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ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES AZMILS DATA

PRIMARY NAME: BLUEBIRD CLAIMS

ALTERNATE NAMES:

MARICOPA COUNTY MILS NUMBER: 334

LOCATION: TOWNSHIP 7 N RANGE 4 W SECTION 36 QUARTER NW
LATITUDE: N 33DEG 54MIN 27SEC LONGITUDE: W 112DEG 37MIN 48SEC
TOPO MAP NAME: WICKENBURG - 7.5 MIN

CURRENT STATUS: DEVEL DEPOSIT

COMMODITY:

COPPER OXIDE
IRON HEMATITE

BIBLIOGRAPHY:

USGS WICKENBURG QUAD
ADMMR BLUEBIRD CLAIMS FILE
ADMMR HERCULES MINING CORP. FILE

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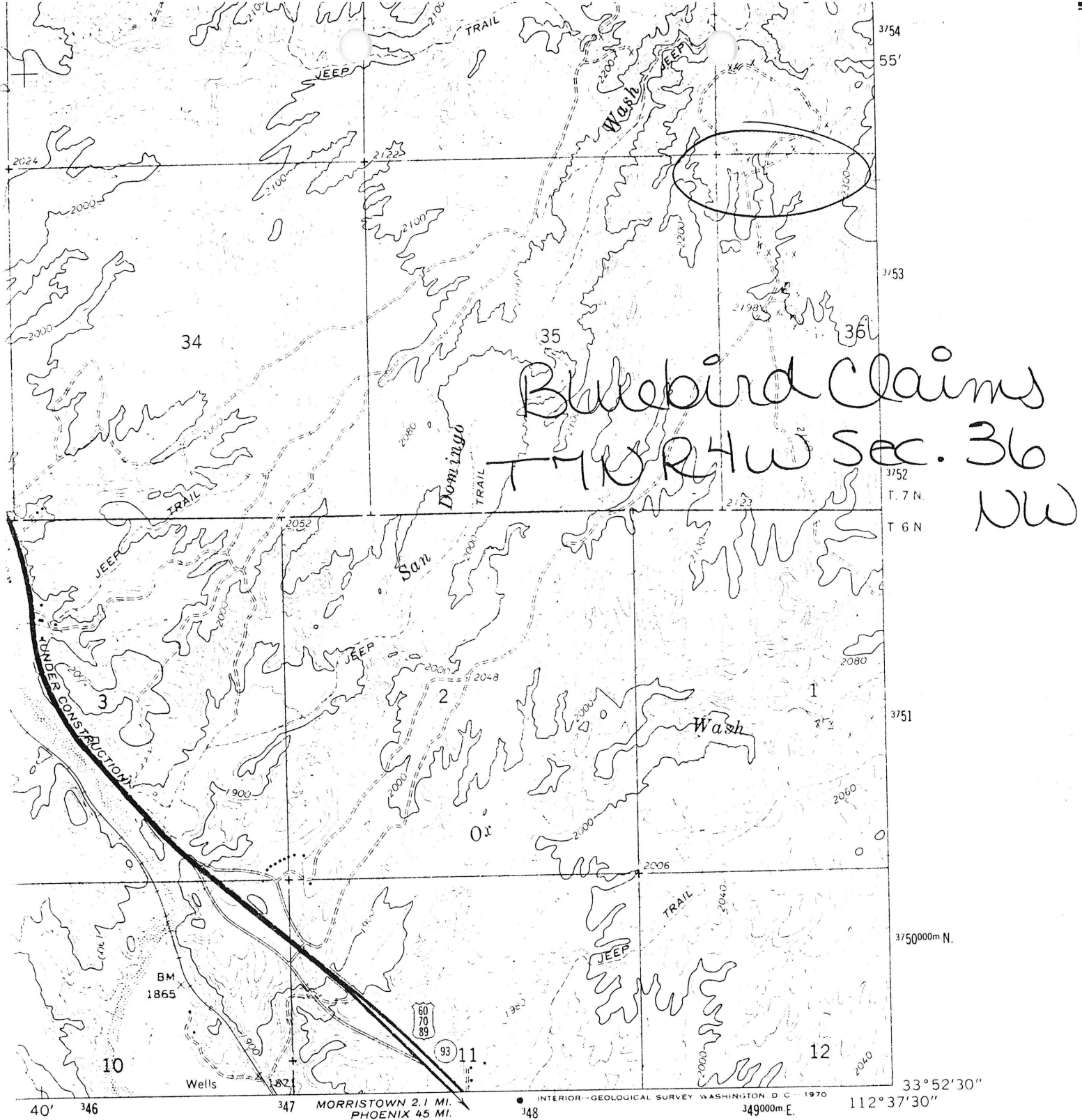
CURRENT STATUS: DEVEL DEPOSIT

COMMODITY:

COPPER-(M) OXIDE-RECOVERABLE
IRON-(M) HEMATITE-RECOVERABLE

BIBLIOGRAPHY:

USGS WICKENBURG QUAD
ADMR BLUEBIRD CLAIMS FILE
ADMMR Hercules Mining Corp. FILE



Bluebird Claims
 T.M. & R.H.W. Sec. 36
 NW

ROAD CLASSIFICATION

- Heavy-duty Light-duty
- Medium-duty Unimproved dirt
- U. S. Route State Route



ARIZONA MAP SHOP **WICKENBURG, ARIZ.**
 1315 N. CENTRAL AVE. N3352.5—W11237.5/7.5
 PHOENIX, AZ 85004
 (602) 258-9345 1964

(WITTMANN)
 3451 SE

RECOVERY OF PRECIOUS METALS FROM DIFFICULT ORES

FIELD OF INVENTION

The present invention relates to the recovery of minerals from ores and, more particularly, to the extraction of precious metals by lixiviation, particularly from ores which are otherwise difficult to handle.

BACKGROUND OF THE INVENTION

Lixiviation is a technique used to extract a soluble component from a solid mixture by washing or percolation, i.e. leaching. World-wide present practice for extracting precious metals by lixiviation is carried out using cyanide solutions, mainly sodium cyanide. Because cyanides are so highly toxic, and because they cause substantial environmental problems, the use of cyanides is now falling into disfavor. Moreover, cyanides are costly materials which makes their use economically disadvantageous. Moreover, the use of cyanide solutions is at best difficult and at worst impossible with respect to some ores, especially those containing copper and/or manganese, since these materials easily contaminate the cyanide; and such materials are frequently present to the extent that poor recoveries of the precious metals are obtained using cyanide solutions.

Indeed, with respect to the last problem mentioned immediately above, there are many difficult-to-treat ores in existence which contain manganese and significant quantities of silver and/or gold, and from which it would be desirable to extract these precious metals, and if a suitable and sufficiently inexpensive technique existed for such recovery. However, present techniques are simply not adequate and these ores remain an untapped mineral resource.

Copper-bearing sulphur-containing ores, such as chalcopyrite, often contain small quantities of gold and silver which, desirably, should be recovered. Although the problem of recovering such precious metals, as well as the copper, has received considerable attention in the past, much of the work carried out in this connection, insofar as commercial processing is concerned, has involved the recovery of precious metals using pyrometallurgical processes for the recovery of the copper.

One attempt to solve the above identified problems is disclosed in the Genik-Sass-Berecowsky et al U.S. Pat. No. 4,070,182. This patent proposes the use of ammonium thiosulfate as a secondary leach for the recovery of silver and gold, in conjunction with a hydrometallurgical process for the recovery of copper from the copper-bearing sulphidic ore. FIG. 3 of this patent shows a flow diagram for the extraction of precious metals from chalcopyrite concentrate before the main leaching step for extraction of copper. However, this patent appears to provide no instruction as to how to maintain the thiosulphate radical stable, and does not even appear to recognize the problem of thiosulphate instability. This patent also does not clearly teach the necessity of maintaining an alkaline pH in the thiosulfate leach liquor when starting with a raw ore, although the need for an alkaline pH is mentioned in conjunction with thiosulfate extraction following a copper recovery leach. Furthermore, this patent provides no guidance with respect to the extraction of precious metals from difficult ores containing manganese.

