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

The following file is part of the Doug K. Martin Mining Collection

ACCESS STATEMENT

These digitized collections are accessible for purposes of education and research. We have indicated what we know about copyright and rights of privacy, publicity, or trademark. Due to the nature of archival collections, we are not always able to identify this information. We are eager to hear from any rights owners, so that we may obtain accurate information. Upon request, we will remove material from public view while we address a rights issue.

CONSTRAINTS STATEMENT

The Arizona Geological Survey does not claim to control all rights for all materials in its collection. These rights include, but are not limited to: copyright, privacy rights, and cultural protection rights. The User hereby assumes all responsibility for obtaining any rights to use the material in excess of "fair use."

The Survey makes no intellectual property claims to the products created by individual authors in the manuscript collections, except when the author deeded those rights to the Survey or when those authors were employed by the State of Arizona and created intellectual products as a function of their official duties. The Survey does maintain property rights to the physical and digital representations of the works.

QUALITY STATEMENT

The Arizona Geological Survey is not responsible for the accuracy of the records, information, or opinions that may be contained in the files. The Survey collects, catalogs, and archives data on mineral properties regardless of its views of the veracity or accuracy of those data.

948-7315

Key notes from Bob Bierk

Doug,

Many Thanks

Happy holiday Season

Regard,

Bob

PHOENIX, AZ 850
PM
18 DEC
1979

CHRIST
FIGHT
TB. AIR POLLUTION

USA 15c
THE LAND OF THE FREE
HOME OF THE BRAVE

D.K. Martin & Associates
4728 North 21st Ave
Phoenix, Ariz.
85015

6010 HUNTRESS DRIVE
PARADISE VALLEY, ARIZONA 85253

SILAS C. BROWN & ASSOCIATES
GEOLOGICAL CONSULTANTS
Phone (602) 966-7874
2401 W. Southern Ave. B-78
Tempe, Arizona 85282

Dec. 1, 1979

Mr. D. K. Martin
4728 North 21st Ave.
Phoenix, Ariz 85015

Dear Doug:

Enclosed is my check for $600.00 as an estimate of six days professional services on the Tonopah Enterprises project. I discussed this with the attorney, Jim Callahan and Jack Dunne. They may have you go to Tucson with the samples so any milage you can bill them direct if they want the write off this year. You can make the deal direct with them. Your services as a consultant is through my account as discussed.

I mentioned that you could no doubt help them acquiring mining equipment if we find minable ore so keep that in mind.

My statement to them is also going to be an estimate which they have agreed to. I'm not too worried about a couple of bucks here and there but if they add up to a substantial sum I'll bill them later. They no doubt have a budget to be spent in 1979.

Jim Callahan and Jack Dunne like out set-up where we can do all the work so lets hope it develops into something.

See you when I get back. Kim has a Telex address for me if needed but don't think that will be necessary.

Sincerely,

Buzz

S. C. Brown

3/c

TONOPAH-SIERRA DE ORO JOINT VENTURE

Revised Cash Payment Estimate for First 30 Days of Operation, including Start-Up Expenses:

First 60 days expenses:

Water Lines	$ 950.00	
Dynamite	288.00	
Electric Caps	109.00	
Cement	960.00	
Misc. Tools	500.00	
Pumps	3,500.00	
Bins	1,000.00	
Welding Equipment	500.00	
Fuel and Oil	1,000.00	
Lights and Luminaire	1,000.00	
Equipment Delivery	3,000.00	
Spirals	8,195.00	
Balance Forward	$ 21,002.00	
Add 10% contingency reserve	2,100.00	$ 23,102.00
Engineering and Core Expense	$ 15,000.00	
Start up Wages	4,000.00	
Install Water Tank	2,175.00	21,175.00
First 30 day Start up Cost		44,277.00
First 60 day Lease Insurance Expense See schedule	53,970.00	
Two Week Mine and Mill Expense in First 60 Days Paid/See Schedule	20,740.00	74,710.00
Balance Forward		$118,987.00
Add 10% contingency reserve		11,899.00
Total estimated Cash outlay for first 60 days *		$130,886.00

* Note above figures include a total of $16,569 for contingency reserves.

TONOPAH-SIERRA DE ORO JOINT VENTURE

Schedule of Lease and Insurance Expense
First 60 Days

Mill Equipment from Reuter:	
$11,000 per month x 2 =	$22,000.00
Heavy Equipment from Modeern:	
$12,000 per month x 2 =	24,000.00
Generator Lease:	
$700 per month x 2 =	1,400.00
Air Drill Lease	1,000.00
Insurance Reserve (60 day pro rata)	3,000.00
	$51,400.00
Add 5% contingency	2,570.00
	$53,970.00

Schedule of First Two Week
Mining and Milling Expense

2 week payroll	$ 4,240.00
On site Mill Expense	4,000.00
Estimate (Truck and Hauling Expense/Lease including dump, hauling at mine and to Smelter	5,000.00
Smelting costs	7,500.00
	$20,740.00

Estimated two week production out of first 60 day period:

1,200 tons ore mined in two weeks at the rate of 120 tons per day for ten working days. 120 tons of ore concentrate, approximately 50% lead, obtained from milling 1,200 tons of mined ore.

120 tons ore concentrate x 2,000# per ton = 240,000#, Smelter credit is 92% of ore concentrate or 220,800# @ 50% lead. 110,400# lead smelted at current market of 58¢ per # less 04¢ per # smelter fee is $59,616.00

TONOPAH-SIERRA DE ORO JOINT VENTURE

One Month Estimated Income Statement

Ship 240 tons of concentrate to Smelter (8/30 Ton Loads)		$119,232.00
Mill Equipment Lease	$ 11,000.00	
Heavy Equipment Lease	12,000.00	
Generator Lease	700.00	
Air Drill	1,000.00	
Insurance	1,500.00	
Payroll	8,500.00	
On Site Mill Expense	8,000.00	
Trucking and Hauling	10,000.00	
Smelting Costs	15,000.00	
Fuel and Oil	1,000.00	
Legal and Audit	1,000.00	
	$ 69,700.00	
Mine Consultant, Geologist, Misc., Lease vehicle (10% contingency reserve)	6,970.00	76,670.00
Estimated Income		$ 42,562.00

Note: Income figures are based only on recoverable lead content.

TONOPAH

Total Shareholders Cash Commitment		$115,000.00
Shareholders Guarantee of Bank Loan		50,000.00
Total Shareholder Funds and Guarantee Available		$165,000.00
Shareholder's Cash	$115,000.00	
Original Investment @ $5,000	(15,000.00)	
Loans by Shareholders @ $6,000	(18,000.00)	
Balance due in cash if project proceeds	$ 82,000.00	
Less credit for funds already paid Steinbach and Baker	(4,200.00)	
Balance @ $25,933.33	$ 77,800.00	

Application of Funds

Cash on Hand 11/16/79	$ 24,594.90
Additional cash/Shareholder	77,800.00
Bank Loan Guaranteed by Shareholders	50,000.00
Total Funds Available	$152,394.90
Estimated cash needed first 60 days	130,886.00
Balance of Cash	$ 21,508.90

Note: Estimated cash needed includes total contingency reserves of $16,569.

TONOPAH-SIERRA DE ORO JOINT VENTURE

Cash and Disbursements
November 16, 1979

Investment Money @ $5,000 each			$15,000.00
Shareholder Loan - 11/16/79 @ $6,000 each			18,000.00
	Cash Available		$33,000.00
8/31/79	William Baker and Warren Steinbach/ Option Payment	$1,000.00	
9/ 6/79	Humphrey Engineering Co.	1,500.00	
9/ 6/79	Baker-Steinbach for Humphrey Engineering Test - Denver	1,500.00	
9/29/79	Baker-Steinbach Cash Advance for assay and budget reports	200.00	
10/ 5/79	Hale Pritsch Reports on Steinbach and Baker	1,035.00	
10/ 5/79	Silas Brown Research and conferences at mine	957.00	
10/18/79	R. A. Bierk/Dinner Meeting: O'Reilly, Dunne-Bierk/Gasoline and Mine Supplies	101.00	
10/18/79	R. L. Bierk/Special Services	50.00	
10/25/79	Warren Steinbach Loan	150.00	
10/25/79	R. L. Bierk/Special Services	50.00	
10/25/79	Jack Dunne/Lease of vehicle to mine	117.37	
11/16/79	Bishop & Crawford, Ltd./Professional services	1,813.96	
8/1979	Bank charge/Deposit stop	5.08	
9/1979	Bank charge	2.00	
9/1979	New checks	22.89	(8,504.30)
	Cash balance - 11/16/79		$24,495.70

9-9 Sunday 10-6

964-3297
Bill Baker

GERALD WEATHERS
REGISTERED PROFESSIONAL GEOLOGIST
MINERAL EXPLORATION

AREA CODE 602
955-3590

3928 EAST MEADOWBROOK AVE.
PHOENIX, ARIZONA 85018

MATERIAL TONNAGE ESTIMATES WITHIN A DESIGNATED AREA ON THE HOPE CLAIMS, MARICOPA COUNTY, ARIZONA

The writer accompanied Messrs. Warren Steinbeck and William Baker to the Hope Claims, located in Section 31, T 4 N, R 7 W, G&SRB&M, Maricopa County, Arizona (about 15 miles north of Tonopah, Arizona) on October 29th, 1978.

The purpose of the trip was to measure a designated area encompassing old mine shafts and prospect pits and to estimate the tonnage represented therein to a depth of 200 feet below the surface.

A compass and tape survey was conducted around the perimeter of the designated area, which is underlain by andesite cut by veins mineralized with finely crystalline argentiferous galena as well as other minerals. Sampling, ore grade estimates, etc. were not part of this examination, as the client has conducted these surveys in the past.

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
ARIZONA STATE OFFICE
2400 VALLEY BANK CENTER
PHOENIX, ARIZONA 85073

IN REPLY REFER TO
A MC 31608 thru
A MC 31707 (952)

January 17, 1979

Mr. Warren H. Steinbach
Mr. William J. Baker
4136 N. 85th Ave.
Phoenix, AZ 85037

Dear Mr. Steinbach and Mr. Baker:

This letter is to identify the serial numbers we have assigned to each of your mining claim location notices filed in this office on January 3, 1979.

