CONTACT INFORMATION
Mining Records Curator
Arizona Geological Survey
416 W. Congress St., Suite 100
Tucson, Arizona 85701
602-771-1601
http://www.azgs.az.gov
inquiries@azgs.az.gov

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August 26, 1974
18001 N. 41 Place
Phoenix, Arizona 85032

Mr. John B. Rothermel
3016 W. Mercer Lane
Phoenix, Arizona 85029

Dear Jack,

Results of the work performed on your Pinkham property on August 15 and 16 are as follows:

1) Geological mapping has shown that the principal vein strikes NNW with an 85° dip to the southwest. The vein is nearly vertical and locally dips to northeast. Vein thickness is greater in the northern portions of the claim where it is comprized of 3 to 4 feet of quartz with attendant 1 to 2 feet of bleached fault gouge. Pyrite occurs both in the quartz and the gouge. The vein dies to the south with thicknesses less than one foot. In this area the Cerbat complex of precambrian rocks has been intruded by veins, pegmatite dikes and granodiorite.

2) Sampling results consisting of channel vein samples, trenched dump samples and numerous shovel dug grab samples indicate that the northeast portions of the dump around the main workings exhibit the highest values. Highest values of the vein structure were also obtained near the old workings around the main shaft. (see map) Highest silver assays are found in the gouge zones of the vein. Gold assays were generally low but silver assays were locally very good especially when copper staining was observed.

Conclusions:

The Pinkham is principally a silver mine where high grade silver is associated with copper and weak amounts of gold. Deep maroon iron staining and copper oxides are good indicators of an increase in silver content. The vein averages 6 feet thick in the northern portions of the claim and is nearly vertical. (see map for metal content along the vein) Little or no copper staining can be observed on the dumps near the main workings and since originally the Pinkham was a copper mine with associated silver these dumps must have been primarily waste dumps while the mine operated in 1904 to 1907.

Recommendations:

Initial samplings indicates that approximately 8,000 tons of dump material near the main shaft contains .035 oz. gold, 4 to 8 oz. silver and unknown copper, a predicted average would be .035 oz. gold, 6.5 oz. silver and 0.80 % copper. Using a $9/ton milling cost and $10/ton shipping cost (f.o.b. Wickenp), $1/ton mining (front end loader), a profit of $23/ton could be expected. Additional costs of sampling, a guard, selective waste removal, etc., have be disregarded but these costs should not run over $5/ton. Auger or backhoe samples would have to be taken before any consideration could be given to shipping.

The vein itself could be mined from the surface using a D-9 cat with rippers. Values of 3 or 4 times the dump could be expected. Mining costs would have to be investigated further.

Sincerely,

Donald E. Ross
Geologist

MEMORANDUM

To: John H. Jett, Director

From: Ken A. Phillips, Mineral Resources Engineer

Subject: Shipments To Douglas Reduction Works (P.D. Smelter) By John Rothermel

In a telephone conversation with John Rothermel on July 18, 1980, he discussed his shipments of ore from his Pinkham Mine to Phelp Dodge's Douglas Reduction Works. The negotiations prior to shipping were also discussed.

On or prior to March 10, 1980, J.B. (John) Rothermel shipped six truck loads of siliceous silver-gold-copper ore to the Phelps Dodge Smelter at Douglas. The shipment totaled 187,780 wet pounds (93.89 short tons). It was sampled at Douglas on March 10, 1980. A.J. Gilbert Construction Co. represented Rothermel at the time of sampling and weighing. A provisional settlement was made at that time. Net smelter value (at time of provisional settlement) was 88.358 short tons-dry @ $240.53/ton, a total of $21,252.75. An advance payment of 50% or $10,626.38 was made by the smelter.

Final ore settlement on the shipment was made twelve weeks later, June 13, 1980. By that time the price of silver (silver was the major pay metal in the ore) had dropped more than 50% from its value on March 10 (from 3471¢/troy ounce to 1534.6¢). The price of gold also dropped somewhat. Net smelter value at the time of final settlement was $116.51 per ton, a total of $10,294.59. The final settlement was less than 50% of the provisional settlement and less than the advance payment.

The advance payment was in reality a note issued against final payment. The note was issued at essentially prime rate (17.5% annual interest). The total interest on the advance was $470.42 for the 95 day period, March 10, 1980, through June 13, 1980. At the time of final settlement the shipper was faced with owing the difference between the note (advance) based on the provisional settlement and the final settlement - $431.41 plus the interest - $470.42 - a total of $801.83. An over payment of commission amounting to $33.00, reduced the amount due from John Rothermel to $768.83.

The methods of determining the value of shipments, provisional settlements, interest charges on provisional settlement payments, the length of time between provisional and final settlements, and a commission to an agent appear to be accepted practice. HOWEVER, Mr. Rothermel explained that these details were not made clear to him. Upon his initial contact to the Phelps Dodge Smelter, he was referred to A.J. Gilbert Construction Co. and told that any and all arrangements to ship small lots of custom ore to Douglas must be made through them. They charged 10% of the net final settlement to supervise the deliveries and sampling of the ore upon its arrival at Douglas. The smelter payment was made to Gilbert and they issued the check to Rothermel.