SUMMARY OF THE INVENTION

It is, accordingly, an object of the instant invention to overcome deficiencies in the prior art, such as indicated above.

It is another object to provide for the improved extraction of precious metals from ores by lixiviation.

It is a further object to provide an improved process of extracting precious metals, such as gold and silver, by lixiviation, using an ammonium thiosulfate leach liquor.

It is yet another object of the instant invention to provide for the extraction of precious metals from difficult-to-treat ores, and particularly such ores containing copper and/or manganese, and most particularly such ores containing manganese.

It is yet a further object to provide a method for recovery of precious metals from an ore containing same, which method comprises lixiviating the precious metals, using an ammonium thiosulfate leach liquor at an alkaline pH and containing copper and sulfite ions.

These and other objects and the nature and advantages of the instant invention will be more apparent from the following detailed description of various embodiments, such detailed description being offered illustratively and not limitatively.

DETAILED DESCRIPTION OF EMBODIMENTS

In accordance with the instant invention, it has been found that the problems extant in the prior art, including those indicated above, are largely overcome by lixiviation in ammonium thiosulfate solutions containing copper and at least a trace of sulfite ions. With the use of such a leach liquor good recoveries are achieved in less time compared with the prior art use of cyanide, and without the possibility of contamination of streams and surroundings. Moreover, the process constitutes an improvement of the thiosulfate leaching of U.S. Pat. No. 4,070,182 by providing better control of the stability of the thiosulfate radical.

After the lixiviation has been completed, recovery of the precious metals from the leach liquor can be carried out in the same ways as are conventionally used for recovering such metals from cyanide solutions, namely by the use of metallic zinc, iron or copper; by electrolysis; or by the addition of soluble sulfides to recover a sulfide precipitate. The stripped ammonium thiosulfate solution is thereby rejuvenated and can be recycled for reuse in the instant process.

The present process is especially advantageous for the recovery of precious metals from difficult-to-treat ores, namely those which are contaminated by copper and/or manganese, less frequently arsenic, antimony, selenium, tellurium and possibly other base metals as well. Copper and manganese, and particularly manganese, are especially poisonous to cyanide solutions, and because thiosulfate is much less expensive, stronger leach solutions may be used, which will overcome the disadvantages of such poisons as manganese and lead. A particular problem exists with manganese ores, as many such ores presently exist which, under previous technology, are simply unusable. The instant invention overcomes the disadvantages of high manganese content, and good recoveries are obtained merely at the expense of the use of more reagent and, at times, maintaining a higher quantity of sulfite in the leach solution than would otherwise be needed in accordance with the instant invention.

In any lixiviation process, the strength of the leach solution is an important consideration. However, with cyanide lixiviation the high toxicity and the high cost of the chemical prohibit consideration of using more than about 1-2% solutions, thereby requiring long retention times and resultant large solution tanks. These problems are eliminated by the instant invention; thus, in the present invention ammonium thiosulfate, which is a relatively low cost and non-toxic material, can be used in much stronger solutions than is permissible with cyanide, namely as high as 60%. Solutions in the range of 12-25% are particularly satisfactory, it being understood that the higher the solution strength the less the time needed for completing the leaching. In some ores, as little as 2% ammonium thiosulfate gives adequate results.

An important aspect of the present invention is the inclusion of copper in the leach solution or lixiviation liquor. This, of course, presents no problem if the ore itself contains copper, such as the ores treated in accordance with U.S. Pat. No. 4,070,182. Some copper must be present for good recovery, and if the ore itself contains copper, this will most generally suffice. If not, a copper salt or copper containing ore should be added to supplement and maintain the concentration required for best results. In general, and consistent with U.S. Pat. No. 4,070,182, it has been found that a copper concentration of 1-4 g/l is desirable, although this will vary somewhat from ore to ore.

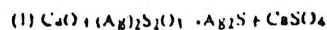
Another important requirement is to maintain the pH of the leach solution in the alkaline range, preferably at least 7.5 and most preferably at least 8. Ammonium hydroxide (ammonia titratable with dilute standard acid) is the preferred means for maintaining the desired pH. Available ammonia not only accelerates the rate of solution of the precious metal in the leach liquor, but also helps to stabilize the ammonium thiosulfate.

The presence of sulfite ions in the leach solution is an essential aspect of the invention. The sulfite ion is necessary to inhibit the decomposition of the thiosulfate which, if permitted to occur, would result in precipitation of silver sulfide with resultant loss of recovery. While the quantity of sulfite present need not be great, as noted below, it is essential that the sulfite be present throughout the lixiviation process. Quantities as little as trace amounts of sulfite will assure stability of the solution, but in view of the continuously changing conditions which inherently occur in the lixiviation process, it is desirable that the sulfite ion be present in a quantity of at least 0.05%. In the case where the ores being treated are refractory ores, in particular ores containing significant quantities of manganese, up to three or four percent, e.g. 1-4%, of sulfite ions are desirable to maintain stability of the ammonium thiosulfate.

Sulfite ions can be provided in a number of ways. The most direct is by simply adding ammonium sulfite or ammonium bisulfite to the leaching solution; other sulfite salts may also be used. In some cases it is desirable to maintain sulfite concentration by adding sulfur dioxide to the aminoniacal leach solution, but if this method is chosen, precaution must be taken to assure that the solution does not become acid and that the pH is preferably maintained at 8 or above, it being understood that sulphur dioxide is an acid source.

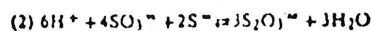
The importance of maintaining at least a trace of sulfite anion ($\text{SO}_3 = -$) in the leaching liquor during lixiviation is important because without the presence of sulfite, the thiosulfate radical becomes unstable result-

ing in the production of sulfite and the precipitation of silver as represented by the following equation:



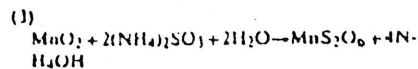
This equation is representative of the irreversible reactions which take place not only in the presence of calcium oxide, but also with the oxides of iron, aluminum, manganese and copper; and such a reaction may even take place with ammonium hydroxide in the absence of the sulfite anion. The sulfite ion prevents the formation of any free divalent sulphur necessary for the formation and precipitation of silver, and automatic entrainment and loss of gold. In treating raw ores containing oxides of the metals listed above which serve to poison the extraction process, particularly manganese, the conditions are quite variable depending on the ore and thus it is essential to prevent decomposition of the thiosulfate following the general mechanism of formula (1) above. Maintaining at least a trace of sulfite ion, preferable at least 0.05% and most preferably 0.1-2% sulfite ion, has been found to stabilize the thiosulfate and thereby preventing precipitation of already dissolved precious metal.

An equilibrium reaction occurs in the thiosulfate leach liquor as represented by the following equation (2):



It is clear that without the sulfite ion being present, the equilibrium would move to the left, thereby producing divalent sulfide sulphur (S^{2-}) which precipitates metal sulfides thereby losing them from the leaching solution. Equilibrium reaction (2) thereby readily illustrates the need for continued presence of some sulfite to drive the reaction (2) to the right thereby preventing the decomposition of the thiosulfate with loss of not only reagents but loss of values from the leaching solution.

Manganese containing precious metal ores have an unusually high requirement for sulfite ion, because of the oxydizing capability of various manganic compounds, especially prevalent among which is manganese oxide (MnO_2). This high requirement for sulfite is demonstrated by equation (3) below:



The reaction demonstrated by equation (3) is beneficial with many ores, because the metals are in a complex combination with manganese, and such reaction serves to free the desirable metals from the manganese so that such desirable metals can then be lixiviated. However, the undesirable aspect of this reaction is that it consumes sulfite anion and it is therefore important that when acting on manganese containing ores in accordance with the present invention, special precautions be taken to assure the continued presence of sulfite thereby preventing equation (2) from going to the left with the resultant loss of these desired precious metals from the leaching solution.

The lixiviation is preferably carried out at a temperature of 40°-60° C., preferably 50°-60° C. Temperatures much greater than 60° C. make it difficult to retain the ammonium hydroxide content needed for best results.

It will be obvious to those skilled in the art that various changes may be made without departing from the scope of the invention and the invention is not to be considered limited to what is described in the specification.

