60002491

Mining District File Summary Sheet

DISTRICT	Manhattan - see back
DIST_NO	2960 - see back
COUNTY If different from written on document	Nye - see back
TITLE If not obvious	Hughes Series Employees and Consultant Reports - Skinner, Paul
AUTHOR	Skinner P; Block, F
DATE OF DOC(S)	1974
MULTI_DIST (Y) / N? Additional Dist_Nos:	See back
QUAD_NAME	Manhattan 7½' - See back
P_M_C_NAME (mine, claim & company names)	Hughes Tool Co.
COMMODITY If not obvious	Gold silver
NOTES	Correspondence; handwritten notes; assay procedures; expenses NOTE: Some pages double sided Scan Folder front 58p.

Keep docs at about 250 pages if no oversized maps attached (for every 1 oversized page (>11x17) with text reduce the amount of pages by ~25)

SS: DD (Initials) 12/22/08 (Date)

DB: (Initials) (Date)

SCANNED: MT (Initials) 1.12.10 (Date)

Revised: 1/22/08

District	District No.	ID	Quad	PMC	County
McCoy	3020	60002478	McCoy 15'	Hughes Tool Co.	Lander
Silver Peak	4390	60002481	Silver Peak 7½	Hughes Tool Co. Mary Mine	Esmeralda
Tonopah	4840	60002485	Tonopah 7½	Hughes Tool Co.	Nye

SKINNER, Paul 25

HUGHES SERIES
EMPLOYEES & CONSULTANT REPORTS 25
SKINNER, PAUL

60002471 2960

Land Exploration
and Mining Division

Post Office Box 1126
Tonopah Nevada 89049

A Division of
Summa Corporation

6666 2471 2960

#3-N

October 29, 1974

Mr. Frank E. Block- Research Director
U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
1605 Evans Ave.
Reno, Nevada 89505

Dear Mr. Block:

In answer to your letter of October 7, 1974 I would like to commend you on your Open House.

I received some very important information about carbon stripping with ethanol. In fact I believe we are going to use this process in our operation.

I am very pleased to see that the Bureau of Mines is now spending it's time and money on things that are practical.Your rare earth project of past was interesting and informative, but didn't really don anything for mining, where as your more recent work is of a great help to people in the industry. I would be most interested in anymore such demonstrations you have in the future.

Sincerely,

Paul M. Skinner
Chief Metallurgist
Summa Corporation

Land Exploration
and Mining Division

Post Office Box 309
Las Vegas Nevada 89101
702 739 7441

A Division of
Summa Corporation

12-S

November 25, 1974

National Filter Media Corp.
333 S. 3rd East Street
P. O. Box 156
Salt Lake City, Utah

Dear Sirs:

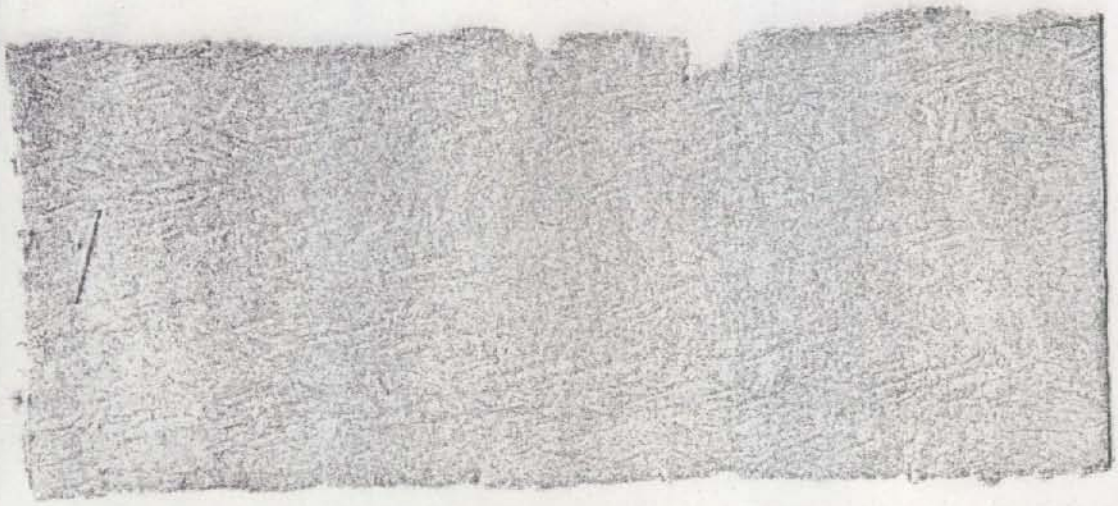
I am interested in purchasing some canvas duck filter cloth and filter paper from you. Enclosed is a sample of the type of paper I would like. The canvas I want is canvas duck suitable for filtering silver and gold precipitate out of cyanide solution. Could you send me prices and a brochure on your products.

Thank you,

Paul M. Skinner

Paul M. Skinner
Chief Metallurgist

PMS:sfm
Enclosure



16-S

summa

Internal Communication

Date: November 26, 1974

To: Dave J. Gribbin

From: Paul M. Skinner, Chief Metallurgist

Subject: Preliminary Report on the Mary Mine Leach No.1

A 500-pound sample of mine run Mary ore was placed in a tub and leaching started. The sodium cyanide was kept at 2.0 pound per ton of solution and a pH of 10.5 was maintained with caustic soda.

After three days the pregnant solution had built up to 7.2 ppm., at which time I put in a carbon column to continuously strip the pregnant solution. After 19 days of leaching the pregnant and the barren solutions were both the same, .008 ppm. I then took the carbon column off and circulated the solution for 2 more days and found that there was no more build-up of gold in the solution. I therefore concluded that the leach was completed.

The sample was then washed with water and a 100-pound sample was split out and assayed.

The assays were as follows:

head .128 oz. Au
tail .031 oz. Au

$$\frac{.031}{.128} \times 100 = 24.2\% = 75.8\% \text{ total gold recovery}$$

head .280 oz. Ag
tail .032 oz. Ag

$$\frac{.032}{.280} \times 100 = 11.4\% = 88.6\% \text{ total recovery}$$

Conclusions:

The results of this preliminary test show that the Mary ore is amenable to heap leaching. A recovery of 75% on mine run ore is excellent.

I am, however, in the process of running a test on material which has been crushed to -3/8 inch to see if an even better recovery can be gotten.

I am very pleased with these preliminary results and I feel that the Mary ore can be leached at a good profit.

Paul M. Skinner

Paul M. Skinner
Chief Metallurgist

Dist: PMK
WS
Lutz
Maryline File
WOM - 7-14-75

BROWNSTONE Mining Co.

P. O. BOX 215 · LONE PINE, CALIFORNIA · PHONE: 876-4640
P. O. BOX 206 · DARWIN, CALIFORNIA · PHONE: 876-5565

January 12, 1975

Statement - Summa Corp, Tonopah, Nevada

The following is my bill for consulting at your Tonopah and Manhatten, Nevada projects.

December 30, January 2 and 3 - 3 days at $125.00 per day

January 6 through January 10 - 5 days at $125.00 per day

Total due $1000.00

Make check payable to Paul M. Skinner

Paul M. Skinner

Paul M. Skinner

37-S

Internal Communication

summa

Date: January 8, 1975

To: D. J. Gribbin

From: Paul Skinner

Subject: Amalgamation Run on 75 Pounds of Concentrates

A small amalgamation barrel and amalgamation plate were borrowed from Jim Larson. This barrel has a capacity of about 80 lbs. of concentrates.

The test run went as follows:

75 lbs. of concentrates (assay unknown) were added to the barrel along with 10 ball mill balls, one handful of lime, 2 lbs. of mercury and water to within 2 inches of the top. The lid was put in place and the barrel turned on for 45 minutes. While the barrel was rotating the copper amalgamation plate was dressed down with new mercury and some silver to get it prepared. The barrel's contents were emptied into a bucket and the rock washed away from the mercury with a strong stream of water. This was done over the amalgamation plate so that any escaping amalgam would be caught on the plate. After cleaning, the remaining mercury and amalgam were squeezed through a muslin cloth to obtain the amalgam.

