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PRINTED: 01-06-2011

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES AZMILS DATA

PRIMARY NAME: COBRE GRANDE MTN

ALTERNATE NAMES:
COWBOY
SAYERS J.C.
COBRE GRANDE GROUP 1-6
COBRE GRANDE MINE

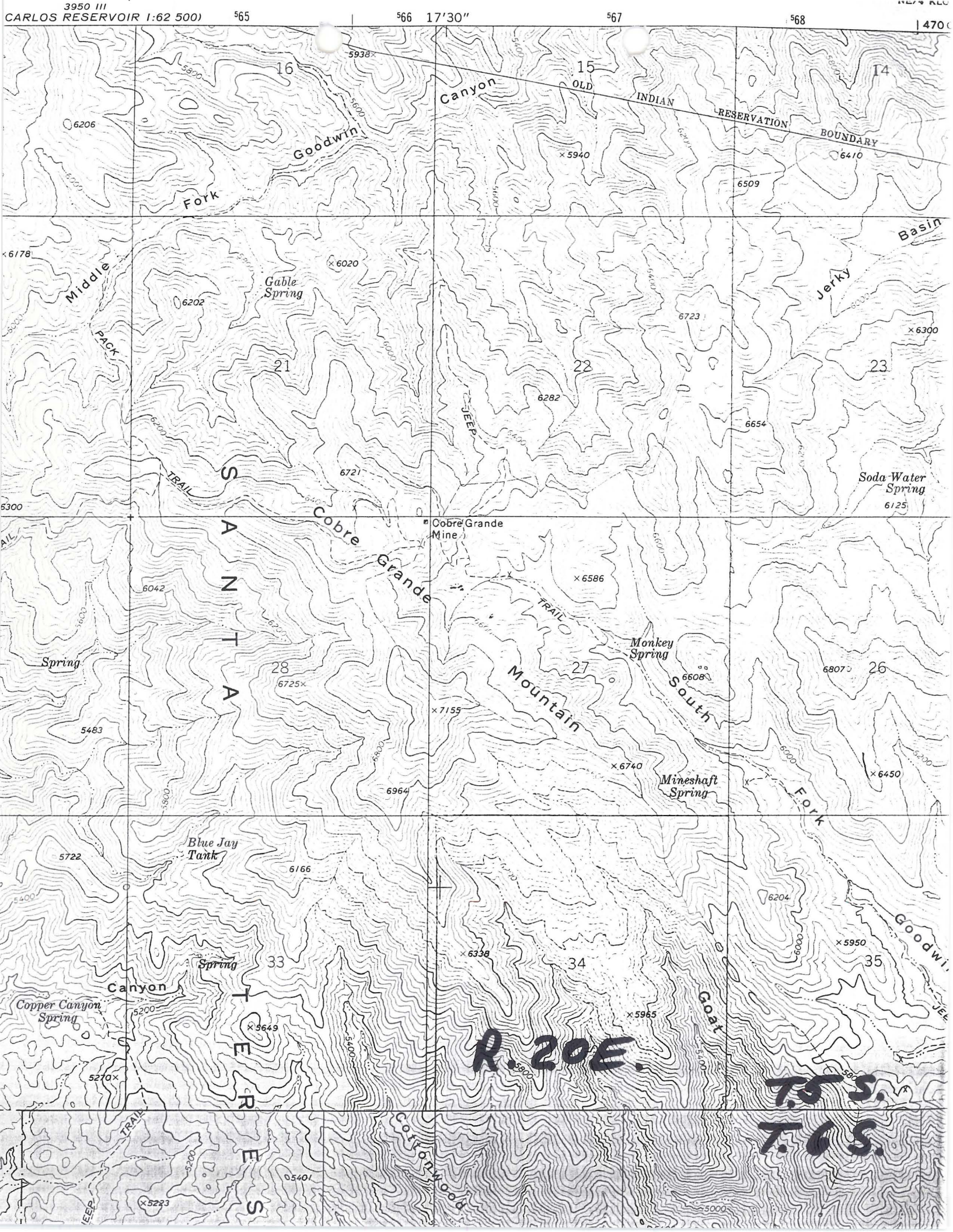
GRAHAM COUNTY MILS NUMBER: 148

LOCATION: TOWNSHIP 5 S RANGE 20 E SECTION 28 QUARTER NE
LATITUDE: N 32DEG 58MIN 34SEC LONGITUDE: W 110DEG 17MIN 34SEC
TOPO MAP NAME: COBRE GRANDE MTN - 7.5 MIN

CURRENT STATUS: PAST PRODUCER

COMMODITY:
COPPER OXIDE
ZINC
COPPER
LEAD

BIBLIOGRAPHY:
USGS PP 461, GEOLOGY KLONDYKE QUAD, P. 136
ADMMR "U" FILE
ROSS, CLYDE P., USGS BULL. 763, 1925, P. 102-103
ADMMR COBRE GRANDE MTN FILE
SEE: GOLD STAR (CARD)
USBM OFR MLA 26-93 CORONADO NAT. FS PART 10


3950 III
CARLOS RESERVOIR 1:62 500)
565
566
17'30"
567
568
470
OLD INDIAN RESERVATION BOUNDARY
Goodwin Canyon
Middle Fork
Jerky Basin
Gable Spring
PACK TRAIL
JEEP TRAIL
SANTA TERES
Cobre Grande Mountain
Cobre Grande Mine
Soda Water Spring
Monkey Spring
South Fork
Mineshaft Spring
Blue Jay Tank
Spring
Copper Canyon Spring
Canyon
Goat
Cottonwood
Goodwin
R. 20E.
T. 5 S.
T. 6 S.

R E P O R T

on the

COBRE GRANDE MINE

Made for Aravaipa Copper Company.

After an examination extending over a period of six days, sufficient information and data were secured to reach the following:

CONCLUSIONS:

The property is a partly developed prospect of great interest, well worthy of careful development. There is about 1,700 feet of development work which could not be duplicated for less than $15,000.00 at the present time. Every bit of this work can be used to good purpose in the further development of the mine. Fully $5,000.00 would have to be expended to duplicate the camp equipment, trails, roads, etc., now belonging to the property. The present workings, while showing considerable ore of a grade between 8% and 15% copper, are much too shallow to permit of any correct estimate of the real value of the mine. With the work now done, which can justly stand as one of the assets of the property, the price at which the mine is offered must be considered as a very unusual bargain.

LOCATION:

The mine is located about 10 miles west of Arizona Eastern Railway station at Geronimo, in the heart of the Santa Teresa Mountains. At present it is reached over a fair wagon road to Black Rock, a distance of 14 miles, and thence by good trail 9 miles to the mine.