In the end, the tabulation below summarizes the shipment:

Shipments To Douglas Reduction Works (P.D. Smelter)
By John Rothermel



| | | | |
|---|---|---|---|
| 88.358 Dry Tons @ $116.51/Ton | = | | $10,294.59 |
| Less Freight on 93.540 Wet Tons @ $ 45/Ton | = | $4,209.30 | |
| Less Commission @ 10% of Net Smelter | = | $1,029.46 | |
| Less Interest On Note | = | $ 470.42 | |
| Total F.O.B. Mine Site | = | | $ 4,585.41 |
| Total F.O.B. Mine Site/Ton | = | | $ 49.02/Ton |

PHELPS DODGE CORPORATION DATE: June 15, 1980

DOUGLAS REDUCTION WORKS
Drawer E, Douglas, Arizona 85607

OF A. J. Gilbert Construction Co. (J. B. Rothermel)
PO Box 5288 - Bisbee, Arizona 85603

L. Siliceous Ore

SHIPPED FROM Kingman, Arizona

| ate eived | CAR Initial | CAR Number | WEIGHT Wet Lbs. | WEIGHT % $H_2O$ | WEIGHT Dry Lbs. |
|---|---|---|---|---|---|
| 10-80 | Truck JB | 265 | 35,040 | | |
| | | 261 | 31,200 | | |
| | | 201 | 25,240 | | |
| | | 203 | 30,720 | | |
| | | 202 | 33,180 | | |
| | | 264 | 31,400 | | |
| | | | 186,780 | | |
| | Plus Adjustment To Belt Weight | | 300 | | |
| | | | 187,080 | 5.54 | 176,716 |

| | | |
|---|---|---|
| Smelter Lot No. | | 251 |
| Shipper's Lot No. | SCL | 1 |
| Date Sampled | | 3-10-80 |
| E & M J Copper Quotation | | |
| Domestic fob Refinery | 95.3820 | ¢ per |
| Export fob Refinery | | ¢ per |
| Deduction | 8.0000 | ¢ per |
| Silver Price | | |
| Domestic | 1534.6000 | ¢ per |
| Foreign | | ¢ per |
| Deduction | .1250 | ¢ per |
| U. S. Gold Price | 573.4500 | $ per |
| Deduction | .2500 | $ per |

PER TON OF 2000 LBS.

| | Assay | Deduct | PAYMENTS Pay For | AMOUNTS Per Ton | Total |
|---|---|---|---|---|---|
| GOLD | .040 oz. | 10 % or oz. | .036 oz. @ 573.2000 $ per oz. | 20.64 | |
| SILVER | 8.02 oz. | 10 % or oz. | 7.218 oz. @ 1534.4750 ¢ per oz. | 110.76 | |
| COPPER | .73 % | 10.00 Lbs. | 4.560 Lbs. @ 87.3820 ¢ per Lb. | 3.98 | 135.3 |
| CHLORINE | .001 % | .04 | Total Payments | | 135.3 |

| | Analysis | Deduct | Charge For | CHARGES | Per Ton | Total |
|---|---|---|---|---|---|---|
| | | 10% | Of $135.38 | Treatment Base | 13.54 | |
| $SiO_2$ | Penalty 71.6% | 80.0% | 8.4 % @ | 60 ¢ per unit | 5.04 | |
| $Al_2O_3$ | Penalty 5.3% | 4.0% | 1.3 % @ | 20 ¢ per unit | .26 | |
| Pb | Penalty .35% | .30% | .05 % @ | 30 ¢ per unit | .02 | |
| As, Sb, Bi | | | @ | 300 ¢ per unit | .01 | |
| | Penalty .104% | .100% | .004 % | Total Treatment | 18.87 | |
| | | | | LESS CREDITS | | |
| | % | | % @ | ¢ per unit | | |
| | % | | % @ | ¢ per unit | | |
| | | | | Net Treatment | | 18.8 |
| | | | | Net Price per Ton | | 116.5 |
| | | | | f.o.b. Douglas | | |

| | | | | | |
|---|---|---|---|---|---|
| Proceeds | 88.358 | Dry Tons | @ $ 116.51 per ton | | 10,294.5 |
| Freight From Kingman On | 93.540 | Gross Tons | @ $ None per ton | Note | 10,626 |
| | | | | Interest | 470. |
| | | | | Comm. overpaid | 33 |
| | | | | Due | 768. |
| | | | | from shipper | 801 |
| | | | | | 10,294. |

FINAL PAYMENT ASSIGNED TO:
Valley National Bank
PO Box 311
Tucson, Arizona 85702

Attn: Jack Croddy

nce Due Valley National Bank

ect Checked Approved

WJA JTH

Inv. Clerk Chief Account

PROVISIONAL SETTLEMENT

ORE SETTLEMENT

# PHELPS DODGE CORPORATION

Date MAR 13 1980

DOUGLAS REDUCTION WORKS
Drawer E, Douglas, Arizona 85607

GHT OF A. J. Gilbert Construction Co. (J. B. Rothermel)
RESS P. O. Box 5733 - Bisbee, Arizona 85603
ERIAL Silicious Ore SHIPPED FROM Kingman, Arizona

| Date Received | CAR Initial | CAR Number | WEIGHT Wet Lbs. | % H₂O | Dry Lbs. |
|---|---|---|---|---|---|
| 10-80 | Truck JB | 265 | 35,240 | | |
| | | 261 | 31,220 | | |
| | | 201 | 25,240 | | |
| | | 203 | 30,720 | | |
| | | 202 | 33,180 | | |
| | | 264 | 31,400 | | |
| | | | 176,780 | | |
| | Plus Adjustment to Bolt Weight | | 300 | | |
| | | | 187,780 | 5.54 | 176,716 |

Smelter Lot No. 254
Shipper's Lot No. SCL 1
Date Sampled 3-10-80

E & M J Copper Quotation
Domestic fob Refinery 119.4274 ¢ per
Export fob Refinery ¢ per
Deduction 8.0000 ¢ per

