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BRIEF ON ICC HEARING TO ABANDON MAYER RAILROAD - 8-6-57

Page 2

WITNESS SHERWOOD B. OWENS, Mine Owner and Operator during the past 15 years, with mining interests over entire State of Arizona, testified (316-17), in substance:

Presently, is the owner of the De Soto Mine in the Big Bug District about 12½ miles from Blue Bell siding (317-18-45-6). Said mine is being developed under lease arrangement by the De Soto Copper Corpn., which was formed in December 1956, and actual work began about January 15, 1957 (318-19).

The De Soto was first operated in about 1890. It produced slightly in excess of 300,000 tons of pretty good grade ore until 1926 (342-3).

The present management appropriated $250,000, aside from money I previously expended, to determine the ore reserve (319). After preliminary investigation of ten months, conclusion was reached that there was better than a 50-50 chance of developing a six million plus tons ore body of one percent copper (320-25).

From January 15 to May 31, 1957, slightly more than $70,000 were expended (321), leaving roughly $180,000 of private money still on hand (348).

The witness described the methods being used in developing the mine; the first stage of the work has been completed, and 350 to 400 samples taken which practically completes the sampling on the 600-foot level. While it has cost a lot of money, the management is more than satisfied (320-1).

Open-pit operation is proposed with a mill to produce 2,000 tons of concentrates daily which will be shipped to El Paso (325). The open-pit possibilities have not been completely explored but they will be determined by drilling and sampling the mine. Presently, sufficient quantity of good grade ore justifies underground operation (326). In the event it develops that open-pit operation is not feasible, lesser tonnage of high grade ore, ranging from 2,000 to 2,500 tons per month, will be produced by underground mining (325), employing 25 to 30 people (336).

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Under present conditions, our engineering estimates overall costs of placing the property and mill in operation will be between 6½ and 7 million dollars, of which the 2,000-ton mill will cost approximately 3½ million dollars, of which the 2,000-ton mill will cost approximately 3½ million dollars (332). The effects of the present development work in the De Soto Mine must be obtained not later than May 1, 1958, (336-7).

The Blue Bell Mine, four and one half miles from end of track at Blue Bell, owned by the witness, Sherwood B. Owens, has opened up outstanding area of direct smelting ore (326-7). Exploration work has developed 35,000 to 40,000 tons of high-grade siliceous ore running 2.5 to 2.9 percent copper. As the witness is furnishing fluxing ores for American Smelting and Refining Company, he is in position to ship this ore. Qualified engineer has made complete study of the mine. There is no question but that it can be substantial producing mine by further expenditure of $50,000, which is going to be made (327-8).

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Flux is simply low grade ore which is of value to smelter because of content of other metal (341).

In the past, the Blue Bell Mine produced and shipped over one million tons of commercial ore over the two loading ramps at Blue Bell which are still there, thus making perfect loading situation (329).

During World War II it shipped about 20,000 to 25,000 tons of ore (350).

The plans of the owners for the development of both the De Soto and Blue Bell Mines took into consideration availability of railroad service from Blue Bell (229). Cost of trucking to Humboldt, instead of to Blue Bell, would be approximately 96 cents per ton compared with rail charge of 28 to 30 cents per ton (330). Continuation of rail service from Blue Bell is absolutely vital to successful operation of the De Soto and Blue Bell Mines not only for the outbound movement of ore and concentrates, but for the inbound movement of machinery and supplies (331).

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The Iron King and Blue Bell Mines were formerly owned by the Consolidated Arizona Smelting Co., which owned the former smelter at Humboldt, which company went broke (333-42-43). The Iron King Mine was reopened in 1942 by the Shattuck Denn Mining Corporation since which time it has been continously in operation, and presently making a small profit, although the price of zinc is much depressed (333-34).

While the De Soto and Blue Bell Mines were previously shut down, it was not because the metals therein were exhausted (353-4).

It would require 12 bob-tail trucks to haul the ore or concentrates to Humboldt because of the longer distance, while only three such trucks can perform the same service to Blue Bell (354-55).

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Other principal producing mines tributary to the line between Iron King and Blue Bell, incl., are the Bing Hampton, Copper Queen, Hackberry, Buttermut, Minor, Stoddard, Golden Turkey and Silver Cord (376-7-8-9-80-.

The Nipponese Mining Co., Ltd., which is Canadian capital, has an option on the Bing Hampton and Copper Queen Mines. During three or four months in 1956, the properties were being diamond drilled to determine the size of the ore bodies and the grades thereof (382-3).

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The Hackberry Mine has a good long-range chance; not in the next three years, unless the price of lead and zinc increases. Then there might be considerable activity, depending more on economic conditions (391-2).

The Minor Mine is in the exploration phase. It has good ore indications, but its operation will be further removed than in the case of the De Soto (391).

The Bing Hampton and Copper Queen Mines have a large outcrop of an iron-stained shear carrying small amounts of copper, lead and zinc that have never been explored prior to the work performed in 1956 (392).

WITNESS JOE STARNICK, engaged in the mining business about 35 years and presently Superintendent of the U. S. Consolidated Mines, known as Minor properties, 5 miles east of Mayer, testified (409-10), in substance:

That the Minor Mine has both milling and shipping grades of copper and zinc ores. It has done development work such as diamond drilling and presently is at the point where it can go ahead. It is further planning to drive a 700-foot drift (410).

In the near future we will ship ore. We have ore and are exploring, but we still have to run our drift to determine how much ore we will ship. It is hard to say when and what will develop. It could be 2,000 or 200 tons a day. There could be some shipping ore as well as milling ore. We might ship some and blend the ore (411-12).

The high grade ore is definately shipping ore, while the low grade siliceous ores, which the smelters want, would be more profitably milled and blended with high grade ores. To start, we contemplate erection of a mill with capacity of 200 tons per day (411-12).

The Iron King Mine has zinc, gold, silver and lead, and the Minor Mine has copper, zinc, gold and silver ores (412).

We struck ore at the 200-foot level. Ore was shipped out of the Minor Mine during World War II, and six carload trial shipments have recently been made (412-13).

We were going to ship from Mayer but since the line is our of operation, we have to truck the ore to and ship from Humboldt. We must call the Iron King in order to get a place to load and then go and see the station agent at Mayer to order a car. We can move the ore on the Iron King ramp if it is not busy. If Iron King is using the ramp, we must wait until the car is spotted for loading (414).

The additional cost of trucking the ore to Humboldt is $1.50 a ton higher than the cost of trucking it to Mayer (414-15-16-17). Illustrating the importance of $1.50 additional trucking cost to Humboldt over Mayer, if we were shipping 200 tons a day, the additional operating cost to us would be $300 a day, which is sufficient to mean a profit or a loss (418).

We have shipped 5 carloads of test ore from Humboldt since January 1, 1957. We expect to ship a few cars during the next six months or a year (420-421).

In operating a mine, every foot you penetrate has to be developed (421). We expect to be in production within six months to a certain degree. Development and operation go hand in hand. The proposed mill, close to the mine, should be in operation inside of a year. The concentrates from the mill will move by rail to El Paso (422-23). I could not be definite about the date; might be before a year or a little thereafter. I am sure that within a year we will have the mill on the property ready to operate (425).

WITNESS EUGENE FREDERICK, President and General Manager of the U. S. Consolidated Mine, Inc., and in charge of the Minor properties, testified that $125,000 cash has been spent in development of the mine since work began in August 1955 in exploration, purchase of new machinery and hoist (426-7-30).

WITNESS M. L. HECKLTHORN, practical mine operator, who owns the Oro Fino Mine 18 miles southwest of Mayer, and has a lease on the Stoddard Mine, and is driving a shaft on the St. Anthony Mine testified (421), in substance:

I am not developing a large mine. I am an independent operator and obtain my living by putting up my own money and services for producing ore from various ming properties (437).

Shipped orefrom the Stoddard and Half Moon Mines from Mayer in 1956.

Mayer, Arizona
July 22, 1945

Subject: The Blue Bell Mine of Yavapai County, Arizona, upon which the W.P.B. have recently refused the transfer of special copper premiums from one operator to another.

In 1943 the Southwest Metals Co., owner of the mine, leased the Blue Bell to the Western Machinery Co. of San Francisco, Calif. The Western Machinery have operated the mine under the direction of E. J. Bumsted, their authorized agent and manager.

Early in April, 1945, E. J. Bumsted suffered a serious heart attack, resulting in partial permanent disability, so that he felt unable to continue the operation of the Blue Bell Mine. As a consequence, E. J. Bumsted asked L. L. Farnham to take over the lease and operate the Blue Bell mine.

After examination and finding that the lease upon the mine was still in good standing, L. L. Farnham purchased, through E. J. Bumsted, the Western Machinery Co.'s lease. On June 12, 1945 the transfer was made and a new lease was executed between the Southwest Metals Co. and L. L. Farnham. Thereupon Farnham made application to the W. P.B. for the transfer to him of the special copper premium that was formerly granted the Western Machinery Co. on the ores of the Blue Bell Mine.

On July 8, 1945, Farnham was advised by Bernard A. Clark, President of the Southwest Metals Co., that the W.P.B. had on June 25, 1945, refused to transfer the special copper premium on the grounds that the Western Machinery Co. had abandoned their lease on the Blue Bell Mine. The Western Machinery Co. may have at some time signified their intention to terminate working the mine, but they never actually abandoned their lease or the mining property.

The pertinent correspondence relative to this matter is herewith attached.

/s/ L. L. Farnham

WAR PRODUCTION BOARD
Washington, 25, D. C.

In reply refer to:

July 19, 1945

Mr. Bernard A. Clark, President
Southwest Metals Company
Ford Building
Detroit 26, Michigan

Dear Mr. Clark:

Re: Blue Bell Mine
Yavapai County, Arizona

Replying to your letter of July 16, 1945, I should advise you that quotas are established for the operator of a particular mine rather than the property.

If the rights of the operator, whether owner or lease-holder, are transferred during the operation, the quotas are subject to review before a quota may be transferred to a new operator. The review may result in an increase, a decrease or denial of quota.

When a lessor has his lease cancelled or abandons a property which he has under lease, there is no further action which he may take with the Quota Committee in connection with the revision of his former quota.

In the instant case, the connection of the Western Machinery Company with the Blue Bell Mine is terminated for quota purposes.

Under the circumstances, we have to consider Mr. Farnham as starting a new operation and since we have gone on record that we do not need any copper that costs over 17 cents per pound for the war effort, we cannot recommend starting an operation that requires a special premium.

The purpose of the Premium Price Plan, as started February 9, 1942, is to expend output of copper, lead and zinc, because of their importance in the production of armaments. At the present time, the copper requirement-supply position for armaments is such that we have adequate supply to satisfy the anticipated requirements.

Yours very truly,

D. L. Forrester, Chief
Primary Production Branch
Copper Division

SOUTHWEST METALS CO.
Ford Building
Detroit 26, Michigan

July 10, 1945

Mr. L. L. Farnham
Mayer, Arizona

Dear Mr. Farnham:

This will acknowledge your letter of the 7th, and upon receipt of same we called D. L. Forrester and advised that the lease with the Western Machinery Company, as far as we knew, we still in effect, and that I had a letter from their attorney, outlining several methods to bring about cancellation so that a transfer to you could be made.

During our conversation, a Mr. Blakmore came in on the line to say that the W. P. B. had a telegram from Western Machinery Company, saying that they had abandoned the lease some time ago, to which I answered was not the fact. I have had several telephone conversations with Mr. How and while we fully understand his reasons for not wanting you to act as their agent in operating the property, we feel his wire has caused the delay and we are requesting him to sent another wire explaining the situation.

Just as soon as we hear from the W. P. B. you will hear from us. You might advise if you have started work at the mine.

Yours very truly,

SOUTHWEST METALS COMPANY

By: /s/ Bernard A. Clark
President

BAC:rg

Mayer, Arizona
July 7, 1945

Mr. Bernard A. Clark
Ford Bldg.
Detroit 26, Mich.

Dear Mr. Clark:

Am just in receipt of yours of July 5th with enclosure of copy of letter from D. L. Forrester of the WPB, dated June 26th and addressed to me at Phoenix, Ariz. As I do not, nor never have, lived in Phoenix, I of course failed to get the letter. This mistake in the proper address seems to me, under the circumstances, to be almost inexcusable, as my address of Mayer, Ariz. was plainly typed on all the 4 copies of my application.

The statement made by Forrester that he understood that the Western Machinery Co. had abandoned their lease some time ago on the Blue Bell Mine was certainly news to me, for as I understand the transaction, the Western Machinery Co. through their authorized agent, Mr. E. J. Bumsted, used their influence to have the lease transfered, in an amiable manner, to me. In consideration of this I agreed to pay them a five percent royalty on the net smelter payments plus the premiums received. For reasons that you no doubt know, the Western Machinery prefered to have the lease granted or transfered to my name, rather than let me operate as their agent under their lease.

Perhaps, legally, it could be construed that Western Machinery had abandoned, you no doubt know better of this than I. Surely the proof that I did not think so lies in the fact that I agreed to pay them a five percent royalty. Mr. Bumsted claims he is still in possession of the property, knows of no forfeiture and continues to visit the property daily.

Early in April 1945 when I started negotiating for the Blue Bell with the Western Machinery, I knew that the WPB had ceased granting new special premiums but I was reliably informed that they were transferring from one operator to another the special quotas that had been formerly established on a given mine. It was upon this premise that I spent some two months time in negotiations, surveying, mapping and sampling the Blue Bell Mine, at a cost of some $1200.

I dont see a chance under present circumstances to operate with the A-0 quota only. Our only hope is that you may be able to convince the WPB that the Western Machinery did not abandon their lease. I am not writing to the WPB at this time and wont unless you think it best. Last night before receiving your letter with the bad news, I wired Landon F. Strobel, Exec. Sec. of the Quota Committee, asking him to wire me when I could expect a decision regarding Blue Bell premiums. Have nothing from that as yet.

/s/ L. L. Farnham

SOUTHWEST METALS CO.
Ford Building
Detroit 26, Michigan

July 5th, 1945

Mr. L. L. Farnham
Mayer, Arizona.

Dear Mr. Farnham:

Enclosed find copy of letter sent you June 25th by D. L. Forrester of the W. P. B. This was sent me by E. J. Craig, Assistant Chief of the Copper Division of the W. P. B. (Dept. 7300) owing to the absence from the city of Mr. Forrester.

You will note that it was sent to Phoenix, therefore I doubt if you have received it.

Should you be able to operate under the Quota A-0 Application satisfactorily, fine; otherwise, we will take it up again with Mr. Forrester when he returns to his office, for he told us over the phone that the transfer was going to be made.

Kindly keep us advised.

Yours very truly,

/s/ Bernard A. Clark

BAC:rg
Eng. 1

June 25, 1945

Mr. L. L. Farnham
Phoenix
Arizona

Re: Blue Bell Mine
Yavapai County, Arizona

Dear Mr. Farnham:

Your application dated June 10, 1945, for transfer of quota formerly in the name of the Western Machinery Company, and applied to ores from the Blue Bell Mine, has been referred by the Quota Committee to me for reply.

It is understood that the Western Machinery Company abandoned this lease some time ago, therefore, any proposed reopening of this mine is considered as a new mine operation.

For your information, the War Production Board is not at this time approving the opening of Copper mines which require a Special Copper Premium in order to operate.

However, if you wish to attempt the operation of this property under an initial Quota, A-0, the Secretary of the Quota Committee will issue an A-0 Quota in your name on receipt of your application for it, together with a copy of your lease.

Yours very truly,

D. L. Forrester, Chief
Primary Production Branch
Copper Division
WPB-Dept. 7300

SOUTHWEST METALS CO.
Ford Building
Detroit 26, Michigan

June 20th, 1945

Mr. L. L. Farnham
Mayer, Arizona

Dear Mr. Farnham:

Mr. Forrester of the W. P. B. called our Washington Office and they in turn contacted us in Detroit, after which we called Forrester and had a telephone conversation with him.

The sum total of our talk was that they would transfer the project to you, which simply means that you will get the premium price the same as the Western Machinery Company; however, he was making it conditional upon the understanding that you would not later ask them to allow you amortization of your equipment. We asked him if you had requested that, and he said you had not, but that most of the operators do ask. Was it ever your intention to ask for that; if so, we can see where you are going to run into difficulties. Please advise.

We thought it best to warn you of this fact and if such was the case, our position would necessarily have to change in regard to the lease.

Kindly let me have a reply on this immediately.

Yours very truly,

/s/ Bernard A. Clark

Bernard A. Clark

BAC:rg

(No request was made for amortization of equipment. I simply made application on prescribed forms (WPB-2465))-- s/ L. L. Farnham.

DEPARTMENT OF MINERAL RESOURCES

REPORT TO OPA ON ACTIVE MINING PROJECT

Date.....

Name of Mine.....

Owner or Operator.....

Address.....

Filing Information

File System.....

File No.....

This chart to be used for gallons of gasoline required per month.

Mine Location.....

PRESENT OPERATIONS: (check X)

Production.....; Development.....; Financing.....; Sale of mine.....;

Experimental (sampling).....; Owner's occasional trip.....;

Other (specify).....

PRODUCTION: **Past and Future.**

	Tons
Approx. tons last 3 months	
Approx. present rate per 3 months	
Anticipated rate next 3 months	
If in distant future check (X) here	

EQUIPMENT OPERATED:

Type	Quantity or Horse Power	Miles or Hours Per Month	Gallons Required Per Month
Personal Cars			
Light or Service Trucks			
Ore Hauling Trucks			
Compressors			
Other Mine or Mill Eqpt.			

PRODUCT PRODUCED OR CONTEMPLATED: Name metals or minerals.

.....

REMARKS:

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ARIZONA DEPARTMENT OF MINERAL RESOURCES

By.....

BLUE BELL MINE:

Four miles south of Mayer, Ariz.
Southwest Metals Co; Owner,
% Bernard A. Clark, Pres; Ford Bldg; Detroit, Mich.

Approximate Production; 1945-1947-;
545,590 lbs Copper; 8600 Ozs. Silver and 175 Ozs. Gold.

Operations were suspended in 1947 because of increased costs and lower copper price resulting from the termination of premiums.

About 35¢ copper would be necessary to bring out any production on the small scale of the last operation.
Some 250,000 lbs of copper could be produced 1st yr. at above price.

The Blue Bell probably contains the largest potential supply of copper, of any known deposit within the Big Bug and Bradshaw area. Even though it has produced over fifty three million pounds of copper, it has not been bottomed nor the ore impoverished at depth.

To put this old property back into production on a substantial basis, suitable to its reserves, would take sizable venture capital. Even given a price for copper, compatible with present costs, it is very doubtful if private enterprise would be interested. Since the policy of government has dried up the source of venturs capital, it would seem, in the face of an emergency, to be the function of that government to supply the necessary capital.
To serve the immediate needs of the defense effort, production (within one year) would have to come from small scale selective mining.

Five men would be required for a production of 250,000 lbs of copper per year.

L. L. Farnham

October 20, 1950

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine: Blue Belle and De Soto — Date: March 28, 1957

District: Peck — Engineer: Mark Gemmill

Subject: Present Status

These two mines are but a short distance apart and were owned and operated by the owners of the Humboldt Smelter. The last owner of record was the Southwest Metals Company. This company operated last in 1928. Since then there has been some leasing on both. They were served with Aerial Trams which transported the ore to sidings on the railroad, which was then in operation.