PROPERTY:

There are 14 claims, all lawfully located, monumented, and recorded.

GEOLOGY:

The geology is rather complex and not clearly exposed by the present workings. The surface is covered in many places by dense brush and considerable soil which makes the story of the rocks rather obscure and difficult to decipher. There appears to be two fault fissures running about parallel from southeast to northwest. Both of these faults are mineralized to an average width of from 40 to 60 feet. The one to the southwest is characterized throughout its entire length by a heavy gozen of iron oxides, mainly honey-combed limonite, and shows a very open structure and strong leaching action. This is the fissure or vein on which the so-called Iron tunnel was started and this vein gives much promise of secondary enrichment and large bodies of commercial shipping ore when the area of secondary enrichment is reached. This is the strongest vein on the property and can be clearly traced from a point on the trail, just below the boarding house, to a pit showing strong iron bodies on the trail to Araveipa, a distance of about 2,000 feet.

The parallel vein lies about 200 feet to the northeast from the iron vein. This vein consists almost entirely of metamorphic contact minerals such as garnet, actinolite, wollastonite, etc. It is about 60 feet wide and has yielded all of the shipping ore which has been exported from the property. It shows little leaching

Considerable bodies of bornite and chalcopyrite ores have been mined from this vein right from the grass roots. This vein can be distinctly traced from a point near the Mong tunnel to the Cooper shaft, a distance of about 800 feet. It is much decomposed in places and contains much iron pyrites and should yield large and valuable lenses of copper ores throughout its entire length and to considerable depth. Both of the veins described above dip regularly to the southwest at an angle of about 45°. There appears to be a marked displacement of these veins in the workings of the Mong tunnel. The exact movement is not entirely clear but the veins are so large and strong that there has been no difficulty in following them horizontally and vertically past the displacements. The iron vein for a part of its course has a diorite foot-wall, with chrystaline-schist for the hanging wall. Further northwesterly, the foot-wall is limestone and the hanging wall felsite-porphyry. The garnet vein at the surface has limestones for both walls. The limestones do not appear to be deep and probably will not go deeper than 300 feet from the surface at any point. It is believed that the fractures and mineralization pass below the limestone area and it is reasonable to suppose that the veins will be more compact and of better grade after they enter the diorite area and escape the interference of the limestones.

To the northwest is a strong felsite porphry dike cutting across the country from northeast to southwest and dipping about 40° to the northwest. There is,

probably, some faulting along this dike and wherever it touches the limestones, which is for a distance of about 1,300 feet, there is strong mineralization, much limonite, and rich bunches of copper ore. The Carbon tunnel is at the extreme northeast end of this mineralization and a sample of ore outcropping at this point gave 10.78% copper. Four hundred feet to the south, on the same contact, is the Brooking shaft, with small bunches of ore at the surface which assay 17.8% copper. Two hundred feet southwest from this point is the Cooper shaft, 80 feet deep, with water in the bottom. It is claimed that they passed thru seven feet of high grade sulphide ore near the bottom. Samples picked up from a pile on the dump gave 4.4% copper. The heavy irony outcrop continues along the dike, so long as it is in limestone, to a distance of about 800 feet southwest of the Cooper shaft.

This dyke cuts off the iron and garnet veins, and they cannot be traced to the northwest after they reach the felsite dyke. It would be reasonable to expect that large and valuable concentrations would be found at the regions of union of the veins with the dyke contact area.

DEVELOPMENT:

The Iron tunnel was started on the vein and should have been kept there, but for some reason was driven very crooked and out into the foot-wall limestones. It is caved in at about 250 feet from the mouth but is said to extend to a point directly under and past the Mong

tunnel workings, a distance of over 600 feet. The Mong tunnel with its drifts and crosscuts is about 350 feet. There is a raise up 20 feet, all in ore of fair grade, and ore now being sorted from the product of this raise gave 9.4% copper and 1/2 oz. silver per ton. A shallow open cut on the surface 20 feet above this raise was turning out ore which assayed 8.9% copper and 1-3/4 ozs. silver per ton. It is reasonable to expect several cars of 40 tons each of this grade will be easily and quickly mined from this area, which should be converted into a "glory hole" as soon as possible.

There is a winze 45 feet deep, all in limestone, going down from the main drift of the Mong tunnel.

The Weast tunnel lies about 200 feet north from the Mong tunnel. It has about 250 feet of drifts and crosscuts, much of it in low grade ore.

The Cooper shaft is down 80 feet. The Brooking shaft is down 45 feet. Both of these shafts are all in vein matter with bands and bunches of high grade ore. The Carbon tunnel has about 100 feet of work, nearly all in felsite dyke, and shows high grade ore only at its mouth, which assays, when clean, nearly 18% copper. The Fisher tunnel, which is a crosscut intending to cut the veins about 300 feet below their outcrop, is in 500 feet, mainly in dioritic rocks, some of which are crushed and much altered.

ORE:

The ore so far exposed is entirely sulphides in the form of bornite and chalcopyrite. Practically no

ore can be said to be blocked out, although ore is exposed at enough points and of proper grade to give promise of several carloads to be extracted from present surface workings at the Mong tunnel, Brooking shaft, and Carbon tunnel.

VALUE OF THE PROPERTY:

The value of the property depends entirely upon the results of future development work. There would appear to be at least $20,000.00 of useful work done, to which must be added the value of the high grade ore outcropping on the surface and the legitimate expectations of good bodies of ore to be opened up by a very small amount of well placed development work projected from the ends of the tunnels now so nearly completed.

NATURAL RESOURCES:

The most important of these is a large stumpage of unusually fine pine timber. I am advised that the forestry service has estimated that there are 700,000 board feet of good pine on and near these claims. There are also oak and juniper well suited for mine purposes. Near the camp there is ample water for domestic purposes; at Cold Springs, at the northwest end of the property, is a strong spring which could be piped around to a point near the mouth of the Fisher tunnel and used for milling purposes. The altitude of 6,000 feet gives a perfect summer climate and not enough cold in winter to interfere with operations.

