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JAN 15 1988

RECEIVED

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

EVAN MECHAM, GOVERNOR
GERALD H. TELETZKE, PH.D., DIRECTOR

January 13, 1988

A. J. Fernandez
A. F. Budge (Mining) Limited
7340 East Shoeman Lane
Suite 111 "B" (E)
Scottsdale, Arizona 85251-3335

Dear Mr. Fernandez:

RE: Vulture Mine Project; ADEQ Water Permits File No. 87-86

A Notice of Disposal has been received and given a preliminary review for the above referenced facility. In accordance with A.A.C., Title 9, Chapter 20, Section 205 of the Water Pollution Control Permit System, this letter serves as notification:

1. Of our intent to issue a Groundwater Quality Protection Permit. You should, however, be reminded that operations may not commence until a groundwater permit is issued.
2. The issuance of the permit is contingent on technical approval of plans and specifications by ADEQ, Technical Review Unit, or the appropriate County Health Department.
3. That the facility does not comply with the criteria listed in R9-20-208.A, and as such, a full permit application will be required. The regulations (R9-20-208.A) require you to first submit a proposal for a permit application. It is suggested you contact this office to arrange a pre-proposal meeting. I have enclosed a copy of the "Outline of Requirements for a Permit Application".
4. That the NOD is incomplete and further information will be required to complete the preliminary review. (see attachment)

If you have any questions, you can reach me at 257-6806.

Sincerely,

A handwritten signature in cursive script that reads "Rob B. Larson".

Rob B. Larson
Environmental Engineering Specialist
Water Permits Unit

RBL:mm

cc: Hydrology Unit

The Department of Environmental Quality is An Equal Opportunity Affirmative Action Employer



A. F. Budge (Mining) Limited

7340 E. Shoeman Lane, Suite 111 "B" (E)

Scottsdale, AZ 85251-3335

(Business Office)

Telephone: (602) 945-4630

Telex: 751739

February 22, 1988

Arizona Department of Environmental Quality
2005 North Central Avenue
Phoenix, Arizona 85004

Attention: Rob Larson

RE: Vulture Mine Project; ADEQ Water Permits File No. 87-86

This is in response to your phone call of February 5. The location selected for the extraction plant is up gradient, northeast, from the barren solution pond. On SHB's drawing, Plate No. 1 dated 10/87, plan view, this would be approximately where the word "access" is printed. This area will be graded to drain to the barren solution pond. The concrete floor of the extraction facility will be designed to drain to a sump, piped to conduct flow to the barren solution pond. This will serve as an emergency drain in the event of containment failure in the plant.

Sewage disposal will be by means of portable chemical toilets. Therefore, no sewage will be disposed on site. Wash down and laboratory solutions will be disposed in the barren solution pond.

The volume of the three ponds can be found in SHB's report dated April 10, 1987 on pages 12-14 under section 4.5 Barren, Pregnant and Storm Water Ponds.

Should you have any further questions, feel free to call anytime.

Sincerely,

A. J. Fernandez
Senior Mining Engineer

To: Anthony F. Budge
A.F. Budge Limited
Retford, Notts., DN22 7SW

From: A.J. Fernandez

Date: March 15, 1987

Further analysis of the east pit high grade zone proves 115,000 tons of 0.084 oz/t (by sections) with 450,000 tons waste (by bench outlines). This gives a waste to ore ratio of 3.9:1 in the east pit. The east pit is defined as sections 21400 to 21600 of my preliminary Vulture pit of which you have maps and sections.

Other near surface areas could yield 12,000 tons of 0.110 oz/t with 12,500 tons waste. These other areas fall on sections 20650, 20700, 20750 and 21050. The zones chosen are within 50 feet of surface. The total then would be 127,000 tons of 0.086 with 462,500 tons of waste for a waste to ore ratio of 3.6:1. At 55% recovery, this yields about 6,000 recoverable ounces of gold.

An additional \$50,000 in capital would be required to expand the leach pads to accommodate the additional material.

The greatest uncertainty in the numbers of the March 12 telex are the mining and crushing costs. It may be unlikely that a contractor could mine and crush for the rates quoted on a project of about 600,000 total tons mined and 127,000 tons crushed.

One alternative to explore would be to lease the required mining equipment; acquire the necessary crushing equipment for the U.V.X., using it first to crush the Vulture ore. Crushing equipment for the UVX may not be ideally suited to the Vulture ore, but could probably be made to work. Here, timing would be very critical.

Regards,

Joe.

B>

MEMO

To: A.F. Budge

From: A.J. Fernandez

Date: March 27, 1987

Subject: Vulture Mine-Agitated Leach

During our meeting with Frank Millsaps yesterday, we discussed the feasibility and costs of treating the Vulture ore and tails by agitated leach. A rough estimate of capital and operating costs was made. A 500 TPD plant is estimated to cost \$1.7 million; with operating costs (including crushing) at \$9.50 per ton. An itemized estimate is attached.

We assumed all new equipment for the purposes of this rough estimate. Certainly, the capital could be trimmed by contracting the crushing and by purchasing used equipment where possible; particularly the ball mill.

The \$1.7 million figure represents a cost of \$53 per ounce versus \$70.75 per ounce cost in heap leaching the tails only.

Using the \$9.50 per ton operating cost, a new cut-off grade of 0.040 OPT was determined. Adjusting my previous ore reserve estimation on this basis, we have 445,000 tons at 0.062 OPT with a waste to ore ratio of 2.9:1. (This includes dilution.) Therefore, at 85% recovery and including the tails, the Vulture could produce 32,000 ounces.

Direct operating cost per ounce would then be \$286 versus \$212.30 in the tails only heap leach case. Total cost per ounce in the agitated leach case would be \$339 versus \$283 in the tails

only heap leach case. Although the margin is lower, the project would show a higher profit because of the larger number of ounces. However, the tails could be processed in a year, whereas the 500 TPD mill would run about four years.

To summarize:

Gross Revenues	\$ 12,820,000
Capital	1,700,000
Crushing and Milling	6,365,000
Mining	2,800,000
	<hr/>
	\$ 1,955,000
Sunk costs	700,000
	<hr/>
Net Project	\$ 1,255,000

If we elected to process ore from the UVX at the Vulture by agitated leach, I estimate we would need 13,000 recoverable ounces to break even. In other words, we would need 13,000 ounces to cover mining, shipping, crushing, milling and our sunk costs.

INTRODUCTION

THIS IS A "FIRST PASS" EVALUATION OF PROFITABILITY OF THE Vulture Mine PROPERTY. Overall, THIS REPORT IS ABOUT $\pm 20\%$ - ACCURATE. AT THIS TIME THE LACK OF DETAILED DATA AND ENGINEERING WOULD MAKE A CASH - FLOW ANALYSIS MISLEADING.

FOR EXAMPLE, THE PLANT SIZE (500 TPD) WAS SELECTED ON THE BASIS OF TAILINGS AND ROCK TOTALING 370,000 TONS. ACTUALLY, THE TOTAL IS ABOUT 609,000 TONS. FOR THE PURPOSE OF THIS REPORT, THE PLANT WAS "UP-SCALED" TO 800 TPD BASED ON MILLSAPS' 500 TPD COST ESTIMATES.

THERE IS NO DATA ON HOW THE ROCK ALONE, WOULD LEACH. THE ADVANTAGES TO LEACHING. THE ~~tailings~~ ^{tailings} SEPARATE FROM THE TAILINGS IS DISCUSSED LATER. THEREFORE, I ASSUMED THAT THE ~~rock~~ ^{tailings} AND ~~tailings~~ ^{some portion of the rock} WOULD BE AGGLOMERATED TOGETHER AND ALL THE ORE ROCK WOULD BE CRUSHED.

WITH THE AVAILABLE DATA THIS IS A ROUGH LOOK AT THE VULTURE MINE. I HOPE IT ANSWERS ALL THE IMPORTANT QUESTIONS OF THE MOMENT.

NOT

SCANNED

Vulture: business correspondence, early estimates
options, equipment, personnel issues...
(also UVX, Commanon stuff)

ASSUMED PARAMETERS

- 1) PRICE: \$350 PER OUNCE OF GOLD
- 2) PLANT/LEACH RECOVERY = 75%
- 3) TAILINGS AND ROCK MINED AND AGGLOMERATED TOGETHER.
- 4) OPERATION SCHEDULE: MINE: 5 days/week 1-8hr shift/DAY
PLANT: 7 days/week 24 hrs/day
- 5) DILUTION: 10%
- 6) MINING COST ESTIMATED BASED ON LEASING OF EQUIPMENT. CONTRACTING - THE MINING WOULD PROBABLY COST ABOUT THE SAME.
- 7) CRUSHING COULD BE DONE @ \$0.40/TON

SUMMARY OF RESULTS

CAPITAL COSTS

PLANT CAPITAL COST	\$617,000
PREPRODUCTION MINING & HEAP CONSTRUCTION	85,000
WORKING CAPITAL (20 DAYS OPERATING COSTS)	<u>116,500</u>
 TOTAL	 \$818,500

OPERATING COSTS (COST PER OZ Au MEANS PER RECOVERED OZ Au)

ROCK MINING COST PER TON	\$1.56
(3.7:1 S.R.) PER TON/OZ Au	\$7.33
(0.06 OPT) PER OZ Au	\$163.00

TAILINGS MINING COST PER TON	\$0.95
per OZ Au	\$33.33

PLANT OPERATING COST (800 TPD)	
per OZ Au	\$130.00

CRUSHING COST (ASSUMED) per TON	\$0.40
per OZ Au	\$8.90

TOTAL OPERATING COST PER OZ Au

From TAILINGS \$ 163.³³

From ROCK \$ 301.⁹⁰

AVERAGE COST PER OZ Au \$ 264.⁰⁰

GROSS REVENUES

\$ 350 X 23,750 OZ Au = \$ 8,312,500

OPERATING COST 23,750 X \$ 264 = 6,270,000

\$ 2,042,500

RESERVE SUMMARY

TAILINGS

225,000 TONS @ 0.038 OPT

8,550 oz Au contained

6413 oz Au RECOVERABLE (75% RECOVERY)

M.H Hood's ESTIMATE BASED ON 0.020 OPT CUTOFF

ROCK 384,000 TONS @ 0.060 OPT (10% DILUTION)

23,000 oz Au contained

17,300 oz Au RECOVERABLE (75% RECOVERY)

WASTE 1,420,000 TONS WASTE: ORE = 3.7:1

M.H Hood's ESTIMATE BASED ON 0.030 OPT CUTOFF
AND 45° PIT SLOPE

AVERAGE TAILINGS AND ROCK 609,000 TONS @ 0.052 OPT
23,750 oz RECOVERABLE Au

Comments: (1) FURTHER REFINEMENT OF COST ESTIMATES, PARTICULARLY CRUSHING AND AGGLOMERATION, WILL ENABLE A BETTER FIXING OF THE CUTOFF GRADE. THIS COULD SUBSTANTIALLY ALTER THESE RESERVE ESTIMATES.

(2) DETERMINATION OF A STEEPER SAFE PIT SLOPE WILL CERTAINLY REDUCE STRIPPING REQUIREMENTS AND POSSIBLY INCREASE ORE TONNAGE.

(3) M.H Hood's ESTIMATION OF THE TAILINGS USING POLYGONS IS NOT DONE IN ANY TRADITIONAL MANNER. THE METHOD MAY BE VALID, BUT DOES REQUIRE VERIFICATION.