Serial Number	Name of Claim
A MC 31608 thru 31707	Hope #1 - 100

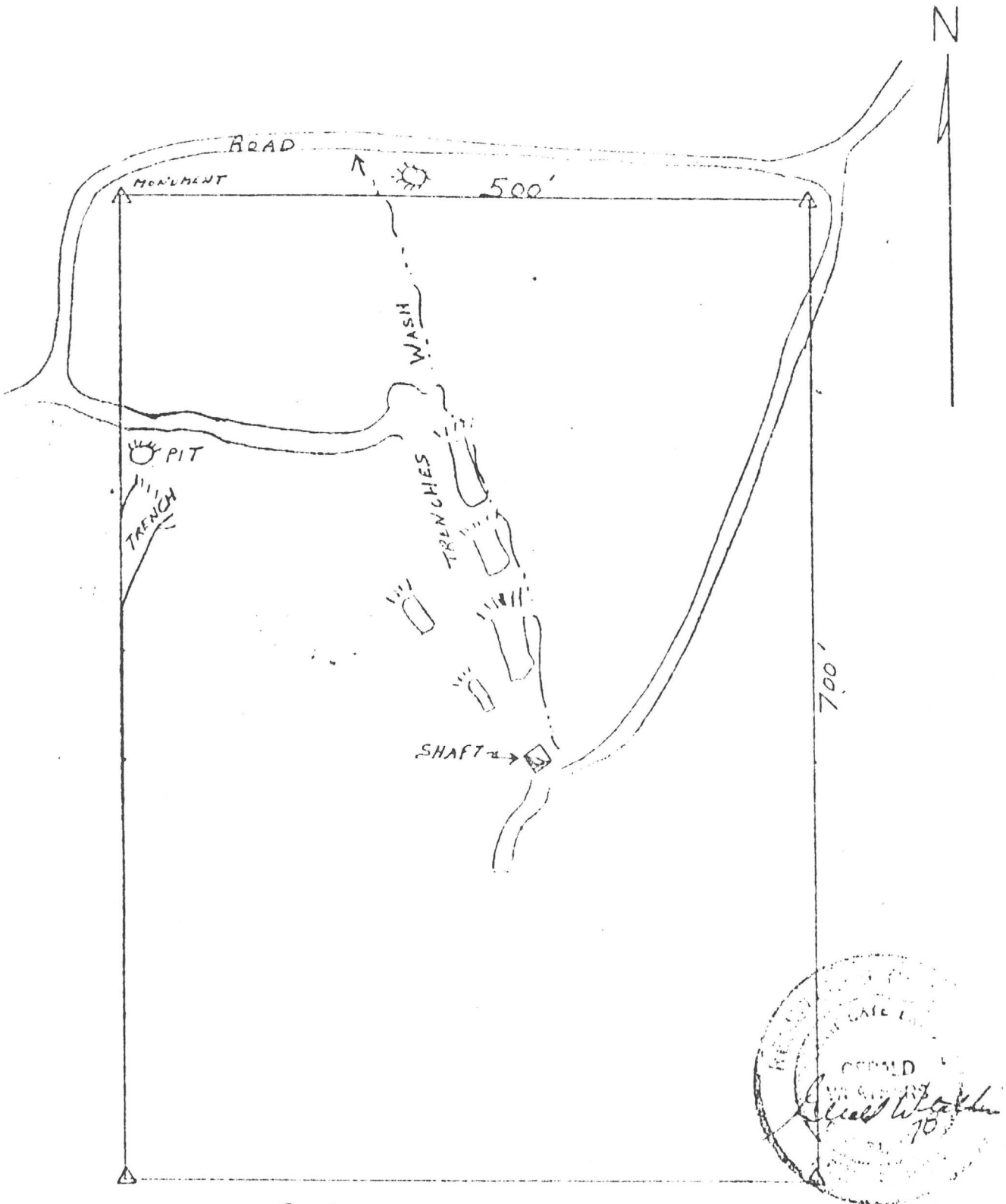
Please refer to the claim names and the respective serial numbers in any future correspondence.

Enclosed is a chart showing requirements for filing affidavits of assessment work or notice of intention to hold mining claims.

Sincerely yours,

Chief, Branch of Records
and Data Management

Enclosure



SKETCH OF PORTION OF

HOPE CLAIMS

SEC 31, T 4N, R 7W

MARICOPA CO, AZ

SCALE 1" = 1000'

10-29-78

S. W.

TONNAGE ESTIMATES

The area enclosing the old workings measures 500 feet east to west and 700 feet north to south. (Refer to enclosed sketch). This area projected to a depth of 200 feet below the surface represents 70,000,000 cubic feet of material. Andesite has a specific gravity of 2.6 x 62.5 = 166.25 pounds/cubic foot or 12.03 cubic feet per short ton. If all the material within the designated area is andesite then 70,000,000 $ft.^3$ ÷ 12.03 $ft.^3$/ton = 5,818,786 tons of material. The client states he believes that 10% of the material is lead. If this is true, then the tonnage estimate within the designated area would be:

Andesite 2.66 x 62.5 x .90 = 149.625

Galena 7.5 x 62.5 x .10 = 46.875

196.50 lb./cubic ft. or 10.178 cubic ft. per short ton.

70,000,000 $ft.^3$ /10.178 $ft.^3$/ton = 6,877,579 tons.

October 29, 1978

Gerald Weathers

OUR MOTTO: — WHAT THERE IS IN IT, NO MORE NO LESS.

[illegible] E. PHILLIPS, Vice-Pres.—Gen. Mgr. | M. E. PHILLIPS, Secretary

THE COLORADO ASSAYING COMPANY

(INCORPORATED)

ASSAYERS AND CHEMISTS

303—623-2842 | 2244 BROADWAY

DENVER, COLO. 80201 September 4, 1978

SAMPLE SUBMITTED BY

Mr. Warren H. Steinbach
325 West [illegible] - Apt [illegible]
Watertown, South Dakota [illegible]

SPECTROGRAPHIC ANALYSIS

SAMPLE NO.

PERCENTAGES ARE APPROXIMATE

Antimony		Nickel	.0025	Holmium	
Arsenic	5.-10.%	Potassium	.5	Lanthanum	
Aluminum	4.-7.	Radium		Lutecium	
Boron		Rubidium		Neodymium	
Barium	.2	Rhenium		Prasaodymium	
Beryllium	.05	Scandium		Samarium	
Bismuth	.03	Silicon	2.-4.	Terbium	
Calcium	Major	Strontium	.03-.05	Thulium	
Columbium		Sodium	.5	Yttrium	
Cadmium	.001	Tantalum		Ytterbium	
Cobalt	trace	Thallium			
Chromium	.1-.2	Thorium	trace (under .01)	Platinum	
Cesium		Tin	.01	Palladium	
Copper	1.	Titanium	.1-.15	Iridium	
Gallium	[illegible]	Tungsten		Osmium	
Germanium		Uranium	trace (under .003)	Rhodium	
Hafnium		Vanadium	.04	Ruthenium	
Indium		Zinc	1.		
Iron	5.	Zirconium	trace	Gold	.01 oz./ton -$2.00/ton.
Lead	20.			Silver	.50 oz./ton -$2.50/ton.
Lithium		Cerium			
Magnesium	1.-1.5	Dysprosium			
Manganese	.3-.5	Erbium			
Mercury		Europium			
Molybdenum	2.	Gadolinium			

REMARKS: The yellow mineral in this sample is Mimetite (a lead arsenate).
The dark brown is Limonite (a hydrous iron oxide).
The bit of light blue is Chrysocolla (copper silicate).
The light green mineral is Fluorite (or calcium fluoride).
Some soft white Calcite (calcium carbonate) is present.
Hard white Quartz (silica) and soft earthy Clays (aluminum silicate) are present.
The Lead and Fluorspar contents are of possible commercial interest.

THE COLORADO ASSAYING COMPANY

By Ed Phillips

TONTO MINING & MILLING CO., INC.

ASSAY CERTIFICATE

DATE SAMPLED TONTO, BASIN, ARIZONA

DATE	SAMPLE NUMBER	DESCRIPTION	% CaF_2	% $CaCO_3$	% SiO_2	% Pb	% WT.	%	%	%	% H_2O
-79	T. # 70	Red Rock ore									
		Conc	92.9	0.23			656.0 gms			609	
		Medics	74.3	1.3			85.0 –			63	
		Tails	36.8	2.2			228.0 –			84	
										756	
79	T. # 71	Tonto PA ore									
		Conc Lead	46.9	.87		16.0	339.0 gms				
		Conc	66.5	7.3		0.58	197.5 –				
		Medics	78.9	12.0		0.83	253.0 –				
		Tails	28.2	37.3		2.46	156.7 –				

José O. Hernández
ASSAYER

TONTO MINING & MILLING CO., INC.
ASSAY CERTIFICATE
DATE SAMPLED TONTO, BASIN, ARIZONA

DATE	SAMPLE NUMBER	DESCRIPTION	% CaF_2	% $CaCO_3$	% SiO_2	%	%	%	%	%
1-22-79		Box Rocks								
			51.2	17.7	[illegible]		6.68			

José O. Hernández
ASSAYER

949-1632 [illegible]

TONTO MINING & MILLING CO., INC.

ASSAY CERTIFICATE

DATE SAMPLED — TONTO, BASIN, ARIZONA

DATE	SAMPLE NUMBER	DESCRIPTION	% CaF_2	% $CaCO_3$	% SiO_2	% Pb	%	% WT.	%	%
2-4-79	Test #	72 Tonto, Pa, CRS								
		Conc Lead	[illegible]	[illegible]		17.0		104.[illegible]	gms	
		Conc	[illegible]	[illegible]		1.60		344.0	–	
		Medics	[illegible]	12.7		7.53		323.1	–	
		Tails.	28.7	29.0		3.75		216.0	–	

J. Hernández
ASSAYER

TONTO MINING & MILLING CO., INC.