The overall average from the two mines was about the same, being gold .05 oz. Silver 1.0 oz. Copper 3%. Reported production up to 1930 is in round figures De Soto - 280,000 tons. Blue Belle - 1,200,000 tons.

Maps and records of the mines are in possession of Allison Steel Co. Phoenix. These records were compiled by Geo. M. Colvocorresses who managed the properties for a good many years and up to the time of the last shut-down.

It is reported that the properties are presently being investigated by some by some exploration company. Reliable information concerning this is not available.

BLUE BELL

DEPARTMENT OF MINERAL RESOURCES

TO ALL PRODUCERS OF COPPER, LEAD and ZINC IN ARIZONA:

This department and others are making strenuous efforts to bring about legislation which will help ameliorate the restrictions and difficulties faced by the producers of copper, lead and zinc, and other strategic minerals.

To assist in these efforts it is advisable that we have an authentic survey of the results of the President's veto of the Allen Bill, and the results that would take place if a new bill, such as the Russell Bill, were passed by Congress. The Russell Bill includes all strategic minerals.

While we have all learned to love questionnaires just as we love stomach ulcers, will you please give the answers in your best judgment to the following questions:

1. What was your approximate production in pounds per month for the period preceding the President's veto of the Allen Bill?

   (Copper 28,000 Lbs.) (Lead_____ Lbs.) (Zinc_____ Lbs.)

2. What has been your average production per month since that veto has affected your price?

   (Copper None Lbs.) (Lead_____ Lbs.) (Zinc_____ Lbs.)

3. What is your estimate of your production per month for the first few months of 1948 if prices remain as they are now and no premiums are in effect?

   (Copper None Lbs.) (Lead_____ Lbs.) (Zinc_____ Lbs.)

4. What is your estimate of production per month if some incentive plan such as the Russell Bill were in effect?

   (Copper 25,000 Lbs.) (Lead_____ Lbs.) (Zinc_____ Lbs.)

5. General remarks: _____

An addressed envelope is enclosed for your convenience, but you will have to help with the stamp.

Yours very truly,

Chas. H. Dunning

CHD:mh

Chas. H. Dunning
Director

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine BLUE BELL & DE SOTO MINES

Date April 20, 1955

District BIG BUG, YAVAPAI COUNTY

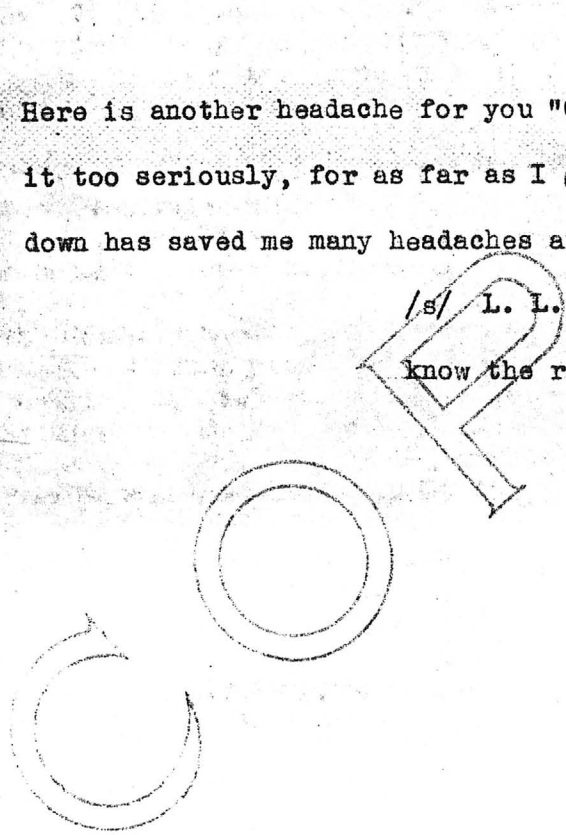
Engineer Mark Gemmill

Subject:

Property inactive.

Here is another headache for you "Chuck"- but don't take it too seriously, for as far as I go perhaps the turn down has saved me many headaches and dollars besides.

/s/ L. L. Farnham - who doesn't know the right people in Wash. D.C.



October 20, 1942

MEMORANDUM

BLUE BELL-DE SOTO

TO: Bill Broadgate

FROM: Earl F. Hastings

Referring to your memorandum of October 16 and September 20 we quote from a letter by G. M. Colvocoresses relative to the recent court decision on this group.

"Entirely contrary to our expectations, the Arizona Supreme Court reversed the decision of the lower court in which the title of E. G. Snedaker, who holds this property on our behalf, had been confirmed and the effect of the recent decision is to deprive us of all our rights in these mines and to permit their redemption by a party who claims to represent the Southwest Metals Company.

We have decided to apply for a rehearing of this case but I recognize that there is only the slimmest chance that the Supreme Court will reverse its decision and in the event that the Southwest Metals Company resumes title to the property neither the Ohio Copper Company nor I will have any connection with future operation in so far as we now have any reason to believe.

Since the Southwest Metals Comapny, a Delaware Corporation, has been dissolved since April 1st, 1939, and the party who has been given the right to redeem on its behalf, although holding certificates for a large block of the stock, is not at present a stockholder of record, it appears likely that many lengthy legal proceedings will have to be completed before any active work can be undertaken at the mines; even assuming the new owners are able to finance such operations.

From a practical standpoint the recent decision of the Supreme Court is likely to make it impossible to find purchasers for a great many mines in Arizona which have been sold to the State for taxes since it now seems that no title which might thus be acquired would have any value until after a year had elapsed and that any money which might have been spent to improve them during that period would be entirely lost if they sould be redeemed by some party who could convince the court that he had at one time held an equitable interest in the property. This is a point which will be stressed to the utmost in our request for a rehearing of the case."

October 6, 1942

Mr. Frank A. Ayer, Chief
Mr. F. H. Hayes, Assistant Chief
Copper Branch, War Production Board
Washington, D. C.

Re: Blue Bell and De Soto Mines

Dear Sirs:

In reference to previous correspondence regarding these properties and in reply to letters from Mr. Hayes dated September 30th and October 1st, file 4H-HGM, I sincerely regret to advise you that the litigation in which these mines have been involved has taken a very unfavorable turn in so far as my associate, the Ohio Copper Company, and I are concerned.

Entirely contrary to our expectations, the Arizona Supreme Court reversed the decision of the lower court in which the title of E. G. Snedaker, who holds this property on our behalf, had been confirmed and the effect of the recent decision is to deprive us of all our rights in these mines and to permit their redemption by a party who claims to represent the Southwest Metals Company.

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War Production Board-2

Should we fail to obtain a reversal of the decision it will obviously be useless for me to attempt to furnish you with the information requested in Mr. Hayes' letter of October 1st or to continue corresponding regarding the above mining properties unless there is some way in which I could cooperate with the War Production Board toward actually putting them into active operation.

I desire to thank both of you for past assistance in this matter and for having urged the Supreme Court to terminate the litigation as promptly as possible but since the outcome of this litigation has not been in line with our hopes and expectations I presume that you will wish to carry on any further correspondence with the parties who eventually acquire title to the mines and put themselves in a position to recondition and operate the same.

Personal regards to you both.

Yours very truly,

L. K. Colcord

GKC:CG

CONFIDENTIAL

Washington, D.C.
Sept. 20, 1942

SUBJECT: Copper
Bluebell-DeSota

I heard today in the WPB Copper Branch that every effort is being made to clear up legal difficulties and get these mines into operation.

They are even taking up one phase with the Supreme Court.

Bill

Bill Broadgate

June 5, 1941

Mr. G. M. Colvocoresses
1102 Luhrs Tower
Phoenix, Arizona

Dear Mr. Colvocoresses:

I have your letter of June 4 relative to the Storm Cloud and Blue Bell Mines. We appreciate the information as to where we can get descriptions of both of these mines. Our work on this survey is being done in a down town office and the other Department of Mineral Resources records are all out at the capitol. For that reason we did not know that we had the data regarding the Storm Cloud.

Thanking you, and with kindest personal regards,

I am

Yours very truly,

Chairman, Board of Governors
Arizona Department of Mineral Resources

CFW:LP

June 2, 1941

Mr. G. M. Colvocoresses
1102 Luhrs Tower
Phoenix, Arizona

Dear Mr. Colvocoresses:

Many thanks for the questionnaires filled out on the Blue Bell Mine and on the Storm Cloud Mine. We certainly appreciate the complete manner in which they have been filled out, and it is very evident that both of these properties qualify to be included within the report which we are making.

Included within this report we anticipate putting a brief description of the properties which will be listed as potential producers. In order to have these brief reports uniform in their contents we have gotten up another questionnaire showing the points we want to cover, and it will be greatly appreciated if you will fill in one of these questionnaires for each the Blue Bell and the Storm Cloud and return them to us.

Thanking you and with kindest personal regards, I am

Yours very truly,

Chairman, Board of Governors
Arizona Department of Mineral Resources

CFW:LP
Enc.

GEORGE M. COLVOCORESSES
MINING AND METALLURGICAL ENGINEER
1102 LUHRS TOWER
PHOENIX, ARIZONA

June 4th, 1941

Mr. Charles F. Willis
Department of Mineral Resources
Capitol Building
Phoenix, Arizona

Dear Mr. Willis:

Replying to yours of the second instant relative to the Storm Cloud and Blue Bell Mines.

I am quite sure that some months ago I filled out a questionnaire regarding the Storm Cloud similar to the one which was enclosed with your last letter and this should be on file in the records of the Department of Mineral Resources.

As to the Blue Bell, there are reasons why it seems best just at present not to attempt to secure any financing of the resumption of the operations at this property through the Federal Government or the State Department of Mineral Resources but a little later I would be glad to give further information concerning this property if there seems to be any reason to believe that the government will actually take a hand in reopening some of the old copper mines of the state. In any event the engineers of the Department will find a very complete description of the property on page 143 of U.S.G.S. Bulletin 782 entitled, "Ore Deposits of the Jerome and Bradshaw Mountains" by Waldemar Lindgren, and except for the production which was made subsequent to 1925 when Lindgren made his report this description can be considered as absolutely accurate.

Personal regards.

Yours very truly,

G. M. Colvocoresses

GMC:at

13 Units in 1926

July 30, 1945

MEMORANDUM

TO: W. C. Broadgate

FROM: Chas. H. Dunning

It looks as if we were getting a complete reversal of policy re premiums from M.R.C.

Heretofore it was always understood that premiums stayed with the property in spite of change of operators. Now it looks as if they were grabbing at every possibility - even reversing policy - to get out from under as many premiums as possible. — yes

Are they a little peeved at S-502? — yet and yes — much

Herewith is a line of correspondence re Blue Bell Mine, which speaks for itself.

What's the answer?

Am having hell with policy — Am trying to save the Michigan Copper mines and think I will. See you soon.
Bill.
Chas H Dunning

CHD:LP

Will try to fix this or get it started before I leave town. Jim Douglas tells me there is no policy change so this case must have odd features.

Washington, D.C.
Oct. 22, 1942

SUBJECT: Blue-Bell, De Soto
Hastings Memo- Oct. 20

The War Production Board believes it will be able to effect a compromise settlement between the parties without allowing further legal action to tie up this potential production.

Such a settlement is expected shortly and understand that a very liberal offer has been made to Colvo's crowd considering that all they could do now would be to delay operating the properties until further legal actions had been completed as the results probably would not be changed in the long run.

Bill Broadgate

Blue Bell Mine file
Yavapai

ABSTRACTED FROM ADMMR ACTIVE MINES DIRECTORY, 1992

APACHE STONE DIVISION
Halquist Stone Co. Inc.

Mayer Onyx Quarry T12N R1E Sec. 22
Blue Bell Schist Quarry T11.5N R1E Sec. 24
Rainbow Schist Quarry T12N R1E Sec. 23
22040 N. 21st Ave., Phoenix, AZ 85027 - Phone 267-8658 - Employees: 9 (including contractors) - quarries located near Mayer - Onyx marble quarry - Schist quarries - Landscape boulders, building and dimension stone - Marketed throughout the United States and exported.
President Perry Halquist
Manager Wayne Evans
Sales Pat Graham

ABSTRACTED FROM ADMMR ACTIVE MINES DIRECTORY, 1991

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President .....
Perry Halquist
Manager .....
Wayne Evans

United States Department of Agriculture
Forest Service
Bradshaw Ranger District
2230 East Highway 69
Prescott, AZ 86301

Reply To: 2810

Date: August 28, 1990

Circulate & file

Ken: There should be an historic name for this prospect
BLUE BELL (f) YAVAPAI Co.

The Bradshaw Ranger District of the Prescott National Forest has received a proposal from Newmont Exploration Limited for mineral exploration activities in the Mayer area. The general area is shown on the attached map. The proposal calls for construction of approximately 2500 feet of access roads to three drill pads. Three test holes would be drilled to a depth of 400 to 600 feet. Upon completion of operations disturbed areas would be returned to approximate original contours and revegetated. The actual proposal is available for review at the District Office.

In previous mailings, I have explained Forest Service responsibilities in processing exploration and mining proposals. Because you have shown an interest in past proposals, your input on this operation is invited. All comments should be submitted in writing by September 15, 1990. If you have any questions, feel free to contact Steve Rinella at 445-7253.

Sincerely,

John W. Holt

JOHN W. HOLT
District Ranger

Enclosure

DEPARTMENT OF MINERAL RESOURCES

REPORT TO OPA ON ACTIVE MINING PROJECT

Filing Information

File System.....

File No.....

This chart to be used for gallons of gasoline required per month.

Date Oct 30-44

Name of Mine Blue Bird

Owner or Operator E. J. Bumstead

Address Box 222 Mayer Ariz

Mine Location near Mayer

PRESENT OPERATIONS: (check X)

Production ✓; Development ✓; Financing.....; Sale of mine.....;

Experimental (sampling).....; Owner's occasional trip.....;

Other (specify).....

PRODUCTION: Past and Future. Tons

Approx. tons last 3 months	Not furnished by applicant
Approx. present rate per 3 months	
Anticipated rate next 3 months	
If in distant future check (X) here	

EQUIPMENT OPERATED:

Type	Quantity or Horse Power	~~Miles or~~ Hours Per Month	Gallons Required Per Month
Personal Cars			
Light or Service Trucks		~~200~~	
Ore Hauling Trucks	160	200	600
Compressors	60	200	200
Other Mine or Mill Eqpt.			

PRODUCT PRODUCED OR CONTEMPLATED: Name metals or minerals.

Copper ore

REMARKS: I approve for 800 gal per month

ARIZONA DEPARTMENT OF MINERAL RESOURCES

By [illegible]

Field Engineer - Dy. Mg.

(1)

BLUE BELL MINE
(Page 143 of U.S.G.S. Bulletin 782)

History

The Blue Bell mine has for many years been the property of the Consolidated Arizona Smelting Co. and has yielded a large quantity of low-grade pyritic copper ore. It is now held by the successor of this company, the Southwest Metals Co., which also operates the Humboldt smelter. Jaggar and Palache in 1901 mentioned the property briefly, but it was not until 1906, when the mine was trnasferred to the Consolidated Arizona Smelting Co., that it began to acquire importance. Since then it has developed into the largest producer in the Bradshaw Mountains. The total production of ore to 1921, inclusive, was 800,000 tons of copper ore, with an average gross value of $10 a ton. In common with many other mines the property was idle in 1921, but it reopened in 1922 at the same time as the Humboldt smelter.

Development

The Blue Bell mine is 4 miles south of Mayer, at an altitude of 4,500 feet. (See pl. 18,A.) It has modern, electrically driven equipment and is connected with the railroad siding by an aerial tram 1 mile long. There is a concentrating plant of 350 tons capacity at the Humboldt smelter. The developments consist of a vertical shaft 1,400 feet deep in 1922 with almost 30,000 feet of workings north and south. There are five smaller shafts.

Production

Production table clipped out and used in Holt's report.

Geology

The deposit is contained in the Yavapai schist, which here is of complex character, including ledges of quartzite, biotite schist, small lenses of crystalline limestone, chloritic schist, clay slate, and schistose quartz porphyry. The strike is N. 27° 30' W. and the dip 70° W.

A reef of brownish quartzite crops out prominently at the village below the mine, and close by is some light-gray fissile clay slate. Quartzite also occurs on the 1,400-foot level. Another specimen collected from the same level is a dark-green dense schist which looks like hornfels and contains dirty-green biotite, magnetite, zoisite, chlorite, and quartz mosaic. Still another specimen from the same level is a greatly crushed quartz porphyry with microcrystalline groundmass of quartz and orthoclase, with some microcline, albite, and sericite. The quartz phenocrysts are also greatly crushed.

Veinlets of calcite and quartz are abundant in the mine. A persistent dike is exposed on all levels and is not affected by schistosity. A thin section of this dike shows partly idiomorphic augite, brown hornblende, some of it with kernels of augite, lathlike labradorite, magnetite, and apatite. Secondary chlorite and sericite are present. The grains average 1 to 2 millimeters in size. This is a granular dike rock related to camptonite. This dike is generally vertical and intersects ore about 200 feet south of the shaft. It shows no mineralization.

The ore body

The ore body is essentially a silicified and mineralized zone that conforms to the schist. The width is about 100 feet. The ores form a series of about six flat lenses within the zone; in part they overlap and they pitch about 75° S. in the zone. These lenses are as much as 40 feet wide and occur on both foot and hanging walls.

The stopes stand well; some of them are 80 feet high and 20 feet wide. Relatively to the walls of the zone, each shoot keeps its position well. Most of them continue from points near the surface down. The surface is generally barren, probably as a result of leaching. The fourteenth level was just opened in 1922. The developed length of the deposit is 1,600 feet. (See pl. 16.)

Structure

The ore bodies are intersected by several faults that dip 30°-40° NW., thus intersecting the lenses at an oblique angle. The faults are of the reverse type and show a slip of 50 to 100 feet. One fault observed on the 500-foot level strikes east and dips 60° S., and the fault plane shows striations parallel both to strike and dip. The faults cut the ore cleanly and show no mineralization.

The walls of the ore shoots are mostly well defined, but in some places they show transitions to silicified country rock. Locally on such walls a groove structure is noted which conforms with the southward pitch of the shoot.

The Ore

The most common country rock is a chlorite-biotite schist. Within the silicified zone it may, however, be difficult to recognize the original character of the rock. The silicified material may contain sparse sulphides, but as a rule the ore is well defined. The ore is classified as heavy smelting ore and siliceous concentrating ore and averages 3 per cent in copper. The smelting ore contains also 1.5 ounces of silver and 0.05 ounce of gold to the ton; the siliceous ore averages 1 ounce of silver and 0.03 ounce of gold to the ton. As a rule the siliceous ore contains a little less gold and silver than the smelting ore.

The smelting ore is usually massive and rather fine-grained; it consists of pyrite intergrown with more or less chalcopyrite and containing spots of quartz and imperfectly replaced schist. A little calcite is universally present, but a fine-grained quartz mosaic replacing the schist is the principal gangue. The siliceous ore usually shows the schistose structure of the original rock and contains streaks of replacing sulphides. The minerals are pyrite and chalcopyrite, with very small amounts of arsenopyrite, sphalerite, and galena. No tetrahedrite was observed.