EXCAVATOR CAT 235

MATERIAL TONNAGE FACTOR: 12 cu. ft / TON
or 2.25 TONS / cu. yd.
or 0.44 cu. yd / TON

HEAPED BUCKET CAPACITY = 3.0 cu. yd.

$$3.0 \text{ cu yd} \times .65 = 1.95 \text{ bcy} \quad (.65 = \text{swell} \times \text{bucket fill factor})$$

$$1.95 \text{ bcy} = 4.4 \text{ TONS}$$

$$\frac{35 \text{ TON/TRUCK}}{4.4} = \underline{8 \text{ PASSES}}$$

Cycle TIME (CAT HANDBOOK pg. 192)

$$= 0.35 \text{ minutes / pass}$$

$$0.35 \times 8 = 2.8 \text{ minutes / LOAD}$$

DAILY PRODUCTION

Assume: 50 MINUTE OPERATING HOUR

80% AVAILABILITY

30 minute START-UP / SHUT-DOWN (7.5 hr OP DAY)

$$\frac{50 \times .80 \times 7.5}{2.8} = 107 \text{ LOADS / DAY}$$

$$107 \times 35 = \underline{3,750 \text{ TPD}}$$

800 TPD C

2950 TPD WA

MINE LIFE

2,029,000 TONS TOTAL MATERIAL

$$\frac{2029000}{3750 \times 20} = 27 \text{ months} \rightarrow 2 \text{ years } 3 \text{ months}$$

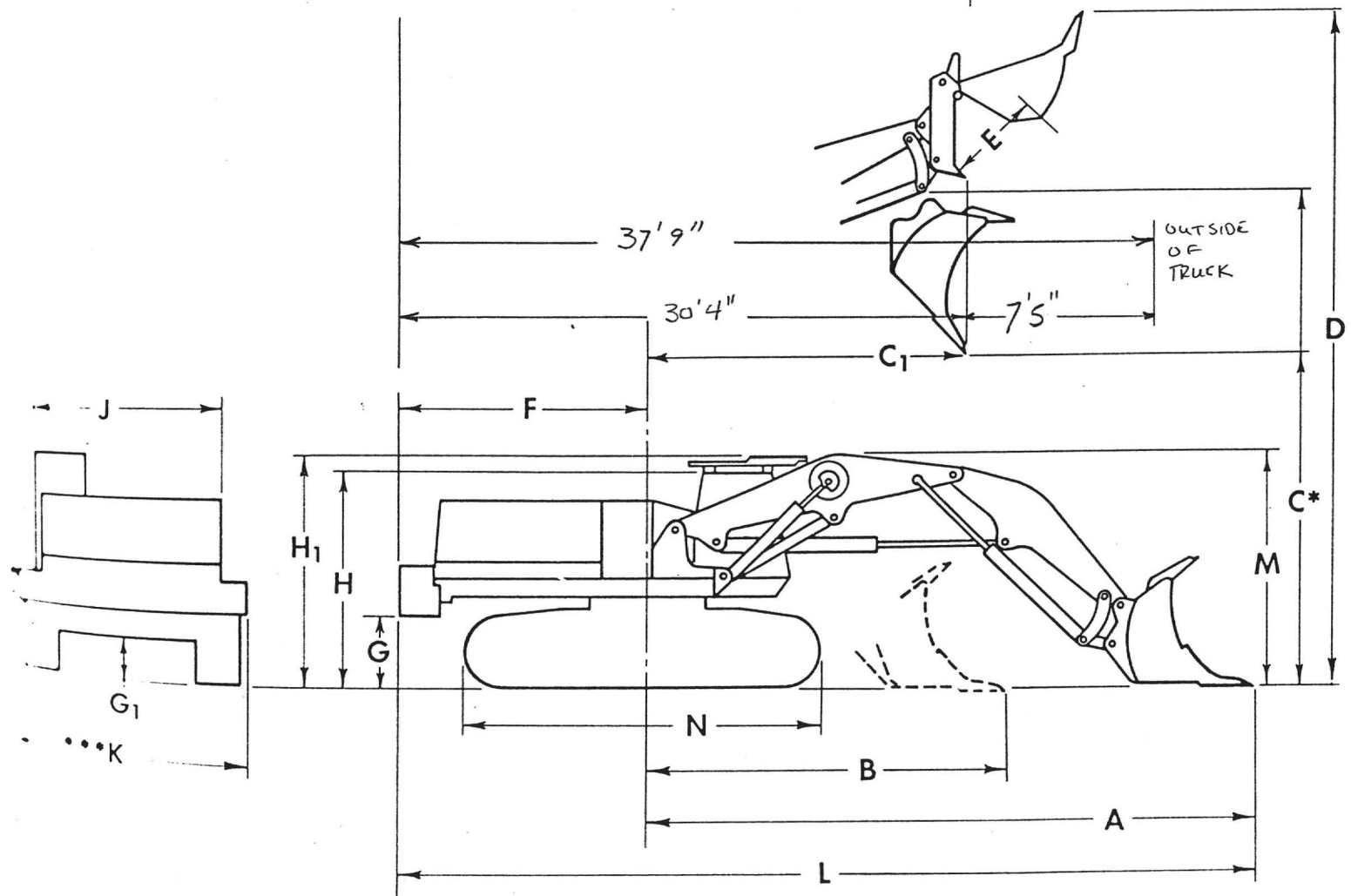
Operating Dimensions | Excavators — Front Shovels

TRUCK

- 4.0 yd³
- 3.5 yd³
- 92.5°
- 30' 9"
- 17' 11"
- 22' 3"
- 18' 9"
- 16' 6"
- 23' 7"
- 34' 2"
- 4' 7.5"
- 12' 6"
- 3' 8"
- 30"
- 11' 10"
- 12' 5"
- 9' 10"
- 12' 2"
- 43' 9"
- 12' 4"
- 18' 8"

200

D = 30' 1"



CAT 235 B FRDNT SHOVEL (3 cu yd) E'

CAT 769 C 35 T TRUCK

TRUCK CAT 769C (35 TON)

Truck Cycle Time

LOAD TIME	2.8 minutes
SPOTTING TIME (LOAD)	.6
TRAVEL TIME*	2.9
SPOTTING (DUMP)	.4
DUMP TIME	<u>1.2</u>
	7.9 minutes

DAILY PRODUCTION

50 minutes/hour
75% AVAILABILITY
7.5 hrs. / OPERATING DAY

$$\frac{50 \times .75 \times 7.5}{7.9} = 35 \text{ LOADS/DAY}$$

OR 1225 TPD

$$\frac{\text{EXCAVATOR } 3750 \text{ TPD}}{\text{TRUCK } 1225 \text{ TPD}} = \underline{\underline{3 \text{ TRUCKS REQUIRED}}}$$

* TRAVEL TIME (CAT HANDBOOK pg. 301 + 302)
ASSUME: 6% TOTAL ROLLING RESISTANCE
2000 FT AVERAGE HAUL DISTANCE

LOADED	1.9 minutes	>	2.9 minutes
EMPTY	1.0 minute		

EQUIPMENT COST ESTIMATE

SOURCE - RENTAL RATE BLUE BOOK

CAT 235B EXCAVATOR

$$\begin{aligned} \text{Monthly } \$14,900 \times 0.93 \text{ (REGIONAL ADJ.)} &= \$13,857 \\ \text{DAILY (20 DAYS MONTH)} &= \$693.00 \end{aligned}$$

$$\text{OPERATING COST}^* \quad 6 \text{ hrs/day} \times \$32.00 = \$192.00$$

$$\text{LABOR}^{**} \quad 8 \text{ hrs} \times \$13.83 = \$110.66$$

$$\begin{aligned} \text{TOTAL} & \quad \$995.66 / \text{DAY} \\ & \quad \div 3750 \text{ TPD} \\ & \quad \longrightarrow \$0.266 / \text{TON} \end{aligned}$$

CAT 769C TRUCK

$$\begin{aligned} \text{Monthly } \$9465.00 \times .97 \text{ (ADJ.)} &= \$9181.05 \\ \text{DAILY (20 days/month)} &= 459.05 \end{aligned}$$

$$\text{OPERATING COST}^* \quad 5.63 \times \$24.20 = \$136.25$$

$$\text{LABOR}^{**} \quad 8 \times \$12.90 = \$103.20$$

$$\begin{aligned} \text{TOTAL} & \quad 698.50 / \text{DAY} \\ & \quad \times 3 \text{ TRUCKS } 2095.50 / \text{DAY} \\ & \quad \div 3750 \text{ TPD} \\ & \quad \longrightarrow \$0.56 / \text{TON} \end{aligned}$$

$$\begin{aligned} * \text{ HOURS PER DAY} &= 7.5 \times .80 = 6 \text{ hrs/day (EXCAVATOR)} \\ &= 7.5 \times .75 = 5.63 / \text{day (TRUCK)} \end{aligned}$$

** SOURCE: MINING COST SERVICE page LAB
30% BENEFITS

CAT D-8L DOZER

$$\begin{aligned} \text{monthly } \$12,685 \times .93 \text{ (ADJ)} &= \$11,780 \\ \text{DAILY} &= \$589 \end{aligned}$$

$$\text{OPERATING COST } \$32.00/\text{hr} \times 6\text{hrs}^* = \$192.00$$

$$\text{LABOR } 8\text{hrs} \times \$13.83 = \$110.64$$

$$\text{TOTAL } \$891.64$$

$$\div 3750 \text{ TPD}$$

$$\longrightarrow \$0.238/\text{TON}$$

CAT 14G GRADER

$$\begin{aligned} \text{monthly } \$8310 \times .93 \text{ (ADJ)} &= \$7728.30 \\ \text{daily } \div 20 &= \$386.42 \end{aligned}$$

$$\text{OPERATING COSTS } \$18.65 \times 6.38\text{hrs}^* = \$118.99$$

$$\text{LABOR } 8\text{hrs} \times \$13.83 = \$110.66$$

$$\text{TOTAL } \$616.07$$

$$\div 3750 \text{ TPD}$$

$$\longrightarrow \$0.164$$

* BASED ON: 80% AVAILABILITY DOZER
85% AVAILABILITY GRADER

DRILL MUSTANG/VCR-280 (5 1/2" HOLE) (W/ DUST COLLECTION)

$$\begin{aligned} \text{monthly } \$5760 \times .95 \text{ (ADJ)} &= \$5472 \\ \text{daily } \div 20 &= \$273.60 \end{aligned}$$

$$\begin{aligned} \text{OPERATING COST } 6 \text{ hrs}^* \times 9.95 &= \$59.70 \\ \text{LABOR } 8 \text{ hrs} \times \$12.43 &= \$99.42 \end{aligned}$$

$$\begin{aligned} \text{TOTAL} & \quad \$432.12 \\ & \div 3750 \text{ TPD} \\ & \longrightarrow \$0.115 \end{aligned}$$

COMPRESSOR FOR DRILL 1200 CFM

$$\begin{aligned} \text{monthly } \$4925 \times .95 \text{ (ADJ)} &= \$4679.00 \\ \text{DAILY } \div 20 &= \$234.00 \\ \text{OPERATING COST } 6 \times \$28.30 &= \$169.80 \\ \text{LABOR INCLUDED WITH DRILL} & \end{aligned}$$

$$\begin{aligned} \text{TOTAL} & \quad \$403.80 \\ & \div 3750 \text{ TPD} \\ & \longrightarrow \$0.108 \end{aligned}$$

$$\text{TOTAL DRILL \& COMPRESSOR} \longrightarrow \$0.223$$

* AVAILABILITY ASSUMED TO BE 80%

PIT SUPERVISION / AUXILIARY PERSONNEL

1 PIT SUPERVISOR
 $(\$25,000 / \text{year} \times 1.3) \div 260 \text{ DAYS} = \$125 / \text{DAY}$

1/2 MINE MANAGER
 $(\$30,000 \times 1.3) \div (260 \times 2) = \$75 / \text{DAY}$

2 SURVEYORS / ORE CONTROL TECHNICIANS
 $2 \times 8 \text{ hrs} \times \$12.90 / \text{hr} = 206.40 / \text{DAY}$

TOTAL 406.40
 $\div 3750 \text{ TPD}$
 $\longrightarrow \$0.108$

SUMMARY OF COSTS (ROCK)

EXCAVATOR	\$0.266	/TON
TRUCKS (3)	0.560	
DOZER	0.238	
GRADER	0.164	
DRILL & COMPRESSOR	0.223	
SUPERVISION / AUXILIARY	0.108	
<u>TOTAL</u>	<u>\$1.56</u>	<u>/TON</u>

@ 3.7:1 S.R. \$7.33 /TON ORE
@ 0.060 OPT \$163.00 /oz Au

Comment: PROBABLY A LITTLE HIGH
A CONTRACTOR IN NEVADA IS MINING
FOR NEVER GOLD @ \$1.40/TON

TAILINGS MINING COST

EXCAVATOR	\$ 0.266 /TON
TRUCKS (2)	0.373
1/2 Doter	0.119
1/2 GRADER	0.082
SUPERVISION /AUXILIARY	<u>0.108</u>
	\$ 0.948 → \$ 0.95 /TON

COST PER OZ Au → \$ 163 ³³

CAPITAL COST ESTIMATE SUMMARY

A. Equipment in Plant	\$229,300	
Frt. @ \$12.50/cwt., 63,800#	8,000	
Unloading & Handling At Site	4,500	
Sales Tax @ 3½%	8,025	
TOTAL COST EQUIPMENT AT PLANT		\$249,825
B. Mobile Equipment		
Used Front End Loader, Cat. 980B <i>lease?</i>		115,000
C. Buildings & Structures		
Process & Security		20,000
D. Concrete		
Foundations 4 yds. @ \$250/yd.	1,000	
Slabs	3,500	
		4,500
E. Structural Steel		
Included with Equipment		
F. Electrical		
Switch Gear, MCC, Wiring & Lighting		7,000
G. Piping		
Process & Domestic Water		15,000
H. Pads		35,000
I. Ponds Barren/Preg./Overflow		13,250
J. Equipment Installation		4,500

TOTAL A THROUGH J

~~\$464,075~~

FROM
MILLSAPS' REPORT DATED August 21, 1985

\$349,075

K. Engineering \$23,100

L. Water System (to Plant) 10,000

TOTAL A THROUGH L \$497,175

Contingency 75,000

Total Estimated Plant Capital Cost 572,175

Start-Up Working Capital @ 1 % 5,725

TOTAL ~~\$577,900~~ *less loader \$463,000*
 500 TPD \$462,900

ADDENDUM ⁽¹⁾ 800 TPD
 (X 1.33) \$617,000 ⁽²⁾
 F.M.