ASSAY CERTIFICATE

Tonto Pa — DATE SAMPLED — TONTO, BASIN, ARIZONA

DATE	SAMPLE NUMBER	DESCRIPTION	% CaF_2	% $CaCO_3$	% SiO_2	% Pb	%	%	% WT.	%
1-29-79		Test # 69								
		Conc	85.6	6.10		0.65			300.0	gms
		Medics	63.4	24.0		0.70			153.0	–
		Tails.	45.3	31.3		1.53			144.0	
		Conc Lead	50.5	15.3		21.6			178.0	
		Medics –	50.4	21.7		11.5			193.0	

José Hernández
ASSAYER

TONTO MINING & MILLING CO., INC.

ASSAY CERTIFICATE

DATE SAMPLED — TONTO, BASIN, ARIZONA

DATE	SAMPLE NUMBER	DESCRIPTION	% CaF_2	% $CaCO_3$	% SiO_2	% Pb	%	% U.T.	%	%
2-12-79	T-# 73	TONTO PA ORE								
		Conc Lead	45.9	17.3		21.0		2430 gm		
		Conc	78.4	13.3		6.53		5860 "		
		TAILS.	54.5	36.7		1.92		1470 "		

José Hernandez
ASSAYER

TONTO MINING & MILLING CO., INC.

ASSAY CERTIFICATE

TONTO PA — DATE SAMPLED — TONTO, BASIN, ARIZONA 3-6-79

DATE	SAMPLE NUMBER	DESCRIPTION	% CaF_2	% $CaCO_3$	% SiO_2	% Pb	%	%	%	%
3-5-79	# 1	big box	57.9	16.3		5.08				
	# 2	Plastic box	75.7	14.1		14.19				
	# 3	TIRO	54.6	8.3		16.63				
	# 4	Red Rock	7.1	7.1		1.75				
	# 5	Plastic bags	14.6	2.1		49.0				57.5
						80.46				

José Hernández
ASSAYER

PRODUCT DEVELOPMENT APPLIED RESEARCH

ARC LABORATORIES

Division of Arizona Research Consultants, Inc.
9236 NORTH 10TH AVE. PHOENIX, ARIZONA 85021 943-3573

FOR: William Baker
4136 North 85th Avenue
Phoenix, Arizona 85037

DATE March 16, 1979
LAB No. 17676-7

RESULTS

	2786 A	2150 A
Lab No.	17676	17677
Description	#1	#2
Lead, % as Pb	57.46	18.28
Molybdenum, % as MoO_3	0.28	0.30
Silver, oz/T	10.58	

Respectfully submitted,
ARC LABORATORIES

John P. Sickafoose, Ph.D.
Technical Director

As a mutual protection to clients, the public and this corporation, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from this corporation.

LONG BEACH
3310 AIRPORT WAY
BOX 16026, LONG BEACH 90806

FROM	DIAL
LONG BEACH	(213) 426-3355
LOS ANGELES	(213) 630-2366
ORANGE COUNTY	(714) 828-6432

SANTA ANA
1514-D N. HARPER ST. 92703
JEFFERSON 1-2048

Twining Laboratories
of Southern California, Inc.

INSPECTION & MATERIAL ENGINEERING
CHEMICAL & PHYSICAL ANALYSIS
RESEARCH & ENVIRONMENTAL TESTING
CORROSION RESEARCH & ANALYSIS

January 10, 1967

Examination C1167-11

Mr. H. McVey
Overseas Central Enterprises, Inc.
601 California Street
San Francisco, California 94108

SUBJECT: One (1) sample of ore received by Twining Laboratories of Southern California on January 9, 1967, for Lead and Molybdenum content.

TEST RESULTS:

Pb	(Lead)	66.283 %
PbO	(Lead Oxide)	71.386 %
Mo	(Molybdenum)	7.791 %
MoO_3	(Molybdenum Oxide)	11.685 %
R_2O_3	(Iron + Aluminum Oxide + TiO_2? + ZrO_2?)	7.844 %
Insoluble Residue	(Silica + ?)	5.112 %
So_3	(Sulfur Trioxide)	Trace

The conclusion of this analysis is that the Lead and Molybdenum content is not present as Sulfide; we assume their presence as Oxides.

TWINING LABORATORIES OF SOUTHERN CALIFORNIA, INC.

J. B. Omari

H. R. Landwehr
Chemical Engineer

JBO:HRL:bq

cc: 3

ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS. AUTHORIZATION FOR PUBLICATION OF OUR REPORTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING THEM IS RESERVED PENDING OUR WRITTEN APPROVAL AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC AND OURSELVES.

LONG BEACH
3310 AIRPORT WAY
BOX 16026, LONG BEACH 90806

FROM	DIAL
LONG BEACH	(213) 426 3355
LOS ANGELES	(213) 636 2388
ORANGE COUNTY	(714) 828 6432

SANTA ANA
1514 D N. HARPER ST 92703
JEFFERSON 1 2045

Twining Laboratories of Southern California, Inc.

INSPECTION & MATERIAL ENGINEERING
CHEMICAL & PHYSICAL ANALYSIS
RESEARCH & ENVIRONMENTAL TESTING
CORROSION RESEARCH & ANALYSIS

December 14, 1966

Examination CH66-964

Royal Mining Co.
Box 203
Tonopah, Arizona

ATTENTION: Warren H. Steinbach, President

SUBJECT: Concentrate sample received by Twining Laboratories of Southern California on December 13, 1966, for Lead and Molybdenum content.

TEST RESULTS:

Lead	-	53.82%
Lead Oxide	-	58.14%
~~Lead Sulfide~~	-	~~61.89%~~
~~Lead Sulfate~~	-	~~78.78%~~
Molybdenum as MO_3	-	1.42%

TWINING LABORATORIES OF SOUTHERN CALIFORNIA, INC.

J. B. Omari

JBO/bg

cc: 3

B.L.M. AZ STATE OFFICE   SEE ATTACHED

JAN 3 1979

10:00 A.M.

PHOENIX, ARIZONA

Notice of Mining Location

440537

LODE CLAIM

MIN CLAIM (MC)

TO ALL WHOM IT MAY CONCERN:

AMC ____

This Mining Claim, the name of which is the Hope Mining Claim, situate on land belonging to the United States of America, and in which there are valuable mineral deposits, was entered upon and located for the purpose of exploration and purchase by Warren H. Steinbach and William J. Baker

(Locator must insert either "A Citizen of the United States," or "Who has declared his intention to become a Citizen of the United States.")

the undersigned, on the 18th day of December, 1978.

The length of this claim is 1500 feet and We claim 750 feet in a Easterly direction and 750 feet in a Westerly direction from the center of the discovery shaft, at which this notice is posted, lengthwise of the claim together with 300 feet in width of the surface grounds, on each side of the center of said claim. The general course of the lode deposit and premises is from the Easterly to the Westerly

The claim is situated and located in the Vulture Mining District, in Maricopa county, in the State of Arizona, about 3 miles in a Westerly direction from Belmont Mines

The surface boundaries of the claim are marked upon the ground as follows: Beginning at Stone Monument

at a point in a Westerly direction 750 feet from the discovery shaft (at which this notice is posted), being in the center of the NorthWest end line of said claim; thence North 300 feet to a Stone Monument, being the North West corner of said claim; thence 300 feet to a Stone Monument being at the South Eastern corner of said claim; thence 300 feet to a Stone Monument at the center of the South East end of this claim; thence 300 feet to a Stone Monument, being at the South East corner of said claim; thence 1500 feet to a Stone Monument at the North West corner of said claim; thence 300 feet to the place of beginning.

Dated and posted on the ground this 18th day of December, 1978.

Witness

Warren H. Steinbach

William Baker

Locator(s)

Phoenix, Arizona 85037

4136 North 85th Avenue.

MARICOPA COUNTY RECORDER ARIZONA

STATE OF ARIZONA
COUNTY OF MARICOPA } ss. DEC 18 1978 -12 45

I hereby certify that the within instrument was filed and recorded at request of William J. Baker

on ____ at ____ M, Docket 13336

Page 475-576

Witness my hand and official seal the day and year aforesaid.

BILL HENRY
County Recorder.

By R. B[illegible]
Deputy Recorder.