2. A method in accordance with claim 1, wherein said ore is a manganese containing ore and said sulfite ion concentration is maintained at a level of at least 0.1%.

3. A method in accordance with claim 1, wherein said ore contains at least 0.5% manganese and said sulfite ion

NAME AND ASSAY Au and Ag (oz/ton) (Others as percent)	Solution		Solids (Tails)		Solution		Solids (Tails)	
	% thio-sulfate	% Sulfite	Assay oz/t	Percent Recovery	% thio-sulfate	% sulfite	Assay oz/t	Percent Recovery
(1) Belmont Ore Au 0.012 Ag 10.10 Mn 22.4%	18.4	1.3	0.002 Au 1.80 Ag	None Au 82.2% Ag	17.3	Nil	0.002 Au 5.78 Ag	None Au 42.8%
(2) PROSPECTO - Mexico Au 0.079 Ag 12.0 Mn % 2.1 Cu % 1.1%	19.7	0.9	0.004 Au 1.98 Ag	95.0% Au 83.5% Ag	18.6	Nil	0.050 Au 8.70 Ag	16.7% Au 27.5% Ag
(3) Miranda 2062 Au 0.188 Ag 12.0 Mn % 18.0 Cu % 2.0	17.7	1.4	0.004 Au 0.56 Ag	50.0% 95.3%	17.5	Nil	0.006 Au 4.40 Ag	25% 63.3%
(4) Guanacevi Mexico Au 0.020 Ag 0.215 Mn % 7.3	18.8	0.8	0.040 Au 0.20 Ag	80.6% 96.2%	18.2	Nil	0.014 Au 2.80 Ag	30% 47.2%
(5) Cruz de Mayo Mexico Au 0.012 Ag 0.212 Mn % 0.40	19.3	0.70	0.006 Au 2.02 Ag	50.0% 84.3%	16.4	Nil	0.012 Au 6.22 Ag	Zero 5.8%
(6) Duval Corp - Battle Mountain Au 0.008 Cu % 0.3%	18.0	1.0	0.004 Au 0.02 Ag	95.5% 96.0%	17.2	Nil	0.004 Au 0.05 Ag	95.5% 90.0%

What is claimed is:

1. In a method for the recovery of precious metals including gold and silver from an ore containing same, comprising lixiviating said precious metals from said ore using an ammonium thiosulfate liquor as the lixiviating agent in the presence of copper, followed by recovering said precious metals from said ammonium thiosulfate liquor, the improvement comprising:

maintaining the pH of said liquor during lixiviation at a value of at least 7.5 with ammonia, and simultaneously maintaining a sulfite ion concentration of at least 0.05%.

concentration is maintained at 1-4%.

4. A process in accordance with claim 1, wherein the sulfite ion concentration is maintained by generation in situ from the addition of sulfur dioxide.

5. A method in accordance with claim 1, wherein the temperature is maintained at 40°-60° C.

6. A method in accordance with claim 1, wherein after said recovery of said precious metals, said ammonium thiosulfate liquor is recycled and additional thiosulfate is generated in situ by adding extra sulfite and sulfide, and reacting the same to form the additional thiosulfate.

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BLUEBIRD CLAIMS

MARICOPA COUNTY

RRB WR 9/5/80: Dave Zack and Ed Brady of Copper State Leaching Metals, Inc.,
1350 North 21st Avenue, Phoenix, Arizona 85009, phone 257-0422, are investigating
the Bluebird Claims near Morristown, Maricopa County.

August 18, 1982

[REDACTED]
[REDACTED]
[REDACTED]
Phoenix, AZ

RE: Ore Mining & Processing of Blue Hills Mines

Dear Mr. [REDACTED]

Per your instructions, we have tested and processed the "paint ore" (Red hematite & magnetite) from the Blue Hills Mining claims near Morristown, AZ. The geology of these claims are described in the reports (enclosed) by Larry Kersey (Alanco) and Dr. Dusenberry and we have made no attempt to amplify or expound on these reports.

The claims are highly mineralized with commercial quantities of copper, nickel, various rare earths, gold, silver, iron and platinum. We've worked only the precious metals and rare earths from this ore. We have the ore assays and analysis and have used this data in our approaches to recover the microscopic (colloidal) precious metals.

The red "paint ore" and the brown outcroppings are very abundant. The economical recovery of the values in the red ore has been our work. There are various surface rocks including Turquoise and Chrysocolla. These, along with the large Rose Quartz veins may produce a profitable side line in gem and commercial quality crystals. The Chrysocolla can be soked in clear epoxy to give it the hardness of Turquoise and worked and polished the same.

August 18, 1982
[REDACTED]

Page Two

(As an interesting side note, one of the crown jewels of England, The Black Knight "Ruby", is, in fact, a Rose Quartz crystal stone and is more valuable than would be a Ruby of the same size).

Your instructions to us were to determine:

- A) Whether the mine had valuable ore; and
- B) Whether the ore could be economically extracted.

We have concentrated our efforts to date of the red "paint ore" that is the predominant mineral in the mine and here are our results.

The red ore is rich in gold, silver and the platinum group metals. Our initial experiments, run at the limited facilities of Jack Swanner's mill and laboratory and the Golden Turkey mine site were less than precise in the beginning since we wanted basic processing answers to values shown by the various assays obtained prior to our involvement.

We have concluded and can verify that the ore is rich in gold and silver and the Pt. group metals and that the ore can be processed in large commercial quantities.

When you contracted with us to conduct the work on this mine, you supplied us with the following information relative to your partners/predecessors attempts to process the ore. It is

our understanding that \$20,000 had been spent toward a chemist/metallurgist of unknown credentials, who pre-roasted the ore in some "secret" chemical presolution for several hours maintaining a 40°C temperature with constant agitation. Following the "pre-roast" the ore in solution was pumped into a second vat and treated with an unknown quantity of chemicals in the cyanide group. This process had apparently consistently produced gold "buttons" showing values of 1½ ounces of gold (Au) per ton, though this processor failed to provide details of his methods. We suspect, as a matter of opinion only, that the "pre-roast" consisted of agitating the ore in a combination of water and lime to raise the Ph to about 10 - 11 and to provide ample oxidation to the solution. This probably burned off the various sulfides prior to the cyanide treatment. However, we made no attempt to duplicate this process since we felt the acid leach, Thiourea method (developed in Russia in 1941) would better lend itself to the recovery of this ore.

Our results, using the acidic Thiourea method has varied incorporating other methods used to compliment the basic strategy from passable to very good. We have not yet been able to recover the high values shown in small (ie. 30 to 300 gram) assays, but our results are very good. In our opinion, subject to ore body verification, you may well have the richest group of contiguous mines in Arizona.

Despite various approaches to chemical leaching of the ore, we have not yet failed to obtain values of less than $1\frac{1}{2}$ oz. Au (gold) per ton and various large readings of Ag (silver) per ton. Details follow.

The use of Thiourea for processing complex, sub-micron, precious metals is not new to mining, but has not been thoroughly used in the U. S. Due to our relative recent introduction to this method, we expect to find better recoveries and more economical applications by continually refining this technique. We have employed several variations as well that we have reported to you, and you are, of course, entitled to present to whomever you choose, but we feel these techniques are valuable unto themselves and request that you be judicious in disbursement of them.

After numerous runs of laboratory size samples at 30 to 300 grams (representing 1 to 10 ton samples in that each milligram recovered represents one ounce per ton), we proceeded, at your request to collect and process a full 5 ton sample to be sure that the results could be duplicated in commercial quantities. The results of this and others "lab" results are attached.

In the lab quantities we have run, we have recoveries of Au (gold) in the amounts ranging from $1\frac{1}{2}$ oz. per ton to over 100 ounces per ton. We believe the extraordinarily high results can probably be discounted due to relatively large particles

of free gold that are in the various samples tested. The Ag (silver) ranged from about 100 ounces per ton to over 2,000 ounces per ton. Again, we associate the extremely high results to free (native) silver particles that some of the ore contains to show the extremely high assays, but we certainly don't expect the large results in commercial quantities.