Polished sections show rude crystals and rounded grains of pyrite, fractured, cemented, and replaced by chalcopyrite and the other scant sulphides, among which dark sphalerite is the most abundant. (See pls. 9, B; 17, B.)

The ore shows less ankerite and more quartz than usual in the schist replacement deposits, but the succession of minerals is the same: quartz and carbonates are the oldest, followed by pyrite and later by chalcopyrite. The smae dark-green iron-rich chlorite that was observed at Jerome appears here again in places.

Oxidation and Water

At the surface the ore is leached and rusty brown; there is no chalcocite zone proper, but a little chalcocite may be found in places down to the 1,200-foot level. On the 400-foot level a little oxidation is observed, and 1,800 feet farther north on the 500-foot level the drift encountered a 2-foot vein of chrysocolla and cuprite fully oxidized and containing no silver. The workings are rather warm, and the mine water is acidic and contains much copper. The original water level was probably at the 400-foot level; the mine makes little water, say 150,000 gallons in 24 hours.

June 20, 1962

Mr. Thomas Bardon
Shattuck Denn Mining Corp.,
120 Broadway
New York 2, New York

Re: BLUE BELL MINE

Dear Mr. Bardon:

Mr. Kentro has left with me a blue print of the Blue Bell Mine, a recent report by Richard Mieritz on possible leaching, a 1941 report by C. T. Van Winkle covering the possibility of recovering some ore from the upper sections of the mine, and a detailed report by George Colvocoresses. He suggested that I might make a brief report on the Blue Bell, especially covering the Mieritz report.

I knew Mr. Colvocoresses quite well and did some work with him on the Jerome area. As an engineer, he was somewaht inclined to theory, but was very careful and I believe his report can be fully accepted. It may be recalled that he did the drilling in an unsuccessful attempt to locate the meteor supposedly buried at Meteor Crater, Arizona.

The Blue Bell, with about 3% copper and several dollars in precious metals was an attractive mine in the past, but only when copper prices were not depressed. It operated at a time when labor and supply costs were low. There is little evidence that the ore is getting any better or the ore bodies any larger at depth. The ore bodies were separated quite widely along the strike and to a lesser extent across the dip, where often there were three lenses with an average aggregate width of 15 feet or more. I consider it impossible to equip the mine, rehabilitate the underground workings and mine at depth an ore that will return about $15 and make anything with which to pay for the property.

The possibility of leaching in place is discussed in the following notes.

H. F. Mills

cc: Dan Kentro

DEPARTMENT OF MINERAL RESOURCES

STATE OF ARIZONA

FIELD ENGINEERS REPORT

Mine	Blue Bell Mine	Date	Sept. 13, 1961
District	Big Bug District - Yavapai County	Engineer	Lewis A. Smith
Subject:	Interview with Dick Mieritz		

Mr. Mieritz stated that if present plans materialize, a leaching operation will be set up at the Blue Bell to precipitate the mine water which is said to carry fairly good copper values. Since the upper part of the shaft is in bad shape, it is planned to sink a drill hole into the old workings to contact the water. The precipitated water would be returned to the mine. The mine has a shaft nearly 1800 feet deep and extensive underground workings over 30,000' were driven. Dick estimates many millions of gallons of water are in the mine below 400'.

STILL & STILL
CONSULTING MINING ENGINEERS & GEOLOGISTS
ROOM 24 - UNION BLOCK PRESCOTT, ARIZONA

J. W. STILL
ARTHUR R. STILL

KEN

TELE
P. O

December 4,1958

Mr. D, M. Kentro, Ass't. Vice Pres.
Shattuck Denn Mining Corporation
Prescott, Arizona

Re: Blue Bell Property, Yavapai County, Ariz.

COPY

Dear Mr. Kentro:

Acting under your instructions of October 27th, we have examined the reports and maps submitted by Mr. Sherwood B. Owens and have spent one day in the field examining the various surface exposures of the Blue Bell property. The following briefly summarizes our conclusions.

Summary & Recommendations:

Mr. Owens has proposed four possibilities for the Blue Bell: 1) the continuation of the known orebodies below the present developed bottom level (1500 ft.) of the mine, 2) the mining and dump leaching of copper bearing surface alteration material, 3) the pumping and subsequent precipitation of copper bearing water from the flooded mine workings and 4) the exploration possibilities of gossans which exist on both the north and south extremities of the major Blue Bell ore zone outcrop.

These possibilities have been individually evaluated by us and, for reasons as given in the following text, none are believed by us to be attractive speculations for your company. As such, we have no alternative but to recommend that your firm desist from any further expenditures on the property.

General Discussion:

While there is little argument but what at least some of the main oreshoots exploited by the old Blue Bell operation do persist down to the 1500 ft. level, and therefore probably for some distance beyond, the economics of opening up old workings of that depth to mine a 3% copper ore that occurs in relatively narrow (12') and short (200' max.) oreshoots is certainly questionable. Due to the present high costs of labor and materials, it is our opinion that such "ore" could not be exploited at an economic profit, at this time, on the tonnage scale that the known occurrence is capable of producing. Since, from a geological standpoint, there is no reason to assume an increase in the grade, or in the size of the shoots, with greater depth there is no basis by which the opening up of the old mine could be recommended.

As for the possibility of mining and dump leaching of copper bearing surface alteration material, no such possibility exists since the minor quantity of such material does not start to approach the order of magnitude necessary for even a very small leaching operation.

The possibility of pumping and subsequent precipitation of copper bearing water from the mine does not look attractive for several reasons. Firstly, the nature of the Blue Bell occurrence is such that it is not reasonable to assume that the waters presently flooding the mine will actually contain much copper. This is due to the relatively shallow copper oxide zone, the calcareous nature of the host rock and the fact that essentially no copper could be leached from the sulphides during the period that they have been under water. Secondly, the limited quantity of water available for treatment (294,000 tons if pumped clear to bottom), and the high cost of obtaining it, would not allow for the

amortization of a treatment plant even if the waters were assumed to contain as much as 4 lbs. of copper to the ton, which they almost certainly would not.

With regard to the gossans which exist both to the north and the south of the major area of Blue Bell workings, I am in agreement with Mr. Cox (*) in his statement that the north end gossans are not worthy of attention but in disagreement with him as to the merit of the southern, or Blue Thunder area, which he recommended as having "interesting exploration possibilities for a small operation". To me, this area is typically the lateral weakening, or "dying out", surface expression of the major Blue Bell mineralized zone. The gossans present are somewhat smaller, and decidedly less numerous, than shown on Mr. Cox's map and the surface alteration is very markedly less than that exhibited in the immediate area of the tops of the Blue Bell oreshoots. The facts that essentially all gossan present is representative of coarse grained pyrite in quartz stringers, the almost total lack of any copper staining in or around the outcrops and the quartz-pyrite mineralization, barren of copper, that was encountered by the Blue Thunder adit (as evidenced by the dump material) all detract, in my opinion, from the exploration possibilities of the Blue Thunder area. As compared to the prominent surface evidence at the nearby Blue Bell outcrop, which overlay 3% copper oreshoots, it is my opinion that the Blue Thunder mineralized area at depth would not be apt to exceed 1% in copper content. Its limited lateral area (300 ft. max.) would not make mineralization of that grade of economic interest. This conclusion is at least partially born out by the drilling done under this area from the extreme south end of the 800 ft. level of the

(*) Memorandum Report to E. G. Frawley, April 4,1957, By by Manning W. Cox.

Blue Bell mine where "the downward extension of this shoot as found on the 800 foot level, was very spotty and with an average grade of less than 2% copper"(*).

Very truly yours,

Arthur R. Still
Mining Geologist

ARS/

COPY

(*) "Notes to Accompany Large Map of Blue Bell Mine", unsigned but attributed to G. M. Colvocoresses.

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine: Bluebell

Date: April 30, 1959

District: Peck, Yavapai County

Engineer: Travis P. Lane

Subject: Visit of April 29, 1959

Operators: McFarland & Hullinger
Box 238, Tooele, Utah

Supt.: R. F. Ashlock
911 Audrey Lane
Prescott, Arizona

McFarland and Hullinger took hold of the property early in April of this year. They repaired and improved parts of the 5 mile road which connects the mine with the town of Mayer. Mining is in progress in a cut along the croppings of a silicified band of copper material occurring in a broad shear zone. The large past production of the mine, estimated at 1,200,000 tons containing about 3% Cu and several dollars gold-silver value, has been made from a series of overlapping lenses in a broad shear zone in schist which dips steeply in a westerly direction. The lense presently being mined is east and roughly parallel to the trend of the lenses mined in the past. The material is lower grade (said to run about 1.5% Cu with no-pay gold-silver content) than the average of the past production and is being shipped to the Hayden smelter as a flux ore. The thickness of the lense is about 12 feet and it is believed that it can be mined continuously for some 1000 ft. and possibly to a depth of 40 or 50 ft.

The main interest in the venture is in the possible development of southerly extensions of ore beyond the south limits of the stoped areas in the upper part of the mine. The main shaft is 1500 feet deep. Extensive stoping was carried down to the 1200 ft. level. Drifting on this level reached a point some 1800 ft. south from the shaft with no ore exposures encountered in most of the drifting. The operators propose to continue the sinking of a 30 ft. shaft located in the shear zone some 800 ft. south of the main shaft. The plan is to sink to 200 feet and explore the zone at that horizon. It is said that past diamond drilling disclosed ore to a depth of 1800 ft. or 300 ft. below the present shaft bottom. 5 men are employed. The shipping rate is about a car a day and it is intended to double this. The spur at Humboldt however accommodates only 2 cars and to maintain a high shipping rate it will be necessary to extend this spur or to build up a stockpile at Humboldt and load out when the locomotive is in the area making up a train here and at the Iron King siding.

MINE MANAGEMENT CORPORATION

P. O. BOX 7277
INDIAN SCHOOL STATION
PHOENIX, ARIZONA 85011

Western Office:

1505 FINANCIAL CENTER BLDG.
PHOENIX, ARIZONA 85012
602 - 274-8049

December 1975

OUTLINE: MINE MANAGEMENT CORPORATION

Purpose:

The purpose or reason for the existence of the Mine Management Corporation (MMC) (Delaware) is to provide complete executive direction for investors for the exploitation of proven mineral properties.

Functions:

The Corporation's functions include, but are not limited to the following:

1. Locate, investigate and evaluate mineral properties including precious metals, base metals, coal and industrial non-metallics.

2. Prepare at its own expense complete project studies to determine that the properties under consideration are technically sound and economically attractive.

3. Present acceptable and desirable projects to investors whether individuals or companies.

4. Manage and operate at executive and technical level the investment for an agreed upon fee or percentage of net profits.

5. Act as advisory Board of Directors to investor(s) on all capital improvements, expansion, policy matters, purchasing practice, sales contracts and planning, tax implications, etc.

6. Operate mining properties for its own account.

BOARD OF DIRECTORS - December 1975

The Directors of MMC (or its affiliated company, Mine Management Corporation of Arizona) and a brief resume of their backgrounds follows:

Mr. William Kennedy, 67, New York City, N.Y., recently retired Senior Financial Vice President of International Nickel Company and its in-house counsel. Mr. Kennedy is a recognized expert in mining law and taxation.

Dr. George Olson, 55, Fort Collins, Colorado
Vice President of Colorado State University and the Director of the Colorado Research Foundation. Dr. Olson is a Ph.D. in physical chemistry and an expert in extractive metallurgy and industrial non-metallics. He is also a consultant to several substantial minerals companies.

Mr. Fred Niggemyer, 59, Lancaster, California
President of Fremont Industries, Lancaster, California and Fremont, Ohio, a company specializing in liquidation and resale of heavy production equipment in mining and related fields. He was Vice President of McDowell-Wellman (now Rodney McDowell) engineers and constructors, Cleveland, before going into his own business. He holds a B.S. in electrical engineering and did graduate work at MIT.

Mr. Richard Vollmer, 54, New Haven, Connecticut
Until recently President and controlling stockholder of the Bigelow Company, manufacturers for over 100 years of medium sized boilers and heat exchangers. Before taking control of Bigelow, Mr. Vollmer was Assistant Vice President-Engineering, Koppers Company. Mr. Vollmer is a graduate mechanical engineer.

Mr. James J. Girard, 44, Santa Maria, California
Mr. Girard is Manager of Airox Incorporated at Santa Maria, California where MMC modified a substantial fluid bed reactor and installed a complete new crushing and screening plant. Mr. Girard is a graduate of the University of Arizona in business administration with 15 years experience in mining, construction and chemicals.

Mr. Andrew Zinkl, 59, Prescott, Arizona
Registered Professional Mining Engineer, for 17 years managed all underground operations of Iron King Mine (1500 tons silver-zinc ore day) and is a very successful consulting engineer with particular expertise in uranium, copper leaching and flotation, and the cyanidization of gold and silver.

Mr. Dennis K. Pickens -- resume attached

As can be seen, the Directors are all successful in their fields and all are technically trained with executive positions and experience. The availability of this group is important as no non-mining investor(s) could afford the cost of their advice for small or intermediate sized projects.

SPECIAL CONSULTANTS

MMC uses, as may be required, specialists in various fields of mining and extractive metallurgy depending on the problem encountered. These include, but are not limited to:

Mr. Edward Greenwald, President of Resource Engineering & Management, Inc. and sole surviving partner of Eavensen, Auchmuty and Greenwald, Pittsburgh, Pennsylvania, consulting coal mining engineer. Mr. Greenwald is one of the highly recognized specialists in the field and includes among his clients both large and small coal companies, banks and public utilities.

Coe and Van Loo, Consulting Engineers, Phoenix, Arizona
This is Arizona's most distinguished consulting engineering firm which specializes both in civil projects and the design and specifications for extractive metallurgical plants.

P. J. McGauley, 58, Metallurgical Engineer, University of British Columbia, currently Senior Extractive Metallurgist Bechtel, headquartered in New York. Previously with Chemico, holds 18 patents in extractive metallurgy, most of which are in use; is world-recognized as an authority on hydrometallurgy, pressure leaching and sulphur extraction.

Terry R. Douglas, 35, Alabama Registered Professional Engineer, firm of Hutt-Douglas Consulting Engineers, Tuscaloosa, Alabama. Specialists in Alabama coal with many producing mines as clients. Mr. Douglas holds a Ph.D. in science from the University of Alabama.

John Long, 54, Director and owner Arizona Research Consultants (ARC), Phoenix, Arizona, a small but highly respected laboratory specializing in extractive metallurgy and assaying. Mr. Long holds his degrees in chemistry from Ohio State University. Before starting ARC 17 years ago, he was Assistant Chief Chemist of U.S. Rubber Company.

These consultants are used when needed by MMC or its affiliated corporation who pay full prices for services and special advice.

RESUME

DENNIS K. PICKENS

1. Born 4/1/16, Married, 2 sons, Episcopalian. Graduated Stanford University 1938, Mining and Mine Management.

2. 1971 (August) -- President, Mine Management Corporation, a company designed to advise and manage mining operations for non-mining investors.

3. 1968 to 1971 (July): Senior Vice President, Home-Stake Production Company, a Tulsa, Okla. based independent oil company. Executive in charge exploration, development, acquisition and operation of mining properties; headquartered in Phoenix, Arizona office. Base salary $50,000 plus profit sharing, insurance and other benefits.

4. 1961 - 1968: Executive Vice President and Director, Gulf States Land & Industries, Inc., (American Exchange), headquartered in New York City; a raw materials company with extensive interests in oil, land and minerals. Gulf States acquired Chemetals Corporation in 1961. Salary $35,000 to 1963, raised to $50,000. Resigned March 1968 to join Home-Stake.

5. 1955 - 1961: President and Director Chemetals Corporation, New York City, a closely held research and development company in extractive metallurgy and powdered metals, controlled by E. W. Bliss Co. (Gulf and Western), Fluor Corporation and two prominent Wall Street houses. Merged into Gulf States Land & Industries, Inc. in 1961.

6. 1948 - 1954: Principal owner-operator of three coal mines (two strip, one deep) in Southern Illinois, producing average 1,500 tons coal per day. Left business because low prices and inability to obtain sufficient capital to completely mechanize with large equipment.

   During this period was also consultant for National Lead Company (no NL Industries, Inc.) and other mining (including coal) and metals companies from time to time.

Continued...

7. 1940 - 1948: Executive Staff, National Lead Company, New York City, in various capacities (including six months as Deputy Chief, Mining Division, W.P.B.); Assistant to President, Titanium Division; Manager, Washington Office during war; special research projects in mining and metallurgy. Resigned to go into business for self.

8. 1938 - 1940: Apprentice (Assistant) to Dr. Fred C. Carstarphen, Mining Consulting Engineer, Denver, Colorado and Member of Colorado River Board. Assisted in examining mines, preparing preliminary reports, etc.

Other Experience:

Served on Industry Advisory Committee of W. P. B. as representative of National Lead Company, including Committees on Mining, Pigments and Ferro Alloys.

Served as Consultant on Mining and Coal Preparation to several coal companies.

Designed and installed five heavy media coal washing plants.

Served on Board of Directors of Malleable Iron Fittings Co., American Dock Co., Mississippi Valley Realty Co., and several small mining companies.

Special Consultant to Southern Lead Company, Dallas, Texas on mining and copper extraction.

Member, Management Committee, Arizona Chemcopper, a joint venture of Bagdad Copper Company and Chemetals Corporation, 1965-68.

Developed, patented and co-own (with P. J. McGauley, Senior Extractive Metallurgist, Bechtel Corporation) process for extraction of elemental sulphur from surface sulphur deposits.

Co-patentor several fabrication processes still in use on powdered metals. Patents assigned Chemetals Corporation and licensed to Pfizer, Inc. and Sherritt Gordon Mines, Ltd.

Clubs: Metropolitan Club, 1 East Sixtieth Street, New York.

Lakeview Country Club, Morgantown, W. Va.

August 1971

BLUE BELL

Amoco Minerals Company
502 West Sheldon
Prescott, Arizona 86301
602-778-0830

March 11, 1976

Mr. Jerry Schmidt
Crown King Ranger Station
P. O. Box 458
Crown King, Arizona 86333

Dear Mr. Schmidt:

As recommended in our conversation on February 18, 1976, the following is Amoco Minerals Company's amended plan of operations for the initial base metals drilling program on the South Cedar Creek project, Yavapai County, Arizona.

AMENDED PLAN OF OPERATIONS:

1. The operator is Amoco Minerals Company, a wholly owned subsidiary of Standard Oil Company of Indiana. The Denver Division office is located at 333 West Hampden Avenue, Suite 508, Englewood, Colorado 80110. The Prescott Field Office is located at 502 West Sheldon, Prescott, Arizona 86301. The head office is located at 200 East Randolph Drive, M.C. 5003, Chicago, Illinois 60601.

2. The area of interest is located in Sections 23 and 26, T.11½ N., R.1 E.

   At the present time the property consists of 58 unpatent mining claims staked by Amoco Minerals Company during 1975, eight unpatented claims staked by Sherwood B. Owens of Tucson and eight patented claims (pat. #1528 and 3022 A & B) owned by Sherwood B. Owens. Amoco Minerals Company has acquired by option agreement the mining claims owned by Mr. Owens, except for the copper leaching operation currently operated on the patented Blue Bell claim by Mine Management of Phoenix, Arizona.