~~Estimated Capital Cost Using New Equipment \$577,900~~

~~Estimated Capital Cost Using Equipment from Searchlight, NV~~

~~Subtract \$151,000 for items available -\$151,000~~

~~Add modifying for use + 53,000~~

~~Add cost of Equipment + 18,000~~

~~Total Change - 80,000~~

~~Total Estimated Cost Using Available Used Equipment \$497,900~~ *less loader 385,000*

NOTE: (1) SINCE FRANK MILLSAPS' WORK WAS DONE A YEAR AGO IT IS UNKNOWN IF THE USED EQUIPMENT IN

SEARCHLIGHT IS STILL AVAILABLE. However, other (2) SIMILAR EQUIPMENT IS PROBABLY AVAILABLE SOMEWHERE. FROM CONVERSATION WITH FRANK MILLSAPS CAPITAL COSTS WOULD INCREASE BY 1/3 FOR UPSCALE FROM 500 TPD TO 800 TPD

THIS IS AN EXAMPLE OF WHAT
IS AVAILABLE.

BEN ASKED ME TO TELL THIS W.

MISSOURI

ESTIMATED DIRECT OPERATING COSTS

~~132,000 TPY~~
 UPSCALE TO 800 TPD
 211,000 TPY

	Cost/Yr.	Cost/Ton
<u>Supervision</u>		
1 Man @ \$36,000 + 30% Fringe	\$46,800	0.355 0.222
<u>Labor</u>		
Pad Operator - 3 @ \$10/hr. + 30% Fringe	81,120	0.615 0.384
Refiner & Carbon Oper.- 2 @ \$12.50/hr. + 30% Fringe	67,600	0.512 0.320
Assayer - 1 @ \$12.50/hr. + 30% Fringe	33,800	0.256 0.160
Watchmen/Security - 3 @ \$8.50/hr. + 30% Fringe	68,952	0.256 0.326
TOTAL PERSONNEL	<u>\$298,272</u>	<u>2.260</u> 1.412

Reagents

Cement 10#/ton @ 5¢/lb.	NO CHANGE	66,000	0.500
Lime 5#/ton @ 2¢/lb.	REAGENTS	13,200	0.100
Cyanide 2#/ton @ 83¢/lb.	ON PER TON	219,120	1.660
Carbon .04#/ton @ 75¢/lb.	BASIS	3,960	0.030
TOTAL REAGENTS		\$302,280 483,648	<u>2.290</u>

Assaying

8/5 X 15,600 24,960 0.118

Refining

8/5 X 5,200 8,320 0.039

Fuel

Electrolyte Heating \$2480
 Carbon Regeneration 350

8/5 X 2,830 4528 0.021

Power - 113 KWH Demand @ 7¢/KWH

8/5 X 16,460 26,336 0.125

Water Supplies

8/5 X 5,980 9,568 0.045

TOTAL ESTIMATED DIRECT PLANT
 OPERATING COSTS

~~\$646,622~~ 855,632 \$4,898 4.12

Tailings Reclaiming ? \$1/ton

\$211,000
\$132,000 \$1.000

TOTAL ESTIMATED DIRECT
 OPERATING COSTS

\$778,622 1,066,632 \$5,898 5.12

Estimated Direct Operating Cost/oz. Au. Produced

~~132,000 x 0.044 x 0.75 = 4,356 Oz./year~~

~~\$178.75~~

211,000 x .052 x 0.75 = 8,229 Oz./year

\$129.62

UP-SIDE POTENTIAL

1. IF THE TAILS AND ROCK CAN BE LEACHED SEPARATELY, IT APPEARS THAT OPERATIONAL AND ECONOMIC ADVANTAGES WOULD BE REALIZED. IN THIS CONTEXT, FINES FROM THE CRUSHING OF ORE WOULD BE AGGLOMERATED WITH TAILINGS. OPERATIONALLY, MINING WOULD NOT HAVE THE RESTRICTIONS OF EXCAVATING TAILINGS AND ROCK AT SOME FIXED RATIO. ONLY ONE LOADING UNIT, INSTEAD OF TWO, WOULD BE REQUIRED TO MEET PRODUCTION REQUIREMENTS. AT START-UP, TAILINGS COULD PROBABLY BE STACKED DURING PLANT CONSTRUCTION AT A LOWER COST THAN ROCK AND READY FOR LEACHING IMMEDIATELY WHEN THE PLANT IS COMPLETED. THIS WOULD BEGIN SOME INCOME AGAINST LOWER MINING COST. (LESS STRIPPING, LESS CRUSHING) OBVIOUSLY, THIS WOULD IMPROVE THE CASH-FLOW PICTURE OVER MINING ROCK AND TAILINGS SIMULTANEOUSLY. (SOME STRIPPING, ALL ROCK CRUSHED) DETAILED INVESTIGATION AND EVALUATION OF THIS OPERATING MODE STILL NEEDS TO BE DONE.

2. RESERVES ESTIMATED BY M. H. HOOD USED A PIT SLOPE ANGLE OF 45°. WHILE THIS IS CERTAINLY PRUDENT FOR AN INITIAL ANALYSIS, I BELIEVE A STEEPER SLOPE ANGLE TO BE FEASIBLE. THIS COULD POTENTIALLY REDUCE STRIPPING REQUIREMENTS BY APPROXIMATELY

140,000
250,000

TONS; STRIPPING COSTS BY

\$390,000.
\$220,000

DETERMINATION OF A SAFE

REVISED ESTIMATE
8/27 -

UP-SIDE (CONTINUED)

PIT SLOPE NEEDS TO BE MADE.

3. DISCOVERY OF MORE ORE NEAR THE SURFACE IN THE VICINITY WOULD CERTAINLY ENHANCE THE PROFITABILITY OF EXPLOITING THIS RESOURCE. PLANS ARE IN PLACE TO DRILL FAVORABLE IDENTIFIED TARGETS POSSIBLY CONTAINING 6000 RECOVERABLE OUNCES OF GOLD. THIS WOULD REPRESENT A 25% INCREASE IN RECOVERABLE GOLD RESERVES. ALSO, WITH RESPECT TO ENHANCED RESERVES, THE VERY HIGH GRADE DRILL HOLE INTERCEPTS WERE DOWN GRADED BY ABOUT 75% (e.g. 0.855 TO 0.20 OZF) I WOULD MAKE NO ESTIMATE OF THE ADDITIONAL OUNCES THIS MAY BRING IF THE ORE DOES GRADE AT OR NEAR THE DRILL HOLE GRADES.

DOWN-SIDE POTENTIAL

1. ORE ZONES DIPPING AT ABOUT 45° CAN BE DIFFICULT TO MINE WITHOUT SOME DILUTION. WASTE MATERIAL IN THE ORE WOULD DEFINITELY ADD TO CRUSHING COST, BUT THE EFFECT ON GOLD RECOVERY IS UNCLEAR. HENCE MINING PRACTICE AND ORE ZONE STAKING WILL HAVE TO BE CAREFULLY SUPERVISED.
2. IT HAS BEEN ASSUMED THAT MOST OF THE ROCK CAN BE MINED WITH MINIMAL BLASTING. THIS IS REASONABLE IN VIEW OF THE HIGHLY FRACTURED CONDITION OF THE ROCK WE CAN SEE ON THE SURFACE. SHOULD THE ROCK BE ^{more} COMPETENT THAN IS BELIEVED NOW, ADDITIONAL COSTS WOULD BE INCURRED IN DRILLING AND BLASTING. FURTHER INVESTIGATION IS NEEDED TO BE REASONABLY SURE OF WHAT WILL BE REQUIRED.
3. IN ONE AREA OF THE PIT THERE ARE KNOWN TO BE OPEN STOPES OF PREVIOUS MINING ACTIVITY. THESE AREAS WILL CERTAINLY HAVE TO BE MINED WITH CAUTION TO PREVENT ACCIDENT OR ORE LOSS AND DILUTION. OF POTENTIALLY GREATER DANGER IS THE POSSIBILITY OF STOPES THAT ARE NOT KNOWN. I ONLY MENTION THIS AS AN ASIDE, AS IT IS AN UNLIKELY EVENT.

General Thoughts on the Vulture —

TAILS 225,000 TONS @ .038 OPT
 8,550 oz @ 75% REC. = 6,413 oz
 Rock 383,800 TON @ .060 OPT (10% DILUTION)
 23,028 oz @ 75% REC = 17,271 oz

TOTAL RECOVERABLE oz Au

≈ 23,700

WASTE mining cost @ \$1.50/TON 1,420,000^{TONS} → \$2,130,000
 LEACH OP COSTS \$178.75/oz
 Mining cost @ \$1.00 TON TAILS → \$35¹⁰/oz
 \$1.50 TON Rock → \$33³³/oz

	TAILS + Rock	TAILS only
23,700 x \$350 =	\$ 8,295,000	2,244,550
\$178.75 x 23,700 =	- 4,236,375	- 1,146,323
\$35 ¹⁰ x 6413 =	- 225,000	- 225,000
\$33 ³³ x 17,271 =	- 575,700	873,227
	<u>3,257,925</u>	
EXPLORATION + ACQUISITION TO DATE =	- 500,000	- 500,000
CAPITAL (PLANT)	- 463,000	- 463,000
Moving Equip from PENN	- 200,000	
Contingency 10% of TOTAL CAP	- 166,300	\$89,773
Waste Removal	- 2,130,000	

(\$101,375)

INTRODUCTION / OVERALL VIEW —

SUMMARY OF RESULTS / COMMENTS

RESERVE SUMMARY / COMMENTS

EQUIPMENT SELECTION AND COSTS

MINE LIFE

CONSTRUCTION COSTS (PLANT)