We observed the random collection of surface samples collected by your employee, Frank Nicholson, over the 540 acre site for examination at Kennecott where his brother was a manager. Their test for Au (gold) on the approximate one ton sample was $3\frac{1}{2}$ ounces per ton. The results were not documented since Mr. Nicholson's brother ran the tests as a favor to his brother, without authorization. We don't doubt these results since they are so close to our own and others.

We found that the high mineralization of the ore, particularly the sulfides and coppers, make the conventional cyanide leaching methods impracticable for this ore. None-the-less, our recoveries with cyanide, when grinding the ore to 200 mesh, then pre-treating with the botanical agent mentioned earlier, never failed to yield results of less than one ounce per ton of Au (gold) and substantial amounts of silver.

Our best results were obtained with the Thiourea treatments using sulphuric acid to drop the Ph to about 2½. As of this writing, the first ton of ore produced about 250 gallons of leached solution that was 62½ grams heavier per gallon than water of the same volume. Using the various precipitation methods described later, our first run produced about 82 ounces of precious metals per ton of head ore, and we are confident that continued experimentation with ionization, the botanical pre-treatment, etc. will yield results closer to those obtained in the lab quantity assays.

In quantity runs, we are convinced that recoveries of 82 ounces or more of precious metals per ton can be consistently obtained at total processing cost before taxes, interest, and refinery discounts, of less than \$50.00 per ton initially, increasing with depth, including all chemicals, direct cost, and reasonable operating overheads. Due to the high recoveries coupled with low operating cost, we are convinced that this mine will prove to be very substantial. In our combined experience of over 50 years in the industry, we believe this group of claims to be the richest on a volume basis in our experience in Arizona.

On the basis of our examinations of the claims, the ore, and the extant shafts on the property, we believe a combined ore body of 100,000,000 cubic yards or about 150 million tons is a minimum estimation of the available ore from this site. We expect the ore to become richer when it hits the sulfide zones.

We discovered, rather by accident, in milling the first ton of ore to 8 guages, that the smaller particles reduced to "slime" held the best values suggesting that the precious metals are adhering to the cleavages and fracture zones, therefore making possible, during our grinding and classifying to reduce the weight of ore to be leached at least 25%. This, as many of the foregoing results should be confirmed by additional experimentation and testing, even though we are convinced that our results can be easily duplicated by any competent group gathering similar ore throughout the mine site and leaching and precipitating the valuable metals using this process.

Our only explanation as to why the areas hasn't been claimed and worked by the larger, more sophisticated companies lies in the nature of the ore. First, it's microscopic. Second, the mineral impurities make it rather nonresponsive to the various causes that led to it's use are rather timely for you.

We expect the hard hematite outcroppings with their high osmium, iridium and other platinum group metals to be equally susceptible to the acidic Thiourea leach recovery, and expect to verify or disprove this assumption in the next few days.

While the high (about 9 ounces per ton of osmium and 3 ounces per ton of iridium) may not be completely recoverable from the head ore, sufficient quantities will, no doubt, enable you to offer large economical recoveries in this brown ore outcroppings as well.

We will be able in the next 5 to 10 days to report our work with this ore with accompanying flow sheets (comparable to those attached for the red ore). Osmium is presently selling from \$150.00 to \$155.00 (per the EMJ), while iridium has almost insatiable market at \$360.00 per ounce. The Rhodium is similar in market and value to the iridium. (Please note the attached A.S.T. report on the brown ore).

We estimate the cost of a 150 ton per day processing facility for the red ore to be about \$150,000.00. The flow sheets are attached. We know, by actual, unrefined experience that we are recovering 82 ounces of noble metal per ton - exact breakdown within 5 days - and we have sufficient experience to suggest that no more than 70 ounces are silver, therefore minimal recoveries at 150 tons per day should be (conservative metal prices used), $(70 \times \$6.00) + (12 \times \$300.00) = \$4,020.00$ with cost of about \$50.00 per ton (excluding taxes, amortization and depreciatin).

This volume of processed ore will yield a net of about \$600,000.00 per day. Extractions and marketing of the osmium and iridium would, depending on volume, push this figure even higher.

Per your request, we have considered your approach to sophisticated mine investors in that a qualified prospective investor gather samples of the red ore from various random locations on the mine and follow our processing procedures to verify our results.

This seems extremely reasonable to us and is certainly a way to provide proof positive that the high values found by us indicates the presence of an extremely large, extremely rich, ore body that if processed in large quantities, say 10,000 tons per day, could make this operation a major mining entity. In all our years in mining and mining related work, this is the most exciting property and ore we have examined in Arizona.

Our methods of processing the red ore is attached: (EXHIBIT "A")

We will provide you with further information as we proceed, but with the existing results, we suggest construction of the processing plant and excavation of the red ore be commenced as soon as reasonably possible since the basic recovery structure can be refined and the cost of the processing plant will probably pay-out in the first day of processing.

Very Truly Yours,

Gene W. Bennett, President
Transcon Mining and Milling Corp.
P.O. Box 125
Mayer, AZ 86333



P. O. Box 5843, Tucson, Arizona 85703

(602) 889-5248

BRIEF GEOLOGICAL EVALUATION

HERCULES MINING CORPORATION CLAIMS

Sections 25, 26, 35 and 36, Township 7 North, Range 4 West
Wickenburg and Red Picacho Quad Maps
San Domingo Mining District
Maricopa County, Arizona
August 16, 1981

Location

The claim property can be easily reached by two wheel drive vehicle and is located approximately 48 miles North-West of Phoenix, Arizona... The claims are reached by traveling West from Phoenix on Highway 93 to the Garden City Road, approximately 2.5 miles North-West of Morristown, Arizona. From Highway 93, it's approximately a 3 mile drive to reach the center of the 27 claim block. The topography of the area would lend itself to a year round operation.

Brief History and Geologic Description

The claims are in the San Domingo Mining District, a gold placer district and close to the lode gold mining area of the Red Picacho District. The work, which has been done to date on the property, comprises two shafts of considerable size, as representative by the amount of dumps near them, on the Blue Bird Claims #1 and #2, open pit and trenching around the Southern Boundary of the Last Stand #1 and #2 Claims, placer operations on the Northern Boundary of the claim block and several prospect pits and trenches scattered through-

out the claim block area. No production records were found concerning the Blue Bird Mine or of the San Domingo Mining District.

The geological formations in the area consists of Precambrian schists, which includes diorite, rhyolite and greenstone, Cretaceous Andesite and Tertiary gravels and conglomerates.

The predominant mineralized zones are contained in the North 30° to 55° West striking, steeply dipping to the South-West, faults and quartz sericite veins. This has been where the bulk of the mining activity has been done, with the exclusion of the placer workings in the Northern portion of the claim block. Associated altered zones on contact zones and fault intersect areas contain localized mineralization of copper, minor galena and pyrite, and very heavy FeO_x .

Good continuance of copper and FeO_x was observed along the entire length of the main quartz-sericite veins associated with the Blue Bird claims area, with several smaller and discontinuous veins, also containing good FeO_x and localized copper. Veins in the Blue Bird Mine area ranged in thickness from a few inches to ten feet, where observed, and having strike lengths of just a few hundred feet to several thousand feet, as traced on the surface and observed in prospect pits.

All workings were within 100 feet in depth, but the shafts were reported to go much deeper, as reported by the owners of the property.

In the Northern portion of the claims, the major work has been done in faults and contact zones, with a North 30° to 60° West-strike. Several large areas of very heavy FeO_x mineralization were found associated with the faults and contact zones.

Mineralization

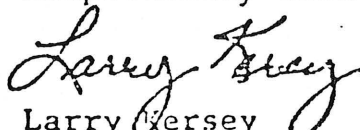
The mineralization is comprised of very heavy FeO_x (some specular hematite), light galena and minor pyrite, MnO , good copper (malachite, azurite, chrysocolla and copper staining), is contained in the quartz-sericite veins and faults, predominantly at intersect areas. The contact zones and alteration zones contain very heavy FeO_x , with minor copper and pyrite mineralization.