ROADS:

As stated before, the wagon road is fair for a distance of 14 miles from Fort Thomas to Black Rock ore

bin, and a good t ll leads from there to th. .ine. A good automobile road could be built all on a gravelly mesa hogback from Fort Thomas to Black Rock and thence to the ridge west of Fisher's Gulch. At this point a mile of rather heavy rock work would come in. The road would then follow the trail to camp. Most of it would be little more than cutting brush, but one more mile would entail some rock work. The cost would be about as follows:

Fort Thomas to Black Rock, 14 miles	$ 700.00
Black Rock to Fisher's Ridge, 2 miles	1000.00
Past Fisher's Camp, 1 mile	5000.00
Rock work along trail, 1 mile	3000.00
Road along trail	600.00
Total cost of wagon road	$10300.00

This road could be built to be level or down grade in favor of the load practically the entire distance. It could be kept in repair easily, and freight with motor trucks would cost not to exceed $3.00 per ton, loading at railroad 20¢, and railroad freight to smelters at Globe $1.25, making a total from mine to smelter of $4.45.

TREATMENT:

All ore not sorted out for direct shipment should be milled in a mill at the mouth of the Fisher tunnel.

The flotation method of concentration is indicated.

RECOMMENDATIONS:

1. The Iron tunnel should be cleaned out and caving ground retimbered.

2. At a point about 325 feet in the Iron tunnel where there is a sharp bend to the right, a crosscut should be driven about due south to cut the iron vein below a very strong copper stained iron outcrop on the surface.

3. The winze in the Mong tunnel should be sunk 50 feet to connect with the Iron tunnel for ventilation and cross-

cuts driven at is point in the Iron tunnel from the diorite to schist. I say, "Sink the winze" rather than "Raise from the tunnel", because of the short distance and because of the cost and difficulty of ventilating the raise.

4. Drive the Fisher tunnel to a point directly under the Cooper shaft.

5. Place a small gasoline hoist, capable of lifting a winze bucket 300 feet, on the Cooper shaft, and sink said shaft to connect with the Fisher tunnel.

6. Connect the iron tunnel, by driving along the garnet vein, with the Cooper shaft.

By these plans the entire mine would be worked and ventilated through Fisher tunnel to a depth of 250 feet and deeper work could be planned to raise all ore and water to the Fisher tunnel.

Report made at Globe, Arizona, May 15, 1916.

Revised at Globe, Arizona, to February 1, 1917.

File Copied for
Jensen 10/6/88-at

COBRE GRANDE GRAHAM COUNTY

NJN WR 8/19/88: Provided information to Richard Ducote of the Arizona Daily Star on a new project of Gold Star Inc (card). A press release Mr. Ductore had received reported that Gold Star had acquired a lease/purchase option on the Cobre Grande, (file) Graham County. The press release by John Frost reported 'metal values' in excess of 15% and the potential to develop a large tonnage, creating in excess of $5000 per ton/Ag to begin production in 1989.

COBRE GRANDE MINE ~~Do Not Reproduce~~ GRAHAM COUNTY

Mr. John W. Hinton, 3730 W. Rose Lane, Phoenix, Arizona - owner of Cobre Grande Mine as of April 7, 1966. FPK Note 4-7-66

Secs. 21, 22, 27 & 28, T5S, R20E

References: USGS Bull. 763, p. 102
" P.P. 461, p. 135 Plate I

GRAHAM COUNTY, AZ, WENDY JOHN - RECORDER BY: SHARON FOX
DATE: 03/24/1999 TIME: 4:37 PAGE #: 0001 OF 0004 FEE #: 1999 1599 **

When recorded, mail to:

Name: _____

Address: _____

City/State/Zip Code: _____

RECORDER GRAHAM COUNTY ARIZONA

Space above this line for Recorder's Use

NOTICE OF MINING CLAIM

OWNERS IN 1999

1. TYPE OF NOTICE: ☐ Location ☐ Amendment ☐ Relocation
2. TYPE OF CLAIM: ☐ Placer ☐ Lode ☐ Millsite ☐ Tunnelsite
3. The name and address of the Locator is
   Name: Marjorie Hinton & Frank & Sharon J. Fox and Susan Curtis.
   Address: P. O. Box 409
   City/State/Zip Code: Central, Arizona 85531 PH - 520-428-1148.
4. The name of the claim is Cobre Grande #1.
5. The date of the location is _____.
6. The claim is 1500 feet long and 600 feet wide. The distance from the location monument to each end of the claim is 1500 feet in a Wesrternly direction and 0 feet in a Easternly direction.
7. The general course of the claim is from the West to the East.
8. The location of the claim is in Section 22, Township 5S, Range 20 East, G & SRB & M Base and Meridian, Aravaipia Mining Mining District, Graham County, State of Arizona.
9. If amending or relocating, the previous claim name was Cobre Grande #1 recorded in Docket(Book) _____ page(s) _____, Aravaipa Mining District, Graham County, State of _____.
10. The location of the claim with reference to a natural object or permanent monument is about 9 miles from the old Jack Hinton Ranch, Westerly.

Dated: March 24, 1999

Marjorie Hinton
Sharon J. Fox
Frank W. Fox
Signature

P.O. Box 409
Address

Central, Az 85531
City/State/Zip

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(UPC 722573-64046) (ISBN 1-57164-046-0)