5/00

~~Fee $1.00~~ —

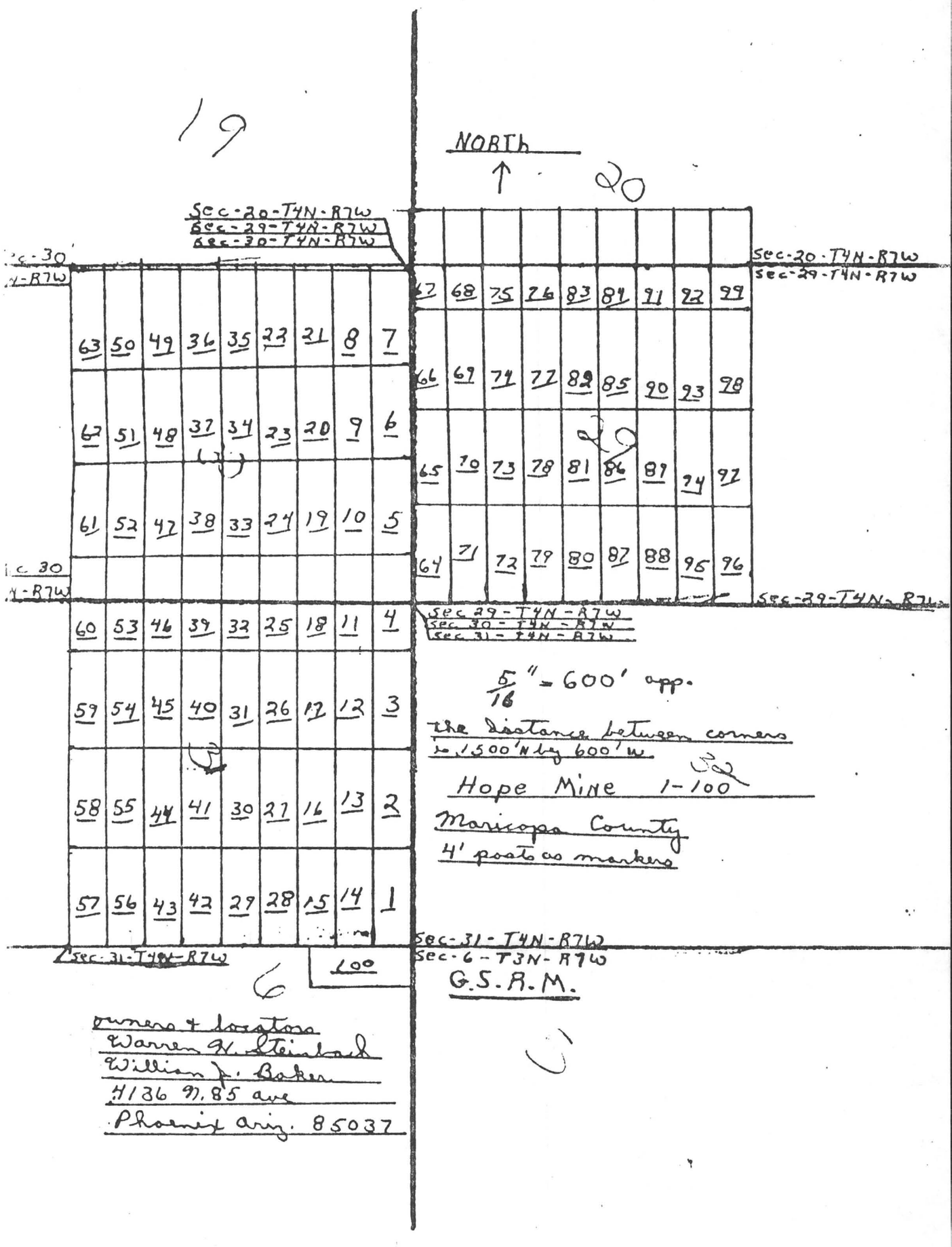
Indexed	Photostat Compared	Blotted

RECEIVED
B.L.M. AZ STATE OFFICE
JAN 3 1979
10:00 A.M.
PHOENIX, ARIZONA

A.M.C. 3163[illegible]

1/4 Sec.

blue - Sec.



5/16" = 600' app.

The distance between corners is 1,500' N by 600' W.

Hope Mine 1-100

Maricopa County

4' posts as markers

G.S.R.M.

owners of longtons
Warren H. Steinbach
William J. Baker
4136 N. 85 ave
Phoenix Ariz. 85037

DKT13295PG1280

Affidavit of Labor Performed and Improvements Made

112379

AFF LABOR (AL)

STATE OF ARIZONA, County of Maricopa } ss.

Warren H. Steinbach & William Baker being duly sworn, deposes and says that he is a citizen of the United States and more than twenty-one years of age, and resides at Phoenix in Maricopa County, State of Arizona, and is personally acquainted with the mining claim known as Hope # 1 thru # 100

mining claim, situate in Vulture Mining District, County of Maricopa, State of Arizona, the location notice of which is recorded in the office of the County Recorder of said County, in Book 311 of Records of Mines, at page 12 72 thru 1471; that between the 23 day of August, A. D. 1978, and the 23 day of November A. D. 1978, at least $10,000 dollars worth of work and improvements were done and performed upon said claim, not including the location work of said claim. Such work and improvements were made by and at the expense of Warren H. Steinbach & William Baker owners of said claim for the purpose of complying with the laws of the United States pertaining to assessment of annual work, and the B.Y.C. & W mining company

were the men employed by said owners and who labored upon said claim, did said work and improvements, the same being as follows, to-wit: road work & drilling, cross cuts & a sizeable block of ore reserves of several million tons of ore was blocked out.

NOV 24 1978 -11 15

STATE OF ARIZONA } ss
County of Maricopa }

I hereby certify that the within instrument was filed and recorded at request of Warren H Steinbach

in Docket 13295
in page 1280
Witness my hand and official seal the day and year aforesaid.

4136 N. 85th ave 85037

Bill Henry
County Recorder

By [illegible] Deputy Recorder

Warren H Steinbach

HUMPHREYS ENGINEERING COMPANY
2219 MARKET STREET
DENVER, COLORADO 80205

TELEPHONE 303 825-8300
TELEX 45 508

RECEIVED

July 19, 1979

[redacted]
Mr. W. H. S. Steinbach
[redacted]

Dear Mr. Steinbach:

This is to respond to your telephone call of July 18, requesting information on the Humphreys spiral concentrator for removal of lead oxides from a fluorspar bearing ore.

The price, f.o.b. Denver, for the Model 24A-FG-MRL 17½" pitch spiral entwined (4-double wound 2 spirals in one axis and in one frame) is $1,850. Two of these double units would be required to treat your ten tons per hour (2½ T/HR/Spiral going to four spirals). The weight of the two spiral unit is 500 pounds. It will occupy the same floor space as the Model 24A-13½" pitch shown on Drawing D325AC, but will be 8'-2" high, compared to 6'-3" for the Model 24A-13½" pitch spiral.

Assuming you will get 50 to 60 percent recovery from the four spirals above, you will require two Model 24A-13½" pitch cleaner spirals for this application. We recommend our Model 24AD-MRL spiral at $950.00 each, or $1,900 for the two. These spirals weighing 360 pounds each, are shown on Drawing D325AC.

Both spirals have rubber linings, the 17½" pitch vulcanized to molded fiberglass accounting for its 4 feet being lower than the 13½" pitch which is vulcanized to cast iron.

In addition to the above, you may wish to purchase accessory parts for feeding, delivering wash water to, and handling products from the spirals. These customized parts vary in price from $100.00 to $175.00 per spiral, depending upon the quantity and type required for the particular installation. They include parts for slurry division and distribution, wash water division and distribution and hose and fittings for delivering spiral products to your launders or sumps.

As I recall, there is some question about the size of grind required to liberate the lead oxide, but it is thought to be around 20 mesh, whereas the grind required to liberate the fluorspar is 60% -200 mesh. If the lead oxide can be liberated at a 14 to 20 mesh pregrind, its removal will be much more effective by gravity concentration--hence, spirals.

We maintain a testing laboratory at 2219 Market Street, Denver, Colorado, 80205, and can determine the optimum grind, as well as run spiral tests. We would require about 500 to 600 pounds of your ore, which we propose to crush grind through 14 mesh, mix, sample, run screen and sink-float tests to determine liberation, and make spiral rougher and cleaner tests. We estimate that this work will require about three days time and cost no more than $1,000.00, outside analytical work or assaying not included.

Mr. W. H. S. Steinbach
~~P. O. Box 910~~
~~Scottsdale, Arizona 85252~~

July 19, 1979

In the event of purchase of equipment, we will allow credit on our invoice to you amounting to 5% of the total of the invoice--packing, taxes and shipping costs exclu

Please advise a few days in advance of your arrival in Denver, so that we can get your work in our schedule.

Sincerely,

HUMPHEREYS ENGINEERING COMPANY

Merrill Welker
Vice President Engineering

mw/jc

Encls: Dwg. D325AC, Bul.20

Bob

This is the place I will take the ore sample to be tested and we will have the assays done there also which will run about $300.00 which is included in the $3,000.00

If you want to have a representative present during the testing please feel free to have someone there.

Dave

BISHOP & CRAWFORD, LTD.

ATTORNEYS & COUNSELORS AT LAW

TELEPHONE 312/323-4600

LESLIE R. BISHOP
LUCY M. BISHOP
ALFRED L. DIDIER
ROBERT A. HALL
CARL A. NEUMANN
JOHN N. DORE
JAMES A. KOHLSTEDT
LEONARD S. DeFRANCO

OAK BROOK REGENCY TOWERS • EAST TOWER • 1415 WEST 22ND STREET • SUITE 850 • OAK BROOK, ILLINOIS 60521

August 14, 1979

Messrs. William J. Baker
and Warren H. Steinbach
1755 East Elton, Apt. D
Mesa, Arizona 85204

Re: Hope Claim #1 - 100
Maricopa County, Arizona

COPY

Dear Messrs. Baker and Steinbach:

At the request of Mr. Robert A. Bierk, I am enclosing an original and two photocopies of a proposed Option Agreement relating to the joint venture for the Hope Mining Claim which is owned by you. The purpose of this Option Agreement is to set forth in writing the understandings which have been reached by you and our client, Mr. Robert A. Bierk, as they have been related to us by Mr. Bierk.

If the proposed Option Agreement fairly represents the agreements between you, the original and one copy should be signed by each of you and returned to Mr. Bierk for his counter-signature, at which time we understand that he will forward to you the initial option payment of $1,000 and a fully executed copy of this agreement. The third copy of the Agreement should be retained by you for your files and reference. If you require any changes to the Option Agreement, please advise Mr. Bierk accordingly. Also, we are forwarding a copy of this proposed Option Agreement to our local co-counsel in Arizona, Mr. Robert Lane, for his review, comments and recommendations, if any. It is our recommendation that Arizona counsel approve this Option Agreement form prior to Mr. Bierk's signature and final execution here in Elmhurst.

Should you feel that I may be of any assistance in expediting the consummation of this Agreement, please feel free to contact me directly.

Very truly yours,

BISHOP & CRAWFORD, LTD.

Leslie R. Bishop

LRB:djw
Enclosures

cc: Mr. Robert A. Bierk
Mr. Robert Lane

United States Department of the Interior

IN REPLY REFER TO

8500

BUREAU OF LAND MANAGEMENT

PHOENIX DISTRICT OFFICE
2929 WEST CLARENDON AVENUE
PHOENIX, ARIZONA 85017

August 24, 1979

Warren Steinbach
1755 E. Elton, Apt. D
Mesa, AZ 85204

Dear Mr. Steinbach:

This is to inform you that your plans to lightly blade the road into the Moon Anchor Mine and to work within the existing disturbed area at the mine will not impair the Wilderness suitability of the study area. Please inform us as soon as possible, however, if your plans are changed to include more surface disturbance than is currently anticipated.

We appreciate the opportunity to work with you on this matter and will be pleased to answer any questions.

Sincerely,

District Manager

[illegible]ND E. PHILLIPS, Vice-Pres.—Gen. Mgr.

M. E. PHILLIPS, Secretary

OUR MOTTO: — WHAT THERE IS IN IT, NO MORE NO LESS.

THE COLORADO ASSAYING COMPANY

(INCORPORATED)

ASSAYERS AND CHEMISTS

303—623-2842 2244 BROADWAY

DENVER, COLO. 80201 September 4, 1978

SAMPLE SUBMITTED BY

Mr. Warren R. [illegible]
325 West [illegible] - Apt. #3
Watertown, South Dakota [illegible]

SPECTROGRAPHIC ANALYSIS

SAMPLE NO.