All in all the test went well, but we did have a longer than normal mercury loss because of all the heavy black sands. This was strictly a physical loss and not chemical. What happens is that when cleaning the amalgam the heavy black sands make you use a stronger stream of water than should be needed. This in turn causes more mercury than normal to overflow the bucket onto the plate. When the mercury hits the plate it runs along the top of the heavy, dense black sands and is insulated from the plate, keeping it from sticking, and in turn causes the mercury to run into the tailings.

This problem can of course be remedied by doing what I did in the lab experiment -- remove the black sands first by magnetic separation, then amalgamate.

Paul M. Skinner

Paul Skinner

36-S

summa

Internal Communication

Date: January 8, 1974

To: D. J. Gribbin

From: Paul Skinner

Subject: Placer Amalgamation (Test)

P. S. 126
Screen Analysis 254.6 g.

Screen Size	g.	% Dist.	mg.- Au - Ag	Au
+10	12.4	4.8	62.44 =	43.71
-10+20	80.0	31.4	873.77	611.64
-20+30	39.0	15.3	444.96	311.47
-30+48	60.8	23.9		
-48+80	33.2	13.0	-30 through -100	
-80+100	5.4	2.2	928.73 by amalgamation	
-100	23.8	9.4		

The -30 mesh sample was amalgamated for 10 minutes with Hg. The amalgam was then taken down with hot HNO_3. The metallics were then fired and weighted. The tailings from the amalgamation assayed 6.10 oz. Au and 3.96 oz. Ag per ton.

$$\text{mg.Au in tails} = \frac{252 \text{ g.} \times 6.10 \text{ mg.}}{29.166}$$

$$= 52.7 \text{ mg. Au in the tails}$$

Paul M. Skinner

43.71

611.64

311.47

928.73

52.70

1948.25 mg. Au total in the sample

1895.55 mg. Au taken out = 97.3% recovery by amalgamation.

$$x = \frac{454 \times 1.948}{254.6} = 3.47 \text{ g. per lb. of sample}$$

= 6953.7 g. per ton

= 223.57 oz. per ton
(calculated head assay)

Conclusions:

This test shows that by simple amalgamation 97.8% of the gold can be recovered from the Manhattan placer concentrates. I feel that this is the route we should take in cleaning up these concentrates. A small, 2 or 3-foot amalgamation barrel should work real well.

Paul M. Skinner

35.S

summa

Internal Communication

Date: January 8, 1975

To: D. J. Gribbin

From: Paul Skinner

Subject: Placer Magnetic Separation Test

P.S. 131

100 g. Manhattan placer concentrate was taken and separated with a magnet with the following results:

		Au oz./t	gm.oz.	%Dist.	%Dist.Au
Head	100 g.	4.015	401.5	100	100
Magnetic	79.5 g.	.048	3.816	79.5	.95
Non-magnetic	20.5 g.	19.40	397.7	20.5	99.05
	100.0		401.52		

$$H \times P = \frac{401.52}{100} = 4.015 \text{ oz. per ton}$$

Conclusions:

From this test it can be seen that 99% of the gold is in the non-magnetic portion of the concentrates, and the non-magnetic part constitutes 20% of the total. There was also an upgrading of approximately 5 to 1 when the magnetic fraction was removed. I would highly recommend having the placer concentrates dried and put through a magnetic separator before amalgamation. This would help in two ways: one is it would cut your need to run the amalgamation plant down to a minimum because of the reduction in volumn, and a lot of heavy magnetite is a real nuisance when you amalgamate.

Paul M. Skinner

Skinner

summa

Internal Communication

Date: September 17, 1975

To: WOM, DJG, WS

From: Susie Mollison

Subject: Spectrographic Analysis "Skinner #1 03/28/75" by USBM Reno Metallurgy Research Center (Sample of cracked Summa Bar)

Dr. Howard Heady, Director of the Analytical Group for the above center, telephoned the following to me this afternoon. (I had spoken to his assistant this morning requesting the information.) He believed the gold sample had come to him from Harold Heinen with a request to identify contaminants.

The elements he detected in the sample are in the following percentages:

Aluminum	.01
Copper	.06
Iron	.06
Magnesium	.002
Manganese	.2
Nickel	.01
Lead	.5
Silica	.0005
Tin	.004
Zinc less than	.1
Silver	4.0
Gold	major (the remainder of the sample)
Platinum	.003

PROJECT MANHATTEN AL + ZN DUST PRECIPITATION

Notebook No.

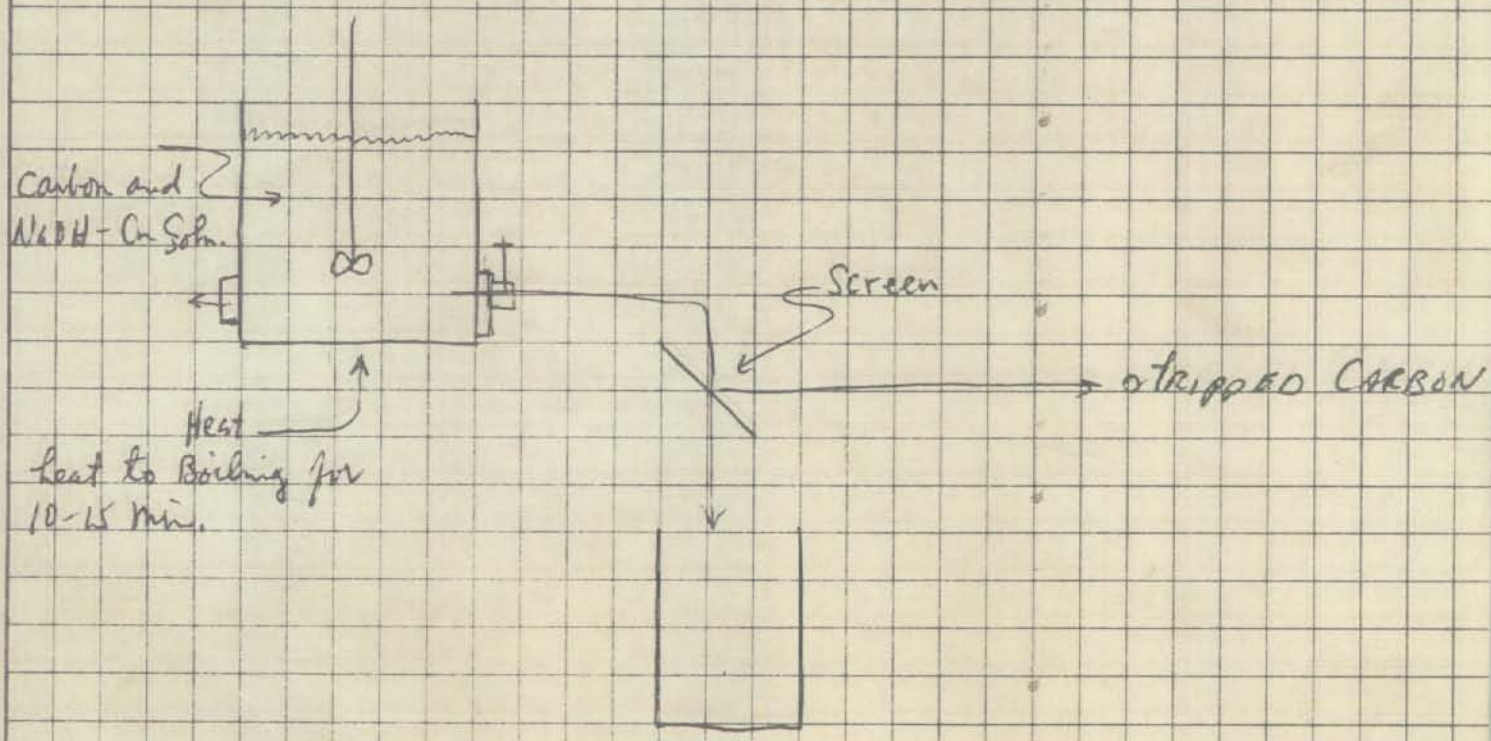
Continued From Page

100 ml preg. soln from carbon strip cell, touch of Pb acetate added then zinc dust. Soln. agitated for 5-10 min. Soln filtered through filter paper. ppt. then leached with HCl to dissolve off excess zinc, then fired with Borax glass, silica, Soda Ash. filtrate assayed ~~on~~ with A-A.

preg Soln = 85 ppm (by A-A) 2.48 oz/ton Soln.

