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07-25-84
JCL

OPTION AND LEASE AGREEMENT

BY THIS OPTION AND LEASE AGREEMENT

effective as of the _____ day of July, 1984,

by and between V. M. P., INC., an Arizona corporation, whose address is Wickenburg, Arizona 85358 ("Lessor" herein),

and

A.F. BUDGE (MINING) LIMITED, a registered corporation (No. 1278744) under the laws of England ("Budge"), whose address is West Carr Road, Retford, Nottinghamshire, England DN22 7SW,

the Lessor, in consideration of the agreements set forth herein, has granted certain rights to Budge under the following terms and conditions:

1. Recitals

Lessor is the owner of certain mineral properties in Maricopa County, Arizona, more particularly described in Exhibit A. Budge desires to evaluate the mineral potential of Property and lease the Property if he deems development is feasible. It is the understanding of the parties that if Budge exercises its option, Budge shall form a subsidiary corporation authorized to transact business in Arizona, and that such corporation will constitute Budge for the further provisions of this Agreement.

2. Grant; Definitions

a. Grant - Lessor hereby grants to Budge the sole and exclusive option to enter into a lease with the Lessor, which lease shall lease and let the Property exclusively unto Budge, its successors and assigns. During the term of the option Budge shall have the right to conduct Mineral Exploration and after exercise of its option, Budge shall thereafter have the right to conduct Mining Activities to produce, process and market Leased Substances during the term hereof.

b. Definitions - The words and phrases used in the above grant shall have the following meanings:

(1) The "Property" shall include that certain real property situated in Maricopa County, Arizona, more

particularly described in Exhibit A attached hereto.

(2) "Leased Substances" shall include, but without being limited to, all soil, sand and gravel, rock, ores, minerals and mineral rights in, upon and under the Property, excluding, however, coal, geothermal resources, oil, gas, and associated hydrocarbon gases.

(3) "Mineral Exploration" shall include those activities that Budge, in its sole judgment and discretion, may deem advisable for the purpose of ascertaining any facts relating to the occurrence of ores and minerals in and under the Property and the metallurgical and physical properties of such ores and minerals; including, but not limited to, surface trenching, excavations, geophysical and geochemical surveys, drilling, the sinking of shafts for bulk sampling, and further including the right to use the surface for access, to place and use facilities on the surface and to use water and other surface resources that may be useful or convenient in connection with such activities.

(4) "Mining Activities" shall include, in addition to those activities constituting Mineral Exploration, all activities related to the mineral development and mining of the Property including the right:

-- to mine (by open pit, strip, underground, solution mining or any other method, including any method hereafter developed), extract, mill, store, process, remove and market Leased Substances from the Property;

Those EXISTING structures MUST remain unless SUITABLE COMPENSATION is PAID for Their removal.

-- to ~~place,~~ construct, maintain, use, and remove such structures, facilities, equipment, roadways, ~~haulageways and~~ such other improvements on the surface or subsurface of the Property as Budge may deem necessary, useful or convenient for the full enjoyment of all of the rights herein granted;

-- to mix or commingle Leased Substances with any other ores produced off the Property, provided that Budge shall first weigh, sample, and assay the Leased Substances in accordance with recognized industry practice;

ROYALTY will be based on composit or total value, not separated.

-- to conduct any mining upon the Property and Budge's mining of adjoining or nearby lands as a single mining operation as if the Property and all

such other properties constituted a single tract of land, in which event Budge shall have the exclusive right to use structures, facilities, equipment, roadways, haulageways, and all other appurtenances installed on the Property for the purpose of producing, removing, treating or transporting metals, ores, minerals or materials from adjoining or nearby property owned or controlled by Budge and the right to mine and remove Leased Substances from the Property through or by means of shafts, openings or pits which may be made in or upon adjoining or nearby property;

-- to use the surface of the Property to deposit waste, overburden, surface stripping and other materials from mining operations on the Property and adjoining properties being mined with the Property as a single mining operation; provided that materials from other lands may not be deposited on the Property if it would interfere with potential mining operations on the Property.

2b5 → Property will be returned to approved condition by Budge. Lessor will determine approved condition

3. Term

Unless sooner terminated under the termination provisions hereinafter contained, the term of the option shall be for one year but may be further extended for an additional year by Budge. Thereafter, if the option is exercised, this Agreement shall be for an term of twenty (20) years commencing on the effective date of exercise of the option and for so long thereafter as Leased Substances are continuously produced from the Property. The term may be extended by reasons of force majeure, as specified in Section 11 hereof. Operations shall be deemed continuous as long as mining, processing or marketing operations do not cease for a period of more than ninety (90) consecutive days.

Minimum of $500,000.00 gross

4. Payments to Lessor

a. Option Payments - Budge shall pay Lessor Six Thousand Dollars ($6,000.00) per month in order to keep its option to lease in full force and effect. Such payment shall be payable monthly three months in advance. The first payment consisting of Eighteen Thousand Dollars ($18,000.00) and representing the payment for the months of ~~August~~, September, and October, 1984, shall be payable upon execution of this Agreement.

July - Sept

b. Advance Minimum Royalty - At such time Budge exercises its option to lease the Property, the option payments made to Lessor under the provisions of subsection a above shall constitute an advance minimum royalty. Budge

From the time of production only.

shall thereafter pay Lessor 6500 Dollars per month as an advance minimum royalty payable in the same manner as set forth above. Such advance royalties shall be a credit insofar as they will go toward any monies due Lessor under the provisions of subsection c of this Section 4.

NO

c. Production Royalty - If Budge mines and markets Leased Substances from the Property, Budge shall pay to Lessor a production royalty of a specified percentage of the "~~Net Returns~~" received by Budge from the sale or other disposition of Leased Substances. Such percentage shall be based on the price of gold as determined on the date of sale or other disposition of Leased Substances according to the Englehard buying price of industrial bullion on the date of sale as follows: If gold is $400 or less, 6%; $401 to $600, 7%; $601 to $800, 8%; $801 to $1,000, 9%; $1,001 to $1,200, 10%; $1,201 to $1,400, 11%; $1,401 or more, 12%. The term "Net Returns" shall mean the total dollar value received from the purchaser of Leased Substances, less:

N.S.R.
NSR

(1) in the case of sale of raw ore or concentrates: (a) any weighing, sampling, penalty, processing or other charges assessed by the purchaser; (b) selling charges; (c) any sales, severance, gross production, privilege or similar taxes assessed on or in connection with the ore or measured by the value thereof; and (d) the cost of transportation from the Property to the purchaser.

OMIT

Replace with Net NSR.

(2) in the case of leaching or other solution mining techniques in addition to the deductions specified in (1) above, all processing and recovery costs incurred beyond the point at which the leaching reagents are applied to the ore being treated (including the cost of reagents) shall be deducted from the selling price.

NO
OMIT

If ores or concentrates are processed at a smelter or other facility owned, operated or controlled by Budge or treated on a toll basis for Budge, the selling price shall be computed in the above manner with deductions for all charges and items of cost equivalent to the deductions set forth above and in any case not more than would be available at the nearest purchaser otherwise willing to accept such Leased Substances.

d. Payment of Production Royalty - Production royalty paid to Lessor hereunder shall be due and payable within thirty (30) days after the end of each calendar quarter for those Leased Substances sold and a settlement sheet received during the applicable calendar quarter after first deducting any advance minimum royalty paid for the applicable annual period under Section 4b hereof. All production royalty shall be accompanied by the settlement sheets or a similar statement showing the basis upon which the payment was computed.

e. Method of Making Payments - All payments required hereunder may be mailed or delivered to Lessor's address or to any single depository as Lessor may instruct. Upon making payment to the authorized agent or depository, Budge shall be relieved of any responsibility for the distribution of such payment to Lessor. The delivery or the deposit in the mail of any payment hereunder on or before the due date thereof shall be deemed timely payment hereunder.

f. Fractional Interest - All payments under this Agreement, unless specified otherwise, are based on a grant by Lessor of full undivided rights and title to the Property. If Lessor's interest in the Property or any compensable damage or improvement is less than such full interest, all payments made hereunder shall be paid in the same proportion thereof as the undivided rights and title actually owned by Lessor bear to the entire undivided rights and title to the Property, the areas included therein, or any compensable damages or improvements.

5. Inspection

Lessor and its agents authorized in writing, at Lessor's risk and expense, may (1) enter upon the Property to inspect the same at such times and upon such notice to Budge as shall not unreasonably or unnecessarily hinder or interrupt the operations of Budge, and (2) inspect the accounts and records used in calculating production royalty paid to Lessor hereunder, which right may be exercised, at any reasonable time during a period of one (1) year from and after the date on which the applicable quarterly payment of production royalty was made. Lessor agrees to treat all information received hereunder as confidential and not to disclose the same without prior permission of Budge.

6. Obligations of Budge

a. Conduct of Operations - All work performed by Budge on the Property pursuant to this Agreement shall be done in a good and workmanlike manner and in compliance with all state or federal laws and regulations governing such operations.

b. Weights and Analysis - In all cases where ore or concentrates are stockpiled off the Property or commingled with ore or concentrates not mined from the Property, Budge shall measure ore, weigh other product, and take and analyze samples thereof, in accordance with sound mining and metal-

lurgical practice, and keep accurate records thereof as a basis for computing royalty payments, which records shall be available for inspection by Lessor in accordance with Section 5.

c. Protection from Liens - Budge shall pay all expenses incurred by it in its operations on the Property hereunder and shall allow no liens arising from any act of Budge to remain upon the Property; provided, however, that Budge shall not be required to remove any such lien as long as Budge is contesting in good faith the validity or amount thereof.

d. Indemnity - Budge shall indemnify Lessor against and hold Lessor harmless from any suit, claim, judgment or demand whatsoever arising out of negligence on the part of Budge in the exercise of any of its rights pursuant to this Agreement, provided that Lessor, or any one of them, or any person or instrumentality acting on its behalf, shall not have been a contributing cause to the event giving rise to such suit, claim, demand or judgment. Budge shall maintain insurance to support the indemnification required by this Agreement and provide Lessor with copies of such policies or a certificate of such insurance showing the amount of coverage.

e. Payment of Taxes - Budge shall pay all taxes levied against its improvements on the Property. In the event of commercial development of the Property, Budge shall pay all ad valorem taxes assessed against that amount of the Property used in such commercial development and shall, in addition, pay all taxes related to production of Leased Substances from the Property, ~~(subject to Budge's right to deduct the amount of such production-related taxes from the dollar value received from the purchaser of Leased Substances in the computation of Net Returns under the provisions of subsection c(1)(c) of Section 4.)~~ Lessor shall pay, before delinquency, ~~all other taxes and~~ assessments on the Property and improvements of Lessor thereon. In no event shall Budge be liable for any taxes levied or measured by income of Lessor, or for taxes applicable to or levied against or based upon advance or production royalty payments made to Lessor under this Agreement. Budge shall have the right to contest, in the courts or otherwise, the validity or amount of any taxes or assessments, before it shall be required to pay the same. Budge shall have the right, at its sole discretion, to pay any delinquent property taxes, together with interest, penalties and charges, that are the responsibility of the Lessor, the payment of which shall be a credit against payments thereafter to be made by Budge under the provisions of Section 4. If this Agreement is terminated or otherwise expires, all ad valorem taxes that are Budge's responsibility

NO. OMIT

shall be prorated as of the date Budge has removed its improvements from the Property or Lessor agrees to their abandonment.

f. Work Requirements -

(1) Budge agrees to perform assessment work (unless excused, suspended or deferred) for the benefit of the unpatented mining claims included within the Property for each assessment year during which this Agreement continues in force beyond July 1 of the applicable assessment year. The work performed shall be of a kind generally accepted as assessment work, and Budge shall expend the total amount sufficient to meet the minimum requirements with respect to all of the unpatented claims. Lessor acknowledges and agrees that the mining claims included within the Property are one contiguous group and that development and exploration work on any one or more of the claims will be for the benefit of all of them. Lessor further agrees that if Budge acquires a right to explore areas adjacent to the Property by location, purchase, lease or option, Budge shall have the right to perform assessment work required hereunder pursuant to a common plan of exploration or development of all the areas, claims or groups of claims, whether performed on or off the Property. Those Acquired Properties shall become the property of the lessor At the Termination of the lease. 3(1) mile continuous area of interest

(2) During the term of the option, Budge shall expend in the conduct of exploration ("Work") not less than Thirty-Five Thousand Dollars ($35,000.00). The nature, place and conduct of such Work shall be at the sole discretion of Budge, so long as such Work benefits the exploration, development or mining of the Property. The amount of the expenditures shall be determined by the direct cost to Budge of Work performed, the salaries, expenses and benefits burden of Budge's employees or consultants performing Work.

7. Title Matters

a. Representations and Warranties - Lessor represents and warrants to Budge that: (1) Insofar as the Property includes fee lands, the Lessor owns the entire undivided title to the Property, including the surface and mineral estate, and has the exclusive possession thereof; (2) insofar as the Property includes unpatented mining claims, the claims have been located and appropriate record made thereof in compliance with the laws of the United States and the laws of Arizona, the assessment work for the year ending September 1 prior to the effective date of this Agreement has been performed and appropriate record made thereof in compliance with applicable law, and there is no claim of adverse mineral rights affecting such claims; (3) with respect to the Property as a whole, except as specified in Exhibit A,

Lessor's title or possessory right to the Property is free and clear of all liens and encumbrances, and (4) the Lessor has the full right, power and capacity to enter into this Agreement upon the terms set forth herein.

b. Title Documents - Upon written request of Budge at any time during the term hereof, Lessor shall promptly deliver to Budge all abstracts of title to and copies of all title documents affecting the Property which Lessor has in its possession.

c. Title Defects, Defense and Protection - If -- (1) in the opinion of counsel retained by Budge, Lessor's title to any of the Property is defective or less than as represented herein, or (2) title to any of the Property is contested or questioned by any person, entity or governmental agency -- and if Lessor is unable or unwilling to promptly correct the defects or alleged defects in title, Budge may attempt, with all reasonable dispatch, to perfect, defend or initiate litigation to protect such title. In that event, Lessor shall take such actions as are reasonably necessary to assist Budge in its efforts to perfect, defend or protect such title. If title is less than as represented in this Section 6, then (and only then) the costs and expenses of perfecting, defending or correcting title (including, but without being limited to, the cost of attorney's fees and the cost of releasing or satisfying any mortgages, liens and encumbrances), shall be a credit against payments thereafter to be made by Budge under the provisions of Section 4, unless the encumbrance or dispute arises from Budge's failure to perform obligations hereunder (in which case such costs shall be borne by Budge).

This has already been established

Totally unnecessary

d. Lesser Interest Provisions - If the rights and title granted hereunder are less than represented herein, Budge shall have the right and option, without waiving any other rights it may have hereunder, to reduce all payments to be made to Lessor hereunder in the proportion that the interest actually owned by Lessor bears to the interest as represented herein.

e. Amendment and Relocation of Mining Claims - Budge shall have the right to amend or relocate in the name of Lessor the unpatented claims which are subject to this Agreement which Budge, in its sole discretion deems advisable to amend or relocate. ~~Budge shall not be liable to Lessor for any act (or failure to act) by it or any of its agents in connection with the amendment or relocation of such claims as long as such act (or omission) is not made in bad faith.~~ - NO

& omit

If Budge amends the claims - then he must assume the responsibility for any mistakes

f. Patent Proceedings - Upon request of Budge at any time or times during the term of this Agreement, Lessor

agrees to undertake to obtain patent to any or all of the unpatented mining claims which are subject to this Agreement. Budge shall prepare all documents and compile all data and comply in all respects with the applicable law, all at the expense of Budge. Lessor shall execute any and all documents required for this purpose and shall cooperate fully with Budge in the patent application proceedings subsequent thereto. If Lessor begins such proceedings and Budge thereafter requests Lessor to discontinue such proceedings, or if this Agreement is terminated while proceedings are pending, Budge shall have no further obligation with respect thereto except to pay any unpaid expenses accrued in such proceedings prior to its request to discontinue or prior to termination, whichever occurs first. ALL ACQUIRED PROPERTY SHALL BE IN LESSORS NAME. - PATENTED OR UNPATENTED.

g. Change of Law - If the laws of the United States concerning acquisition of mineral rights on federally managed lands is repealed, amended, or new legislation is enacted, Budge shall have the right to take whatever action it deems appropriate to preserve a right to explore for, develop, and mine Leased Substances. If Budge elects to take any action under the terms of this subsection, it shall first notify Lessor in writing setting forth the nature of the proposed action and an explanation thereof. Lessor agrees to cooperate with Budge and execute whatever documents are deemed necessary by Budge to accomplish such action. Nothing in this subsection shall impose any obligation upon Budge to take any action, or diminish the right of Lessor to take action it deems appropriate; provided, however, that if Lessor chooses to take any action, it will first inform Budge of the nature of such contemplated action.

h. General - Nothing herein contained and no notice or action which may be taken under this Section 7 shall limit or detract from Budge's right to terminate this Agreement in the manner hereinafter provided.

8. Termination; Removal of Property; Data

a. Termination by Lessor - If Budge defaults in the performance of its obligations hereunder, Lessor shall give Budge written notice specifying the default. If the default is not cured within thirty (30) days after Budge has received the notice, or if Budge has not within that time begun action to cure the default and does not thereafter diligently prosecute such action to completion, Lessor may terminate this Agreement by delivering to Budge written notice of such termination, subject to Budge's right to remove its property and equipment from the Property, as hereinafter provided. If Budge in good faith disputes the existence of a default, Budge shall initiate appropriate action in a court of competent jurisdiction within the 30-day period and the time

to cure shall run from the date of a final determination that a default exists. Lessor shall have no right to terminate this Agreement except as set forth in this subsection a of Section 8.

b. Termination by Budge - Budge shall have the right to terminate this Agreement at ~~any time by~~ written notice from Budge to Lessor. From and after the date of termination, all right, title and interest of Budge under this Agreement shall terminate, and Budge shall not be required to make any further payments or to perform any further obligations hereunder concerning the Property, except payment and obligations, the due dates for the payment or performance of which occur prior to the termination date, including the obligations related to damages to the surface and improvements thereon.

c. Removal of Property - Upon any termination or expiration of this Agreement, Budge shall have a period of ~~one (1) year~~ from and after the effective date of termination within which it must ~~remove~~ from the Property all of its machinery, buildings, structures, facilities, equipment and other property of every nature and description erected, placed or situated thereon, except supports placed in shafts, drifts or openings in the Property. Failure of Budge to so remove the same shall constitute an abandonment by Budge to Lessor of the same; provided, however, that Budge may still be required to remove such property upon notice from Lessor at any time during the one-year period and thirty (30) days ~~thereafter.~~

d. Delivery of Data - If this Agreement is terminated, upon written request given by Lessor within thirty (30) days of said termination, Budge shall, within a reasonable time, furnish Lessor copies of all available noninterpretive exploration, development and mining data pertaining to the Property prepared by or for Budge.

e. Relinquishment of Record - If this Agreement is terminated or otherwise expires, Budge shall provide Lessor with a recordable document sufficient to provide notice that Budge no longer asserts rights to the Property under this Agreement.

9. Notices

Any notice or communication required or permitted hereunder shall be effective when personally delivered or deposited, postage prepaid, certified or registered, in the United States mail to the addresses specified above. In the case of notice to Budge, duplicate notice shall be given to DMEA Ltd., 4203 N. Brown Avenue, Suite F, Scottsdale, Arizona

85251. Either party may, by notice to the other given as aforesaid, change its mailing address for future notices.

10. Binding Effect; Assignment

The rights of either party hereunder may be assigned in whole or in part and the provisions hereof shall inure to the benefit of and be binding upon the heirs, personal representatives, beneficiaries, successors and assigns, but no change or division of ownership of the Property or payments hereunder, however accomplished, shall operate to enlarge the obligations or diminish the rights of Budge hereunder. No such change or division in the ownership of the Property shall be binding upon Budge for any purpose until the first day of the month next succeeding the month in which such person acquiring any interest shall furnish evidence to Budge's satisfaction of such change, transfer or division of ownership.

11. Force Majeure; No Implied Covenants

If Budge is delayed or interrupted in or prevented from exercising its rights or performing its obligations, as herein provided, by reasons of "force majeure," then, and in all such cases, Budge shall be excused, without liability, from performance of its obligations set forth in this Agreement (except as to obligations set forth in Sections 4 and 6), but the provisions shall again come into full force and effect upon the termination of the period of delay, prevention, disability or condition. "Force majeure" includes all disabilities arising from causes beyond the reasonable control of Budge; including, without limitation, acts of God, accidents, fires, damages to facilities, labor troubles, unavailability of fuels, supplies and equipment, orders or requirements of courts or government agencies, the inability to obtain environmental clearance or operating permits that may be required by governmental authorities, or if the prevailing levels of operating costs in relation to prevailing levels of prices makes it economically impractical for Budge to conduct production operations. It is expressly agreed that no implied covenant or condition whatsoever shall be read into this Agreement relating to any time frame as the measure of diligence for prospecting, mining, or any operations of Budge hereunder.

12. Memorandum

The parties to this Agreement agree to execute and record a Memorandum of this Agreement in a form sufficient to constitute record notice to third parties of the rights granted hereunder, which may be recorded in the official records of Maricopa County, Arizona.

13. Construction

a. Governing Law - This Agreement shall be construed by the internal laws but not the laws of conflict of the State of Arizona.

b. Headings - The headings used in this Agreement are for convenience only and shall not be deemed to be a part of this Agreement for purposes of construction.

SIGNED, effective as of the date recited above.

LESSOR:

V. M. P., INC.

By_____
Larry W. Beal, President

BUDGE:

A. F. BUDGE (MINING) LIMITED

By_____
A. F. Budge, Chairman

STATE OF ARIZONA)
) ss.
County of Maricopa)

The foregoing instrument was acknowledged before me this _____ day of _____, 1984, by A. F. Budge, the Chairman of A. F. Budge (Mining) Limited, a registered corporation under the laws of England, for and on behalf of the corporation.

_____
Notary Public

My commission expires:

_____

STATE OF ARIZONA)
) ss.
County of Maricopa)

The foregoing instrument was acknowledged before me this _____ day of _____, 1984, by Larry W. Beal, the President of V. M. P., Inc., an Arizona corporation, for and on behalf of the corporation.

_____
Notary Public

My commission expires:

_____

EXHIBIT A

The "Property" consists of those certain patented and unpatented mining claims situated in the Vulture Mining District, Maricopa County, Arizona, in Sections 24, 25, 26, 27, 34, and 36, Township 6 North, Range 6 West, and Sections 16, 17, 19, 20, 21, 28, 29, 30, 31, and 32, Township 6 North, Range 5 West, G&SRM, and are more particularly described as follows:

Patented Lode Mining Claims:

Name of Claim	Mineral Survey No.
Jane Elmore	
Astor	
Talmadge	
Sherman	
Van Buren	
Custer	
Elmore	
Conkling	
Sheridan	
Pit Gold	
Vulture Extension	
Gold Nugget	
Canon City	
Hamilton	

Unpatented Lode Mining Claims:

The names and place of record of the location notices of the unpatented lode mining claims in the official records of the Maricopa County Recorder and the authorized office of the Arizona State Office of the Bureau of Land Management are as follows:

Name of Claim	Mrcpa Cty Rcds Book	Page	BLM Serial # A MC

Name of Claim	Mrcpa Cty Rcds Book	Page	BLM Serial # A MC

Unpatented Placer Mining Claims:

The names and place of record of the location notices of the unpatented placer mining claims in the official records of the Maricopa County Recorder and the authorized office of the Arizona State Office of the Bureau of Land Management are as follows:

Name of Claim	Mrcpa Cty Rcds Book	Page	BLM Serial # A MC

729895A 30JAN84 10:45 EST

PTS

Printed on 01-30-1984 at 10:25:56

1/6/1

  098039   39-19130-N

  Finding the Lost Vulture mine [Maricopa County--gold]

1/6/2

  098016   39-19107-N

  Finding the Lost Vulture mine [Maricopa County--gold]

? T 1/5/1

1/5/1

  098039   39-19130-N

  Finding the Lost Vulture mine [Maricopa County--gold]

  Thompson, Arthur Perry

  Min. Jour., Phoenix, Ariz. vol. 14, no. 13, pp. 9-11, 28-30, November 30
,   1930

  Subfile: N

  Descriptors: *Arizona; *Gold ; Physical geology ; Lost Vulture mine

? B59

Printed on 01-30-1984 at 10:32:11

6/5/1

 1204737   83-59099

  Precious metal contents of Proterozoic massive sulfide deposits in

Arizona

Dewitt, E.

U. S. Geol. Surv., Denver, CO, USA

Geological Society of America, Rocky Mountain Section, 36th annual meeting; Cordilleran Section, 79th annual meeting

36th annual meeting, Rocky Mountain Section; 79th annual meeting, Cordilleran Section; Geological Society of America, Salt Lake City, UT, United States, May 2-4, 1983

Abstracts with Programs - Geological Society of America 15: 5, 298p., 1983

CODEN: GAAPBC ISSN: 0016-7592

Subfile: B

Country of Publ.: United States

Doc Type: SERIAL; CONFERENCE PUBLICATION Bibliographic Level: ANALYTIC

Languages: English

Descriptors: *Arizona; *mineral deposits; *genesis ; economic geology; metal ores ; volcanic processes; precious metals; Proterozoic; Precambrian; massive deposits; sulfides; United States; gold ores; silver ores; Hualapai region; Bagdad region; Mayer-Prescott region; Jerome region; Payson region; production; oxidation; ore grade; copper ores; zinc ores; veins; stratiform deposits; chert; chemically precipitated rocks; mineral deposits, genesis

Section Headings: 27 .(ECONOMIC GEOLOGY, METALS)

6/5/2

1203467 83-59027

Arsenic and gold mineralization in the McFarland Canyon-Story Mine area, Maricopa County, Arizona

Marsh, S. P.

Open-File Report (United States Geological Survey. 1978) 24p., 1983

CODEN: XGROAG ISSN: 0196-1497 9 REFS.

Subfile: B

Country of Publ.: United States

Doc Type: SERIAL; REPORT; MAP Bibliographic Level: MONOGRAPHIC

Languages: English

Report No.: 83-0442

Availability: U. S. Geol. Surv., Open-File Serv. Sect., West. Distrib. Branch, Denver Fed. Cent., Lakewood, CO, United States

6 tables, geol. sketch map; 1:6,000; geol. map

Latitude: N335500; N340500 Longitude: W1113000; W1113500

Descriptors: *Arizona; *mineral exploration; *mineral deposits; *genesis; economic geology; gold ores; geochemical methods; hydrothermal processes; arsenic ores; Maricopa County; Payson Granite; Alder Formation; USGS; United States; McFarland Canyon; Story Mine; Mazatzal Wilderness; arsenic; rhyolite; andesite-rhyolite family; dikes; intrusions; mineral deposits, genesis; Proterozoic; Precambrian; granite; granite-granodiorite family; arsenopyrite; arsenides; sulfides; volcanic processes; geologic maps; maps; geochemical indicators

Section Headings: 27 .(ECONOMIC GEOLOGY, METALS)

6/5/3

1177013 01177013

Gold in the Gold basinPSLost basin districts, Mohave County, Arizona

Theodore, T. G.(investigator); Blair, W. N.(investigator); Nash, J. T.(investigator); Mckee, E. H.(investigator); Antweiler, J. C.(investigator)

Geological Survey research 1982

Geological Survey Professional Paper 1375, 5p., 1982

CODEN: XGPPA9 ISSN: 0096-0446

Subfile: B

Country of Publ.: United States

Doc Type: SERIAL Bibliographic Level: ANALYTIC

Languages: English

Descriptors: *Arizona ; economic geology ; gold ores; Mohave County; United States; Gold Basin district; Lost Basin district; mineralization; USGS; Proterozoic; Precambrian; Upper Cretaceous; Cretaceous

Section Headings: 27 .(ECONOMIC GEOLOGY, METALS)

6/5/4

1118982 82-42116

Lithological, structural, chemical and mineralogical patterns in a Precambrian stratiform gold occurrence, Yavapai County, Arizona

Swan, M. M.; Hausen, D. M.; Newell, R. A.

Newmont Explor., Tucson, AZ, USA; Occident. Res. Corp., USA

Process mineralogy; extractive metallurgy, mineral exploration, energy resources

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Yavapai Series; United States; stratiform deposits; Precambrian; Prescott; Agua Fria District; volcanism; metasedimentary rocks; metavolcanic rocks; sericitization; metasomatism; chloritization; silicification; mineral deposits, genesis

Section Headings: 27 .(ECONOMIC GEOLOGY, METALS)

6/5/5

479109 68-05429-N

The geology of the Iron King mine

Gilmour, Paul; Still, Arthur R.

in Ore deposits of the United States, 1933-1967 (Graton-Sales Volume), V. 2

New York, Am. Inst. Mining, Metall. and Petroleum Engineers p. 1238-1257, illus., table, 1968

Subfile: N

The ore occurs in steeply-dipping metamorphosed eugeosynclinal sedimentary and volcanic rocks of Precambrian age. The ore lies at the contact of rhyolitic tuff and interbedded andesite with underlying andesite tuffs, minor rhyolitic tuffs, and argillaceous sediments. The ore is overlapping, conformable, or massive pyrite bodies and associated lenses of massive quartz containing gold, silver, lead, zinc, and copper. A parallel zone of copper occurs within the hanging wall. The orebodies were formed through the agency of volcanic hot springs on or near a submarine surface of deposition.

Descriptors: *Arizona; *copper; *gold; *silver; *genesis; *Lead; *Mineral deposits ; Economic geology; Polymetallic ores ; Lead-zinc; Iron King mine; Yavapai County; occurrence

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$7.39 0.088 Hrs File89 3 Descriptors

$0.70 Telenet

$1.50 5 Types

$9.59 Estimated Total Cost

DMEA

GEOLOGY AND MINERALIZATION

OF THE

CONGRESS MINE

Prepared for the Arizona Geological Society
AGS Spring Field Trip
April 20, 1985

Christopher E. Herald
Senior Geologist
Echo Bay Exploration Inc.

Michael D. Russ
Consulting Geologist

LOCATION

The Congress Mine lies in the southeastern part of Yavapai County, central Arizona. The property occupies parts of Sections 10, 11, 14, 15, 22, 23, and 24 in T.10N, R.6W and Section 18, T.10N, R.5W.

It is situated along the southeastern edge of the Date Creek Mountains at an elevation of 3,400 feet above sea level.

HISTORY AND PAST PRODUCTION

The original Congress claims were located in 1887. A 20-stamp mill was constructed to process the ore and was operated until 1891, at which time a three-year shutdown occurred.