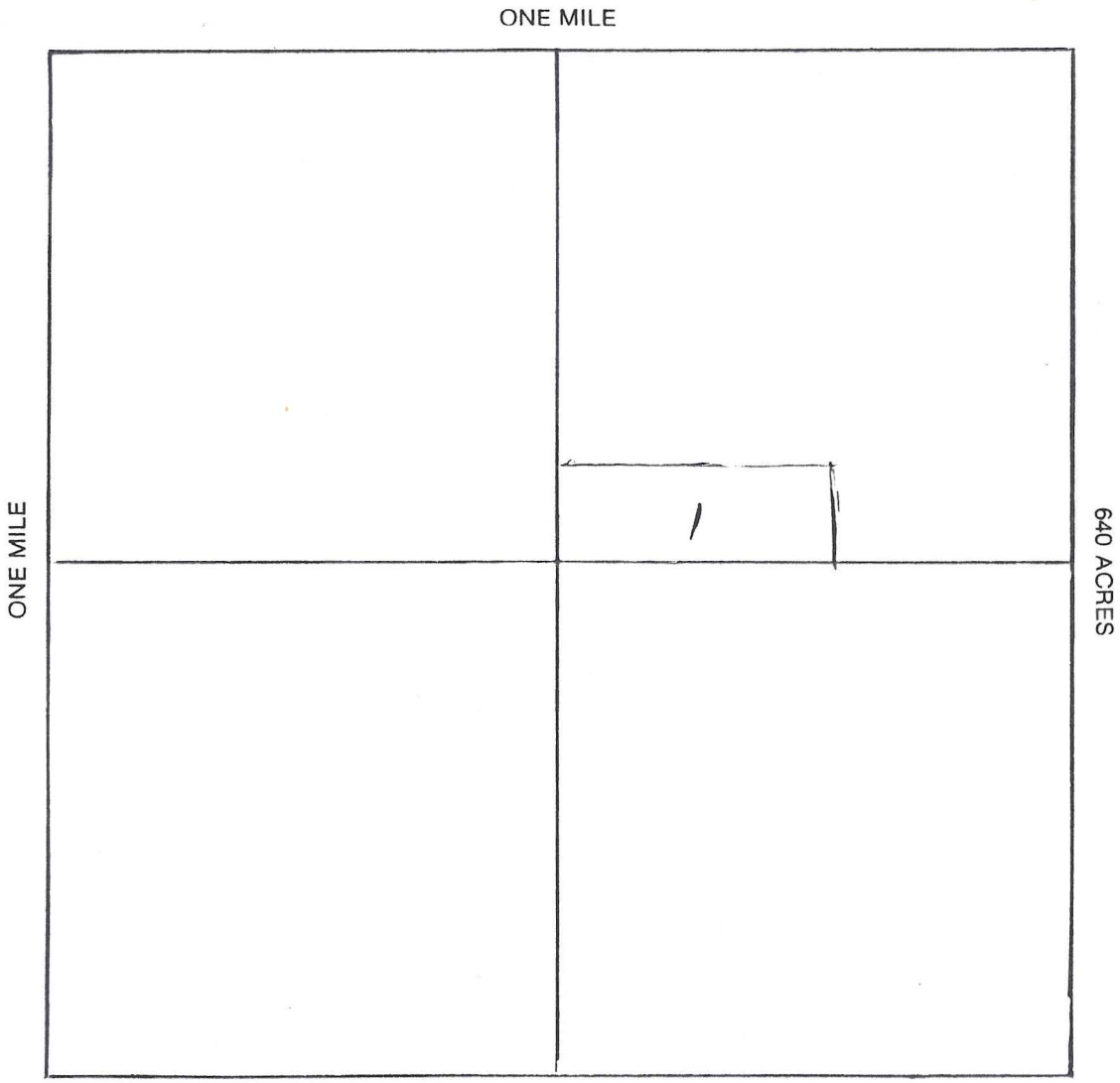
MAP OF MINING CLAIM LOCATION

1. The name of the claim is Cobre Grande #1
2. The Southwest corner of the claim is 0 feet in a Westerly direction to a survey monument or permanent natural object described as USGS Brass Cap ;
3. The type of location monument is a stone monument ;
   The type of corner end monuments are Stone ;
4. The bearing and distance between the corners of the claim are beginning at the S.W. corner of the claim, 1500 feet in a Easterly direction to the S.E. corner, then 600 feet in a Northerly direction to the N.W. corner, then 1500 feet in a Westly direction to the N.W. corner, then 600 feet in a Southerly direction to the point of beginning.

MAP

One inch = One thousand feet

North Arrow



Section 22 Range 5S Township 20E ,
G & SRB & M Base and Meridian.

Dated: _____ _____
Signature

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COBRE GRANDE (F) GRAHAM CO.

REFERENCE TO GOLD STAR CARD

Nyal
K

RECEIVED
AUG 19 1988
DEPT. OF MINES &
MINERAL RESOURCES

FROM AZ DAILY STAR

08/18 10:56 MONEY5 GOLD.STAR VER-03 BY-INS DEPTH- 4.5" PAGE-

TOP OF STORY<
{NOTE}F:B:0231:BWIRE:R:F:DC31:BC:BC-GOLD-STAR{FL}
{S}1.{FL}
bc-GOLD-STAR{EOP}
BW231 AUG 16,1988 15:48 PACIFIC 18:48 EASTERN{EOP}
{EOP}
(BW)(GOLD-STAR) Gold Star Inc. acquires Cobre Grande mine in Graham{EOP}
County, Ariz.{EOP}
{EOP}
Business Editors/Mining Writers {EOP}
PHOENIX, Ariz.--(BW)--John Frost, chairman of the board of Gold Star Inc. (OTC pink sheets) Tuesday announced that the company has acquired the Cobre Grande mine located near Klondyke in Graham County, Ariz.{EOP}
The mine is a historical copper and silver producer with metal values ranging up to 19 percent per ton of ore. The ore is suitable for direct smelter shipment and the location of the mine is convenient to operating smelters.{EOP}
Gold Star Inc. expects the mine to be a major income producer beginning in the summer of 1989 and lasting well into the 21st century.{EOP}
Frost said the potential for the development of high grade silver ores with values in excess of $5,000 per ton is excellent and work in this area will proceed immediately. {EOP}
--30--cs/ix {EOP}
CONTACT: Gold Star Inc., Phoenix{EOP}
Orlando Villa, 602/861-8498 {EOP}
KEYWORDS: ARIZONA {EOP}
ZZZ REPEATS: New York 212-575-8822 or 800-221-2462; Boston 617-720-0012 or 800-225-2030; SF 415-986-4422 or 800-227-0845; LA 213-380-8383 {EOP}
{EOP}
{EOP}

REPORT ON THE

Cobre Grande Mining Claims
and the
Mineral Hill Tunnel site claim
in
Graham County, Arizona

by

Tom Beard

Consulting Mining Geologist

*

September 1956

Los Angeles, California

*

LOCATION OF PROPERTY

The mining property and claims are located in the County of Graham, State of Arizona, in Township 5 South - Range 20 East Salt River Base and Meridian - in sections 21, 22, 27 and 28 and further being situated in the Coronado and formerly the Crook National Forest.

The mine tunnel and dumps are at 6600 feet above sea level, with the apex cropping of the east-west strike rising to 6800 feet elevation.

ACCESSIBILITY AND CLIMATE

The property is available throughout the year, and lies some 9 miles south and west of the Will Hinton cattle ranch, of which 4 miles of road has been installed, with the remaining 5 miles to be yet constructed. This last 5 miles can all be made with an D-8-Caterpillar angle dozer and road grader - in this 5 miles are two places which basic rock of of limestones and granites are in place structure, and it will be necessary to dynamite and use rock breaking equipment for a total distance of 125 yards in one section and a distance of 25 yards in another section of the proposed road. The mine lies 25 miles south of the Southern Pacific Rail, from the small town of Fort Thomas, Arizona - The property is 45 miles westerly of Safford, Arizona, the county seat, and the supply and hub of commercial activities. U.S. highway no. 70 serves both Safford and Fort Thomas, Arizona. Two through trains from Phoenix to Globe to Lordsburg, New Mexico, and El Paso, Texas, serve the area daily. Two flights daily connecting with international terminals have offices at the Safford Municipal Air Field, which affords planes of commercial and civilian status all accommodations of major facilities. All interstate bus and truck lines run regular schedules over Highway 70.