Barren Soln = 0 ppm (by A-A)

ppt. wt =



Continued on Page

Read and Understood By

Signed Date Signed Date

Copy in L.U. file

PROJECT MANHATTEN - CARBON TEST

Notebook No.

Continued From Page

1000 ml - 3# NaCn / Ton of SOLN.
500 ml = PREG. CARBON = approx 450 g OF CARBON

AGITATE FOR 20 MIN. AT 200°F

160°F	12 ppm Au
180°F	65 ppm Au
200°F	103 ppm Au
200°F	130 ppm Au after 15 min.

Pulp, pregnant plus carbon was then filtered. The carbon drained and ~~the soln. then~~ assayed. ~~The solution~~ Zinc dust was added to the soln. and allowed to stand with some stirring. The ppt. was filtered and the soln. showed no Au on the A-A machine. The ppt. was then dried and fired to get the Au-Ag.

Continued on Page

Read and Understood By

Signed Date Signed Date

Powell - .041 approx 20.35% Ag_2O Notebook No.

PROJECT Manhattan - Carbon Test

Continued From Page

1000 ml - 10% NaCn Soln.
300 g Carbon (preg.)

Heat soln. to 200°F, then add the preg carbon to the agitated soln.

Samples

No.		PPM Au	Time start 8 to 9:00
1	5 min	56	3 to 9:05
2	10 min	61	9:02
3	15 min	—	9:07
4	20 min		9:02
5	30 min	63	

After 15 min 10 more g NaCn added - continued boiling for 30' total.

Continued on Page

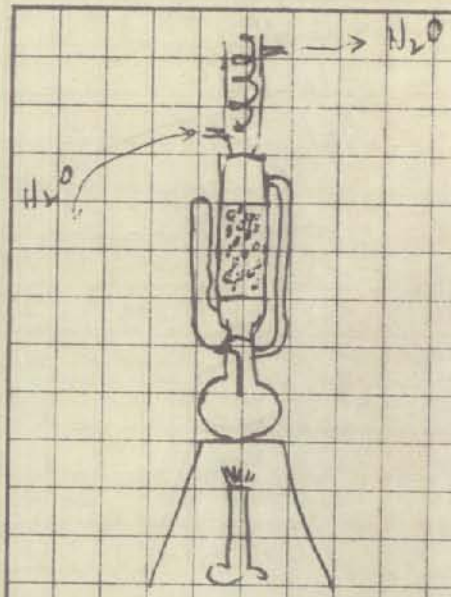
Read and Understood By

Signed Date Signed Date

PROJECT SOXHLET REFLUX TEST

Notebook No. P.S. 116

Continued From Page



130 ml Soln. in flask. Soln. made up of
.1% NaCn
1.5% NaOH
20.0% H_2O
78.4% METHANOL = 102 ml methanol added

50 g Loaded Pellet Carbon

turned on at 9:00 A.M. Cycle time ± 20 min
turned off at 5:00 P.M. approx. 20 bed vol. thru the carbon.
temp at ± 75°C

Return Methanol - drain out 45 ml
45 ml
Return — 90 ml

Carbon Load I 200 oz. Au
Carbon Tail 8 hrs. 138.8 Au, 30.64 Ag
" " 36 hrs.

The carbon was then drained of its methanol and removed to the boiler flask where H_2O was added and the carbon and water mixture then heated and the methanol distilled off of the carbon. the temperature was slowly raised until a temperature of 105°C was reached to purge the system of methanol.

Brat No. 1 Soln. after amm. sulfide ppt. - 40.32 ppm Au, 0 ppm Ag
Brat No. 2 " " zinc dusting - 42.4 " " " Ag
fusion No. 1 - amm. sul ppt. - .156 mg Ag, 8.134 mg Au
" No. 2 zinc dust ppt. - .024 mg Ag, .366 mg Au

8.29 mg Doré = 1.88% Ag
.156 mg Ag

= Doré Bullion = 981.2 fine in Au

Continued on Page

Read and Understood By

11-4-74 P.M.S.

PROJECT Soxhlet Extraction (~~24~~ 36 Hrs.)

Continued From Page

Conditions same as that P.S. but extractor run for 24 hrs. on at 12:00 noon 11-7-74

Solution made up of 200 ml H_2O
1 g NaCN
15 g NaOH
800 ml Methanol

± 50 g carbon used
150 ml soln. used

Carbon feed ± 200 g Au
Carbon tail 117 g Au, 14.4 g Ag

preg soln at 24 hrs - 255.6 ppm Au
" " " 36 hrs - 388.4 " Au, 28.76 ppm Ag

			Au P.P.M
Post #1	Soln before zinc or hydride but after sulfide	10 ml	631.2
" #2	Soln after zinc	21 ml	513.4
" #3	" " " hydride		444.16
" #4	" " preg Merrett 11-13-74		.16
" #5	" " Barren Merrett 11-13-74		.08
" #6	" " preg Mary 11-13-74		.08
" #7	Methanol extraction soln. from 50 g Carbon (pellet) 48.06 g Au		

Silver sulfide from Na_2S precipitation .290 mg Au, 28.57 mg Ag

fine Coconut Carbon to be used for methanol extraction 81.3 g Au, 17.24 g Ag

Continued on Page

Read and Understood By

Signed Date Signed Date

Same as Exp 116, 117, 118 only ethanol soln used.

50 g Sample of pellet carbon used
100 ml of solution

On at 3:00 PM. 11-12-74
Off at 11:00 pm 11-12-74

Carbon washed and dried

all of the soln from the strip diluted down to 25 ml and then put a boat and taken to dryers

preg carbon	200 g
barren carbon	80.8 g Au, 17.14 g Ag

$\frac{80.8}{200.0} = 40.4$ 100.0 - 40.4 = 59.6 % put in strip.

Continued on P

Read and Understood By

Signed Date Signed

Notebook No. P.S. 120

PROJECT SOXHLET EXTRACTION (PRE CONDITION) METHANOL

Continued From Page

Same as test P.S. 119 only precondition with methanol soln for 16 hrs before

50 carbon
100 ml methanol stripping soln.

Start extraction at 8:30 A.M. 11-13-74

1st one at 8:49
2nd one at 9:09 - 20 min. per bed volume
3 per hr - 30 in 3 hrs.

4th at 4:30

Carbon washed with water and dried then ashed
Soln, fine added (vol of soln ± 25 ml) 1 ml of 10% Na_2S added, then dropped out what looks to be all of the Ag_2S in nice large flocs.

preg carbon 200 g Au
Barren Carbon 21.06 g Au, 7.10 g Ag

$\frac{21.06}{200} = 10.53$ 100 - 10.53 = 89.47 % out in 8 hrs.

preg. soln Na_2S added vol. of ppt. 3.98 mg Au, 49.58 mg Ag
= 53.56 doré

$\frac{49.58}{53.56} = 925.69$ fine Ag

fine dust ppt = 53.7 mg Au, 5.48 mg Ag = 59.18 mg doré
$\frac{53.7}{59.18} = 907.40$ fine Au

Barren soln after precipitating = 43.0 ppm Au 0 ppm Ag

Continued on Page

Read and Understood By

Signed Date Signed Date

PROJECT SOXHLET EXTRACTION - Same as 120 Except Small Carbon Continued From Page

50 g Carbon Assay, 81.3 g Au, 17.24 g Ag
100 ml Methanol Sol.
Condition 24 hrs.
On at 8:00 A.M.
Off at 4:00 P.M.