PERCENTAGES ARE APPROXIMATE

Antimony		Nickel	.0025	Holmium	
Arsenic	5.-10.[illegible]	Potassium	.5	Lanthanum	
Aluminum	6.-7.	Radium		Lutecium	
Boron		Rubidium		Neodymium	
Barium	.2	Rhenium		Praseodymium	
Beryllium	.05	Scandium		Samarium	
Bismuth	.03	Silicon	5.-6.	Terbium	
Calcium	[illegible] or	Strontium	.03-.05	Thulium	
Columbium		Sodium	.5	Yttrium	
Cadmium	.001	Tantalum		Ytterbium	
Cobalt	trace	Thallium			
Chromium	.1-.2	Thorium	trace (under .01)	Platinum	
Cesium		Tin	.001	Palladium	
Copper	1.	Titanium	.1-.15	Iridium	
Gallium	[illegible]	Tungsten		Osmium	
Germanium		Uranium	trace (under .003)	Rhodium	
Hafnium		Vanadium	.04	Ruthenium	
Indium		Zinc	1.		
Iron	5.	Zirconium	trace	Gold	.01 oz./ton -$2.00/ton.
Lead	20.			Silver	.50 oz./ton -$2.50/ton.
Lithium		Cerium			
Magnesium	1.-1.5	Dysprosium			
Manganese	.3-.5	Erbium			
Mercury		Europium			
Molybdenum	2.	Gadolinium			

REMARKS: The yellow mineral in this sample is Mimetite (a lead arsenate).
The dark brown is Limonite (a hydrous iron oxide).
The bit of light blue is Chrysocolla (copper silicate).
The light green mineral is Fluorite or (calcium fluoride).
Some soft white Calcite (calcium carbonate) is present.
Hard white Quartz (silica) and soft earthy Clays (aluminum silicate) are present.
The Lead and Fluorspar contents are of possible commercial interest.

THE COLORADO ASSAYING COMPANY

By Ed Phillips

BISHOP & CRAWFORD, LTD.

ATTORNEYS & COUNSELORS AT LAW

TELEPHONE 312/323-4600

LESLIE R. BISHOP
LUCY M. BISHOP
ALFRED L. DIDIER
ROBERT A. HALL
CARL A. NEUMANN
JOHN N. DORE
JAMES A. KOHLSTEDT
LEONARD S. DeFRANCO

OAK BROOK REGENCY TOWERS · EAST TOWER · 1415 WEST 22ND STREET · SUITE 850 · OAK BROOK, ILLINOIS 60521

September 4, 1979

Messrs. William J. Baker
and Warren H. Steinbach
1755 East Elton
Apt. D
Mesa, Arizona 85204

Re: Tonopah Enterprises, Ltd.

Gentlemen:

At the request of Mr. Robert Bierk I am forwarding to you a fully executed copy of the Option Agreement dated August 30, 1979. Please also be advised that Mr. Bierk has caused to be formed a Delaware corporation to be qualified to do business in both Arizona and Illinois under the name Tonopah Enterprises, Ltd. and it is through this corporation that the Bierk group will be represented for the purpose of forming a joint venture with you for the commercial development of your mining claims. Accordingly, the Option Agreement has been signed by Mr. Bierk as President of Tonopah Enterprises, Ltd. Also enclosed is a check from Tonopah Enterprises, Ltd. in the amount of $1,000 made payable to your order pursuant to the aforesaid Option Agreement dated August 30, 1979.

At an early date a name should be selected for the joint venture entity which will carry forward the mining development program. As soon as this name has been agreed upon by you and Mr. Bierk, we should be advised in order to obtain the appropriate federal and state tax identification numbers.

Very truly yours,

BISHOP & CRAWFORD, LTD.

Leslie R. Bishop

LRB:va
encls.

cc: Mr. and Mrs. Robert A. Bierk
Mr. Jack Dunne
Mr. Joseph G. O'Reilly

SILAS C. BROWN & ASSOCIATES
GEOLOGICAL CONSULTANTS

Phone (602) 966-7874

2401 W. Southern Ave. B-78
Tempe, Arizona 85282

29 September 1979

Mr. Robert Bierk
142 Briarwood North
Oakwood, Ill. 60521

Dear Bob:

Jack got the results of the Assays from Walt Statler, Iron King Assay office. I only asked for Lead, gold and silver plus fluorspar. In the furture we should also have assays for zinc, copper and rare earths. Walt Statler will run the Spar assay soon and send the results to Jack along with his bill. I only paid for the gold, silver and lead assays. Once we get a larger volume of ore stockpiled we will want to run a complete assay as well as an Spectroscopic assay for every mineral in the area. Sometimes a fire assay will boil off gold, etc. The assays are expensive but necessary and worthwhile.

If you have any questions on the flow sheet and methods of mining please contact Mr. Doug Martin, 4728 N. 21st Ave, Phoenix 85015. Phone 246-9573. He is presently working on a silver leaching project in the White Hills, Mohave Co., Ariz. for a Canadian company.

For any additional field work, sample collecting, etc. contact Jim Fulton. Jim seems to be recovering from his health problems and he does know field evaluations.

Any billing for work done by either Jim or Doug should be made directly to me. This is for our mutual protection as I am registered with the State and they arehnot. Doug is a graduate engineer and is a member of several national organizations in the profession.

Your attorney, Jim Callahan, was asking about my qualifications so am enclosing a resume. I did not ask him if he was qualified and will not ask him for his resume. I realize he is only doing his job as I've worked with many attorneys in my day.

I understand the mill at Pumpkin Center is not in operation and does not plan to process your ore, however, I believe the value of lead and associated minerals are good enough to process while the fluorspar is stockpiled. If it turns out to be good enough then you may want to form a company to process it yourself. Of course you will need qualified personnel for such a venture. My organization is not qualified in this type of work.

The other 100 Hope claims are in a mineralized trend and feel there are good prospects to be found. We will not do anything until we find success in the Moon Anchor operation.

I have certain data in my files which should be compiled when all the assay results are so this will have to wail until I return about Nov. 13th or 14th. The volume of minable ore and mineral values appear quite good at todays market.

Sincerely

SILAS C. BROWN & ASSOCIATES
GEOLOGICAL CONSULTANTS

Phone (602) 966-7874

2401 W. Southern Ave. B-78
Tempe, Arizona 85282

29 September 1979

Paid 10-5-79 ck # 1002

STATEMENT

To: Mr. Robert Bierk and Associates
142 Briarwood North
Oakwood, Ill. 60521

Professional Services: Sept 8 thru 29, 1979

Field reconnaissance, sample collection, research and conferences on the Hope Claims (Moon Anchor Mine), Sec. 31, T 4 N, R 7 W, SRPM, Maricopa County, Arizona.

Services 3½ days at $250.00/Day	$875.00
Expenses: Iron King Assay Office, Assay for gold, Silver & Lead	82.00
Total due	$957.00

Thank you,

S. C. Brown

SILAS C. BROWN & ASSOCIATES
GEOLOGICAL CONSULTANTS

Phone (602) 966-7874

2401 W. Southern Ave. B-78
Tempe, Arizona 85282

SILAS CHRISTIAN BROWN

RESUME OF QUALIFICATIONS

February 26, 1979

PERSONAL

Birthdate: November 25, 1912, Kansas City, Kansas. Danish descent.

Father: Silas Fransen Brown. Danish descent.
Mother: Agnes Louise Thompson Brown. Danish descent.

Wife: Dorothy Cotter Brown. Danish-Irish descent.

Health: Excellent. Religion: Protestant

AVAILABILITY

Approximately two weeks.

TYPE OF SERVICE

Geological Exploration, Well Sitting, Evaluations in Petroleum, Ground Water, Geothermal, Coal and other basic minerals.

EDUCATION

1939 UNIVERSITY OF KANSAS, Lawrence, Kansas
B.A. Degree. Geology

1940 Graduate Studies.

GEOLOGICAL EXPERIENCE

10/74 to Present CONSULTING GEOLOGIST, Tempe, Arizona
All phases of exploration, evaluation, management etc. in petroleum, geothermal, ground water, coal, uranium and basic minerals in the Southern Rocky Mountains, Colorado Plateau and the Southwestern States.

7/66-10/74 UNITED NATIONS, New Delhi, India
Project Manager in India in ground water research studies and field exploration in geology, drilling, well completion, tracer studies (isotope), hydrology, mathematical modelling (computer), land and water use in arid and semi-arid areas. Trained Indian technical exploration teams in practical field application in all disciplines. Geothermal reconnaissance in Gujarat and Western Himalayas. Project adviser in Nepal.

4/53-7/66 CONSULTING GEOLOGIST, Durango Colorado and Scottsdale, Arizona
All phases of exploration, production, operation and management in petroleum, ground water, helium, uranium, coal and other basic minerals. Geothermal studies in Arizona and Utah. Specialized in the Southern Rocky Mountains, Colorado Plateau, the Southwestern States and Mexico.

GEOLOGICAL EXPERIENCE Continued

9/48-4/53	GENERAL PETROLEUM CORPORATION (MOBIL) Durango, Colorado District Geologist. All phases of exploration, production and management in Arizona, Utah, New Mexico and Colorado. Had continuous training program for geologists in oil, gas, coal and tar sand exploration and evaluation. Included well sitting and drilling-mud engineering training.
2/46-9/48	UNITED STATES GEOLOGICAL SURVEY, Phoenix, Arizona Geologizing the State of Arizona for the development of a ground water code. Ground water investigations on the Navajo-Hopi Indian Reservation, Arizona, New Mexico and Utah. Field geology, drilling and evaluate ground water conditions in the consolidated sedimentary rocks of the Colorado Plateau and the unconsolidated and semi-consolidated sediments of the Basin and Range Province. All phases of exploration, development and evaluations. Field and office supervision.
11/45-2/46	CONSULTING GEOLOGIST, Lawrence, Kansas Oil and gas field geology in Kansas, Oklahoma and North Texas.
2/43-11/45	UNITED STATES NAVY. Senior Lieutenant. (Temporary rank of Lieutenant Commander.) During 1945 served with the Naval Seebees on petroleum reserve #4 at Point Barrow, Alaska. Field and research geology pertaining to petroleum. Also mapped coal deposits.
10/42-2/43	KANSAS GEOLOGICAL SURVEY, Lawrence, Kansas Field geology and laboratory studies in oil, gas and ground water.
4/40-9/42	SOCONY-VACUUM OIL COMPANY de COLOMBIA, Bogota, South America Field and research geology in petroleum.