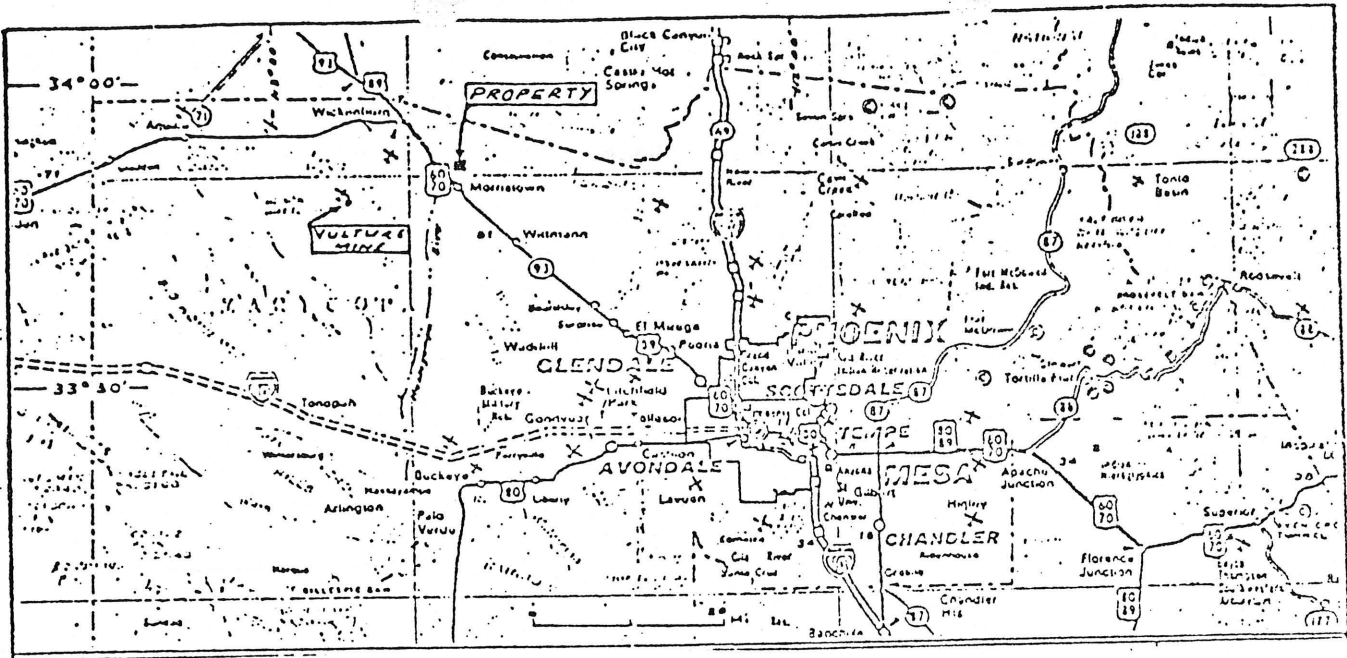
Reported values from assay work shown to me by the owners were very encouraging and indicated values of economic grade for gold, silver and copper.

The potential of the property is very good, based on information supplied and observed on the ground, for either underground (shaft-drift) mining operation to explore the quartz-sericite veins, open trench - open pit operations to explore the large heavily FeO_x mineralized contact zones and possibly a placer type operation in the Northern and Western Sections of the claim block bordering the San Domingo Wash area.

It is recommended that the property be completely mapped with all structural and mineralogical features being plotted and detailed mapping and sampling of all old workings in the area.

Respectfully submitted,


Larry Bersey
Senior Geologist



State Mineral Leases as follows:

#3606 to 3619 inclusive, also known as BLUEBIRD MINING CLAIMS NOS. 1, 2, 3, 4, 5, 9, 10, 11, 12, 13, 14, 15, 16, 17. Township 7 N Range 4 W of the G&SRB&M Maricopa County, Arizona.

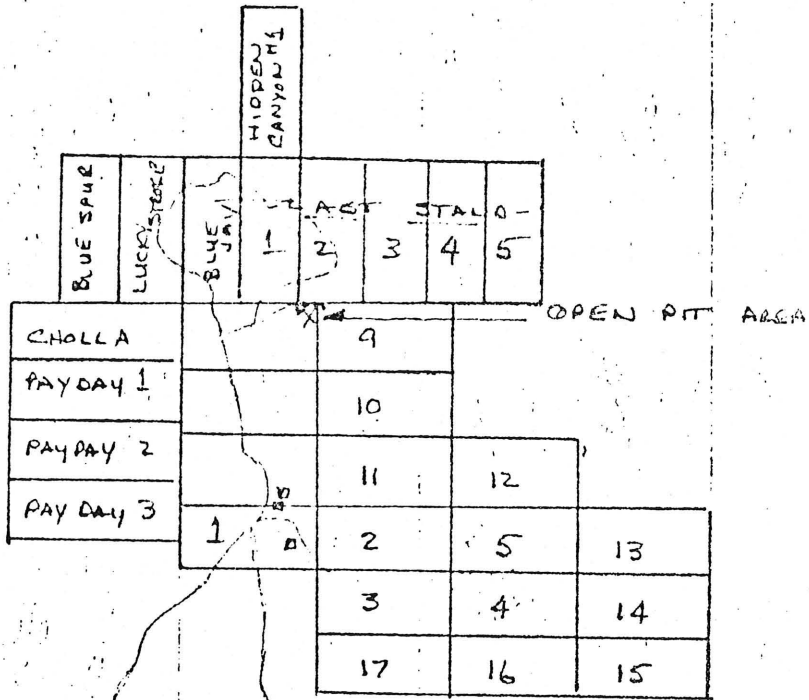
Federal Mining Claims as Follows:

Last Stand #1
 Last Stand #2
 Last Stand #3
 Last Stand #4, and
 Last Stand #5, all in South half (S¹/₂) of Section Twenty-five (25), Township Seven (7) North, Range Four (4) West, of the G&SRB&M, Maricopa County, Arizona, all in San Domingo Mining District;

Pay Day #1
 Pay Day #2
 Pay Day #3, and
 Cholla, all in Northeast quarter (NE¹/₄) of Section Thirty-five (35), Township Seven (7) North, Range Four (4) West G&SRB&M, Maricopa County, Arizona, all in San Domingo Mining District;

Blue Jay; and
 Hidden Canyon #1, both in Section Twenty-five (25), Township Seven (7) North, Range Four (4) West G&SRB&M, Maricopa County, Arizona, all in San Domingo Mining District;

Blue Spur; and
 Lucky Stroke, both in Southeast quarter (SE¹/₄) of Section Twenty-six (26), Township Seven (7) North, Range Four (4) West G&SRB&M, Maricopa County, Arizona, all in San Domingo Mining District.



— CLAIM BOUNDARIES
 --- ROAD AND PROPERTY

HERBERTS MINING CO.
CLAIM MAP
 PROJECT 430
 SECTIONS 20-21
 T17N R4W
 SAN DOMINGO CO.
 DISTRICT
 MARICOPA COUNTY
 ARIZONA

APPROXIMATE SCALE
 1:24000

DATE: 1/10/00
 DRAWN BY: J. L. ...

WILLIAM L. DUSENBERRY Ph.D.

CONSULTANT FOR THE PHYSICAL SCIENCES OF
ELECTRONICS - MINERALOGY - CHEMISTRY

RESUME [AS OF 1981]

PLEASE REFER TO THE ABOVE CAPTIONS ON THIS LETTERHEAD AS TO MY VARIOUS SCHOOLS OF DISCIPLINE AS I HAVE FOLLOWED THE ABOVE IN ORDER.

ELECTRONICS:

A NON-CANCELLABLE FEDERAL COMMUNICATIONS LICENSE #1834054 DATED FEB. 2, 1955. DEVELOPED THE UHF CIRCUIT FOR THE MUNTZ TELEVISION MANUFACTURING COMPANY (1953) CO-FOUNDED THE LARGEST TELEVISION TOWER MANUFACTURING COMPANY, THE ROHN MFG. CO. BELLEVUE, ILL. [1955]. FOUNDED ARIZONA TUBE MFG. CO. IN 1958 PRODUCING CATHODE RAY TUBES FOR THE TELEVISION INDUSTRY, AVIATION AND U.S. GOVERNMENT.