← SUMMARY OF CAPITAL COSTS

PRE-PRODUCTION STRIPPING AND LEACH-PAD COSTS

GROSS INCOME

SUMMARY OF COSTS

DEPRECIATION

DEPLETION

INCOME STATEMENT

CASH-FLOW GRAPHS

UP-SIDE POTENTIAL —

DOWN-SIDE POTENTIAL —

PLAN FOR CONTINUED ENGINEERING ~~WORK~~

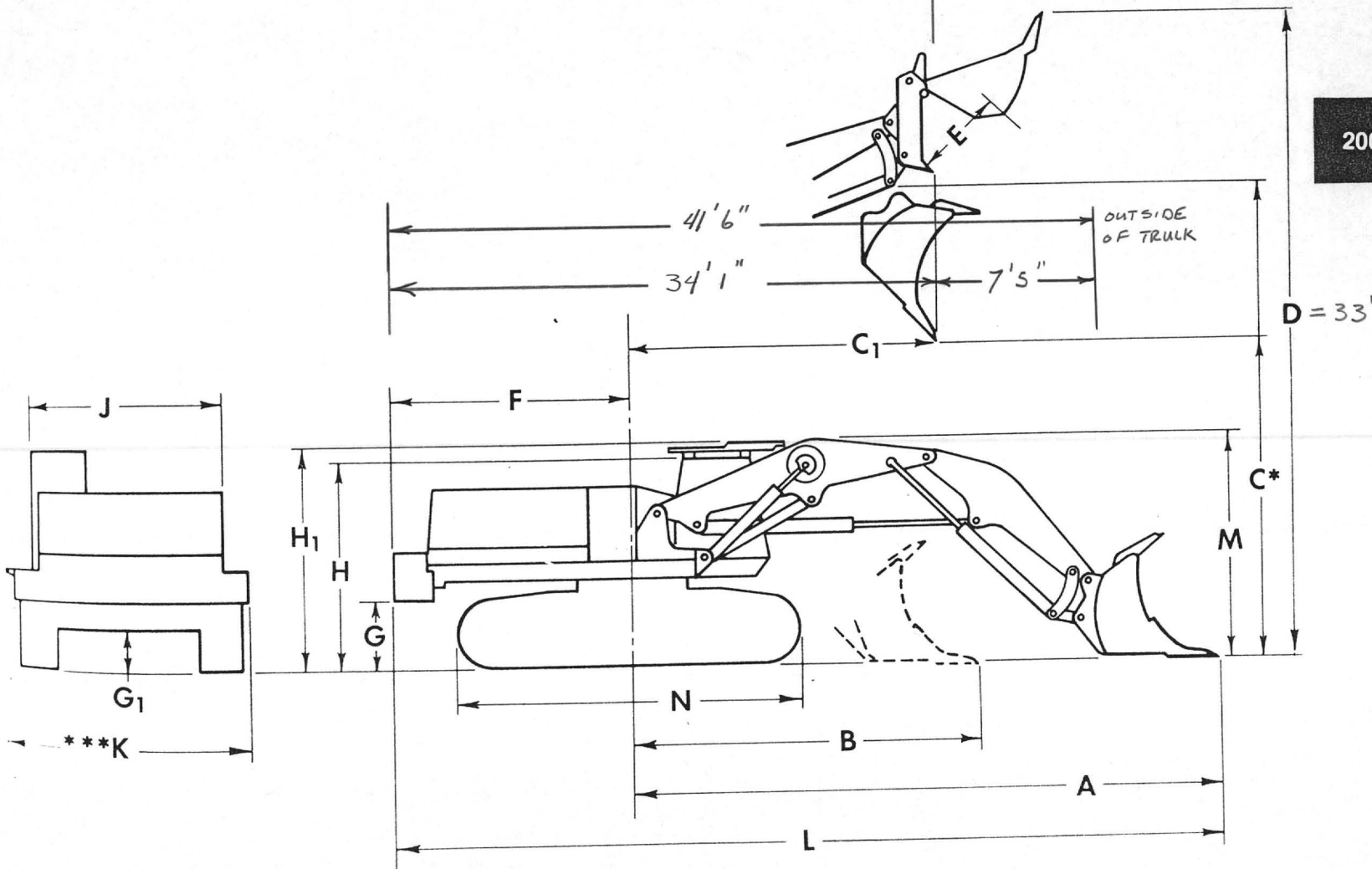
Operating Dimensions

Excavators — Front Shovels

TRUCK

200

- n Dump
- 4.0 yd³
- 3.5 yd³
- 92.5"
- 30'9"
- 17'11"
- 22'3"*
- 18'9"
- 16'6"
- 23'7"*
- 34'2"
- 4'7.5"
- 12'6"
- 3'6"
- 30"
- 11'10"
- 12'5"
- 9'10"
- 12'2"***
- 43'3"
- 12'4"
- 18'5"



CAT 245 FRONT SHOVEL (5 cu. yd.) $\frac{1}{1}$

CAT 769C 35 T TRUCK

Sig Smith

PAD AREA

1135 TPD ROCK \rightarrow 505 yd³ BANK $\xrightarrow{\text{swell } .75}$ 673 yd³
665 TPD TAILS \rightarrow 517 yd³ BANK $\xrightarrow{\text{swell } .75}$ 690 yd³

10 FT. THICK

$$36800 \text{ cu. ft} \xrightarrow{\div 10} \underline{\underline{3680 \text{ sq. ft}}}$$

$$\sqrt{3680} = 60.7 \text{ FT.}$$

$$8 \text{ FT THICK} \rightarrow \underline{\underline{4600 \text{ sq. ft.}}}$$

$$\sqrt{4600} = 67.8 \text{ FT}$$

TOTAL PAD DIMENSION (MILLSAPS) 8 \rightarrow 43.5 DAYS
400 X 500 = 200,000 SQ. FT. 10 \rightarrow 54.4 DAYS.

INITIAL PAD FIRST sprinkle 8 \rightarrow 4.4 days
100 X 200 = 20,000 10 \rightarrow 5.4 days

WASTE DUMP

1,420,000 TONS (.44 yd³/TON)
624,800 yd³ $\xrightarrow{\text{swell } .75}$ 833,100 yd³

50 FT DUMP 450,000 sq. ft \rightarrow 10.3 ACRES

MINING COST ESTIMATE

SOURCE - RENTAL RATE BLUE BOOK

$$\begin{aligned} \text{CAT 245} \quad \text{MONTHLY } \$20,085 \times \overset{\text{ADJ}}{0.93} &= \$18,679 \\ \text{DAILY (20 days/month)} &= \$933.95 \end{aligned}$$

$$\text{OP COSTS}^* \quad 6 \text{ hrs/day} \times 46.50 = 279.00$$

$$\text{LABOR}^{**} \quad 8 \text{ hrs} \times \$13.83 = 110.66$$

$$\text{TOTAL } \$132.361$$

$$\div 6000 \text{ TPD}$$

$$\rightarrow \$0.22 / \text{TON}$$

CAT 769C

$$\begin{aligned} \text{monthly } \$9465.00 \times \overset{\text{ADJ}}{.97} &= \$9,181.05 \\ \text{Daily (20 days/month)} &= \$459.05 \end{aligned}$$

$$\text{OP COSTS}^* \quad 5.63 \text{ hrs/day} \times 24.20 = 136.25$$

$$\text{LABORER}^{**} \quad 8 \text{ hrs} \times \$12.90 = 103.20$$

$$\text{TOTAL } \$698.50 / \text{day}$$

$$\times 4 \text{ Trucks} = \$2794.00$$

$$\div 6000 \text{ TPD } \$0.47$$

$$\begin{aligned} * \text{ Hours per day} &= (8 - .5) \times .80 = 6 \text{ hrs/day} && \text{EXCAVATOR} \\ \text{"} &= (8 - .5) \times .75 = 5.63 && \text{TRUCK} \end{aligned}$$

** SOURCE MINING COST SERVICE pg L48

30% BENEFITS

CAT D-9L Dozer

u-
blade

$$\$16,455 + 2690 = \$19,145 \text{ monthly}$$

$$957.25 \times .93 = \$890.24 \text{ daily}$$

OPERATING COSTS $43.75 \times 6 \text{ hrs}^* = 262.50$

u-blade $3.85 \times 6 \text{ hrs}^* = 23.10$

LABOR $8 \text{ hrs} \times 13.83 = 110.66$

TOTAL $\$1286.50 / \text{DAY}$

$$\div 6000 \text{ TPD} = \$0.21$$

CAT 14G MOTOR GRADER

$$\$8310 \times \frac{.93}{.93} = \$7728.30 \text{ monthly}$$

$$\div 20 = 386.42 \text{ daily}$$

op costs $\$18.65 \times 6.38 \text{ hrs} = \118.99

LABOR $8 \text{ hrs} \times \$13.83 = \110.66

TOTAL $\$616.07$

$$\div 6000 \text{ TPD} \rightarrow \$0.10$$

*
operating hrs per day = $(8-.5) \times .80 = 6 \text{ hrs}$ (Dozer)
" " = $(8-.5) \times .85 = 6.38$ (GRADER)

Vulture
Millsays

CAP Costs — All NEW Equip - \$577,900
 Used from Semblitt 497,900
 — FEL \$463,000
 \$383,000

Op costs \$178 $\frac{25}{100}$ /oz Au PLANT ONLY
 132,000 TPY \$5.898 /TON FINES

Millsays wear 2.16/ton NaCN
 Dawson tent show 1.06 lb/ton

Rock MH
 12 cu ft / ton
 166.67 lbs / cu ft

0.30 oz / ton Au cut-off

MEI
 Quant prod by
 SP 2.63 ?
 ↓
 164.11 lb/ft³
 ≈ 12.2 cu ft / ton

Power = EI cos θ

cos θ = .8

11,190 = 480 I (.8)

E = 480 V

29 Amps = I

Power = 15 hp x 746 = 11,190 WATTS

383,843 TONS @ .060 rock

225,000 TONS @ .038 fines

608,843 .052 → @ 75% Rec. 23,745 oz Au

@ \$1.50 / ton mining cost → \$38.50 mining cost / oz Au

SUMMARY OF COSTS

	EQUIPMENT
DRILL	\$ 0.29 /TON
HYDRAULIC EXCAVATOR	0.22
TRUCKS	0.47
DOZER	0.21
GRADER	0.10
SUPERVISION	0.07
TOTAL	<u>\$ 1.36 /TON</u>

SUPERVISION

1 MINE FOREMAN 25,000 X 1.3 → \$32,500/yr \$125/day
1/2 MINE MANAGER 30,000 X 1.3 → \$39,000/yr \$175/day
2 SURVEYORS/ORE CONTROL TECHS X 8 X 12.50/hr → 206.40/day

1 ENGINEER

TOTAL \$ 406.40
÷ 6000 TPD → \$.07

DRILL DRILL TECH D40K II

monthly \$16,790 X .97^{ADJ} = \$16,286.30
3 days/week → 12 days \$1,357.19 /day
op costs 7.13 X \$39.50 = 281.44 /day
LABOR 8 X 12.43 = 99.42 /day

TOTAL \$1,738.05
÷ 6000 TPD → \$0.29

* (8 - .5) X .95 = 7.13 hrs/day

20 DAYS OPERATING CAPITAL

800 TPD ore 50-50

400 X 20 X .95	TAILS	8,000
400 X 20 X 1.56	ROCK	12,500
2950 X 20 X 1.56	WASTE	92,000
800 X 20 X 5.12	PLANT	4,000
		<hr/>
		116,500

EXCAVATOR CAT 245

Material TONNAGE FACTOR 12 cuft / TON
 $27 \text{ ft}^3 / \text{yd}^3 \times \frac{\text{TON}}{12 \text{ ft}^3} = 2.25 \text{ TONS} / \text{yd}^3$
or $0.44 \text{ yd}^3 / \text{TON}$

HEAPED BUCKET CAPACITY = $5 \text{ yd}^3 \times .65$ (swell & fill factor) $\cdot 75 \times .85$
 $= 3.25 \text{ bank yd}^3$ or 7.3 TONS

Truck 35 TON CAPACITY
 $\frac{35 \text{ TONS}}{7.3} = 4.87 \rightarrow 5 \text{ PASSES}$

Cycle Time (CAT HANDBOOK pg. 192)
 $= 0.35 \text{ min}$
 $0.35 \times 5 = 1.75 \text{ min} / \text{LOAD}$

50 min operating hour (10 min for moving, trucks unavailable etc.)

80% AVAILABILITY

8 hr. work day

- 30 min start-up / shut-down

7.5 hrs / DAY

$$\frac{50 \times 7.5 \times .8}{1.75} = 171.43 \text{ LOADS / DAY}$$

$$171.43 \times 35 \approx \underline{\underline{6000 \text{ TPD}}}$$

1800 TPD ROCK + TAILS (665 TPD TAILS)
4200 TPD WASTE (1135 TPD ROCK)

2,029,000 TONS TOTAL MATERIAL

$$\frac{338 \text{ DAYS} \rightarrow \underline{\underline{17 \text{ months}}}}{20 \text{ DAYS / MONTH}}$$

CAT 769C (35 TON)

Truck Cycle Time

LOAD TIME	1.75	MIN
Truck Spotting (LOAD)	.6	MIN
Travel Time* (1500')	2.4	
Truck Spotting (Dump)	.4	
Dump TIME	1.2	
	<u>6.35</u>	MIN.

Production

50 min hr.

