15 to 25 degrees.

The lowest substratum or foundation for the strata, is the coarse, grey, porphyritic granite of Oracle--the "Oracle Granite", which covers a wide area in the northern and central parts of the "Old Hat" District. This is traversed by heavy intrusive masses or dykes of diorite, by which the stratified formations have been uplifted and to a varying degree altered by hardening and by the flow of silicious water forming the quartz veins.

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These claims have little development and are in the condition of prospects.

(Signed) Wm. P. Blake.

CAMPO BONITO MILL

CAMPO BONITO CANON AND ROAD TO TUCSON



Gold Bug
s.b.

General Hancock
s.b.

Morning Star
s.b.

Happy Thot
s.b.

New Departure
R.

New Discovery
R.

Mischief
B.

Careless
B.

Humming Bird
B.

* Apache Peak

Apache Girl
s.b.

Cross Town
B.

Southern Belle
s.b.

MILL

CAMP

SOUTHERN BELLE CANON

Lewis
s.b.

Apache Boy
R.

Tom Cat
B.

Dolphin
s.b.

Senator
B.

Alto
B.

New Era
R.

Apache Peak
R.

ROAD TO TUCSON

CONSOLIDATED

APACHE PEAK

Mining Claims

PINAL Co. ARIZONA

Scale 1 inch = 300 ft.