MINERALOGY:

CATALOGUED 2013 MINERALS AND THEIR CHEMICAL CONTENTS IN MY LATTER SCHOOL YEARS. HAVE MY OWN LABORATORY COMPLETE WITH SPECTROGRAPHIC INSTRUMENTS, BLAST FURNACE AND ALL OF OTHER EQUIPMENT NECESSARY TO ANALYZE ANY MINERALS. ADMINISTRATIVE ASSISTANT TO PRESIDENT DYSART OF AEROSPACE MINERALS [1960] WHICH OWNED THE FAMOUS AMBROSIA LAKE AT FARMINGTON, NEW MEXICO WHICH CONTAINED 70% OF THE NATION'S URANIUM. DEVELOPED A PROCESS TO IMMEDIATELY DETERMINE THE QUALITY AND PRESENCE OF URANIUM. OWNED THE HAMBER COMPANY OF PHOENIX, ARIZ. [1976] SMELTING SILVER, RECEIVED U. S. PATENT # 3960550 FOR A METHOD OF SILVER RECOVERY. MINING ENGINEER FOR THE SAN JUAN TUNGSTEN MINE AT SELLS, AZ. [1977] MINING ENGINEER FOR SILVER SUGAR MINE AT CROWN KING, AZ. [1978] VICE-PRESIDENT GOLDEN CHEST MINE [1979 TO DATE] MURRAY, IDAHO PRODUCING GOLD AND SILVER AT A 250 TON PER DAY CAPACITY. I HAVE SUFFICIENT TIME TO DO PERSONAL GEOLOGIC, TOPOGRAPHIC, ASSAYING AND MINING EVALUATIONS AS A MINING CONSULTANT. MY TELEPHONE IS UNLISTED, I DO NO ADVERTISING BUT OPERATE ON PERSONAL REFERRALS ONLY.

CHEMISTRY:

MY LABORATORY IS QUITE EXTENSIVE AS I HAVE HAD MANY YEARS TO COMPLETE IT TO MY DESIRE. MY MEMBERSHIPS INCLUDE SUCH AS AMERICAN CHEMICAL SOCIETY, AMERICAN SOLAR SOCIETY, AND HAVE GIVEN MANY LECTURES AT THE UNIVERSITY OF ARIZONA ON CHEMICAL PHENOMEN. MY MAJOR IN CHEMISTRY PRECLUDES ALL ASPECTS OF MY ENDEAVORS TO BE INCLUDED HEREIN.

EDUCATION:

BACHELOR OF SCIENCE, AND MAJOR EDUCATION RESULTING OF A MASTER'S DEGREE IN SCIENCE WAS AT THE UNIVERSITY OF MANILA, QUEZON, PHILLIPINES. [1939]. MY DOCTORATE IN PHYSICS WAS AWARDED IN 1966 AT THE UNIVERSITY OF PHYSICAL SCIENCE [1966].

PLEASE NOTE : THE ABOVE IS FOR INFORMATION ONLY AND CANNOT BE USED IN ANY WAY

WILLIAM L. DUSENBERRY Ph.D.

CONSULTANT FOR THE PHYSICAL SCIENCES OF
ELECTRONICS - MINERALOGY - CHEMISTRY

NOVEMBER 20 1980.

THE HERCULES MINING AREA CONSISTING OF THE BLUEBIRD MINING CLAIMS.

INTRODUCTION:

THIS MINING SITE LOCATED IN R 4 W- T7 N SECTION 25 OF MARICOPA COUNTY, ARIZONA, LEAVES ME TO BELIEVE THAT THE TONNAGE IS ALMOST IMPOSSIBLE TO ESTIMATE. WITH VERY LITTLE OVERBURDEN, A QUITE EXTENSIVE EXPLORATION DEVELOPMENT COULD BE CONSIDERED. THE MASSIVE ORE IN SIGHT AT THE PRESENT EXCAVATION SITE REVEALS 5,600,000 YARDS IN VIEW AT THE LOWEST ASSAY OF \$2400.00 PER TON OF RAW ORE. THE ORE AVERAGES 1 AND 1/3 TONS PER YARD.

THE RAW ORE CAN BE CONCENTRATED TO A 100-1 BASIS FOR SMELTING. THAT MEANS THAT FOR EVERY TON OF RAW ORE, THIS CAN BE CONCENTRATED TO \$240,000.00 PER TON OF THE CONCENTRATES THAT WILL BE SHIPPED TO THE SMELTER. THE MAIN REASON THAT THIS ORE IS IN PLACE, IS THAT THE EARLY DAY PROSPECTORS WERE NOT CAPABLE OF THE GOLD EXTRACTION, AS THE GOLD IS IN SUCH A FINE STATE THAT IT WAS NOT DISCERNIBLE THEREFORE NOT OF ANY VALUE TO THEM ALTHOUGH THE ORE WAS VERY INDICATIVE OF HAVING GOLD BEARING VALUES.

EXTRACTIVE METALLURGY:

THE GOLD IS EVIDENTALLY IN A COLLOIDAL STATE THAT IS ONLY AMENABLE TO A HIGHLY ADVANCED EXTRACTION PROCESS THAT INVOLVES THE ORE WITH A SPECIFIC FLUXING FORMULA. THE FLUXING FORMULA INVOLVES A VERY TIME CONSUMING PROCESS CONSISTING OF VARIOUS CHEMICALS., THE AMOUNT OF HEAT, TIME OF HEAT, ORE CONDITIONING AND TOO MANY OTHER VARIABLES TOO NUMEROUS TO MENTION. NO TWO ORES REQUIRE THE SAME TYPE OF THE FLUX FORMULAS SO THE FLUX HAS TO BE TAILORED-MADE TO EACH TYPE OF ORE.

THE FOLLOWING FORMULA HAS RECOVERED UP TO 19.8 OUNCES PER TON OF RAW ORE, THAT HAD NOT BEEN CONCENTRATED.

FORMULA:

FOR USE OF ONE ASSAY TON OF ORE:

22.5 GRAMS OF POTASSIUM CARBONATE - 22.5 GRAMS OF SODIUM BICARBONATE - 36 GRAMS OF LITHARGE [YELLOW] - 4.5 GRAMS FLOUR - 10.25 ANHYDROUS BORAX [BORAX GLASS] AND 10.25 SODIUM CARBONATE.

FURTHER EXPERIMENTATIONS SHOULD BE MADE IN ORDER TO ACHIEVE A FURTHER HIGHER RECOVERY FROM THE ORE.

RESPECTFULLY

William L. Dusenberry

WILLIAM L. DUSENBERRY, PH.D.

WLD/RII

Janc Research and Developme Inc.

Gold, Silver and Platinum Ores

2027 South McQueen Road • Mesa, Arizona 85202

Phone: (602) 892-4561

August 16, 1982

[REDACTED]

SUBJECT: IRON OXIDE ORE SUBMITTED BY L. JOHN

5 grams ore
70 grams litharge
5 grams soda ash
10 grams flour
10 grams borax
1000 milligrams silver


Scorefire assay at 1950°F. Cupel lead button and weigh silver button. Put 1 part HNO³ to 6 parts H₂O - 50 ml. weight gold after wash and drying of gold.

	<u>Au</u> <u>Oz./ton</u>	<u>Ag</u> <u>Oz./ton</u>
1. Iron Oxide - 5 grams	2.60	8.82

30 grams of ore leached, reduced, burned, filtered, roasted and assayed.
Results:

	<u>Au</u> <u>Oz./ton</u>	<u>Ag</u> <u>Oz./ton</u>	<u>Pt.Group</u> <u>Oz./ton</u>
2. Iron Oxide - 30 grams	4.40	382.00	1.20

Sample submitted to Houston, Texas to be analyzed by Spectro-Span, Plasma.
Results will follow.