75% AVAILABILITY

7.5 hr. operating day

$$\frac{50 \times .75 \times 7.5}{6.35} \approx 44 \text{ LOADS / DAY}$$

1540 TPD

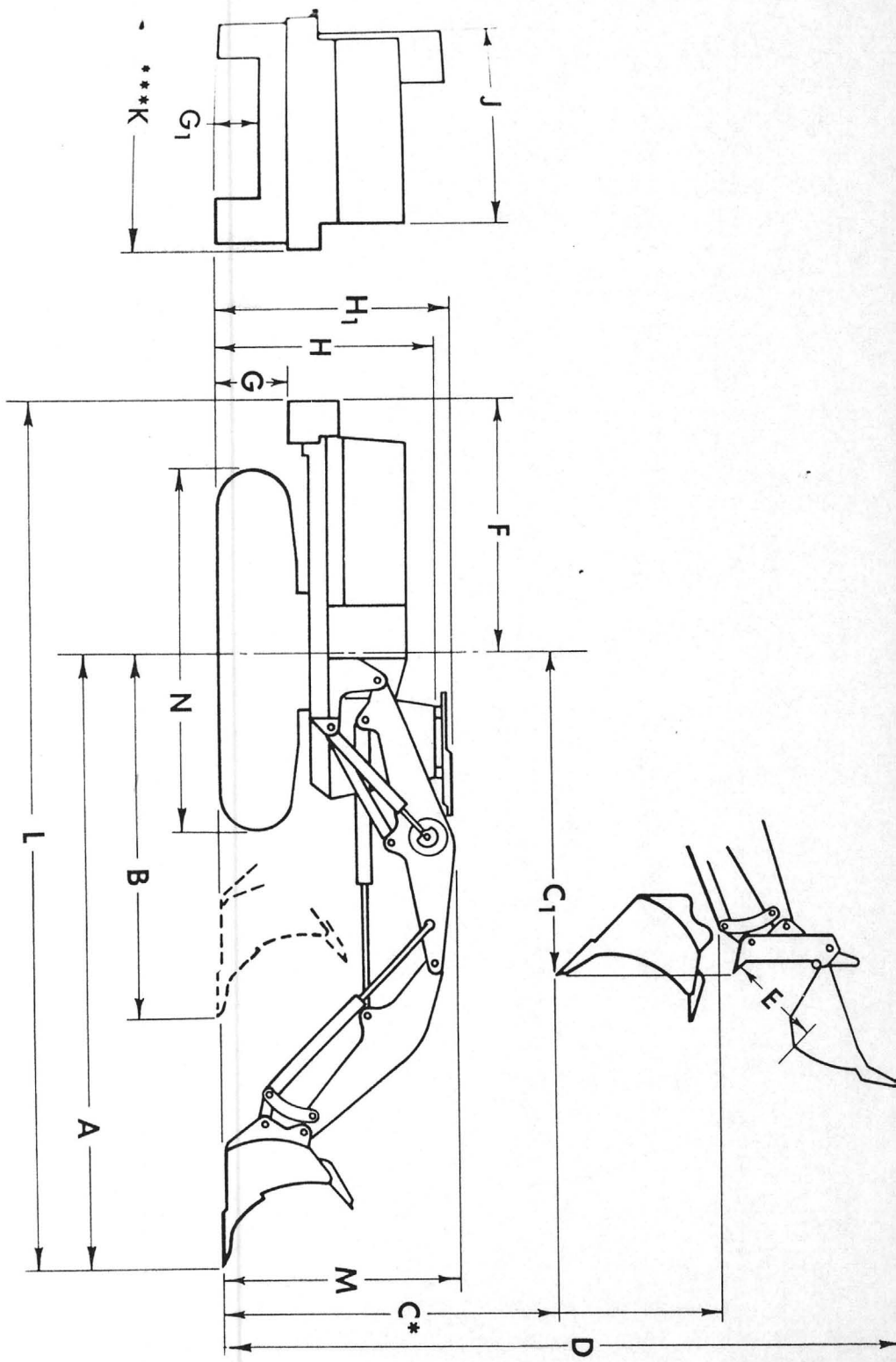
$$\frac{6000}{1540} \rightarrow \underline{\underline{4 \text{ TRUCKS}}}$$

* TRAVEL TIME FROM CAT HANDBOOK pg 301 & 302

ASSUMING 6% TOTAL RESISTANCE & 1500' AVG HAUL DISTANCE

LOADED 1.5 min > 2.4 min

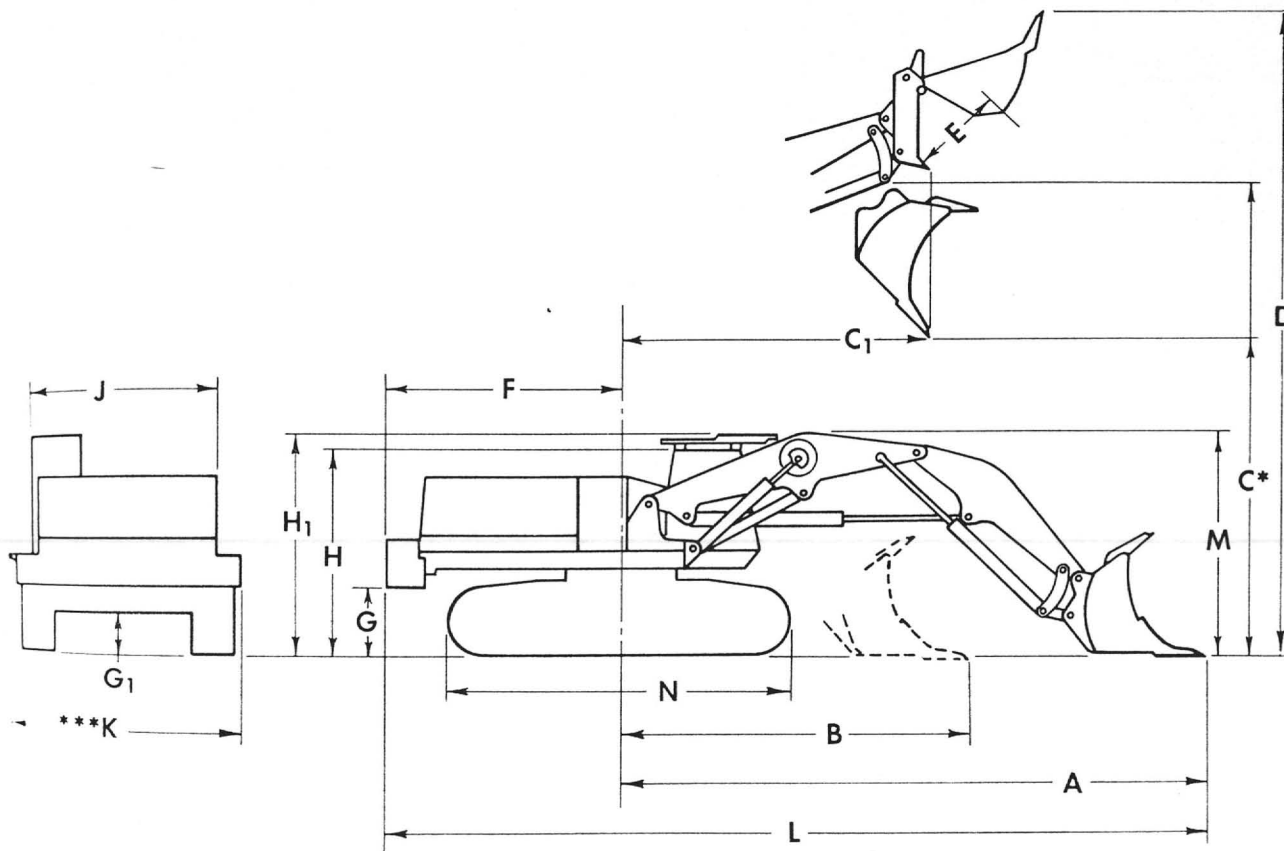
EMPTY 0.9 min



200

245		Bottom Dump	
Front Dump		Bottom Dump	
3	5.0 yd ³	3.1 m ³	4.0 yd ³
h ³	4.4 yd ³	2.67 m ³	3.5 yd ³
nm	92.5"	2350 mm	92.5"
m	31' 2"	9.37 m	30' 9"
m	18' 4"	5.46 m	17' 11"
m	18' 6"	6.781 m	22' 3"
m	20' 8"	5.715 m	18' 9"
m	16' 6"	5.03 m	16' 6"
m	21' 7"	7.19 m	23' 7"
m	33' 9"	10.412 m	34' 2"
ot Applicable		1.435 m	4' 7.5"
0 m	12' 6"	3.860 m	12' 6"
5 m	3' 6"	1.066 m	3' 6"
mm	30"	736 mm	30"
5 m	11' 10"	3.606 m	11' 10"
5 m	12' 5"	3.785 m	12' 5"
6 m	9' 10"	2.996 m	9' 10"
8 m	12' 2"***	3.708 m	12' 2"***
6 m	43' 8"	13.18 m	43' 3"
9 m	12' 4"	3.759 m	12' 4"
3 m	18' 5"	5.613 m	18' 5"

auge position with 610 mm (24") shoes
uces to 3.455 m (11' 4") width over
unterweight removed.



200

Income STATEMENT

① Gross Income
Less: Royalties

② Gross Income from Mining
Less: OPERATING Costs

NET AFTER Costs
Less: DEPRECIATION ?

PRE - Depletion NET INCOME
Less: DEPLETION ?

PRE-TAX NET INCOME
Less: TAXES (? %)(40-60) 34%

NET PROFIT
ADD: DEPRECIATION
ADD: DEPLETION

NET CASH FLOW:

To: Anthony F. Budge
A.F. Budge Limited
Retford, Notts., DN22 7SW

From: A.J. Fernandez

Date: March 12, 1987

Re: Vulture Evaluation

This is an evaluation of processing the Vulture tailings alone. I have revised Frank Millsaps' previous estimates based on new information. Metallurgical parameters are based on Dawson's report of 5/84. The gold price is assumed to be \$400/ounce.

Base data: 225,000 tons of tails
 0.045 oz/ton gold
 70 percent recovery
 7100 recoverable ounces

Gross Revenues: 7100 x \$400 = \$2,840,000

Capital Cost Summary:

A. Zinc precipitation plant & site	\$ 302,600
B. Building, 25 ft. x 20 ft.	25,000
C. Electrical, including generator	21,000
D. Process piping in plant	2,000
E. Spray piping	7,500
F. Leach pad	80,000
G. Solution ponds	19,500
H. Final construction	6,500

Total A thru H \$ 464,100

I. Engineering	15,000
J. Contingency @ 5 percent	23,200

Total Estimated Capital Cost \$ 502,300

Capital Cost/ounce Au = \$70.75

Operating Cost Summary:

	Per ton	Total
Mining	\$ 1.00	\$ 225,000
Agglomeration	0.50	112,500
Stacking	0.40	90,000
Reagents	2.00	450,000
Personnel (Zinc plant)	2.25	506,250
Assaying & refining	0.20	45,000
Fuel & electrical power	0.35	78,750
	<u>\$ 6.70</u>	<u>\$ 1,507,500</u>

Operating Cost/ounce = \$212.30

Total cost (operating + capital)/ounce = \$283.05

Cash Flow Summary:

Gross Revenue	\$ 2,840,000
Capital Cost	- 502,300
Operating Cost	- 1,507,500
"Net"	<u>\$ 830,200</u>

Sunk Costs (as of 2-28-87) 670,000

Net Project Profit \$ 160,200

A quick evaluation of possible high grade from near surface and in the east end of the pit, indicates approximately 125,000 tons at 0.087 oz/ton gold, available at a stripping ratio of about 3.5:1. These numbers are rough and I will refine them over the weekend. These numbers assume that processing tails will cover the capital and sunk costs.

Base data: 125,000 tons of rock
0.087 oz/ton gold
55 percent recovery
6000 recoverable ounces

Gross Revenue: 6000 x \$400 = \$ 2,400,000

Mining @ \$1.40/ton	- 800,000
Crushing @ \$2.50/ton	- 320,000
Agglomeration, Stacking & Leaching	- 725,000
"Net"	<u>\$ 555,000</u>

Total estimated possible "Net Profit" on project \$ 715,000.

Note: I have to go to Tucson this evening, and rather than drive back in the morning, will come up Saturday and work on refining these numbers. Will send telex Sunday. Telephone number in Tucson is (602) 748-7999 should you wish to call on Friday.

Regards,

Joe.

B>

MEMO

To: A. F. Budge

From: A. J. Fernandez

Date: June 17, 1987

Subject: Vulture

Attached is the updated estimate you requested. The column labeled "HIGH GRADE (\$450)" represents the scenario processing the tailings and the high grade pit ore assuming a \$450 gold price. The next column represents an expansion involving the remaining low grade pit ore assuming a \$500 gold price in the future. Hence, the project total would be the sum of the two columns for a net project profit of \$1,814,000 on production of 22,000 ounces.

Frank called while drafting this memo. His estimate of a 75-25 split at 48 mesh was based on the screen analysis of the Qpi sample used in the first column tests. This indicates that the crushing characteristics of the ore may vary considerably. Note that this is only the Qpi material. Frank is checking the screen analyses of the footwall and hangingwall material at my request. The agitated leach circuit may not yet be dead.

VULTURE MINE OPTIONS

	HIGH GRADE (\$450)	EXPANSION (\$500)
RESERVES-Rock (tons)	127,000	318,000
Grade (OPT)	0.086	0.052
Waste:Ore	3.6:1	2.6:1
Tails (tons)	225,000	
Grade (OPT)	0.045	
ORE TREATMENT RATE	1000 TPD	1000 TPD
PROJECT LIFE	18 months	12 MONTHS
RECOVERY-Rock	55%	55%
Tails	70%	
Total ounces	13,000	9,000
GROSS REVENUES @\$450 per ounce	\$ 5,850,000	\$4,500,000
CAPITAL-Total	650,000	175,000
OPERATING		
Mining (Rock)	\$ 875,000	\$ 1,700,000
Mining (Tailings)	225,000	
Treating	2,000,000	1,800,000
Total	3,100,000	3,500,000
Per ounce	238.50	389
CASH FLOW SUMMARY		
Revenues	\$ 5,850,000	\$4,500,000
-Operating	3,100,000	3,500,000
-Royalties + Bonus	224,000	189,000
Operating Profit	2,450,000	811,000
-Capital Recovery	650,000	175,000
-Sunk Costs	622,000	
NET PROFIT	1,178,000	636,000



MILLSAPS MINERAL SERVICE, INC.