PROFESSIONAL SOCIETIES

Association of Professional Geological Scientists. Charter Member Certified Professional Geologist. Coordinator for Arizona and on various committees.

American Association of Petroleum Geologists. Certified Petroleum Geologist. Various Committees

International Geological Congress. Member

Four Corners Geological Society. Past President.

Durango Petroleum Club. Past President.

Oil and Gas Association of Arizona. Past President. Served on executive board and various committees. Received a Citation for Ten Years of Distinguished Service in 1966.

Energy Resources Association of Arizona. (Name changed from the Petroleum Development Association.) President 1977-1978.

PROFESSIONAL SOCIETIES Continued

Indian Geohydrological Society, New Delhi, India

GENERAL INFORMATION

Registered Geologist with the Arizona State Board of Technical Registration.

Published twenty-three articles in oil, gas, helium and ground water in various trade journals, geological Guide Books and the USGS.

1963 to 1970, listed in Marquez "Who's Who in the West", "Who's Who in Colorado" and the "American Men of Science".

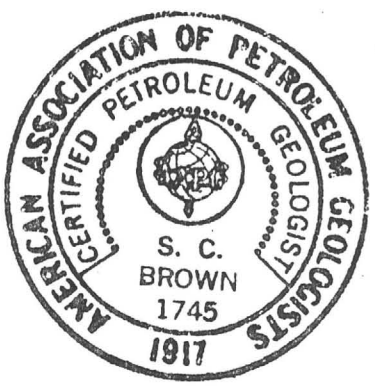
Mayor of Durango, Colorado 1958-1959. City Council 1956-1959.

Working knowledge of Spanish.

Current Passport for International Travel. Issued September 4, 1974 New Delhi, India. Expiration date September 3, 1979.

REFERENCES And additional data will be furnished upon request.

Silas C. Brown



HUMPHREYS ENGINEERING COMPANY
910 AMERICAN NATIONAL BANK BUILDING
DENVER, COLORADO 80202

CABLE ADDRESS
"HUMPHREYS"

TELEPHONE
303/629-6499

October 1, 1979

Mr. Warren Steinback
Tonapah Enterprises
1755 East Elton, Apt. D
Mesa, Arizona 85204

Reference: Our Test Lot 2341

Dear Warren:

Enclosed are two copies of our report dealing with the laboratory studies on your fluorite-anglesite ore. You mentioned over the phone that you will probably be installing spirals after fluorite flotation and this may be an excellent choice for two reasons. First, the lead content should be increased by removal of the fluorite and secondly, some scavenging effect on the fluorite remaining in the tailings may make it possible to return a portion of the tailings back to flotation. This is all conjecture and must be proven in the plant.

From when Mr. Merrill Welker quoted you prices on July 19, we have had some price increases but we will hold your quote firm until November 1, 1979. You were quoted entwined spirals but have since elected to use single starts. Following is a summary of prices:

7	SS-24A-FG5MRL Spirals @		$950.00 ea.	=	$6,650.00
	Above furnished with split discharge boxes		35.00 ea.	=	245.00
	Add for factory assembley @	(1)	50.00 ea.	=	350.00
	Accessories for distribution & feeding	(2)		=	950.00
	Total f.o.b. Denver, Colorado				$8,195.00

(1) Units to be assembled in one frame of four (4) rougher, one frame of two (2) cleaners and a single (1) unit frame.

(2) Includes one eight-way slurry distributor, one two-way dividing unit and all hoses and hose brackets required for slurry distribution.

We presently plan to have your order completed within ten days after receipt of a purchase order. Payment is required upon delivery and a credit of $409.75 is allowed for payment of laboratory fees.

Thank you and we look forward to working with you.

Yours very truly,

HUMPHREYS ENGINEERING COMPANY

Joseph Alexis
Chief Metallurgical Engineer

JA/vjd

Enclosures

SPIRAL CONCENTRATOR TESTS

on

LOW-GRADE ANGLESITE

for

TONAPAH ENTERPRISES
1755 East Elton, Apt. D
Mesa, Arizona 85204

Joseph Alexis, P.E.
Chief Metallurgical Engineer
Humphreys Engineering Company

Introduction

On September 10, 1979, approximately 400 pounds of fluorite ore were received at the Humphreys Laboratory to determine the feasibility of lead recovery employing the Humphreys Spiral Concentrator. It was reported to us that lead values in this ore can approach 10 percent and is present as the mineral anglesite ($PbSO_4$).

A test program was initiated on September 11 and witnessed by Mr. Warren Steinback of Tonapah Enterprises.

Procedure

The sample as received was run-of-mine with some pieces up to 4 inches. Dry crushing, employing the laboratory jaw crusher and rolls, was used to reduce the entire sample through 8-mesh after which the sample was blended and splits were removed for assay and screen analysis. Our assay report showed 7.5 percent lead in the sample and the screen analysis varified the ease of which anglesite slimes in comparison to the host rock. Refer to page 1 in the test data.

Our initial spiral testing was what we refer to as "batch testing". In this approach, we are simply attempting to get familiar with the ore at a minimum loss of material. Our closed-circuit-test-unit (refer to page 2 in the test data) is designed to circulate the ore charge so that as products are produced they are re-combined in the sump and returned to the spiral feed box. Our procedure was as follows:

1. The sump was one-half filled with water (approximately 25 gallons) and the pump was started.
2. As the water circulated through the system, a specified charge of dry feed was slowly added to the sump.
3. Slurry volume was adjusted with the pump varidrive, wash water was introduced at the top of spiral and concentrate splitters were set at selected parts.
4. Simultaneous and equally timed samples were then taken from the product hoses, spiral concentrate and tailings.
5. Volumes and wet weights of the samples were taken after which they were filtered, oven-dried, re-weighed and sent to assay.

This testing method was used for spiral tests numbered 1 and 2 (refer to pages 3, 4 and 5). Although there were some differences in tonnage and slurry volume, the primary item between these tests was in grind. Test number 1 employed a minus 8-mesh grind and number 2 was the undersize from material used in test 1 screened at 35 mesh (page 4).

Because of the friability of anglesite, it was expected that the minus 35 mesh fraction would assay higher in lead than the total head feed. This was verified, and although finer grinding would produce more slimes which might harm gravity recovery we decided to grind approximately one-half of the sample through 20 mesh. Our decision was based on:

1. The grind at the plant where the spirals are to be installed is 50 percent minus 200 mesh.
2. Anglesite has a very high specific gravity (6.2 to 6.4) which should assist in recovery of some slimes.

Our third spiral test, using minus 20 mesh feed, was operated to produce sufficient material for a cleaner test (second stage). We refer to this as a "series" type of test and is similiar to batch testing except that as timed samples are removed, a designated amount of feed material is added to the sump to maintain slurry balance. The rougher concentrate from this test was the feed for the cleaner test.

Up to this point in the program all spiral testing had been on the model SS-24A-FG5MRL-17½" Spiral. For the cleaner

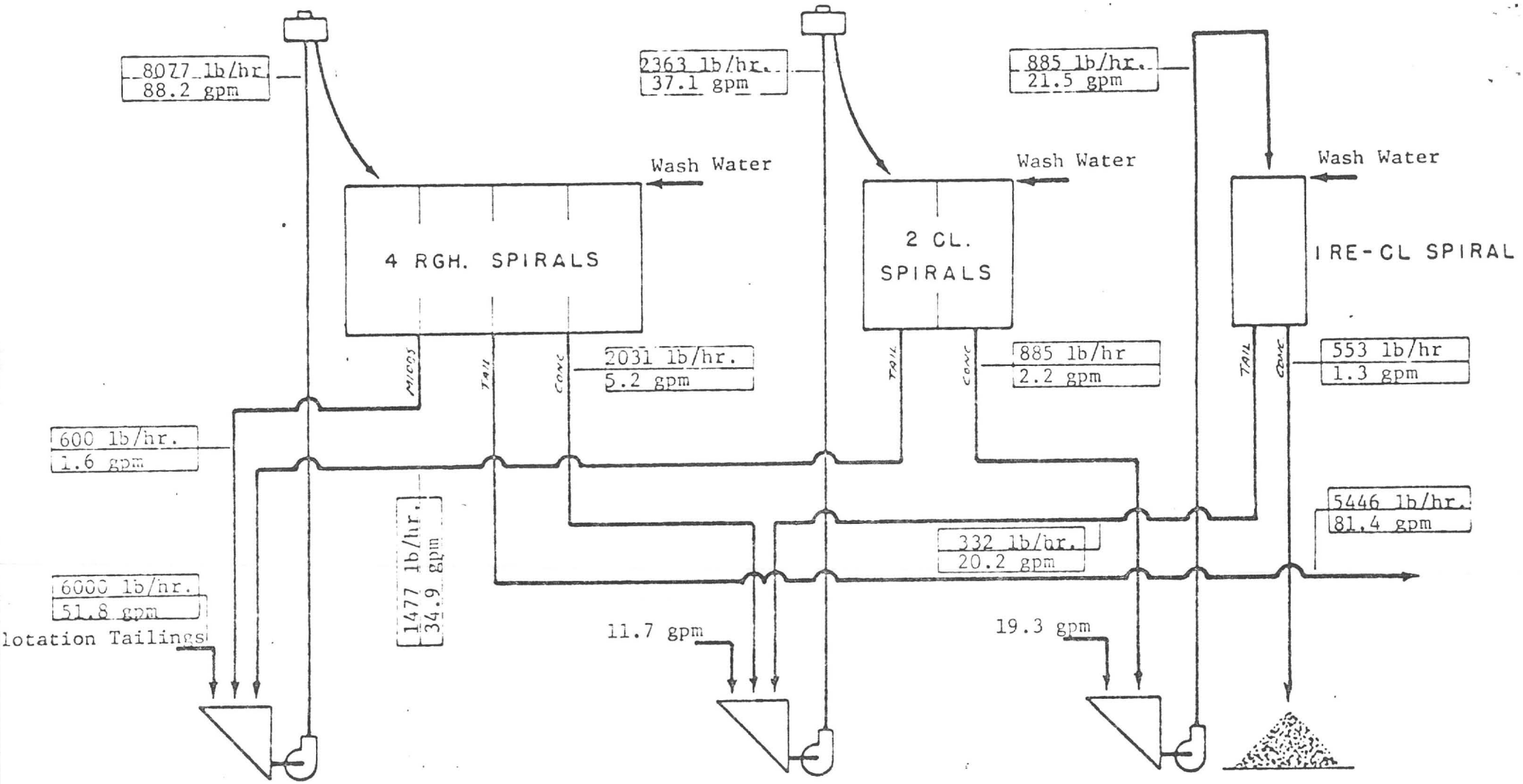
test we elected to use the model 24A5MRL-13½". With the rougher concentrate we were using for feed, 21.4 percent lead (31.3 percent anglesite), we were unable to maintain proper slurry velocity as the high specific gravity minerals had difficulty in moving. We may have corrected this with a more dilute feed but instead decided to finish our work on the steeper pitch SS-24A-FG5MRL-17½".