ACCESSIBILITY & CLIMATE - (Continued)

Climatic conditions permit year round mining operations, similar to the schedules carried on at Globe and Ray, Hayden and Morenci, Arizona.

STATUS OF TITLE

Mr. John Hinton of Fort Thomas, Arizona, is the owner, purchaser and locator of the Cobre Grande Mining Claims numbering from one to six (1 - to - 6) inclusive, situated in the AraWaipa Mining District, in Cobre Grande Mountain on the slopes of the Santa Teresa Mountain Range of Graham County, Arizona. Legal record shows a quit claim deed from Norman L. Hancock and Dee Hill of Eden, Arizona to John Hinton, Fort Thomas, Arizona, on the 6th day of September, 1956 and shown as a matter of record in Docket 42, pages 280 and 281 indexed in Mine Deeds. Notices of location of lode mining claims of the Cobre Grande Group from 1-to-6 - dated Sept. 13, 1956 in Docket 42, pages 282-283-284-285-286 and 287 and indexed in Book of Mines.

Notice of location of the Mineral Hill Tunnel Site, dated Sept. 13, 1956 - Docket 42 page 353, indexed in Book of Mines.

Made a matter of record is a Township Map and Claim Map combined by John Hinton - Docket 42 - page 437 in Book of Mines - numbered 3936 - Sept. 20, 1956.

These claims are held under possessory title from the United States Government. They are located on surveyed United States Government lands and conform as nearly as practical

STATUS OF TITLE - (Continued)

with the United States public land surveys and the rectangular subdivision of such surveys. The Mineral Hill Tunnel site was made under the federal mining laws, Section 2323 Revised Statutes, and constitutes 200 acres more or less - and is held under the procedures of this revised statute, and-is-shown-as-a part of the mining laws of Arizona.

The above notices - records - maps, etc., are made a matter of record in the Graham County Court House, Safford, Arizona.

HISTORY

Because of the poor accessibility to the Township as a whole, the area has had little exploration and development. The writer has nothing in the way of production records to show past shipments made, and when and to whom. Reports from old mining men by word of mouth report that at the turn of the century a mining man responsible with early development of the mines of Miami and Superior, Arizona, sold out his interest at the turn of the century, and prospected and claimed and developed some 300 feet of tunnels, raises and winze represented in this mine. The ore from this operation was put on mules and burros and shipped to an unknown destination. It is reported this ore averaged 13% in copper with fair values in gold and silver. The writer has checked this report with sampling on the tunnel and open pit cuts and finds such values did and still do exist in commercial quantities, as evidenced by assay sheets attached. The forest service and cattlemen have maintained horse trails and foot paths used for erecting fence lines over the years. It is reported by good source of information that over the years the Hinton family and others have kept this present trail cleared and for over 30 years Mr. Landsman walked each year to the mine and cleaned the trail and path and did hand work on the tunnel and put in some open cuts to further explore the mineralized AREA'S.

HISTORY - (Continued)

This man passed on in 1950, and is buried at his request at his camp on the west side of the mountain. Such factual data being available, prompted the writer to investigate this virgin and unexplored area, and to note such data and geological occurences that presented itself from the workings done, together with the general physical structures relative to ore deposition.

TOPOGRAPHY

The mining properties discussed in this Report are a part of the southern Arizona Rockies, and lie in what is known as the Mountain Region or Mexican Highlands, which constitutes a section of The Basin and Range Province. These deposits are located on a pedimant that is a northwestward projection of the Santa Teresa Mountains. The terrain is highly faulted with uplifts and sheer wall systems combined with folding and trenching of the rugged mountain range province. This type of complex structuring was probably due to the major late tertiary volcanics. The range trends northerly to the local area of the San Carlos Dam, thence a slow southerly faulting system which grades down in sedimentary movements to the lower pediments and forming the Regional drainage system of the area into the Gila and San Pedro Rivers. Pine trees, scrub oak, together with mesquite, greasewood, and paloverde and cactus are common vegetation, with ocotillo and catsclaw on the low desert benches. Where the fault and contact zones combine together, the water table is relatively shallow, which has been evidenced by creating water at depths not to exceed 100 ft. for domestic purposes, and by shallow excavating for spring water for cattle use within a few hundred yards of the general mine area. Many natural springs and seepage areas are scattered through the township in which this report has reference to.

GEOLOGY

The Santa Teresa Range consists of many series of unconformities from faulting and displacement related to the volcanic epic of the tertiary times. Two systems of fracturing and faulting occur in this district. The first system is a north east strike, which consists of the pre-mineral conditions, and in which the major ore depositions are confined. There seems to be a second system of post mineral fracturing that is striking northwest and is faulting the veins and the secondary replacement zone in limestone. The main tunnel reflects the chalcopyrite replacement of the limestone where folds occur and the impervious volcanic rock has afforded a condition of damming the solutions, creating rooms and traps in which there appears rich localization of the copper ores. The main ore system from the surface vein of the northwest structure is related to three types of deposition -- No. 1: that tabular replacement is occuring along the fault fissures; No. 2: that irregular replacements occur in the wall system and favor the carboniferous limestones, and creating an outward movement of mineralization from the main depositional structure. This type of mineralization has been noted to 100 feet on each side of the major structure, and or the veins and beds. The third condition is related to the disseminated deposits, occuring in the diabase and quartzite, in which large bodies of

GEOLOGY - (Continued)

medium grade ore appear to exist. Mineralization consists of pyrite, chalcopyrite and bornite with some azurite and malachite together with coatings on the wall structure of dioptase. It is this writer's opinion that the rock formation consisting of paleozoic limestones and sediments, quartzites-shales and conglomerates are lying on a basement of complex structure which is unknown at this time as there are no developments to depth to denote this formation, however this structure has been intruded by the diabase and granitic rocks, which have prepared the way for mineral replacement within the structural limits referred to in this report. The mineralized zone follows the trend of the intrusive rocks, and both intrusives and mineralization are coincident with a main regional axis of uplift along which paleozoic sediments have been raised, folded and distorted with relation to the volcanics that flank the uplifted block. The general area within this Township and the adjoining Township 19, reflects the same occurences depositionally as is recorded here, in which the Stanley Butte, and Deer Creek area of western Graham County depict the top of the Gila conglomerate lying above the Dacite flows, under which is the whitetail conglomerate, thence into the cretaceous sandstone, shale, and overlying andesitic volcanic rocks of the Deer Creek Basin which is some 3 miles northerly and westerly of this area.