August 7, 1987

Ms. Carole O'Brien, Manager
A.F. Budge Mining Ltd.
Suite 111 B East
7340 Shoeman Lane
Scottsdale, Arizona 85251

Dear Carole:

Welcome back. I am certain that the vacation was a great success. We all missed you.

Now that the economics on the Vulture dictates an agglomerated heap leach circuit it only remains to decide whether to go with a carbon adsorption or a zinc precipitation recovery system. They both have some advantages and disadvantages so that it really comes down to personal choice. Capital cost wise it is a stand off.

The zinc dust precipitation (Merrill Crowe) system requires less space in the secure area than does the carbon system thereby reducing building cost. The security is better with zinc dust than carbon. There is less metal tied up in inventory. The zinc system allows reduced solution flows with no bad effects, however a zinc precipitation circuit is designed to a maximum flow which should not be exceeded. The zinc precipitation system is sensitive to variation in preg solution grades as the demand for zinc varies with the metal content. Too little zinc and the recovery drops, too much makes for low grade precip and difficult melting. The zinc dust precipitation requires a clear solution, with all plus 5 micron particles being removed.

The carbon system can be operated with dirty solutions, even though it isn't desirable. The carbon system is not sensitive to preg solution grade. The feed flow rate is very critical. The system is designed for a certain flow, and any major deviation from that rate will cause problems. Too low a flow rate will allow channeling, and by passing. Also if the solution is slightly dirty the first carbon column becomes a filter or becomes blocked by the dirt. Too high a flow rate will cause a loss of carbon by over expansion of the bed. By changing the size of carbon from 12 x 30 mesh to

6 x 16 mesh the flow rate can be increased from 133 gpm to 200 gpm without changing anything else. There is a large inventory of carbon in use, and consequentially there is a large metal inventory in circuit. Security is more of a problem with a carbon circuit. It is more difficult to make a carbon circuit as portable as a Merrill Crowe system

All things considered I would go with zinc dust precipitation because of greater security, and less metal tied up in inventory.

Regardless of the system chosen something will have to be about the mercury. Generally it is precipitated with the gold, either with zinc dust or with electrowinning from the carbon circuit. The precip. is retorted and then melted. The US Bureau of Mines have a process by which the mercury is removed ahead of precipitation. Calcium Sulfide is added to precipitate the mercury as HgS. This will have to be either filtered off, or allowed to settle. The choice of methods depend upon permitting. I talked with Joe about this.

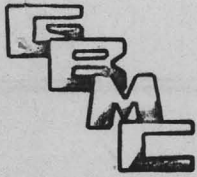
Thinking about the UVX I wonder if it doesn't make more economic sense to ship to a smelter, getting paid for flux where possible and having the rest just go as mine run. I suggested to Joe that he start looking into getting a contract proposal from one or more of the smelters. If this doesn't seem wise we can design a small plant to recover the gold.

Again we are glad you are back. I will be out of town on the 12th, but will call you when I get back into town.

As Ever,



Frank.W. Millsaps



JAW CRUSHERS

- 1 - 8" x 8" Universal
- 1 - 8" x 12" Wheeling PB, w/o Power
- 2 - 8" x 15" Pacific
- 1 - 8" x 18" Universal
- 1 - 8" x 24" Kue Ken, w/New Dies
- 1 - 10" x 16" KVS
- 1 - 10" x 20" Cedar Rapids, w/40 HP
- 1 - 10" x 24" Austin Western
- 1 - 10" x 36" BLH
- 1 - 10" x 36" TelSmith, w/40 HP
- 1 - 12" x 16" Cedar Rapids, Twin
- 1 - 12" x 18" Universal
- 1 - 14" x 24" Pacific
- 1 - 15" x 24" Austin Western, w/30 HP plus
24" x 66" Vibrating Grizzly
- 1 - 20" x 36" Universal, w/o Motor
- 1 - 24" x 36" Missouri Rogers, w/100 HP
- 2 - 30" x 42" Traylor, Blake-Type
- 1 - 36" x 48" Birdsboro, Type C
- 1 - 48" x 60" Allis-Chalmers, 4 pc. Frame, w/250 HP
- 1 - 48" x 60" Traylor, w/250 HP

ROLL CRUSHERS

- 1 - 8" x 16" Double Roll
- 1 - 24" x 24" Williams Single Roll, w/15 HP
- 1 - 30" x 14" Davis, w/Motor and Frame
- 1 - 30" x 16" Allis-Chalmers Double Roll
- 2 - 30" x 18" Cedar Rapids Double Roll
- 1 - 30" x 18" Universal Double Roll
- 1 - 30" x 22" Cedar Rapids, w/Motor and Frame
- 1 - 36" x 36" Jeffrey Single Roll
- 1 - 42" x 24" Universal, w/Tire Drive, w/o Motor
- 1 - 48" x 24" McClanahan "Rockmaster", w/o Motor

HAMMER MILLS & IMPACTORS

- 1 - Pennsylvania C-4-30 Hammer Mill, w/75 HP
- 2 - Pennsylvania C-100-42 Hammer Mills, w/75 HP
- 1 - 30-42 Cedar Rapids, w/two 75 HP Motors
- 1 - 42" x 48" KVS, Type E
- 1 - 24" x 24" Hammer Mill, w/30 HP
- 1 - 4TH Mikro-Pulverizer, 20 HP
- 1 - 30" x 36" Jeffery, Mdle A2, w/100 HP
- 1 - "Knittel" Knife Blade Fine Grinding, w/two
15 HP Motors
- 1 - Cedar Rapids 4033, w/200 HP
- 2 - Svedala-Arbra Hammer Hog, w/1000 HP

CONE CRUSHERS

- 2 - 18" TelSmith Intercones
- 1 - 2' Std. Symons, w/30 HP
- 1 - 28" TelSmith Intercone
- 1 - 3' Std. Symons
- 1 - 36" TelSmith Fine Cone, w/100 HP
- 2 - 4' SH Symons, Reconditioned
- 1 - 4½' Std. Symons, Trailer Mounted
- 2 - 4½' Std. Symons
- 1 - 5½' Std. Symons, Reconditioned
- 2 - 5½' Std. Symons, 300 HP
- 1 - 5½' SH Symons, Reconditioned
- 1 - 5½' SH Symons, 250 HP
- 1 - 7' Std. Symons, Reconditioned
- 1 - 322 Allis-Chalmers Hydrocone

SCREENS

- 1 - 18" Sweco, w/1 Deck & Top
- 1 - 24" Sweco, 1 Deck, 316 SS
- 1 - 24" x 36" Derrick 1 Deck, Hi Speed Vibrating
- 1 - 24" x 60" Derrick 1 Deck, Hi Speed Vibrating
- 1 - 30" Sweco SS, 2 Deck
- 72 - 24" x 48" Dorr-Oliver "Rapifine" DSM
- 1 - 36" x 96" Derrick 1 Deck, Mdle 36-K-460
- 6 - 3' x 5' Tyler Hammer
- 1 - 3' x 5' Link Belt, 2 Deck, w/3 HP
- 5 - 3' x 8' Allis-Chalmers, 2 Deck Hanging Type
- 1 - 3' x 8' Hewitt-Robins, Single Deck
- 1 - 3' x 8' Hewitt-Robins, 2 Deck
- 1 - 3' x 8' Link Belt, 2 Deck
- 1 - 3' x 8' Symons, 2 Deck
- 1 - 48" Sweco SS, 3 Deck
- 1 - 4' x 6' SECO, Mdle S-36 Type C, New
- 1 - 4' x 8' Allis-Chalmers, Lo-Head, Single Deck
- 1 - 4' x 8' Allis-Chalmers, Lo-Head, Double Deck,
horizontal base mounted
- 1 - 4' x 8' Pioneer, 2 Deck Heavy Duty
- 1 - 4' x 8' Overstrum, 3 Deck
- 1 - 4' x 10' Symons, 2 Deck, w/Motor
- 1 - 4' x 10' Deister, Mdle USL 2 Deck, 10 HP
- 1 - 4' x 12' Cedar Rapids, 2 Deck w/Power
- 1 - 5' x 10' Kolman Vibrating Grizzly, less Motors
- 1 - 5' x 12' Tyler Ty-Rock 2 Deck, Mdle 600
- 1 - 5' x 14' Diester
- 1 - 5' x 14' Horizontal Screen, Single Deck, w/30 HP
- 1 - 5' x 16' Tabor Horiz. Screen, 1 Deck, w/Motor
- 4 - 6' x 12' Tyler Tyrock F-900, 25 HP
- 1 - 6' x 12' Allis-Chalmers 2 Deck, 20 HP
- 1 - 6' x 16' Allis-Chalmers 2 Deck, w/Motor
- 1 - Derrick Mdle K-36 Vibrating Head (only)
- 4 - Deister Mdle 88 Diagonal Deck

**Need a special size of equipment?
Give us a call!**

CONVEYORS

- 2 - 18" x 30' Channel Frame, w/Power
- 5 - 18" x 40' Channel Frame, w/Motor
- 1 - 18" x 40' Channel Frame
- 1 - 24" x 25' Channel Frame
- 1 - 24" x 54' Lattice Frame, w/Drive
- 1 - 24" x 100' Lattice Frame
- 1 - 30" x 100' Truss Frame
- 1 - 36" x 25' Channel Frame
- 1 - 30" x 43' Portable Screening Plant

BALL MILLS

- 1 - 3' x 33" Marcy, 10 HP, Steel Frame Mtd.
- 1 - 3' x 4' Denver, 10 HP, Steel Frame Mtd.
- 1 - 38" x 25" Galigher Lab Mill
- 1 - 42" x 43" Shop Made, 20 HP
- 1 - 4' x 3' Joshua Hendly, w/Motor
- 1 - 4' x 6' Denver, 50 HP
- 1 - 5' x 8' Denver, w/100 HP
- 1 - 6' x 24" Hardinge Concial, w/Power
- 2 - 6' x 48" Hardinge, w/o Motor
- 1 - 6' x 8' Allis-Chalmers, w/200 HP
- 1 - 64½" Marcy, w/100 HP, Mtd. on Steel Skid
- 2 - 7' x 10' Traylor, w/Motor
- 2 - 7' x 10' Traylor, w/250 HP
- 3 - 7' x 20' Hardinge Pebble Mills
- 3 - 7' x 20' Allis-Chalmers Pebble Mills, w/150 HP
- 1 - 7' x 22' Allis-Chalmers Pebble Mill, w/200 HP
- 1 - 7' x 22' Allis-Chalmers, w/400 HP
- 2 - 8' x 48" Hardinge Pebble Mills, 100 HP
- 1 - 8' x 60" Hardinge, 250 HP
- 1 - 8' x 9' Marcy, w/400 HP
- 1 - 8' x 9' Traylor
- 1 - 8' x 10' Allis-Chalmers, w/350 HP
- 1 - 9' x 12' Allis-Chalmers, 500 HP
- 1 - 9½' x 11' Nordberg, w/450 HP
- 1 - 10' x 48' Hardinge, w/350 HP
- 1 - 10' x 15'6" F.L. Smidth, 750 HP
- 5 - 10'6" x 13' Allis-Chalmers, 800 HP
- 2 - 10'6" x 17'3" Allis-Chalmers, 1000 HP
- 6 - 10'8" x 15' Marcy, w/1000 HP
- 1 - 11' x 18' KVS Finish Mill, 1100 HP
- 1 - 11½' x 16' Allis-Chalmers, w/1000 HP

ROD MILLS

- 1 - 4' x 6' Denver Rod Mill, w/40 HP Motor
- 1 - 6' x 12' Marcy, w/150 HP Motor
- 1 - 7' x 12' Marcy, w/250 HP Motor
- 1 - 8' x 12' Marcy, w/500 HP
- 1 - 9' x 12' Allis-Chalmers, w/450 HP Motor
- 1 - 9' x 12' Marcy, 500 HP
- 1 - 9' x 14' Allis-Chalmers, 500 HP
- 5 - 10' x 16' Allis-Chalmers, 800 HP
- 1 - 10½' x 14' C.A.C., w/700 HP
- 3 - 10'8" x 15' Marcy, 1000 HP