Silver Price
Domestic 3471.0000 ¢ per
Foreign ¢ per
Deduction .1250 ¢ per
U. S. Gold Price 628.7000 $ per
Deduction .2500 $ per

PER TON OF 2000 LBS. — PAYMENTS — AMOUNTS

| | Assay | Deduct | Pay For | Per Ton | Total |
|---|---|---|---|---|---|
| Gold | .010 oz. | 10 % or oz. | .036 oz. @ 628.4500 $ per oz. | 22.62 | |
| Silver | 8.02 oz. | 10 % or oz. | 7.218 oz. @ 3470.8750 ¢ per oz. | 250.53 | |
| Copper | .73 % | 14.60 Lbs. | — Lbs. @ 111.4274 ¢ per Lb. | — | 273.1 |
| Chlorine | % | | Total Payments | | 273.1 |

| | Analysis | Deduct | Charge For | CHARGES | Per Ton | Total |
|---|---|---|---|---|---|---|
| Treatment Base | | 10% Of $ 273.15 | | | 27.32 | |
| Treatment increase a/c Conv. & Refg. | | | | | | |
| Penalty | 71.6 % | 80.0 % | 8.4 % @ | 60 ¢ per unit | 5.04 | |
| Penalty | 5.3 % | 11.0 % | 1.3 % @ | 20 ¢ per unit | .26 | |
| Penalty | % | % | % @ | ¢ per unit | | |
| Penalty | % | % | % @ | ¢ per unit | | |
| | | | | Total Treatment | 32.62 | |
| | | | | LESS CREDITS | | |
| | % | | % @ | ¢ per unit | | |
| | % | | % @ | ¢ per unit | | |
| | | | | Net Treatment | | 32.6 |
| | | | | Net Price per Ton | | |
| | | | | f.o.b. Douglas | | 240.5 |

Gross Proceeds 88.355 Dry Tons @ $ 240.53 per ton 21252.
Less Freight From Kingman On 93.540 Gross Tons @ $ None per ton 10626.
Less Comm. 1062.
$ 9564.

FINAL PAYMENT ASSIGNED TO:-
Valley National Bank
P. O. Box 311
Tucson, Arizona 85702

Attn:- Jack Croddy

| | Returnable | Gross | |
|---|---|---|---|
| Gold | 3.181 | 3.534 | Oz. |
| Silver | 637.77 | 708.63 | Oz. |
| Copper | | 1270 | Lb. |

21252.

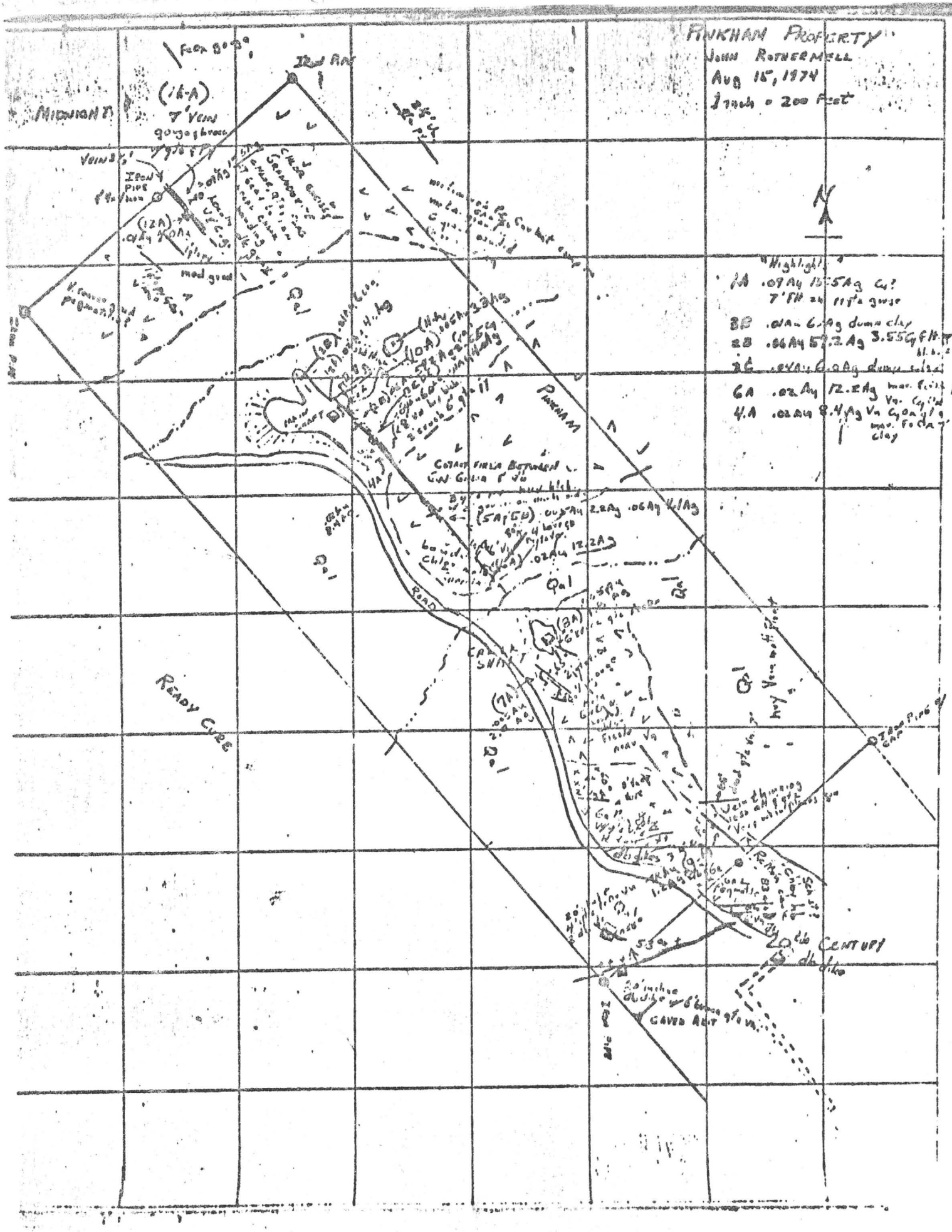
Balance Due Valley National Bank

Correct [signature] Inv. Clerk

Checked [signature]