Approximately 1500 feet westerly along the mineralized

zone from the tunnel, there is an occurence of a quartz-diorite porphry dike which cuts the mineral zone and is a thick sill which has almost a vertical structure. An open cut referred to on the accompanying map, and butting against the overlying sediments shows high values in copper, gold and some silver. This cut some 16 feet wide and 5 deep and 10 feet long is the only workings going westerly on the mineral-zone which has a strike of north 65° west. The dike cuts north 10° east across the mineral zone. Surface examination farther west on the ore producing anomaly reflects good mineralization relative to the removal of the overlying limestone capping, which would vary from 20 to 50 feet before contacting the ore zone. It appears to the writer that the limestone replacement of chalcopyrite ore was related to the mineralizing solutions having traversed the limestone bedding, and depositing high values in copper, gold and silver in the localized areas of contacts. There is continued ore deposition of lower grade along the entire 2000 feet of exposed mineralization, which in turn was the emanation of the fissuring from the transverse strike, with the solutions having been crudely selective, in working out a variety of beds along the minor fractures and folds so that the sulphide ore occurs as irregular masses, distributed through the partly garnetized limestone.

The general rule the writer has found from inspection of the area is that surface indication of the clusters of garnet,

GEOLOGY - (Continued)

associated with diopside and tremolite, in the limestone and altered sediments is evidence of copper bearing mineralization at not too great depths. Relative to ore indication at surface, it is indicated from the present workings in the tunnel that as the mineral zone gains in depth, the width of the ore bearing zone becomes greater. The greatest ore bodies are reached at the 2500 foot level in the Magma Mine at Superior, Arizona where the main shoot is 30 to 40 feet wide.

The traverse conditions of the mineral zone in its easterly and westerly course has played a major part in the formation of the massive andredite during the epoch of replacement, and it is my opinion that the associated minerals of diopside, tremolite, epidote, accompanied by pyrite, magnetite, chalcopyrite and some sphalerite were simultaneous in their occurence as sulphides and not introduced at later periods. Such an occurence of complex minerals creates a depositional condition in which the basic character of the original rocks have been altered to the complexity of the present types of replacements minerals that are found in this deposit ranging from oxides, sulphides, carbonates and sulphates.

In conclusion and genetically speaking, the writer suggests so far as present evidence appears, that the copper zone of mineralization occurred independently of the main porphry mass of granites of the Santa Teresa Range from which the

GEOLOGY - (Continued)

Cobre Grande Pediment radiates, and is particularly associated with dykes which were highly charged with magmatic vapors.

ESTIMATED ORE

In order that as near a true estimate be made of immediate tonnage available, the writer has taken the tunnel workings at the floor level and has taken the width of the face that shows in a north drift from the main tunnel which emerges into a large room, which has a wide raise from the floor of the drift, and has taken the westerly length of the strike to the open cut designated on map and estimate the depth at 100 feet from present tunnel depth which is conservative, allowing for the surface alteration of limestones cappings. The over all estimate is 1500 feet long - 20 feet wide and 100 feet deep, with the rock figured at 12 cubic feet to the ton, it would appear that there is some 125,000 tons of commercial grade ore, with an over all average of 5% copper, .05 gold, and .50 to 1 ounce of silver.

Extending the known further width of the ore mineral zone to 50 feet and to the known length of 2 claims or 3000 feet in which copper mineralization outcrops and taking 200 feet in depth which is proven from the tunnel and dump exit to the apex of the easterly and westerly strike along the mineral zone, would show some 2,500,000 tons of copper ore that from the writer's opinion will be good grade of milling ore, with the metalurgy for treatment still to be determined. Should this

ESTIMATED ORE - (Continued)

Cobre Grande pediment be equivalent to its name, the tonnage of copper ore could be in unknown millions of tons, and could be comparable to Miami, Superior and Morenci if development and exploration work is projected into active operation.

METHOD OF OPERATION

The removal of ore from this deposit can be operated as an open pit mine. The known width of higher grade ore with average of 5% copper content can be selectively mined by shooting the waste and lower grade ores and creating a stock pile of future milling material, and taking the 8 to 20 foot width of shipping grade ores. This type of operation is available for wagon drills for deep blasting either in volume or in a selective handling of ores. Movement can be done with power shovels and loaded onto heavy duty trucks for trucking to rail head. Removal of overburden to expose the ore zone can be accomplished with either D-6 or D-8 Caterpillars or with any type of Dozer equivalent to these machines mentioned. The area topographically speaking is ideal for stock pile of ore and disposal of waste as the zone of mineralisation is the apex of the pediment, with a long extended faulted trough on the north extremity, which has a 300 foot sheer dip into the trough, that leads into a major canyon where a fault alters its direction to a northerly course of travel. The westerly end of the pediment shears off into a north south extending canyon with a northerly dip into the Deer Creek area, and acts as relief for the Western area of the Township. This type of topography is typically suitable for an operation as is presented here in that there is disposal room for millions

METHOD OF OPERATION - (Continued)

of tons of waste materials and possible future tailing dumps. Power for stationary machinery and domestic purposes must be developed by generators for electric power. Fuel storage will be necessary for continued operations. Purchasing under contract in all departments can be arranged f.o.b. mining operations.

IMPROVEMENTS

Facilities for housing have been built from logs taken from native timber - The years have deteriorated the two buildings and they need 60% repair. The mine portal needs about 2 square sets to make safe mining and hauling ore from underground. The track is installed to the face of ore a distance of some 200 feet, and has a 1200 pound ore car that is in good condition. Native timber can be cut for varied uses in the mining operations, or to further maintain the present improvements.

MARKETING ORE

The ore that has been developed, and the possibilities of future developed ore in excess of the ore tonnage now estimated is a good smelting type of copper rock. Such ore that is acceptable from the point of low penalties and good silica content is in demand under good contracts from smelters, in Arizona and in El Paso, Texas. The writer suggests the American Smelting and Refining Company at El Paso, Texas to handle the ore from this deposit, as the proposed road leads to the nearest rail head, and the freight rate on to El Paso would be less than the dirt road haul to Hayden, and the Miami plant is not accepting custom ore. Excellent loading ramp facilities are to be had at the siding at Ashurst, Arizona, and is 25 miles distant from the mine location. The regional ore buyer, Mr. Reed Welch, is located in Tucson, Arizona for A. S. and R. and could be consulted relative to contracts on regular shipments.