FEEDERS

- 1 - Eriez Magnetic Reagent Feeder
- 2 - Clarkson Dry Reagent Feeders
- 3 - 15" x 5' Barber-Greene Apron
- 1 - 16" x 30" Eriez Vibrating
- 1 - 18" x 24" Pioneer Reciprocating Feeder
- 1 - 24" x 108" Syntron Vibrating
- 4 - 30" x 5' Link Belt Reciprocating
- 2 - 30" x 7' HD Nico Apron, w/Power
- 1 - 36" x 14' Pioneer Apron, w/Vari-Drive
- 1 - 36" x 23' Drag Chain Feeder
- 1 - 42" x 16' Apron Feeder, w/Hopper
- 1 - 42" x 35' Link Belt, Belt Feeder
- 1 - 60" x 28' Nico Apron, w/Power
- 1 - 6' x 12' Hewitt-Robins Vibrating Grizzly
- 1 - 72" x 58' Nico Apron, w/Power

FLOTATION MACHINES

- 11 - Denver #5, w/Power
- 3 - Denver #7, w/Power
- 1 - Denver #18, Sub -A, 4 Cell
- 2 - Denver #18, Sub-A, 6 Cell, w/o Motor
- 1 - Denver #18, 6 Cell Bank, w/Motor
- 2 - Denver #21, 6 Cell, w/Motor
- 1 - Denver #21, Sub-A, 6 Cell
- 2 - Denver #21, Sub-A, 10 Cell
- 2 - Denver #24, 10 Cell, w/Motor
- 1 - Denver #24, 12 Cell, w/Motor
- 1 - Galigher #36, 2 Cell, Complete
- 1 - Galigher #36, 7 Cell, Complete
- 1 - Galigher #36, 8 Cell, Complete
- 2 - Galigher #48, 2 Cell Bank, Complete
- 6 - Galigher #48, 6 Cell, Rubber Liners
- 4 - Galigher #48, Banks of 6, Rubber Liners
- 4 - Wemco #66, 8 Cell, w/Motor

CYCLONES

- 10 - Krebs D-6 B
- 10 - Krebs D-10B
- 4 - Krebs D-15B
- 36 - Krebs D-20B
- 4 - Krebs D-26B
- 2 - Wemclones, Series 2000
- 3 - 24" x 20° Townley, Mdle D0480

THICKENERS

- 6 - 18' x 12' Eimco, Type BX
- 1 - 24' x 9' Eimco Sidewall, w/SS Rakes
- 1 - 25' x 9' Eimco Sidewall, w/SS Rakes
- 1 - 28' x 12' Denver w/Wood Tank & Mechanism
- 1 - 28' x 12' Denver, Mechanism Only
- 1 - 48' x 10' Hardinge, Less Tank
- 1 - 240' x 10' Eimco, Type CXX, c/w Power
- 3 - 350' dia. x 8'9" Eimco, w/SS Rakes, New- never installed

PUMPS: Centrifugal

- 1 - 1½" Ingersoll-Rand 1½ GT, w/50 HP
- 1 - 1½ MRV Ingersoll-Rand, w/25 HP Motor
- 1 - 2" Ingersoll-Rand 2GT, w/100 HP
- 2 - 3 x 2 Warman, Type HH, w/o Motor
- 2 - 3" x 4" Ingersoll-Rand, 500 GPM @ 218', 50 HP
- 3 - 5" Ingersoll-Rand 5 GT, 1200 GPM @ 420', 200 HP
- 1 - 6"x6"x10" Union, 1750 GPM @ 231 TDH, 150 HP
- 1 - 12"x10"x14" A.C., 4500 GPM @ 180 TDH, 300 HP
- 1 - Ingersoll-Rand 5 GR, Less Motor, New

PUMPS: Vacuum

- 3 - Nash Mdle A HC-50, 3 HP
- 1 - 824 x 4500 Sutorbilt
- 1 - 1437 x V3200 Sutorbilt
- 2 - Roots, Mdle 1030VJ, 3700 CFM @ 10" Hg

PUMPS: Sump

- 3 - 1½" Denver, 3 HP
- 2 - 2" Denver, w/o Motor
- 1 - 3½" x 48" Galigher, w/60 HP
- 5 - 3½" x 72" Galigher, 20 HP
- 1 - 4" x 48" Galigher, 30 HP
- 1 - 4" x 48" Galigher, 50 HP
- 1 - 6" x 60" Galigher, w/o Motor

PUMPS: Submersible

- 1 - Tate 1250-2, 115 Volt
- 7 - Flygt, Mdle BS-2050, 1.1 HP.
- 3 - Flygt CS3100, 3", 8 HP
- 3 - Flygt, Mdle DS-3060, 11 HP
- 1 - Grindex, Type 230275, 12 HP
- 2 - Gorman-Rupp, 4", 25 HP
- 3 - Grindex, Type 112560, 33½ HP
- 1 - Gorman-Rupp, Mdle 54B1, 50 HP
- 1 - Gorman-Rupp, 95 HP
- 9 - Flygt, Mdle B-2125P
- 1 - Flygt, Mdle B-2400, 140 HP
- 2 - Gorman-Rupp, Mdle S4C1
- 2 - Chicago Pneumatic, pneumatic
- 1 - Thor, Pneumatic

PUMPS: Piston & Diaphragm

- 8 - 1" x 1½" Sandpiper Air, w/New Spares
- 2 - 1½" Dorr ODS Air, w/New Spares
- 1 - 2" Dorr ODS Air, w/New Spares
- 5 - Denver 8" Duplex
- 1 - Wilden M-8, Air
- 1 - Wilden M-15, Air
- 1 - SA-1½ Sandpiper
- 1 - SA-2A Sandpiper
- 2 - 2CL-O.D.S. Pumps
- 1 - S2S Denver 2" Duplex, w/Motor
- 2 - CAT Triplex, 25.9 GPM @ 700 PSI Max.,
7½ HP

PUMPS: Slurry

- 1 - 2½" x 2' Denver SRL, Frame 3
- 1 - 3" x 3" Gyone, Mdle SP, w/3 HP Motor
- 3 - 5" x 4" Denver SRL, 25 HP
- 1 - 5" x 4" Denver SRL, Frame 3
- 1 - 5" x 4" Linatex
- 8 - 5" x 4" Denver SRL-C, w/power
- 1 - 5" x 4" Ash, w/o Motor, New
- 3 - 5" x 5" Denver SRL, Frame 3
- 1 - 6" x 4" Warman Type AM, w/15 HP
- 1 - 6" x 6" Allis-Chalmers SRL
- 1 - 6" x 8" Gyone Mdle SP, w/40 HP
- 1 - 6" x 8" Allis-Chalmers SRL, 50 HP
- 1 - 6" x 8" Gyone Mdle SP, w/100 HP
- 1 - 8" x 6" Denver SRL-C
- 1 - 8" x 6" Denver SRL, Frame 4
- 1 - 8" x 6" Warman, Type AM, w/40 HP
- 1 - 8" x 6" Wilfley, Mdle 6K
- 6 - 8" x 10" Galigher, 75 HP
- 1 - 8" x 10" Galigher Vac-Seal, 2000 GPM @
51 TPH
- 2 - 10" x 8" Ash SRL, w/o Motors
- 9 - 10" x 8" Denver SRL-C, w/Power
- 1 - 10" x 8" Warman Type M, w/125 HP
- 1 - 12" x 10" Allis-Chalmers, w/300 HP
- 1 - 12" x 12" Linatex
- 1 - 12" x 14" ASH-CD
- 1 - 12" x 14" Denver SRL Frame
- 4 - 14" x 12" Diamond Alloy, 300 HP
- 1 - 14" x 12" Denver SRL, Frame 5

FILTERS

- 1 - 2' x 8' Eimco Horizontal Belt Extractor
- 1 - 2' x 15' Straight Line Horiz. Belt Filter,
3 HP
- 1 - 2' x 20' Straight Line Horiz. Belt Filter,
3 HP
- 1 - 3' x 3' Amateck Drum Filter, 316 SS
- 1 - 4' dia. x 1 Disc Eimco, c/w Vacuum Package
- 1 - 4' x 3 Disc Eimco
- 1 - 4' wide x 20' Straight Line Belt Filter, w/
100 HP Vacuum Package
- 3 - 4' x 12' Eimco Horizontal Belt, Complete
- 1 - 6' x 2 Disc Denver, w/o Motor or Vacuum
- 1 - 6' x 3 Disc Denver
- 1 - 6' x 3 Oliver
- 1 - 6' x 6' Dorr-Oliver Drum, Knife Discharge,
25 HP Vacuum Pump
- 1 - 6' x 8' Eimco, SS, Precoat Drum, Complete
- 1 - 80" x 26' Denver Horizontal Belt, Complete
- 6 - 7' x 6 Disc Eimco, w/Vari-Speed Drive
- 1 - 8' x 8' Eimco Drum, w/Vacuum
- 3 - 8' x 12' Eimco Drum, w/Vacuum
- 2 - 8' x 12' Dorr-Oliver Drum, w/Vacuum
- 1 - 10' dia. x 6 Disc Agidisc, w/5 HP

PLATE & FRAME FILTER PRESSES

- 2 - 32" x 32" Sperry Cast Iron Filter Presses
- 7 - 36" x 36" Shriver Cast Iron, Hydraulic Closure

AGITATORS & MIXER DRIVES

- 14 - Denver #10 Agitator Drives
- 4 - Denver #15 Mixer Drive, w/Motor
- 1 - Philadelphia Agitator Mechanism, 75 HP
- 1 - Lightnin Mixer, 3 HP, 37 RPM Output
- 2 - Lightnin Mixer, 5 HP, 68 RPM Output
- 9 - Lightnin Mixer, 15 HP, 68 RPM Output
- 2 - Lightnin Mixer, 25 HP, 68 RPM Output
- 1 - Lightnin Mixer, 30 HP, 37 RPM Output
- 6 - Lightnin Mixer, 30 HP, 69 RPM Output
- 1 - Lightnin Mixer, 40 HP, 68 RPM Output
- 1 - Lightnin Mixer, 60 HP, 84 RPM Output
- 1 - Lightnin Agitator Mechanism, Mdle 5C18, 100 HP

JIGS

- 1 - 8" x 12" Denver Duplex, w/Power
- 1 - 12" x 18" Denver Duplex, w/Power
- 1 - 24" x 36" Bandaleri Duplex, w/Power
- 1 - 36" x 36" Bandaleri, 6 Cell Banks
- 2 - 42" x 42" Bandaleri, 4 Cell Banks

DUST COLLECTORS

- 1 - Ameri-Jet #15-24-900, Dry Type
- 1 - Ducon Scrubber #60, UW4, SS
- 1 - Ducon Scrubber #84, UW4
- 2 - Ducon Scrubber #84, UW4, SS
- 2 - 6,000 CFM AAF, w/7½ HP Blower
- 1 - 14,000 CFM AAF, w/30 HP Blower
- 1 - 42,000 CFM Pulse Jet, w/150 HP Blower
- 1 - 48,000 CFM Pulse Jet, w/200 HP Blower
- 1 - Rexnord Gravel Bed Filter, Nominal, 75,000 Cu. Ft., 6' x 10' dia. Modules

AIR SEPARATORS

- 2 - 60" C-E Raymond, Double Wizzer, w/50 HP Fan
- 1 - 5' Gayco, Complete with 5 HP Motor
- 1 - 14' Raymond, w/50 HP
- 1 - 14' Sturtevant, w/60 HP
- 1 - 16' Sturtevant, w/125 HP
- 1 - 24' Hardinge, New

DRYERS

- 1 - 4' x 28' Lockheed Haggerty, SS
- 1 - 5' x 24' Cedar Rapids
- 1 - 5' x 26' Heatherington & Berner
- 1 - 6'4" x 24' Link Belt, Roto Louvre
- 1 - 7' x 45' Hardinge, Complete with Drive
- 1 - 3' x 30' Hardinge, w/75 HP Drive
- 1 - 8' x 50' Hardinge, w/75 HP Drive, Very Good
- 2 - 8' x 60' Stearns-Rogers, w/75 HP Drive
- 1 - 8' x 77'6" Allis-Chalmers, w/Burner
- 1 - Joy Holo Flite, Mdle D-1215-5, New

CONDITIONERS

- 1 - 5' x 6' Tank, w/Agitator, 5 HP
- 2 - 7' x 7' Conditioners, w/Wood Tanks
- 1 - 8' x 8' Conditioners, w/Tank & 5 HP Drive, S.S.