Approved Total Cost 21252 & Elim. Co

Chief Accoun


PINKHAM PROPERTY
JOHN ROTHERMELL
Aug 15, 1974
1 inch = 200 Feet
"Highlights"
1A .09 Au 15.5 Ag Cu?
7' Flt 2h 11 ft's gouge
3B .01 Au 6 Ag dump clay
2B .06 Au 57.2 Ag 3.55 Cu Flt
3C .04 Au 6.0 Ag dump clay
6A .02 Au 12.2 Ag
4.A .02 Au 8.4 Ag Vn
MIDNIGHT
7' Vein
Iron Pipe
Pinkham
Road
Ready Cure
Century
Caved Adit
Qal

| Year | Mine Cu lbs ~~Ag~~ | Pinkham Ag OZ ~~Au~~ | Au ~~Pb~~ OZ | Pb ~~Zn~~ lbs | Zn ~~Cu~~ lbs | Short Tons |
|---|---|---|---|---|---|---|
| 1900 | | | | | | |
| 1901 | | | | | | |
| 1902 | | | | | | |
| 1903 | | | | | | |
| 1904 | | | | | | |
| 1905 | | | | | | |
| 1906 | 47412 | 11718 | 44 | 0 | 0 | |
| 1907 | | | | | | 564 |
| 1908 | | | | | | |
| 1909 | | | | | | |
| 1910 | | | | | | |
| 1911 | | | | | | |
| 1912 | | | | | | |
| 1913 | 3305 | 978 | 3 | 0 | 0 | 49 |
| 1914 | 2844 | 894 | 5 | 0 | 0 | 22 |
| 1915 | ~~0~~ | | | | | |
| 1916 | 0 | 29 | 2 | 3133 | 0 | 3 |
| 1917 | | | | | | |
| 1918 | | | | | | |
| 1919 | | | | | | |
| 1920 | | | | | | |
| 1921 | | | | | | |
| 1922 | | | | | | |
| 1923 | | | | | | |
| 1924 | | | | | | |
| 1925 | | | | | | |
| 1926 | 1575 | 1076 | 2 | 0 | [illegible] | |

Mine Pinkham

| Year | Au lbs | Ag oz | Au oz | Pb lbs | Zn lbs | Short Tons |
|---|---|---|---|---|---|---|
| 1931 | | | | | | |
| 1932 | | | | | | |
| 1933 | | | | | | |
| 1934 | | | | | | |
| 1935 | | | | | | |
| 1936 | | | | | | |
| 1937 | 530 | 430 | 3 | 570 | 0 | 103 |
| 1938 | | | | | | |
| 1939 | | | | | | |
| 1940 | | | | | | |
| 1941 | | | | | | |
| 1942 | | | | | | |
| 1943 | | | | | | |
| 1944 | | | | | | |
| 1945 | | | | | | |
| 1946 | | | | | | |
| 1947 | | | | | | |
| 1948 | | | | | | |
| 1949 | | | | | | |
| 1950 | | | | | | |
| 1951 | | | | | | |
| 1952 | | | | | | |
| 1953 | | | | | | |
| 1954 | | | | | | |
| 1955 | | | | | | |
| 1956 | | | | | | |
| 1957 | | | | | | |

# CHLORIDE.

## PINKHAM STRIKES IT.

Last week the crosscut cut the Pinkham ledge at a depth of 220 feet. The crosscut was made from the new shaft 120 feet northwest from the old shaft now caved. A drift had been run on the vein 100 feet from the old shaft to 20 feet of the new crosscut, but the high grade copper found above was absent. The new crosscut shows the copper coming in in streaks. The crosscut just cut the southeast end of the ore shoot from which 40 cars of ore was taken from the levels above. At the point of crosscut the ledge is said to be in the neighborhood of ten feet wide. The drift will now probably be extended both ways on the vein while the shaft is going down another 100 feet.

Joseph S. Qualey & Co. are financing the development of the Pinkham, while the engineer in charge is L. A. Dockery, with John Engle foreman, both skilled in their respective work. Perhaps no mine development in the county is watched more closely than the Pinkham for the reason that surface indications are such as to expect a great producer with development.