Work resumed in 1894 by the Congress Gold Company, which now enjoyed the convenience of a rail spur off the then recently-completed Phoenix to Prescott line. The mill was expanded to 40 stamps. At this time the No. 2 Congress shaft was 1000-feet deep with stoping restricted to above the 650 level.

The mine operated continuously from 1894 to 1911. During this period the cyanide process was introduced to greatly improve recoveries and another 40 stamps were added. The total official tonnage shipped or milled during this period is recorded as 692,332 tons, of which 370,022 tons were mined from the Congress vein with an average recovery of about 0.70 opt Au, 293,215 tons with an average recovery of about 0.415 opt Au from the Niagara vein, and 20,125 tons at 0.40 opt Au from the Queen of the Hills vein. A total of 388,477 oz. of Au and 345,598 oz. Ag were recovered. In addition to the above totals, substantial values were left in the mine fills and ore dumps.

From 1911 to 1935 operations at Congress were principally confined to retreatment of small portions of the mill tailings and ore dumps and robbing pillars. An estimated 50,000 tons of dump and tailings were treated.

A 300 TPD counter-current cyanide mill along with a power plant was erected in 1937. From 1938 to 1942, 385,505 tons of material (276,372 tons from tailings, 106,629 tons from dumps) were treated. The mill head averaged 0.094 opt Au with a recovery rate of about 69%.

The property saw very little production from 1942 to the present. Around 1980, with the gold price rise, a heap leach operation of crushed dump rocks operated for several years.

LOCAL GEOLOGY

LITHOLOGY

The Congress Mining District and surrounding Date Creek Mountains are comprised almost entirely of Early Proterozoic granitic intrusive rocks belonging to the 1320 m.y. to 1460 m.y. central Arizona batholith. The granitic rocks range in composition from coarse-grained granite to granodiorite and contain swarms of coeval pegmatite and aplite dikes comprising 10 to 15% of the rock unit. The granite also contains numerous house-size inclusions of partially digested metasediments (gneiss, biotite schist and quartzite). A few small lenses and dike-like amphibolite bodies of probably early Proterozoic age also cut the granite.

The Proterozoic granitic rocks have been intruded by four types of younger dikes that are, from oldest to youngest: east-west trending "greenstone" diabase dikes; northwest trending andesite porphyry dikes; northeast trending latite porphyry dikes; and northeast trending rhyolite dikes (previously termed alaskite).

Previous workers in the district have considered the greenstone dikes and gold mineralization Tertiary in age. However, a Late Proterozoic age (1080 m.y. to 1180 m.y.) has not been ruled out for the dikes or mineralization. The andesite, latite and rhyolite dikes are all post-mineralization.

STRUCTURE

Foliation in Precambrian igneous rocks is indistinct and variable, but an east-west strike and northerly dip appear to be the most common attitude observed in the area. Older metasedimentary inclusions in the granite have a N35°W foliation, coincident with the regional grain of the area.

There are at least six recognized periods of fault movement in the Congress area. From oldest to youngest, they are:

1. Minor pre-mineral thrusting from the north in Precambrian granite dipping 20° to 25° north (Congress Vein);
2. Pre-mineral west-northwest faults, dipping 40° to 45° north, (Niagara Vein);
3. Minor post-mineral movement on west-northwest thrust faults;
4. Cenozoic normal faults, striking N20°W to N30°W;
5. Cenozoic normal faults, striking N30°E to N50°E;
6. Basin and Range faulting striking N0°W to N20°W.

The minor east-west trending, north dipping thrust faults appear to be the oldest of the six main periods of faulting

and are probably Late Proterozoic or Early Tertiary in age. Thrusting appears the simplest explanation for these shallow dipping greenstones. The amount of displacement on the thrusts is not known, but is probably small.

GOLD MINERALIZATION

The Congress Mining District has produced a minimum of 388,000 ounces of gold from relatively high-grade ore shoots in hypogene auriferous quartz veins. The district ranks second in primary gold production in Arizona. Essentially all of the district's gold production has come from two vein systems: The Congress and Niagara veins.

CONGRESS VEIN

The location of the Congress ore shoot was controlled by the intersection of the Congress greenstone dike with the Cross vein. This line of intersection accounts for the northerly rake of mineralization along which stoping was conducted nearly continuously down to the 3100 level and exploration with minor production to the 3900 level. The orebody obtained a maximum width of 1300 feet on the 650 level. Ore widths varied in the shoot from 3 to 7 feet.

The location and strength of quartz veining in the Congress vein was controlled by pre-mineral movement that broke and shattered the greenstone and granite providing open spaces for auriferous quartz-pyrite deposition. The pre-mineral displacement between the hanging and footwalls of the Congress dike was probably small, but sufficient to provide enough fracturing to act as a favorable conduit for the circulation of hydrothermal fluids. There is no reported change in vein mineralogy between the surface and the deepest mine workings, excluding surface oxidation.

NIAGARA VEIN

The Niagara vein strikes west-northwest, dips 41° north, and is located about 250 feet south of the Congress vein. The Niagara vein is a mineralized fault cutting Precambrian granitic rocks. Unlike the Congress vein, which it parallels in outcrop, the Niagara vein does not follow a greenstone dike and has the steeper dip, characteristic of most of the quartz veins in granite. The Niagara vein has been mined in four different areas along a strike length of 4000 feet.

The character of the Niagara vein ranges from a narrow zone of broken and hydrothermally altered granite with a little disseminated pyrite, to massive quartz vein material up to 14 feet thick with sharp wallrock contacts. In Niagara ore zones, the quartz vein averages 3 to 5 feet in thickness, usually with an additional 3 to 5 feet of altered granite wallrock containing a large proportion of quartz stringers and veinlets. The quartz stringer zone commonly constitutes ore grade material. The mineralogy of the Niagara vein material is similar to the Congress vein and consists of quartz, carbonate, pyrite, galena, chalcopyrite, hemitite, gold and silver. The galena and silver content is higher and the average gold grade is lower than in the Congress vein.

STRUCTURAL ORE CONTROLS

Pre-ore faulting and secondary permeability within the vein hosting structures appear to be the most significant structural controls on mineralization. Portions of the east-west trending greenstone dikes and east-west trending 40° north dipping faults were open to circulating hydrothermal solutions during the mineralizing period. Undulations and dialations in the walls of mineralized structures also appear to have increased secondary permeability and consequently, mineralization.

CHEMICAL CONTROLS

Wallrock chemistry does not appear to be as important a factor in controlling mineralization as structure. The higher mafic content of the greenstone dikes may in part account for the higher overall grade of the Congress vein ore. It has been noted in drill cores from the Niagara vein that pegmatitic wallrocks are generally less favorable for good ore (pyrite) deposition than granite wallrocks, and that a higher mafic content of the granite (granodiorite) generally corresponds to higher gold content.

VEIN MINERALOGY

The auriferous quartz veins are composed predominantly of vein quartz along with variable, but generally minor, amounts of carbonates. Pyrite, galena, and chalcopyrite are the only sulfides megascopically identifiable. Molybdenite has been tentatively identified in trace amounts. Reddish-brown hemitite is locally abundant as an oxidation product of pyrite. Gold probably occurs as micron-sized particles in pyrite.

NEW NIAGARA OREBODY

OREBODY CHARACTERISTICS

The Niagara orebody appears to be a classic fissue quartz vein deposit. The vein structure stikes N45°W and dips at about 41° to the northeast. The main ore shoot is oblique to the strike and dip of the structure, trending east-west. Several subsidiary shoots deviate from the main shoot.

Mineralization and Alteration

Mineralization in the new Niagara orebody is similar to areas previously mined in the Niagara structure. Mineralization in the orebody occurs in two basic styles, with the one common denominator observed in all mineralization being the presence of quartz and pyrite. High grade (+1 opt Au) mineralization will contain 10 to 25% sulfides over two feet. The higher grade mineralization usually occurs as a discreet vein of massive quartz from 1 to 14 feet thick with minor amounts of sulfides. The second style of mineralization has been termed the quartz stringer zone. The quartz stringer zone consists of 20 to 70% quartz veinlets flooding altered wallrock. The zone is generally lower grade to barren and usually envelopes the main quartz vein both on the foot and hanging walls.

As no definitive alteration analysis has been conducted on the core, the breakdown of alteration types is tentative, based only on visual identification. Alteration associated with mineralization appears to be relatively simple. Chloritic/propylitic and argillic alteration are the most common alteration types. The chloritic alteration assemblage consists of chlorite + quartz + pyrite that grades into propylitic alteration with the addition of epidote. Both the chloritic and propylitic alteration assemblages, which are closely associated, may contain carbonate, clay, K-feldspar, magnetite, biotite, sericite, and fluorite in minor amounts.

The chloritic/propylitic assemblage extends anywhere from a few inches to 50 feet away from the vein, with the average being less than 15 feet. The width of alteration is largely dependent on the degree of structural preparation. Alteration intensity decreases away from the vein. The alteration zone is widespread at the base of the main ore shoot and becomes much more narrow updip from the shoot and upper parts of the shoot itself.

Argillic alteration does not appear to be associated with mineralization, but with post-ore structures. The argillic alteration is very pale green to white in color and is closely restricted to structures.

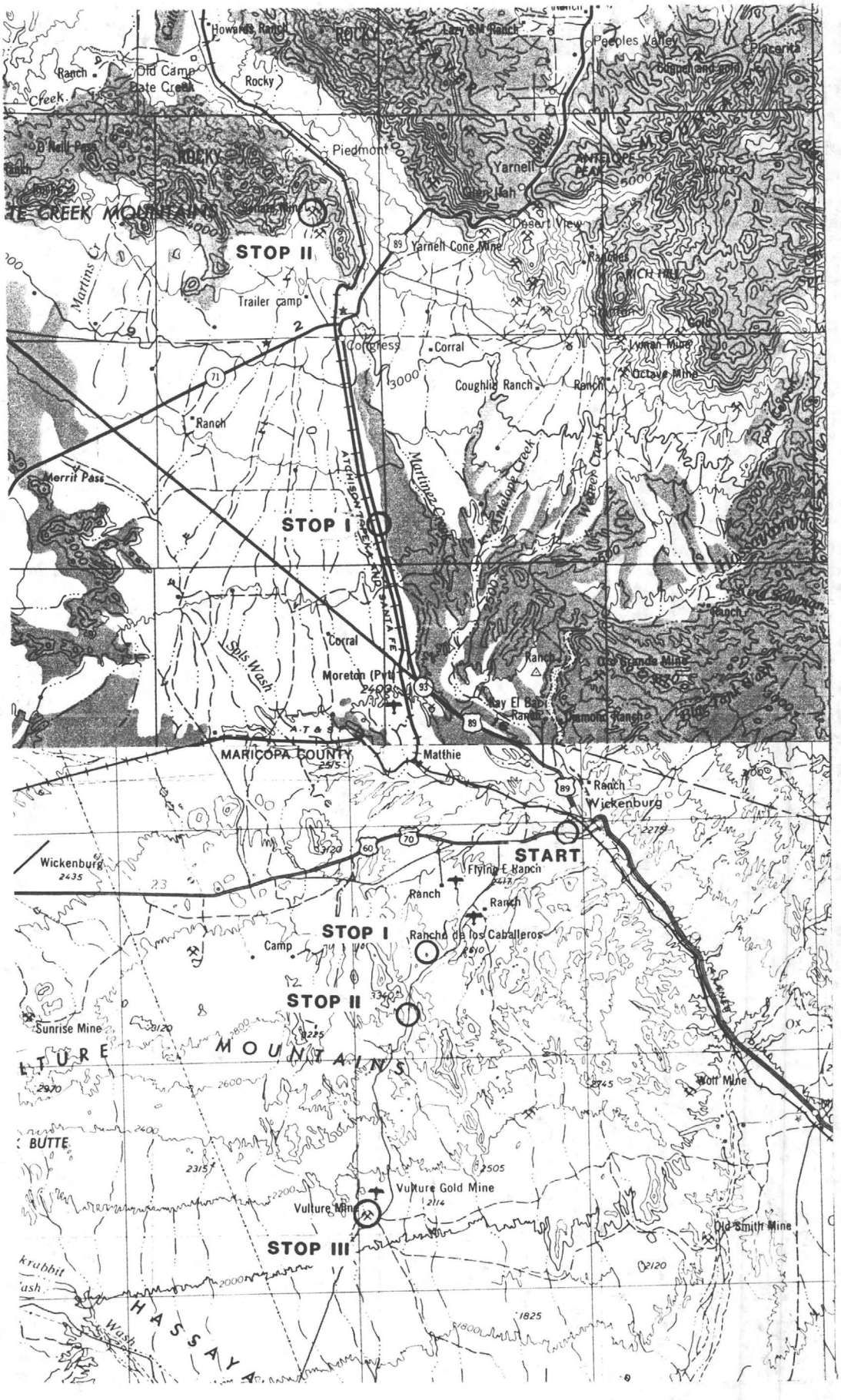
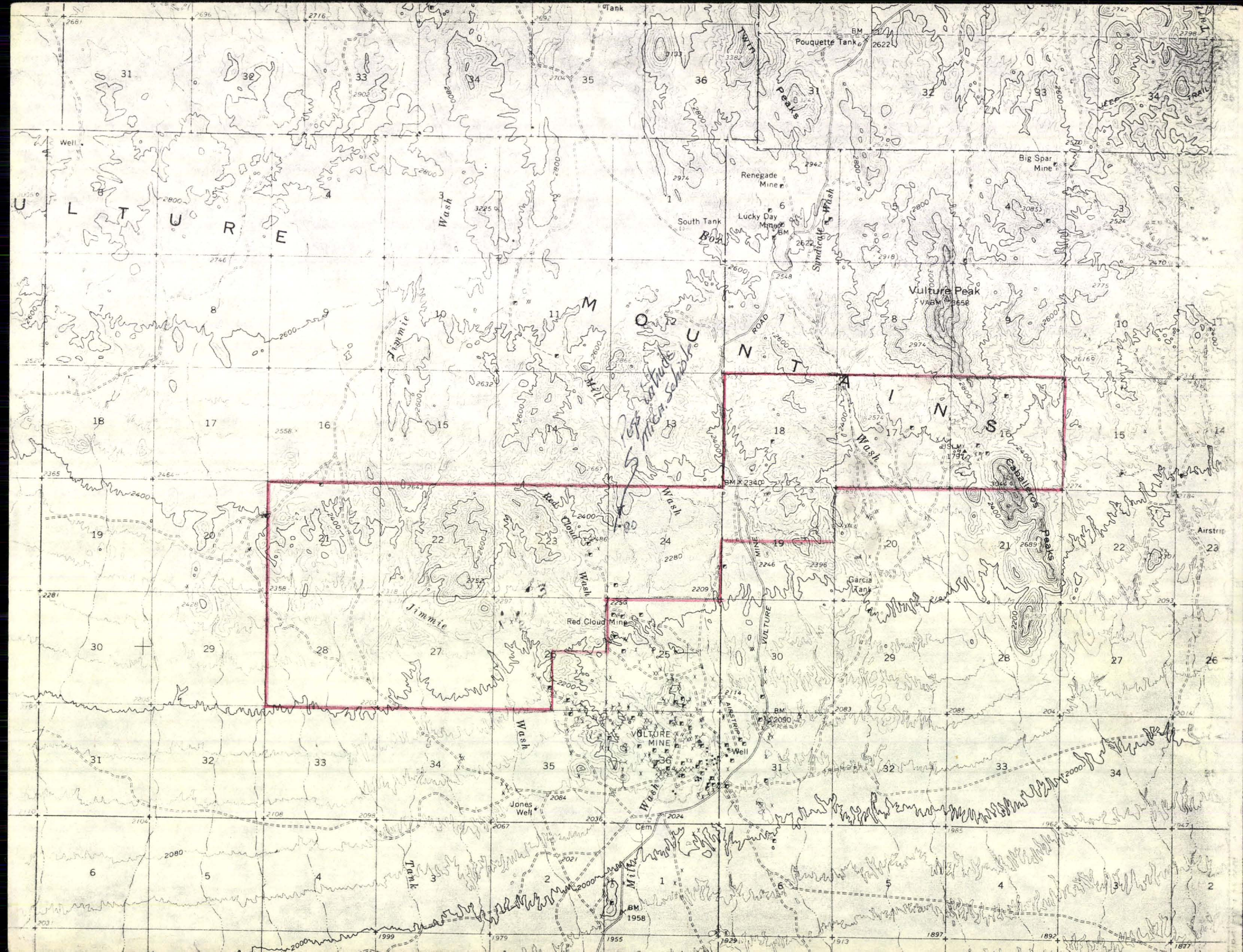


Figure 1 Vulture and Congress Mine field-trip stops.



ULTURE
MOUNTAINS
Vulture Peak
VABM 3658
VULTURE MINE
Red Cloud Mine
Red Cloud Wash
Jimmie Wash
Jimmie
Hill
Caballeros Peaks
Twin Peaks
Pouquette Tank
Big Spar Mine
Renegade Mine
Lucky Day Mine
South Tank
Syndicate Wash
Box
ROAD
VULTURE
MINE
AIRSTRIP
Airstrip
Garcia Tank
Jones Well
Well
Cem
Tank
Wash
JEEP TRAIL
BM 2340
BM 2090
BM 1958

DAWSON
METALLURGICAL
LABORATORIES, INC.

P. O. Box 7685
5217 Major Street
Murray, Utah 84107
Phone: 801-262-0922

January 31, 1984

Mr. Terry Downing
6594 South Race Circle East
Littleton, Colorado 80121

Subject: Projected Testing on Tailings and Pit Ore from the Vulture Mine.

Dear Terry:

We were pleased to hear from you relative to your plans to operate the Vulture Mine in Arizona. We understand that you want laboratory testing conducted to further evaluate heap leaching. If we can be of service, we would be pleased to work with you on this investigation.

From our discussion I understand that you want to evaluate heap leaching on the stamp tailings after agglomeration, heap leach on the pit ore without agglomeration (if possible) and heap leaching on a blend of pit ore and stamp tailings.

We would recommend that the following series of tests be conducted:

A. Stamp Tailing

1. Bottle roll amenability test to determine maximum expected recovery as well as lime and cyanide consumption.
2. Column leach on agglomerated tailing using quick lime and cement with cyanide added during pelletizing.

B. Pit Ore

1. Conduct bottle roll leach amenability test on the ground ore to determine maximum extraction, as well as cyanide and lime consumption.
2. Conduct bottle roll leach test on ore crushed to minus 1/2 inch followed by assay screen analysis of residue to obtain indications as to size of liberation.
3. Conduct column leach on pit ore crushed to size indicated effective in the bottle roll test without agglomeration, if possible.

C. Pit Ore - Tailing Blend

1. Conduct column leach of blend of pit ore and tailing (up to 30% tailings) without agglomeration, if possible.

An outline of general test procedures for the amenability testing is attached along with estimated charges.

Based on these estimated charges we would estimate the cost of the program as outlined above as follows:

2	Bottle Roll Leach Tests	@ 300.00	600.00
1	Bottle Roll Leach Test followed by Assay Screen Analysis of Residue	@ 600.00	600.00
3	Column Leach Tests	@ 1,500.00	4,500.00
	Estimated Total Cost		$5,700.00

If there are any questions, please contact us.

Good luck with your ventures.

Very truly yours,
DAWSON METALLURGICAL LABORATORIES, INC.

Harmel A. Dawson,
President

HAD-cac

DAWSON
METALLURGICAL
LABORATORIES, INC.

P. O. Box 7685
5217 Major Street
Murray, Utah 84107
Phone: 801-262-0922

January 1984

Outline of Test Procedures for
Initial Amenability Cyanide Leach
Evaluation

In our testing we generally recommend that first a bottle roll test be conducted to evaluate amenability to cyanide leach. In this testing 1000 grams of ore is ball mill ground to about 70% minus 200 mesh. Then, after adjusting the pH with hydrated lime to about 11.0, the slurry is bottle roll leached at 50% solids starting with 10 lb NaCN per ton solution. After leaching the weighed slurry is filtered to obtain a leach solution. Then the residue is given three displacement washes, dried and weighed. The leach solution volume is determined by slurry weight less residue weight. The leach solution and residue are fire assayed for gold and silver. All assaying is conducted by qualified assayors in duplicate. The leach solution is assayed for lime and cyanide content. From the feed and product weights and assays calculated head assay, extractions and reagent consumptions can be calculated.

The results of the amenability testing indicates probably the maximum extraction that could be anticipated and about what reagent consumptions that could be expected. Further testing would be necessary to optimize leach conditions.

If the results from the amenability testing are positive, then testing could be conducted to obtain indications as to size of crush or grind for effective leaching. We have found that a large bottle roll leach test (about 5 kg) on unsized ore crushed to about minus one inch followed by an assay screen analysis of the residue would give good indications as to the size crush required.

Then, if the results indicate leaching at relatively coarse particle size is possible, column leaches could be set up to evaluate the feasibility of heap leaching. In the column leach the crushed rock, with pelletizing if necessary, is placed in a column and cyanide solution is trickle flowed through the columns. Daily solution samples are taken and assayed to evaluate the rate of leaching.

Charges are based on the time required to conduct the service and a schedule of our current charges is attached. We estimate that a bottle roll amenability test would cost $250 to $300.00, bottle roll followed by assay screen analyses of residue would cost $550.00 to $600.00, and a column leach $1,200 to $1,500 with additional charges for assay screen analysis of the residue, if required.

At least 6 lbs of representative ore would be required for the initial amenability testing, 25 lbs for bottle roll leach followed by assay screen analysis, and depending on the particle size required for leaching 250 to 800 lb would be required for column leaching.

DAWSON
METALLURGICAL
LABORATORIES, INC.

P. O. Box 7685
5217 Major Street
Murray, Utah 84107
Phone: 801-262-0922

May, 1982

METALLURGICAL LABORATORIES

SCHEDULE OF CHARGES

1. Laboratory charges are based on the time required to perform the services and the type of work involved. Work conducted by fully qualified metallurgists is charged at $40.00 per man hour, that performed by laboratory technicians is charged at $25.00 per man hour, and $15.00 per man hour for laboratory time.

2. Charges for field consultation are based on $400.00 per day plus travel time, living and travel expenses.

3. Assaying is performed by an outside, independent assay laboratory and charges for this service, as well as any other outside services required in a laboratory investigation, are at actual cost, plus a 10% handling charge.

4. The minimum charge for laboratory work is $250.00 if testing is actually conducted. This does not include assaying, special analyses, or miscellaneous outside charges.

5. Charges are invoiced at the completion of an investigation or monthly, depending on duration of testing, provided credit is established. Total estimated fees are payable in advance in the absence of acceptable credit references.

DAWSON METALLURGICAL LABORATORIES, INC.

PILLAR, LOWELL AND ASSOCIATES
CONSULTING MINING & GEOLOGICAL ENGINEERS
5115 NORTH ORACLE ROAD
TUCSON, ARIZONA 85704

(602) 887-5341
TWX 910-952-1172 PLA TUC

J. DAVID LOWELL
CONSULTING GEOLOGIST

July 19, 1982

Mr. Donald M. Duncan
2555 Sharon Way
Reno, Nevada 89509

Dear Mr. Duncan:

At your request I visited the Vulture Mines Operation on July 7 and the following are my observations and suggestions:

In my brief visit I was not able to become familiar with the geology except in a very cursory way. There is no positive evidence regarding the origin or age of the deposit, but the strong mineralization (as indicated by the areas which have been mined) falls in a more or less continuous, straight zone which seems to cut across Precambrian stratigraphy, and this is evidence for epigenetic rather than syngenetic origin. The association of some ore with Tertiary dikes and veins suggests a possible Tertiary age, but there is also evidence for Precambrian age. Final resolution will have to wait for detailed mapping and age determinations, but this will be worth doing because it may be helpful in prospecting other gold occurrences in the vicinity.

Suggestions which occurred to me during the visit were mainly in the area of how best to look for a second Vulture type deposit in the vicinity. Since the Vulture orebody itself was relatively narrow the first step in trying to find a similar, but blind or buried deposit, would be to attempt to expand the target width of the known deposit. It might be possible to do this by mapping a recognizable silicate alteration halo in the walls of the orebody or from geochemical sampling to determine the presence of one or more trace element dispersion halos in the walls of the Vulture orebody. Elements to analyze for might be Hg, As, Sb, Co, Ni and F. Of these Hg is of particular interest because of its tendency to migrate upward as a gas from a buried or blind deposit and to produce soil anomalies.

I suggest that the whole area of interest be covered with a rock geochemical survey on fairly wide spacing with some samples in areas of shallow cover taken with an air trac or other percussion drill. In the areas of possible extension of the Vulture

orebody some fences of shallow air trac holes might also be useful for more detailed cross sections of assays together with the deep, relatively wide spaced rotary or core holes which are planned.

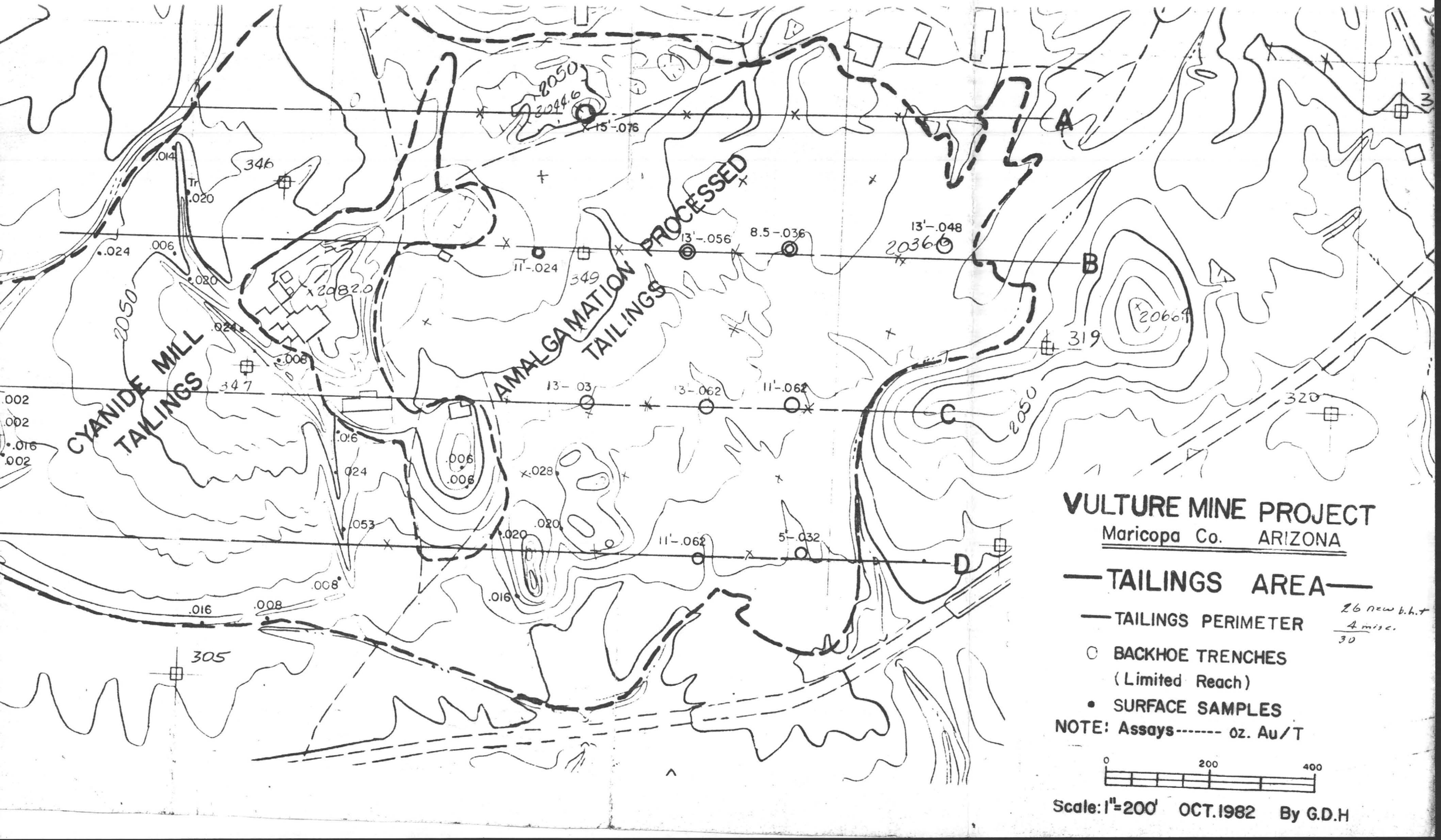
I was not aware prior to my visit that there is as much "smoke" in the vicinity of the Vulture mine as Russ Walker and his group have found, and I believe that the chances are reasonably good for finding another orebody. The geologic work which has been done appears to be of high quality and it will be interesting to see what picture emerges.

Yours very truly,

J. David Lowell

JDL:sbc

cc: Russ Walker✔
Zortman/Landusky Mining Companies
P.O. Box 1904
Wickenburg, Arizona 85358



VULTURE MINE PROJECT

Maricopa Co. ARIZONA

—TAILINGS AREA—

—TAILINGS PERIMETER

26 new b.h.+ 4 misc. 30

○ BACKHOE TRENCHES (Limited Reach)

• SURFACE SAMPLES

NOTE: Assays------- oz. Au/T

0 200 400

Scale: 1"=200' OCT. 1982 By G.D.H

17 16 15 14 13 18
2558 2464 2667 2400 BM 2360
2643 2547 2400 2600 2400 2486 2280 2246 2396 2209
20 21 22 23 24 19
Red Cloud Wash
Wash
MINE
2358 2318 2297 2250
2428
Jimmie
Red Cloud Mine
29 28 27 26 25 30
VULTURE
2200
2205 2203 2332 BM 2090 208
AIRSTRIP
VULTURE MINE
Well
32 33 34 35 36 31
6W 5N
5W
Wash
2084
Jones Well
2104 2108 2098 2067 2036 2024
Cem
1"=± 2000'
2080 2021
5 4 3 2 1 6
Tank
Mine

Vulture

Basic Assumptions 13,000 recoverable tons 0.037 oz rec. or 0.053 oz/head
350,000

Gold price	$375	$400	$425	$450
	[$mm]	[$mm]	[$mm]	[$mm]
Gross in place	4.875	5.200	5.525	5.850
Beal Royalty	0.244	0.312	0.332	0.351
Net in place	4.631	4.888	5.194	5.499
Recapture of exploration costs	0.150	0.150	0.150	0.150
	4.481	4.738	5.044	5.349
Plant capital	0.500	0.500	0.500	0.500
	3.981	4.238	4.544	4.849
Operating costs @ $7.5/ton	2.625	2.625	2.625	2.625
Operating profit	1.356	1.613	1.919	2.224
Taxes @ 35%	0.475	0.565	0.671	0.778
Net Income	0.882	1.048	1.247	1.446
mo/	0.040	0.047	0.057	0.0657

at 750 tpd to leach 1.8 yrs. - 22 mo

Mine 1 ton tails #0.75
1 ton rock 3.75 (2:1)
4.50
leaching 5.50
#10.00

G. Hennessay

D. M. DUNCAN, INC.
MINING DEVELOPMENT • MANAGEMENT

2555 Sharon Way
Reno, Nevada 89509
Telephone 702-826-0890

July 9, 1982

NOTES - VISIT TO VULTURE

July 7, 1982

by

Don Duncan

Participants: Dave Lowell (Tucson geological consultant), Russ Walker, Dave Smith, George Hennessey, Don Burrell, and Don Duncan.