Orig Carbon assay 81.3 oz Au, 17.24 oz Ag

Barren Carbon 1.10 oz. Au, 2.58 oz Ag

= 98.6 % extraction of Au

Continued on Pa

Read and Understood By

Signed Date Signed

11-21-74

50g Sample pellet Carbon
± 100 ml methanol extraction Soln.
24 hrs. condition time
12 hrs. run time.

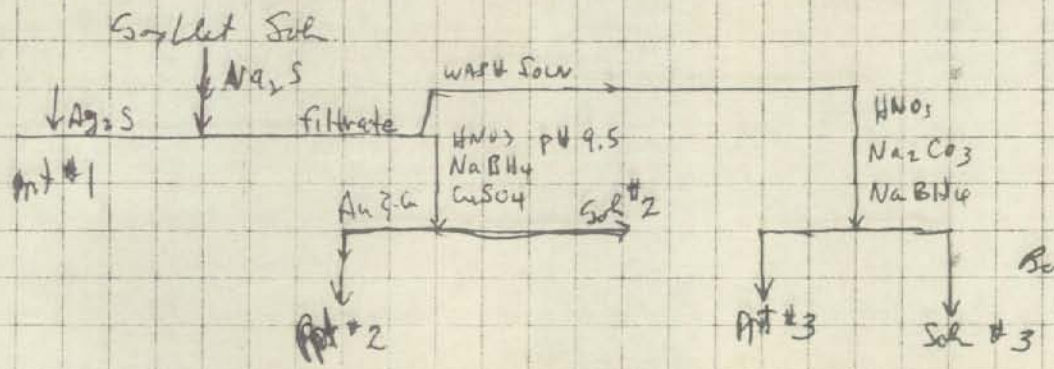
preg carbon - 200 oz Au -
barren Carbon - 14 g Au - 8.56 Ag

Soln #1

Soln. from Soxhlet extract add 2 ml of 10% Na_2S to the 25 ml soln.

ppt called P.S. 122 Ag_2S ppt. - filtrate: soln 2 pH adjusted down to 9.5 (HNO_3), Borohydride added 2 ml and about of $CuSO_4$ called 1st gold ppt.

WASH soln from Ag_2S ppt. = Soln #3, taken to acid side brought back with Na_2CO_3, borohydride added, some lime



Beaut 2 = Soln # 2 10 ml
" 3 = Soln # 3 10 ml

Beaut #2 Doré 13.96 mg

Continued on Page

Read and Understood By

Signed Date Signed Date

Notebook No. P.S. 124

PROJECT Soxhlet extraction (24 hr) methanol

Continued From Page 11-22-74

50 g Carbon
Methanol Soln to soak and cover
Condition 24 hrs.

start 7:00 A.M. 11-22-74
temp ≈ 70°C

		Au	Ag
Soln 1 - stripping soln. 5 ml	Start at 50 ml	3332 ppm	886 ppm
Soln No. 2 - soln after Na_2S (filtrate) diluted up to 250 ml,	10 ml taken	5244	11.6

	Au	Ag
Boat 1A - ppt on beaker	ppm	ppm
Boat 2A - Soln after chilling on whole thing	"	"

Ag_2S ppt Dore 37.8 mg, Au 1.74 mg, Ag 36.156 mg

Barren Carbon 31.65 g Au, 2.64 g Ag

~~Lead~~
Tare

Continued on Page

Read and Understood By

Signed Date Signed Date

PROJECT Mary Mine - 3/8" leach

Notebook No. 125

Continued From Page 11-21-

62# of Mary ore through lab

6200 ml of soln, add 10 g NaOH to start
2000 " " " more
8200 ml of soln added Total
4600 ml of soln back after saturation
3,600 ml of soln to saturate 62# of ore

9.2 g NaCn added to start, NaCn got in at 5:00 A.M. 11-21-74
head assay - .070 Au, .05 Ag

Total mg Au in Sample = 67.49 m

Sample out for assay as of 11-25
22 - 40 ml
23 - 40 ml
24 - 40 ml
25 - 40 ml

1st Soln return 3500 ml = 21.56 mg Au
2nd Soln return 5004 ml = 15.60 mg Au
3rd Soln return 3700 ml = 5.40 mg Au
42.56

$\frac{42.56}{67.49} \times 100 = 63.06\%$

	#/T NaCn	pH	Au PPM	Ag PPM	ml/min flowrate	g added NaCn	g added Na
11-22-74	1.8	10.8	2.96	4.88		14.2	12.0
11-23	1.8	10.6	10.08	0		—	—
11 24	2.0	10.6	8.96	0			
11 25	2.0	10.6	4.32	24.88	100		
11 25	AFTERNOON (3:30) LAST ASSAY		6.16	0	Complete change of soln.		
	New Soln 4.0#/T NaCn, pH 11.5 (4000 ml)						
11-26-74	2.1	11.5	3.12	5.44	added 100 ml new soln	2.0	3.0
11 29 74	2.4	11.0	3.12	1.68			
12 1 74	2.2	11.0	2.64	0			
12 2 74	2.1	11.0	3.04	4.96			
12 3 74	"		3.12	12.08			
12 4 74	New Soln. 2.0#/T NaCn, pH 11.0 (4000 ml)						
12 5 74	Off for good 3:00 P.M.						
	Soln. return 3700 ml		1.44	0			

" at 8:00 A.M., 4 5004 ml Soln. dip
on at 7:00 A.M. 12-4-74

Continued on Pag

Read and Understood By

Report Made

Signed Date Signed Da

254.6 g placer conc.

screen analysis

254.6	g	Wt. %	g. fine Au	
+ 10	12.4	4.8	62.44	= 43.71
-10 + 20	80.0	31.4	873.77	= 611.64
-20 + 30	39.0	15.3	444.96	= 311.47
-30 + 48	60.8	23.9		
-48 + 80	33.2	13.0	928.73	by amalgamation
-80 + 100	5.4	2.2		
-100	23.8	9.4		

Took sample and amalgamated for ± 5 min. Mercury then taken off and dissolved with HNO_3. The amalgam was then fired with flux and weighed. The tailo taken for assay.

tail assay 6.10 oz/ton Au 3.96 oz/ton Ag = 10.06 Au-Ag alloy

~~10.06~~ ~~6.10~~ mg / 29.166 g = x / 252 g (Tails) x = 52.7 mg Au in the tails

~~62.44~~ 43.71
~~873.77~~ 611.64
~~444.96~~ 311.47
~~928.73~~ 928.73 — 1895.55
~~52.70~~ 52.70

~~236.16~~ mg Total gold = ~~97.77~~ 97.3 % recovery by amalgamation
1948.25

~~2.36~~ 1.948 g / 254.6 g = x / 454 x = 454 × ~~2.36~~ 1.948 / 254.6 = ~~4.20~~ 3.47 g/lb. = ~~9316.6~~ 6953.7 g/ton = ~~270.6~~ oz/ton Calculated Head 223.57

Continued on Page

Report Made

Read and Understood By

Signed Date Signed Date

PROJECT Methanol strip 12-4-74

Notebook No. P.S. 127

Continued From Page

50g sample conditioned over night (large pellet Carbon) by pumping ~~Meth~~ soln. through the carbon sample then put into the extracter for 8

on at 8:00 A.M. 12-4-74

Boat #1 left over conditioning soln. (25 ml) 7.05 ppm
Boat #2 Soln. after prec. with aluminum shavings (25 ml)

Continued on P

Read and Understood By

Signed Date Signed

PROJECT Methanol extraction (Condition with Methanol only) Continued From Page

50 g sample conditioned with methanol only for 13 hrs., then run through the extractor for 8 hrs.