3. Drilling: Amoco Minerals Company wishes to test two ground geophysical targets by four diamond core drill holes drilled to a depth of approximately 650 feet. Four proposed drill holes are shown on the enclosed map. Drilling will be conducted by Longyear Drilling Company of Phoenix, Arizona, supervised by Amoco Minerals Company personnel.

   SEE DETAILED GEOLOGY + GEOPHYSICS MAP IN MAP FILE POCKET NTN - 7/84

   Drill holes will be selected by Amoco Minerals Company on an as need basis. The Forest Service will be contacted prior to any move.

   The drill rig, a Longyear 38 or equivalent mounted on skids, requires a level drill pad approximately 40 feet by 30 feet. Within this area a mud pit approximately 10 feet by 20 feet by 6 feet is needed to hold water for drilling and to collect muddy water and sludge discharge out

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine Blue Bell

Date July 16, 1984

District Mayer

Engineer Ken A. Phillips

Subject: Production

Recorded production from the Mayer mining district, Yavapai County according to an abstract of U. S. Bureau of Mines data was obtained from the Arizona Bureau of Geology and Mineral Technology.

Production is recorded for the period

Cumulative totals are:	Tons of ore	1,220,480
	Pounds of copper	68,505,279
	Pounds of lead	
	Troy ounces of gold	49,463
	Troy ounces of silver	1,402,811

The following mines or mining claims in the district contributed to the production: Blue Bell

BLUE BELL MINE

Yavapai County, Arizona

GEOLOGY AND ORE OCCURRENCE

The geology of this mine has been fully studied and seems to be simple, it has been described by numerous geologistswho are in general agreement and a published report by Waldemar Lindgren is to be found in U.S.G.S. Bulletin 782 issued in 1926.

The country rock is pre-Cambrian Yavapai schist highly metamorphosed and with different phases ranging from chlorite and sericite schist, as found along the footwall and throughout most of the mineralized zone, to a very hard biotite or mica schist generally comprising the hanging wall which in many places becomes a dark colored quartzite.

Intrusive post-mineral dikes of diabase (sometimes classified as Kersantite) and ledges of limestone are found in places but appear to have no influence on the ore deposit.

In this area of Yavapai schist there is found a remarkably persistent zone or band of silicification apparently extending more or less continuously in a northeast-southwest direction for a distance of over 12 miles, i.e., from beyond the Arizona Binghampton Mine at the north to the De Soto Mine at the south, and at both ends as well as in the central portion occur substantial ore bodies which are essentially replacements. The most intense mineralization occurs at the Blue Bell (which is roughly midway between the De Soto and Binghampton) and this has a length of over a mile. Here the width of the silicification is in places close to 600 feet on the surface but the maximum width of the mineralized section, in which more than a trace of copper is found is about 125 feet. The strike of this ledge is 20-30 degrees east of north and the dip about 68 degrees to the northwest.

The better grade of copper ore is confined to lenses of which seven have been developed in the workings of the mine and all but one of which had a prominent copper-stained gossan outcrop. The long axis of all of these lenses is in the vertical dimension since five of them have been developed to a depth of 1200 feet below the surface, but the greatest length of any one of them along this strike of the vein was a little over 400 feet and the maximum width 40 feet. The average width of all of the shoots over an aggregate length of 1000 feet on the 800 level or 1200 feet in the five shoots which were opened up on the 1000 foot level may be taken as about 12 feet.

The ore is essentially a mixture of iron pyrites and chalcopyrite with small quantities of lead and zinc sulphides and a gangue of chlorite, sericite and biotite schist plus a varying percentage of quartz.

Some bornite, chalcocite and gray copper are found on nearly all levels, while oxidation has taken place near the surface usually depriving the outcrops of most of the copper values, in a zone of secondary enrichment, occurring at a varying depth of from 100 to 400 feet, the presence of carbonates, oxides and native copper often raised the normal grade of the ore from 3% to double or treble that amount.

As to the genesis of the ore--according to petrographic report of Professor Charles P. Berkey, the original schist rock was of sedimentary origin but has been highly metamorphosed and deformed prior to or concurrent with the mineralization which he believes to have taken place at one time and from one source which was doubtless a deep seated igneous magma, evidence of which is found in the form of a large granite intrusion lying west of the mine. The ore is primary and the deposition was controlled by the decreasing pressure and temperature in the highly heated solutions which impregnated and replaced the country rock.

Berkey finds no geological reason to think that the grade of the ore will decrease or increase with depth and believes that the actual record of production should be the best guide to this condition and he thinks that chalcopyrite and gray copper will continue to the deepest workings.

Since the mine has produced or still contains in place very nearly 1000 tons of ore for every foot of depth down to the 1500 foot level and there the ore seems to be still holding strong, there would appear to be good grounds for anticipating that its quantity and quality might be maintained for at least several hundred feet.

Analyses of two typical specimens of Blue Bell ore are as follows:

	Basic	Siliceous
Au	0.06 oz	0.04 oz
Ag	2.00 oz	1.50 oz
Cu	3.25%	3.00%
Fe	22.00	15.00
S	24.50	17.00
CaO	1.00	1.00
MgO	1.50	1.00
Al203	3.00	4.00
Pb	1.00	1.00
Zn	1.50	1.00
SiO_2	42.00	57.00

HISTORY

Copper ore on the Blue Bell claim was discovered prior to 1895 when an adit drift and later a shaft in what we now term the #6 orebody produced a substantial but unrecorded quantity of high grade copper oxide and carbonate from a short shoot which is reported to have bottomed within 200 feet from the surface. Some of the ore shipped from the adit to the old Boggs smelter carried over 15% copper.

In about 1902 work on the Blue Coat Vein was started and the present main shaft was sunk some 400 feet and stopes were worked in the #1, 2 and 3 ore shoots.

After the Consolidated Arizona Smelting Company acquired the property in 1905 a very substantial production was made until 1908 and again from 1909 to 1913, by which date an examination of such records as were then available, checked by measurements of the larger openings, indicated that some 200,000 tons of ore had been taken from the mine. In February of 1913 when I first examined the property the shaft was sunk below the 700 foot level and my estimate of positive and probable ore was 124,500 tons with average content of 0.5 oz. gold, 1.2 oz. silver and 3.50% copper. By November of that year the shaft had been sunk to the 850 foot level on which four of the ore shoots had been partially developed and the estimated reserves in the mine--which was then producing about 100 tons of ore per day--had increased to a total of 154,600 tons of ore of similar grade. This was further increased to 190,720 tons by April of 1914 when the developments on the 850 foot level had made further progress.

Development and production proceeded steadily from that date forward, a record of the tonnage and grade of the latter being attached.

In 1915 the shaft was sunk to the 1000 foot level and drifts were extended northward to open up the #4 and #5 ore shoots. These developments were extremely satisfactory especially as the #4 and so-called "45" ore bodies proved to be the largest in the mine so that in spite of a greatly increased production during 1915 and 1916 the tonnage in reserve rose to 479,500 tons at the end of that year.

The economic conditions prevailing during '16, '17 and '18--especially the great demand and very high price of copper during the World War--resulted in a substantial change in both development and mining policy since ore with only 2% copper had now for the first time become commercial and in place of producing 200 tons per day of 3.5% ore it paid well to increase the stoping width and include all ore that would average 2.5% and also to develop and prepare the ore bodies for the mining of even a lower grade, most of which actually was not mined until 1919 and 1920.

During 1917 and 1918, 254,000 tons of ore were shipped from the mine and at the end of that period the estimated reserve still stood at 470,000 but the average grade had dropped to 2.80% copper although the gold had increased to 0.06 oz and the silver to 2.00 oz, since the quantity of these metals tended to increase as the ore came from greater depth.

After the close of the war and the precipitous drop in the price of copper, the funds available for development were greatly reduced and during 1921 and the first few months of 1922 the mine was entirely idle while the Consolidated Arizona Smelting Company went through a receivership and was reorganized as the Southwest Metals Company. With the resumption of activity in 1922 the shaft was sunk to the 1350 foot level (14th level) and in 1925 to the 1500 foot level, where

further development was carried on by drifting and from winze which eventually reached a depth of 70 feet below the level before all mining work in the lower levels was discontinued at the end of 1926.

On the 1350 and 1500 foot levels only two ore bodies (#3 and #4) were developed and on the 1350 foot level both of these were badly dislocated and broken up by the one major fault which apparently cuts through the entire mine. On the 1500 foot level the #3 ore came back strong in the solid vein and insofar as the developments went, it proved to be quite as good in both quality and quantity as at any point above, with length being over 100 feet and the width about 15 feet.

A portion of the #4 orebody still showed the effects of the fault above the 1500 and was mixed with waste to some extent in the 1540 stope, but the average of samples shown on the map is slightly in excess of 3%. The length of this ore should be over 200 feet with width averaging about 10 feet.

The #3 orebody was being stoped above the 1500 foot level when the work was stopped at the close of 1926. The ore in the winze had varied in grade from 3.44 to 2.57% and 50 feet below the level the orebody was crosscut for a width of 20 feet assaying 2.77% copper, while a width of some 15 feet assayed better than 3%.

With the beginning of 1927 all work from the main shaft was stopped and pumping discontinued. By April 30, 1930, the water had risen to a point 975 feet below the collar of the shaft and to the 840 foot mark in 1937, while between that date and September 1941 (when the water was next measured) it had risen to the normal permanent level which is 640 feet below the collar of the shaft. At this depth there is an underground channel which drains off the flow into the gulch lying southeast of the workings.

During 1927 and until 1931 small scale operations were conducted by lessees, working in the upper sections of the various ore shoots and altogether about 4500 tons of ore were shipped, including 1000 tons from the #5 or Blue Buck shoot, of which the average grade was close to 5% copper.

In 1937 an additional 557 tons was shipped from the #5 shoot averaging 6.60% copper and completing the production of the mine to date which in round figures has amounted to nearly 1,200,000 tons with a general average of 0.06 oz gold, 1.5 oz silver and slightly over 3.00% copper representing at present bonus metal prices a gross value of $13.40 per ton.

The key to the record of the Blue Bell mine is found mainly in the fluctuating course of the copper market. The mine has never been and probably will never be a cheap producer of copper in spite of the credit for gold and silver values. The nature of the ore occurrence with long acres of barren or low grade material between the shoots of pay ore and the limited length and width of these shoots will make for high cost of development while the actual mining was of necessity carried out by shrinkage or cut-and-fill methods.

The operations were further handicapped by the fact that all of the ore had to be sent over the three-mile ropeway to Blue Bell siding where it was sorted to some extent and then shipped by rail 11 miles to the mill and smelter at Humboldt, thus involving an average transportation cost of $0.60 per ton which can be much improved by the construction of a mill close to the collar of the mine shaft. Milling and smelting at Humboldt were always comparatively expensive operations and largely dependent upon the custom ore which was available and these conditions--which largely determined the financial positions of the operating company--were responsible for the slackening of the development program after 1918 and the final closing of the mine at the end of 1926.

The record of the mine, taken in conjunction with a conservative estimate of the ore reserves (as given below) indicate that it has contained roughly 100,000 tons of ore for each 100 feet of depth. This ratio was not maintained between the 1200 and 1400 foot levels where the principal ore bodies were shattered and displaced by the main fault, but the work already done below that fault gives every reason to believe that it will be re-established as further depth is gained and for an undetermined distance. Except for the fact that values were increased in the zone of secondary enrichment above the 200 or 300 foot levels, the average grade of the ore has remained remarkably constant although the varying price of copper made is sometimes advisable to mine down to a 2% limit, while in other years the economic line was drawn at 2.5 or even 3%.

DEVELOPED AND PROBABLE ORE RESERVES

Several factors make it difficult to estimate these with any degree of exactitude. Shortly before the mine was closed down the available ore that was practically blocked out was figured at 90,000 tons while the probable ore was estimated at 100,000 tons. Since that date a substantial tonnage of probable ore has been proved up by the work of the leasers in the #5 orebody, but conversely it must be assumed that a substantial but quite indeterminate quantity of this reserve has now become inaccessible except at prohibitive expense and should no longer be taken into account.

Therefore, until the mine is actually reopened and partially reconditioned any estimate of this nature must be made with reserve and the detailed estimate which is attached is offered merely as the best that can be given under the circumstances.

The main shaft at Blue Bell is sunk in the footwall of the ore zone with crosscuts on each level to the vein and since the incline of the shaft (75 degs) is slightly steeper than the dip of the vein these crosscuts become a little longer on each successive level.

The shaft and crosscuts are in hard rock which stands up very well and while the mine has not been opened or examined since 1930 below the 600 foot level, nor below the 900 level since 1927, there is every reason to believe that these workings, as well as such portions of the drifts as are in the footwall, will still be found in good shape and will require little timber or mucking out.

The location of the various ore bodies and stopes along the strike of the vein is shown on the accompanying section prints of the mine, but some of these are offset or overlapping and it is unfortunate that none of the plan maps of the mine have been preserved so far as I have been able to determine after a very thorough search.

By reference to the main print (Exhibit B) and the assay map (Exhibit C) it will be noted that in the #1, 2, 3 and 4 ore shoots the bulk of the pay ore has already been mined down to the 1000 foot level, except for sills and pillars, and also some workings in the footwall which last are not clearly represented on these maps. There are still a number of places where cleaning up operations would result in the production of ore and the aggregate tonnage which may thus be produced is substantial, but a portion of this work can best be entrusted to a few experienced men who will probably prefer to work as leasers. Fortunately, a few such men are locally available. The rate of production from these upper sections of the mine will be slow and uncertain.

The #5 or Blue Buck ore shoot still contains near to the surface a substantial tonnage of ore, some of which is likely to prove of higher than average grade and references to this orebody will be made separately. The best chance of developing new ore in the upper portion of the mine lies in the unexplored sections of the vein between the #5 and #6 ore shoots and in the footwall of the old drifts.

In order that a production of 200 tons per day should be attained and maintained over any long period of time it will be necessary to unwater and clean out the workings down to the 1500 foot level and continue the work from the winze below that level.

Between the 1000 and 1200 foot levels much ore still remains to be mined out from the stopes in the #3 and #4 ore shoots. These shoots were cut and broken up by the main fault between the 1200 and 1350 foot (14th level) and the work in this section of the mine was and will be expensive while the ore will require a much greater than usual amount of sorting in order to bring it up to grade.

A substantial tonnage can none the less be recovered from above the 1430 and 1440 stopes although it does not appear to me that the map of these workings was revised just before the mining was discontinued and I have somewhat reduced my estimates of the reserve which the maps seem to indicate as having been left in place.

It has been the intention of the management to continue the 15th level both south through the #1 orebody and north through the #5 in both of which the ore proved on the 1200 may be expected to continue downward and this work should be done as quickly as possible.

The principal mining operations must be undertaken from the 1500 foot level above which stopes were started in the #3 and #4 ore shoots but the bulk of the ore still remains above their backs extending up to the 1350 foot level. These two stopes after proper preparation for handling the ore and the waste filling should quickly be able to reach a combined output of over 100 tons a day.

Since the winze on the #3 orebody had already reached a depth of 70 feet where the showing was very promising I believe that it will be advantageous to promptly continue this to a depth of 150 feet and thereafter to sink the main shaft to that point and open up a new level. Past experience in operating this mine has led us to decide that it was good practice to space the levels at intervals of 150 feet and the total tonnage which may reasonably be expected to develop in the #3 and #4 shoots from the 1500 and 1650 foot levels would be in the order of 100,000, while an additional 40,000 tons may be hoped for in the #1 and #5 ore shoots provided these should previously have been proved up on the 1350 and 1500 foot levels.

#5 and # ORE BODIES

These merit separate consideration since they are located a long way from the main shaft and have never been so thoroughly prospected as the other sections of the mine.

The special assay map of the #5 (Blue Buck) workings (Exhibit G) will serve to show their condition in the autumn of 1941 and the two veins lying in the footwall contain a substantial quantity of probable and possible ore as referred to in the Van Winkle report attached.

These workings can already be reached through the Blue Buck shaft and stopes and a connection with the main workings on the 300 foot level can be made with small expense. All of the ore to be mined above the 500 foot level can probably best be trammed out on that level to the main shaft and haulage at greater depth should provided through the 800 and 1200 foot levels which will probably prove to be in better shape than any of the others, although all of them are likely to be caved in places through the stoped out area south of the #5 shoot.

The workings of the Blue Bell Mines passed through the Blue Buck claim many years ago and a considerable tonnage of ore was mined below the 300 foot level, but above that point the veins had branched into the footwall of the ore-bearing zone and only one of them had been located before large scale operations were continued. However, a raise had been put up to the surface through which waste (broken in a glory hole) was dropped down for filling in the deeper stopes.

Just prior to the depression of 1930 lessees took over the Blue Buck and using this raise as a shaft carried forward an exploration in the course of which they discovered the footwall ore shoots on the 100 foot level and mined a small tonnage of excellent ore.

This work was resumed in 1937 and similar ore in the two footwall veins was found on the 200 foot level as well as some additional ore in the hanging wall vein which had previously been stoped up from the 300 foot level.

The 1500 tons which have been mined and shipped from these upper Blue Buck workings had an average assay according to settlement sheets of 0.044 oz gold, 2.00 oz silver and 6.67% copper.

In the present workings only a small tonnage of ore can technically be classed as positive or highly probable but considering the strength and persistence of the outcrops the showing in the floor and ends of the drifts and the proven record of all of the similar shoots worked in the Blue Bell Mine, it is a fair and justifiable assumption that a very substantial tonnage will be developed by the extension of the present drifts and at greater depth. It must be borne in mind that this work was all done by lessees, who were under the compelling necessity of mining and shipping ore just as fast as it became available and who had neither the means nor the incentive to prove up tonnage in advance of their production.

On the 100 foot level four parallel veins have been partially developed but one of these is not considered because of the low grade of the ore. The width of ore in each of the other three veins is between 6 and 7 feet, and aggregate width of 20 feet, and for each 100 feet of length these three veins, if continuous, will contain 166 tons of ore (@ 12 cu. ft. per ton) to each foot of vertical depth.

Since pay ore is also foundclose to the outcrops it may be assumed that the leached zone has nearly all been eroded away at this point and after deducting the small amount of ore that has been stoped, the future yield of these veins from 100 feet of length and between the 100 foot level and the surface may be estimated conservatively at 5,000 tons.

On the 200 foot level only two of the three veins have so far been proved but since the 3rd vein, lying farthest in the footwall appears to continue down to the 500 foot level (where it is noted in a drill hole) there is a reasonable presumption that the shoots have a length of over 100 feet and deducting the ore already stoped an additional reserve of 15,000 tons should be found between the 100 and 200 foot levels.

Below the 200 foot level considerable stoping has been done on the hanging wall vein down to the 500 foot level, but the other two veins are untouched and because of the developments in the crosscuts and drill holes it is a fair assumption that they will continue downwards and again taking a length of only 100 feet they may be expected to add another 10,000 tons for each 100 feet of depth, bringing the aggregate tonnage in the Blue Buck to 30,000 tons above the 300 foot leve and to 50,000 tons above the 500 foot level. Actually there is every reason to believe that the length of the ore shoots willprove to be well in excess of 100 feet thus substantially increasing the tonnage.

The grade of this ore varies considerably in different sections of the shoots, the average cannot be judged from the production previously described, for shipments made by the lessees were taken from the richer sections and the ore was carefully sorted before shipment.