1. A review of property data and a tour of the mine and outlying areas was provided during the morning. Later, in the Wickenburg office, the group reviewed additional data and discussions were held regarding the work program.

2. Some of Dave Lowell's comments follow:

   (a) Additional surface sampling required - consider using a hand held airhammer drill or small air-trac. Drill short (5') holes rather than surface rock chips.

   (b) Consider geochem sampling - particularly in overburden areas.

   (c) Consider air-trac holes between rotary drilling. The 400' spacing proposed for much of the area will leave large gaps.

   (d) We should not over-look the potential for smaller high grade targets. Arizona is not noted for large gold deposits.

3. It was estimated that at least another month's surface sampling is required.

4. Best drill target areas are in vicinity of pits 2, 3; and 4, where average of samples are .10 oz. Au or better. Another good target is along the contact with the intrusive.

5. A very large anomalous area exists which probably averages in the vicinity of .02 oz. Au. The area is too large to drill and better defined targets must be obtained.

6. A rotary drill should be on the property about mid July, probably from Drilling Services, Inc. We will provide the rig with a sampler. Dave Lowell suggested talking with one of his geologists who is very familiar with drilling contractors in the area.

7. A detailed review of the Vulture budget will be made by Russ Walker. We appear to be about one month behind the original time schedule.

8. Dave Lowell will provide a brief report.

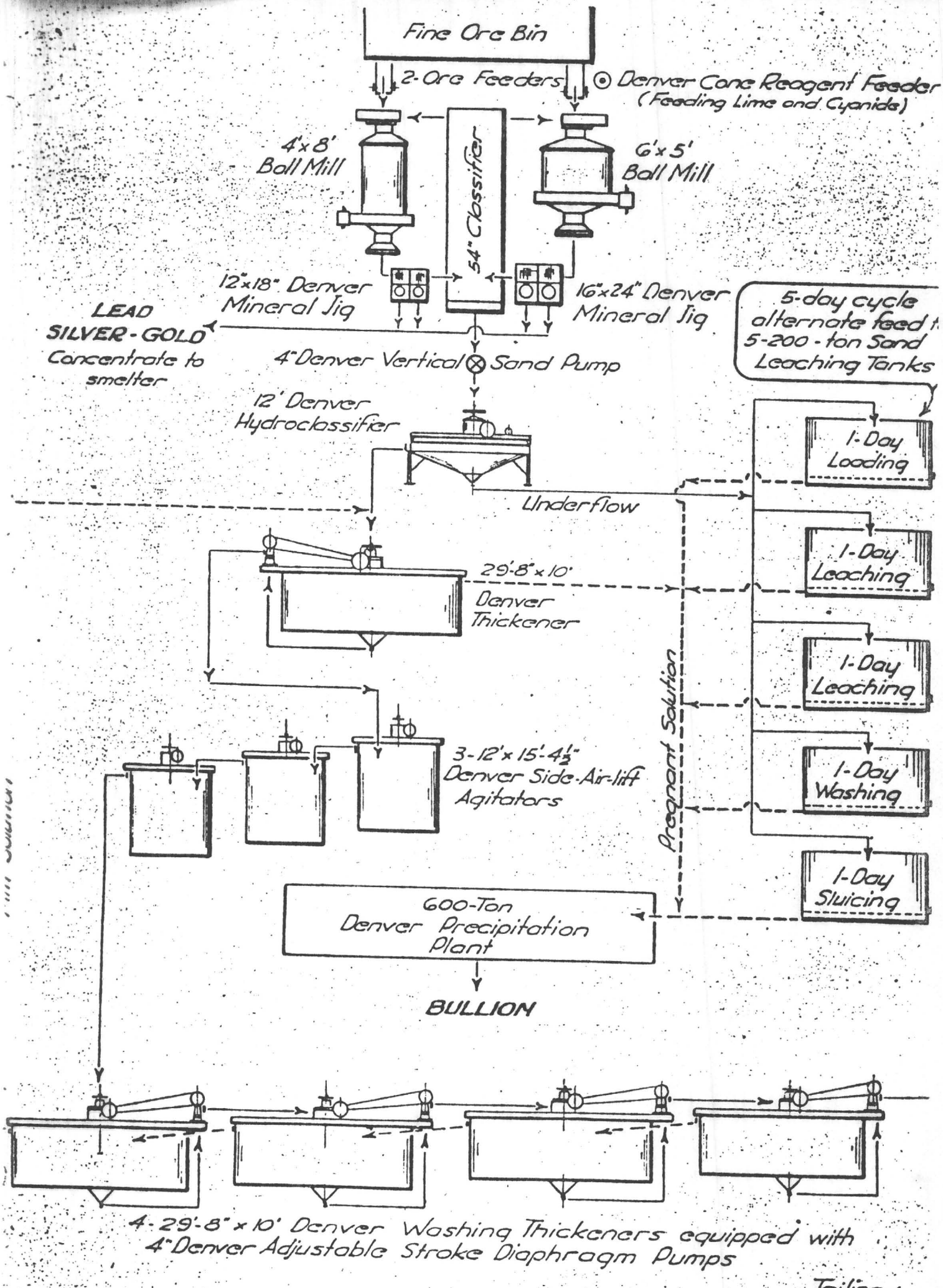
Other items discussed:

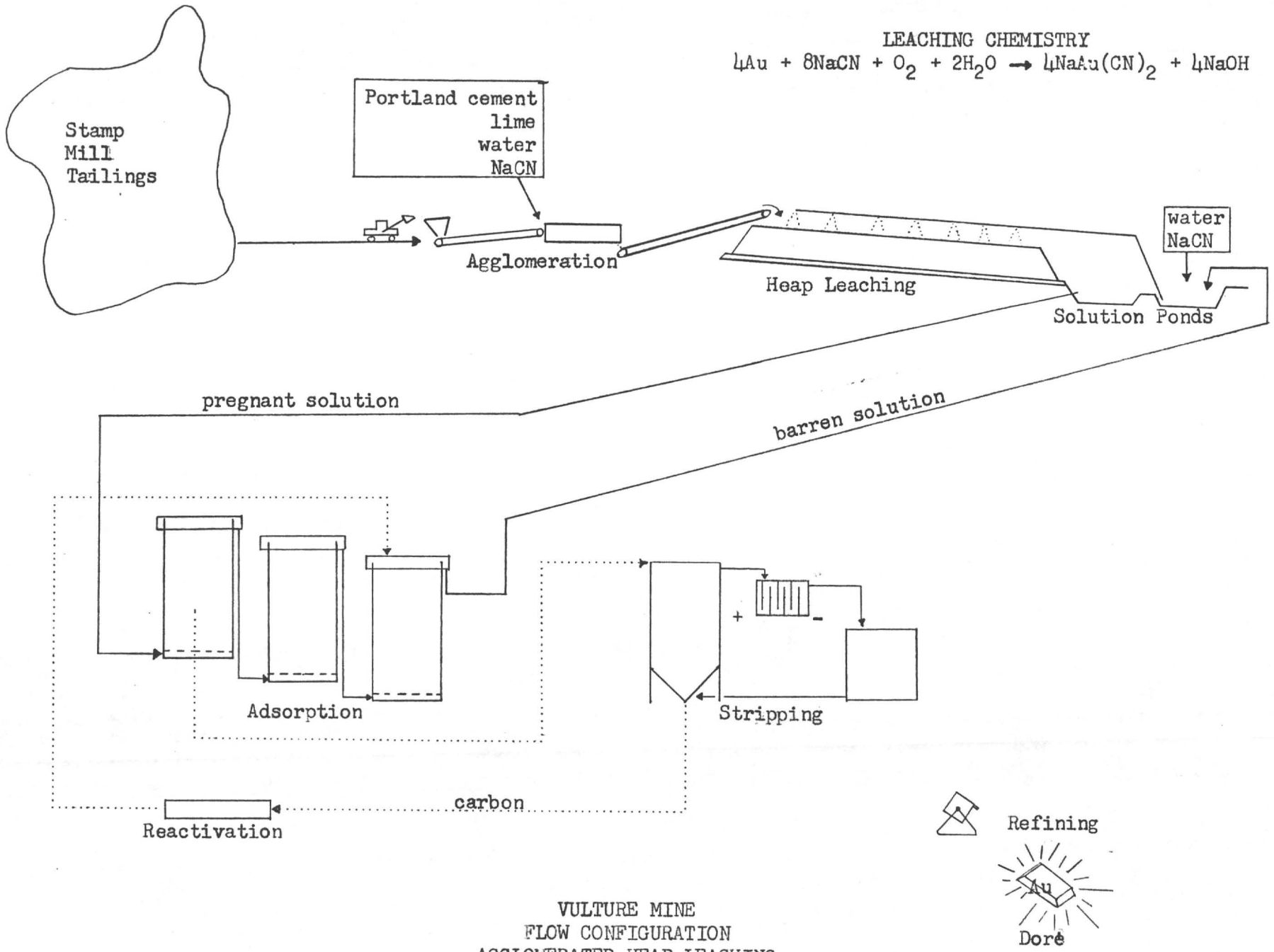
1. Don Burrell will transfer to the German Gulch project during the week of July 12.

2. George Hennessey offered comments regarding the Montoro exploration program. His recommendations will be incorporated into the program.

Copies: D. Belanger
J. Crowhurst
F. Duval
✓G. Hennessay
H. Tenneff
R. Walker
M. Zink

/fap


Fine Ore Bin
2-Ore Feeders
Denver Cone Reagent Feeder
(Feeding Lime and Cyanide)
4'x8' Ball Mill
54" Classifier
6'x5' Ball Mill
12"x18" Denver Mineral Jig
16"x24" Denver Mineral Jig
LEAD SILVER-GOLD Concentrate to smelter
4" Denver Vertical Sand Pump
5-day cycle alternate feed to 5-200-ton Sand Leaching Tanks
12' Denver Hydroclassifier
Underflow
1-Day Loading
1-Day Leaching
29'-8"x10' Denver Thickener
1-Day Leaching
Pregnant Solution
3-12'x15'-4½" Denver Side-Air-lift Agitators
1-Day Washing
1-Day Sluicing
600-Ton Denver Precipitation Plant
BULLION
4-29'-8"x10' Denver Washing Thickeners equipped with 4" Denver Adjustable Stroke Diaphragm Pumps
Tailing



VULTURE MINE
FLOW CONFIGURATION
AGGLOMERATED HEAP LEACHING

DECONCINI McDONALD BRAMMER YETWIN & LACY, P. C.
ATTORNEYS AT LAW

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PHOENIX, ARIZONA 85012-3398
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DINO DECONCINI
OF COUNSEL

December 21, 1984

RECEIVED DEC 22 1984

Mr. Ben F. Dickerson, III
DMEA, Ltd.
4203 North Brown Avenue
Suite F
Scottsdale, Arizona 85251

Dear Ben:

I have enclosed a form of agreement for your use in formalizing consulting arrangements. I have made one version particularly for Mr. Budge with an exhibit prepared from the information Carole furnished me related to the Bell Project. I have also enclosed a second copy of the agreement leaving blanks for your use with other clients.

With regard to the properties acquired in conjunction with client activity, I suggest that a form be followed similar to the Schedule C prepared for the Bell Project. Obviously, when more than one claim is involved, it will be easier to use the tabular listing of the claims.

Very truly yours,

John C. Lacy

jk

Enc.

12-20-84
JCL

CONSULTING AGREEMENT

BY THIS CONSULTING AGREEMENT

effective as of _____, 198__,

by and between DMEA LTD., an Arizona corporation, whose address is 4203 N. Brown Avenue, Scottsdale, Arizona 85251 ("Consultant")

and

Consultant and the Company for the consideration set forth herein, have entered into an agreement whereby Consultant shall provide services to the Company as follows:

1. Term

The term of this Consulting Agreement shall be in effect from the date hereof for a period of _____ unless extended by the mutual consent of the parties or terminated in accordance with Section 7 hereof.

2. Relationship of Parties

Consultant is engaged through its principals, Ben F. Dickerson III and Carole A. O'Brien, in an independent contracting business of providing mineral exploration and land consulting services. Consultant, its employees, servants and agents, shall perform services required by this Agreement as an independent contractor and shall not be considered as an employee of the Company.

3. Retainer and Payment of Consultant

The Company does hereby retain the services of Consultant who shall also provide the services of Ben F. Dickerson III and Carole A. O'Brien. Such services shall be compensated at the rate fixed in Schedule A to this Agreement. Consultant shall invoice the Company once per month for services performed hereunder and shall present receipts for all reimbursable costs, and minor charges may be presented on the statement of Consultant.

4. Activities of Consultant

a. Scope of Project - Consultant shall use its best efforts to evaluate the mineral potential of the lands described under the parameters established in Schedule B, which activities are referred to herein as the "Project."

b. Acquisition of Properties - Consultant may, in the names of the principals or the corporation, stake mining claims on public domain of the United States or acquire mineral exploration permits from the State of Arizona. If such acquisition is made, Consultant shall be the legal owner of such mineral properties and shall not hold title to such mineral properties as a trustee, agent, attorney-in-fact or in any other representative capacity for the Company; provided, however, that the Company is hereby granted an option to acquire such mineral property rights by payment to Consultant of all expenses related to the acquisition of such mineral rights and all costs and expenses related to the evaluation thereof performed by Consultant. Such option shall exist during the term of this Agreement, and if not exercised, Consultant shall be free to deal with such mineral properties in its own behalf. All of such properties shall

be added as appropriate as a Schedule C to this Agreement.

c. Reports - Consultant shall advise the Company on a monthly basis and through a monthly summary of activities and as requested by the Company furnish geological reports and recommendations concerning properties within the Project.

d. Insurance - Consultant shall maintain automobile and public liability insurance in an amount acceptable to the Company and shall furnish the Company with reasonable evidence of the existence of such insurance.

5. Confidentiality

Consultant shall maintain strict security over all knowledge and information acquired or developed during the performance of this Agreement. Consultant shall not divulge such knowledge or information directly or indirectly to any person without the prior consent of the Company; provided, however, that if the Company does not acquire any land position within the Project, or if a position once acquired is thereafter relinquished, Consultant shall be free to use any information so acquired after termination of this Agreement.

6. Notice

Any notice required shall be given in writing personally delivered or deposited in the United States mail and addressed to the parties as indicated in the recital of the parties hereto. Delivery shall be complete upon mailing as evidenced by the postmark on the envelope. Each of the parties may change its mailing address by notice given as set forth above.

7. Termination

This Agreement may be terminated at any time by either party upon _____ (____) days' written notice to the other party. In such event, the Company shall have no further obligation to Consultant except to make payments which have theretofore become due under Section 3 hereof, and Consultant shall have no further obligation to furnish such reports as may be required hereunder.

8. Assignment and Subcontracting

Consultant shall not assign or subcontract in whole or in part any of the services to be furnished under this Agreement with prior written consent of the Company.

SIGNED this ____ day of _____, 198__.

Consultant: The Company

DMEA LTD

By_____ By_____

Ben F. Dickerson III

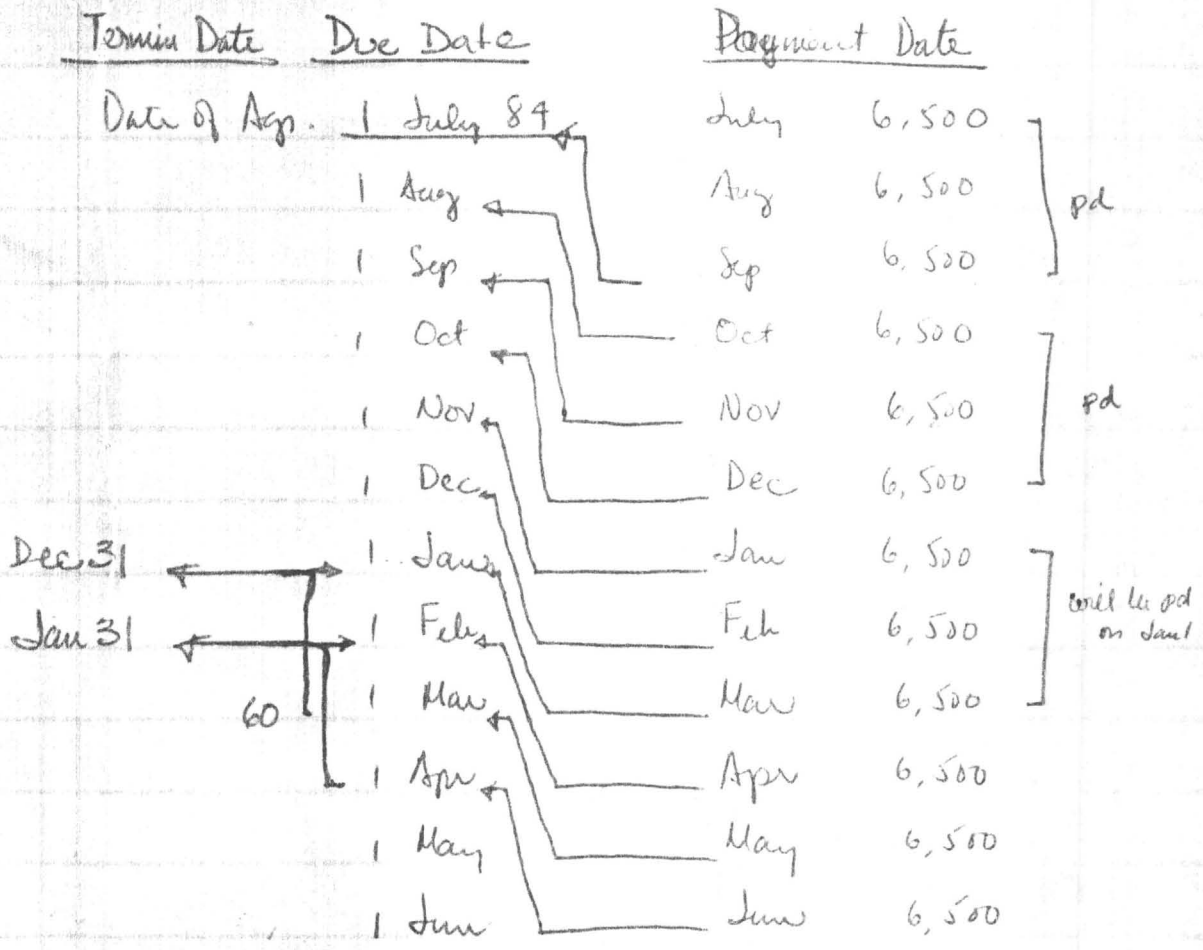
3,5-6

Don White
Nov. 1984

ASSAY SAMPLES

Hole No.*	Footage intervals* (generally 5-ft) samples	No. samples in interval	Total samples in hole
H-1	130 180	10	29
	180 181	1	
	211 215	1	
	215 300	17	
H-15	5 205	40	40
H-16	0 65	13	30
	65 68	1	
	80 160	16	
H-17	5 50	9	30
	55 160	21	
H-18	5 160	31	31
H-19	20 140	24	24
H-20	10 160	30	30
H-21	10 160	30	30
H-22	5 160	31	31
H-23	0 100	20	20
H-12	120 250	26	26
H-24	0 200	40	40
H-25	5 140	26	26
H-26	0 150	30	30
H-27	0 180	36	36
H-28	0 120	24	24
H-29	0 55	11	11
H-30	0 140	28	28
H-31	0 340	68	68
TOTALS 19 Holes	—	584	584 Total samples for gold assay (using one assay-ton sample)

* Note: Sample numbers composed of Hole Number and footage interval; (eg. H-21 , 15-20) and no other number need be used.


Termin Date
Due Date
Payment Date
Date of Agr.
1 July 84
July 6,500
1 Aug
Aug 6,500
pd
1 Sep
Sep 6,500
1 Oct
Oct 6,500
1 Nov
Nov 6,500
pd
1 Dec
Dec 6,500
Dec 31
1 Jan
Jan 6,500
Jan 31
1 Feb
Feb 6,500
could be pd on Jan 1
60
1 Mar
Mar 6,500
1 Apr
Apr 6,500
1 May
May 6,500
1 Jun
Jun 6,500

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DINO DECONCINI
OF COUNSEL

December 7, 1984

Ms. Carole O'Brien
DMEA, Ltd.
4203 North Brown Avenue
Suite F
Scottsdale, Arizona 85251

Re: Vulture Mine Option and Lease Agreement

Dear Carole:

You recently asked two questions related to the Vulture Option and Lease Agreement effective July 1, 1984. You indicated that Mr. Budge was considering the possibility of terminating the Agreement and asked (1) whether if no notice of termination was given, what affect this would have on obligations owing to VMP, and, (2) even if a notice of termination were given, could Mr. Budge thereafter change his mind and reinstate the Agreement.

With regard to the first question, the Agreement is structured as a one-year option that may be extended for an additional one-year period. The act of extending the option requires specific action by Budge. The option payments are payable monthly three months in advance. The obligation to make these monthly payments, therefore, would accrue three months ahead of the due date, and, therefore, to avoid making any such monthly payment, a notice of termination would have to be given 60 days prior to that date under the applicable provisions of the termination clause. Effectively, therefore, there is a five-month termination lead time for the individual monthly payments. This obligation, however, does not go beyond the total obligation for the first year's option payments, and the failure to make any further payments after the June, 1985, (due on March 1, 1985), would require the exercise of an option to extend. It would also appear that in order to avoid this last payment, notice of termination would have to be given by January 1, 1985.

If notice of termination is not given and the payment was not made, then the Lessor, in my opinion, would have the ability to institute legal action to collect this money. However, any monies due after January 1 (i.e., the March payment) that would reflect option payments for the second year of the agreement

March payment) that would reflect option payments for the second year of the agreement would not automatically become due, and it appears that Budge could elect to simply stay in possession of the property without paying anything further through the June 30, 1985. By this time, however, the ability to continue the Agreement into the second year would be substantially jeopardized. I suggest, therefore, that Mr. Beal be approached to amend the Agreement to not require the payments to be three months in advance for the second year of the term. In this way, Mr. Budge could make the determination at any time up to the 30th of June whether or not he wanted to continue the option for a second year, in which case he would simply make the regular monthly payment and the $25,000 bonus required to extend the option for the second year.

The answer to your second question related to the possibility of giving a notice of termination and thereafter withdrawing it seems fairly clear. The notice of termination is a unilateral abandonment of contractual rights under the Agreement and actually terminates the Agreement subject only to specified rights of possession and other contractual rights. Once that action is put into motion it cannot be reversed without the consent of the Lessor. The reason for lengthy termination clauses is usually to allow the Lessor to take whatever steps he deems necessary to secure a new Lessee or developer of the Property. Thus, to allow a Lessee to reverse a notice of termination might unduly interfere with the contractual rights of the Lessor.

In conclusion, it is my opinion that because of the rather intricate structure of the Agreement created by overlaying a 60-day termination clause with monthly payments due three months in advance I strongly advise that a modification of the Agreement be negotiated with Mr. Beal to allow Mr. Budge the flexibility he needs to evaluate the current information.

Very truly yours,

John C. Lacy

jk

F. Duval

PRELIMINARY DRAFT

Boyless!

VULTURE PLACERS, ARIZONA

by

J.E. Lusney, P.Eng.

for

PEGASUS GOLD LTD.

April, 1982

TABLE OF CONTENTS

PRELIMINARY DRAFT

VULTURE PLACERS, ARIZONA

GENERAL

Owing to the presence of gold-bearing rocks in most mountain ranges of the Southwest, gold placers have been found in nearly every county in Arizona. Most of the placers are in accumulations of unsorted, coarse, angular gravels in gullies, dry washes and on hillsides. The gold is mixed with the debris from the adjacent bedrock and is generally concentrated at or near bedrock or on caliche-cemented gravels above bedrock.

Numerous small high-grade gold quartz veinlets rather than single large lode deposits appear to be the most common source of the placer gold. In most cases the gold has been transported only a very short distance from the source. Streams forming the transporting medium were small, intermittent and subject to torrential floods, thus providing very little opportunity for effective sorting of the gravels or concentration of the gold and often to the contrary destroying any concentrations and spreading the gold over a wide area.

Placer properties in arid areas are usually small and the pay streaks are often erratic so that the chances of finding economic deposits will depend on some luck and careful prospecting and evaluation.

VULTURE PROPERTIES

The Vulture placers were first worked in 1867 by as many as 300 men ?, who said? using dry washing methods. Within 10 years, the richest, readily available gravels had been mined and only intermittent operations have been carried on since, usually one or two man shows. No production figures are available for the early period but it is recorded that $61,000 was produced from 1904 to 1949.

The principal rocks of the Vulture area consist of pre-Cambrian schists which contain the large, rich gold-bearing quartz veins of the former lode producer, and also many smaller veins. The origin of the placer gold appears to have been these smaller quartz veins.

The Vulture placers, an area of approximately 3 square miles, covers the pediment northwest of the old Vulture mine. The gravels are composed mainly of medium to fine,angular pebbles of schist and quartz and probably average 10 feet in depth. Considerable caliche cement is visible in most exposures. Information from the locals indicates that some gold is distributed throughout the gravels, but it is more abundant near bedrock. Old reports indicate that the gold is coarse but recent testing also showed considerable fine gold. This would indicate that the old dry-washing machines were not very effective. This is confirmed by the fact that considerable gold is found in the old tailings.

The gold seen at the property is very angular indicating that it has not moved far from its source. It appears to have a fineness of about 750 and does not amalgamate readily.

The Vulture placer property has all the characteristics of the arid deposits described in the previous article and thus due to its nature will require a substantial exploration program to develop its merits.

OBSERVATIONS

The Vulture placer property has some favorable points as a prospect. These are:

1) readily accessible
2) no large boulders
3) known gold producing area,
4) physically easy to explore, and
5) no serious environmental problems.

Unfavorable conditions are:

1) nature of deposit with erratic values and lack of paystreaks or concentrations,
2) water supply, and
3) caliche in gravels detrimental to good recovery.

There are no known successful dry washing methods suitable for large scale mining so production would have to be based on a wet method. Water would either have to be brought in from outside or developed from deep wells in the area. Considerable re-use of the water could be planned: the caliche in the gravels could,however, be detrimental. There is ample space for settling and storage ponds.

The gravels would appear to wash relatively easily using high pressure water in a rotating trommel. Once again the caliche may affect the recovery process. The coarse angular gravels would increase the wear on plates and sluices.

Recommended testing of the Vulture placers would be trenching with a backhoe and washing all the material from the trench in a pilot plant. Due to the erratic nature of the deposit, a very extensive drilling program would be needed to assess the property. N.B. This is a second choice + Lusney does not recommend it The trenching program not only gives a larger sample, it also provides the opportunity to experiment with the recovery system.

CONCLUSIONS AND RECOMMENDATIONS

Mostly due to the history of placer deposits in arid climates and their erratic distribution of values, it is felt that the Vulture placer property has very little chance of success on its own. Lack of water and the detailed testing required are added disadvantages. However, if the Company does proceed with other operations in the area, it is felt that the placer property would have sufficient merit to warrant an exploration program. Once an economical placer reserve is outlined, the actual earth moving and gold recovery should be no obstacle.

It is recommended that any testing of the Vulture gold placers be deferred until the present geological examination of the lode deposits is further advanced and results appear to be positive.

J.E. Lusney, P.Eng.

Pts

Printed on 12-21-1984 at 08:45:57
S VULTURE(W)MINE

1 2 VULTURE(W)MINE

? T 1/5/1-2

1/5/1

098039 39-19130-N

Finding the Lost Vulture mine [Maricopa County--gold]

Thompson, Arthur Perry

Min. Jour., Phoenix, Ariz. vol. 14, no. 13, pp. 9-11, 28-30, November 30
, 1930

Subfile: N

Descriptors: *Arizona; *Gold ; Physical geology ; Lost Vulture mine

1/5/2

098016 39-19107-N

Finding the Lost Vulture mine [Maricopa County--gold]

Thomas, J. S.

Min. Jour., 1936: Geol. Mag. 872 vol. 74, no. 2, pp. 94-95, February,
1937

Subfile: N

Descriptors: *Mexico ; Mineralogy ; Tampico area

?
Printed on 12-21-1984 at 08:48:03
T 5/5/1-3

5/5/1

1203467 83-59027

Arsenic and gold mineralization in the McFarland Canyon-Story Mine area,
Maricopa County, Arizona

Marsh, S. P.

Open-File Report (United States Geological Survey. 1978) 24p., 1983

CODEN: XGROAG ISSN: 0196-1497 9 REFS.

Subfile: B

Country of Publ.: United States

Doc Type: SERIAL; REPORT; MAP Bibliographic Level: MONOGRAPHIC

Languages: English

Report No.: 83-0442

Availability: U. S. Geol. Surv., Open-File Serv. Sect., West. Distrib. Branch, Denver Fed. Cent., Lakewood, CO, United States

6 tables, geol. sketch map; 1:6,000; geol. map

Latitude: N335500; N340500 Longitude: W1113000; W1113500

Descriptors: *Arizona; *mineral exploration; *mineral deposits; *genesis ; economic geology; gold ores; geochemical methods ; hydrothermal processes; arsenic ores; Maricopa County; Payson Granite; Alder Formation; USGS; United States; McFarland Canyon; Story Mine; Mazatzal Wilderness; arsenic; rhyolite; andesite-rhyolite family; dikes; intrusions; mineral deposits, genesis; Proterozoic; Precambrian; granite; granite-granodiorite family; arsenopyrite; arsenides; sulfides ; volcanic processes; geologic maps; maps; geochemical indicators

Section Headings: 27 .(ECONOMIC GEOLOGY, METALS)

5/5/2

1157221 01157221

Ranchers/ACNC form joint venture to explore Mystic I

Anonymous

Skillings Mining Review 71: 52, 9p., 1982

ISSN: 0037-6329

Subfile: B

Country of Publ.: United States

Doc Type: SERIAL Bibliographic Level: ANALYTIC

Languages: English

Descriptors: *Arizona ; economic geology ; gold ores; Maricopa County;

news; United States; Phoenix; Mystic I; mineral exploration

Section Headings: 27 .(ECONOMIC GEOLOGY, METALS)

5/5/3

098039 39-19130-N

Finding the Lost Vulture mine [Maricopa County--gold]

Thompson, Arthur Perry

Printed on 12-21-1984 at 08:51:15

8/5/1

1244503 84-37830

Complex Oligocene-Miocene extensional and strike-slip tectonics in west-central Arizona

Otton, J. K.