F. C. Schrader, Government geologist, and a leading authority, made a thorough examination of the Pinkham some years ago and says in part:

"Underground the vein is on the average 12 feet in width. The ore occurs in lenses and in chimneys. The principal source of the ore thus far mined is a large chimney extending from a point near the shaft westward. It has a width of 14 feet. A sample taken across it, including everything, averaged $24 a ton. Much of this kind of ore is in sight here. The enlargement and enrichment of the vein at this locality seems to be due to the Midnight vein coming in obliquely from the northwest

# CHLORIDE

The sump for the pumping station on the 320 at the Pinkham has been finished and on the arrival of the new cable, sinking the shaft to the 520 will commence. The scattered ores nearer the surface are getting together in one big ore channel with depth. Another station will be cut at the 420 and the veins cut before the shaft goes to the 520. Three shifts make fast time and by the end of the month the 420 will be close at hand. While sinking is going on levels are being extended above on ore. About 30 men are employed and the work is being done in a skillful manner. The Pinkham is located at a point on the copper zone where the croppings are extra prominent, and as the copper zone is several miles long, its deep development is the most important of any work in the district. The Joseph S. Qualey Co., successful mine operators of Mexico, are developing the Pinkham while the Hot Tomalies are cutting each others throats. So far as development has gone, it looks like Mexico will have to take a back seat to the Arizona property. We look for a mill and 100 men to be employed at Pinkham by the end of the year and probably as many on its twin brother, the Midnight. While the Midnight is not yet taken over representatives of the W. A. Clark interests have sent word that they will make the third and final examination shortly. Two other heavy operators are also looking towards it as an opportunity of increasing their wealth.

Now that the pump is drinking water from the Pinkham lower level the water supply for Midnight concentrator will be doubled.

# PINKHAM SHIPS TO DOUGLAS

A 60 ton car of ore left last Saturday from the Pinkham mine, Chloride, billed to the Copper Queen smelter, Douglas. This is the first car under the present management. This mine should have large quantities of ore that will stand the low rate of treatment at Douglas. It is surprising what low grade ore of copper, gold and silver, or any one of these metals, may be sent to Douglas and money made out of it. Railroad charges have been made low so that class of ore may have a market.

Copper

WOLVERINE. The No. 5 exploratory shaft on the Osceola lode is down to the fifth level where a station is being cut [illegible] As soon as the work has been ad-

The face of the 200 foot drift showed five feet of good ore, $100 a ton. A fine body of high grade copper sulphide ore, 18 to 21 inches in width, was opened in extending the drift northwestward on the 140 foot level. This ore averaged about nine per cent copper and 60 ounces silver to the ton.

There are four levels above where the present crosscut is made all showing good ore to the face of drifts northwest and it is reasonable to suppose that the ore now found on the fifth level is the ore shoot drifted on above and perhaps, as Mr. Shrader says, getting its enrichment from the Midnight vein coming in from the northwest.

The discovery of the ore deeper down is very encouraging for deeper work and extensive drifting, and no doubt development will be pushed all along the line.

With the deepest shaft in the county, Tennessee, 900 feet, with a great ore body; Rainbow near 500 feet, shipping large quantities of ore; Silver Hill a bonanza, and a regular shipper of $75 ore; Hercules a regular shipper; New Jersey on the payhst; Distaff shipping high-grade; Midnight in the concentrate column, and now the Pinkham, surely Chloride is entitled to a dance every two Saturdays.

# SUMMARY OF GEOLOGICAL REPORT

## PINKHAM PROPERTY
Wallapai Mining District
Mohave County, Arizona

file

The Pinkham Property consists of two contiguous mining claims, one patented, located in Sections 11, 12, and 14, of Township 23 North, Range 18 West, G&SRB&M, Mohave County, Arizona.

Rich silver discoveries brought miners to the area in the early 1860's and in the early days the Pinkham Mine was known largely for copper and silver production. Production statistics indicate approximately 1000 tons of ore was removed containing between 8 and 60 ounces of silver per ton and 3% to 9% copper.

The Property is located in the central portion of the Cerbat Mountain Range, one of the many North-South trending, fault-block ranges of the Southwest Desert. Rocks exposed at the surface, on the Pinkham Property include pre-Cambrian metamorphic rocks cut by Mesozoic(?) intrusives and mineralized veins of an unknown (Tertiary?) age.

A known ore-body exists on the Property and if underground maps supplied to the Author are accurate, approximately 2000 tons of ore, carrying 8 to 60 ounces of silver per ton and 3% to 9% copper has been blocked out.

The most favorable loci for ore is at the junction of veins although it can be found randomly spaced along the veins in lenses, or shoots. The main vein on the Pinkham Property intersects with at least three smaller veins in a zone of highly altered and fractured country rock.

Results from field reconnaissance indicate the following:

A) Mineralized structures traverse the Property and ore is exposed on the surface; prospect pits, trenches, dumps, etc..

B) A major vein junction exists on the Property providing a favorable locus for prolonged ore deposition.

C) Past mining activity on the Property has produced considerable dump material. The possibility of milling and concentrating this material should not be overlooked.

Wm. Vanderwall, Geologist
April 30, 1981

PERRY DURNING
Fisher DROBECK
FISCHER-WATTS

A

GEOLOGICAL REPORT

on the

PINKHAM PROPERTY

in the

Wallapai Mining District

Mohave County, Arizona

by

Wm. Vanderwall
Geologist
Scottsdale, Arizona

April 30, 1981

Geological Report
PINKHAM PROPERTY
Wallapai Mining District
Mohave County, Arizona

LOCATION:

The Pinkham Property consists of two mining claims (one patented) located approximately 20 miles northwest of Kingman, Arizona, and 2 miles southeast of Chloride, Arizona, on the western slope of the Cerbat Mountains. The property is situated in Sections 10, 11 and 14, Township 23 North, Range 18 West of the G.& SRM, Mohave County, Arizona and is accessible via county and private roads.

SCOPE OF REPORT:

Time was the limiting factor of this very interesting investigation. Facts and opinions in this report are based on a cursory field examination of the property and on the authors specific knowledge of the area and general familiarity with the published literature concerning the Wallapai District.

HISTORY AND PRODUCTION:

The Pinkham Property lies in an area rich and colorful in Arizona Mining History. Bonanza type silver lode discoveries brought miners to the District in the early 1860's. Oxidized ores were mined extensively during the 1880-1890 period principally for silver and gold. The rapid decline in silver prices between 1885-1895, the recession of 1905 and the deeper leaner, sulfide ores caused the suspension of mining operations in the area.