Carbon Assay (preg.) 1200 g
Carbon assay (stripped)

gold soln. from above precipitated with Na_2S and filtered. Filtrate put into beaker electrolytic cell and power turned on. after 30 min. A.A. showed no Au in soln. 25 ml taken for assay.

Boat

BOOZE –

MASH, – 5 GAL H_2O
9# SUGAR
1 CUP YEAST
} LET WORK UNTIL SOUR, 7-14 DAYS AT 70°F
IF NOT SOUR ADD H_2O

5l soln in 5000 ml $\frac{4.0}{200} = \frac{x}{5000}$

Continued on Page

Read and Understood By

Signed Date Signed Date

PROJECT Mary mine -1/8" alaskite ore (well water)

Continued From Page

Lead - .078 Well H_2O - 6.8 pH

50# ore crushed to finest setting on crusher, sample put into Column and 2 gal H_2O run into sample

2 gal = x 3.785 = 7.57 liter H_2O in 5 qts or .9463 = 4.73 liter return

∴ 7.57 - 4.73 = 2.84 liter H_2O held by 50# of ore. on 2:00 P.M. 12-17-74

10 g NaOH added, pH 11.0 soln. then pumped through the column until basic soln. returned. 5 g more NaOH, 10 g more, +5 more +10

added 10 g NaCn - titrate after 2 hrs. = .91 #/T, added 10 more NaCn

DATE	#/T NaCn	pH	Au PPM	Ag PPM	flow rate	added NaCn	NaOH
12-17						20 g	40 g
12-18	.45	9.3	1.80	0		10 g	10 g
12-19	2.35	11.0	2.88	—		—	—
12-23			TR				
12-20			2.72				15 g

12-26 Replaced all of the soln. with fresh soln, 5#/ton soln., one gallon. started at 10:00 A.M.

12-26 3.52

Lead .078
tail .012

$\frac{.078}{.012} \times 100 =$

$\frac{.012}{.078} = 15.4 = \underline{\underline{84.6}}$

1 ton ore will hold. $\frac{2000 \times 2.84}{50} = 113.6$ l/ton = 113.6 x .2642 = 30 gal Soln

~~Report~~ Information given to Bob Fritz about mid June

Continued on Page

Read and Understood By

Signed Date Signed Date

Screen Analysis of head Sample

	Grams	%	Cumulative %	Au	gm-oz Ag
+ 1/2"	579	1.88	1.88	.030	1.71
-1/2 + 3/8"	432	14.27	16.15	.018	7.78
-3/8 + 1/4"	842	27.81	43.96	.065	54.73
- 1/4 + 6 M	522	17.24	61.20	.042	21.92
- 6 + 10	468	15.46	76.66	.046	21.53
-10 + 16	177	5.84	82.50	.060	10.62
-16 + 28	161	5.32	87.82	.072	11.59
-28 + 48	157	5.18	93.00	.094	14.76
-48 + 65	54	1.78	94.78	.108	5.83
-65 + 100	40	1.32	96.10	.132	5.28
-100	118	3.90	100	.162	19.12
					174.87 gm-oz

81.97 % - 3/8"

To Bob Fritz

$$H \times P = \frac{174.87}{3028} \times 100 = \underline{\underline{.0578}}$$

P.S. 130-A

Regular Soxhlet extraction, 24 hr conditioning time, 24 hr extract. H_2O soln. purposely left with some about 1% alcohol. 3 ml 10% NaCN added, filtered and put into electrolytic cell.

boat # 130-A - preg. soln. before elect. 10 ml - 65.2 ppm
130-B barren soln after elect. 25 ml - 1.04 ppm

Carbon

Rich sands assay - 10g ore, 6g flux (2 opoms), = 52g button

Continued on Page

Read and Understood By

Signed Date Signed D

100 g placer, sample separated with the magnets.

Results		Au oz/T	gm/oz	% Dist gr	% Dist Au
Head	100 g	4.015 ~~oz/T~~	401.5	100.0	100.0
Magnetic	79.5 g	.048	3.816	79.5	.950
Non-Magnetic	20.5 g	19.40	397.7	20.5	99.05
			401.52		

99.05 of the gold is in the non-magnetic portion.

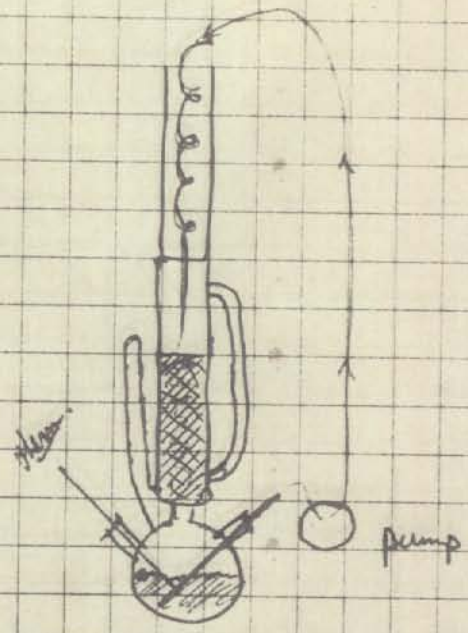
Report made

Continued on Page

Read and Understood By

Signed Date Signed Date

50 g small pellet field loaded carbon where added to the Soxl extractor. The carbon was ~~soaked~~ saturated and then 100 ml more soln. Soln - Methanol strip soln. The complete soln was circulated for 3 hrs., then the soln. was changed.



Temperature of soln. in flask 70°C, approx. in the extractor.

heat and pump on at 10:15
1st soln. removed at 1:15, all new soln added, 100 ml.
flowrate 38 ml/min.

Soln = 87.98 g/100 ml

.8798 × 38 = 33.4 g/min

assays -

Soln. #1 - dore 1252 ppm
Soln #2 -
Loaded Carbon -

Continued on P.

Read and Understood By

Signed Date Signed

PROJECT McCoy - DRILLHOLE SAMPLE (LEACH)

Continued From Page

Sample from hole No. 32-51-75; 100 lbs cutout, 50 lb. of sample was put into the leach column and the leach started. The other 50 lbs. was split down and assayed by fire assay.

1 gal Soln. Containing 10 g NaOH added = 3.785

No good cyanide soln will not percolate

DATE	lb. Cn/T	PH	Au PPM	Ag PPM	added NaCn	added NaOH	Flow rate ml/min

Continued on

Read and Understood By

Signed Date Signed

PROJECT Wet Screen Analysis of McCoy drill cuttings

Notebook No P.S. 135

Continued From Page

Sample of 32-51-75

765.3 g as came from drill hole

			Dist %	Au	~~Ag~~ gm-g.	17.83 NaCn Dist. Au
+ 8 mesh	-	~~253~~ 218.2	29.1	.038	8.292	8.24
-8 + 16	-	144.0	19.2	.092	13.248	13.16
-16 + 35	-	113.3	15.1	.108	12.236	12.16
-35 + 65	-	66.2	8.8	.146	9.665	9.60
-65 + 270	-	82.5	11.0	.254	20.955	20.82
-270	-	125.0	16.7	.290	36.250	36.02
		749.2	100		100.646	100.00

4xP .134 using 749.2
4xP .132 using 765.3

	A
166	.061
167	
168	
169	
170	

Information given to Rob Fitz

Continued on Page

Read and Understood By

PROJECT Cyanide bottle leach McCoy

Notebook No. P.S. 136

Continued From Page

1000 g ore
3000 ml soln at 8.0# NaCn, 5.0# lime 2 avail

Roll of 72 hrs.