U. S. Geol. Surv., Denver, CO, USA

The Geological Society of America, Cordilleran Section, 77th annual meeting, international meeting

The Geological Society of America, Cordilleran Section, 77th annual meeting, international meeting, Hermosillo, Mexico, March 25-27, 1981

Abstracts with Programs - Geological Society of America 13: 2, 99p., 1981

CODEN: GAAPBC ISSN: 0016-7592

Subfile: B

Country of Publ.: United States

Doc Type: SERIAL; CONFERENCE PUBLICATION Bibliographic Level: ANALYTIC

Languages: English

Descriptors: *Arizona; *faults; *folds ; structural geology; displacements; orientation ; tectonics; strike-slip faults; longitudinal folds; Chapin Wash Formation; United States; west-central Arizona; Oligocene; Paleogene; Tertiary; Cenozoic; Rawhide Mountains; Artillery Mountains; Rawhide Mountains; Vultures Mountains; areas

Artillery Mountains; Poachie Mountains; Vulture Mountains; Upper Oligocene; Miocene; Neogene; lower Miocene; Date Creek Basin; Sandtrap Wash Fault; Big Sandy River; basement; uplifts; effects; normal faults ; mylonites; terrains; breccia; clastic rocks; lateral faults; oblique faults; dip-slip faults; fault zones; thrust fault

Section Headings: 16 .(STRUCTURAL GEOLOGY)

8/5/2

1196960 83-50860

Tertiary stratigraphy and geochronologic problems, west-central Arizona

Otton, J. K.

U. S. Geol. Surv., Denver, CO, USA

Rocky Mountain Section, the Geological Society of America, 34th annual meeting

Kolm, K. E.(chairperson)

34th annual meeting of the Rocky Mountain Section, Geological Society of America, Rapid City, SD, United States, Apr. 16-17, 1981

Abstracts with Programs - Geological Society of America 13: 4, 222p., 1981

CODEN: GAAPBC ISSN: 0016-7592

Subfile: B

Country of Publ.: United States

Doc Type: SERIAL; CONFERENCE PUBLICATION Bibliographic Level: ANALYTIC

Languages: English

Note: 41.5-8 m.y.,

Latitude: N330000; N360000 Longitude: W1120000; W1144500

Descriptors: *Arizona; *igneous rocks; *absolute age ; geochronology; volcanic rocks; dates ; Tertiary; Yuma County; Coconino County; Yavapai County; Maricopa County; Mohave County; Chapin Wash Formation; United States; Cenozoic; west-central Arizona; Vulture Mountains; Artillery Mountains; Poachie Range; K/Ar; alkali basalt; alkali basalt family; rhyolite; andesite-rhyolite family; volcanism; andesite;

alluvium; clastic sediments; tuff; pyroclastics and glasses; Black Mountains; stratovolcanos

Section Headings: 03 .(GEOCHRONOLOGY)

8/5/3

1008643 80-49767

Geochronology, geology, and listric normal faulting of the Vulture Mountains, Maricopa County, Arizona

Rehrig, W. A.; Shafiqullah, M.; Damon, P. E.

Conoco, Denver, Colo., USA

Studies in western Arizona

Jenney, J. P.(EDITOR); Stone, C.(EDITOR)

Ariz. Geol. Soc. Dig. 12, 89-108p., 1980

CODEN: AGSDA7 ISSN: 0066-7412 47 REFS.

Subfile: B

Country of Publ.: United States

Doc Type: SERIAL Bibliographic Level: ANALYTIC

Languages: English

illus., tables, plates, geol. sketch maps

Latitude: N340000; N340000 Longitude: W1133000; W1133000

Descriptors: *Arizona; *absolute age; *intrusions; *faults ; structural geology; dates; batholiths; displacements ; tectonics; igneous rocks; structure; normal faults; Maricopa County; United States; Vulture Mountains; Basin and Range Province; Sr/Rb; cartography

Section Headings: 16 .(STRUCTURAL GEOLOGY)

8/5/4

897799 78-26531

Age of Tertiary volcanism and tilt-block faulting in West-central Arizona

Miller, D. G.; Lee, G. K.; Damon, P. E.; Shafiqullah, M.

Fugro Inc., Long Beach, Calif., USA; Univ. Ariz., USA

The Geological Society of America, Cordilleran Section; 73rd annual meeting, Sacramento, Calif., United States, April 5-7, 1977

Geol. Soc. Am., Abstr. Programs 9: 4, 466-467p., 1977

CODEN: GAAPBC

Subfile: B

Country of Publ.: United States

Doc Type: SERIAL; CONFERENCE PUBLICATION Bibliographic Level: ANALYTIC

Languages: English

Latitude: N325000; N340000 Longitude: W1123000; W1130000

Descriptors: *Arizona ; stratigraphy ; Tertiary; Maricopa County; United States; Cenozoic; lithostratigraphy; Gila Bend; Wickenburg; tectonics; red beds; clastic rocks; welded tuff; pyroclastics and glasses; trachybasalt; alkali basalt family; unconformities; tholeiitic basalt; basalt family; trachyandesite; andesite-rhyolite family; faults ; block structures; fanglomerate; Palo Verde Hills; volcanism; Belmont Mountains; Vulture Mountains

Section Headings: 12 .(STRATIGRAPHY, HISTORICAL GEOLOGY)

8/5/5

810069 76-36315

Massive calcite in the Vulture Mountains near Wickenburg, Maricopa County, Arizona

Sanders, D. E.

Northern Arizona

unpaginatedp., 1974

Subfile: B

Degree Level: Master's

Doc Type: THESIS Bibliographic Level: MONOGRAPHIC

Languages: English

Descriptors: *minerals; *Arizona; *mineral deposits; *genesis ; carbonates; processes; petrology ; Maricopa County; calcite; massive;

crystallinity; veins; emplacement; possibilities; Wickenburg; hydrothermal processes; igneous processes; epithermal processes; igneous rocks; volcanic; breccia; United States

Section Headings: 05 .(PETROLOGY, IGNEOUS AND METAMORPHIC)

8/5/6

716520 74-21654

Massive calcite in the Vulture Mountains near Wickenburg, Maricopa County, Arizona [abstr.]

Sanders, David E.

in Rocky Mountain Section, 27th Annual Meeting,

Geol. Soc. Am., Abstr. Vol. 6, No. 5, p. 472, 1974

CODEN: GAAPBC

Subfile: B

Doc Type: SERIAL

Languages: English

Descriptors: *Arizona; *Intrusions; *Igneous rocks ; Petrology; Dikes; Lamprophyre and carbonatite family ; Vulture Mountains; Maricopa County; Wickenburg; Calcite; Cenozoic; United States; Carbonatite

Section Headings: 05 .(PETROLOGY, IGNEOUS AND METAMORPHIC)

?
Printed on 12-21-1984 at 08:56:18

12/5/2

1210151 84-03655

Lost mines of Arizona

Wilson, W. E.

Mineral. Rec., Tucson, AZ, USA

The Mineralogical Record 14: 5, 269-281p., 1983

CODEN: MRECA7 ISSN: 0026-4628 30 REFS.

Subfile: B

Country of Publ.: United States

Doc Type: SERIAL Bibliographic Level: ANALYTIC

Languages: English

Arizona-V, illus., 1 table

Descriptors: *Arizona; *mining geology ; economic geology; history ; gold ores; Yuma County; United States; mines; exploration; Mogollon Rim; Tonto Basin; Mount Ord; Sycamore Canyon; Monument Valley; Colorado Desert; Yuma; Whetstone Mountains; New Mexico; Santa Catalina Mountains; silver ores; mercury ores; Chocolate Mountains; Trigo Mountains; underground installations; site exploration; popular geology

Section Headings: 27 .(ECONOMIC GEOLOGY, METALS)

? T 12/5/5

12/5/5

1163520 83-19622

Exploration for epithermal gold and silver deposits; the epithermal model

Eimon, P.

The First international symposium on small mine economics & expansion; papers

Anonymous

The First international symposium on small mine economics and expansion, Taxco, Mexico, May 17-21, 1981

Publ: Miller Freeman Publ.

15p., 1981

ISBN: 0-87930-125-2 29 REFS.

Subfile: B

Country of Publ.: United States

Doc Type: BOOK; CONFERENCE PUBLICATION Bibliographic Level: ANALYTIC

Languages: English

illus., sects.

Descriptors: *bibliography; *mineral deposits; *genesis; *gold ores; *silver ores ; economic geology; processes ; metal ores; epithermal processes; Elko County; Nye County; Mineral County; mineral exploration ; mineral deposits, genesis; models; hydrothermal processes; Colorado; United States; Creede; Guanajuato; Mexico; North America; Nevada; Round Mountain; Hardshell; Arizona; Carlin; small mines

Section Headings: 27 .(ECONOMIC GEOLOGY, METALS)

? T 12/5/6

12/5/6

1162350 83-19627

Go where the gold is

Fischer, C.

Rock & Gem 13: 1, 24-26p., 1983

ISSN: 0048-8453

Subfile: B

Country of Publ.: United States

Doc Type: SERIAL Bibliographic Level: ANALYTIC

Languages: English

illus.

Latitude: N330000; N330000 Longitude: W1080000; W1080000

Descriptors: *Arizona; *New Mexico; *placers ; economic geology; gold ores ; United States; mineral exploration; geological methods; Mogollon Mountains; White River; ore guides; popular geology; collecting; eastern Arizona; western New Mexico; Catron County; Colorado Plateau

Section Headings: 27 .(ECONOMIC GEOLOGY, METALS)

? T 12/5/9

12/5/9

1118982 82-42116

Lithological, structural, chemical and mineralogical patterns in a Precambrian stratiform gold occurrence, Yavapai County, Arizona

Swan, M. M.; Hausen, D. M.; Newell, R. A.

Newmont Explor., Tucson, AZ, USA; Occident. Res. Corp., USA

Process mineralogy; extractive metallurgy, mineral exploration, energy resources

Hausen, D. M.(EDITOR); Park, W. C.(EDITOR)

Newmont Explor., Danbury, CT, USA

110th AIME annual meeting, TMS-AIME Process Mineralogy Committee ; Process mineralogy; extractive metallurgy, mineral exploration, energy resources, Chicago, IL, United States, Feb. 22-26, 1981

Publ: Am. Inst. Min. and Metall.

143-157p., 1981

ISBN: 0-89520-379-0 11 REFS.

Subfile: B

Country of Publ.: United States

Doc Type: BOOK; CONFERENCE PUBLICATION Bibliographic Level: ANALYTIC

Languages: English

illus., geol. sketch maps

Latitude: N343400; N343400 Longitude: W1122800; W1122800

Descriptors: *Arizona; *mineral deposits; *genesis; *arsenic; *tin; *copper; *zinc; *silver ; economic geology; processes; geochemistry ; gold ores; exhalative processes; metamorphic rocks; Yavapai County; Yavapai Series; United States; stratiform deposits; Precambrian; Prescott; Agua Fria District; volcanism; metasedimentary rocks; metavolcanic rocks; sericitization; metasomatism; chloritization; silicification; mineral deposits, genesis

Section Headings: 27 .(ECONOMIC GEOLOGY, METALS)

? T 12/5/12

12/5/12

1068889 81-56380

In search of gold, Part IX

Mitchell, J. R.

Jewelry Making Gems & Minerals 523, 46-49p., 1981

ISSN: 0274-8193

Subfile: B

Country of Publ.: United States

Doc Type: SERIAL Bibliographic Level: ANALYTIC

Languages: English

illus., sketch maps

Descriptors: *United States ; economic geology ; gold ores; exploration; resources; distribution; North Carolina; South Carolina; Georgia; Alabama; Arizona; New Mexico; Nevada; Utah; California; popular geology

Section Headings: 27 .(ECONOMIC GEOLOGY, METALS)

? LOGOFF

21dec84 11:03:51 User34404

$19.32 0.230 Hrs File89 12 Descriptors

$1.84 Telenet

$4.80 34 Types

$25.96 Estimated Total Cost

LOGOFF 11:03:58

call from Frank Millsaps: Tuesday, April 10

- straight column leach of tailings: no percolation
- mixed with 10# cement, 5# lime, agglomeration: pellets soft
- will try with 15# cement, 10# lime
- next week, will blend tails and pit samples and try percolation test

call from Milt Hood: Tuesday, April 10 at 7:30 p.m.

- drill broke yesterday afternoon
- samples from first two holes sent UPS to Lab in Tucson
- dozer 14, 14½ hours @ $85.00/hour plus $200 mobilization

  drill site preparation & clean up at base of face in pit

call to Milt: Wednesday at 10:45 a.m.

- sent samples from 300' drilling (2 holes) by UPS at 10 a.m. total cost $42.71

Thursday, April 12th:

- Milt said samples from holes #3 & #4 sent UPS to Tucson today; samples from drilling today and tomorrow he will take to Tucson tomorrow (Friday); samples from weekend drilling, he will take down Monday morning.
- Frank Millsaps said he would check on swell factor on tailings; he said 2.67 sp. gravity seemed reasonable; usually 105-110#/cu.ft. or about 20 cu.ft./ton.

Notes - BFD October, 1984

Abstract of NEI report on Vulture Prospect by Michael Donnelly
March 16, 1981

Recommendations

High grade mineralization restricted to zones of quartz veining and adjacent wall rock. Gold in metasediments has direct correlation with intensity and extent of hydrothermal alteration; altered portions of quartz monzonite intrusive are weakly mineralized.

Best potential for gold mineralization on meaningful scale (NEI) is restricted to the intrusive body; veins near exhaustion and gold in metasediments very low grade.

IP survey revealed nothing much of value; one weak anomaly - maybe one drill hole on it.

Property of some interest, but high cost deal precludes work at this time. (Beal mentioned unfavorably.)

Introduction - History

Nothing much new. Two north dipping, east raking ore shoots mined; west shoot to 600 feet; east shoot to approx. 1000 feet; one stope on west shoot, 100-ft. level was approx. 80 feet wide. Noranda had 6-month walk-on at $1,000/month. In 1970, conducted a bulk sampling program. No results given.

Present work consisted of rock chip and channel samples; detailed mapping in pits; and 20 shallow rotary holes (24-36 feet deep).

Regional Setting

Nothing new - Rehrig

Geology - Mine Area

Protovolcanics & sediments

Series of metavolcanics, amphibolites, fine- to coarse-grained epiclastics, quartz-pebble conglomerate and some volcaniclastics; a small lens (?) of ferruginous chert located north of pits is only chemical sediment seen. Upper greenschist metamorphism (staurolite to chlorite); some folding and pegmatites (aplite?).

Metasediments = wackes, quartz-wackes, siltites and quartzites; quartz pebble lens (?) exposed in pits; 75 feet thick in east pit; matrix strongly foliated quartz-sericite.

No bed top indicators: rock probably equivalent to Spud Mountain, or, Iron King volcanics: approx. 1760 m.y. age

Quartz Monzonite Porphyry Intrusive

Least understood rock in the mine area; poorly exposed; multiple facies and alteration overprint make it difficult to map.

Field evidence indicates Qm brought hydrothermal alteration to metasediments along with aplite and pegmatites; latter two very subordinate to Qm porphyry. Outcrop extent of Qmp is poorly defined; that exposed west of mine area dips under gravels to south, east and west. Mapping does show intrusive persists for 1 mile to north and northwest.

Small exposure of Qmp in pits in central part of mine area represents thin knobby apophysis of main intrusive mass. Qmp not seen underground.

Tertiary

Mid-Tertiary volcanics mostly andesite lavas and tuffs with some intercalated epiclastic and volcaniclastic materials. A 1929 Mining Journal article suggests 500 to 600 feet of volcanics on east side of Schoolhouse Fault in drill holes. The only Tertiary unit in the mine area is porphyritic rhyolite dike exposed in southwestern most pit.

Quartz veins - zones

Two large and several smaller veins provided most of historic production; sub-parallel, east-west, semi-conformable to enclosing metasediments. Two large veins tentatively traced through pit areas for 900 feet.

Veins mostly quartz-carbonate with a little pyrite, chalcopyrite and galena; native gold in flakes and leaves in association with basemetal rich portions.

All mineralized vein samples show multiple stages of brecciation, silicification and annealing in thin section and hand specimen. Silicified wall rock fragments occur in all veins and show ghost outlines; changes color of veins to blue-grey; may be a quartz vein breccia.

Absence of cross-cutting relationships prevents establishing relative ages among veins. Two barren vein events in mine area; 2-30 mm thick veins in metasediments.

Structure

Fabric dominated by west trending, north dipping metasediments; both Qmp intrusive and quartz veins are partly controlled by rock structural grain; 35 to 55 degree north dips.

Limited folding, northeast plunging isoclines; wave length less than 1 meter in east wall of west pit.

Faulting

Property in broad zone of intense north-northwest to northwest trending normal faults - shaped Vulture range.

Three episodes can be seen

1) In mine area: east-west to west-northwest trending high angle normal faults, predating quartz veins. These provided avenue for hydrothermal alteration best seen in east pit.

2) Post mineral faulting a) low angle normal faults displace quartz veins in stair step fashion; b) north-northwest trending high angle faults with right lateral movement; age relationship between (a) and (b) not known.

3) North trending Basin and Range faulting; youngest episode in area. The Schoolhouse Fault exemplifys; may have 500 to 600 feet of vertical displacement.

Hydrothermal Alteration

All metasediments and Qpi rocks in mine area have been hydrothermally altered. Quartz-sericite-pyrite is characteristic, and is most advanced in the Qpi apophysis and in fine-grained clastic units.

As a rule, metasediment alteration is strongly developed adjacent to mineralized quartz veins; alteration decreases laterally for 10's of feet before it becomes indiscernable with greenschist metamorphism. However, this relationship breaks down when alteration is structurally controlled and alteration overlaps. Structurally controlled alteration best seen in southwestern corner of east pit.

Advance alteration in metasediments frequently obliterates all relict sedimentary features. Fine-grained clastics are most susceptible and are usually replaced by an auriferous qtz-ser-py association. Pyrite may form 1-5% volume of rock.

Mineralization

Rock chip geochem in conjunction with mapping shows that gold mineralization occurs in 2 distinct modes:

1) mineralized quartz veins and in their hydrothermally altered wall rocks;

2) disseminated gold mineralization in Qpi. Although copper, lead, zinc and silver are present in anomalous amounts, gold is the principal metal. Gold-silver ratios vary from 1:1 in weakly altered metasediments to 1:3.8 in strongly mineralized

quartz veins.

Base metal concentrations are low in all units, with the exception of high grade samples. Arsenic content is quite low, 15-20 ppm, and shows no relationship to gold. Gold vs. lithology plot clearly shows gold mineralization not confined to a single stratigraphic unit or rock type. Gold does vary with the intensity of alteration.

Gold mineralization in Qpi is poorly understood. Rock chip analyses suggest that Qpi in the immediate mine area is weakly gold bearing and there is correlation between intensity of alteration and gold content. Pyritic samples usually the most strongly mineralized. Gold values in Qpi range from a low of 0.04 ppm to a high of 2.2 ppm.

IP Survey

Designed to detect possible sulfide-rich portions of intrusive body and to delineate strongly altered metasediments (Mining Geophys. Surveys of Tucson); 4 north-south trending lines, 500-600 feet apart.

Result: weak amplitude IP response with associated weak resistivity signal on 2 adjacent lines. Anomaly described as an east-west trending dike-like response at, or near the surface that is associated with a relatively high resistivity rock of 500 ohmmeters vs. background of about 150. The significance of this resistivity contrast is not clear. Geophys. estimated that under ideal conditions the 20 ms anomaly may equate to 1% volume sulfides.

The centre of the anomaly lies between the west open pits and the central mine area and continues to the east where it is very weak on line 4, which is centered over old mine workings in central pit of mine area.

Cross sections B-B' and C-C' show the north dipping projection of the pyritic altered rocks and is a likely explanation for the IP response. Rocks (altered metasediments and Qpi) in this area contain 0.5 to 1.0% volume pyrite.

Discussion

This work has added a certain amount of understanding to the gold mineralization at Vulture:

1) altered metasediments in mine area are ubiquitously mineralized;

2) gold content of more than 1.7 ppm (0.05 oz/t) in metasediments generally restricted to zones of more intense alteration adjacent to quartz veins;

3) gold content fades laterally for 10's of feet before

falling to background levels;

4) gold mineralization is not associated with or restricted to a particular stratigraphic unit, including quartz pebble conglomerate;

5) preliminary evidence suggests that the altered portions of Qpi body are weakly mineralized.

Evidence gathered during this work suggests the altered Qpi body offers the best potential for moderate to large tonnage, low grade gold mineralization. This is little promise for discovery of high grade gold vein mineralization on a meaningful scale; gold bearing metasediments are low grade.

The auriferous character of the intrusive is poorly understood and geologic and geochemical data are restricted to scattered exposures. Although preliminary model suggests a strong pyrite-gold correlation, a sulfide-poor mineralized system cannot be ruled out.

Relative and absolute ages of veining and emplacment of Qpi body are uncertain. Based upon petrologic makeup of the intrusive and the apparently deep erosional level, an atypical Laramide age magmatic event is suggested. Field evidence indicates that mineralized veins are cogenetic with the Qpi intrusive mass and unrelated to Tertiary volcanics.

The absence of subsurface data in the west half of the mine area causes source of IP anomaly to be conjectural. From the geologic framework available now, several geologic explanations could be constructed. However, Gordon W's (geophys) interpretation that the anomaly is a near surface, north dipping, dike-like feature suggests that the subsurface projection of weakly to moderately altered instrusive and metasediments exposed on the surface can best account for the anomaly. The strength of the anomaly, in contrast to the weak response over vein mineralization on line 4 suggests that vein mineralization cannot be sole source. An attractive alternate explanation for the IP response is a sulfide poor, potentially mineralized, buried portion of the intrusive body.

- End -

DeCONCINI McDONALD BRAMMER YETWIN & LACY, P. C.
ATTORNEYS AT LAW
240 NORTH STONE AVENUE
TUCSON, ARIZONA 85701
(602) 623-3411

PHOENIX OFFICE
4041 NORTH CENTRAL AVENUE
SUITE 640
PHOENIX, ARIZONA 85012
(602) 248-0036

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JOHN R. McDONALD
J. WM. BRAMMER, JR.
RICHARD M. YETWIN
JOHN C. LACY
ROBERT M. STRUSE
WILLIAM B. HANSON
DOUGLAS G. ZIMMERMAN *
JOHN C. RICHARDSON
DAVID C. ANSON
MICHAEL A. GRAHAM *
NORMAN H. KOTLER *
JAMES A. JUTRY
SPENCER A. SMITH
GARY L. LASSEN *
SANDRA LEWIS*
DEBORAH OSERAN
MICHAEL R. URMAN

*PHOENIX OFFICE

DINO DeCONCINI
OF COUNSEL

January 25, 1984

RECEIVED JAN 2 7 1984

Mr. Ben F. Dickerson
DMEA, Ltd.
4203 North Brown Avenue
Suite F
Scottsdale, Arizona 85251

Dear Ben

I have enclosed a copy of a Joint Venture Agreement that was produced by a committee of the Rocky Mountain Mineral Law Foundation during the past several years. I am a member of the committee and the document is substantially longer than I normally use. It does, however, have everything in it and, therefore, is usually a good place to start.

Very truly yours,

John C. Lacy

JCL:jk

Enclosure

DMEA Ltd.
Mineral Exploration Advice

Ben F. Dickerson III
Registered & Certified Geologist
Carole A. O'Brien
Geologist & Associate

4203 N. Brown Avenue, Suite F
Scottsdale, AZ 85251
(602) 945-4630

February 22, 1984

John C. Lacy
DeConcini, McDonald, Brammer
Yetwin & Lacy
240 North Stone Avenue
Tucson, AZ 85701

Re: A.F. Budge (Mining) Ltd.

Dear John:

Enclosed are copies of the executed Mineral Lease, plus Memorandum of Mining Lease, and Approval of Assignment, which I mentioned to you on the phone this morning.

There were a few minor changes made in the lease, and before it was signed we suggested that both parties initial the changes, which of course they didn't. That plus the other minor inconsistencies, have urged us to be more cautious.

Glad to be able to dump it all in capable hands.

Sincerely,

Carole

Carole A. O'Brien

encls.

DeCONCINI McDONALD BRAMMER YETWIN & LACY, P. C.
ATTORNEYS AT LAW
240 NORTH STONE AVENUE
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(602) 623-3411

PHOENIX OFFICE
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PHOENIX, ARIZONA 85012-3398
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GARY L. LASSEN *
DEBORAH OSERAN
MICHAEL R. URMAN

*PHOENIX OFFICE

DINO DeCONCINI
OF COUNSEL

July 26, 1984

FILE COPY

Ms. Carole O'Brien
DMEA, Ltd.
Suite F
4203 North Brown Avenue
Scottsdale, Arizona 85251

Re: Vulture Mine; V.M.P. Agreement

Dear Carole:

I have enclosed a proposed Option and Lease Agreement by which A. F. Budge would acquire rights in the Vulture Mine from V.M.P, Inc. The form of agreement follows our previous conversations and the letter you provided to me. I have extracted some materials related to the Osborne brothers with the idea that similar language could be included in some sort of a side agreement.

I didn't attempt to complete the Exhibit A because much of the information related to recording and filing was missing.

Please feel free to call with any changes required.

Very truly yours,

John C. Lacy

JCL:jk

Enc.

Vulture tailings samples

5 ft. sample interval per hole

yields ±48 pounds of material

split yields 24 pounds of material in 2 samples — throw ½ away
split yield ±12 pounds of material in 4 samples

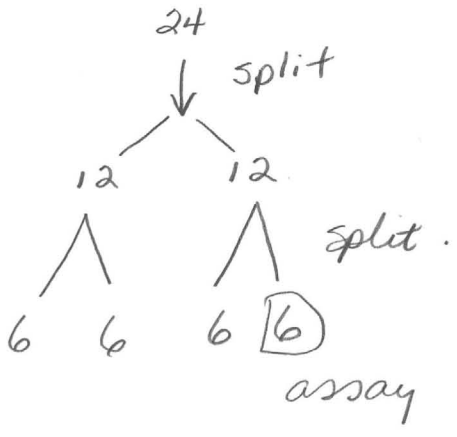

EXHIBIT "A"

PROPERTY

The term "property" as used in this Mineral Lease to which this Exhibit is attached shall mean the following list of patented lode mining claims, unpatented lode mining claims, and unpatented placer claims located in Sections 24, 25, 26, 27, 34, 35, 36, R6W, T6N; Sections 16, 17, 19, 20, 21, 28, 29, 30, 31, 32, R5W, T6N; Sections 1, 2, R6W, T5N; and Sections 5, 6, R5W, T5N of the Gila and Salt River Meridian in the Vulture Mining District, Maricopa County, Arizona:

a) Patented Lode Mining Claims
Jane Elmore
Astor
Talmadge
Sherman
Van Buren
Custer
Elmore
Conkling
Sheridan
Pit Gold
Vulture Extension
Gold Nugget
Canon City
Hamilton

b) Unpatented Lode Mining Claims
1. Unspecified Group
Central
Vulture South
Rosa de Oro
Desert 1, 5, 8, & 9
Vindicator No. 1
Reserve 1, 2, 3
Rosa de Oro 2
Thomas
Vulture North

2. Desert Group
D-1A, 2, 3, 4, 5A, 6, 7, 8A, 9A, and 10 thru 155

3. Vulture Group
V-1 thru 20, 25 thru 174, and 81A

4. JS Group
JS 1 thru 25

5. A-Lan Group
A-1 thru 42

6. B-Lan Group
B-1 thru 23

7. Zen Group
Z-1 thru 21

c) Unpatented Placer Claims
1. VMP 1 thru 13 and 18 thru 25
2. JS 1 thru 16

EXHIBIT "A"

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JS 1 thru 25

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A-1 thru 42

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B-1 thru 23

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Z-1 thru 21

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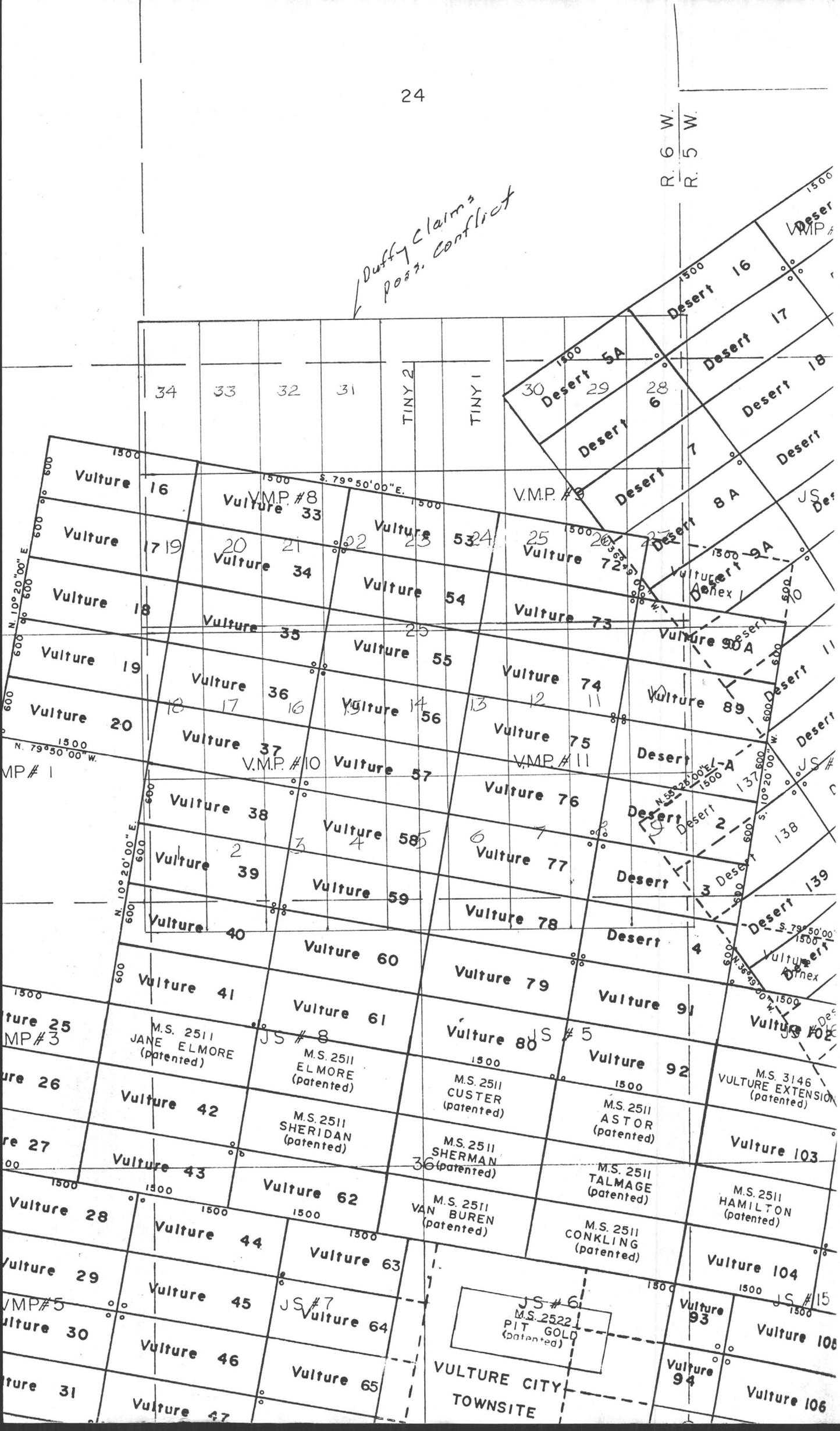
1. VMP 1 thru 13 and 18 thru 25
2. JS 1 thru 16