Dings, 1951, (pp147) lists the early production from the Pinkham Mine as approximately 14,000 ounces of silver and 27.5 tons of copper with minor amounts of gold and lead.

Schrader, 1909, (pp 74-76) credits the Pinkham Mine as the most important copper mine in the region. Schrader's ore description tells of oxidized ore containing 18 ounces of silver per ton and 3% copper which indicates less than 1000 tons of ore was mined from the property.

In 1943, the Tennessee Mine, 2 miles north and mining in the same vein system as the Pinkham, was producing 150 tons of crude ore per day averaging 20 ounces of silver per ton. Total production from the Tennessee Mine is reported to be in excess of 500,000 tons (Dings, 1951, pp147).

The value of metals produced from the Wallapai District during the years 1904-1948, U.S. Bureau of Mines 1948 Annual Report was about 22.5 Million Dollars at 1948 prices (nearly a half of a Billion Dollars at today's prices). Values were principally in

lead and zinc, but with substantial amounts of copper, silver and gold.

Currently Penzoil-Duval Corporation, located 2 miles south of the Pinkham Property, is reportedly producing 18,000 to 20,000 tons per day of open pit ore averaging 0.5% copper and 0.045% molybdenum, plus other metals.

GEOLOGY AND ORE DEPOSITS:

The Cerbat Mountain constitute one of the many north-south trending, fault-block ranges of the Southwestern Desert. They consist primarily of metamorphosed pre-Cambrian igneous and sedimentary rocks, cut by later intrusions of Mesozoic(?) granite and monzonite porphyries, known locally as the Ithaca Peak Granite, and by Tertiary Volcanic dykes. Centering around the Ithaca Peak intrusive, mineralization is typically copper and molybdenum sulfides, now being mined by Duval. Surrounding the intrusive is a zone several miles wide of copper-lead-zinc-silver bearing veins in which the Pinkham Property lies.

The vein type ore deposits occur in clefts or cracks in the country rock in which the mineral material precipitated from aqueous solution (hydrothermal fissure veins). It is probable that these fissures formed from forces accompanying the implacement of the Ithaca Peak intrusive. With the intrusive acting as a heat engine, a convecting hydrothermal system developed that set up a hypogene enrichment process which deposited ore and gangue minerals near the top of the convecting cell and extracted metals and sulfur from sources at depth. Conceivably, as the solution approached the fissure level, it boiled, thereby distilling the acid forming constituants $CO_2$ and $H_2S$. Cooling and a slight pH rise of the residual liquids, due to loss of acid forming constituants, may be regarded as the mechanism of sulfide precipitation. Exposure of the viens to normal weathering processes oxidized the ore and, to a point, enriched it by the downward migration of slightly acidic rainwater carrying metals in solution.

Many veins, occuring in nearly vertical fault fissures, strike northwest and outcrop for considerable distances. The fault fissures are largely occupied by breccia with abundant shearing and some gouge. Ore lenses, or shoots, though not continuous are numerous and tend to have greater vertical rather than horizontal extent. Concentrations of extremely hi-grade ore appear to favor vein junctures. These concentrations are attributable to chemical and physical changes which enhanced mineral deposition at the fissure level of the convecting cell.

The main vein on the Pinkham Property is a prominant structural feature which extends from the main body of the Ithaca Peak intrusive northwesterly for a distance of over three miles. It cuts all lithologic units in the area and appears to intersect with at least three smaller veins in the vacinity of the Pinkham Mine. The veins are composed of brecciated and altered granite(?) wall rock and quartz. In outcrop they are heavily stained by iron and manganese. The main vein trends N.35°-45° W., and is nearly vertical

with occasional reversal. Country rock is pre-Cambrian granite which has been intruded by later granite and diabase. A gouge zone of sericite and clay accompanies most of the veins.

Bordering the Pinkham Mine is a zone of vein intersection possibly 100 feet across composed of highly altered and fractured rock, impregnated with many short and irregular veinlets. The fractures appear to have no regular strike or dip and are filled with limonite and quartz. Several veins can be traced to an intersection at this zone, a relationship favorable to prolonged ore deposition.

The primary mineralization on the Pinkham Property is one of chalcopyrite, pyrite, galena, sphalerite and arsenopyrite, together with a variety of gange minerals. The oxidized and enriched portion of the veins contain chalcocite, bornite, cerargarite, copper carbonates, native silver and lesser concentrations of native gold.

ORE RESERVES:

The Pinkham Property contains base-metal silver veins, oxidized silver-gold veins and possibly a zone of enrichment in between. Data from past developments, publications and reports are insufficient, or unavailable, to completely delineate the orebody. However, there is ore exposed underground and in many places on the surface; prospect pits, trenches, dumps, etc..

Schrader, 1909, (pp 74-76) describes ore from the Pinkham Mine as carrying 18 ounces of silver per ton and 3% copper in the upper drifts and 60 ounces of silver with 9% copper in the lower drifts. Schrader"s map of the workings shows 1200 feet of total progress with a total depth of 400 feet. He shows approximately one-third of the known orebody mined out. Schrader's map is nearly identical to one produced in the 1940's(?) suggesting very little mining has been carried out on the property since Schrader's time.

If the lower drifts could be worked for 180 pounds of copper and 60 ounces of silver per ton and the maps are correct in showing two-thirds of the orebody in place, an estimated recovery in excess of 2000 tons of ore could be expected.