titrate 4.02 # NaCn / ton soln

.11 #/T CaO

prog soln - 16.16 ppm

25 ml = .404 mg Au

$\frac{.404}{25} = \frac{x}{3000}$

$x = \frac{3000 \times .404}{25} = 48.48$ mg Au out

Tail ~~assay~~ .03 Au/T

1000 g @ .03 = .015 g Au ~~30 gm = g = .03 mg Au/gm = .015 gm Au = g~~

3000 ml @ 16.16 ppm = ~~48.48 mg Au = Soln~~ $\frac{16.16}{34.3} = .48$ g/T

~~Soln = 32.32 g/ton~~ $\frac{.48}{2000} = \frac{x}{3000} = .72$ g Au/ton

Total Au .015 g/ton/1000 lb.
.720 g/~~ton~~ 3000 lb.
.735 g Au total/ton

$\frac{.72}{.735} \times 100 = 98.0$ % recov

$\frac{.735}{1000}$ g = 1.47 g/ton

Information to Fritz (I think)

15.2
25.0
40.2

.55
.2
.11

40.2 ml AgNO3, 1 ml = .1 # NaCn/T
.55 ml oxalic 1 ml = .2 CaO

$\frac{1}{2} = \frac{.55}{x}$ $\frac{x}{.55} = \frac{.2}{1}$
$x = .2 \times .55$
$= .11$

Continued on Page

Read and Understood By

Signed Date Signed Date

PROJECT Cyanide bottle leach (McCoy) Notebook No. P.S. 137

Continued From Page

This test is to check test No. 136

100 g ore from hole No. 1

3000 ml Soln. 7.5 g NaCn = 5.0 #/ton Soln
20 g CaO @ =

titrate 16.8 ml
25.0 ml
41.8 ml NaCn = 4.18 #/ton Soln

titrate 5.8 ml Oxalic

3000 ml @ 3.2 ppm $\frac{3.2}{34.3}$ = .0933 g/T

$\frac{.0933}{2000} = \frac{x}{3000}$ = .13995
= .1400 g Au/ton

Tails 100 g @ .052 .052 mg/2000 g = .026 mg/100 g

.1400 mg/3000 ml Soln
.0260 mg/100 g tails
.1660 mg Total Au in 100 g head. $\frac{.026}{.1660}$ = 84.3%
2
.3320

Calculated head = .332 g/ton

Information to Fritz (I think)

Continued on Page

Read and Understood By

PROJECT HNO_3 leach of placer conc.

Notebook No. 138

Continued From Page

Some non-magnetic placer conc. was added to a beaker along with with 1:1 HNO_3 and boiled, ~~the~~ and then filtered. The filtrate was assayed for Au-Ag, as was the residue, a fusion was run on the residue.

Cont p.s. 138 25 mc

222.6 mg Au-Ag from placer test sample of 10 Kilo (+10 m)

Continued on Page

Read and Understood By

Signed Date Signed Date

PROJECT Sod. Sulfid ppt. of preg rocket soln.

Notebook No. 139

Continued From Page

4 - 100 ml samples of preg soln. put into 250 ml beakers

1. 1 ml 10% Na_2S added along with lime
2. 5 ml " " " " " "
3. 10 ml " " " " " "
4. 20 ml " " " " " "

soln. assayed and ppt. fused and weighted

			Au	Ag
Boat	139-1	5 ml	8.354	1.386
"	" -2	5 ml	8.536	0
"	" -3	5 ml	8.432	.128
"	" -4	5 ml	7.740	0
Ppt	139-1		.196	.204
"	" -2		.116	.024
"	" -3		.140	.270
"	" -4		.038	.102

1st rocket soln. - Sodium Sulfide added - approx. 500 g / 40 gal so
Sample then taken for electrolysis. wool boiled away with HCl
Sample of Au taken for fries assay

Au-Ag Doré	.08389	g
Ag-added	.25025	g
	.33414	g

Std. .24986
.24430 : 2.25% loss
.00556

Continued on Page

Read and Understood By

112
65
172

Reports to get

R.I. 7464 - Malononitrile Extraction of gold from ores
R.I. 7660 - Recovery of Ag Hg from Mines tailing by Electrooxidation
R.I. 7395 - Leaching Au-Bearing Mill tailings from Marion Utah
R.I. 7597 Extraction of Au from Carbonaceous Ores: pilot plant studies

Summa Milage

Start Summa Lab.	34555	= 151	
to Round Mtn, Manhattan by to Tonopah.	34706		435
Tonopah to Lone Pine	34709	= 172	
Lone Pine to Darwin	80 miles	~~80~~	
Lone Pine back to Tonopah	34164	= 112	
total for week 547 @ .15 = 82.05		284	

Circulating pump.

Cole - Parmer 1 No. 7545 Variable speed drive with Solid State Controller 147.50
1 No. 7014 Std pump head 35.00

Call Collect to 312-647-0272

151	172
172	172
172	344
112	80
60	424
667	

Cole - Parmer Instrument Co.
7425 N. Oak Park, Ave.
Chicago, Ill. 60648

50' No. 6408-43 Tygon tubing @ .22/ft.

Copied L.V. file 8-15-75

~ 150
.04
6.00

To do

1. Cost report on heap leaching #1 priority
2. ~~See about trommel screen at Lopez mill~~
3. Start dump tonnage est. also pick sampling and extraction procedure.
4. See what the silver minerals are in Tonapah dumps.
5. lab work, lab float cell, filter, est of reagents
   Call about costs
6. ~~Call At Monte Tom~~
7. ~~get travel heaters at Monticito~~ (2)

For Capitas City equity Co. 150.00/day plus expenses ~~analysis~~

1. How important this clay, Borate, is to scheme of things.
2. Get cost of mill from Cyprus, also see what replacement cost would be
3. find out amount of land there also.
4. Talk Mulryan about land, from Reeder to Dunn - Pick out in, have new equipment can do best job.

Friday or Saturday

go to Merritt mill to get samples from mon working there to run metallurgy. 75.00 plus assays.

Summa Au leach cost analysis.
Manhattan project

A. mining - 40 - 50,000 tons

1) ore deposit preparation, stripping -
2) mining costs -
   a) ripping and picking up with cars. (Bids coming in
   b) ripping and picking up with loader and trucks)

B. Pad -

1) Excavation of pad area
2) pad preparation, ~~material~~
   a) material for bottom of the pad
   b) Sand and gravel for pad base

] cost known approx

C. Pond -

1. pond excavation
2. pond lining

] cost known approx.

D. Soln stripping plant -

1. Cost to build plant
2. Cost to run plant

] cost known approx.

E. Au - Ag stripping plant (in Tonopah)

A. Mining

Stripping, all over burden can be pushed to the east, toward town, this would take only 2 days with the D-8 cat. Cost - 24 hrs at 40.00/hr cost if hired.

= $1060.00

An Method for Solution by A-A

1. pipet 10 ml of Sample into a large screwtop test tube

2. add a crystal of $KMnO_4$ to each ~~crystal~~ test tube. allow to dissolve, heat in water bath if necessary.

3. add (with a burette) 2 ml HCl

4. let stand 10-15 min. until color is gone, or mostly gone.

5. add 5 ml M.I.B.K to each sample

6. Shake 2 min.

7. Run MIBK layer on A.A.

8. prepare stds. same as samples
   prepare stds. to be extracted fresh daily

   1, 2, 5, 10 ppm stds.

P.P.M.

9.

10.

2.02

Mineral Eng. Monte-Verde
Angels Camp.

Ball mill - Denver Ball - Rod #24
need spiral classifier to match

1.20 yd² - 20 mil

U.S. machinery Co. - 786-0300
Tony Selig -
Jess Wilson - 14"-16" about 10' long 359-2669
Minerals Equip. Salt Lake M.E.C. 801-262-5471
See Salt Lake phone book
Machinery Center Salt Lake 801-484-7601
Denver Equip. Denver - 303-831-7311
- Ask about -

Zinc dust precipitator, filter
screw classifier
Jaw Crusher 18 x 36 or there about

Merrill-Crowe. - S.A.
9" X 7' = about $1000.00

Kor Ut-ake - Thinks he has Merrill-Crowe unit
- has 9" X 7' classifier
Minerals Equip.