R. 6 W.
R. 5 W.
Duffy claim's post. conflict
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TINY 1
Desert 16
Desert 17
Desert 18
Desert 5A
Desert 6
Desert 7
Desert 8A
Desert 9A
Desert 10
Desert 11
Desert 1-A
Desert 2
Desert 3
Desert 4
Desert 139
Vulture Annex
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Vulture 17
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Vulture 89
Vulture 90A
Vulture 91
Vulture 92
Vulture 93
Vulture 94
Vulture 103
Vulture 104
Vulture 106
V.M.P. #8
V.M.P. #9
V.M.P. #10
V.M.P. #11
V.M.P. #1
V.M.P. #3
V.M.P. #5
JS #8
JS #5
JS #7
JS #6
JS #15
M.S. 2511 JANE ELMORE (patented)
M.S. 2511 ELMORE (patented)
M.S. 2511 CUSTER (patented)
M.S. 2511 ASTOR (patented)
M.S. 3146 VULTURE EXTENSION (patented)
M.S. 2511 SHERIDAN (patented)
M.S. 2511 SHERMAN (patented)
M.S. 2511 TALMAGE (patented)
M.S. 2511 HAMILTON (patented)
M.S. 2511 VAN BUREN (patented)
M.S. 2511 CONKLING (patented)
M.S. 2522 PIT GOLD (patented)
VULTURE CITY TOWNSITE
S. 79° 50' 00" E.
N. 10° 20' 00" E.
N. 79° 50' 00" W.
S. 10° 20' 00" W.
1500
600

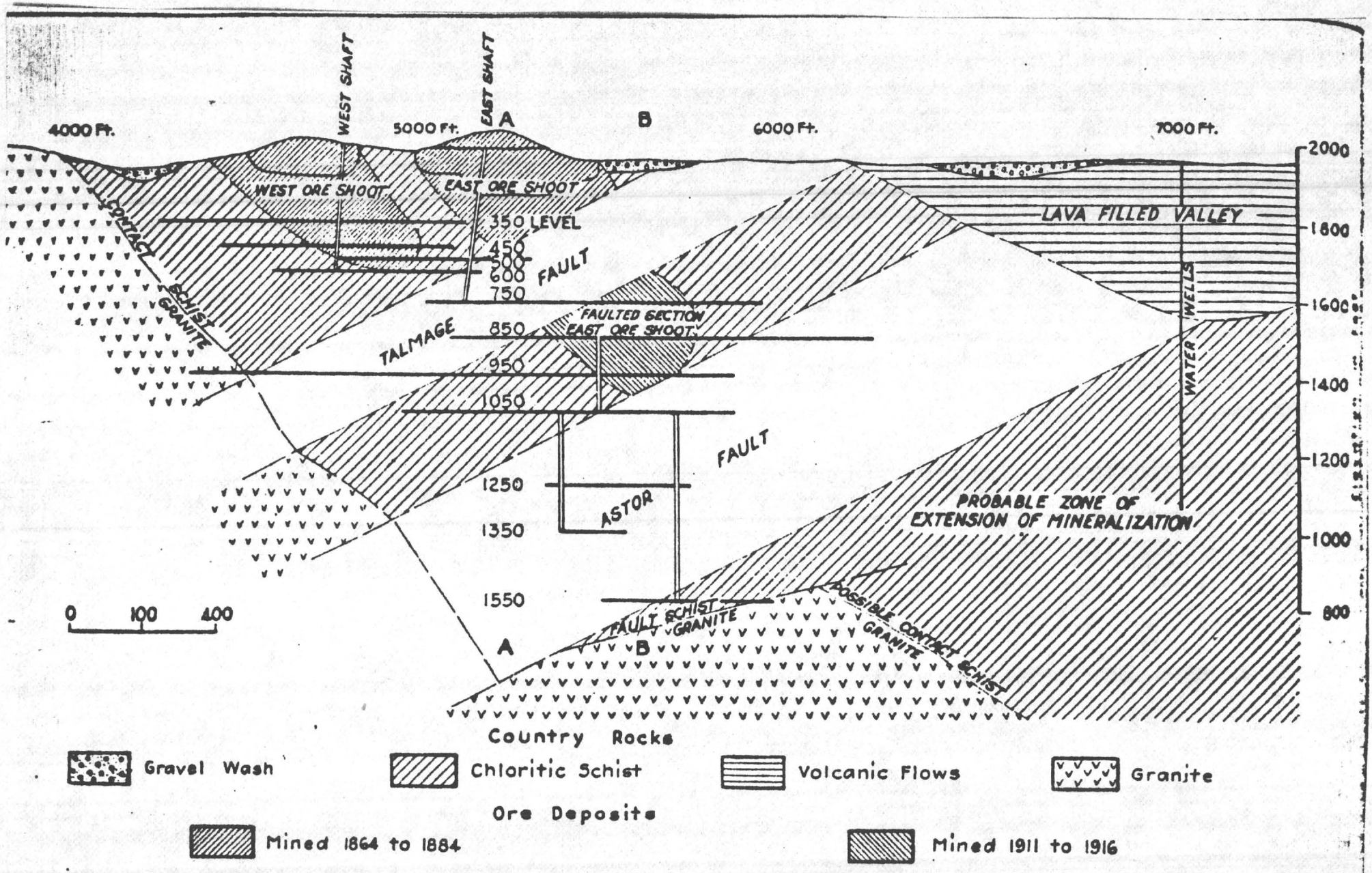


FIG. 1. LONGITUDINAL VERTICAL PROJECTION OF THE VULTURE MINE WORKINGS

ZORTMAN/LANDUSKY MINING COMPANIES
VULTURE MINES OPERATION
P. O. Box 1904
Wickenburg, Arizona 85358

TO: Don Duncan

FROM: Russ Walker

DATE: November 16, 1982

SUBJECT: Origin of Vulture Mine Tailings

Information on milling Vulture Mine ores until recent times is rather sketchy as would be expected. Two types of milling were used to treat the ores. First of these was stamp milling.

STAMP MILLING

1864 - 1866. Forty (40) Arrastras (simple crushing device using stones; then ore was panned or washed) were built at Wickenburg on the Hassayampa River.

1866 - 1872. A new 20 stamp mill was built at Wickenburg with a 40 ton/day capacity using amalgamation and concentration. Tailings accumulation estimated at 150,000 to 200,000 tons one mile north of Wickenburg. Tailings are on property owned now by Dave Underdown. Additional batteries of stamps were constructed at Smith's Crossing, Martinez Wash and Seymour - down the Hassayampa River in the vicinity of what is now Morristown.

1880 - 1884. A 9 inch reduced to 7 inch pipeline was built to the mine and water pumped from wells drilled in the Hassayampa River flood plain. A new 80 stamp mill was constructed at the mine. Estimated tailings at 248,000 tons from the operation.

1885 - 1909. Not much production. Tailings estimate - 50,000 tons.

1910 - 1915. Vulture Mines Co. 20 stamp mill operated and produced 100 to 120 tons/day. Each stamp was 1,600 lb. capacity crushing in cyanide solution and amalgamating inside mortars, Dorr classifier, 3 Australian grinding pans, 3 Dorr pulp thickeners, 32' X 12' and one Oliver filter. Three (3) Wilfley tables were used to concentrate the ore. Tailings estimate - 150,000 tons.

1927 - 1930. Five stamp mill produced estimated 30,000 tons.

1931 - 1933. Ten stamp mill produced 10 tons of concentrate per month with an estimated tailings total of 45,000 tons.

1934. 125 ton amalgamation and concentration mill operated using quarried unmined portions of vein. Old-tails dump was run through 100 ton cyanide leaching plant. Estimated tailings - 7,500 tons.

1935 - 1936. Tailings processed only.

COMPLEX MILLING

1937 - 1942. Dickie and Lincoln (East Vulture Mining Co.) constructed and operated a more complex and efficient milling operation. Their mill was built in 1939 with a capacity of 100 tons/day. It was enlarged to 200 tons/day in 1940 and 400 tons/day in 1941. A brief summary of the circuitry is as follows:

Crushing - Ore crushed to 2½ inch on a 14" X 20" primary. The product went to a double-decked Simplicity vibrating screen with the plus 1" being crushed in a cone crusher and the oversize from the bottom deck (plus 3/4 inch) rolled through 36" X 16" McFarlane rolls.

Grinding - Screen undersize minus 1/4" X 3/4" conveyed to fine ore bin. Two ore feeders fed 6' X 5' Allis-Chalmers and 4' X 8' Marcy ball mills. Both mills were in a closed circuit with a 54" Simplex Akins Classifier. Grinding was done with a one (1) pound cyanide per ton solution at 79% solids. Cyanide and lime were fed by a Denver Dry Reagent Feeder onto the ore feed belt.

Jigging - Discharge from the 4' X 8' and 6' X5' ball mills was jigged by 12" X 18" and 16" X 24" Denver Duplex Mineral Jigs. The jigs discharged into a dewatering and settling tank and the concentrates shipped to a smelter. Initial operational testing of the jigs produced a concentrate assaying 33% lead, 3.12 oz. gold and 2.76 oz. silver and a ratio of concentration 200 to 1.

Leaching - The classifier overflowed at 40% solids, minus 40-mesh and was pumped to a 12 foot Denver Hydro classifier. The overflow (minus 100-mesh) went to a 29' 8" X 10' Denver Primary Thickener. Underflow went to one of five 200-ton leaching tanks. The leaching tanks had slatted bottoms over which 1/4" cocoa matting and canvas was placed. Solution returned to the primary thickener and the sand was sluiced out to the tailings area south of the mill.

Slime Plant - Slimes from the Denver Primary Thickener were pumped to one of three 15' 4½" X 12' Denver Side Air-Lift Agitators in series. The agitators provided thorough mixing of the slime and allowed for more dissolution time. Slime pulp from third agitator flowed to first of four 29' 8" X 10' Denver Washing Thickeners which comprised a counter - current decantation system. Slimes from the fourth thickener were discarded to tailings while the solution progressed counter - current to the primary thickener. The overflow (gold bearing) from the primary thickener then joined the pregnant solution from the sand leaching plant where it was sent to a 600-ton Denver Precipitation Plant. The precipitate was then refined in a Denver Fire Clay Co. furnace.

VULTURE MINE PROJECT

Maricopa Co. ARIZONA

—TAILINGS AREA—

26 new b.h.t
4 misc.
30

— TAILINGS PERIMETER

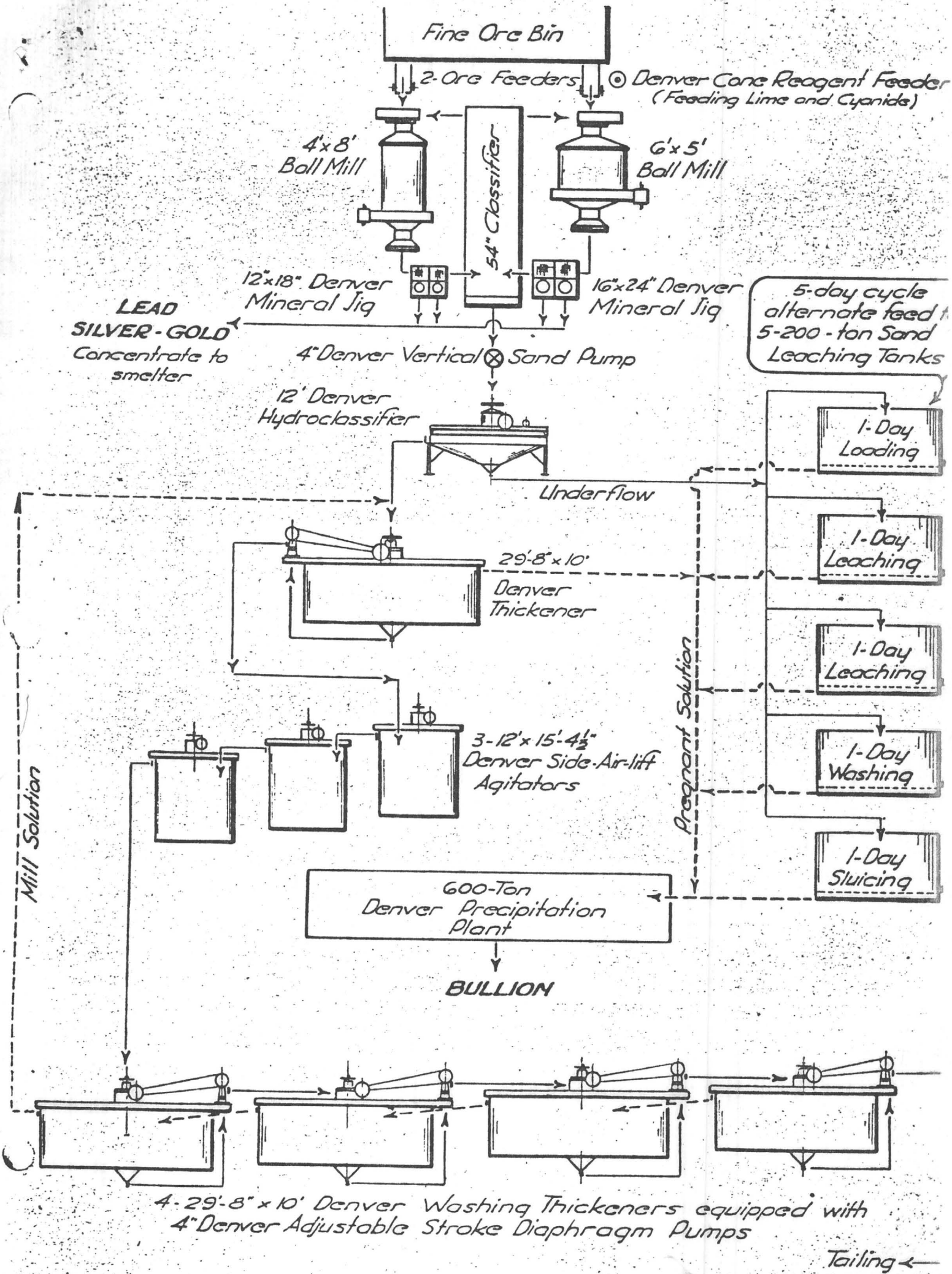
O BACKHOE TRENCHES
(Limited Reach)

• SURFACE SAMPLES

NOTE: Assays------- oz. Au/T

0 200 400

Scale: 1"=200' OCT. 1982 By G.D.H


Fine Ore Bin
2-Ore Feeders
Denver Cone Reagent Feeder
(Feeding Lime and Cyanide)
4'x8' Ball Mill
54" Classifier
6'x5' Ball Mill
12"x18" Denver Mineral Jig
16"x24" Denver Mineral Jig
LEAD SILVER-GOLD Concentrate to smelter
4" Denver Vertical Sand Pump
5-day cycle alternate feed
5-200-ton Sand Leaching Tanks
12' Denver Hydroclassifier
1-Day Loading
Underflow
1-Day Leaching
29'-8"x10' Denver Thickener
1-Day Leaching
1-Day Washing
3-12'x15'-4½" Denver Side-Air-lift Agitators
Pregnant Solution
Mill Solution
1-Day Sluicing
600-Ton Denver Precipitation Plant
BULLION
4-29'-8"x10' Denver Washing Thickeners equipped with 4" Denver Adjustable Stroke Diaphragm Pumps
Tailing

now, the upper parts of the vein having been quarried in two large open pits. The westerly pit is 300 ft. long and the easterly one 500 ft., with low-grade vein matter, which consists mostly of white quartz too poor to mine, remaining between them.

In the oxidized zone the quartz is stained with iron oxide, and some wulfenite in characteristic tabular crystals with razor-sharp edges is found in openings in the quartz. Vanadinite is reported to have been found, but it must be rare, for none was seen during the recent operations. Below the zone of oxidation the vein minerals, other than quartz, are pyrite, galena, blende, and chalcopyrite. The proportion of these is indicated by the ratio of concentration, which was about 30 to

extensive outcroppings of granite are found, occurring as an intrusive mass in the schist. The vein extends into the granite, but pinches out within a short distance after splitting up into several smaller veins, which have, however, yielded some high-grade ore. Granite of identical character was encountered in the westerly end of the 950 level, in the easterly end of the 1,55 level, and in a diamond-drill hole put down from th latter. These points of exposure of granite in the zon of mineralization indicate a probable easterly pitch the contact and perhaps also an easterly pitch or ra to the ore zone.

The position of the stoped areas is shown in Fig. representing the longitudinal section. Characterist

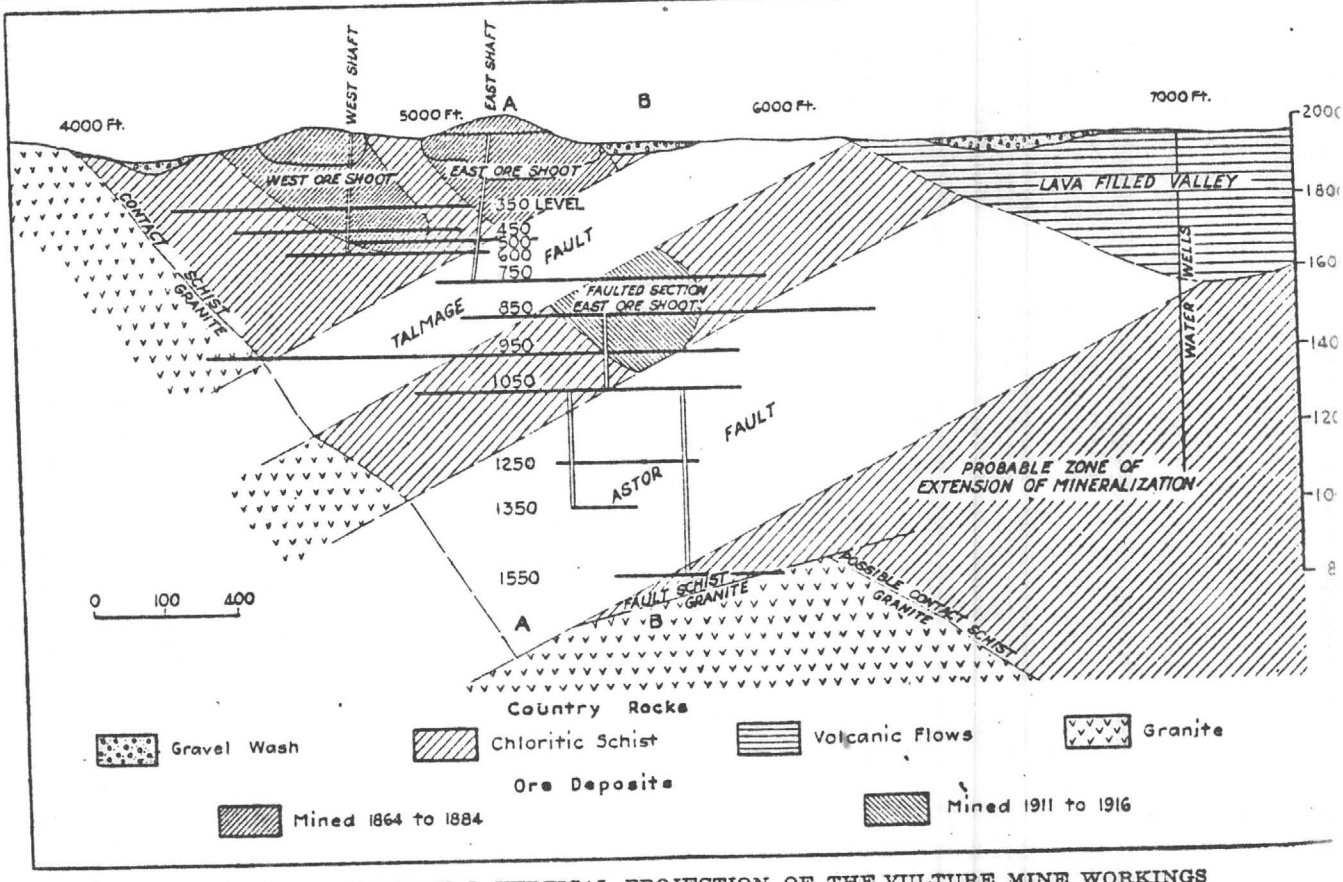


FIG. 1. LONGITUDINAL VERTICAL PROJECTION OF THE VULTURE MINE WORKINGS

1, and the assay of the concentrates, which was 12 to 15 per cent of lead, 8 to 12 per cent of zinc, 1 to 2 per cent copper, and from $120 to $200 in gold. Metallic gold was found in all parts of the mine, and even in the deeper workings, where the ore was not oxidized but was made up of characteristic quartz with associated sulphides, coarse gold was present, and thus some pieces weighing half an ounce or more accumulated in the mortars of the stamp batteries. This gold had a fineness of 760 to 780.

The association of gold with galena is an interesting characteristic. The gold thus associated appeared not to be metallic, and proved, upon experiment, to be peculiarly obstinate to cyanidation, but the galena was usually rich, so that when the average mill concentrates assayed $150 per ton the clean galena concentrate assayed $600. These characteristics of the ore led to the adoption of a rather unusual metallurgical treatment, a combination of amalgamation, concentration, and cyanidation.

Just beyond the ore shoot on its westerly extension

silicification is found throughout, but mineralizatio stead of being uniform, is segregated in two well-d ore shoots. The easterly orebody, which is th furthest from the granite, was the larger in dimension, and the position of the two suggest conception of a succession of ore shoots *en ec* Thus, the next one should be further east and d and the faulting would have carried it to some position as is indicated on the drawing as "pr zone of extension of mineralization." Evidence o erly extension of the ore zone would naturally be for on the surface, but near-by exposures are la for the reason that the schists are buried by v tuffs and lavas. The schists emerge again 3,000 the east, where they show characteristic structur some mineralization.

The geological feature which has been a cont factor in the history of the Vulture mine is the ordinary development of faulting. There are a number of small faults, with displacement, h of a few feet only. These have been of little

DAWSON
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P. O. Box 7685
5217 Major Street
Murray, Utah 84107
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November 12, 1982

Mr. Russ Walker
Zortman/Landusky Mining Companies
Vulture Mine Operation
P. O. Box 1904
Wickenburg, Arizona 85358

Subject: Results of tests made on Vulture tailings. Our Project No. P-828

Dear Mr. Walker:

In accordance with your letter of September 9, 1982, and discussions with Mr. D. M. Duncan, we have completed cyanide agitation leaches on samples 1407, 1408, 1409, and 1410, as well as column tests on a composite of all four.

The results are shown in the following summary and attached work sheets:

I. SUMMARY

Results - Cyanide Agitation Tests

Sample	Residue		Calc Head		% Recovery		Reagents Used	
	oz./Ton						Lbs/Ton	
	Au	Ag	Au	Ag	Au	Ag	$Ca(OH)_2$	NaCN
1407	0.016	0.02	0.041	0.06	62.0	68.7	2.0	2.0
1408	.010	Tr	.033	Tr	70.0	-	19.0	2.0
1409	.011	.02	.036	.15	69.3	87.1	20.0	7.7
1410	.010	.02	.015	.04	34.8	53.5	1.3	2.2

Results of Column Leaching

	Residue	Calc Head	%	Cement	$Ca(OH)_2$	NaCN
	oz./Ton Au		Recov.	Lbs/Ton Used		
Composite						
As Received	0.011	0.039	71.8		15.0	2.5
Agglomerated	.022	.040	45.0	10.0	15.0	2.3

The as received ore was almost completely leached in five days, as shown by the final solution assay of 0.009 oz. Au/Ton. There was no evidence of ponding at a flow rate equivalent to about 5.6 gal./sq. ft/24 hours on ore loaded to a depth of four feet in a 5 inch diameter column.

The agglomerated ore in a similar column percolated very well, but the density of the pellets inhibited solubility, causing a very slow recovery rate. It is evident that additional tests should be carried out in the field to determine if agglomeration is necessary, and if so, the minimum amount of cement that can be tolerated.

II. TEST PROCEDURES AND RESULTS

The individual samples were agitated 48 hours at 40-45 percent solids with the equivalent of about 10 lbs. NaCN per ton of ore. The lime comsumption was quite variable, ranging from 1.3 lbs./ton for sample 1410 to 20 lbs./ton for sample 1409.

The four samples were blended in a cement mixer for 30 minutes, followed by splitting in half for column leaching. One portion was mixed with the equivalent of 15 lbs. $Ca(OH)_2$/Ton and loaded into a 5 inch diameter by 4 foot column, and leached with a solution containing the equivalent of 4 lbs. NaCN/Ton, pumped onto the ore at the rate of 2 ml/minute, equivalent to 5.6 gal./sq. ft./24 hours.

The second portion was agglomerated with the equivalent of 15 lbs. $Ca(OH)_2$ and 10 lbs./Ton cement at 12.7 percent moisture. The pellets were very competent, in fact, too competent to allow efficient solubility.

The column results indicate that good percolation and recovery can be accomplished without agglomeration. However, we would suggest that a large scale test be conducted in the field to determine if the same percolation rate can be maintained from tailings piled up to 10-12 feet.

We appreciate the opportunity of conducting this investigation for you, and if you have any questions, please contact us.

Very truly yours,

DAWSON METALLURGICAL LABORATORIES, INC.

Harris B Salisbury
HBS

Harris B. Salisbury
Consulting Metallurgist

HBS:jw

Encl.

cc: Mr. Don Duncan

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PROJECT NO. P-828
DATE 9/21/82
BY HS & MT
Sample 1407

TEST NO. 1 NAME Vulture Mine

Preliminary 48 Hour Cyanide Leach on Sample as received.

PRODUCT	Weight	PLACEMENT WEIGHT	ASSAY					UNITS				DISTRIBUTION			
				Au		Ag		Au		Ag		Au		Ag	
Leach Residue	297.3	Aver.	of 2	.0155		.05	(.02)	.0461		.060		38.0		31.3	
Leach Solution	376.7			.020		.035		.0753		.132		62.0		68.7	
Head (Calc)	297.3			.041		.06		.1214		.192		100.0		100.0	
Head (Assay)				.039		.12									

		9/22/82					9/23/82						GRINDING
OPERATION	Leach	3 PM	7 PM	9 AM	3:30 PM		48 Hrs.						PRODUCT
TIME	10 AM						10 AM						
REAGENTS - LBS PER TON	ON						OFF						
As Received Ore	300											MESH	%
Water	300											+10	
$Ca(OH)_2$	.15		.10	.10								+14	
NaCN	1.5											+20	
CaO Titration							.1					+28	
NaCN Titration							6.3					+35	
$Ca(OH)_2$ Consumed - lbs/ton							2.0					+48	
NaCN Consumed " "							2.0					+65	
												+100	
												+150	
MACHINE												+200	
R.P.M.												+325	
pH 8.0	10.5	10.2	10.2	10.1	11.0		10.5					-325	
% SOLIDS													
TEMPERATURE													

REMARKS: Filtered easily

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PROJECT NO. P-828
DATE 9/21/82
BY HS & MT
Sample 1408

TEST NO. 1 NAME Vulture Mine

Preliminary 48 hour cyanide leach on sample as received.

PRODUCT	Weight	PERCENT WEIGHT	ASSAY Au		ASSAY Ag		UNITS Au		UNITS Ag		DISTRIBUTION Au	
Leach Residue	296	Aver. of 2	.010		<.05		.0296				30.0	
Leach Solution	432		.016		Tr.		.0691				70.0	
Head (Calc)	296		.033				.0987				100.0	
Head (Assay)			.055		.15							
Head (Assay-Repeat)			.055									

OPERATION		Leach			9/22/82			9/23/82					GRINDING PRODUCT
TIME		11:30AM	3PM	7PM	9AM	4PM		48 Hrs 11:30AM					
REAGENTS - LBS PER TON		ON						OFF					
As Received Ore		300									MESH		
Water		300									+10		
$Ca(OH)_2$		3									+14		
NaCN		1.5									+20		
CaO Titration								.6			+28		
NaCN Titration								5.6			+35		
$Ca(OH)_2$ Consumed lbs/ton								19.0			+48		
NaCN Consumed " "								2.0			+65		
											+100		
											+150		
MACHINE											+200		
R.P.M.											+325		
pH	5.3	11.8	12.0	11.8	11.7	11.7		11.6			-325		
% SOLIDS													
TEMPERATURE													

REMARKS: Filtered Easily

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Murray, Utah 84107
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PROJECT NO. P-828
DATE 9/21/82
BY HS & MT
Sample 1409

TEST NO. 1 NAME Vulture Mine

Preliminary 48 hour cyanide leach on sample as received.

PRODUCT	Weight	PERCENT WEIGHT	ASSAY Au	ASSAY Ag	UNITS Au	UNITS Ag	DISTRIBUTION Au	DISTRIBUTION Ag
Leach Residue	296.4	Aver. of 2	.011	<.05 (.02)	.0326	.059	30.7	12.9
Leach Solution	398.6		.0185	.10	.0737	.399	69.3	87.1
Head (Calc)	296.4		.036	.15	.1063	.458	100.0	100.0
Head (Assay)			.060	.42				
Head (Assay-Repeat)			.058					

OPERATION	Leach			9/22/82			9/23/82					GRINDING PRODUCT
TIME	2 PM	3 PM	7 PM	9 AM	4 PM		48 HRS 2 PM					
REAGENTS - LBS PER TON	ON						OFF					
As Received Ore	300										MESH	%
Water	300										+10	
$Ca(OH)_2$	3										+14	
CaO Titration							Tr.				+20	
NaCN Titration							1.8				+28	
$Ca(OH)_2$ Consumed - lbs/ton							20.0				+35	
NaCN	1.5						7.7				+48	
NaCN Consumed - lbs/ton											+65	
											+100	
											+150	
MACHINE											+200	
R P M											+325	
pH 4.8	11.0	11.0	10.9	10.5	10.5		10.2				-325	
% SOLIDS												
TEMPERATURE												

REMARKS:

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Murray, Utah 84107
Phone: 801-262-0922

PROJECT NO. P-828
DATE 9/21/82
BY HS/MT
Sample 1410

TEST NO. 1 NAME Vulture Mine

Preliminary 48 hour cyanide leach on sample as received.