Considering the extent and mineralized nature of the zone of fractured rock around the old workings it may be possible to extend the limits of the know orebody.

Many veins traverse the Pinkham Property and some of these may contain separate orebodies which an adequate exploration program would reveal.

The mine dumps have been shown to carry mill grade values in gold and silver, and this asset should not be overlooked.

CONCLUSION:

On the basis of surface observations plus facts provided in the published literature and by talks with people familiar with

the property it is the Author's conclusion the Pinkham Property contains well developed structrues with moderate to strong copper-lead-silver mineralization.

It is also the Author's conclusion a well planned exploration program consisting of detailed geologic mapping and diamond drilling would justify initiating a mining venture.

Respectfully submitted,

(Wm. Vanderwall)ss

Wm. Vanderwall, Geologist
April 29, 1981

PINKHAM MINE MOHAVE

March, 1919, p. 28 - Ariz. Mng. Journal

U. S. Geol Survey Bull. 397, p 74-76

USGS Bull. 340, p. 64

Arizona Mining Journal Agust 1920, p. 13

USGS Bull 978-E P. 147

Malach, R., Mohave County Mines, 1977, p. 27

Evaluation of Mineral Resources of Hualapai Indians, Vol, 1, 1964, p. 197-198

MILS Sheet sequence number 0040150707

PINKHAM MINE MOHAVE

John Rothermel wanted to know buyers of silver ore from old Pinkham mine near Chloride. He said tailings will assay about 6 to 8 oz/ton. Suggested he contact ASARCO. FTJ WR 9/26/74

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Fred Rothermel came in with a sample of a vein on the Pinkham mine south of Chloride, for mineral identification. Highly oxidized material, malachite, zinc oxide and native silver. They intend to set up a mill as there is a large dump of mill grade material and will develop mine at the same time. FTJ WR 1/7/75

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[redacted]

PINKHAM MINE MOHAVE

I drove to the Pinkham mine which the Rothermals have also sub-leased to the Texas Mining and Development Co., 2118 Maxmillan, Houston, Texas, 77039. The dumps at the Pinkham contain mostly pyrite and are questionable quantity-quality in my opinion.
VBD WR 6/19/76

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CJH/WR 12/14/79 - John Rothermel put a dozer slice on his Pinkham claim. He has asked for field inspection and advice. Probably in January.

---

Date November 12, 1946

Mine Pinkham

2. Location 2 mi. south of Chlorides

SW¼ SW¼ Sec 11, T 23N, R1

Mining District & County Wallapai Mining Dist., Mohave Co.

Former name

Owner

6. Address (Owner) Box 644, Kingman, Ariz.

Operator

8. Address (Operator)

President, Owning Co.

9A. President, Operating Co.

Gen. Mgr.

14. Principal Minerals Gold, silver, copper, zinc.

Mine Supt.

15. Production Rate

Mill Supt.

16. Mill: Type & Cap.

Men Employed

17. Power: Amt. & Type

Operations: Present

Operations: Planned

Number Claims, Title, etc. One patented lode claim.

Description: Topography & Geography It is located in the open border of Sacramento Valley, at the foot of the range.

Mine Workings: Amt. & Condition 2 shafts 240' & 400' - probably good condition
Several stopes

Ore: Positive & Probable, Ore Dumps, Tailings  Mine is full of water.

Dimensions and Value of Ore body  The ore occurs in lenses and elongated kidneys and chimneys. The principal source of ore mined was of a width 14" and sampled $24.00 per ton estimated at values of forty years ago. Much of the ore ran $100.00. For every percent of copper the ore carries 10 ozs. of silver.

Mine, Mill Equipment & Flow-Sheet

Road Conditions, Route  Very good.

Water Supply  Water stands to 35' of surface.

Brief History  Has been worked years ago for its high grade copper and silver content. Smelter returns are not available just now as I loaned them to a promoter whom I can't locate.

Special Problems, Reports Filed

Remarks

If property for sale: Price, terms and address to negotiate.  $10,000.00 and three years to pay.

32. Signature W. C. Babcock

Use additional sheets if necessary.

# DEPARTMENT OF MINERAL RESOURCES
## State of Arizona
### MINE OWNER'S REPORT

DEPT. MINERAL RESOURCES
RECEIVED
NOV 14 1946
ARIZONA
PHOENIX

Date Nov. 12 1946

1. Mine: Pinkham
2. Location: Sec. SW, SW 11 Twp. 23 N Range 18 W Nearest Town Chloride
   Distance 2 miles Direction South Road Condition Very good
3. Mining District & County: Wallapai Mining District, Mohave Co.
4. Former Name of Mine:
5. Owner: H. L. Babcock
   Address Box 644, Kingman, Arizona
6. Operator:
   Address:
7. Principal Minerals: Gold, silver, copper, zinc
8. Number of Claims: one Lode yes Placer
   Patented yes Unpatented
9. Type of Surrounding Terrain: It is located in the open border of Sacramento Valley, at the foot of the range

10. Geology & Mineralization: The country rock is the pre-Cambrian complex, and it is intruded by microcline granite and diabase dikes near by

11. Dimension & Value of Ore Body: The ore occurs in lenses and elongated kidneys and chimneys.
The principal source of ore mined was of a width 14' and sampled $24.00 per ton estimated at value of forty years ago. Much of the ore ran $100.00
For every per cent of copper the ore carries 10 oz of silver.