Although fine grinding produces more anglesite slimes, it was decided to grind our remaining sample through 35-mesh and conducted one more series rougher test followed by cleaning. Our sample now had a size consist of 35.3 percent minus 200 mesh which contained 45.2 percent of the total lead. The entire screen analysis is presented on page 8 in the test data. With this finer grind we were still able to recover almost 60 percent of the lead. Cleaning of the rougher concentrate produced a final concentrate of 43.3 percent.

Summary

Test work to date indicates that three stages of spiral concentration will be required to produce a final grade in excess of 50 percent lead. We have enclosed a proposed flow-diagram for a three stage plant with the approximate material balances.

Throughout the test series we were bothered with proper metallurgical balances. A review of the spiral test data shows our calculated head (or feed) to always be consistently lower than the measured (or assayed) head. Because of the short runs on these tests, we believe that not all the seams and "traps" in the spiral were properly "sanded" with heavy minerals. This would not be the case in an operating plant and we would naturally expect better balances.



Based on: 8% Pb in feed
52% Pb grade
60% Pb recovery

PLANT FLOW DIAGRAM

Approximate Material Balances

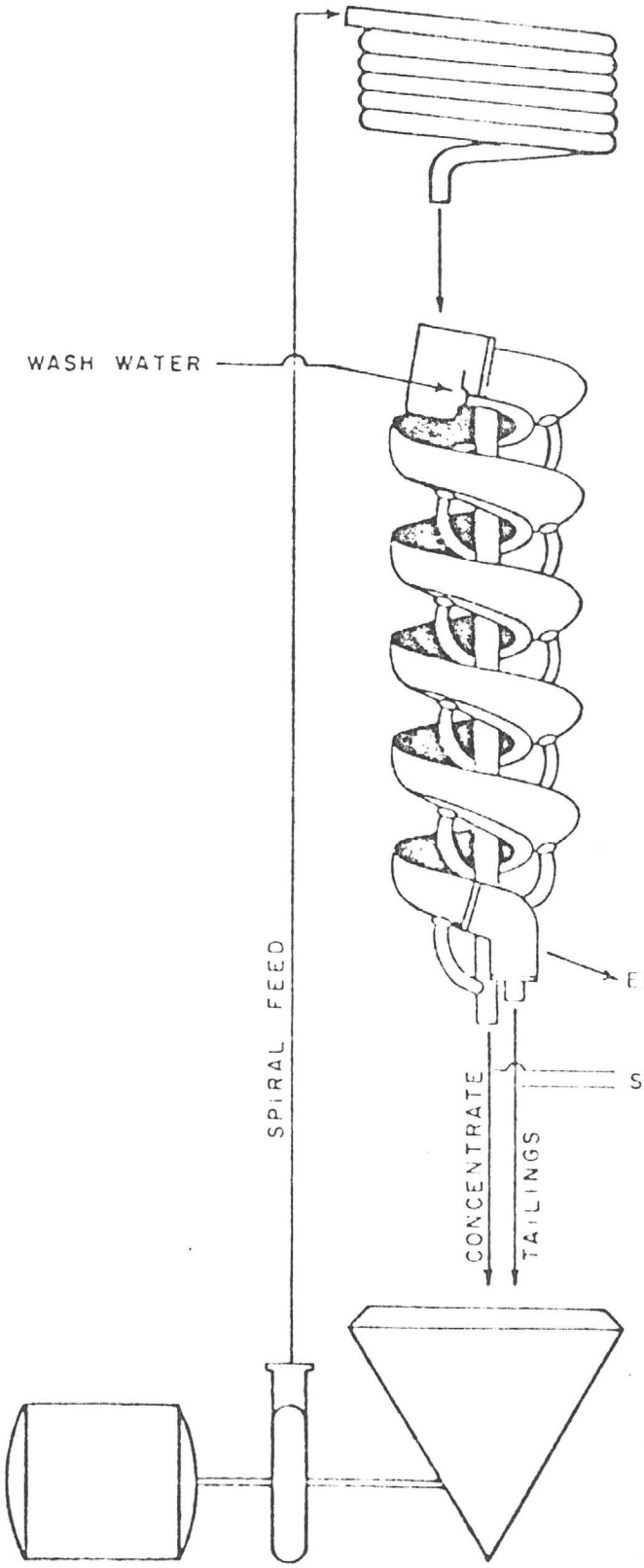
		Rougher Spirals				Cleaner Spirals			Re-Cleaner Spirals		
Stream	New Feed	Feed	Conc.	Midd.	Tail.	Feed	Conc.	Tail.	Feed	Conc.	Tail.
Lb/Hr. Solids	6,000	8,077	2,031	600	5,446	2,363	886	1,477	886	554	332
Lb/Hr. Water	24,000	41,533	2,031	600	38,902	17,879	886	16,993	10,546	554	9,992
Lb/Hr. Slurry	30,000	49,610	4,062	1,200	44,348	20,242	1,772	18,470	11,432	1,108	10,324
% Solids	20.0	16.3	50.0	50.0	12.3	11.7	50.0	8.0	7.8	50.0	3.2
Sp. Gr. Solids	3.2	3.2	3.7	3.2	3.0	3.7	4.7	3.2	4.7	5.2	3.7
Sp. Gr. Slurry	1159	1126	1574	1524	1089	1093	1649	1058	1065	1679	---
GPM Water	48.0	83.1	4.1	1.2	77.8	35.8	1.8	34.0	21.1	1.1	20.0
GPM Solids	3.8	5.1	1.1	0.4	3.6	1.3	0.4	0.9	0.4	0.2	0.2
GPM Slurry	51.8	88.2	5.2	1.6	81.4	37.1	2.2	34.9	21.5	1.3	20.2

Note: Specific gravity of slurry is in grams per liter

Test Data

Screen Analysis After Crushing Through 8-Mesh

Screen Fraction	Wt. %	Lead	
		Assay%	Distribution %
Plus 8 Mesh	Trace		
8 x 10 Mesh	3.8		
10 x 14 Mesh	15.9	6.1	40.2
14 x 20 Mesh	16.2		
20 x 28 Mesh	13.8		
28 x 35 Mesh	9.7	6.5	15.9
35 x 48 Mesh	8.8		
48 x 65 Mesh	6.2	7.7	11.3
65 x 100 Mesh	4.9		
100 x 150 Mesh	4.4	12.1	14.1
150 x 200 Mesh	4.4		
Minus 200 Mesh	11.9	11.7	18.5
Totals	100.0	7.5	100.0



LABORATORY CLOSED-CIRCUIT TEST UNIT

Spiral Concentrator Test No. 1 (Rougher)

Feed 4905 Lb./Hr. (-8 Mesh)

Slurry Volume 19.8 GPM

Percent Solids 31.2 %

				Lead	
Sample No.	Products	Lb./Hr.	Wt.%	Assay %	Dist. %
A - 1	Meas. Head			7.5	
	Calc. Head	4905	100.0	5.0	100.0
2 - 2	Rgh. Conc.	723	14.7	13.8	40.4
2 - 4	Rgh. Tail.	4182	85.3	3.5	59.6

Lead assays by C. O. Parker & Company; Denver, Colorado

Feed Preparation For Sprial Concentrator Test No. 2

A portion of the head feed was dry screened at 35 - Mesh

			Lead	
Sample No.	Products	Wt. %	Assay %	Dist. %
A - 1	Meas. Head		7.5	
	Calc. Head	100.0	6.4	100.0
3 - 1	Plus 35 Mesh	64.9	5.2	52.7
3 - 2	Minus 35 Mesh	35.1	8.6	47.3

Lead Assays by C. O. Parker & Company; Denver, Colorado

Spiral Concentrator Test No. 2 (Rougher)

Feed	2040 Lb./Hr.	(-35 Mesh)
Slurry Volume	18.1 GPM	
Percent Solids	18.5 %	

Sample No.	Products	Lb/Hr.	Wt. %	Lead	
				Assay %	Dist. %
3 - 2	Meas. Head			8.6	
	Calc. Head	2040	100.0	7.1	100.0
4 - 2	Rgh. Conc.	438	21.5	19.9	60.2
4 - 4	Rgh. Tail.	1602	78.5	3.6	39.8

Lead Assays by C. O. Parker & Company; Denver, Colorado

Spiral Concentrator Test No. 3 (Rougher)

Prior to testing, approximately one-half of the sample was crushed through 20-mesh.