Jerry C. Henderson, Research Chemist

JCH:hh

TOTAL CHARGE: \$350.00

PAID IN FULL



January 22, 1982

HERCULES MINING CORP.
5100 North Miller Road
Scottsdale, Arizona

Gentlemen:

As you know I have worked on the ore from your Blue Bird Mine off and on over the past 2 years. Most recently I have been involved in the extraction aspect of the ore. Through my work I have found some commercially prepared chemicals which I feel will make a very satisfactory recovery.

My tests on the head ore indicates a minimum recovery of 1.5 oz. au and slightly more on ag. This has been confirmed by others using the same extraction methods I propose to use. Through additional experimentation, I feel the actual recovery will be well in excess of 1.5 oz. au per head ore ton.

As you know, I have a pilot plant which is capable of handling 1-2 tons of head ore per day. It would require very little to expand this to 4-6 tons per day. Cost of operation would be virtually the same at either size. Because of this, the plant as it is now would be marginally profitable. However, if we were processing 4-6 tons per day it would net approximately 50% profit. Of course as capacity was expanded profitability would increase.

The initial outlay of expenses would be for chemicals. However, if we were processing the same ore on a continuous basis, the chemicals would be recycled and used repeatedly. This would make the cost of chemicals a minor expense.

For the past four years I have been involved in designing and operating ore milling equipment. During that time I have processed many different ores. Ever since I first became involved with your ore I have felt it had real potential. I am sure the values can be recovered on a profitable basis, even on a small scale. However, there is virtually no limit to the size the entire operation can be expanded to.

Sincerely,
ROLA METALS COMPANY



Robert Gunnison

RG:mm

- [54] RECOVERY OF PRECIOUS METALS FROM DIFFICULT ORES
- [76] Inventor: Bernard J. Kerley, Jr., Santo Tomas Rt. Box 73, Sahuarita, Ariz. 85629
- [21] Appl. No.: 108,168
- [22] Filed: Dec. 28, 1979
- [51] Int. Cl.¹ C22B 11/04
- [52] U.S. Cl. 75/103; 75/101 R; 75/118 R; 75/121; 423/32, 423/33
- [58] Field of Search 75/103, 118 R, 121, 75/101 R; 423/32, 33

1,627,582	5/1927	Terry	75/101
1,870,703	8/1932	Allingham	423/45
1,891,532	12/1932	Gibson	75/103
2,693,404	11/1954	Muckiw	423/32
2,822,263	2/1958	Forward	75/117
2,928,732	3/1960	Bare et al.	75/119
3,848,054	11/1974	Wieriorowski	423/140
3,953,200	4/1976	Im	75/103
3,983,017	9/1976	Szabo	75/117 X
4,029,498	6/1977	Okajima	75/103
4,070,182	1/1978	Genik-Sas-Berezowsky et al.	75/103

Primary Examiner—G. Ozaki

[57]

ABSTRACT

Precious metals such as gold and silver are recovered from difficult-to-treat ores, particularly those containing manganese, by lixiviating using an ammonium thio-sulfate leach solution containing copper, sufficient ammonia to maintain a pH of at least 7.5, and at least 0.05% sulfite ion.

6 Claims, No Drawings

[56] References Cited
U.S. PATENT DOCUMENTS

295,815	3/1884	Russell	75/101 R
295,816	3/1884	Russell	75/101 R
296,709	4/1884	Russell	423/35
296,710	4/1884	Russell	423/37
320,590	6/1885	Russell	423/182
366,103	7/1887	Hofmann	423/27
381,849	4/1888	Russell	75/101 R

Read this Jerry
GREEN VALLEY
625-1195

AMERICAN SMELTING AND REFINING COMPANY
HAYDEN ARIZONA PLANT

SHIPPER First Capital DATE 1-5-66
 ADDRESS 2771 West Shipman, Phoenix, Ariz. SMELTER LOT 317
 SHIPPING POINT Phoenix SHIPPERS LOT 1
 NAME OF MINE First Capital CLASS OF MATERIAL Concentrate
 TERMS - CONTRACT _____

DATE RECEIVED	CAR NUMBER	INITIAL	GROSS	TARE	WEIGHT		% H ₂ O	DRY	SETTLEMENT DATE
					WET	NET			
2-16-66	66025	AT	19432.7	1670.5	3670.2		1.9	3606.2	2-25-66
TOTAL									
									METAL QUOTATIONS
									Silver 1.737
									Less .000
									Net 1.737
									Copper 3.572
									Less .000
									Net 3.572

ASSAY CONTENT PER TON				ANALYSIS										
	GOLD OUNCES	SILVER OUNCES	COPPER PERCENT	INSOL.	SiO ₂	Fe	Mn	CaO	SiO ₂	S	Al ₂ O ₃	As	Pb	Bi
1 ton	2.527	5.10	3.57	79.4	5.24	1.7		1.7			2.3			
1 lb.														
1 oz.														
1 fl. oz.														
1 cu. in.														
1 cu. ft.														
1 gal.														
1 qt.														
1 pt.														
1 cup														
1 g.														
1 mg.														
1 lb.														
1 ton														

PAYMENT VALUE PER TON				FREIGHT VALUE	DEDUCTIONS		CHARGE	CREDIT
PAY CONTENT	PRICE	AMOUNT	Base Charge		Additional Treatment			
					15.00		6.00	
Less					(Incl. Escalator Clauses)			
5 Oz.	%	4.100	1.360	5.81	Additional Treatment			
Less					Acc. Value Over 10.11 (3.10%)		1.09	
Lbs.	%	62.23	7.212	14.92	Net Deductions		7.09	
Value					SiO ₂			
Deductions					CaO			
Valuation								
Plus								
Freight On								
Shipping								
Valuation								
Plus								
Freight On								
Shipping								
Valuation								
Plus								

Weight On 18.35 Wet Tons @ \$ 3.74 Per Car
 @ 15.00 Dry Tons Per Ton 211.98.90
 Presentation _____ Umpires _____ Sampling _____
 Held Pending Return Of Silver Affidavit _____
 Due Date _____ Balance Due _____

METAL REFINERS LTD
 255 S EXTENSION RD
 MESA AZ 85202
 (602) 964-2704

NAME <i>HERCULES MINING CORP.</i>	DATE <i>3-29-82</i>	LAB NUMBER <i>A-329-2</i>
ADDRESS <i>5700 N. MILLER RD #43</i>	ELEMENTS TESTED <i>GOLD</i>	
CITY <i>SCOTTSDALE, AZ 85253</i>	DESCRIPTION OF MATERIAL <i>GOLD CYANIDE SOLUTION</i>	

	TEST WT.	BEAD WT.	T.O./TON (COMBINED METALS)
FIRE			
ASSAY			

	SAMPLE WT.	INSTRUMENT READINGS	PERCENTAGE	T.O./TON
ATOMIC ABSORPTION	<i>100 lbs ± 10 lbs</i>			
		<i>16.2 ppm. @ [5]</i>		<i>9.4 ± 2</i>
		<i>120 gal sol'n ± 20 gal</i>		

REMARKS THIS REPORT IS RENDERED WITH FULL WARRANTY AND RESPONSIBILITY ONLY FOR THE SAMPLE RECEIVED.

SA
 Scott Ames,

Received 9-4-79

ASARCO INCORPORATED
HAYDEN PLANT
ASSAY CERTIFICATE

MARKED *Lead* Sample # 3064 DATE ASSAYED 9/7 19 79

GOLD OUNCES PER TON	SILVER OUNCES PER TON	LEAD %	COPPER %	Fe %	SO ₂ %	Si %	CaO %	Zn %	S %	Al ₂ O ₃ %	As %	Sb %	Bi %	Cd %	Ni %
.002	125	.04	3.80		71.0	9.5	1.80	.11		2.9					

BY *[Signature]* CHEMIST

ASARCO INCORPORATED
 HAYDEN PLANT
 ASSAY CERTIFICATE

DATE ASSAYED 9/7 19 79

MARKED Lead Sample # 3064

D.	GOLD OUNCES PER TON	SILVER OUNCES PER TON	LEAD %	COPPER %	INSOL %	SiO ₂ %	Fe %	CaO %	Zn %	S %	Al ₂ O ₃ %								
												As %	Sb %	Bi %	Cd %	Ni %			
	.002	125	.04	3.80		71.0	9.5	1.80	.11		2.9								

BY [Signature] CHEMIST

Lead Sample from: Nick T. Habib
 5100 N. Miller Rd., #45
 Scottsdale, AZ 85251
 (602) 994-8332

SOUTHWESTERN ASSAYERS & CHEMISTS, INC.