Monte Verde - 209 - ~~736 2113~~ 209-736-2626

.430

.340
.190
.510

Las Vegas Trucker -

Espy Bros. Conc. - 648-0030
Mig trucking - 385-4151 or 642-0440
Wheeler trucking - 878-9636

Milage

1. To Tonopah for work 112
2. To Mina and back plus trips to Round Mtn. 151
3. Tonopah to Darwin and back to pick up heaters 284

547 @ .15 = 82.05

40,000 Ton @ .07 = 2800 oz/Au
2800 @ 150.00 = $420,000 x .75
= $315,000 total $ avail. @ 75% rec.

.07
40000
2800.00
150
140000
2800
420,000
.75
2100000
2940000
315000.00

Summa P.E. 107 A-A.

Pb Std.

4g of 50.1 % Pb up to 1000 ml

1 ml = 2 mg Pb

	~~g Ag~~	ABS. READING	% using 1g up to 25 ml
1. 1 ml = 2 mg Pb =	~~.338~~	.003	.2
2. 10 ml = 20 mg Pb =	~~3.38~~	.032	2.0
3. 20 ml = 40 mg Pb =	~~6.75~~	.053	4.0
4. 30 ml = 60 mg Pb =		.076	6.0
5. 40 ml = 80 mg Pb =		.100	~~10.0 %~~ 8.0 %
6. 50 ml = 100 mg Pb =	~~16.88~~	.126	10.0 %
7. 75 ml = 151 mg Pb =		.180	15.0
8. 100 ml = 201 mg Pb =	~~33.76~~	.230	20.0 %

Do

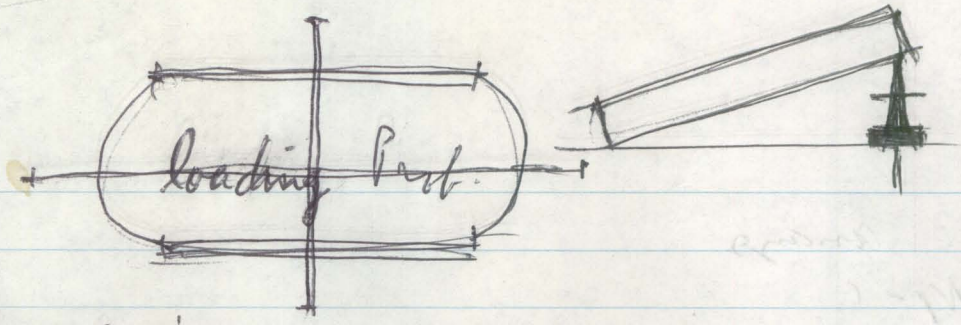
- Call Dad about - Having Women do Complete license job, Much faster, Can have complete by end of the week.
- Tell about end dump in Texas

13

39.00
.3

15.0

Ilo



Call Earl Dingman - Operator 6
702-786-0300

Call - Orion research 11 Blackstone, Cambridge Mass
617-864-5400

procedure manual for
cyanide
fibre

when are you going to get a gold electrode

minimum cyanide exposure.

2 stand. 1%, 1 to 10 K

temp to 25 or
slope 12%
electrode in

Good line 95 to 100% slope

arrange

Np - 1

Np - 2

Np - 2A lost some of it could be low

Np - 3

Np - 4

Beagle Sam ore
55 # rock
start with 6 l soln.
to saturate 4 l
takes 15 minutes to flow through the 7 ft. column.
pH 6 after running H_2O through the ore
added 2 gm NaOH to bring pH up to 11
put in 24 g of NaCn to start with trying to keep
3.5 #/ton sol.

1st sample taken 5:30 June 21
2 sample " 9:00 June 22 conc. NaCn #5/ton soln.
June 23 NaCn #5/ton soln.
afternoon " NaCn #3#/ton soln.

Sample 1 1.95 g/t after 6 hrs. pH 11 conc. 3.8

Sample 2 4.5 g/t after 20 hrs.

Sample 3 3.514 g/t

Sample 4 3.7

Sample 5 3.72

Gold in sample showed .145 g/ton in Au

48
1/0
6

change Cook

Beall - Lopez -

$ft^3 = 40^{\#}$

27
40
1080

Ron Beers
685-8500

Cris. drawing.

Jim groenlyk
213-353-7287

Mew - 26' aluminum
Cook - 13,500 with (P.T.O - ~~pump~~ - tank) = 1500.00 cost
Skiff x 10x22 tire.
1600.00 - using our tires

5000
200
400
600
40
200
6440

17 29
28,000
6440
18560
25000

1000#/yd

20 tn = 40,000#
= 40yd³

60
3
180
2
0
360

2000
.30
600.00

2000
.2
400.00
.10
40.00
4

Sodium Boro-Anhydride

will ppt. the following elements

Antimony
Arsenic
Bismuth
Cadmium
Copper
Germanium
Gold
Indium
lead
Mercury
Osmiridium
platinum
renium
rodium
ruthenium
Silver
thallium
tin

Ethanol Extraction

activate with -

Best for Silver not as good for gold

assay - 2-4 bed volumes -

1% - NaOH - up to 3-4% will keep acetate down
.1% NaCn
up to 25% H_2O
Ethanol.

Acetate formed due to electr.

Tom Carnahan - send sample of Carbon up to U.S.B.M. Reno

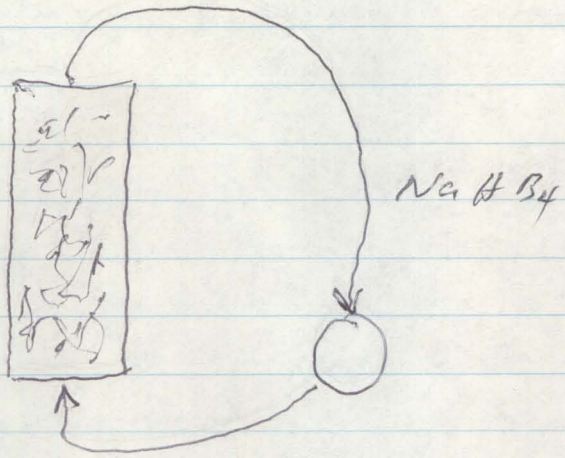
3 volts

1020
.01

1020
.001
1,000

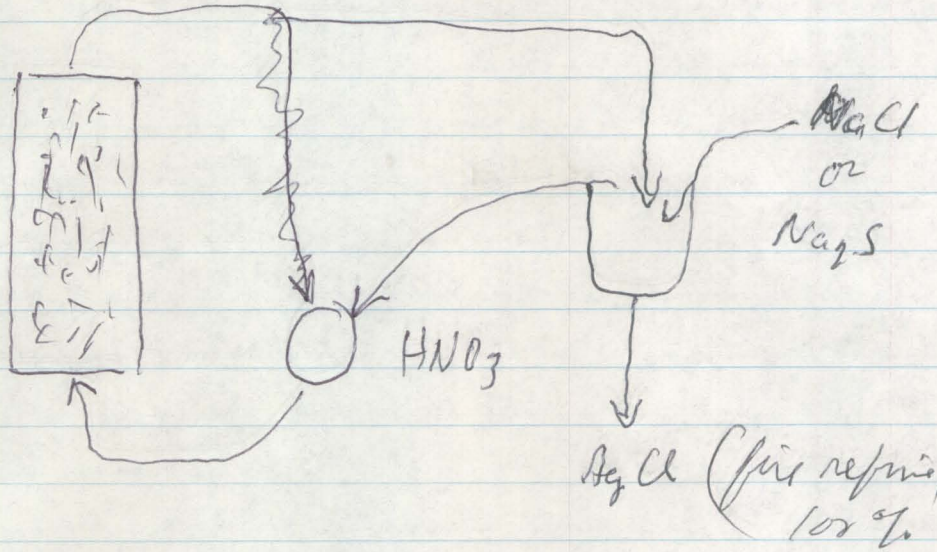
150 ml Ethanol
200 ml H_2O
15 g NaOH
1 g NaCn