Feed	3939 Lb./Hr. (-20 Mesh)
Slurry Volume	20.3 GPM
Percent Solids	29.0 %

Sample No.	Products	Lb./Hr.	Wt.%	Lead	
				Assay %	Dist. %
A - 1	Meas. Head			7.5	
	Calc. Head	3939	100.0	6.1	100.0
5 - 2	Rgh. Conc.	615	15.6	21.4	54.5
5 - 4	Rgh. Tail.	3324	84.4	3.3	45.5
5 - 3	Middlings	(236)	(6.0)	(6.1)	

Lead Assays by C. O. Parker & Company; Denver, Colorado

Spiral Concentrator Test No. 4 (Cleaner)

Feed 2435 Lb./Hr. (Rgh. Conc. from Test No.3)

Slurry Volume 25.0 GPM

Percent Solids 15.8 %

				Lead	
Sample No.	Products	Lb./Hr.	Wt. %	Assay %	Dist. %
5 - 2	Meas. Head			21.4	
	Calc. Head	2435	100.0	15.7	100.0
7 - 2	Cl. Conc.	236	9.7	49.2	30.4
7 - 4	Cl. Tail.	2199	90.3	12.1	69.6

Lead Assays by C. O. Parker & Company; Denver, Colorado

Screen Analysis After Crushing Through 35-Mesh

The remaining one-half of the sample was crushed through 35-mesh for spiral tests numbered 5 and 6.

			Lead	
Sample No.	Screen Fraction	Wt. %	Assay %	Dist. %
9 - 1	Plus 35 Mesh	0.0	--	--
9 - 2	35 x 48 Mesh	10.0	4.1	6.0
9 - 3	48 x 65 Mesh	18.3	5.7	15.1
9 - 4	65 x 100 Mesh	15.2	5.3	11.8
9 - 5	100 x 150 Mesh	11.2	7.0	11.3
9 - 6	150 x 200 Mesh	10.0	7.3	10.6
9 - 7	Minus 200 Mesh	35.3	8.8	45.2
	Totals	100.0	6.9	100.0

Lead assays by C. O. Parker & Company; Denver, Colorado

Spiral Concentrator Test No. 5 (Rougher)

Feed 2734 Lb./Hr. (-35 mesh)

Slurry Volume 15.2 GPM

Percent Solids 23.0 %

				Lead	
Sample No.	Products	Lb./Hr.	Wt. %	Assay %	Dist. %
C - 1	Meas. Head			7.0	
	Calc. Head	2734	100.0	6.2	100.0
8 - 2	Rgh. Conc.	718	26.3	13.7	58.2
8 - 4	Rgh. Tail.	2016	73.7	3.5	41.8
8 - 3	Middlings	(291)	(10.6)	(3.8)	

Lead Assays by C. O. Parker & Company; Denver, Colorado

Spiral Concentrator Test No. 6 (Cleaner)

Feed 2306 Lb./Hr. (Rgh. Conc. from Test No. 5)

Slurry Volume 16.0 GPM

Percent Solids 23.2 %

				Lead	
Sample No.	Products	Lb./Hr.	Wt. %	Assay %	Dist. %
8 - 2	Meas. Head			13.7	
	Calc. Head	2306	100.0	11.6	100.0
10 - 2	Cl. Conc.	256	11.1	43.3	41.6
10 - 4	Cl. Tail.	2050	88.9	7.6	58.4

Lead Assays by C. O. Parker & Company; Denver, Colorado

IRON KING ASSAY OFFICE

ASSAY CERTIFICATE

BOX 247 — PHONE 632-7410
HUMBOLDT, ARIZONA 86329

REGISTERED ASSAYER
CERTIFICATE NO. 2976
WALTER G. STATLER
Date Signed 10/29/79
ARIZONA, U.S.A.

ASSAY MADE FOR

SIERRA DE ORO
Warren Steinbach
1735 E. Elton, Apt D
Mesa, Ariz. 85204

Oct. 28, 1979

DESCRIPTION Ref no.		oz/ton Au	oz/ton Ag	Arsenic %	% Bismuth	% Pb	% Zn	% Cu
10-12-12	Conct.	.008	0.46	6.55	Nil	47.82	0.10	0.31

CHARGES $37.75 paid

ASSAYER

AMENDMENT TO OPTION AGREEMENT

THIS AGREEMENT is made this 31st day of October, 1979, between WILLIAM J. BAKER and WARREN H. STEINBACH (hereinafter referred to as the "Steinbach-Baker Group") and TONOPAH ENTERPRISES, LTD. ("Tonopah").

WITNESSETH:

WHEREAS, Tonopah, formerly the ROBERT A. BIERK GROUP, and Steinbach-Baker have entered into an Option Agreement dated August 30, 1979, which granted Tonopah the right to purchase a forty-nine percent (49%) working interest in those lode mining claims known as "Hope #1-100", more particularly identified as those certain mining claims filed with the United States Department of Interior, Bureau of Land Management, Arizona State Office, Phoenix, Arizona on or about January 3, 1979, and listed as claim serial numbers AMC 31608 through 31707, and

WHEREAS, Tonopah and Steinbach-Baker desire to conduct additional tests on the ore bodies contained within the above-referenced mining claims, and

WHEREAS, Tonopah and Steinbach-Baker desire to extend the initial Option Agreement of August 30, 1979, for an additional sixty (60) day period and waive the necessity of the five thousand dollar ($5,000) payment required to obtain such an extension under said August 30th Option Agreement, and

WHEREAS, This Agreement is made for good and sufficient consideration received by each of the parties from the other, and in consideration of the covenants, provisions and conditions stated herein.

IT IS THEREFORE AGREED between Tonopah and Steinbach-Baker that the Option Agreement between Steinbach-Baker and the ROBERT A. BIERK GROUP (now known as TONOPAH ENTERPRISES, LTD.) dated August 30, 1979, is hereby amended in the manner and to the extent expressly set forth below:

ITEM ONE:

Paragraph I of page 3 of the Option Agreement is amended by deleting from the first sentence of that paragraph the words "by the payment of the Steinbach-Baker Group of an additional $5,000 which, when paid, shall be nonrefundable."

ITEM TWO:

Tonopah, formerly the ROBERT A. BIERK GROUP, does hereby elect to extend that Option Agreement of August 30, 1979, for a period of sixty (60) days, commencing with the termination of the initial option period and in accordance with the terms and conditions set forth in said Option Agreement and Amendments thereto.

STEINBACH-BAKER GROUP

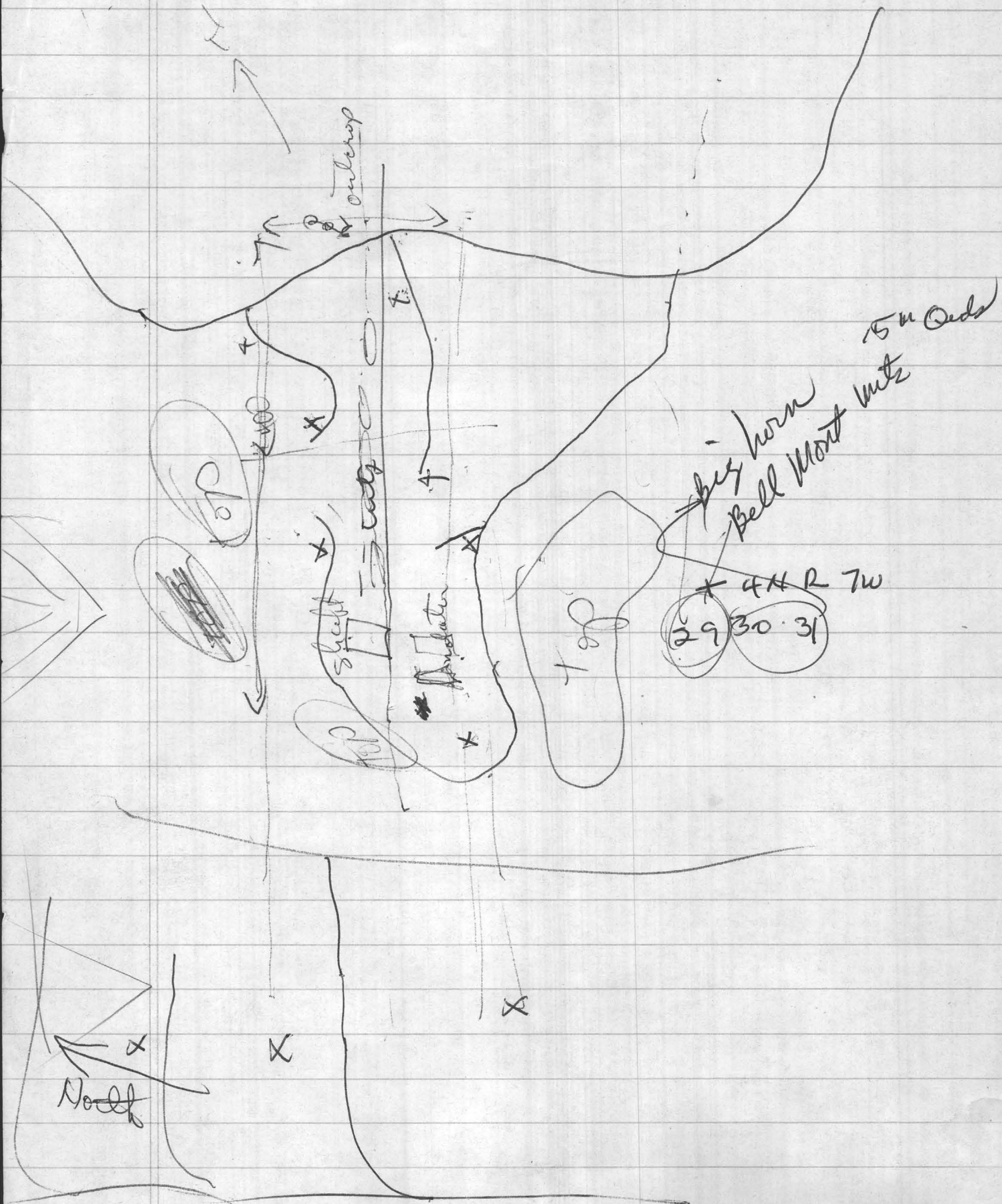
By: Warren H. Steinbach
Warren H. Steinbach

By: William J. Baker
William J. Baker

TONOPAH ENTERPRISES, LTD.

By: Robert A. Bierk
Robert A. Bierk
President

Tonopah exit
right (north) to 1st road
Maintenance sign turn left (west) flagging on fence orange red yellow
1 mile 2nd right Main road to
water tank on shoulder small water cattle tank 1/2 mile
left (west) flagging on bush
Swing north on main channel (flagging on west side)


outcrop
Big horn
4N R 7W
29 30 31
North