OPERATION COSTS

The proposed costs per ton of mining and developing ore for shipment from open pit operations is estimated at $3.00 per ton. Trucking costs to rail head for 25 miles of dirt road $3.00. Rail transportation cost from Ashurst, Arizona to El Paso, Texas, estimated at $4.00 per ton. Estimated smelter treatment charges at $4.00 per ton of ore. Administrative costs 50¢ per tonof ore. Supervising engineer and/or geologist in charge of all operations $1000.00 per month, plus expenses. All other labor costs are absorbed in the estimated per ton costs. The Arizona industrial commission requires a cash deposit on labor and the compensation fund estimated at $1,000.00.

Cost Breakdown Per Ton

Mining operation cost.....	$3.00	1.00
Trucking costs to rail.....	3.00	.09
Rail freight to smelter.....	4.00	.12
Smelter treatment charges.....	4.00	4.00
Administrative costs.....	.50	.25
Engineering costs.....	1.00	.25
Depreciation costs		.50
General & Miscellaneous Expense.....	1.00	.25
Total expense per ton of ore.....	$15.50	5.26

OPERATION COSTS - (Continued)

Ore Returns Per Ton		14.00
One (1) Ton of 5% Copper ore @	6.76	$35.00
Less operation costs.....	$16.50	
Less 20% for smelter & total deducts.	7.00	
Total deductions.....	$23.50	6.26
		23.50
Total net profit.....		$12.50
		7.74

This operation is estimated to produce not less than 1000 tons per month or an average of 5 rail dump gondola cars of 50 tons each per week and/or a car per day on a 5 day work week.

Estimated net profit per ~~month~~ day - Concentrates -- $12,500.00.
Rated 200 tons day - net 1598.00

University of Arizona
TUCSON 25, ARIZONA

May 21, 1956

COLLEGE OF MINES
ARIZONA BUREAU OF MINES

Mr. Ruskin Lines
Attorney-at-Law
Safford, Arizona

Dear Mr. Lines:

In reply to your letter of May 15, the only information we have regarding the Cobre Grande Mine is given on pages 102-103 in the U. S. Geological Survey Bulletin 763, GEOLOGY AND ORE DEPOSITS OF THE ARAVAIPA AND STANLEY MINING DISTRICTS, by C. P. Ross. This bulletin was published in 1925 and is now out of print, but copies may be seen in libraries. Regarding the Cobre Grande mine, it reads as follows:

"The Cobre Grande mine lies on the northeast slope of the mountain of the same name. It is 4 miles northeast of Arivaipa and 6 miles southeast of Stanley, measured in straight lines, and is accessible only by steep trails. The camp of the miners consisted of several tent houses and cabins about half a mile south of the main workings, at a place where there was formerly a good spring. The camp has been uninhabited for several years. The Cowboy tunnel, in which most of the ore has been found, winds around in an irregular curve a few hundred feet long; short drifts lead off it, and near the end stopes have been opened above and a winze about 40 feet deep below. Another tunnel near by cut ore also. A short distance down the slope is a caved tunnel reported to have been over 600 feet long but to have encountered no ore. A few hundred yards to the west, on the other side of the mountain spur, is a shaft reported to have been 160 feet deep in which some ore was found. On the trail to the old camp is a partly caved tunnel reported to have been over 700 feet long. There are doubtless other excavations, but those enumerated are the principal ones."

"The deposits appear to have been first located in 1905 by Julius Riser and W. A. Clark. In recent years the owners have been Messrs. Snell, Elliot, Fisk, and Alderman, of Globe, Arizona. Location notices of J. C. Sayers, dated January 3, 1922, were posted on the property when it was visited. A carload of ore running about 8 per cent of copper is reported to have been shipped to the Old Dominion smelter at Globe some years ago. Most of this ore came from the Cowboy tunnel."

"The Cowboy tunnel and the workings near it are all in the Tornado limestone. The accessible part of the tunnel on the trail to the camp is in an altered fine-grained igneous rock, but the face is reported to have been in limestone. In the Cowboy tunnel, which is the

only one where ore in place was accessible at the time of the visit, the ore is in irregular bodies in the limestone. In general the replacement followed the bedding. The gangue minerals include quartz, calcite, chlorite, epidote, garnet, specularite, and magnetite. The hypogene sulphides are pyrite, chalcopyrite, and a little galena. A little chalcocite is also present. There is scant evidence of oxidation in any of the ore."

Trusting this information will be of service to you,

Sincerely yours,

Eldred D. Wilson

Eldred D. Wilson
Geologist
Arizona Bureau of Mines

THE EISENHAUER LABORATORIES
316-322 South San Pedro Street
Los Angeles 13, California

ASSAY CERTIFICATE

PHONE VANDIKE 5920

Los Angeles, Calif. Sept. 28/56 19

I hereby Certify that the samples described below, received from

Mr. Tom Beard assay as follows:

Owner's Mark and Sample	GOLD		SILVER		TOTAL VALUE PER TON	PERCENTAGE OF		
	OZS. PER TON	VALUE PER TON	OZS. PER TON	VALUE PER TON		COPPER	LEAD	ZINC
#2 Open cut	trace		.28	$ .25	$ 28.25	3.5		

GOLD @ $ 35 PER OZ.
SILVER @ $ .90 PER OZ.
LEAD @ ____ C.
COPPER @ 40 C.

CHARGES _____

Ed. Eisenhauer
ASSAYER

Established 1916

W. E. HAWLEY
PRESIDENT

EL PASO, TEXAS
BOX 4

HAWLEY & HAWLEY

ASSAYERS AND CHEMISTS, INC.