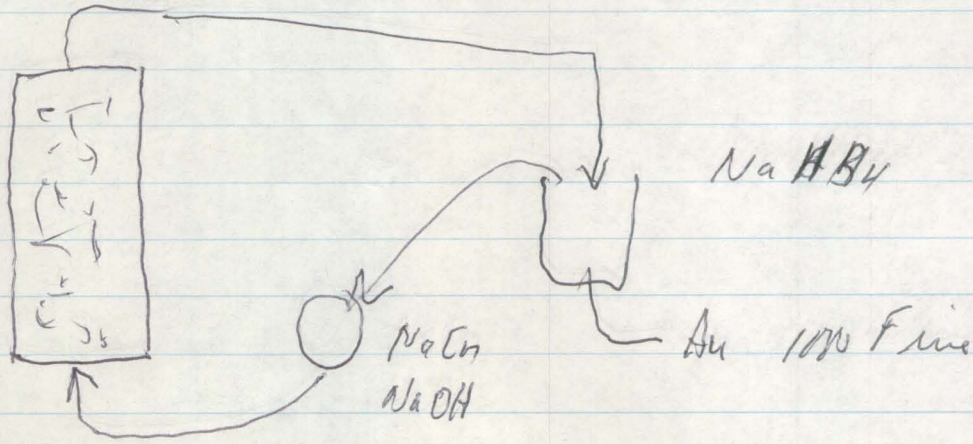
1000 ml -


NaHB4

Step #1

Step #2


NaCl
or
Na2S
HNO3
AgCl (fine refining)
100%


NaHB4
NaCn
NaOH
Au 1000 Fine

Carbohydrate Count

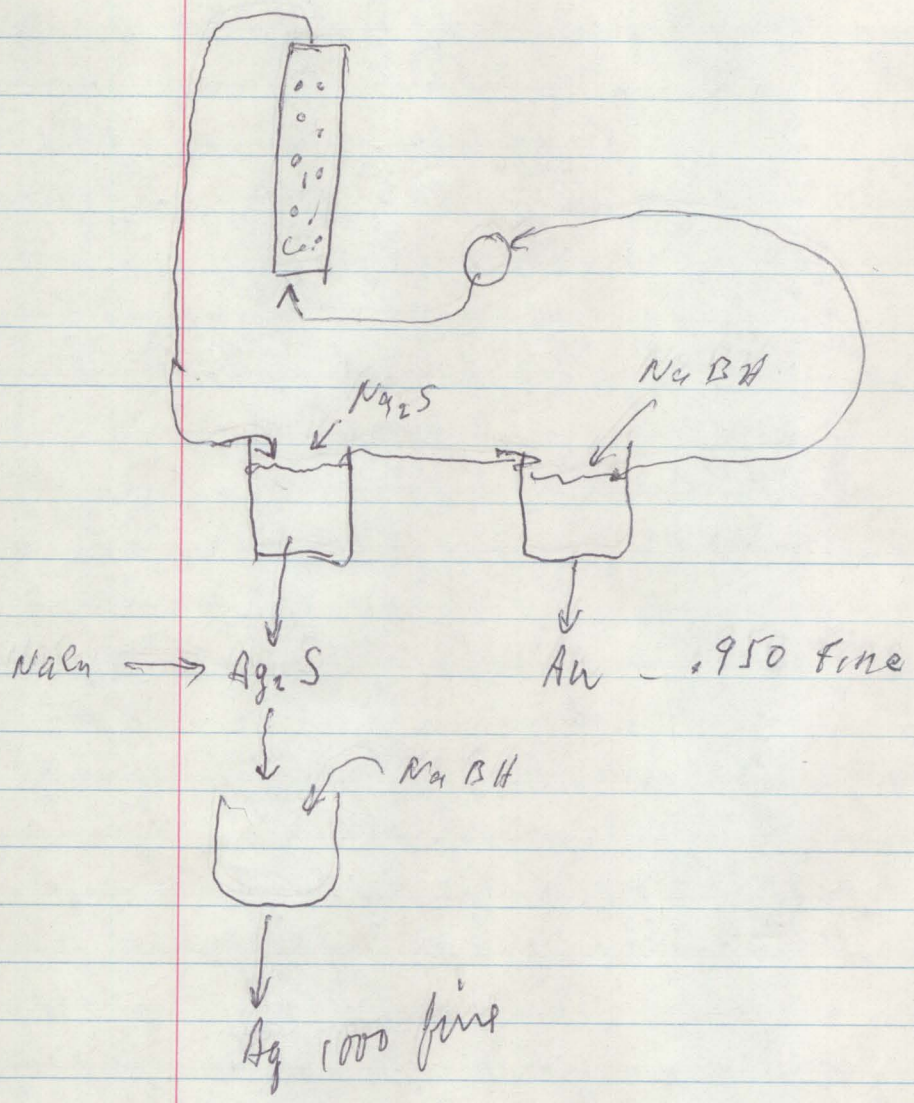
~~Tues. Sept. 3~~

Wed. Sept 4	no breakfast
7	lunch - corn beef, cabbage (one wedge)
3	- salad, cheese dressing,
5	- 1/2 cup peas and carrots mixed
17	- small portion of jello.
0	Supper - T-Bone
3	- salad. roq. fort
12	- 1 piece of toast
47	

1.	Doug.	55.00
2.	Sandy	55.00
3.	"	594.00
4.	"	36.00
5.		36.00
6.		280.00

Agr S

Ethanol



1. Leach test on sawyer ore
2. " " " Merritt Conc.
3. " " " Merritt ore.
4. Make float reagent
5. float test on Hard Cash ore.
6. Test ethanol method
7. Check Nitric acid method

Call Pacific Foundry

<u>Rolli Brown</u> Ethanol - Commercial Solvents
55 gal barrels San Jose 408-262-2474

formula 1 SDA 1.68/gal + freight
" 3A " 1.67/gal + "
" 3b "

Shellacol 1.71/gal + freight
Cinaherol " + "
Quinyol " + "
Ask about → Fotocol Form A2 1.43/gal F.O.B. Calif.
3-9 barrel lots

	Samples.		Doré Au - Ag
P.S. 5	good looking Ruby Ag ore dark colored.		3177.02
P.S. 6	yellow Bi? rock		28.9
P.S. 7	½ sample (parent ½) of first dump rock		1584.16 ~~1,884~~
P.S. 8	west end sample.		43.04
P.S. 9	little (½ rock with native Ag)		300.82
P.S. 10	1 A.T. preg. soln.	105.22	~~210.44~~
P.S. 11	Cerargyrite sample	19,851.8	

714- 8764102

Susan Tonopah files

Skinner

RL-7-75-70

MEMO

TEST RESULTS OF MARY MINE ORE

ORE: from: Mary Mine Open Pit

type: Quartz + Alaskite with FeO's and Sulfide

head assay: = .078 oz. Au/ton

PROCEDURE: 50 lbs. of ore was crushed to minus 3/8" diameter and placed in a column with well water from a well in the Mary Mine area. Water had a pH of 6.8. This test had a 9 day leach using 2 lbs/ton NaCN. The pH was maintained at 10.5, test used 65 gms caustic, and 30 gms NaCN.

RESULTS: Tail Assay = .012

1. 84.6% total recovery
2. 5 to 9 days peak of leach time
3. 57% of gold is from (+)1/4", (-)3/8" material
4. One ton ore @ (-)3/8" holds 30 gals. solution in retention.

NOTE

The above information taken from Paul Skinner notes and dictated to Robert Lutz on 6-30-75.

ln

cc: R. Lutz
D. Gribbin
W. Mollison
W. Simmons

Skinner's Expense Reports

October	240.90	
	137.10	
	114.08	
		492.08
Sept	341.88	
	231.46	
	107.15	680.49
Aug	133.40	
	91.38	224.78
July	117.97	
	178.15	296.12
June	259.99	
	94.21	354.20
		2046.—

400/MO
4800/yr