WIL WRIGHT
ARIZONA REG. NO. 8879

REGISTERED ASSAYERS
P. O. BOX 7517
TUCSON, ARIZONA 85725

710 E. EVAN
PHONE 602-88
88

DNYANENDRA A. SHAM
ARIZONA REG. NO. 8898

Mr. William Shriver
5522 N. 11th Street
Phoenix, Arizona 85014

for Hercules
mining Corp

JOB # 023995
RECEIVED 2-19-80
REPORTED 4-8-80

SAMPLE NUMBER	GOLD OZ.°	SILVER OZ.°	LEAD %	COPPER %	ZINC %	MOLYBD %
Unroasted:						
Con-1	.745	4.70				
2	.020	.20				
Roasted	7.425	3.90				



1 ppm = 0.0001%

1 troy oz./ton = 34.286 ppm

1 ppm = 0.0292 troy oz./ton

* Gold and Silver reported in troy oz. per 2,000 lb. ton.

A.S.T. LABORATORIES, INC.

— ATOMIC SPECTROSCOPY & TESTING —

7730 E. REDFIELD RD. • SUITE # 4 • SCOTTSDALE, AZ 85260 • (602) 948-6907

CERTIFIED TEST REPORT

3157

DATE: August 3, 1982

HEAT NO:

CUSTOMER: MR. MAY

PART NO:

YOUR P.O.: Verbal

S/N:

JOB NO:

SPECIFICATION: -

MATERIAL: Ore (brown)

Metallography

Hardness

Chemistry

Lead was used as a collector for Noble Metals
(Analysis of Pb-Button)

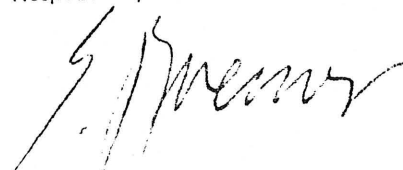
Ag	8
Au	N.D.
Pd	5
Pt	3
Ir	100
Os	300
Rh	30
Ru	15

N.D. - Not detected.

All values in ppm for 1 assay ton

The elements shown are in the values indicated and are present in the sample in an uncombined state, or in physical combination with other material; or in a chemical compound with other elements. Such elements may or may not be recoverable in the quantities indicated.

Respectfully submitted



A.S.T. LABORATORIES, INC.



Na Comp Inc.

1966 East 1st Street - Tempe, Arizona 85281 - 602-967-9469

February 2, 1980

To whom it may concern:

Bluebird

Note: this is an assay report of the tests made by us on the ~~Red~~ Red ore located in Arizona. These are not certified assays but special assays and can be varified.

They are as follows:

Dec. 7, 1979	#1.	AU - 13.5 oz.
Dec. 7, 1979	2.	AU - 9.5 oz.
Dec. 10, 1979	3.	AU - 10.5 oz.
Dec. 10, 1979	4.	AU - 16.1 oz.
Dec. 11, 1979	5.	AU - 13 oz.
Dec. 12, 1979	6.	AU - 16 oz.
Dec. 12, 1979	7.	AU - 9.8 oz.
Dec. 13, 1979	8.	AU - 12 oz.
Dec. 13, 1979	9.	AU - 15 oz.
Dec. 13, 1979	10.	AU - 18 oz.
Dec. 13, 1979	11.	AU - 8 oz.
Dec. 14, 1979	12. (1 pound run)	AU - 15.1 oz.
Dec. 14, 1979	13.	AU - 17.4 oz.
Feb. 1, 1980	14.	AU - 8 oz.
Feb. 1, 1980	15.	AU - 19 oz.

Part 7

Signed

Leslie C. Raiser
Leslie C. Raiser, Sec. & Treas.

ARIZONA TESTING LABORATORIES

A DIVISION OF CLAUDE E. McLEAN & SON LABORATORIES, INC.

PHONE 254-6181 817 WEST MADISON ST. P. O. BOX 1838 PHOENIX 65001

Chemist . . . Engineers

For: Dr. John Usall
550 West Thomas
Phoenix, Arizona

Date: November 8, 1965

Sample of: Ore

Received: 11-5-65

Submitted by: Same

ASSAY CERTIFICATE

Gold figured at \$ 35.00 per ounce

Silver figured at \$ 1.29 per ounce

LAB. NO.	IDENTIFICATION	GOLD		SILVER		PERCENTAGES	
		OZ. PER TON	VALUE	OZ. PER TON	VALUE	COPPER	
155222	#1					16.35 %	
	#2					7.80 %	
	#3					3.75 %	

Respectfully submitted,

ARIZONA TESTING LABORATORIES

Claude E. McLean

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

FILED
JUL 21 1966

Mine BLUEBIRD CLAIMS

Date June, 1966

District SAN DOMINGO or Wickenburg, *Maricopa Co*

Engineer LEWIS A. SMITH

Subject: Mine Visit with Leon Childs (an owner), 6-17-66

Property: 6 unpatented claims on Public Domain and 17 unpatented claims on State property.

Location: SW $\frac{1}{4}$ Sec. 36, T. 7 N., R. 4 W.

Access: Follow Hgy. 60-70 to first right turn-off (1 $\frac{1}{2}$ miles N. of Morrystown) thence go 2 $\frac{1}{2}$ miles, on a good dirt road to the mine in a N-NE direction.

Owners: Leon A. Childs, agent, along with several relatives, 1416 W. Coulter, Phoenix, Arizona, Phone 279-2087.

Minerals: Copper, gold. According to Childs no appreciable sulphide has been found. The copper minerals observed are mostly chrysocolla and malachite. Iron oxides are quite prevalent though. Other minerals include epidote and chlorite, which is widespread.

Work: Work mainly consists of a 45° W-SW inclined shaft more than 15 feet wide, that is at least 100 feet deep. According to Childs there is a drift 150 feet long at about 35 feet below the collar and 2 stub drifts at about 100 feet below the collar. $\frac{1}{4}$ mile or so SW of the shaft is a recent cut that is about 75 feet long, 20 feet wide, up to 6 feet deep, and made by a bulldozer. The cut exposes oxidized copper along with chlorite and epidote. The rock was too altered to be definitely identified but could be a meta volcanic rock and high altered schist (a guess). This rock is on the NE overlain by a rock that looks like a quartzite floater. All rocks are severely sheared in a NW direction and copper mineralization seems to be affiliated with this shearing, but seems to occur less in the quartzite, a dense rock.

At the old shaft a dike or bed of metamorphosed igneous-like material, 6 feet wide, seems to be conformable with the apparent wallrock bedding. The shaft pitches W-SW at 45° away from this dike or bed although shearing was seen on the west side of dike or bed which is vertical. Generally, a large area surrounding these two workings shows strong iron oxide staining and strong fracturing. The area plunges under detritus around its periphery.

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

~~December 10, 1957~~

February 5, 1958

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

BLUEBIRD

(Property)

COPPER SILVER GOLD

(ore)

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

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

FRANK P. KNIGHT,
Director.

Enc: Mine Owner's Report



RETURNED FOR BETTER ADDRESS

NO POSTAGE
Rural Route Discontinued

Mr. O. P. Long
R 12 Box 795
Phoenix, Arizona

not in phone book

Phoenix, Arizona, 27 November 1939

M E M O R A N D U M

TO THE FIELD ENGINEERS:

Messrs. Howard Motlier and Dan Mayne, Box 93, Cave Creek, Arizona, having been operating the Bluebird Mine under lease and shipping to the International Smelter. They have shipped some 7,500 tons in the last twelve months, doing from 200 to 250 feet of development work.

They have full equipment, and are looking for a new lease, or a property to take over under terms where they might ship and pay royalty.

If there is any property within your district that you think might be of interest to them and to the owners, please advise.

J. S. COUPAL, Director

JSC-jrf