PRODUCT	Weight	PERCENT WEIGHT	ASSAY Au		ASSAY Ag		UNITS Au		UNITS Ag		DISTRIBUTION Au		DISTRIBUTION Ag
Leach Residue	297.5	Aver. of 2	.010		<.05	(.02)	.0298		.060		65.2		46.5
Leach Soln.	345.5		.0046		.02		.0159		.069		34.8		53.5
Head (Calc)			.015		.04		.0457		.129		100.0		100.0
Head (Assay)			.026		.06								
Head (Assay - Repeat)			.015										

OPERATION	Leach		9/22/82				9/23/82					GRINDING PRODUCT
TIME	2:30PM	7PM	9AM	4PM			48 hrs. 2:30PM					
REAGENTS - LBS PER TON	ON						OFF					
As Received Ore	300										MESH	%
Water	300										+10	
$Ca(OH)_2$	.15	.05									+14	
NaCN	1.5										+20	
CaO Titration							.05				+28	
NaCN Titration							6.8				+35	
$Ca(OH)_2$ Consumed - lbs/ton							1.3				+48	
NaCN Consumed - " "							2.2				+65	
											+100	
											-150	
MACHINE											+200	
R.P.M											-325	
pH 8.2	10.7	10.3	10.4	10.4			10.4				-325	
% SOLIDS												
TEMPERATURE												

REMARKS:

P-828 - Test 1 - Vulture Tailings - 17.010 Kgs. (583.2 Assay Tons) Mixed with the equivalent of 15 lbs. $Ca(OH)_2$/Ton. Flow rate approximately 2 ml/min., equivalent to 5.6 Gal./sq. ft./24 hours.

COLUMN LEACH RESULTS - WITHOUT AGGLOMERATION

Date	Sample Start	Liters	Au oz/Tn	Au PPM	Au Mgs	Au Cum Mg	Au Cum Oz/T	Au Dist.
10/13/82								
10/15/82	P1	2.944	.1065	3.65	10.75	10.75	.018	46.2
10/16/82	P2	4.853	.0225	.77	3.74	14.49	.025	64.1
10/18/82	P3	5.467	.009	.31	1.74	16.23	.028	71.8
	Residue - Fire Assay						.011	28.2
							.039	100.0

COLUMN LEACH DATA - WITHOUT AGGLOMERATION

Date	Sample	Liters	Lbs/T NaCN	pH	Grams NaCN In	Grams NaCN Out
10/13/82	Start				36.0	
10/14/82						
10/15/82	P1	2.944	.6	12.2		.9
10/16/82	P2	4.853	1.7	12.2		4.4
10/17/82						
10/18/82	P3	5.467	2.0	12.2		5.5
Left in Ore		4.000	2.0	12.2		4.0
					36.0	14.8
		Grams NaCN Used				21.2
		Equivalent lbs/ton				2.5
		Moisture Sample		Wet		1000
				Dry		765
						235 =
						23.5% Moisture

P-828 - TEST 2 - Vulture Tailings - 14,615 Kgs. (501.1 Assay Tons) Agglomerated with 15 lbs/Ton $Ca(OH)_2$ + 10 lbs/Ton Portland Cement at 12.7 Percent Moisture flow rate - approximately 2 ml/min., equivalent to 5.6 gal/sq. ft./24 hours

COLUMN LEACH RESULTS - WITH AGGLOMERATION

Date	Sample	Liters	Au					
			Oz/T	PPM	Mgs	Cum Mgs	Cum Oz/T	Dist.
10/13/82	Start							
10/15/82	P1	2.232	.041	1.41	3.14	3.14	.006	15.0
10/16/82	P2	3.411	.024	.82	2.80	5.94	.012	30.0
10/18/82	P3	4.450	.003	.10	.45	6.39	.013	32.5
10/20/82	P4	3.591	.0005	.02	.07	6.46	.013	32.5
10/22/82	P5	4.281	.0055	.19	.81	7.27	.015	37.5
10/25/82	P6	5.761	.0050	.17	.98	8.25	.017	42.5
11/1/82	P7	5.022	.0039	.13	.67	8.92	.018	45.0
11/4/82	P8	3.917	.0010	.03	.13	9.05	.018	45.0
	Residue Fire Assay						.022	55.0
							.040	100.0

P-828 - TEST 2 - VULTURE TAILINGS - AGGLOMERATED

COLUMN LEACH DATA - WITH AGGLOMERATION

Date	Sample	Liters	Lbs/T NaCN	pH	Grams NaCN IN	NaCN OUT
10/13/82	Start				In Ore 25.5	
10/15/82	P1	2.232	7.3	12.2		8.3
10/16/82	P2	3.411	1.2	12.2		2.0
10/18/82	P3	4.450	.3	12.2		.9
10/20/82	P4	3.591	Tr.	12.2		---
Started NaCN Solution					9 l. Sol. 18 g.	1.7
10/22/82	P5	4.281	.7	12.2		
10/25/82	P6	5.761	2.4	12.2		6.9
10/29/82					5 l. 10 g.	
11/1/82	P7	5.022	2.5	12.2		6.5
11/4/82	P8	3.917	2.8	12.0		5.5
Left in Ore		3.000	2.8			4.2
					53.5	37.0
		Grams NaCN Used				16.5
		Equivalent Lbs/Ton				2.3

Moisture Sample — Wet 1000

Dry 795

205 = 20.5% Moisture

G. Hennessay

D. M. DUNCAN, INC.

MINING DEVELOPMENT • MANAGEMENT

2555 Sharon Way
Reno, Nevada 89509
Telephone 702-826-0890

July 9, 1982

NOTES - VISIT TO VULTURE

July 7, 1982

by

Don Duncan

Participants: Dave Lowell (Tucson geological consultant), Russ Walker, Dave Smith, George Hennessey, Don Burrell, and Don Duncan.

1. A review of property data and a tour of the mine and outlying areas was provided during the morning. Later, in the Wickenburg office, the group reviewed additional data and discussions were held regarding the work program.

2. Some of Dave Lowell's comments follow:

   (a) Additional surface sampling required - consider using a hand held airhammer drill or small air-trac. Drill short (5') holes rather than surface rock chips.

   (b) Consider geochem sampling - particularly in overburden areas.

   (c) Consider air-trac holes between rotary drilling. The 400' spacing proposed for much of the area will leave large gaps.

   (d) We should not over-look the potential for smaller high grade targets. Arizona is not noted for large gold deposits.

3. It was estimated that at least another month's surface sampling is required.

4. Best drill target areas are in vicinity of pits 2, 3, and 4, where average of samples are .10 oz. Au or better. Another good target is along the contact with the intrusive.

5. A very large anomalous area exists which probably averages in the vicinity of .02 oz. Au. The area is too large to drill and better defined targets must be obtained.

6. A rotary drill should be on the property about mid July, probably from Drilling Services, Inc. We will provide the rig with a sampler. Dave Lowell suggested talking with one of his geologists who is very familiar with drilling contractors in the area.

7. A detailed review of the Vulture budget will be made by Russ Walker. We appear to be about one month behind the original time schedule.

8. Dave Lowell will provide a brief report.

Other items discussed:

1. Don Burrell will transfer to the German Gulch project during the week of July 12.

2. George Hennessey offered comments regarding the Montoro exploration program. His recommendations will be incorporated into the program.

Copies: D. Belanger
J. Crowhurst
F. Duval
✓G. Hennessay
H. Tenneff
R. Walker
M. Zink

/fap

PILLAR, LOWELL AND ASSOCIATES
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TWX 910-952-1172 PLA TUC

J. DAVID LOWELL
CONSULTING GEOLOGIST

July 19, 1982

Mr. Donald M. Duncan
2555 Sharon Way
Reno, Nevada 89509

Dear Mr. Duncan:

At your request I visited the Vulture Mines Operation on July 7 and the following are my observations and suggestions:

In my brief visit I was not able to become familiar with the geology except in a very cursory way. There is no positive evidence regarding the origin or age of the deposit, but the strong mineralization (as indicated by the areas which have been mined) falls in a more or less continuous, straight zone which seems to cut across Precambrian stratigraphy, and this is evidence for epigenetic rather than syngenetic origin. The association of some ore with Tertiary dikes and veins suggests a possible Tertiary age, but there is also evidence for Precambrian age. Final resolution will have to wait for detailed mapping and age determinations, but this will be worth doing because it may be helpful in prospecting other gold occurrences in the vicinity.

Suggestions which occurred to me during the visit were mainly in the area of how best to look for a second Vulture type deposit in the vicinity. Since the Vulture orebody itself was relatively narrow the first step in trying to find a similar, but blind or buried deposit, would be to attempt to expand the target width of the known deposit. It might be possible to do this by mapping a recognizable silicate alteration halo in the walls of the orebody or from geochemical sampling to determine the presence of one or more trace element dispersion halos in the walls of the Vulture orebody. Elements to analyze for might be Hg, As, Sb, Co, Ni and F. Of these Hg is of particular interest because of its tendency to migrate upward as a gas from a buried or blind deposit and to produce soil anomalies.

I suggest that the whole area of interest be covered with a rock geochemical survey on fairly wide spacing with some samples in areas of shallow cover taken with an air trac or other percussion drill. In the areas of possible extension of the Vulture

orebody some fences of shallow air trac holes might also be useful for more detailed cross sections of assays together with the deep, relatively wide spaced rotary or core holes which are planned.

I was not aware prior to my visit that there is as much "smoke" in the vicinity of the Vulture mine as Russ Walker and his group have found, and I believe that the chances are reasonably good for finding another orebody. The geologic work which has been done appears to be of high quality and it will be interesting to see what picture emerges.

Yours very truly,

J. David Lowell

JDL:sbc

cc: Russ Walker
Zortman/Landusky Mining Companies
P.O. Box 1904
Wickenburg, Arizona 85358

DAWSON
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P. O. Box 7685
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Murray, Utah 84107
Phone: 801-262-0922

January 31, 1984

Mr. Terry Downing
6594 South Race Circle East
Littleton, Colorado 80121

Subject: Projected Testing on Tailings and Pit Ore from the Vulture Mine.

Dear Terry:

We were pleased to hear from you relative to your plans to operate the Vulture Mine in Arizona. We understand that you want laboratory testing conducted to further evaluate heap leaching. If we can be of service, we would be pleased to work with you on this investigation.

From our discussion I understand that you want to evaluate heap leaching on the stamp tailings after agglomeration, heap leach on the pit ore without agglomeration (if possible) and heap leaching on a blend of pit ore and stamp tailings.

We would recommend that the following series of tests be conducted:

A. Stamp Tailing

1. Bottle roll amenability test to determine maximum expected recovery as well as lime and cyanide consumption.
2. Column leach on agglomerated tailing using quick lime and cement with cyanide added during pelletizing.

B. Pit Ore

1. Conduct bottle roll leach amenability test on the ground ore to determine maximum extraction, as well as cyanide and lime consumption.
2. Conduct bottle roll leach test on ore crushed to minus 1/2 inch followed by assay screen analysis of residue to obtain indications as to size of liberation.
3. Conduct column leach on pit ore crushed to size indicated effective in the bottle roll test without agglomeration, if possible.

C. Pit Ore - Tailing Blend

1. Conduct column leach of blend of pit ore and tailing (up to 30% tailings) without agglomeration, if possible.

An outline of general test procedures for the amenability testing is attached along with estimated charges.

Based on these estimated charges we would estimate the cost of the program as outlined above as follows:

2	Bottle Roll Leach Tests	@ 300.00	600.00
1	Bottle Roll Leach Test followed by Assay Screen Analysis of Residue	@ 600.00	600.00
3	Column Leach Tests	@ 1,500.00	4,500.00
	Estimated Total Cost		$5,700.00

If there are any questions, please contact us.

Good luck with your ventures.

Very truly yours,
DAWSON METALLURGICAL LABORATORIES, INC.

Harmel A. Dawson

Harmel A. Dawson,
President

HAD-cac

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Phone: 801-262-0922

January 1984

Outline of Test Procedures for Initial Amenability Cyanide Leach Evaluation

In our testing we generally recommend that first a bottle roll test be conducted to evaluate amenability to cyanide leach. In this testing 1000 grams of ore is ball mill ground to about 70% minus 200 mesh. Then, after adjusting the pH with hydrated lime to about 11.0, the slurry is bottle roll leached at 50% solids starting with 10 lb NaCN per ton solution. After leaching the weighed slurry is filtered to obtain a leach solution. Then the residue is given three displacement washes, dried and weighed. The leach solution volume is determined by slurry weight less residue weight. The leach solution and residue are fire assayed for gold and silver. All assaying is conducted by qualified assayors in duplicate. The leach solution is assayed for lime and cyanide content. From the feed and product weights and assays calculated head assay, extractions and reagent consumptions can be calculated.

The results of the amenability testing indicates probably the maximum extraction that could be anticipated and about what reagent consumptions that could be expected. Further testing would be necessary to optimize leach conditions.

If the results from the amenability testing are positive, then testing could be conducted to obtain indications as to size of crush or grind for effective leaching. We have found that a large bottle roll leach test (about 5 kg) on unsized ore crushed to about minus one inch followed by an assay screen analysis of the residue would give good indications as to the size crush required.

Then, if the results indicate leaching at relatively coarse particle size is possible, column leaches could be set up to evaluate the feasibility of heap leaching. In the column leach the crushed rock, with pelletizing if necessary, is placed in a column and cyanide solution is trickle flowed through the columns. Daily solution samples are taken and assayed to evaluate the rate of leaching.

Charges are based on the time required to conduct the service and a schedule of our current charges is attached. We estimate that a bottle roll amenability test would cost $250 to $300.00, bottle roll followed by assay screen analyses of residue would cost $550.00 to $600.00, and a column leach $1,200 to $1,500 with additional charges for assay screen analysis of the residue, if required.

At least 6 lbs of representative ore would be required for the initial amenability testing, 25 lbs for bottle roll leach followed by assay screen analysis, and depending on the particle size required for leaching 250 to 800 lb would be required for column leaching.

DAWSON
METALLURGICAL
LABORATORIES, INC.

P. O. Box 7685
5217 Major Street
Murray, Utah 84107
Phone: 801-262-0922

May, 1982

METALLURGICAL LABORATORIES

SCHEDULE OF CHARGES

1. Laboratory charges are based on the time required to perform the services and the type of work involved. Work conducted by fully qualified metallurgists is charged at $40.00 per man hour, that performed by laboratory technicians is charged at $25.00 per man hour, and $15.00 per man hour for laboratory time.

2. Charges for field consultation are based on $400.00 per day plus travel time, living and travel expenses.

3. Assaying is performed by an outside, independent assay laboratory and charges for this service, as well as any other outside services required in a laboratory investigation, are at actual cost, plus a 10% handling charge.

4. The minimum charge for laboratory work is $250.00 if testing is actually conducted. This does not include assaying, special analyses, or miscellaneous outside charges.

5. Charges are invoiced at the completion of an investigation or monthly, depending on duration of testing, provided credit is established. Total estimated fees are payable in advance in the absence of acceptable credit references.

DAWSON METALLURGICAL LABORATORIES, INC.

DMEA Ltd.
Mineral Exploration Advice

Ben F. Dickerson III
Registered & Certified Geologist
Carole A. O'Brien
Geologist & Associate

4203 N. Brown Avenue, Suite F
Scottsdale, AZ 85251
(602) 945-4630

March 8, 1984

William Lehmbeck
Skyline Labs, Inc.
P.O. Box 50106
1775 W. Sahuaro Drive
Tucson, AZ 85745

Dear Bill:

Thank you for the shipment tags and order forms. I enclose a sample of the order form for your records. As indicated, invoices and reports are to be sent to A.F. Budge (Mining) Limited at our address, with a copy of the report to Tara Minerals in Wickenburg.

All samples will be assayed for gold and silver using a full assay ton.

Rejects and pulps should be returned to Tara Minerals in Wickenburg.

Tara Minerals will be responsible for shipping the samples to you. Principals of Tara are: George D. Hennessey, President, and Milton W. Hood, Vice President.

Any questions concerning the above can be addressed to me directly.

Thank you.

Sincerely,

Carole A. O'Brien

Carole A. O'Brien
Geologist

encl.

cc: Tara

ORDER FOR ANALYTICAL SERVICES

Samples Sent to:

SKYLINE LABS, INC.
1775 W. SAHUARO • P.O. BOX 50106
TUCSON, ARIZONA 85703
(602) 622-4836

(Report and invoice in duplicate will be sent to address below unless otherwise instructed)

Address Report To:

A.F. Budge (Mining) Limited
c/o Ben F. Dickerson III
DMEA Ltd.
Suite F, 4203 North Brown Avenue
Scottsdale, AZ 85251
Tel.

PROJ. NO.
P.O. NO.:
SHIPMENT NO.:
DATE SHIPPED:
SHIPPED VIA:
NO. OF CARTONS:
NO. OF SAMPLES:
(Information above helps us trace lost shipments)

Send Invoice To: A.F. Budge (Mining) Limited
c/o Ben F. Dickerson III
DMEA Ltd.
4203 North Brown Avenue, Suite F
Scottsdale, AZ 85251

Send Copy of Report To: Tara Minerals, Inc.
P.O. Box 20340
Wickenburg, AZ 85358

LIST SAMPLE NOS.	DESCRIBE MATERIAL (ROCK CHIP, SOIL, WATER, DRILL CORE, ETC.)	LIST ELEMENTS TO BE DETERMINED (Give anticipated range of values, if possible) Describe any special sample preparation procedures desired:	INDICATE METHOD OF ANALYSIS*	✓ IF 31 – ELEMENT EMISSION SPEC SCAN DESIRED
		gold/silver	Fire Assay 1 assay ton	
		- S A M P L E C O P Y -		

PAYMENT FOR SERVICES REQUESTED MUST ACCOMPANY ORDER UNLESS CREDIT ARRANGED

Signature of person authorizing work:

(Use Continuation Sheet If Necessary)

INSTRUCTIONS

*METHOD OF ANALYSIS: G-Geochem, Q-Routine Quantitative Assay
F-Fire Assay

†SAMPLE STORAGE: Pulps stored 90 days pending instructions, bulk rejects stored 30 days pending instructions.

Enclose yellow original with samples, send white copy by mail, retain pink copy. White copy will be returned to shipper as an acknowledgement that shipment has been received.

INDICATE DESIRED DISPOSITION OF SAMPLES AFTER ANALYSIS	Bulk Rejects	Pulp
Return at customer's expense via:		
Store temporarily pending instructions†		
Discard immediately		

ACKNOWLEDGEMENT

Ps

V.M.P., Inc.
Wickenburg, Arizona 85358

May 27, 1982

Mr. Hobart Teneff, President
Zortman Mining Company, Inc.
505 Northtown Office Building
Spokane WA 99207

Dear Hobart,

I hope everything is going well with you and your organization. It has been some time since we have corresponded and since I will be gone until the first part of July, I thought that I should relate to you some areas of concern from my position.

First of all let me state that I realize your personal expertise in mining and that it is your money that is being spent on my property. However, being a successful businessman myself, I feel some degree of competency in what I am about to say.

From the outset, my original contact was with George Hennessey, of whom I have the utmost confidence, and it was through George that I was to have the pleasure of meeting you and your associates. It was my understanding that George was to be the co-ordinator and in direct charge of the exploration and development of my property. This arrangement was very satisfactory with me and I felt quite at ease knowing that George would be the "man in charge". During our initial contact and negotiation George kept me well informed of what was happening and what progress was being made. At the present time, however, I am totally uninformed and truthfully quite concerned about the lack of progress being made. I have no doubt about the intigrity of Mr. Walker, however, his expertise and experience in gold mining and exploration appears to be extremely limited. On several occassions I have posed elementary questions which Russ Walker has been unable to answer. I personally feel that the future of this property is of to great a value to intiate a training program. However, I feel that George could do a very excellent job of training Russ and Dave Smith.

Second, I feel that sufficient time has elaspsed for some formal negotiation to have started. I realize that we are all extremely busy, however, considerable neglect on the part of your legal department is evident. A short note now and then seems not to much to expect.

V.M.P., Inc.
Wickenburg, Arizona 85358

Third, I have personally talked with Milt regarding the use and repair of the houses and equipment at the mine. Also, I have advised him that some type of reimbursment is in order for the early closing of the tourist part of the mine. To date no acknowledgement of our conversation has been received.

Hobart, I am interested in a "successful" operation starting up on my property. However, at the present it looks very "shakey" - - with no communication, lack of experienced personel qualified to handle technical problems, and a general do-it-tomarrow attitude. Couple this with an apparent lack of time from the corporate end - - I think I have a genuine reason to be concerned.

Again, it is your money - - but it is my property. I don't want to see you not getting good value for your dollar invested and I don't want to see my property placed in jeopardy as a result of unqualified personel. I do not question the value or integrity of the people whom you hire, however, when they are responsible for my success as well, then I feel obliged to request someone whom I have confidence in and who has the expertise and qualifications to carry this project to a successful completion.

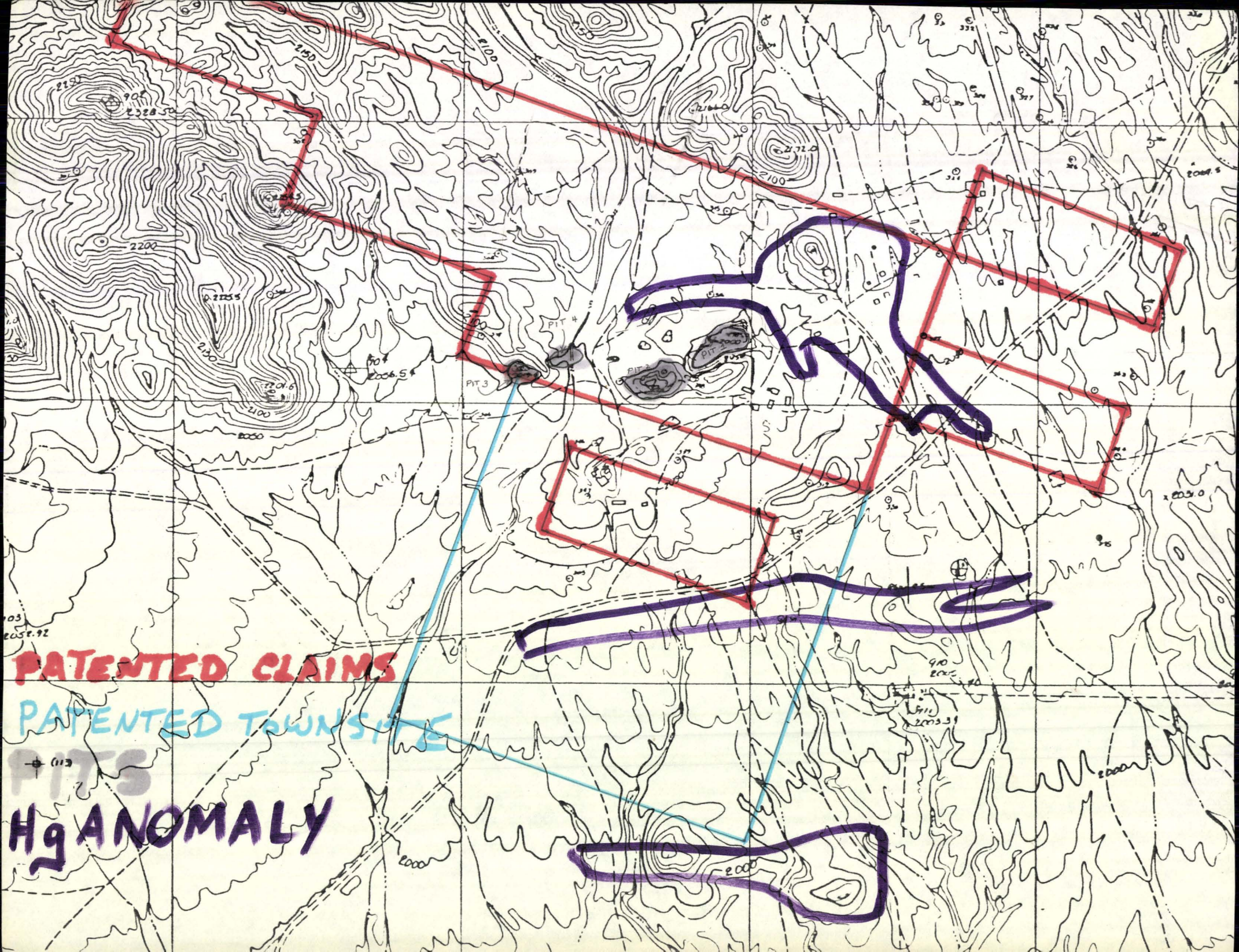
Please accept this letter as one businessman to another. Both working toward success on the property.

Sincerely,

Larry W. Beal

Larry W. Beal, President

cc/G.D. Hennessey


PIT 4
PIT 3
PATENTED CLAIMS
PATENTED TOWNSITE
PITS
Hg ANOMALY

RECEIVED JAN 18 1984

Property: Vulture Mine

Location: Subject property is located 14 miles southwest of Wickenburg in Maricopa County, AZ. It is accessable by a well maintained all weather county road.

History & Description: Gold was discovered at the Vulture in 1863 and mining commenced in 1866. Production from 1866 through 1917 was estimated at $6.8 million. This would amount to 329,000 ounces @ $20.67/oz. Some mining from open pits and underground along with cyanide treatment of old tails was done in the 1930's.

Title? Underlying lease? Exhibit A?

The property consists of 14 patented claims, 451 unpatented lode claims and 50 unpatented placer claims. An advance royalty of $10,000/mo is payable to the owner and is deductable from production royalties. Production royalties are NSR and fluctuate with the price of gold according to the following schedule:

Price of Gold/oz.	Royalty (% NSR)
Less than $400	5%
$400-600	6%
$601-800	7%
$801-1000	8%
$1001-1200	9%
$1201-1400	10%
$1401-2000	11%
$2001 & Up	12%

5% on $395 = $19.75
6% on 405 = 24.30
diff. = $4.55

Reserves: There are approximately 1.9 million tons of ore in the proven category at the Vulture Mine. These consist of the following: NO! NO!

1. Stamp mill tails 450,000 tons @ 0.045 o.p.t. Au.
2. Open pit ore @ 3.0:1.0 SR 1,525,000 tons @ 0.083 o.p.t. Au.

In addition to these reserves, there appears to be excellent potential for development of more ore of the following types.

Where?

Placer material
Additional open pit ore
Underground high grade ore

Who collected samples?

Metallurgy: Metallurgical test work by Dawson Metallurgical Labs, CSMRI, and Kappes, Cassiday & Associates indicate that both the tails and open pit ore are treatable by cyanide leaching with an expected recovery of about 70% of the contained gold. Further testing will be carried out during the option period.

Acquisition & Development: The property would be optioned for a 90-day period at a cost of $30,000. During the option period a sampling program would be carried out to verify tonnage, grade and metallurgy of the tailings. This sampling and metallurgical testing, along with flowsheet design, equipment sizing and selection is estimated to cost about $60,000 and could be at the go/no go decision point within 60 days of signing the option.

from what date? execution of Agreement

First phase development would consist of processing the stamp mill tailings. This would be carried out at an average rate of 50,000 tons per month. It is estimated that the first production could be realized 6 months from execution of the option agreement if no complications arise.

As soon as production starts from the tails, development work on the open pit ore would commence. This would consist mainly of pad preparation and mining and placing the ore on the pads. Very little additional equipment would be required if pad preparation and mining is done by a contractor.

The first pad would be built in two stages. The first 50,000 tons would be placed on the pad and leaching started and the second stage would follow. This procedure would minimize the funds required to move the project through startup.

VULTURE MINE

$350

ESTIMATE OF OPERATING CASH GENERATED

TLD/1/17/84

12/12 mo. Capt.
E&E 60,000
Leach Pad 225,000
other 13,000
298,000

type plant

MONTH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19-51	52	53
Land Payment	30,000			30,000			30,000														
Eval & Eng	10,000	10,000	10,000	10,000	10,000	10,000															
Tons Mined-Tails							50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000						
Tons Mined-Ore																44,000	44,000	44,000	1,368,000		
Leach Pad Const						75,000		75,000		75,000		117,500 →						37,500	513,000		
Other Capital						270,500				13,000							50,000		100,000		
Royalty 5%												20,248	27,562	27,562	27,562	27,562	27,562	43,663	1,357,405	43,663	43,663
Mining							50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	264,000	264,000	264,000	8,208,000	---	---
Preparation							87,500	87,500	87,500	87,500	87,500	87,500	87,500	87,500	87,500	88,000	88,000	88,000	2,736,000	---	---
Leaching								75,000	75,000	75,000	75,000	75,000	75,000	75,000	75,000	75,000	66,000	66,000	2,052,000	66,000	
Stripping								25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	22,000	22,000	684,000	22,000	
Office & G&A								37,500	37,500	37,500	37,500	37,500	37,500	37,500	37,500	37,500	33,000	33,000	1,026,000	33,000	33,000
Lab								12,500	12,500	12,500	12,500	12,500	12,500	12,500	12,500	12,500	11,000	11,000	342,000	11,000	
Exploration											25,000	25,000	25,000	25,000	25,000	25,000	---	---	----	---	---
Total Cost-Tails	40,000	10,000	10,000	40,000	10,000	355,500	167,500	362,500	287,500	375,500	313,500	450,248	340,062	340,062	340,062	202,562	27,562				
Total Cost-Open Pit																352,000	534,000	565,163	17,018,405	175,663	76,663
OZ Recovered								1,575	1,575	1,575	1,575	1,575	1,575	1,575	1,575	1,575	2,495	2,495	77,566	2,495	
Revenue @ $350/oz									551,250	551,250	551,250	551,250	551,250	551,250	551,250	551,250	523,688	873,250	27,148,100	873,250	873,250
									224,000	149,600	203,000	203,000	203,000	203,000							
OP Cash Gen-Tails	-40,000	-10,000	-10,000	-40,000	-10,000	-355,500	-167,500	-362,500	+263,750	+175,750	+238,750	+101,002	+211,188	+211,188	+211,188	+348,688	+551,250				
Cum Cash Gen-Tails	-40,000	-50,000	-60,000	-100,000	-110,000	-465,500	-633,000	-995,500	-731,750	-556,000	-317,250	-216,248	- 5,060	+206,128	+417,316	+766,004	+1,289,692				
Op Cash Gen-Ore																-352,000	-534,000	+308,087	+10,129,695	+697,587	+796,587
Cum Cash Gen-Ore																+414,004	+403,692	+711,779	+10,841,474	+11,539,061	+12,335,648

Tot/oz = 99,226
@ 67% recovery

wk cap incl?
& Int.?