By continuing a system of selective mining with some sorting the grade from this section of the mine may perhaps be kept up to 4% but this will result in reducing the tonnage which is classed as possible in the above discussion of the ore body.

RECONDITIONING THE MINE FOR OPERATION

In the autumn of 1941 the cave around the collar of the shaft was caught up and ladders and timbers were repaired down to the 500 foot level and it was possible to climb down with some difficulty to the 600 foot level, to within about 40 feet of which the water had risen and appeared to be stationary.

To properly repair the shaft down to that point would involve some further work around the collar and new wall plates, spreaders and guides involving a total expense of probably $5000. (This work has been completed.) The shaft timbers from the 600 to 1000 foot levels are likely to be in worse shape than above, but below the 1000 they have been under water since soon after the mine shut down and their condition should be good.

To resume operations at Blue Bell the logical procedure will be to first repair the road and next to put in a new collar at the main shaft, erect a suitable headframe (this work has been completed in the last two years) and install an electric-driven hoist and compressor with the transformers and the accessory equipment. As the shaft is reconditioned, the skip track and the guides can be installed, also the wiring and piping for air and water, and as soon as this work has proceeded to the water level the dewatering can begin. A large portion of the flow came into the mine on or above the 800 foot level and here the sump and main pumping station should still be in good shape and an electric station pump can be installed. A similar pump should later be installed on the 1500 foot level.

As soon as hoisting and mining equipment is in working order it will be logical to start cleaning out certain of the drifts running to the north, namely the 300 and 500 foot levels and, after the water has been lowered, on the 800, 1200, 1350 and 1500 foot levels.

The south drifts should also be cleaned out probably on the 500, 800, 1000, 1250, 1350 and 1500 foot levels.

The expense and work involved in this procedure will depend upon the condition of these drifts which at present is an unknown quantity. From my knowledge of the mine I do not anticipate that there will be much caving in any of the south drifts except the 800 which it may seem advisable to defer reopening for a time, as only a relatively small tonnage of ore will be rendered accessible from the south side of this level.

A different situation will be found to the north of the shaft for even before the mine was closed there had been large caves in the 40 and 45 stopes and some of the original drifts had to be abandoned and by-passes run through the footwall which should still be standing.

My estimate of the expense of this procedure would at present be merely to guess, but I think that it would be wise to set aside the sum of at least $40,000 for cleaning and retimbering the old

levels down to the 1500 and preparing for operation the stopes in which there remain a sufficient quantity of ore to justify the resumption of mining. To this figure should be added the cost of repairing the shaft and stations which may amount to a total of $20,000, including the $5,000 required to reach the water level. I believe that this is a very liberal estimate.

The new development work which should be promptly undertaken in order to make positive and accessible for mining the ore reserves which are now estimated as probable or indicated is as follows:

(a) #1 ore shoot: Extend the 1500 foot level to the south for a distance of about 400 feet which should develop the full expected length of this ore body well below the zone of the main fault.

(b) #3 ore shoot: Sink winze an additional 80 feet in the ore and crosscut at intervals.

(c) #4 and #5 ore shoots (Blue Buck): Extend both 100 and 200 foot levels in #5 for about 100 feet and crosscut from 3rd level for 100 feet into footwall, with about 200 feet of drifting on footwall veins.

(d) Extend 1350 foot level north to the end of #4 shoot and continue on through the 50 and 55 ore shoots, a total of about 500 feet.

(e) Extend the 1500 foot level for about the same distance to fully develop the #4, #5 and 55 shoots.

The above will aggregate about 2000 feet of drifting, which I estimate will cost $15.00 per foot, or say, a total of $35,000, allowing for the added cost of the winze and short crosscuts.

If this work has given satisfactory results, especially the winze in the 1630 and the drifts in the 1510, 1540 and 1550, it will next be in order to continue sinking the main shaft to the 1650 foot level (i.e. another 150 feet) and to crosscut on that level to the vein (say 200 feet) and then to drift for the full length of the above named ore shoots a distance of about 1500 feet. Assuming that the sinking will cost $100 per foot and the crosscutting and drifting $15 per foot, this additional expense of properly opening up all of the expectant ore to the 1650 foot level will be in the order of $40,000 with due allowance for sump, station, etc.

For future development--aside from the continuance of the work at greater depth--I suggest drifting on the 200 foot level from the #5 and #6 ore bodies a distance of some 500 feet and also reopening the long drift south on the 800 foot level and further exploring the mineralized area in the Blue Thunder claim for which purpose some $14,000 may be required.

The future of the Blue Bell Mine, in my opinion, lies in working to greater depth, for the ore bodies have held fairly constant from the surface down except for a vertical distance of some 200 to

300 feet where their breaking up and displacement by the main fault rendered them almost or entirely worthless. It seems reasonably certain that the lower limit of this faulted area has already been passed in the #3 orebody and logically we should be well below it on the 1500 level when this is advanced to the #1 orebody. The 1500 level should be near the bottom of the fault in the #4 orebody, but the 45, 5 and 55 will probably show the effects of the fault down to a depth of 1600 to 1700 feet. It seems probable that an 1800 foot level would cut all the ore bodies as far north as the 55 well below the faulted area, and should such prove to be the case deeper workings in the Blue Bell might yield tonnage comparable to those above the 1200 where about 100,000 tons of ore was opened up for each 100 foot gained in depth.

It is impossible from present indications to make any definite statements regarding the probable grade of the ore below the fault, but #3 shoot, so far as developed, is equal in grade to the average above the fault, and there seems to be no good reason why a similar condition should not exist in all of the other ore bodies.

The policy which may later be adopted in respect to developments at greater depth will obviously be dependent upon the results of the work which is outlined above as well as on other conditions such as the course of the copper market which cannot be foreseen at present.

Further lateral development in the upper levels is not recommended at present, since the indications obtained from explorations by crosscuts and diamond drilling, while inconclusive, were not encouraging (See Exhibit J). The ore which was found in the Blue Thunder claim at and near the end of the long south drift on the 800 foot level was very low grade but the work done in that section of the mine was inconclusive.

CAMP ACCOMMODATIONS

The mine has been completely dismantled of equipment and, except for a powder house and the basement and portion of the lower story of the old boarding house, there are no structures on the property.

It is believed that it will be possible to arrange for most of the crew to live in the town of Mayer (5 miles distant) where housing facilities are ample and to drive back and forth to work.

In such event housing for only the Mine and Mill superintendents and a few of the key men would be required at the mine, as well as an office and assay office, all of which might be provided at a cost of perhaps $10,000.

If later on it should become necessary or advisable to have all of the crew live on the property an additional outlay of some $15,000 might be required.

LABOR

Because of excellent climatic conditions it was always possible in past times to secure a good crew of men at Blue Bell and in spite of the current scarcity of mining labor it is believed that a similar

situation still exists. There are a number of men both Americans and Mexicans living in Mayer and vicinity who formerly worked in the mine and who have repeatedly expressed their desire to return there whenever active operations were resumed. Many of these men are over age for the larger mines but still well able to perform a good day's work, and younger members of their families will doubtless be attracted back to this district as soon as they are offered an opportunity for employment.

MINING COSTS

The costs of mining the remaining ore at Blue Bell will show a wide variation in different stopes but the following is believed to be a fair estimate based on past records and with due regard to present conditions, as far as these can be visualized, and to present costs of labor and materials. These estimates are intended to apply only to the ore which has been wholly or partially developed and prepared for mining above the 1500 foot level. For all new ore which must be fully developed the cost will be increased by probably 60-75¢ per ton, but this charge has been absorbed by the initial investment in respect to all ore tabulated as probable.

Estimate of Mining Cost on Present Developed or Partially Developed Ore assuming that prices for Labor, Material and Taxes remain approximately as at Present.

	Per Ton
Preparing ore for stoping	$ 0.35
Breaking ore and sorting in stopes (including filling and timbering)	2.00
Underground tramming	0.18
Hoisting	0.20
Pumping	0.05
Surface and camp expense	0.06
Supervision and clerical	0.10
Sampling and assaying	0.06
General, property tax, etc.	0.05
	$ 3.00

This estimate may be compared with the cost records for previous years as given below.

Mining and hoisting, etc. without development:

1915	$ 1.567
1916	1.7286
1917	1.3871
1918	2.1558
1919	2.6250
1923	2.25 (about)

CONCENTRATION OF ORE

The attached record of the Humboldt Mill (Exhibit I) covers the treatment of both Blue Bell and De Soto ores from 1913 through 1923 and also a small tonnage of custom ore which was milled during the last few years.

The mill at Humboldt was originally built in 1905 for the treatment of the De Soto ore which was more siliceous than most of the Blue Bell production. Only a small quantity of ore was treated before the De Soto operations were discontinued in 1907 and when in 1913 the mill was next put in operation, this time with feed from Blue Bell, it was only equipped for gravity concentration which gave very poor results.

Flotation was first installed in the spring of 1914 with marked improvement and subsequently various changes and additions increased the recovery until during the last run in 1923 and again in 1926 the saving in copper was from 91% to 93%, with recovery of about 85% of gold and silver values in the ore.

The flow sheet of May 1917 which is attached to the record represents the general system employed although some minor changes were subsequently made. Not all of the Blue Bell output was at any time sent to the mill, since the more basic ore was needed at the smelter.

The ratio of concentration varied from 3.3 to 1 to 4.3 to 1 depending largely upon the needs of the smelter which usually required a heavy iron concentrate of at least 93% of the copper and 85% of the gold and silver values with a ratio of concentration of 5 to 1 or somewhat better.

In 1915 when the mill first operated for a full year by flotation, treating over 200 tons of ore per day, the cost was only $1.00 per ton, excluding flotation royalty, but from that time forward there was a steady advance in labor and materials and particularly in the cost of electric power which together overbalanced the economies that were introduced in practice.

The mill at Humboldt had been very unwisely built on level ground so that several elevators were required and the power cost represented just about 33% of the total milling expense.

In a modern hillside mill of good design much power and electricity could be saved and even considering the present very high scale of wages and cost of most material it is believed that the total direct cost of milling, in which the flotation royalty of some 13¢ per ton would no longer figure, should not exceed $1.25 per ton, which may be expected to be distributed about as follows:

Estimate of Milling Cost Based on Previous Operations

	Per ton Milled
Unloading and sorting ore	$ 0.05
Coarse crushing	0.15
Fine grinding	0.47
Flotation	0.30
Filtering & handling concentrate	0.12
Supervision and clerical	0.08
General expense, property tax, insurance, etc.	0.03
Total	$ 1.25

Included in the above figures are charges for maintenance and repairs, also the estimated cost of power which should not exceed $0.30, water and compressed air. The payment of compensation insurance, social security and unemployment taxes, etc. are considered as part of the cost of labor. It is believed that these figures are very liberal.

Attached to the report as part of Exhibit I is a print of the flow sheet of the mill and portions of a report on the treatment of the ore by H. R. Banks, who was Mill Superintendent at Humboldt in 1923 and now holds a similar position with the Consolidated Smelting Company of Canada, where several thousand tons of ore per day are treated in the Sullivan concentrator. Needless to say that Mr. Banks or any other competent metallurgist would at present substantially revise some of his recommendations in the light of modern practice and with the development of modern reagents.

It is now proposed that a new all-flotation mill, designed to eventually treat 200 tons of ore per day, should be erected on sloping ground just south of the collar of the main shaft and that the ore should be transferred over a picking belt from the mine bin directly to the coarse crushing plant and from there to the fine ore storage bin in the mill. From 5 to 10% of waste will probably be sorted out on the belt but all costs are figured on the basis of tons of sorted ore or mill feed.

Electric power is already available at this point and water in sufficient quantity should be pumped from the mine. The slope of the hillside site is from 20-30 degrees and at the foot of the mill there should be constructed a bin for the concentrates, to which a short stretch of new road will have to be built so that these concentrates can be loaded directly into trucks for haulage to Blue Bell railway siding (four miles) or all the way to the Clarkdale smelter (50 miles).

The flow sheet and design of the mill and detailed estimate of costs of erection and operation will be prepared and furnished by others as will also the detailed estimate of the mining equipment.

MARKETING CONCENTRATE

It is expected that all of the ore produced from the mine will be concentrated and the concentrate will be shipped to any one of three custom smelters, namely, Phelps Dodge (United Verde) smelter at Clarkdale, Magma Copper Company smelter at Superior, A.S. & R. Co. smelter at Hayden.

Considering that almost identical terms are offered by these three plants it is probable that the shipments will be made to Clarkdale and the following calculations are made on that assumption.

Based on the ore reserves tabulated in Exhibit F the average grade of the sorted ore which will constitute the mill feed is taken to be 0.04 oz gold, 1.5 oz silver and 2.75% copper with a recovery in

concentrate of 93% of the copper and 85% of the gold and silver and the ratio of concentration is estimated as 5 to 1 so that the concentrate will assay 0.17 oz gold, 6.38 oz. silver and 12.79% copper. The smelter will pay:

For all gold @ $32.2 per oz.	$ 5.47 per ton concentrate
For silver less 0.5 oz @ 70¢	4.16 " " "
For copper less 15# @ 9.275	22.33 " " "
The Metals Reserve Corporation will pay a bonus price of 5¢ per pound on 241# copper	12.05
Total payments	44.01

Less: Treatment charge	$ 5.00	
RR Freight(with allowance for moisture) (about)	2.06	
Truck from mill to siding with allowance for moisture	1.10	8.16
Net value of concentrate at mill		$ 35.85

Representing five tons of sorted ore or equivalent of $7.17 per ton of ore.

The operating expenses chargable against each ton of ore will be about as follows acccrding to my previous estimates:

Mining	$ 3.00
Milling	1.25
General expense and overhead, say	0.12
	$ 4.37

Leaving a margin of $2.80 per ton from which the operator will have to repay the initial investment.

NOTE

(In all cost estimates or both mining and milling, I have used the old rate for electric power whichwas about 1.5¢ per kilowatt hour but I believe that a better rate can now be obtained and also that better terms for the treatment of concentrates than those set forth can be procured. The costs include the property tax and operating taxes for social security and unemployment, also premiums on industrial insurance but they do not include any sales or income taxes nor royalty to the owner.)

The total cost of producing and marketing the 48.2# of copper which will be paid for in each ton of ore thus works out at about 11.27¢ per pound after crediting the amount which will be paid for the gold and silver in the ore and with no charge for royalty to the owner, depreciation, depletion or amortizing the new investment which is now required and which is tentatively summarized below.

Estimate of New Investment Required

Repairs to road	$ 1,000
*Mine equipment and power house, change room	40,000
Repair and equip shaft to 1500 foot level with headframe	20,000
Recondition levels and stopes	30,000
Camp buildings, office and dwellings	10,000
Accessory equipment and bin at siding	10,000
*Mill buildings and equipment (approx)	100,000
	$ 210,000
Subsequent underground development to 1650 foot level:	
New drifts, etc. on 1500 level and above	35,000
Deepen shaft and development work on 1650 foot level	40,000
Lateral development on upper levels	14,000
Total	$ 300,000

*Estimates to be revised by Western-Knapp Engineers

SUMMARY AND CONCLUSION

Since the metallic contents of the Blue Bell ore is nearly always greatest at the center of the ore shoots, then gradually shades off into the wall rock, it is evident that there is an inverse ratio between the tonnage and value of the ore and that economic conditions establish the lower limits of the material which it will pay to mine and mill at any given time.

Based upon the estimated reserve as tabulated in Exhibit F and my past experience in operating this mine I have now assumed that the pay ore should average 2.75% copper with gross values in gold and silver of about $2.50 per ton and on that basis I estimate the recoverable tonnage developed as positive or reasonably probable by the existing workings is from 102,000 to 113,000 tons, while the additional ore which should be proved by the development work which I have recommended--including the partially developed ore which should be found between the 1500 and the 1650 foot levels--is from 119,000 to 137,000 tons. All developed and probable ore is estimated at an average grade of 2.75% copper, 0.04 oz gold and 1.5 oz silver.

The investment involved in reopening this mine and providing it with first-class mining and milling equipment is tentatively figured at $211,000 with an additional estimate of $89,000 to fully develop the indicated ore bodies down to the 1650 foot level.

Such a procedure should result in proving a substantial quantity of ore which cannot now be classed as even probable and in making accessible for mining a total of 300,000 tons of the estimated grade, if the ore shoots hold strong to that level. As long as the present bonus price of copper is maintained along with the current scale of

wages and prices of essential commodities the operations should stand a substantial charge per ton to repay the initial investment and still earn a satisfactory profit to the operators.

Production of ore should commence within six to eight months from the time when active reconditioning and construction was started and the output of 200 tons of ore per day containing about 10,000 pounds of recoverable copper should be attained within the next two or three months and thereafter should be continuous for at least three years or as long as present economic conditions prevail.

(Copy of undated, unsigned report -
probably written by G.M. Colvocoresses)

Blue Bell Mine (file)

MINE MANAGEMENT CORPORATION

P. O. BOX 7277
INDIAN SCHOOL STATION
PHOENIX, ARIZONA 85011

Western Office:

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PHOENIX, ARIZONA 85012
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April 30, 1976

MINE MANAGEMENT COMPANY OF ARIZONA

STATUS BLUE BELL MINE

Yavapai County

1.0 Summary & Purpose

The Blue Bell Mine is presently equipped to mine, crush and leach under controlled conditions high grade surface copper ore at a rate of 100,000# to 150,000# per month of copper contained in precipitates (cement copper).

The recent price increase to 70¢/# copper with further increases expected by all segments of the industry makes the start up of the operations desirable at the earliest possible date.

Mine Management Corporation of Arizona (MMCA) together with some participants have expended in excess of $350,000 in exploration, plant installation. Heavy stand-by costs were incurred 14 months during which the project was idle first from lack of market (no Arizona smelter was buying from non-contract sources) and laterly from lack of $40,000 in working capital. The purpose of this memo is to briefly describe the status and what is offered on a private basis to induce a loan of this amount.

2.0 Location

Three and one-half miles south Mayer, Arizona, Yavapai County, Big Bug Mining District, Sections 26, 27 & 34. Anyone going there for the first time should stop at Red Raven Arco Station and approach Mayer, Arizona for directions.

3.0 Original History

Operated from 1888 to 1927. Produced by verifiable records one million forty-seven thousand eighty one (1,047,081) tons of three and two tenths (3.2%) percent copper ore, largely chalcopyrite and small amounts of leachable surface oxides and chalcocite since. Mine closed down in 1927 when copper fell to 5¢/# and smelter at Humboldt failed. Tram line and railroad removed in 1931.

4.0 Ownership & Lease

MMCA has a lease from the owner, Sherwood Owens of Tucson, which lease is in good standing. The terms of the lease require no

Blue Bell

royalties until all monies expended to explore and commercialize the operation have been earned and retained from profits. The lease runs to December 31, 1977. Under certain circumstances MMCA could be required to vacate the property. These circumstances evolve about the possibility that a major oil company presently drilling in the area might exercise its right to acquire the property. MMCA believes on the basis of present knowledge that the oil company's exploration program will not develop a sufficiently large enough project to justify acquiring the property. Therefore, MMCA believes, but can give no assurance that the lease will be extended if MMCA is in steady production.

For this reason, and others set out below, it is planned to mine and treat 40,000 to 50,000 tons of high grade ore first and leach in place 400,000 tons of low grade thereafter.