SHIPPERS REPRESENTATIVES

H. W. BOLLWEG, JR.
TREASURER

LABORATORIES:
DOUGLAS, ARIZONA
237 TWELFTH STREET
TEL. EMPIRE 4-2741 BOX 1080

WE HEREBY CERTIFY THAT THE FOLLOWING RESULTS WERE OBTAINED FROM SAMPLES OF Tom Beard

OFFICE NO.	MARKED	GOLD OZS.	SILVER OZS.	LEAD PER CENT	COPPER PER CENT	ZINC PER CENT	IRON PER CENT	Mn %	SiO_2 %
294767	1 - Cut	0.35	1.2		19.70				
	2 - Tunnel	Trace	0.3		3.59				
	~~3 - Manganese~~ sample anothermine area							~~[illegible]~~	~~[illegible]~~
	4 - Single Piece	Trace	0.2		2.65				

METAL QUOTATIONS:

GOLD $35.00 PER OZ. COPPER ____ C PER LB. CHARGES $18.00

SILVER ____ PER OZ. ____ PER LB. DATE 9/11/56

HAWLEY & HAWLEY

PER [signature] ASSAYER

THE EISENHAUER LABORATORIES
316-322 South San Pedro Street
Los Angeles 13, California

ASSAY CERTIFICATE

PHONE VANDIKE 8240

Los Angeles, Calif. Sept. 28/56 19

I hereby Certify that the samples described below, received from

Mr. Tom Beard assay as follows:

Owner's Mark and Sample	GOLD		SILVER		TOTAL VALUE PER TON	PERCENTAGE OF		
	OZS. PER TON	VALUE PER TON	OZS. PER TON	VALUE PER TON		COPPER	LEAD	ZINC
#3 Open cut	trace		.30	$ .27	$ 63.47	7.9		

GOLD @ $ 35 PER OZ.
SILVER @ $ .90 PER OZ.
LEAD @ ____ C.
COPPER @ 40 C.

CHARGES ____

[signature]
ASSAYER

Established 1914

GEO. L. DICKINSON—PRESIDENT
GEO. G. DICKINSON—VICE-PRESIDENT
ROBERT L. DICKINSON—VICE-PRESIDENT
DR. J. A. HANCOCK, PH. D.—CONSULTING CHEMIST

DICKINSON LABORATORIES, INC.

ASSAYERS — CHEMISTS — METALLURGISTS
UMPIRES
WATER ANALYSIS
PHONE 3-3413 & 2-9354 — P. O. BOX 7006
1500 WEST MAIN ST. EL PASO, TEXAS

Mch. 26, 1957.

CERTIFICATE OF ASSAY

ASSAYED FOR: Mr. Tom Board Lab No. 11559

ADDRESS: El Paso, Texas.

MARKED: Copper Ore sample

Gold Ozs. per ton	Silver Ozs. per ton	% Lead	% Copper	% Zinc	% Silica	% Calcium Fluoride	Effective Urea	% Manganese	% Iron
0.00	0.13		5.20		24.6				

CHARGES 07.75

[signature] ASSAYER

SUBSIDIARIES:
Texas Testing Laboratories • Concussed Oil • Physical Testing • Fuel Service Laboratory • Soil and Water Analyses

FORM 12 5M 7-56 A-7050 L. P. S.

INTERNATIONAL SMELTING & REFINING COMPANY

MIAMI PLANT

ASSAY CERTIFICATE

Name Cobr. Grande Mng. Co.
MIAMI

Class Lot Date 4/11 1957

Smelter Lot	Per Ton of 2000 Lbs. Oz. Silver	Oz. Gold	Per Cent Copper	Per Cent Insoluble	Per Cent SiO_2	Per Cent Al_2O_3	Per Cent Fe	Per Cent CaO	Per Cent S	Per Cent
	0.96	½	9.00		38.2	6.4	15.0	9.2		

[signature]
Chief Chemist

AMERICAN SMELTING AND REFINING COMPANY
DEMING MILLING UNIT
P. O. BOX 992
DEMING, NEW MEXICO

April 12, 1957

Mr. Tom Beard
Cobre Grande Mining Company
P. O. Box 253
Safford, Arizona

DEMING MILLING UNIT
Sample for Investigation

Dear Sir:

Your sample, submitted on April 4 for our investigation, has been assayed with the following results:

Pb	Cu	Ox Cu	Zn	N-S Zn
0.25	14.35	13.80	0.70	0.55

We will check the floatability of this ore, but do not expect to be able to handle it at Deming. If the high copper content can be maintained, smelter shipments should be considered.

A further report will advise our decision as to treatment at Deming.

Very truly yours,

B. L. Richman
Mill Superintendent

BLR/bp

NEW YORK OFFICE
25 BROADWAY

SMELTING DIVISION
MIAMI, ARIZONA

INTERNATIONAL SMELTING AND REFINING COMPANY

P. O. BOX 1255
MIAMI, ARIZONA

FILE NO. 700

April 13, 1957

Mr. To m Beard
1333 E. 7th St.
Los Angeles 21
California.

Dear Sir:

Enclosed is our assay certificate showing the values and analysis of your sample of ore.

This grade of 9.00% copper would give a smelter net value of nearly $40.00 per ton at present prices.

We could accept some of this type now, so when you have ore to ship let us know.

Yours very truly,

C. F. Smith
Ore Buyer

CFS:r

AMERICAN SMELTING AND REFINING COMPANY
SOUTHWESTERN ORE PURCHASING DEPARTMENT
810 VALLEY BANK BUILDING
TUCSON, ARIZONA

April 15, 1957

REED F. WELCH
MANAGER

Mr. Tom Beard
Cobre Grande Mining Company
P.O. Box 253
Safford, Arizona

Dear Sir:

I have copy of Mr. Rickman's letter of April 12th reporting assays on the oxidized copper ore you sent to our Deming Mill.

This type of ore is suitable for direct-smelting and we could purchase for El Paso delivery on terms that would give you a return of about $60.30 per ton after freight and smelting on 14.35% copper based on 31-cent copper price.

When you have a carload mined and wish to ship to El Paso I shall be glad to issue a purchase schedule and shipping instructions upon receipt of your lease agreement or evidence of mine ownership.

Yours very truly,

REED F. WELCH

By A C Stipp

CONCLUSIONS

The following general conclusions were reached as a result of the findings made and further related in the report attached.

1. The mineralization of the mine and the area discussed from the geological setting, warrants the immediate development program stated in this report to be activated.

2. Past workings of the mine, combined with present reconnaissance in determining the geological prospects have revealed a definite ore tonnage of commercial grade mining and shipping ore.

3. The potentials relative to ore production in this mine for future operations appear as an enormous ore body with both smelter ore for shipping purpose and local milling and treatment ore for assured plant recovery systems.

4. Simplicity in all detail is more than favorable in every consideration in establishing a profitable operation in the removing and development of specific ores from favorable zones of known mineralization.

5. The amount of capital required in financing this projected mining operation, in relation to the possible returns from a net profit consideration, place this proposed mining project high on the lists of one that should be a successful venture.

CONCLUSIONS - (Continued)

6. The writer can only conclude this report with a favorable recommendation that the main contention in any mine is that if mineable ore is present and is to be had without any complexities in its removal and development of further valuable ore, there should be no mistake in its success, and such a contention seems to reflect the possibilities that are represented in this proposed mining operation.

Respectfully submitted,

Tom Beath
Consulting Geologist.