Split on Hardrock capt. plant?

VULTURE MINE

$400

ESTIMATE OF OPERATING CASH GENERATED

TLD/1/17/84

MONTH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19-51	52	53
Land Payment	30,000			30,000			30,000														
Eval & Eng	10,000	10,000	10,000	10,000	10,000	10,000															
Tons Mined-Tails							50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	44,000	44,000	44,000	1,368,000		
Tons Mines-Ore												117,500						37,500	513,000		
Leach Pad Const						75,000		75,000		75,000							50,000		100,000		
Other Capital						270,500				13,000											
Royalty 5%												20,248	27,562	27,562	27,562	27,562	27,562	43,663	1,357,405	43,663	43,663
Mining							50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	264,000	264,000	264,000	8,208,000	---	---
Preparation							87,500	87,500	87,500	87,500	87,500	87,500	87,500	87,500	87,500	88,000	88,000	88,000	2,736,000	---	---
Leaching								75,000	75,000	75,000	75,000	75,000	75,000	75,000	75,000	75,000	66,000	66,000	2,052,000	66,000	
Stripping								25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	22,000	22,000	684,000	22,000	
Office & G&A								37,500	37,500	37,500	37,500	37,500	37,500	37,500	37,500	37,500	33,000	33,000	1,026,000	33,000	33,000
Lab								12,500	12,500	12,500	12,500	12,500	12,500	12,500	12,500	12,500	11,000	11,000	342,000	11,000	
Explor											25,000	25,000	25,000	25,000	25,000	25,000	--	--		---	
Total Cost-Tails	40,000	10,000	10,000	40,000	10,000	355,500	167,500	362,500	287,500	375,500	312,500	450,248	340,062	340,062	340,062	202,562	27,562				
Total Cost-Open Pit																352,000	534,000	565,163	17,018,405	175,663	76,663
OZ Recovered								1,575	1,575	1,575	1,575	1,575	1,575	1,575	1,575	1,575	2,495	2,495	77,566	2,495	
Revenue at 400/oz									630,000	630,000	630,000	630,000	630,000	630,000	630,000	630,000	630,000	998,000	31,026,400	998,000	998,000
OP Cash Gen-Tails	-40,000	-10,000	-10,000	-40,000	-10,000	-355,500	-167,500	-362,500	+342,500	+254,500	+317,500	+179,752	+289,938	+289,938	+289,938	+427,438	+602,438				
Cum Cash Gen-Tails	-40,000	-50,000	-60,000	-100,000	-110,000	-465,500	-633,000	-995,500	-653,000	-398,500	- 81,000	+ 98,752	+397,690	+687,628	+977,566	+1,405,004	+2,007,442				
OP Cash Gen-Ore																-352,000	-534,000	+432,837	+14,007,995	+882,337	+921,337
Cum Cash Gen-Ore																+1,053,004	+519,004	+951,841	+14,959,836	+15,842,173	+16,763,510

PROPOSAL FOR JOINT VENTURE

Mr. George Hennessey, Lessee of the Vulture Mine Property near Wickenburg in Maricopa County, AZ, has agreed to cooperate with Mr. Terry Downing and Milton Hood in the development and operation of the Vulture Mine. As their contribution to this undertaking, Mr. Downing and Mr. Hood will obtain project financing and contribute necessary technical and management expertise to develop and operate the mine(s).

It is proposed that the property be developed as a joint venture between the incoming financial backer and Messers Hennessey, Downing and Hood. The basis of a deal would be:

1. Incoming partner to furnish funds for option period of 90 days ($30,000) and cost of sampling and metallurgical testing program during option period to verify tonnage, grade and treatment flowsheet for stamp mill tails. This program is estimated to cost approximately $60,000.

2. If the sampling program confirms the viability of the project, and a decision is made to proceed with development, the incoming partner will provide funds necessary for project development through completion and commercial production.

3. Operating revenue, defined as sales less operating costs and royalties, would be divided as follows:
   a. Seventy-five percent (75%) to incoming partners and twenty-five percent (25%) to operating partners (Hennessey, Downing & Hood) until initial investment is repaid.

   b. After repayment of the initial investment, operating profits will be divided on an equal basis between the incoming partners (Hennessey, Downing & Hood).

   c. The incoming partner will receive credit for all allowable depreciation and investment tax credits.

An operating agreement between the joint venture partners would be executed. This would set forth the manner in which the property would be developed and operated. It would include duties and obligations of all partners including composition of a management committee.

CONDENSED RESUMES

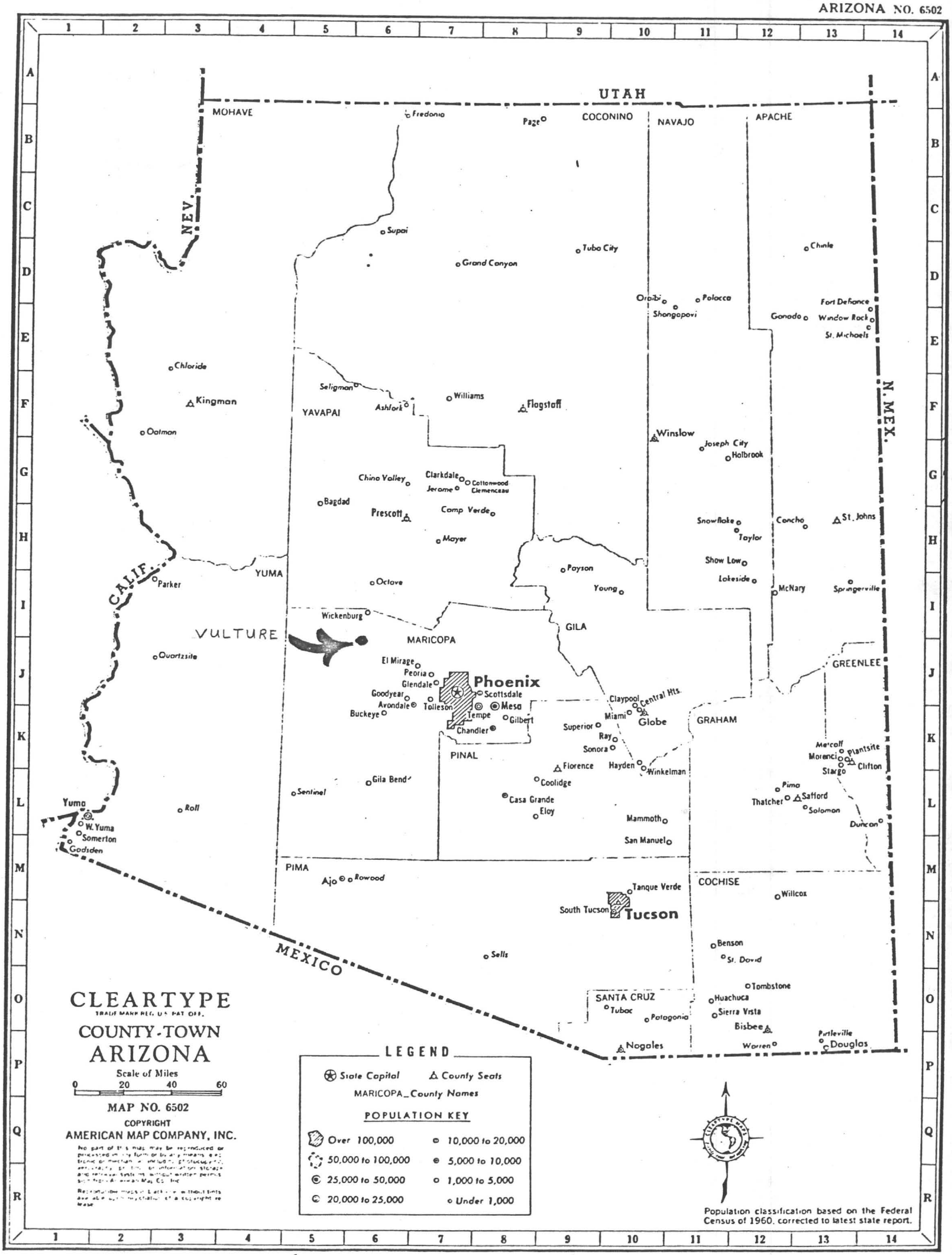
OF

MILTON W. HOOD

Milton W. Hood is a 1953 Graduate of the University of Arizona with a B.S. in Geological Engineering and a M.B.A. which he received in 1972. Work experience consists of positions as Pit Engineer, Mine Foreman, Chief Mining Engineer and Mine Superintendant of the 55,000 TPD open pit copper mine, Cyprus Pima Mining Company in Arizona; Manager of Mining Engineering, corporate level, with Utah International in San Francisco, California; Vice President of operations for Quintana Minerals Corporation, Houston, Texas. Primary skills include management of new projects and open pit mining.

TERRY L. DOWNING

Terry L. Downing is a 1970 graduate of the South Dakota School of Mines and Technology in Metallurgical Engineering. Work experience consists of positions as Assistant Mill Metallurgist at White Pine Copper Company in Michigan; Concentrator Metallugist, Assistant Superintendant, and Superintendant of the 22,500 TPD Inspiration Consolidated Copper Company Concentrator in Arizona; Staff Metallurgist at Homestake Mining Company in South Dakota; Vice President and Manager of Operations at Gold Resources, Inc., in Colorado; and Senior Metallurgist at Quintana Minerals Corporation in Colorado. Primary skills include management of operations in recovery of copper, gold and silver.


UTAH
NEV.
CALIF.
N. MEX.
MEXICO
MOHAVE
COCONINO
NAVAJO
APACHE
YAVAPAI
YUMA
MARICOPA
GILA
GREENLEE
GRAHAM
PINAL
PIMA
COCHISE
SANTA CRUZ
VULTURE
Fredonia
Page
Supai
Tuba City
Grand Canyon
Chinle
Oraibi
Polacca
Shongopovi
Fort Defiance
Ganado
Window Rock
St. Michaels
Chloride
Kingman
Oatman
Seligman
Ashfork
Williams
Flagstaff
Winslow
Joseph City
Holbrook
Chino Valley
Clarkdale
Cottonwood
Jerome
Clemenceau
Bagdad
Prescott
Camp Verde
Mayer
Snowflake
Taylor
Concho
St. Johns
Show Low
Lakeside
McNary
Springerville
Parker
Octave
Payson
Young
Wickenburg
Quartzsite
El Mirage
Peoria
Glendale
Phoenix
Scottsdale
Goodyear
Avondale
Tolleson
Mesa
Tempe
Buckeye
Gilbert
Chandler
Claypool
Central Hts.
Miami
Globe
Superior
Ray
Sonora
Hayden
Winkelman
Florence
Coolidge
Casa Grande
Eloy
Mammoth
San Manuel
Morenci
Metcalf
Plantsite
Clifton
Stargo
Pima
Thatcher
Safford
Solomon
Duncan
Sentinel
Gila Bend
Yuma
W. Yuma
Somerton
Gadsden
Roll
Ajo
Rowood
Tanque Verde
South Tucson
Tucson
Willcox
Benson
St. David
Sells
Tombstone
Huachuca
Sierra Vista
Bisbee
Tubac
Patagonia
Nogales
Warren
Douglas
Pirtleville
CLEARTYPE
TRADE MARK REG. U.S. PAT. OFF.
COUNTY-TOWN
ARIZONA
Scale of Miles
0 20 40 60
MAP NO. 6502
COPYRIGHT
AMERICAN MAP COMPANY, INC.
LEGEND
State Capital
County Seats
MARICOPA_County Names
POPULATION KEY
Over 100,000
50,000 to 100,000
25,000 to 50,000
20,000 to 25,000
10,000 to 20,000
5,000 to 10,000
1,000 to 5,000
Under 1,000
Population classification based on the Federal Census of 1960, corrected to latest state report.

SHEARSON LEHMAN BROTHERS
An American Express company

Shearson Lehman Brothers Inc.
Foster & Marshall Inc.
The Robinson-Humphrey Company, Inc.

1 Western Union International Plaza
New York, NY 10004
(212) 623 8000

542-04660 8984162 09/26/85

DMEA LTD
BEN F. DICKERSON III
7340 E. SHOEMAN LANE
SUITE 111 B
SCOTTSDALE, AZ 85251

DATE

BRANCH	ACCOUNT	T	C	FC
542	04660	1	2	06

ACCOUNT NUMBER

Dear Client:

Due to the absence of your signature, we have in our possession securities which cannot be removed from your name.

We request that your signature be affixed to the "Assignment Separate From Stock Certificate," printed below, on the line indicated by an "X". If securities are jointly registered, both signatures are required.

Please return this stock power to us promptly in the enclosed, self-addressed, postage-paid envelope. If you have any questions concerning this matter, please contact your Financial Consultant.

We thank you for complying with this request.

BY: T. Ciluffo

IRREVOCABLE STOCK OR BOND POWER

FOR VALUE RECEIVED, the undersigned does (do) hereby sell, assign, and transfer unto

_____

_____

_____ | Social Security No. or Taxpayer Identification No. of Transferee

IF STOCK 23 shares of the _____ stock of General Motors Co Contingent Note

company represented by Certificate(s) No.(s) _____ inclusive

IF BOND(s) $ _____ principal amount of the _____

of the _____ Company,

as represented by BOND(s) No.(s) _____ inclusive

standing in the name of the undersigned on the books of said Company, and do hereby irrevocable constitute and appoint

_____ attorney to transfer the

foregoing on the books of said Company, with full power to substitution in the premises.

Dated Oct. 3, 1985

Ben F. Dickerson III
(Person(s) Executing This Power Signs Here)

IMPORTANT – READ CAREFULLY

The signature(s) to this Power must correspond with the name(s) as written upon the face of the certificate(s) or bond(s) in every particular without alteration or enlargement or any change whatever and must be guaranteed by a commercial bank or a trust company having its principal office or a correspondent in the City of New York or by a firm having membership in the New York or Midwest Stock Exchange.

SIGNATURE GUARANTEED

_____
(Name of Bank, Trust Company or Broker)

BY: _____
(Official Signature)

649 (7/85)

Geophysics
International

October 1, 1985

Geophysics International will have an exhibit at space 506 at the SME-AIME fall meeting in Albuquerque, New Mexico. I would like to extend a personal invitation to you to stop by and visit with us.

Geophysics International utilizes the exclusive Petro-Sonde technology which is used in combination or, as a substitute for drilling. It is a fast, practical, and economical way to investigate the subsurface. The Petro-Sonde instrument provides an electric log (relative resistivity log) of any depth interval, between 0 and 20,000', below a surface point. The Petro-Sonde survey is performed from the surface with no drilling or accessing of drill holes involved. The data obtained with the Petro-Sonde allows the identification of oil and gas, water, coal, and minerals, as well as the lithologic characteristics of the surrounding rock. Some of the practical applications of a Petro-Sonde survey would include construction of isopach maps, delineation of faults, voids, and structural features, and determining volume, tonnage potential, morphology and spatial distribution of a resource.

The Petro-Sonde instrument is a small passive device, totally operated and carried by a Geophysics International consulting geologist. It can be used in remote areas with no access roads and causes no environmental damage. A Petro-Sonde surface survey is equivalent to running logs in a drilling program, except that the Petro-Sonde can be focused directly to the depth interval of interest. The Petro-Sonde logging speed ranges from 100' to 400' per hour. This means that in one day, several different locations can be analyzed, the number being limited by the spacing of the sites and the thickness of the interval logged.

If you should have any questions, or if I can be of any assistance before the AIME meeting, please do not hesitate to contact me at the numbers listed below.

Sincerely,

Don Stephens

Don Stephens
Minerals Geologist

DS/ca

9441 LBJ Freeway • Lock Box 39 • Suite 504 • Dallas, Texas 75243 • Telex: 5106 00 2993
214-699-9378 • Texas Watts 1-800-442-1142 • Out of State 1-800-527-7004

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OCT 2, 1985

TO: MR. BEN F. DICKERSON III

FROM: A. E. SOREGAROLI

NO PLANS FOR ALBUQUERQUE - PREPARING PRESIDENTIAL ADDRESS FOR ORLANDO

-- IF I EVER PUT IT ON PAPER, I WILL FORWARD COPY.

ECHO BAY MAY BE SUFFERING FROM 'MIDAS SYNDROME' AND FEEL THEY HAVE T
HE 'TOUCH'. IT'S HAPPENED TO MANY BEFORE.

I LOOK FORWARD TO A CONTINUING ASSOCIATION WITH YOU AND CAROLE.

REGARDS

ART SOREGAROLI

REF. NO. 5694

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F

MMMM

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Dear Reader,

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Should you prefer to make payment through another office or Subscription Agency, please forward the pro forma invoice to them. Meanwhile, however, to prevent interruption to this service, please return the slip below directly to me.

Yours sincerely,

Dan Wyman

ck #403

Dan Wyman,
Subscription Manager.

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DATE REPTD 85/06/25			
100. SPECIALIZED BUSINESS SERVICE			
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Description	Amount	Due Date	Payable Amount
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DATE REPTD 85/06/25			
100 SPECIALIZED BUSINESS SERVICE			
1 SBS CNS REPORTS, CONTINUOUS SVC			
75 SBS RESIDUE			
TOTAL $	850.00		850.00

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Arizona Pneumatic Systems, Inc.
205 South River Drive
Tempe, Az. 85281
(602) 894-9805

August 28, 1985

Lease Agreement

Lease Agreement entered into this 26th day of August, 1985, between Arizona Pneumatic Systems, Inc.(an Arizona corporation) 205 South River Drive, Tempe, Az. 85281 (herein called Leasor) and DMEA Limited, 7340 Shoeman Lane, Scottsdale, Az. (herein called Leasee).

1. This lease is for a period of approximately five (5) months commencing September 01, 1985 and ending January 28, 1986.

2. The machinery leased shall be a Gardner-Denver Model ESLBE, serial number 683992, 75 horsepower, rotary-screw air compressor for the period beginning September 01, 1985 on a month to month basis. If the customer should require a 100 H.P. unit, we will provide the following:
One (1) Gardner-Denver Model EAQQMB, 100 H.P. rotary-screw air compressor, serial number 731828.

3. The lease amounts will be $957.00 on a month to month basis, payable on the First (1st) of each month, until such time when Leasee requires the use of the Model EAQQMB, 100 H.P. machine. At that time the lease will be a minimum of 4 months @ $1,200.00 per month. In addition to this amount, the Leasee will be responsible for the delivery and recovery of both air compressors at a cost of five hundred dollars ($500.00) per trip.

4. Payments shall be due the first day of each month commencing September 01, 1985 and shall be delinquent if not received by the fifth (5th) day of each month. Should payments become delinquent, Leasee agrees to return to Leasor machinery within five days. If Leasor has not received machinery within the alloted time period, Leasee agrees to make available to Leasor (during regular working hours) the machinery for Leasor's recovery. Leasee further agrees that should default occur, Leasee will pay all reasonable attorney's fees and costs incurred in the collection of all amounts due or past due.

5. Leasee expressly agrees to provide adequate insurances for the replacement of any machinery due to fire, theft, or destruction by misuse, and expressly agrees to hold Leasor harmless of any liability or consequential property damages caused by the use of the machinery.

6. Leasee expressly agrees to the following condition of this agreement: Should Leasee's financial position become unstable and deems it

necessary to persue the protection provided by United States bankruptcy laws, upon any of the appropriate filings, this Lease shall be terminated and machinery will be returned to Leasor in the manner prescribed in Section 5.

DMEA Lts. by
Ben F. Dickerson III
Leasee owner

State of Arizona ss
County of Maricopa

On this 29th day of August 1985, Ben F. Dickerson III

an Autorized agent for DMEA personally appeared before me and executed this document.

Aaron A. O'Brien
NOTARY PUBLIC

My Commission Expires April 14, 1987

Shearson Lehman/American Express Inc
Scottsdale Centre
7373 North Scottsdale Road
Suite 120
Scottsdale, AZ 85253
(602) 991-1910

August 27, 1985

RECEIVED AUG 2 8 1985

Ben F. Dickerson III
7340 E. Shoeman Lane
Suite 111 "B"
Scottsdale, Arizona 85251

Dear Ben:

I cannot dispute the facts of the wire transfer of your $30,000. I failed to inform Pat of the transfer because I had an unexpected client drop in and two appointments immediately after. In other words I forgot!

Under normal circumstances my sales assistant would keep track of money transfers, receipts, follow-up calls, and other secretarial work. I have not been under normal circumstances for the past few weeks because I do not have a trained full-time sales assistant at this time. Since I do not have one yet (I will get one soon), I have been doing my job as a financial consultant and I have been trying to do some of the secretarial work myself. Obviously, I am not cut out for the secretarial work, but I am trying. Imagine if Carole were on vacation for a month and you had a Kelly Girl! I'm sure things wouldn't run as smoothly. A great assistant is certainly hard to find. I don't mean to categorize Carole as a secretary because I know she is a Certified Geologist and certainly a valuable business associate.

Concerning the funds drawn on the Bank of Montreal, I did not mean to imply that the funds were "foreign" only that they were funds drawn from a foreign bank. My cashier was well-aware of the U.S. account status and informed me that Shearson could not accept this anyway. I decided to double-check with New York and after several calls was told the same thing.

Since this is your second letter of complaint and you do not want apologies or excuses, I feel that the resolution lies in your hands. You may request another financial consultant or you may try to be more understanding. I will try to do my best in the future to expedite your requests. "To err is human, to forgive is divine".

Sincerely,

Sierra A Wallwork

Sierra A. Wallwork
Financial Consultant

SAW/tj

STATE OF MAINE
DEPARTMENT OF CONSERVATION
STATE HOUSE STATION 22
AUGUSTA, MAINE 04333

JOSEPH E. BRENNAN
GOVERNOR

RICHARD B. ANDERSON
COMMISSIONER

July 12, 1985

RECEIVED JUL 20 1985

To Interested Parties:

During this past legislative session, Legislative Document 1466, "An Act to Clarify Certain Aspects of Mineral Exploration, Development and Disclosure", was enacted. Subchapter III of L.D. 1466 includes the revised Mining on State Lands statutes. The changes are largely procedural. Subchapter IV, "Information on Mining Exploration", is entirely new. It specifies requirements for registration of persons or companies conducting mineral exploration anywhere in the State of Maine, and for the filing and publication of notice of intent to file for a site location permit. These statutes become effective September 19, 1985.

I'm enclosing a copy of L.D. 1466 for your consideration. If you have any questions, please contact Carole Ricker at the Maine Geological Survey.

Sincerely,

Carolyn A. Lepage

Carolyn A. Lepage
Geologist

/cf

Enclosure

cc: Walter Anderson
Carole Ricker

APPROVED
MAY 23 '85
BY GOVERNOR

CHAPTER
201
PUBLIC LAW

STATE OF MAINE

IN THE YEAR OF OUR LORD
NINETEEN HUNDRED AND EIGHTY-FIVE

S.P. 549 - L.D. 1466

AN ACT to Clarify Certain Aspects of Mineral Exploration, Development and Disclosure.

Be it enacted by the People of the State of Maine as follows:

Sec. 1. 12 MRSA c. 201-A, sub-c. II, as amended, is repealed.

Sec. 2. 12 MRSA c. 201-A, sub-c. III is enacted to read:

SUBCHAPTER III

MINING ON STATE LANDS

§549. Jurisdiction

The Maine Geological Survey and the agencies having jurisdiction over state-owned lands shall have jurisdiction, as set forth in this subchapter, over all state-owned lands for the purpose of mineral development and mining on that land. The Maine Geological Survey and the agencies having jurisdiction over state-owned lands may make such rules as each deems proper with respect to the authority delegated pursuant to this subchapter.

§549-A. Definitions

As used in this subchapter, unless the context otherwise indicates, the following terms have the

following meanings.

1. Development. "Development" means all of the methods used in the preparation of a known and presumed economically extractable ore deposit for mining.

2. Director of the survey. "Director of the survey" means the Director of the Maine Geological Survey.

3. Exploration. "Exploration" means an examination of an area for the purpose of discovering the presence of minerals with techniques which include all of the manual, mechanical, electronic or chemical methods of determining the presence, size and quality of a mineral deposit.

4. Explosives. "Explosives" means explosive materials which are used to explore, develop or mine a mineral deposit.

5. Machinery. "Machinery" means equipment or machinery, exclusive of vehicles, which is used to explore, develop or mine a mineral deposit.

6. Minerals. "Minerals" means all naturally occurring mineral deposits, including hydrocarbons and peat, but excluding sand, gravel and water.

7. Mining. "Mining" means all of the extractive and beneficiative processes necessary to remove and prepare a mineral deposit for market.

8. Ore. "Ore" means any mineral or an aggregate of minerals which can be extracted from the earth economically.

9. Person. "Person" means individuals, partnerships, corporations and other entities.

10. Royalty. "Royalty" means the amount paid to the State for the right to remove minerals from state land, including minimum and preproduction payments.

11. State lands. "State lands" means all lands owned or held in trust by the State or in which the

State holds an interest, including inland and tidal submerged lands and waters.

§549-B. Exploration permits, exploration claims and mining leases

1. Authority to explore. Any individual over 18 years of age or other person may enter upon state lands, including lands held under specific trust instruments when the trust is consistent with mineral development, on receipt of an exploration permit from the director of the survey for the purpose of exploration, unless otherwise indicated in this subchapter. An exploration permit shall be issued upon payment of a fee of $20 and shall apply to state lands only. An exploration permit shall bear a number and be dated on the date of issue of the permit and shall expire at midnight on the next June 30th. The holder of an exploration permit is entitled to a renewal of his permit upon expiration of the permit, upon making application to the director of the survey on or before June 30th, including payment of the prescribed fee, which renewal shall take effect on July 1st and bear the same number as the expired permit. Prospectors' permits in effect on June 30, 1985, shall remain in effect as exploration permits until June 30, 1986.

If machinery or explosives are to be used for exploration on state lands, the methods to be employed and the amount of explosives to be allowed shall first be approved by the director of the survey and the director of the agency having jurisdiction over the state land. The use of machinery or explosives shall be approved only where it will be done in harmony with the activities of the agency having jurisdiction over the state land and will not result in environmental harm.

2. Exploration for and mining of hydrocarbons. The director of the survey and the Director of the Bureau of Public Lands may promulgate rules governing exploration and mining of hydrocarbons on all lands within the jurisdiction of the State, public and private, in order to prevent the waste of hydrocarbons and to protect correlative rights and natural resources. The directors may promulgate rules on all

lands in the State to specify the size of the area of exploration, the amount charged for exploration permits and exploration claims, the duration of those permits and claims and other matters related to the exploration and mining of hydrocarbons on state lands.

3. Location of exploration claim and maintenance of rights of possession. Any person or corporation which has secured an exploration permit may locate one or more exploration claims by defining the boundary lines of the claim or claims. No exploration claim may be smaller than 20 acres, except in cases where only a smaller area is available in a parcel of state-owned land. The location or record of any exploration claim shall be construed to include all surface found within the surface boundary lines, and all ledges throughout their entire vertical depth, but shall not include any portion of the ledges beyond the end and sidelines of the exploration claim or timber or growth on the exploration claim. As nearly as circumstances permit, an exploration claim shall be staked out in the following manner:

A. By erecting a post or other reasonably permanent monument at each of the corners of the exploration claim. Every post or monument shall stand not less than 4 feet above the ground, shall not be less than 4 inches in diameter and shall bear the following information: The name of the locator; the number of his exploration permit; the date of the staking; and, if the exploration claim is staked on behalf of another person, the name of the other person and the number of his exploration permit;

B. By plainly marking the trees with paint and by trimming the underbrush along the boundary lines of the exploration claim to indicate clearly the outlines of the exploration claim. Where there are no trees or underbrush, by piling stones or placing pickets at reasonable intervals along the boundary lines of the exploration claim; or

C. By establishing post or buoy markers to witness exploration claim corners which fall in a

body of water, by placing posts on dry land and marking on the posts exact distances and directions to over-water exploration claim corners or by such other methods as the director of the survey may by regulation establish.

Any person who has located and recorded any exploration claim or claims shall, subject to this subchapter, have the right of possession of the premises covered by that exploration claim or claims, for the purpose of conducting exploration activities on those premises. The right of possession shall be alienable in the same manner as real estate. No alienation or transfer of the rights of possession conferred by a located and recorded exploration claim may be effective until the transferor has notified the director of the survey of the transfer and has received an acknowledgment by the director of the survey in writing of receipt of the notification. The director of the survey shall make an acknowledgment within 30 days of the receipt of the notice. Without the express prior written consent of the director of the survey and the agency of the State having jurisdiction over the state land, granted for good cause, the exploration claim shall in no way interfere with conservation, recreation, harvesting timber, leasing campsite lots or other activities of the agency having jurisdiction.

4. Recording of exploration claim. No person may have the right of possession of any exploration claim until the exploration claim has been recorded with the director of the survey. The explorer who first records with the director of the survey a validly-staked exploration claim or claims shall be deemed the claim holder of record for the purposes of this subchapter. The record shall contain:

A. The name of the claimant;

B. A general description of the minerals or metals sought;

C. The date of location and a description of the exploration claim as follows:

(1) A reference, using magnetic bearings

and distances, to the natural object, permanent monument or survey corner of the state-owned parcel as will identify the claim; and

(2) A description, using magnetic bearings and distances, of each sideline and corner of the exploration claim; and

D. A United States Geological Survey quadrangle base map and an aerial photograph of a scale that shows with reasonable accuracy the outline location and corners of the exploration claim in relation to the state-owned parcel and prominent natural objects or permanent structural features so that the exploration claim may be located on the ground by the director of the survey or his representatives.

5. Fees and terms of exploration claim. The fees and terms of exploration of any claim shall be as follows.

A. The fee for recording, renewing, transferring or changing the size of a claim is $100, which shall be paid to the director of the survey.

B. The term of the exploration claim shall be for one year, renewable for 5 years from the initial date of recording by written notice to the director of the survey before June 30th. For claims recorded after April 1st and before June 30th, the first renewal notice shall be due on the 2nd June 30th following. By the end of the 5-year period, any title to the claim shall lapse, unless a mining lease has been issued by the State under this subchapter. The director of the survey may, upon application and for good cause, grant an extension for an additional period not to exceed 2 years. Upon lapse or filing of notice of abandonment of a claim, no person holding the claim immediately prior to the date of the lapse of abandonment, or his representative, partner, affiliate or leasing associate, may relocate on the same area for a period of 60 days.