5.0 Principal Features of Mine

5.1 Mineralization

Yavapai schist - mineralized zone averages 125' in thickness - ore occurs in high grade lenses. Ore below 300' to 400' level massive sulphide, above this level ores are mixed oxides and sulphides (largely chalcocite).

5.2 Surface Ore

The first 100' to 150' in depth can be mined from surface with average values for entire width of zone held between 0.7% and 0.8% copper. This block contains 400,000 to 500,000 tons, of which very high grade (3% and above) occur in 10 to 12 feet at both footwall and hanging wall, and are easily selectively mineable.

5.3 Underground Reserves

At the time the mine was closed in 1927, assay maps and reports confirm 275,000 to 300,000 tons of 3.0% copper ore developed reserve.

5.4 Condition of Mine Shaft

The main 6' x 12' shaft is to a depth of 1500', but is plugged from approximately 75' to 410' with timbers and loose material bulldozed into the shaft on orders of a mine inspector in the 1950's. A bulkhead at the 410' level has undoubtedly held this plug.

5.5 Water & Leaching Prospect Underground

MMC has drilled a well 410' into the old works and installed a 50 gpm submersible pump in over 100' of water. This surface water has a pH of 6.7 with high iron content. The entire old workings contain 36,000,000 gallons or more of water and the mine makes 100 gpm or more. Old USGS records show that below

Blue Bell

the 800' level during old operations, the water was acid and contained much copper. Launderers were set up and cement precipitated on all levels below the 800' and, according to living persons who were in the mine on upper levels as well.

The cut off grade for mining underground was 2% and old stopes were largely back-filled with low grade material. It is velieved that no less than 2,000,000#, and possibly as much as 5,000,000# of copper can be recivered by pumping and recirculating the water if a hole can be gotten to the 1300' level or below. An attempt was made at considerable cost in late 1976 but the drill encountered unknown old workings and lost circulation.

6.0 Present Facilities and Plan to Exploit Mine

6.1 Existing Plant

The present plan consists of crushing, screening, 125 tons surge, agitated leach vessel, 10,000 ton leach pond, water system, acid storage, precipitation tanks, 325 hp diesel electric generator capable of 50 tons per hour feed to leach pond at ½" x 0. There is also a small ballmill, flotation and tabling section which will handle 3 to 4 tons per hour or sulphides. This plant could be expanded very inexpensively by addition of a larger ballmill and a few more float cells, if and when needed.

6.2 Mining Program - Surface

A block of ore approximately 125' x 400' x 125' containing about 500,000 tons of 0.7% and 0.8% ore has been developed and sufficient selective mining done to establish that grade can be held to 3.0% copper.

Four 10' x 12' adits (two are started) will be driven in the high grade which principally occurs against the footwall and hanging wall. Stoping will connect an A' level with the B' level. When the high grade is mined out the remaining 400,000 to 450,000 tons will average out 0.5%. This will be drilled from the workings left by the high grading, loaded with explosives and shot. Leaching in place is then very cheaply achieved.

6.3 Leaching & Precipitation

Initially 100 tons per day of ore will be mined and transported 1500' to the crushing plant where it is crushed to ½" x 0 and put into 125 tons storage bin.

The crushed ore is fed evenly by Syntron feeder to a 12" diameter plastic sewage type pipe where water and acid in correct proportions is added. As the material (slurry) is carried down the pipe to the leach pond it is intimately mixed; i.e. the

acid solution has the opportunity of starting to leach immediately. This system has been used elsewhere with great success and large scale testing at Blue Bell in late 1974 proved the system amenable to Blue Bell ore.

The 100 tons of initial production per day will be placed in solution in the pond in a few hours.

Solution is drawn off by gravity from perforated plastic pipe covered with river gravel. (The reverse of a septic tank "field") and pregnant solution gathered as desirable in a 300,000 gallon collecting pond, either recirculated or when sufficient copper is in the solution (2 grams per liter or higher - equivalent of 16# of copper per 1000 gallons) sent to the iron precipitation tanks. Sixteen (16%) percent of all copper in Arizona is produced as cement so this aspect of the operation is conventional.

7.0 Costs

The system requires only one shift with leaching going on in the pond at all times. Costs for 100,000# of copper in cement should not exceed 33.0¢ per pound (see Schedule A, Budget and Timing attached).

8.0 Working Capital Required

Because it is necessary to create a large volume of leach liquor, the first month of operations will collect insufficient copper cement (80% copper plus moisture) for the first shipment. However, once the system is producing a sufficient volume of pregnant liquor, the production can be steadily maintained. For this reason, to turn the system on requires the availability of $40,000 including inventories of acid, iron, equipment rentals, labor, etc. Ten thousand will be used for current a/p, local tax assessment now overdue, and other necessary expenditures.

9.0 Proposal

MMCA holds 32.7% of the operation and the balance is held by participants in the form of a Net Profits Royalty allowing under IRS code the pass through of profits and non-cash items such as depletion (15%) and depreciation.

In return for a one year loan or a guarantee of the loan with monthly payments commencing in 90 days, MMCA will agree that all of its share of profits will first be used to pay off the loan and interest, (estimated 7 months) and the loanor or guarentor will then have an undivided 10% Net Profits Royalty til December 31, 1977. Thereafter the net profits interest would drop to 5%.

Blue Bell

10.0 Risk

MMCA believes that an individual(s) guarantors will have taken a business man's risk with a high probability of $30,000 to $50,000 profit partially tax sheltered by 15% depletion. Thereafter the operation may continue for five years or longer and the residual interest could be substantial, particularly if copper rises to 85¢/# as is predicted by money experts including the executives of major copper companies.

BUDGET & TIMING

START UP AND CONTINUED OPERATIONS - BLUE BELL MINE

		1st Month	2nd Month	3rd Mon Thereaf
CASH COSTS				
1.0	Equipment Rentals & Lease			
	1.1 Patagonia Leasing	$2,700		
	1.2 High speed rubber tired front end loader	2,150		
	1.3 600 cfm compressor	950		
	1.4 Small dump truck	700		
	1.5 Advance rentals & lease payment	$6,500	$6,500	$6,500
2.0	Labor & Supervision			
	2.1 Seven men @ $50 day average including burden	$7,500	$7,500	$10,500
3.0	Supplies			
	3.1 ~~Fuel & lubricants~~	$ 750		
	3.2 Explosives, bits & caps	600		
	3.3 Acid - 150 tons @ $30	4,500		
	3.4 30 tons scrap iron @ $100	3,000		
	3.5 Misc. & oversights	500		
		$9,350	$12,300 (2)	$12,300
4.0	G A & O & Contingencies	$4,250	$ 4,000	$ 4,000
5.0	Cash Out	$27,600	$30,300	$33,300
6.0	Cash In: Sales		$33,000 (3)	$55,000
7.0	Cash Flow		$ 2,700	$21,700

NOTES:

(1) 100,000# Cu recoverable @ 3% or equivalent contained in copper ore - selective mining

(2) Scrap iron to 60 tons - acid same - production to 100,000# min. month - 66% recovery

(3) Shipped at end 5 weeks - settlement 80% - balance 7 weeks

(4) Copper 70¢ - freight & smelter 15¢ - 55¢ fob Blue Bell

NOTICE OF INTENTION TO OPER /BASIC OPERATING PLAN
(Ref. 36 CFR 228, FSM 2817)

For rvice--Unit No. 03
2817
Date Rec'd. 30 APR 1984

INSTRUCTIONS TO OPERATORS. Items 1 through 6 and 12 constitute a Notice of Intention; items 1 through 12 constitute a Basic Operating Plan. Please complete in as much detail as possible and furnish to District Ranger's office. Additional sheets may be used if necessary.
NOTICE: To the extent authorized by law this information will be held confidential. As an agency of the Federal Government, the Forest Service is required to comply with the Freedom of Information Act.

NOTICE IS HEREBY given that the undersigned intends to conduct prospecting, mining, or milling operation, etc. on the lands described below, and in the manner indicated.

1. Operator(s):
Name(s) Address(es) Telephone No(s).
Nevcan Exploration Inc.
155 Glendale # 11
Sparks Nevada 89451
702-331-0850

2. Area of Operation:
National Forest: Prescott State: Arizona Mining District: Big Bug
Ranger District: Bradshaw County: Yavapai T. 11N, R. 1E, Sec. 10, 15

3. Access:
The proposed route of access to the operation is (describe route from point of entry into National Forest, using road numbers when possible):
Take the Blue Bell Road south from Mayer for approximately five miles to reach the property

The following means of transport will be used (4-wheel drive vehicle, tractor, pickup, etc.): 4-wheel drive pickup

(NOTE: Construction, reconstruction, or restoration of a road across National Forest System lands as a means of access to mining claims must be authorized separately by special-use permit.)

4. Type of Proposed Operation:
Describe the type of proposed surface disturbing activities, such as trenching, bulldozer exploration, drill road construction, tunnel site development, etc.
Approximately 500 feet of drill road construction is required, along with 3 30'x50' drill pads. Approximately 1500' of NQ (2⅜" O.D.) diamond core drilling is planned in three holes.

5. Map:
A map is attached which shows the general area of operation and the proposed route of access to it. (This map is required. A map scale of about 1 inch = 2 miles is adequate.)

6. Period of Operation:
Period or periods during which operations, including road work, will take place. The work will be (continuous) intermittent, during the periods:
Road Work: May 28-31, 1984
Other Operations: Drilling: June-September 1984

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES

VERBAL INFORMATION SUMMARY

1. Mine file: DE SOTO (f) & BLUE BELL (f)
2. Mine name if different from above:
3. County: Yavapai
4. Information from: Dick Mieritz

   Company:

   Address: 2940 N. Casa Tomas

   Phoenix, AZ 85016

   Phone: 277-6053

5. Summary of information received, comments, etc.:

Mr. Mieritz reports that Pronto Exploration still has a lease on the De Soto mine. They have run up to the geology, geophysics etc. limit for exploration work counting as assessment work. This year they will need to do physical work on the ground if they wish to keep the property. Apache Stone continues to lease the Blue Bell and produce schist dimension stone from quarries on the property.

Date: February 1, 1989

Nyal J. Niemuth, Mining Engineer

How long would it take, after financing has been provided for, before production on the above basis could be reached? 8 to 10 months

Does your organization have the facilities for raising the necessary capital to increase production to the amount stated? No

If not, do you believe that your company would be amenable and agreeable to government financing? Yes

Do you believe that you could finance the capital investment yourself on some such basis as a guarantee of sale of output at a fixed price and for a definite period, with damages to cover unamortized portion of capital investment in the event the government failed to take the output for the agreed upon time - or some similar arrangement? Very probably

Please let us have your comments on the probability or possibility of your organization participating in such a program for national defense purposes.

Will cooperate in every possible way if capital can be obtained.

What would be your ideas on financing and carrying out such a plan as is indicated by these questions? U. S. Govt. to guarantee to purchase a fixed tonnage of copper during next three years from this property and at a certain price which should be increased pro rata if costs of labor and other basic factors are increased.

Kindly list names and addresses of other potential copper producers in Arizona whose operations should be included within this survey

Date May 30, 1941 Signed E. L. Colcord

MINE MANAGEMENT CORPORATION

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INDIAN SCHOOL STATION
PHOENIX, ARIZONA 85011

Western Office:

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FILE IN BLUE BELL FILE

January 26, 1973

MEMOPANDUM NO. 1 TO PARTICIPANTS BLUE BELL COPPER PROGRAM

During the exploration phase of the program in which you have invested, you will receive reports on a non-periodic basis, i.e., when information and developments occur of importance to the program. At such time as the program enters into production, reports will be made monthly and accounting quarterly.

This first report, therefore, is to advise you of our progress to date and our immediate plans for the next few weeks.

Additional Claims

Attached you will find a claim map showing in green 8 additional claims which have been staked and filed by our consulting geologist, Mr. Richard E. Mieritz. These 8 claims are protection claims, i.e., there is presently no evidence of mineralization but because the project could be sizeable in time, they provide additional space for waste piles, ponds, etc.

The 1972 program is shown in blue, i.e., Blue Bell and Blue Buck and the oxide zone extending over into the Blue Coat which is included. All of the old workings of the original Blue Bell lie beneath these patented claims. The other 7 patented claims comprising the original Blue Bell are shown in red, and they will form the basis of the 1973 program on which each present participant has the right, but not the obligation, to participate in the additional exploration work.

Personnel

We have been fortunate to obtain the services of Mr. Dexter Broyles, a veteran miner, who is thoroughly familiar with the Blue Bell and whose home is at Mayer. Mr. Broyles might be considered the Master Sergeant or Chief Petty Officer. He is accustomed to handling small groups of men in mining projects and has years of experience in underground work as well as surface mining.

We have also assigned Mr. Herbert Dahlman, Mechanical Engineer and a master mechanic with over 30 years in the building,operation and maintenace of metallurgical plants to the project. Mr. Dahlman has been associated with this company from the beginning and has been on my staff in other assignments in previous years. He was for some years Chief of Maintenance for various Cyprus Mines.

Sampling Results

Actual work got under way January 15 as Mr. Dexter Broyles had been working in

California and could not return until that date. In addition to locating and staking the 8 claims mentioned above (which is quite an undertaking in this rugged country), a systematic cleaning out of small shafts and the cutting of ore faces which are exposed on the surface has been done.

Channel samples at the base of the Walker shaft, which has been reopened, averaged 2.2% copper oxide. An 18 ft. channel sample across the face of the open stopes above the 4-5 ore body averaged in excess of 3% copper oxide. One 6 ft. section averaged 4.2% oxide and 1.73% sulphides for a total of 5.93% copper. All other samples have been analyzed for oxide only.

We can now trace this occurrence for more than 600 ft. and we know from very old reports that it occurs at depths as much as 300 ft. in predominantly oxide form. As yet, we do not know how wide the lense opens up but this work will be undertaken in the next 10 days to 2 weeks.

It would be extremely safe to say at this time, from our own knowledge, that there is at least 25,000 tons of proven mineable 2% oxide ore simply based on the above work. This amounts to approximately a million pounds of recoverable copper and we have literally just "scratched the surface". This is most encouraging since there appears to be enough copper developed from this first work to justify the program.

Main Shaft and Water

A careful examination of the collar of the main shaft showed it to be extremely dangerous as one of the original head shaft piers, weighing many tons of reinforced concrete, is in jeopardy of falling into the shaft. In consultation with all involved, this pier was secured to solid piers by welding heavy steel members. A 15" I-beam has been purchased which must be inserted under the two front piers very carefully. This is delicate time consuming work.

Steel has also been obtained for collaring and covering the shaft and rendering it a safe strong platform from which to work. We expect by the end of next week to be able to get down the shaft for preliminary examination of the conditions, but until the securing of the shaft for safety is accomplished, no further progress can be made to get to the water.

Immediate Program

In addition to the steel work and clean up of the loose material around the old shaft, cross-cutting and bulldozing will be started the week of January 29. This is expected to speed up considerably the surface prospecting to delineate the width of the oxide zone and make possible large numbers of additional channel samples.

Sincerely,

MINE MANAGEMENT CORPORATION

Dennis K. Pickens
President

DKP:hj
Enclosure

MINE MANAGEMENT CORPORATION

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March 13, 1973

MEMORANDUM NO. 2 TO PARTICIPANTS BLUE BELL COPPER PROGRAM

SUMMARY

Since the No. 1 Memorandum (1/26/73), exploration work has been severely slowed by weather. As most of you probably know, Arizona has had a true "rainy season" with several times the amount of precipitation and long periods of drizzling rain and cloud cover rendering the access road impassable and work progress difficult. Over 20 working days (virtually a month) have been lost.

Nevertheless, progress has been made and the program, other than the weather, continues to develop ore, water is now assured, and the design and specification for a starting plant is due to be completed by April 1, with production starting 45 to 60 days later.

A basic decision has been taken to ultimately clean out the main shaft instead of pile driving through it for reasons discussed below.

Main Shaft and Water

As pointed out in the first report, the main shaft collar was found to be extremely dangerous. With the use of a back hoe, the loose debris was excavated away from the shaft, the massive concrete footings, which were undercut, were removed (one large piece fell down the shaft), a heavy steel sill and cover installed and the hazard removed. There is still some welding to be done, delayed by wet weather.

Inspection of the shaft by lowering personnel, shows the shaft to be plugged by dirt, rock and timbers which have caved in. Interrogation of persons who worked at the mine as late as 1947 (some hand mining at the 300' level was done during the war), as well as a contract miner who did a small amount of work in the late 1950's, reveals that a bulkhead was established at the 350' level (below the level of water standing in the mine) and that the plug is therefore between 250' and 275' thick. More importantly, below this bulkhead the timbers, having been under water, will in all probability be in good useable shape.

Although there is no doubt that the plug can be penetrated by drill or pile-driver, it is the concensus of all involved that this could permanently ruin the shaft for future use and exploration. Therefore, as time goes on the shaft will be "mucked out", a slow and tedious process.

A useable 8" well exists into the 350' stope (northeast of main shaft) to a depth of 490' into 100' of water. The water is sweet and carries little copper,

but data has been found, from an earlier pumping test run for 14 days, establishing a 50 gallon per minute yield. To get started, a pump will be installed for this purpose and is expected to give sufficient water to enable leaching up to 200 tons per day of ore.

Face Sampling and Leachability Tests

Because of the erratic and very high copper (up to 5.93% Cu) content of the first samples taken, the very low acid consumption and higher than theoretical recoveries in several controlled leaching tests at Arizona Research Consultants (ARC Laboratories), it was felt that the exposed surfaces had been enriched by osmotic migration of natural copper sulphate to the surface. This proved to be true as benches were blasted and fresh, unexposed ore sampled. Blue Bell ore contains chalcanthite ($CuSo_4 \cdot 5H_2O$) which is highly soluble in water, and when a surface is wet by rain or ground water, the chalcanthite leaches and migrates. In the case of surface exposures, this enrichment distorts values, and non-exposed ore has lesser values over a narrower face.

It will still be possible to hold 1½% to 2% heads by selective mining. Tests show the ore will leach at 10 mesh grind in five hours with an acid consumption of under 5 lbs. per lb. copper, and a recovery in excess of 85%. This is very good.

Acid Mine Water

Some records which neither MM C nor the owner of Blue Bell, Mr. Sherwood Owens, did not know existed (or if they existed where they could be found) have turned up. They show that the Blue Bell had acid mine waters on all levels below 500' and that these contained sufficient copper sulphate in solution to install collection launders to precipitate cement copper on scrap iron. The cement was collected and mixed with the concentrates. This is of considerable interest since it is now believed that there is chalcanthite ore throughout the mine and that when the mine was operating and pumped out daily, the downward migration of ground water produced copper sulphate solution. This could account for the reason there is so little copper in the first 100' of water. While there is no guarantee that in the deeper measures of the mine there will be copper in solution present in significant amounts, it is logical to assume that since the mine made only about 100 gallons per minute of mine water, the leaching was taking place as the mine was filling up. But regardless of this, the decision to save the shaft by "mucking out" becomes increasingly important because the time may come when it will pay to pump the mine down below the 1400' level and gather daily newly enriched copper sulphate solution at various levels. There is still a good possibility that at depth the copper sulphate is present.