12. Ore "Blocked Out" or "In Sight": Mine is full of water

Ore Probable: Don't know

13. Mine Workings—Amount and Condition:

| | No. | Feet | Condition |
|---|---|---|---|
| Shafts | 2 | 240 480 | probably good. |
| Raises | | None | |
| Tunnels | | No. | |
| Crosscuts | | Very little | |
| Stopes | | Usual | |

14. Water Supply: Water stands to 35' of surface

15. Brief History: Has been worked years ago for its high grade copper & silver content. Smelter returns are not available just now as I loaned them to a promoter whom I can't locate.

16. Signature: W. L. Babcock

17. If Property for Sale, List Approximate Price and Terms: $14,000.00 and three years to pay.

1919

# A Visit to the Chloride District

By E. N. PHILLIPS

"There is so much to say of the Chloride Queen silver mine and the silver mines of the Chloride district that it is of the greatest difficulty one can cull out profitably for the reader.

"I have said the half was never told. Every one feels this who comes to this mineralized district, and more when the critic sits down to tell it himself, he feels he is not capable of telling even the tenth part of what he would like to tell. And, for this very reason I will talk of a few things in general.

"In the first place, let it be said loud enough for all classes of mining men to hear, nothing can be said against this district that does not affect the price of silver. The low price of silver stopped these hundreds of silver mines, and the present high price of silver will start them all again. Hundreds of mines is the true expression—there are literally hundreds of them. We stood today on the top of Silver Mountain claim of the Chloride Queen Mining company, and counted 100 mines by the dumps we could see.

"From 27 of these very mines I had ore of assay values from $50 to $2,000 per ton in silver. And, while standing on this claim we observed a dump some 300 yards away on the same property, where high-graders had worked 50 to 60 years ago. So we went to the dump (for we must see it all) and with a prospector's pick we succeeded in excavating from the quartz ledge a sample of the very ore which so long ago was shipped to Swansea, Wales, Europe. At present prices the assay we took runs near $250 per ton in silver. The ledge from which we took this sample is only one of a number running across the property of the Chloride Queen Mining company.

"Speaking of 'chloriding' or 'highgrading', one can high grade yet. The very richest oxidized ores are still in sight. The 'Old Chloriders' did not begin to touch the valuable ores which lie on top of the ground. The owner or the miner has not begun to cull out the ore in sight. On one small 20-acre claim, the superintendent, John B. Hughes, also part owner, showed us several veins from 18 inches to 15 feet in width running across this holdings where ore valuing hundreds of dollars per ton were taken out—and still these veins showing over the entire property had only been scratched here and there. To the west and north of this 'Bay State Mine' is the 'Old Towne Mine', recently bought by S. S. Jones and Mr. Murphy, and which is the old 'Glory Hole' from which silver ores of the very highest values have been taken out. But this mine, which still has high grade silver ore in its dump, had not really been opened up for the real body of ore lower down.

"Next we visited the Midnight property adjoining the Bay State on the east and north. The old watchman showed us some rich ore which he said came from the ledge 50 to 60 feet in width. We walked over the rich Pinkham property and called on the superintendent of the Copper Age, where machinery to the value of several hundreds of thousands of dollars has been installed. We passed over the rich dumps of the Gold Back and the Emmerson properties, collecting a specimen from each ore dump. Then there was the Molly Gibson, and others, too numerous to mention. Will only mention a few more of the larger properties.

"The Tennessee has done no shipping recently, and the monthly shipments were $20,000. But since then the old machinery has been junked and new electrical equipment has been installed and the management is now under a new company with the amalgamation of the Tennessee and Schuylkill mines. Speaking of ore bodies and values in sight, the Schuylkill dump alone has an assay value of $500,000, not saying of ores on the dump of the old Tennessee mine. I talked with the superintendent and found information which, in fact, he said was already public property. He said the best ores of the Tennessee were found between the 1,000 and the 1,400-foot levels. A test shipment about one year ago of 438 tons had been made by the new management that netted them $8,000. This shipment of ore was an experiment, seeking to find the best possible treatment for the ores of this particular Chloride district. As soon as a definite report is made, the new Tennessee mill will be built accordingly at Chloride.

"Adjoining this property is the Elkhart and the Empire properties and end-lining and side-lining these two is the Chloride Queen. These properties, with a dozen others within a mile, covering acres and acres of untouched ground, holding the highest grades of ore ranging from $9 to $1,000 per ton in silver and gold, saying nothing of the lower grades of ore.

"We visited the Tuckahoe, Bella Union and Shot Gun mines that cluster together west of Chloride. We took rich samples from this group. The superintendent of the Bella Union showed us some rich ore taken practically from the surface, assay values from $200 to $1,000. At the Tuckahoe, we were shown silver from their recent rich strike on the 350-foot level. I have been asked what I think of the Chloride Queen. This property has this rich ruby silver as well as the other high grade ores to other properties of the district. The rich veins on the other properties are interrupted over the Chloride Queen property and are easily traced on the property with all openings on the property showing big values. I will wager that the Tuckahoe and the Bella Union veins run the length of the Chloride Queen property. Then the big veins running through the Molly Gibson, Tennessee, Schuylkill, Elkhart, Argyle, Distaff and Empire and several other rich mines run right through the Chloride Queen property.

"Now, I will say, what every man in Chloride will say: 'I don't see how the Chloride Queen Mining company can fail in developing one of the richest mines in the southwest.' I think I have looked this matter over with an unbiased judgment—keeping in mind not only what I saw and heard, but also considering the United States Geological survey and reports of a number of the best mining engineers of the country. Already the present price of silver has started the wheels of the silver industry in the Chloride district and before this year is out I am sure this district will possess one of Arizona's largest mining camps, and the Chloride Queen will be producing its thousands of dollars in silver. Forty feet more in the main shaft will possibly open the largest body of silver ores in the district."

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