C. In addition to the recording fee, a rental

fee shall be levied from the date of recordation of the claim as follows:

First year	$ .25 per acre
2nd year	$ .75 per acre
3rd year	$ 1.50 per acre
4th year	$ 2.50 per acre
5th year	$ 5.00 per acre
6th year	$20.00 per acre
7th year	$30.00 per acre

The rental fee payment for the first year shall be due on the date of recordation of the claim. The rental fee payment for the 2nd year and for each year the claim is in effect shall be due on the June 30th which precedes the year for which the payment is due and shall be paid to the director of the survey. For claims recorded after April 1st and before June 30th, the 2nd rental fee payment shall be due on the 2nd June 30th following.

D. An affidavit of investigatory and exploratory work shall be filed each year with the director of the survey on June 30th. At the time of filing that affidavit, the claimant shall demonstrate to the director that investigatory work has been performed on that claim at a rate of at least $5 per acre during the year ending June 30th. For claims recorded after April 1st and before June 30th, the first affidavit of investigatory and exploratory work shall be filed on the 2nd June 30th following. All work done shall be described in the affidavit and shall include work which tends to reveal such characteristics of the material sought as length, width, depth, thickness, tonnage and mineral or metal content, or, with respect to nonmetallic minerals, other physical characteristics of the deposit relating directly to the commercial exploitation of the deposit and such other information relating to the

exploration work as the director of the survey may require. This information may be shared with other governmental agencies, but shall not constitute records available for public inspection or disclosure pursuant to Title 1, section 408, during the period of time in which the claim is in effect.

E. The failure to comply with any of the requirements of this subsection shall operate as a forfeiture of the claim or claims. Written notice of the forfeiture shall be sent by registered or certified mail to the claimant's last known address. Any claimant who is aggrieved may file a written petition for a hearing before the director of the survey within 14 days after notice of forfeiture has been given. If the petition for a hearing is filed with the director of the survey within the 14-day period, the director of the survey shall, within 30 days, grant a hearing on the forfeiture and give the claimant 10 days' notice of the time and place of the hearing. For good cause, the director of the survey may extend the time for filing the petition. If the claimant is aggrieved by the decision of the director of the survey resulting from the hearing, he may, within 30 days thereafter, appeal to the Superior Court filing a claimant therefor. The court shall fix a time and place for hearing and cause of notice of the hearing to be given to the director of the survey and, after hearing, the court may affirm or reverse the decision of the director of the survey and the decision of the court shall be final. During the pendency of all proceedings under this paragraph, no person may lay claim to the area of dispute. The director of the survey may perform the duties of this paragraph personally or through his designee.

F. Within 6 months of the lapse or termination of a validly located exploration claim or claims, the owner of the claim or claims shall provide to the director one copy of all factual data acquired during exploration of that claim or claims. The factual data shall include, but not be limited to, all geologic maps, drill logs, as-

say or other analytical data, geochemical maps, geophysical data and metallurgical or other laboratory tests, but shall not include interpretive reports derived from that data.

6. Land use ruling. Any person with a recorded exploration claim shall make application to the director of the agency having jurisdiction over the state lands on which the claim is located for a ruling on the question of whether mining operations can be carried on consistent with any prior or proposed other use by the State or any agency or instrumentality of the State. Such a ruling, that mining operations can be carried on, shall not be made without consulting the director of the survey. No mining lease may be issued under this subchapter without a land use ruling which answers the question in this subsection in the affirmative. A public hearing shall be held prior to any ruling required under this subsection. The ruling shall be made within 180 days of the date of the application and when obtained shall be binding and irrevocable for such period of time as the applicant and the State may agree.

7. Mining lease. Mining leases may be applied for and granted as follows.

A. Any person with a valid recorded exploration claim in accordance with this subchapter may make application for a mining lease to the director of the agency having jurisdiction over the state lands on which the mining lease is sought. The application shall be accompanied by a report from a certified geologist or mining engineer containing all information of a geologic, engineering and operational nature which is required by the director of the survey or the director of the agency having jurisdiction over the state lands on which the mining lease is sought to properly evaluate the application and an accurate survey of the property boundaries certified by a registered surveyor and evidence of ability to finance the proposed mining operations.

B. The director of the agency having jurisdiction over these state lands shall hold a hearing for the purpose of hearing evidence on whether to

grant or deny a mining lease to mine under this section. The hearing shall be held within 90 days of receipt of the application and notice of the date, time and place shall be given to the applicant and public notice shall be made by causing publication of the notice twice in a newspaper of general circulation in the proposed locality or, if none, in the state paper. The date of first publication shall be at least 10 days and the last publication shall be at least 3 days before the date of the hearing.

C. A decision in accordance with this subsection shall be issued within 120 days of the date of the hearing.

D. The director of the agency having jurisdiction over the state lands, with the consent of the director of the survey, may issue a mining lease subject to such terms and conditions as the directors may determine.

E. If a lease is issued, the lessee shall be required to provide a bond in an amount determined by the director of the agency having jurisdiction over the state-owned lands to be necessary to reclaim the area mined and to protect against damage that may be caused to any property located outside the leased area by the lessee's mining operations or, in lieu of a bond, other security determined by the director of the agency having jurisdiction over the state-owned lands to provide the same protection as a bond.

8. Common and undivided interests. The director of the survey and the Director of the Bureau of Public Lands, acting jointly, may, by regulation, establish procedures for the filing of exploration claims and issuance of exploration permits and leases covering state-owned public lands, including public reserved lands, which are comprised of state-owned common and undivided interests. The regulations may condition the issuance of an exploration permit or mining lease and the filing of an exploration claim upon the consent of a majority of the private common and undivided ownership of the parcel of land to which the exploration permit, exploration claim or

mining lease relates.

Any permit or lease issued under this section shall extend only to the common and undivided interest of the State. Any partition occasioned by a negative ruling under subsection 6 or 7 shall be conducted with reasonable expedition. In any partition or location of public reserved land, the Bureau of Public Lands may accept a partition of the surface estate and continue as a cotenant in all or a portion of the mineral estate.

9. Royalty. Royalty payments shall be made as follows.

A. The holder of a lease to mine shall make royalty payments annually or more frequently if so specified in the lease.

B. The amount of royalty payments, including minimum royalties and preproduction payments, together with the other terms and conditions of the lease, shall be set jointly by the director of the survey and the director of the agency having jurisdiction over the state lands. The royalty rate set shall reasonably relate to applicable royalty rates generally prevailing.

10. Disposition of fees and royalties. All fees and royalties accruing to the survey under this subchapter shall be paid into a separate account to be established by the Treasurer of State to be used for salaries and other expenses incurred in the administration of this subchapter, subject to and to the extent permitted by section 553, subsection 3, paragraph E. The account shall not lapse, but shall continue from year to year.

11. Rights-of-way. Any person who has located an exploration claim and has been issued a mining lease in accordance with this subchapter may, with the consent of the director of the agency having jurisdiction over those state lands and consistent with the law, have the right of access across any lands owned or controlled by the State to and from that location. The holder of a mining lease may be issued a permit giving him authority to open, construct, put

in, maintain and use ditches, tunnels, pipes, conduits, flumes and other works through, over and upon that land for drainage and passage of water, together with the right to construct dams, provided that no such water flows on land of others, in connection with the working of his mine to bring water to the mine necessary or convenient for its operation with such conditions and restrictions as may be imposed.

12. Mining under bodies of water. Where any mineral is situated under or in the bed of a stream or lake, and for the efficient working of the mineral deposit, it is necessary to divert the water of that stream within the boundaries of public land, or drain any lake, the director of the agency having jurisdiction over these state-owned lands may permit the diversion or drainage to be done, subject to such provisions, for the benefit of any persons who are entitled to the use of the water of that stream or lake in its natural state, as to him may seem just and expedient.

13. Annual reports. Any person with a mining lease engaged in mine development or mining under this subchapter shall, in the month of June following the year the operation was carried on, pay all applicable fees, rentals and royalties and file an annual report with the director of the survey and director of the agency having jurisdiction over the state-owned land setting forth:

A. The location of the operation;

B. The quality and grade of mineral products or ores produced;

C. The amount of royalty which has accrued on material extracted;

D. The number of persons ordinarily employed at operation below ground and above ground; and

E. Any other information, relating to the mining lease, mine development or mining, the director of the bureau and the director of the agency having jurisdiction over the state-owned lands may require by regulation.

This information may be shared with other government agencies, but shall not constitute records available for public inspection or disclosure pursuant to Title 1, section 408.

14. Termination. In the event that any explorer, claimant or lessee violates any of this subchapter or any rule, the director of the survey or the director of the agency having jurisdiction over the state-owned lands shall notify the explorer, claimant or lessee, as the case may be, of the alleged violation and of the nature of the alleged violation, by sending the notice by registered or certified mail to him at his last known address. If the violation is not remedied within 30 days after the date of mailing the notice, the permit, claim or lease of the violator in existence at the time of the violation may be terminated by the State through the director of the survey or the director of the agency having jurisdiction over the state-owned lands by giving written notice of termination in the same manner specified for notice of violation. For cause, the State, through the director of the survey or the director of the agency having jurisdiction over the state-owned lands, may extend such further time for compliance as it may determine. Any person who is aggrieved may file a written petition for a hearing before the State within 30 days of the date of the giving of written notice of termination by the State. The hearing shall take place within 30 days of receipt of the petition and a decision shall be rendered by the State within 60 days following the final adjournment of the hearing. Appeals from the State's decision shall be pursuant to the Maine Rules of Civil Procedure as they apply to appeals from rulings of public agencies.

15. Injunctions against violation. Whenever it appears that any person is violating or threatening to violate this subchapter or any rule or order issued pursuant to this subchapter, the State may seek an injunction against that person in the Superior Court of the county in which the office of the director of the survey and the director of the agency having jurisdiction over the state-owned lands is located or of any county where the violation occurs or is threatened, or in the county in which the defend-

ant resides or in which any defendant resides if there is more than one defendant, to restrain the person from continuing the violation or from carrying out the threat of violation. In any such action, the court shall have jurisdiction to grant to the State, without bond or other undertaking, such prohibitory or mandatory injunctions as the facts may warrant, including temporary restraining orders and preliminary injunctions.

§549-C. Compliance with regulatory laws

Nothing in this subchapter may be deemed to relieve any explorer or mining lessee from the obligation to comply with all applicable environmental or other regulatory laws and rules of the State.

Sec. 3. 12 MRSA c. 201-A, sub-c. IV is enacted to read:

SUBCHAPTER IV

INFORMATION ON MINING EXPLORATION

§550. Annual exploration registration

Annual registration shall be required as provided in this section.

1. Registration. Any person conducting mineral exploration where the total exploration expenses incurred in a calendar year exceed $25,000 on private, leased or otherwise acquired lands within the State must register with the director. Registration shall be valid for the fiscal year and must be renewed annually.

2. Information. Registration shall include the following information:

A. The name and address of the person conducting the exploration;

B. The name and address of the parent and any subsidiaries or domestic affiliates of the corporation engaged in exploration activities in this State; and

C. The names of counties where exploration is expected to occur.

§550-A. Notice of intent to file

Intent to file shall be required as provided in this section.

1. Anticipated filing, notices of intent to file. Companies anticipating to file for a permit under Title 38, Article 6 to mine a metallic mineral deposit on a site larger than 20 acres on state land or privately-owned land shall file a notice of intent to file with the director at least 6 months prior to the date when an application for a site location permit will be filed.

Companies shall publish the notice of intent in a daily or weekly newspaper having general circulation in the municipality in which the deposit is located, on the earliest date practicable following the filing of the notice with the director, and shall repeat the publication of the notice at weekly intervals for a total of 4 successive weeks.

2. Information. Notice of intent to file shall include:

A. The name and address of the applicant;

B. The name and address of the parent and any subsidiary or domestic affiliates of the corporation engaged in exploration activities in this State;

C. The location of the intended mining site; and

D. The ores to be extracted from the intended mining site.

In House of Representatives, ... 1985

Read twice and passed to be enacted.

..... Speaker

In Senate, ... 1985

Read twice and passed to be enacted.

..... President

Approved 1985

..... Governor

Vulture Mine Project
Project Evaluation
MH 1/85

Reserves

A reserve estimate was made for that material along strike of the main system that could possibly be mined from surface using conventional open pit methods. Maximum depth planned for this pit was approximatly 115 ft and most of the tonnage would be less than 100 ft from the surface.

Vertical cross sections were constructed at 50-ft intervals and the area of each type material measured by planimeter. A tonnage factor of 12 was used to convert volume to tons. A cut-off of 0.030 opt Au was used. Material within 40-ft along dip of a sample point was considered "proven". Beyond this distance, if it seemed likely that the zone continued, the classification was changed to "Probable" and in most cases the assays were down graded. Dilution of 10% of ore tons at a grade of 0.025 oft Au was used.

Cost Estimates

Capital and operating costs for a 500tpd plant using either carbon or zinc precipitation circuits was developed by Frank Millsaps. Preliminary analysis convinced me that the cash throw-off from this size plant would be inadequate. I sized a plant at 1150 tpd (500tpd tails + 650 tpd ore) and asked Frank for an estimate of the incremental cost involved with the increase. The resulting numbers were used.

I added in certain things that were not addressed in Frank's estimate. These included assay facilities & repair costs for the crushing and agglomerating equipment along with a more realistic figure for power generation costs.

I contacted a number of local contractors and asked for the wage rates. An average was used for this study and this same schedule was applied to jobs in Frank's study. A fringe loading of 25% was used. This should be ample.

Cost Est. (Cont.)

Equipment suppliers were contacted and asked to submit quotes on new & used equipment as well as proposals for rental and lease arrangements. In most cases, the rental costs would not be attractive. However, it would be possible to make very good deals by means of long term lease or purchase & lease back arrangements.

Costs for this study assumed purchase of used equipment at 60% of quoted new equip. prices. The prosected operating and repair costs were developed using the "local" labor rates & Caterpiller's Parts & supplies schedule.

Vulture Mine Project
1150 tpd Plant
—Summary— MI 1/85

Reserves—
Ore. 309,000 tons @ 0.060 opt Au
Tails. 225,000 tons @ 0.038 opt Au
Waste- 1,200,000 tons @ 3.70 S.R.

Production. (Carbon Precip. w/crushing)
Ore @ 650 tpd x 260 days = 169,000 tpy
Tails @ 500 tpd x 260 days = 130,000 tpy
Recovery @ 75%

Costs—
Capital = $2,744,150 = $137.81/oz Au
Operating- = 238.92/oz Au

Life of Mine = 450 days = 1.73 yrs
oz Au Recovered = 19,912 = 11,310 oz/yr

Total No. Employees = 40

Vulture Mine Project
1150 tPd Plant — MH 1/85

Reserves

Ore - 300,000 tons @ 0.060 oA Au, 75% Rec. = 13,500 oz
Tails - 225,000 " @ 0.038 " " " " = 6,412 "
Total oz Au Recovered 19,912
Waste - 1,200,000 tons @ 3.70 S.R.

Production

Ore @ 650 tPd x 260 days x 0.060 x 0.75 = 7,605 oz/yr = 633.75 oz/mo
Tails @ 500 tPd x 260 days x 0.038 x .75 = 3,705 " = 308.75 "
Totals - 299,000 tPy 11,310 oz/yr 942.50 oz/mo
Waste @ 3.70 SR x 169,000 = 625,300 tPy = 52,108 t/mo
Life of Mine = 450 days = 1.73 yrs

Capital Cost Estimate

Plant (Carbon Circuit - Per Millsaps)

Plant Less Loader	$ 885,150

Ancillary Facilities (Hood)

Assay Trailer & Equip.	40,000
Office Trailer + Furniture	15,000
Warehouse Trailer	15,000
Maint. Bldg	25,000
Sewer (Septic Tanks)	5,000
Communications (Radio Phone)	10,000
Site Prep. + Fencing	30,000
Total	140,000

(Cont)

Vulture Mine Project
1150 tPd Plant
Capital Cost Est. (cont) MH 1/85

Mining Equipment

Equipment	New Price	Used * Price	No Units	Total
Loaders - 988B	$387,000	$232,000	2	$464,000
Trucks - 769C	327,000	196,000	2	392,000
Grader 140G	161,000	96,000	1	96,000
Tractor - D8L	359,000	215,000	1	215,000
Tractor - 824C	262,000	157,000	1	157,000
Water Trk. 61313	154,000	92,000	1	92,000
Drill - TraXXON		35,000	1	35,000
		Total		$1,451,000

* 60% of Price quoted by Empire Mach. Co. ON New Cat. Equip.

Aux. Equipment

Mobile Crane - 15 t	—	30,000	1	30,000
Mech. Trk w/A-Frame	15,000	—	1	15,000
Welder Trk.	15,000	—	1	15,000
Flatbed Trk	12,000	—	1	12,000
Electrican Trk	12,000	—	1	12,000
ForKlift	—	15,000	1	15,000
Bobcat Loader	—	10,000	1	10,000
Backhoe	—	20,000	1	20,000
Pickup Trks	—	12,000	3	36,000
Generator 250 KW	29,000	—	1	29,000
Generatr 60 KW	24,000	—	1	24,000
		Sub-Total		$218,000

Vulture Mine Project
1150 tPd Plant
Capital Cost Est. (Cont) MH 1/85

Aux. Equip (Cont)

Equipment	New Price	Used Price	No. units	Total $
Powder Truck	$15,000	—	1	$15,000
Powder Magazine	5,000	—	1	5,000
Cap Magazine	5,000	—	1	5,000
Tools	25,000	—		25000
		Total		$ 268,000

Summary

Plant	$ 885,150
Ancillary Facilities	140,000
Mining Equip	1,451,000
Aux. Equip.	268,000
Project Total	$ 2,744,150

Cost/oz $= \frac{\$2,744,150}{19,912\ oz} = \$137.81$

(4)

Vulture Mine Project
1150 tpd Plant
Oper. Cost Summary

MH 1/85

Plant (Millsaps / Hood Labor)

Item	Annual Cost	Cost / Ton
Labor & Supervi.	$ 320,900	$ 1.073
Reagents	642,850	2.150
Parts & Supplies	80,340	0.269
Power	136,408	0.456
Pad Prep	100,000	0.334
Repairs	97,950	0.328
Total	1,378,448	4.610

Mining & Placement on Pad

Supervision	$ 60,000	$ 0.201
Loading & Hauling	574,788	1.920
Drilling & Blasting		
@ $0.382/ton w/5.70 SR	303,422	1.800
Total	938,210	3.921

Admin.

Sal + Wages (Ex. supt)	$ 175,500	$ 0.587
Supplies	18,000	0.060
Communications	12,000	0.040
Mgmt Fees	36,000	0.120
Outside Serv.	24,000	0.080
Total	265,500	0.887

G & A

Taxes, Legal, etc	120,000	0.401

(5)

Vulture Mine Project
1150 tpd Plant
Oper. Cost Summary MH 1/25

Total Operating Costs/yr $\frac{\$2,702,158}{299,000 \text{ tn}} = \$9.037$ (to

Cost/oz Au $= \frac{\$2,702,158}{11,310 \text{ oz}} = \$238.92$

(6)

Vulture Mine Project
1150 tpd Plant
Equip Oper & Repair Cost

MH 1/85

Equip	Repair Parts	Repair Labor	Maint. G., O, F.C.	Fuel @ $1/gal	Tires or U.C.	Opr. Labor	Total $/hr
Loader-988B	$ 6.55	$ 2.50	$ 2.00	$ 15.00	$ 5.85	$ 11.25	$ 43.15
Tractor-D8L	6.25	2.05	2.90	12.00	7.85	11.25	42.30
Tractor-824C	4.74	1.60	2.15	10.00	5.00	11.25	34.74
Trucks-769C	4.30	1.60	1.75	7.00	5.00	11.25	30.90
Grader-140G	4.00	1.40	0.90	6.00	0.90	11.25	24.45
Water Truck 613B	4.40	1.50	1.10	6.00	2.50	11.25	26.75

Yearly Costs (260 days @ 8 hrs)

Equipment	Hrly. Cost	Elect Hrs	Total Cost
Loaders-988B(2)	$ 43.15	4,160	$ 179,504
Tractor-D8L (1)	42.30	2,080	87,984
Tractor-824C (1)	34.74	2,080	72,260
Trucks-769C (2)	30.90	4,160	128,544
Grader-140G (1)	24.45	4,160	50,856
Water Truck (1)	26.75	2,080	55640
			$ 574,788

Cost/ton ore @ 299,000 tpy = $1.92/ton

D&B Costs/ton ore @ 3.705 R. @ $0.382/ton moved = 1.80

Total Mining & Placement Costs $ 3.72/ton-ore

Generators

250 KW	$ 21.01	4160	$ 87,400/yr
60 KW	5.05	4160	21,008
30 KW	4.00	7,000	28,000
	Total		$ 136,408

$ 0.117/t

(1)

Vulture Mine Project
1150 tpd Plant
Personnel List

MH 1/85

Mining

Job	No Req'd	Rate	Annual Cost
Loader Opers	2	$9.00/hr	$37,440
Dozer/Grader Opers	2	9.00/hr	37,440
Truck Drivers	4	9.00/hr	74,880
Drillers	2	9.00/hr	37,440
Drill Helpers/sampler	2	8.00/hr	33,280
Laborer	2	7.50	31,200
Powderman	1	9.00	18,720
Total Hourly	15		$270,400
Foreman	1		30,000

Maintenance (Based on Outside Maint. Contract)

Mechanic/Welder	1	10.00	20,800
Electrican	2	10.00	41,600
	3		62,400

Office & Tech

Supt	1	sal	36,000
Engr/Geol	1	sal	30,000
Surveyor/Sampler	1	sal	20,400
Clerk	1	sal	15,000
Purchasing Clerk	1	sal	15,000
Safety Engr	1	sal	24,000
Security	3	12,000/yr	36,000

(8)

Vulture Mine Project
1150 tpd Project
Personnel List MH 1/85

Plant & Lab

Job	No Paid	Rate	Annual Cost
Pad Oper	3	$ 8.50/hr	$ 53,040
Refin. & Carbon Oper.	1	9.50/hr	19,760
Crusher Oper	1	9.00/hr	18,720
Process Assayer	1	9.50/hr	18,720
Laborer	2	7.00/hr	29,120
	8		139,360
Metallurgist	1	Sal	36,000
Assayer/Chemist	1	Sal	28,000
Lab Tech/Samp. Prep	2	8.50	35,360
	4		99,360
Total	40		777,920
Burden @ 25%			194,480
			$ 972,400 .0

Cost/Ton @ 299,000 tpy = $3.25

Vulture Mine Project
500 tpd Plant
- Summary -

MH 1/85

Reserves -

Ore - 300,000 tons @ 0.060 opt Au
Tails - 225,000 tons @ 0.032 opt Au
Waste 1,200,000 tons @ 3.70 S.R.

Production - (Carbon Precip. w/crushing)

Ore - 250 tpd x 260 days = 65,000 tpy
Tails - 250 tpd x 260 days = 65,000 tpy
Recovery @ 75%

Costs

Capital - $1,285,000 = $64.53/oz Au
Operating - = 299.00/oz Au

Life of Mine = 1050 days = 4.04 yrs
oz Au Recovered = 19,912 = 4,930 oz/yr

Total Employees 29

Vulture Mine Project
500 tpd plant – MT 1/85

Reserves –

Ore - 300,000 tons @ 0.060 oPt & 75% Recy = 13,500 oz Rec.
Tails 225,000 " @ 0.038 " " = 6,412 " "
Waste - 1,200,000 tons @ 3.70 S.R.

Production

Ore @ 250 tpd x 0.060 x 0.75 x 260 = 2,925 oz/yr = 243.75 oz/mo
Tails @ 250 tpd x 0.038 x 0.75 x 260 = 1,852.5 oz/yr = 154.38 oz/mo
Waste @ 3.70 SR x 250 x 260 = 240,500 t/yr = 20,042 t/mo

Capital Cost $1,285,000
Per oz of Au = $\frac{1,285,000}{19,912\ oz} = \$64.53$

Capital Cost Estimate.
Plant (Carbon Circuit - Per Mill sales)
Plant less Loader $ 667,150

Ancillary Facilities (Hood)

Assay lab Trailer & Equip	40,000
Office Trailer + Furniture	15,000
Warehouse Trailer + Shelving	15,000
Maint. Bldg.	25,000
Communications (Radio Phone)	10,000
Sewer (septic Tanks)	5,000
Site Prep. + Fencing	30,000
Total	$ 140,000

Vulture Mine Project
500-tpd Plant

Capital Cost Est (cont)

Mining Equip (Hood)

Equipment	New Price	Used* Price	No Units	Total
Loader - 988B	$387,000	232,000	1	232,000
Trucks - 769C	327,000	196,000	2	392,000
Grader - 140C	161,000	96,000	1	96,000
Tractor - D8L	359,000	215,000	1	215,000
Water Trk. 613C	154,000	92,000	1	92,000
Drill - Traxxon	-	35,000	1	35,000
	Total			$ 1,062,000

* 60% of New Price quoted by Empire Mach. Co on Cat equip.

Aux. Equip (Hood)

Mobile Crane 15 TON		30,000	1	30,000
Mech Truck w/A-frame	15,000	-	1	15,000
Welder Truck	15,000	-	1	15,000
Flatbed Truck	12,000	-	1	12,000
Backhoe	-	29000	1	29,000
Pickup Trucks	12,000	-	3	36,000
Generator 250 KW	29,000	-	1	29000
Generator 60 KW	24000	-	1	24,000
Powder Truck	12,000		1	12,000
Drill storage (Trailer)	-	5000	1	5,000
Cap Magazine	5,000	-	1	5,000
Tools	20,000	-	-	20,000
	Total			$ 223,000

Total Capital

Vulture Mine Prospect
500 tpd Plant
Est. Equip Oper. & Repair Cost 1/85 MA

Equipment	Hr/y Cost	Fleet Hrs/yr	Total Cost
Loader - 988B	$ 43.15	2,080	$ 89,752
Tractor - D8L	42.30	1,040	43,992
Truck - 769C	30.90	2,080	64,272
Grader - 140G	24.45	1,040	25,428
WaterTrk - 613C	26.75	2080	55,640
	Total		$ 279,084

Cost/ton ore @ 130,000 tpy = $ 2.15 Loading & hauling
D & B @ $ 0.382/ton & 3.70 S.R = 1.80
Total Mining & Placement $ 3.95 / ton ore

Generators -

1	250KW	21.01	3120	65,551
	60KW	5.05	5520	27,876
	30KW	4.00	5,000	20,000
		Total		$ 113,427

Vulture Mine Project
500 tpd Plant
Oper. Cost Summary 1/85 Mt

Plant (Millsaps / 100 d. Labor)

Item	Annual Cost	Cost/Ton
Labor & Superv.	$ 223,300	$ 1.718
Reagents	258,700	1.990
Parts & Supplies	40,170	0.309
Power	113,427	0.873
Pad Prep	50,000	0.385
Repairs	48,975	0.377
Total	$ 734,572	$ 5.652

Mining & Ore Placement on Pads

Item	Annual Cost	Cost/Ton
Supervision	22,500	$ 0.173
Loading & Hauling	279,084	2.150
Drilling & Blasting @ $0.382 & 3.70 S.R.	116,701	1.800
Total	$ 418,285	$ 4.123 / ton

Admin.

Item	Annual Cost	Cost/Ton
Sal & Wages	$ 145,500	$ 1.119
Supplies	12,000	0.092
Communications	10,000	0.077
Mgmt Fees	36,000	0.277
Outside Serv.	15,000	0.115
	$ 218,500	$ 1.681
	60,000	0.462
	$ 278,500	$ 2.143

Vulture Mine Project
500 t/d Plant
Oper. Cost Estimate 1/85 - MH

(CONT)

G & A

Item	Annual Cost	Cost/ton
Taxes, Legal, etc	$ 60,000	$ 0.462

Proj. Total Cost/oz = $1,431,357 / 4777.50 oz = $299.60

$ 11.010 / ton

Vulture Mine Project
500 tpd Plant
Personnel List

Plant (Positions - Millsaps, Rates - Hood)

Position	No Req'd	Rate	Annual Cost
Crusher Oper.	1	$9.00/hr	$ 18,720
Pad Operator	3	9.00/hr	56,160
Refiner	1	9.00/hr	18,720
Assayer (Process)	1	9.00/hr	18,720
Total	6		112,320

Assay Lab - (Hood)

Metallurgist/Chemist	1	Sal	32000
Lab Tech./Samp. Prep	1	9.00/hr	18,720
Total	2		50,720

Office/Tech - (Hood)

Supt.	1	Sal	36,000
Engr/Geol	1	Sal	30,000
Secy/Acct	1	Sal	15,000
Purchasing Clerk	1	Sal	15,000
Security	3	12,000/yr	36,000
Surveyor/Sampler	1	1,700/mo	20,400
Total	8		152,400

Vulture Mine Project
500 tpd Plant
Personnel List (cont)

MINE (Hood)

Position	No Req'd	Rate	Annual Cost
Foreman	1	$ 2,500/mo	$ 30,000
Loader Oper	1	9.00/hr	18,720
Dozer/Grader Oper	1	9.00/hr	18,720
Driller	1	9.00/hr	18,720
Hc/Rer/sampler	1	8.00/hr	16,640
Laborer *	2	7.50/hr	31,200
Truck Drivers	2	9.00/hr	37,440
Total	9		171,440

Maintenance (Hood)

Electrican	1	10.00/hr	20,800
Mechanics	2	10.00/hr	41,600
Welder	1	10.00/hr	20,800
Total	4		83,200

Total W/o Fringes	29	570,080
Fringes @ 25%		142,520
Total W/Fringes	29	$ 712,600

Note –

Mine & Maint. Labor Costs are included in hourly equipment operating costs.

* Laborer for Plant

Vulture Mine Project
500 t/d Plant
– Tailings –

MH 1/85

Capital Cost

Plant	$ 72,500
Lab	35,000
Office Trailer	15,000
Warehouse/Shop	20,000
Aux. Vehicles	60,000
	$ 192,500

MINING EQUIP.

Loader	100,000
Truck	100,000
Tractor	150,000
Water Truck	60,000
	410,000

Misc —	
Generators	40,000
Pad Prep.	25,000
Engr.	15,000
Site Prep & Fencing	30,000
Water System	15,000
Elect. Controls & Distr.	20,000
	145,000
Total Capital Cost	$ 747,500

Oper Costs —

Plant	$ 3.424/ton
Matl Handling	2.29 /ton
G & A	1.00 /ton
Total	6.71 /ton