Oxide Ore Reserves

Several elevation and profile maps of the main oxide area to the northeast of the main shaft have been made available through the courtesy of friends in Prescott. These assay maps show that the early miners encountered heavy oxide at approximately 300' below the surface, and in those days oxides were not

suitable for smelters and leaching was not developed. It is now the opinion of MMC and its technical advisors that oxide ores averaging 12' in width, approximately 1200' in length to a depth of about 200' can be considered to be developed by virtue of surface sampling done with your exploration dollars and the existence of authentic assay maps showing the cutoff of mining where oxides were encountered.

This information also contributed to the decision not to take a chance on destroying the mine main shaft by drilling or pile driving because the grade of ore indicated by the assay maps is well in excess of 3%, but the vein being narrow, it will best be mined from underground after easily mineable surface ores have been exhausted. It is therefore reasonable to believe, but not yet certain, that there are 100,000 tons of higher than 2% oxide in this area alone, only a small part of which can be efficiently mined from the surface. So the main shaft must be preserved for still another reason.

Economics - Starting Plant

There appears to be sufficient surface ore to justify a small leaching facility, but until more leach tests are made, additional exploration completed, and a plant sized and built and some experience gained, it will not be possible to forecast profits or cash flow with accuracy.

A good rule of thumb in the Industry is that heads (feed) of 1% or higher from surface mining are needed to break even on a small facility. Since 1½% to 2% now appears to be realistic, a starting plant of 100 to 200 tons per day on an air agitated, batch leach, seems to be the smallest starting size justified which should turn a minimum cash profit (no non-cash items) of about $200 per day at 1½% Cu and about $600 per day at 2%. Again, it is cautioned that more data is necessary before these figures can be considered more than a generality, or "experience-of-others" type estimate. Mining costs and methods will govern variations either way.

Conclusion

Other than weather delays and some erratically high original assay results, the project has suffered no adverse discoveries and new information gained by exploration and from previously unknown records is most encouraging. Needless to say, the recent rise in copper prices is also advantageous -- if they stay up.

Also, long range, in-place leaching of old workings, including large tonnages of low grade broken stope material containing leachable values, now appears to be an excellent possibility, although limited by the amount of natural make-up water, i.e., an estimated 100 gallons per minute, which is substantial since evaporation would be very small underground.

Sincerely,

MINE MANAGEMENT CORPORATION

Dennis K. Pickens
President

DKP:hj

P.S. A question has been raised respecting the participants' increased owner-

ship should Mr. Sherwood Owens, the owner, be paid out from profits. This matter was left moot on purpose in the presentations of the exploration project for two principal reasons:

1) The first phase project covers only two of nine claims. In order to obtain the rights to the balance of the Blue Bell, the second phase 1973 program will require $185,000 in which each participant has the right, but not the obligation, to participate. This is important because it could happen that the 1973 program would develop a very substantial underground ore body which would require a large plant and ultimately be the big earning factor in paying out Mr. Owens. Calculation of each participants' share when and if Mr. Owens is paid out will depend on a future determination unless the next phase participants are the same and in the same percentages as now.

2) Should Phase II - 1973 Program be successful, it may be better to raise outside money for a large plant, buying out Mr. Owens' interest at the same time, or a sale to a large company might be arranged to benefit all proportionately.

However, in direct answer, if Mr. Owens should be paid out of earnings from the 1972 project alone, then each participant and MMC would receive an increased ownership in direct proportion to his present holding.

DKP

Royalty

AMERICAN SMELTING AND REFINING COMPANY
HAYDEN ARIZONA PLANT

SHIPPER McFarland & Hullinger　　DATE June 3, 1959
ADDRESS P.O. Box 238 Tooele, Utah　　SMELTER LOT 298
SHIPPING POINT Humboldt, Ariz. B/a Prescott, Ariz.　　SHIPPERS LOT 9
NAME OF MINE Blue Bell　　CLASS OF MATERIAL Crude

TERMS - CONTRACT　　SCHEDULE (Rates Subject to Change Without Notice) 137

DATE RECEIVED	CAR NUMBER	CAR INITIAL	WEIGHT GROSS	TARE	WET	% H_2O	DRY
5/21	65265	ATSF	178460	66600	111860	2.8	108728
✓	65572	✓	174100	66660	107440	4.3	102820
5/22	65490	✓	205800	66640	139160	1.9	136516
✓	66928	✓	202360	68440	133920	1.7	131643
✓	65024	✓	189240	66400	122840	2.7	119523
✓	66274	✓	202760	67900	134860	2.5	131488
		TOTAL			750080		730718

SETTLEMENT DATE 5/22/59

METAL QUOTATIONS	
Silver	
Less	
Net	
Copper	.31225
Less	.035
Net	.27725

ASSAY CONTENT PER TON	GOLD OUNCES	SILVER OUNCES	COPPER PERCENT	INSOL %	SiO_2 %	FE %	MN %	CAO %	ZN %	S %	Al_2O_3 %	AS %	SB %	BI %
Smelter	0.005	0.26	1.11	84.6	73.2	3.0		0.4			9.6			
Shipper	0.010	0.70	1.33											
Umpire	—	—	—											
Metallics														
Settle	NP	NP	1.22											

PAYMENT VALUE PER TON	PAY CONTENT	PRICE	AMOUNT	FREIGHT VALUE
Gold				
Silver - Less Oz. %				
Copper - Less 6 Lbs. 5 %	17.48	.27725	4.85	1.84
Gross Value			4.85	1.84
Deductions		Cr.	.50	.50
Freight Valuation			X X X	2.34
Net Value			5.35	

DEDUCTIONS	CHARGE	CREDIT
Base Charge (Incl. Escolator Clauses)		
Additional Treatment		
Acc. Value Over		
SIO2		.50
CaO		
Net Deductions		.50

= 2.28 Per Wet Ton
@ 365.3590 Dry Tons

	CHARGE	CREDIT
Net Value 5.35 @ 365.3590 Dry Tons		1954.67
Less Freight On 375.0400 Wet Tons @ $ 3.12 Per Ton	1170.13	
" Weighing 1 Cars @ 1.31 Per Car	1.31	
" Hauling @ 1.50 PWT = 562.56)		
" Representation　Umpires　Sampling		
" Royalty 10% to D. B. Owens Box 769 Tucson	22.07	
" Withheld Pending Return Of Silver Affidavit		
Toll Metals　Due Date		
Balance Due Shipper	761.16	

AMERICAN SMELTING & REFINING CO. HAYDEN, ARIZONA JUN 3 1959 PER

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Royalty

AMERICAN SMELTING AND REFINING COMPANY

HAYDEN ARIZONA PLANT

SHIPPER: McFARLAND & HULLINGER — DATE: June 3, 1959

ADDRESS: P.O. BOX 238, TOOELE, UTAH — SMELTER LOT: 289

SHIPPING POINT: HUMBOLDT, ARIZONA B/A PRESCOTT, ARIZONA — SHIPPERS LOT: 8

NAME OF MINE: BLUE BELL — CLASS OF MATERIAL: CRUDE

TERMS - CONTRACT — SCHEDULE (Rates Subject to Change Without Notice) 137

DATE RECEIVED	CAR NUMBER	CAR INITIAL	GROSS	TARE	WET	% H_2O	DRY
5-16	66973	AT&SF X	204060	68000	136060	2.7	132386
"	65389	" "	206240	66620	139620	2.4	136269
"	65846	" "	206640	66620	140020	2.5	136519
"	66405	" "	207960	68180	139780	3.0	135587
		TOTAL			555480		540761

SETTLEMENT DATE 5-16-59

METAL QUOTATIONS

Silver	.91375
Less	.01500
Net	.89875
Copper	.31225
Less	.03500
Net	.27725

ASSAY CONTENT PER TON / ANALYSIS

	GOLD OUNCES	SILVER OUNCES		COPPER PERCENT	INSOL %	SiO_2 %	FE %	MN %	CAO %	ZN %	S %	Al_2O_3 %	AS %	SB %	BI %
Smelter	0.005	0.50		1.54	23.4	75.2	2.6		2.3			8.4			
Shipper	0.010	0.89		1.78											
Umpire	—	—		—											
Metallics															
Settle	NP	0.695		1.66											

PAYMENT VALUE PER TON	PAY CONTENT	PRICE	AMOUNT	FREIGHT VALUE
Gold				
Silver - Less 0.5 Oz. %	0.195	.89875	.18	.18
Copper - Less 6 Lbs. 5 %	25.84	.27725	7.16	2.71
Gross Value			7.34	2.89
Deductions		Cr.	.50	.50
Freight Valuation			X X X	3.39
Net Value			7.84	

DEDUCTIONS	CHARGE	CREDIT
Base Charge 10.00	—	
(Incl. Escolator Clauses)		
Additional Treatment		
Acc. Value Over		
SiO2		.50
CaO		
Net Deductions	—	.50

Freight Valuation 3.39 = 3.30 Per Wet Ton

Stamp: JUN 3 1959 AMERICAN SMELTING & REFINING CO. HAYDEN, ARIZONA

	CHARGE	CREDIT
Net Value 7.84 @ 270.3805 Dry Tons		2119.78
Less Freight On 277.7400 Wet Tons @ $ 3.12 Per Ton	866.55	
" Weighing 1 Cars @ 1.31 Per Car	1.31	
" Hauling (@ 1.50 PWT = 416.61)		
" Representation Umpires Sampling		
" Royalty 10% to D.B. Owens Po. Bx 769 Tucson, Ariz.	83.53	
" Withheld Pending Return Of Silver Affidavit		
Toll Metals Due Date		
Balance Due Shipper	1168.39	

Checked: — Correct: — Approved: —

AMERICAN SMELTING AND REFINING COMPANY
HAYDEN ARIZONA PLANT

SHIPPER McFARLAND & HULLINGER — DATE May 21, 1959

ADDRESS P.O. Box 238, TOOELE, UTAH — SMELTER LOT 274

SHIPPING POINT HUMBOLDT, ARIZONA B/A PRESCOTT, ARIZONA — SHIPPERS LOT 7

NAME OF MINE BLUE BELL — CLASS OF MATERIAL CRUDE

TERMS - CONTRACT — SCHEDULE (Rates Subject to Change Without Notice) 137

DATE RECEIVED	CAR NUMBER	CAR INITIAL	WEIGHT GROSS	WEIGHT TARE	WEIGHT WET	% H_2O	WEIGHT DRY
5-12	66114	AT&SF	204740	67680	137060	3.5	132243
"	66266	"	200700	68080	132620	2.9	128774
"	66493	"	199060	68220	130840	3.1	126784
"	66459	"	202500	68360	134140	2.6	130652
"	66126	" X	200820	67860	132960	2.5	129636
		TOTAL			667620		648109

SETTLEMENT DATE 5-12-59

METAL QUOTATIONS	
Silver	.91375
Less	.01500
Net	.89875
Copper	.31225
Less	.035
Net	.27725

ASSAY CONTENT PER TON

	GOLD OUNCES	SILVER OUNCES		COPPER PERCENT
Smelter	0.005	0.40		1.57
Shipper	0.005	0.79		1.82
Umpire	—	—		—
Metallics				
Settle	NP	0.595		1.695

ANALYSIS

	INSOL %	SiO_2 %	FE %	MN %	CAO %	ZN %	S %	AL_2O_3 %	AS %	SB %	BI %
Smelter	86.6	75.2	2.4		0.4		—	8.8			
Shipper											
Umpire											
Metallics											
Settle											

PAYMENT VALUE PER TON

	PAY CONTENT	PRICE	AMOUNT	FREIGHT VALUE
Gold				
Silver - Less 0.5 Oz. %	0.095	.99875	.09	.09
Copper - Less 10 Lbs. 5 %	26.505	.27725	7.35	2.78
Gross Value			7.44	2.87
Deductions		Cu.	.50	.50
Freight Valuation			X X X	3.37
Net Value			7.94	@ 324.0545

DEDUCTIONS

	CHARGE	CREDIT
Base Charge	—	
(Incl. Escolator Clauses)		
Additional Treatment		
Acc. Value Over		
SiO_2		50
CaO		
Net Deductions	—	50

= 3.37 Per Wet Ton

Dry Tons

	CHARGE	CREDIT
		2572.99
Less Freight On 333.8100 Wet Tons @ $ 3.12 Per Ton	1041.49	
" Weighing 1 Cars @ 1.31 Per Car	1.31	
" Hauling @ 1.50 PWT (500.72)		
" Representation Umpires Sampling		
" Royalty 10% to L.B. owens P.O. Box 769 Tucson, Ariz.	102.95	
" Withheld Pending Return Of Silver Affidavit		
Toll Metals		
Due Date		
Balance Due Shipper	1427.24	

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AMERICAN SMELTING AND REFINING COMPANY
HAYDEN ARIZONA PLANT

SHIPPER McFarland & Hullinger — DATE May 22, 1959

ADDRESS P.O. Box 238, Tooele, Utah — SMELTER LOT 270

SHIPPING POINT Humboldt, Arizona "(Prescott, Arizona) — SHIPPERS LOT 6

NAME OF MINE Blue Bell — CLASS OF MATERIAL Crude

TERMS - CONTRACT — SCHEDULE (Rates Subject to Change Without Notice) 137

DATE RECEIVED	CAR NUMBER	CAR INITIAL	WEIGHT GROSS	TARE	WET	% H_2O	DRY
5-9-59	65126	AT	206780	66460	140320	2.2	137233
"	65??7	"	206840	66560	140280	2.6	136633
		TOTAL			[illegible]		[illegible]

SETTLEMENT DATE [illegible]

METAL QUOTATIONS

Silver	.91375
Less	.015
Net	.89875
Copper	.31225
Less	.035
Net	.27725

ASSAY CONTENT PER TON	GOLD OUNCES	SILVER OUNCES		COPPER PERCENT
Sm	0.007	0.41		1.55
Shipper	0.01	0.81		1.75
Umpire		—		—
Metallics				
Settle	NP	0.61		1.65

ANALYSIS	INSOL %	SiO_2 %	FE %	MN %	CAO %	ZN %	S %	Al_2O_3 %	AS %	SB %	BI %
Sm	84.2	75.0	2.8		0.3			8.8			

PAYMENT VALUE PER TON	PAY CONTENT	PRICE	AMOUNT	FREIGHT VALUE
Gold				
Silver - Less 0.5 Oz. %	0.11	.89875	.10	.10
Copper - Less 6 Lbs. 5 %	25.65	.27725	7.11	2.69
Gross Value			7.21	2.79
Deductions		CN.	.50	.50
Freight Valuation			X X X	3.29
Net Value			7.71	

DEDUCTIONS		CHARGE	CREDIT
Base Charge	10.00	—	
(Incl. Escolator Clauses)			
Additional Treatment			
Acc. Value Over			
SiO_2			50
CaO			
Net Deductions		—	50

= 3.21 Per Wet Ton

	CHARGE	CREDIT
Net Value 7.71 @ 136.9330 Dry Tons		1055.75
Less Freight On 140.3000 Wet Tons @ $ 3.12 Per Ton	437.74	
" Weighing — Cars @ — Per Car		
" Hauling @ 1.50 PWT (210.45)		
" Representation Umpires Sampling		
" Royalty 10% S.B. Avery Box 769 Tucson, Ariz.	40.76	
" Withheld Pending Return Of Silver Affidavit		
Toll Metals Due Date		
Balance Due Shipper	577.25	

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Royalty

AMERICAN SMELTING AND REFINING COMPANY

HAYDEN ARIZONA PLANT

SHIPPER McFarland & Hullinger — DATE May 21, 1959

ADDRESS PO Box 238, Tooele, Utah — SMELTER LOT 256

SHIPPING POINT [illegible], Arizona Via Prescott, Arizona — SHIPPERS LOT 5

NAME OF MINE [illegible] — CLASS OF MATERIAL [illegible]

TERMS - CONTRACT — SCHEDULE (Rates Subject to Change Without Notice) 137

DATE RECEIVED	CAR NUMBER	CAR INITIAL	WEIGHT GROSS	TARE	WET	% H_2O	DRY	SETTLEMENT DATE [illegible]
								METAL QUOTATIONS
5-5-59	65991	[illegible]	204220	66840	137380	2.4	134083	Silver .91375
"	65594	"	201580	67060	133520	2.4	130316	Less .015
								Net .89875
								Copper .31100
								Less .035
								Net .27600
		TOTAL			270900		264399	

ASSAY CONTENT PER TON	GOLD OUNCES	SILVER OUNCES		COPPER PERCENT	INSOL %	SiO_2 %	FE %	MN %	CAO %	ZN %	S %	Al_2O_3 %	AS %	SB %	BI %
Smelter	0.007	[illegible]		1.45	[illegible]	[illegible]	2.9		6.3			9.0			
Shipper	0.015	0.69		1.66											
Umpire	—	—		—											
Metallics															
Settle	NP	0.52		1.555											

PAYMENT VALUE PER TON	PAY CONTENT	PRICE	AMOUNT	FREIGHT VALUE	DEDUCTIONS	CHARGE	CREDIT
Gold					Base Charge		
					(Incl. Escolator Clauses)		
					Additional Treatment		
Silver - Less					Acc. Value Over		
0.5 Oz. %	0.02	.89875	.02	.02			
Copper - Less					SiO_2		50
6 Lbs. 5 %	23.845	.27600	6.58	2.50	CaO		
Gross Value			6.60	2.52			
Deductions		Cr.	50	.50	Net Deductions		50
Freight Valuation			X X X	3.02	= 2.95 Per Wet Ton		

	CHARGE	CREDIT
Net Value 7.10 @ 132.1995 Dry Tons		938.62
Less Freight On 135.4500 Wet Tons @ $ 3.12 Per Ton	422.60	
" Weighing Cars @ Per Car		
" Hauling @ 1.50 PWT (203.18)		
" Representation Umpires Sampling		
" Royalty 10% to S.B. Owens Po. Box 769 Tucson, Ariz.	31.28	
" Withheld Pending Return Of Silver Affidavit		
Toll Metals Due Date		
Balance Due Shipper	484.74	

Checked: [signature] Correct: [signature] Approved:

AMERICAN SMELTING AND REFINING COMPANY
HAYDEN ARIZONA PLANT

SHIPPER McFarland & Hullinger — DATE May 21, 1959

ADDRESS P.O. Box 238, Ticoll, Arizona — SMELTER LOT 250

SHIPPING POINT Hayden, Arizona c/o Prescott, Arizona — SHIPPERS LOT 4

NAME OF MINE Blue Bell — CLASS OF MATERIAL Crude

TERMS - CONTRACT — SCHEDULE (Rates Subject to Change Without Notice) 137

DATE RECEIVED	CAR NUMBER	CAR INITIAL	WEIGHT GROSS	TARE	WET	% H2O	DRY
5-4-59	65060	AT	203250	66580	136700	3.3	132189
"	65360	"	186120	66960	119160	2.9	115764
		TOTAL			255860		247953

SETTLEMENT DATE 5-4-59

METAL QUOTATIONS

Silver	.91375
Less	.015
Net	.89875
Copper	.31100
Less	.035
Net	.27600

ASSAY CONTENT PER TON

	GOLD OUNCES	SILVER OUNCES	COPPER PERCENT
Smelter	0.009	0.48	1.76
Shipper	0.02	0.85	1.93
Umpire	—	—	—
Metallics			
Settle	NP	0.665	1.845

ANALYSIS

	INSOL %	SiO2 %	FE %	MN %	CaO %	ZN %	S %	Al2O3 %	As %	Sb %	Bi %
Smelter	5.44	75.6	2.07		0.3		—	5.6			
Shipper											
Umpire											
Metallics											
Settle											

PAYMENT VALUE PER TON

	PAY CONTENT	PRICE	AMOUNT	FREIGHT VALUE
Gold				
Silver - Less				
0.5 Oz. %	0.165	.89875	.15	.15
Copper - Less				
6 Lbs. 5 %	.29355	.27600	8.10	3.08
Gross Value			8.25	3.23
Deductions		Cr.	.50	50
Freight Valuation			X X X	3.73
Net Value			8.75	@ 123.9485 = 3.61 Per Wet Ton Dry Tons

DEDUCTIONS	CHARGE	CREDIT
Base Charge 10.00	+	
(Incl. Escolator Clauses)		
Additional Treatment		
Acc. Value Over		
SiO2		50
CaO		
Net Deductions	+	50

	CHARGE	CREDIT
		1084.53
Less Freight On 127.9300 Wet Tons @ $ 3.12 Per Ton	399 14	
" Weighing — Cars @ — Per Car	—	
" Hauling @ 1.50 PWT. ($191.90)		
" Representation — Umpires — Sampling		
" Royalty 10% to S.B. Owens P.O. Box 769 Tucson, Ariz.	49 35	
" Withheld Pending Return Of Silver Affidavit		
Toll Metals — Due Date		
Balance Due Shipper	636 04	

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Royalty

AMERICAN SMELTING AND REFINING COMPANY
HAYDEN ARIZONA PLANT

SHIPPER McFarland & Hullinger DATE May 8, 1959

ADDRESS P.O. Box 238, Tooele, Utah SMELTER LOT 236

SHIPPING POINT Humboldt, Arizona c/o Prescott, Arizona SHIPPERS LOT 3

NAME OF MINE [illegible] CLASS OF MATERIAL Crude

TERMS - CONTRACT SCHEDULE (Rates Subject to Change Without Notice) 12 L

DATE RECEIVED	CAR NUMBER	CAR INITIAL	GROSS	TARE	WET	% H2O	DRY
4-28-59	66355	AT	215680	67900	137780	2.6	134198
"	66116	"	206080	67940	138140	2.9	134134
		TOTAL			275920		268332

SETTLEMENT DATE 4-28-59

METAL QUOTATIONS	
Silver	.91375
Less	.015
Net	.89875
Copper	.31225
Less	.03500
Net	.27725

ASSAY CONTENT PER TON / ANALYSIS

	GOLD OUNCES	SILVER OUNCES	COPPER PERCENT	INSOL %	SiO2 %	FE %	MN %	CAO %	ZN %	S %	AL2O3 %	AS %	SB %	Bi %
Smelter	[illegible]	[illegible]	1.58	84.1	74.5	2.9		0.4			9.2			
Shipper	0.02	0.75	1.81											
Umpire														
Metallics														
Settle	NP	0.56	1.695											

PAYMENT VALUE PER TON	PAY CONTENT	PRICE	AMOUNT	FREIGHT VALUE
Gold				
Silver - Less 0.5 Oz. %	0.06	.89875	.05	.05
Copper - Less 6 Lbs. 5 %	26.505	.27725	7.35	2.78
Gross Value			7.40	2.83
Deductions			1.50	1.50
Freight Valuation			X X X	1.33
Net Value			5.90	@ 134.1660

DEDUCTIONS	CHARGE	CREDIT
Base Charge	1.50	
(Incl. Escolator Clauses)		
Additional Treatment		
Acc. Value Over		
SiO2		
CaO		
Net Deductions	1.50	

= 1.29 Per Wet Ton

	CHARGE	CREDIT
Dry Tons		791.58
Less Freight On 137.9600 Wet Tons @ $ 3.12 Per Ton	430.44	
" Weighing — Cars @ — Per Car		
" Hauling		
" Representation Umpires Sampling		
" Royalty 10% to S. B. [illegible]	36.11	
" Withheld Pending Return Of Silver Affidavit		
Toll Metals Due Date		
Balance Due Shipper	325.03	

Checked: [illegible] Correct: [illegible] Approved:

Royalty

AMERICAN SMELTING AND REFINING COMPANY
HAYDEN ARIZONA PLANT

SHIPPER McFarland & Hullinger — DATE May 8, 1959

ADDRESS P.O. Box 225, Tooele, Utah — SMELTER LOT 231

SHIPPING POINT Mammoth-St. Anthony Mine, Tiger, Arizona — SHIPPERS LOT 2

NAME OF MINE Blue Bell — CLASS OF MATERIAL Ore

TERMS - CONTRACT — SCHEDULE (Rates Subject to Change Without Notice) 521

DATE RECEIVED	CAR NUMBER	CAR INITIAL	WEIGHT GROSS	WEIGHT TARE	WEIGHT WET	% H_2O	WEIGHT DRY
4-21-59	65721	SPKX	204200	66580	137620	3.2	133216
"	65511	NYC	202810	66490	136320	2.3	133139
		TOTAL			274020		266355

SETTLEMENT DATE 4-27-59

METAL QUOTATIONS

Silver	.91375
Less	.01500
Net	.89875
Copper	.31225
Less	.04000
Net	.27725

ASSAY CONTENT PER TON

	GOLD OUNCES	SILVER OUNCES	COPPER PERCENT
Smelter	0.007	0.60	1.93
Shipper	0.02	0.97	2.21
Umpire			
Metallics			
Settle	NP	0.785	2.07

ANALYSIS

	INSOL %	SiO_2 %	FE %	MN %	CAO %	ZN %	S %	Al_2O_3 %	AS %	SB %	BI %
Smelter	35.7	77.1	2.3		0.2			5.1			
Shipper											
Umpire											
Metallics											
Settle											

PAYMENT VALUE PER TON

	PAY CONTENT	PRICE	AMOUNT	FREIGHT VALUE
Gold				
Silver - Less 0.5 Oz. %	.285	.89875	.26	.26
Copper - Less 6 Lbs. 5 %	33.63	.27725	9.32	3.53
Gross Value			9.58	3.79
Deductions			1.50	1.50
Freight Valuation			X X X	2.29
Net Value			8.08	@ 132.22775 Dry Tons

DEDUCTIONS

	CHARGE	CREDIT
Base Charge	1 50	
(Incl. Escolator Clauses)		
Additional Treatment		
Acc. Value Over		
SiO_2		
CaO		
Net Deductions	1 50	

= 2.23 Per Wet Ton

	CHARGE	CREDIT
		1,077 29
Less Freight On 137.10 Wet Tons @ $ 3.12 Per Ton	427 75	
" Weighing 1 Cars @ 1.31 Per Car	1 31	
" Hauling		
" Representation Umpires Sampling		
" Royalty 10% to S.B. Owens P.O. 7689 Tucson, Ariz.	64 82	
" Withheld Pending Return Of Silver Affidavit		
Toll Metals Due Date		
Balance Due Shipper	583 41	

Checked: [illegible] Correct: [illegible] Approved:

AMERICAN SMELTING AND REFINING COMPANY
HAYDEN ARIZONA PLANT

SHIPPER Mc Farland & Hullinger DATE May 5, 1959
ADDRESS Box 238 Tooele, Utah SMELTER LOT 222
SHIPPING POINT Humboldt Ariz. B/a Prescott, Ariz SHIPPERS LOT 1
NAME OF MINE Blue Bell CLASS OF MATERIAL Crude

TERMS - CONTRACT **SCHEDULE** (Rates Subject to Change Without Notice) 126

DATE RECEIVED	CAR NUMBER	CAR INITIAL	WEIGHT GROSS	TARE	WET	% H_2O	DRY	SETTLEMENT DATE 4/23/59 METAL QUOTATIONS	
4/23	66047	ATSF x	210560	67900	142660	4.1	136811	Silver	.91375
"	65120	" x	212820	66280	146540	4.2	140385	Less	.015
								Net	.89875
								Copper	.31225
								Less	.035
								Net	.27725
		TOTAL			289200		277196		

ASSAY CONTENT PER TON	GOLD OUNCES	SILVER OUNCES		COPPER PERCENT	INSOL %	SiO_2 %	FE %	MN %	CAO %	ZN %	S %	AL_2O_3 %	AS %	SB %	BI %
Smelter	0.01	0.55		1.78	84.1	75.8	2.8		0.5			8.2			
Shipper	—	0.90		1.97											
Umpire				—											
Metallics															
Settle	NP	0.725		1.875											

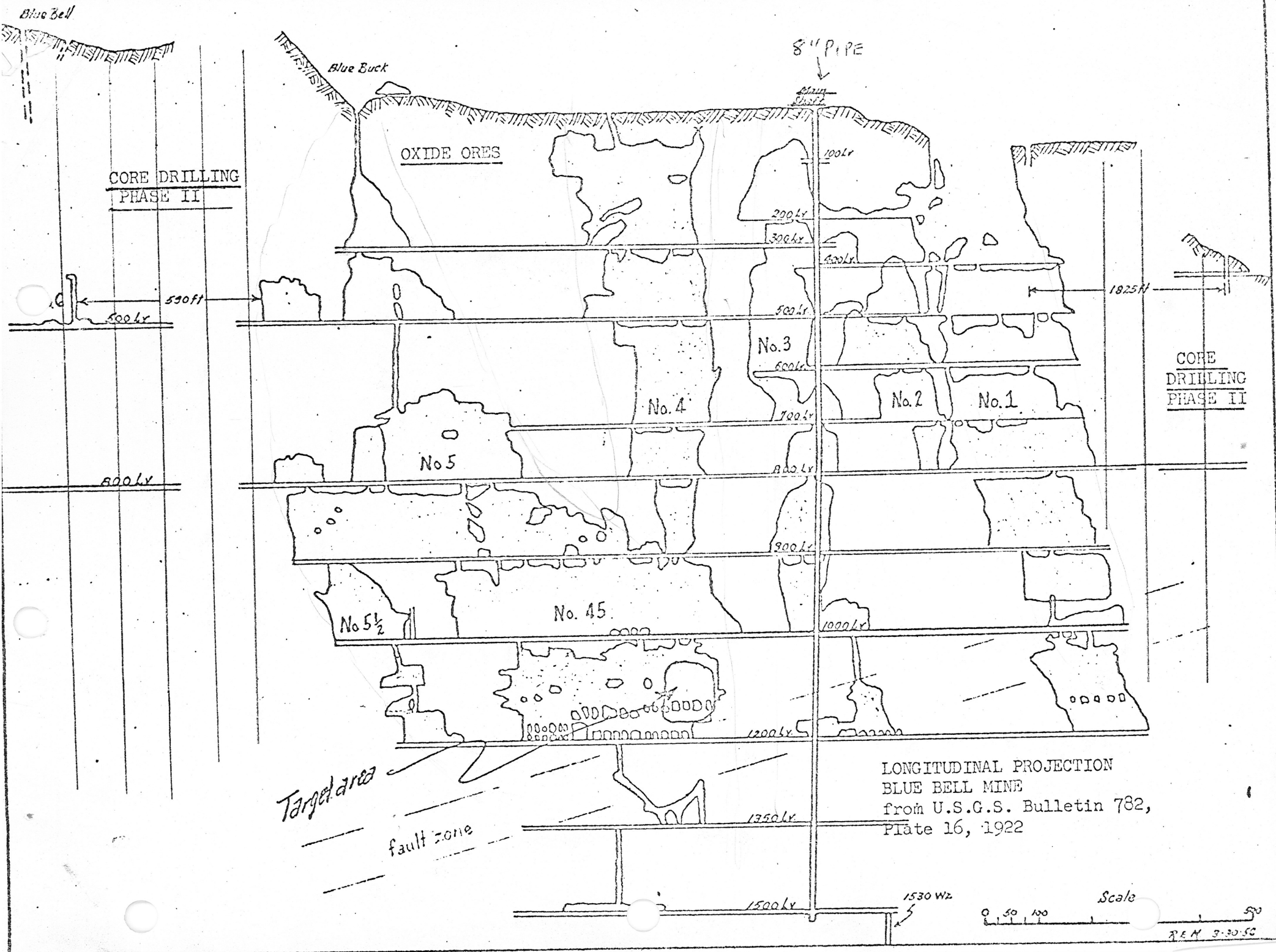
PAYMENT VALUE PER TON		PAY CONTENT	PRICE	AMOUNT	FREIGHT VALUE
Gold					
Silver - Less					
0.5 Oz.	%	.225	.89875	.20	.20
Copper - Less					
6 Lbs.	5 %	29.925	.27725	8.30	8.14
Gross Value				8.50	8.34
Deductions				1.50	1.50
Freight Valuation				X X X	1.84 = 1.76 Per Wet Ton
Net Value				7.00	@ 138.5980 Dry Tons

DEDUCTIONS	CHARGE	CREDIT
Base Charge	1.50	
(Incl. Escolator Clauses)		
Additional Treatment		
Acc. Value Over		
SiO_2		
CaO		
Net Deductions	1.50	

AMERICAN SMELTING & REFINING CO. HAYDEN, ARIZONA ... 1959

	CHARGE	CREDIT
Net Value 7.00 @ 138.5980 Dry Tons		970.19
Less Freight On 144.6000 Wet Tons @ $ Per Ton	451.15	
" Weighing 2 Cars @ 1.31 Per Car	2.62	
" Hauling		
" Representation Umpires Sampling		
" Royalty 10% to S.B. Owens Box 769 Tucson, Ariz.	51.64	
" Withheld Pending Return Of Silver Affidavit		
Toll Metals Due Date		
Balance Due Shipper	464.78	

Checked: [illegible] Correct: [illegible] Approved:



LONGITUDINAL PROJECTION
BLUE BELL MINE
from U.S.G.S. Bulletin 782,
Plate 16, 1922

Machinery & Equipment
Owned Out-Right by MMC and/or D.K. Pickens
To be used for Blue Bell Plant and to be included in Equipment Chattel Mortage to Patagonia Leasing

Item/#	Condition	New Cost	Market Price on orderly sale	Coe & Van Loo Estimate Estimate Market Price on orderly sale
1. 36'x24' Stainless Steel Centrifuge, 3 speed, 15 hp for Filling and Drying Cement Copper	Excellent	$16,500	$ 6500	$ 6,000
2. 500 gallon Agitated, Jacketed S.S. Reacter vessel for precipitating cement copper	Excellent	$10,000	$ 3500	$ 3,000
3. 6'x30' Reciprocating Rake Classifier Without 5 hp Drive for desliming oxide leaching ore.	Never Used	$14,000	$ 9000	$ 5,000
4. 1,000,000 BTU/hr (52 hp) Steam Boiler and Controls for drying cement, heat, and agitation	Excellent	$12,500	$ 5500	$ 5,000
5. 6'x6' Heavy Duty Truck with 4 ton crane - used Army Surplus	Good	$20,000	$ 3000	$ 3,000
		$73,000	$26,500	$22,000

P. E. COE, P.E.
HENRY L. LEGGE, P.E.
RALPH B. NUNNELLEY, P.E., L.S.
W. DAVID HUPP, P.E.
SAMUEL TUCKER, P.E.

COE AND VAN LOO
CONSULTING ENGINEERS, INC.
4831 NORTH 11TH STREET, SUITE 1
PHOENIX, ARIZONA 85014
TELEPHONE 264-6831

H. W. VAN LOO, P.E.
H. MASON COGGIN, P.E.
JOHN B. NELSON, P.E.
JACK P. TEBBENS, P.E.
J. E. COE

August 27, 1973

Mr. Donald D. Roper
Patagonia Leasing Company
222 West Osborn
Phoenix, Arizona 85013

Dear Mr. Roper:

Attached hereto is a comparison of estimated used prices for various prices of equipment as submitted by Mr. Dennis Pickins of Mine Management Corporation.

These estimates are based on consultation with a current dealer in second hand mining equipment and my own experience from association with the mining industry since 1955.

These prices represent values that would be drawn on an advertized sale by a national dealer over a period of perhaps 6 months. A quick sale or an auction would yield substantialy lower prices. Part of this equipment (Item No.1) should sell rapidly. The stainless steel will bring strong prices but the demand is small.

Please be advised that we have not personaly examined the equipment and have based prices on condition of equipment as stated.

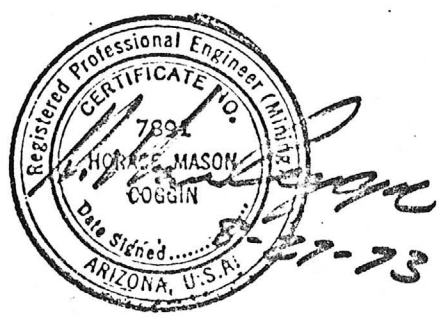
I have appreciated this opportunity to be of assistance to you and sincerely hope that we can be of service in the future.

Very truly yours,

COE & VAN LOO
Consulting Engineers, Inc.

H.M. Coggin

HMC/pbd



COE & VAN LOO ESTIMATE

Estimate Orderly Sale Price	Remarks
$30,000	This machine should be seen before an adequate opinion can be made to judge wear, abrasion etc. However, most equipment of this type & capacity should bring the price.
$ 5,000	To $2,000 varies with location and demand
$ 2,000	
$ 2,500	Price depends largly on accuracy of machine
$ 5,000	
$ 3,000	
$ 3,000	To $1,000 depending on condition
$ 3,000	Possible scrap price

MINE MANAGEMENT CORPORATION

P. O. BOX 7277
INDIAN SCHOOL STATION
PHOENIX, ARIZONA 85011

Western Office:

1505 FINANCIAL CENTER BLDG.
PHOENIX, ARIZONA 85012
602 - 274-8049

August 23, 1973

Mr. Robert Liddell
Patagonia Leasing Company
222 West Osborn Road
Phoenix, Arizona 85013

Dear Mr. Liddell:

Attached herewith please find the final equipment and machinery list and final estimate of cost of installation. We have also attached additional copies of the machinery and equipment which MMC owns and will give good title to Patagonia Leasing Company to be included as further security.

We have set up an appointment with Coe and Van Loo, professional consulting mining and civil engineers, for tomorrow to go over this list of equipment and have them give their professional opinion as to the sale value of the machinery and equipment package on an orderly basis. We will also ask them to give their professional opinion to Patagonia Leasing Company as to the value of the plant for sale as a unit. There is such a demand for copper and silver that the plant as a whole, in working condition, could probably be sold rather quickly at its cost.

Very truly yours,

MINE MANAGEMENT CORPORATION

Dennis K. Pickens
President

DKP:hj

Enclosures

Machinery & Equipment
Owned Out-Right by MMC and/or D.K. Pickens
To be used for Blue Bell Plant and to be included in Equipment
Chattel Mortage to Patagonia Leasing

Item/#	Condition	New Cost	Market Price on orderly sale
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4. 1,000,000 BTU/hr (52 hp) Steam Boiler and Controls for drying cement, heat, and agitation	Excellent	$12,500	$ 5500
5. 6'x6' Heavy Duty Truck with 4 ton crane - used Army Surplus	Good	$20,000	$ 3000
		$73,000	$26,500

$ 3,000 - 1,000	Price depends on demand & location
$ 2,000	
$ 2,000	Reasonable resale for pump in good condition
$ 5,000	
$65,500	