CLASSIFIERS

- 1 - 24" x 25' Eagle Spiral Classifier, w/Motor
- 1 - 30" x 18'11" Denver
- 2 - 36" x 19'3" Wemco, RHTP
- 1 - 40" x 15' Dorr, Rake Type, w/5 HP
- 1 - 60" x 31'9" Wemco S-H
- 2 - 66" x 35' Akins, Mdle SDPH
- 3 - 78" x 35'4" Wemco Spiral
- 1 - Eagle 24-20, w/Flaired Tank

LAB EQUIPMENT

- 1 - #8 Denver Flote Cell
- 1 - 8" Bico Lab Pulverizer, w/2 HP
- 1 - 8" Braun Pulverizer, 3 HP
- 1 - 2" x 3" Canadian Made Lab Jaw
- 1 - 4" x 6" Braun Lab Jaw
- 1 - Complete Fire Assay Lab w/Bico UA Pulverizer, 3" x 4" Jaw, Cress Electric Furnace, Splitter
- 1 - Hevi Duty Electric Lab Furnace
- 1 - 18" x 12" Sample Oven
- 1 - Darda Rock Splitter, Size 3
- 1 - 300 Lb. Capacity Fairbanks Morse Scale
- 1 - 4" x 8" Kent 3-Roll Mill, On Base
- 2 - 18" Galigher Samplers, Mdle P
- 1 - 36" Galigher Sampler, Mdle P
- 1 - 80" Galigher Travel Sampler
- 5 - 60" dia. x 8' deep Eimco Lab Thickeners, Poly Tanks, 1/3 HP Drives

COMPLETE PLANTS

- 1 - 75 TPD Modulized Flotation Plant
- 1 - 200 TPD Flotation Plant
- 1 - 250 TPD Flotation Plant Complete, Used within last year, can be moved and put back to work.
- 1 - Universal 880 Sr. Gravel Master Portable Duplex Crushing & Screening Plant

HOISTS: Tugger (Air Operated)

- 1 - Ingersoll-Rand, Mdle D6U
- 10 - Ingersoll-Rand Mdle EU
- 1 - Ingersoll-Rand, Mdle EUA
- 3 - Ingersoll-Rand, Mdle HU
- 1 - Ingersoll-Rand, Mdle HU-40
- 1 - Ingersoll-Rand, Mdle K6UL
- 1 - Ingersoll-Rand, Mdle UW5030A
- 1 - Gardner-Denver, Mdle HB
- 4 - Atlas Copco, Mdle MHG-61
- 1 - Atlas Copco, Mdle MHG-64
- 5 - Atlas Copco, Mdle MHK81-A2
- 2 - Chicago Pneumatic, Mdle 10SP-2000
- 1 - Ingersoll-Rand Air Winch, Mdle E-2, 2000# Cap.
- 20 - Ingersoll-Rand Single Drum

HOISTS: Single Drum

- 1 - 2' dia. x 21" face Sullivan Escape Hoise, 40 HP, 1000# @ 1100 FPM
- 1 - 4½' dia. x 42" Vulcan, 125 HP, 8000# @ 430 FPM
- 4 - 4'7" dia. x 5'10" New Era, 20 HP, 24,000 # at 20 FPM
- 1 - 60" dia. x 45" face C.D. Card, Hyd. Escape Hoist
- 1 - 5' dia. x 60" Lidgerwood, 250 HP, 13,875# @ 535 FPM
- 1 - 5' dia. x 65" Ottumwa, 250 HP, 14,000# @ 530 FPM
- 1 - 5' dia. x 84" Nordberg, 200 HP, 13,000# @ 454 FPM
- 1 - 6' dia. x 60" Nordberg, 400 HP, 12,600# @ 944 FPM
- 1 - 6' dia. x 74" Lakeshore, 250 HP, 13,350# @ 558 FPM
- 1 - 7' dia. x 48" Vulcan, 300 HP, 13,600# @ 655 FPM
- 1 - 7' dia. x 84" Vulcan, 400 HP, 22,000# @ 1000 FPM
- 1 - 8' dia. x 100" Sullivan, 450 HP, 16,280# @ 1821 FPM
- 1 - 8' dia. x 101" Ottumwa, 400 HP, 15,000# @ 800 FPM
- 1 - 9' dia. Step Drum Vulcan, 800 HP, 52,000# @ 600 FPM
- 1 - 10' dia. x 70" Nordberg, 600 HP DC, 97,000# @ 400 FPM
- 1 - 10' dia. x 84" A-C, 300 HP, 22,800# @ 1150 FPM
- 1 - 12' dia. x 120" Vulcan, 1600 HP, 28,200# @ 1700 FPM
- 4 - Beebe Stage Hoists, 7½ HP, 12,000# @ 15 FPM
- 4 - New Era Stage Hoists, 5,000# @ 8 & 16 FPM
- 1 - 120 Cu. Ft. Sala 7 Ton Skip Cage, w/15 Man Cage

**Specializing in Used Mining,
Milling and Processing
Equipment**

HOISTS: Double Drum

- 1 - 3' dia. x 24" CIR, 100 HP, 6000# @ 450 FPM
- 1 - 3½' dia. x 30" CIR, 100 HP, 8000# @ 650 FPM
- 1 - 4' dia. x 36" CIR, 125 HP, 10,000# @ 650 FPM
- 1 - 7' dia. x 48" Wilde, 350 HP, 17,000# @ 650 FPM
- 1 - 7½' dia. x 38" Vulcan, 600 HP, 14,000# @ 1200 FPM
- 1 - 7'6" dia. x 4'6" Lakeshore, 1,000 HP, 24,000# @ 1500 RPM
- 1 - 8' dia. x 60" CIR, 800 HP, 21,000# @ 1700 FPM
- 1 - 8½' dia. x 42" M.B. Wilde, 300 HP-AC, 30,000# @ 560 FPM
- 1 - 8'10" x 6'4" Nordberg, 1250 HP, 45,600# @ 1800 FPM
- 1 - 10' dia. x 62" face CIR, 1000 HP, 28,000# @ 1200 FPM
- 1 - 12' dia. x 5'9" face FH&B, 2500 HP, 75,000# @ 2,034 FPM

COMPRESSORS: Portable

- 1 - IR 50B , 200 CFM, 50 HP V-Belt Drive
- 1 - IR 160 Gyro-Flo
- 3 - Gardner-Denver STQDG, 750 CFM
- 1 - IR 600 Spiro Flow, 600 CFM, GM Diesel
- 1 - IR 900 Spiro Flow, 900 CFM, GM Diesel
- 1 - IR DXL 900, w/GM Diesel
- 1 - GD Roto-Screw, 600 CFM, Detroit 671 Diesel
- 1 - GD Roto-Screw, 900 CFM, Cat 343 Diesel
- 1 - DXL 1100S

COMPRESSORS: Stationary

- 1 - GD, 375 CFM, 75 HP Motor
- 1 - IR Mdle 75-C, 385 CFM, 75 HP, 440V
- 1 - IR Mdle XLE, 900 CFM, w/ 150 HP
- 2 - IR Mdle 1000H, 1000 CFM, 250 HP
- 2 - Siemens Elmo Low Pressure, 1360 CFM, 75 HP
- 1 - CIR, Mdle 125, Type 40, 125 HP
- 1 - Joy Twistair, Mdle TA015TAN2A, 15 HP
- 4 - GD Mdle B-1265-CA, 60 HP 460/220V Electric
- 1 - GD Mdle ECFQJBD, 50 HP
- 1 - GD Mdle R-15-PM, 60 HP
- 1 - Westinghouse 3-Stage, Mdle 5051, 75 HP

SLUSHER BUCKETS

- 1 - Amsco 30" Slusher Bucket
- 1 - Pacific 36" Slusher Bucket
- 2 - Card 44" Slusher Buckets
- 1 - Card 50" Slusher Bucket
- 2 - Card 54" Slusher Buckets
- 11 - Joy Amsco 54" Slusher Buckets

GENERATORS: Diesel

- 5 - 20 KW GM 271
- 3 - 30 KW GM 271
- 1 - 125 KW Cumming
- 1 - 180 KW GM
- 1 - 250 KW Cat, w/Trailer
- 1 - 300 KW Cat 3408TA, w/Trailer
- 1 - 350 KW GMC Diesel/Electric, Switch Gear, in Van

SLUSHERS: Air (2-Drum)

- 6 - Ingersoll-Rand
- 1 - Ingersoll-Rand , Mdle K5ML-2G
- 1 - Joy, Mdle S211
- 1 - Gardner-Denver, Mdle HKD
- 1 - Gardner-Denver, Mdle HKE
- 3 - Canadian Ingersoll-Rand, Mdle HNN1J

SLUSHERS: Electric (2-Drum)

- 10 - Joy Mdle A2F-211-MS5, 20 HP
- 15 - Joy Mdle FF211, 20 HP
- 1 - Joy Mdle B2F211, 30 HP
- 3 - Joy Mdle C2F -211A, 50 HP
- 12 - Pickrose Mdle S2, 15 HP
- 1 - Sullivan Mdle HDE35N212, 35 HP
- 1 - Sullivan Mdle HDE38N212, 50 HP

SLUSHERS: Electric (3-Drum)

- 1 - Ingersoll-Rand, Mdle 30MNM-2G, 30 HP
- 1 - Ingersoll-Rand, Mdle 30MNM-3F, 30 HP
- 1 - Joy Mdle CF312, 50 HP
- 1 - Joy Mdle CF-312N, 60 HP

BLOWERS: Fans

- 1 - Joy Axivane Series 1000, One Stage, 30 HP, 230/460 V, Unused
- 3 - Joy Axivane Series 1000, 18-14-3450, 15 HP
- 1 - Joy Axivane Series 1000, 42.25-26.5-1750, 125 HP
- 1 - Joy Axivane Series 1000, 48-26.5-1750
- 1 - Joy Series 1000, 78-26½-1180, 125 HP
- 2 - Joy Series 1000, Explosion Proof, w/40 HP
- 2 - Joy 72-43 HD, 160,000 CFM @ 7.5 HG, 250 HP
- 2 - Joy 24-17-3600, 30 HP
- 1 - Tri-Metal, Mdle 192, 10 HP
- 3 - Hartzel Axial Vane 44-18-DL2, 5 HP
- 1 - Hartzel Axial Vane 56-24-BP2, 20 HP
- 5 - Hartzel Axial Vane 56-29-BR2, 30 HP
- 2 - Hartzel Axial Vane 56-20-BS2, 40 HP
- 1 - Hartzel Axial Vane 36", VB365, 100 HP
- 1 - Aerovent C-365, Series CBD-48, 75 HP, with Belt Drive
- 1 - Westinghouse Double Inlet, 253,000 CFM, 400 HP
- 1 - Buffalo Forge Induces Draft, 1,000,000 CFM, 200 HP

DRILLS

- 7 - Secan S250M Stopers
- 12 - Secan S250M Airlegs
- 11 - Secan S240M Stopers
- 13 - Ingersoll-Rand 300M Stopers
- 3 - Gardner-Denver PR-55 Drifters
- 1 - Gardner-Denver RB83 Stoper
- 9 - Gardner-Denver S53F Jacklegs
- 3 - Gardner-Denver S63F Jacklegs
- 70 - Gardner-Denver 83 Jack Drills
- 40 - Gardner-Denver 83 Airlegs
- 2 - Gardner-Denver 83 Stopers

DIAMOND DRILLS

- 2 - Mdle 34 Longyear Diamond Drills
- 1 - Mdle 38 Longyear, Mtd. on Log Skidder, w/Mast
- 1 - Mdle 44 Longyear Diamond Drill
- 1 - Diamond Drill Contractors, Skid Mtd., Hyd. Power
- 3 - Mdle 65 C.P. Diamond Drills
- 1 - Lot of Drill Bits, Reamer Shells, and Rods

DRILL JUMBOS: Rubber-Tired

- 4 - Atlas Copco, Mdle H210, Single-Boom, Electric Hydraulic, w/Diesel Tram
- 1 - Atlas Copco 4-Boom
- 1 - Atlas Copco 5-Boom
- 2 - Gardner-Denver Fan Drills, 8' Feed, DH123 Drill
- 2 - Gardner-Denver Mark IV, w/PR-123 Drills

MUCKING MACHINES

- 2 - Eimco 12B, 18" ga.
- 3 - Eimco 12B, 24" ga.
- 7 - Eimco 21B, B-Deck, 30" ga.
- 2 - Eimco 21B, C-Deck, 24" ga.
- 1 - Eimco Mdle 21, 18" ga.
- 2 - Eimco Mdle 25, 24" ga.
- 2 - Eimco Mdle 25, 36" ga.
- 1 - Eimco Mdle 634
- 5 - Eimco Mdle 630 Rocker Shovels
- 4 - Conway Mdle 100-2, 42" ga.
- 10 - Atlas Copco LM56HE & HE-2, 30" ga.

RUBBER TIRED EQUIPMENT (Underground)

- 3 - 911 Eimco, LHD
- 1 - 912 Eimco, LHD
- 1 - 913-E Eimco, LHD, 3 Yd.
- 2 - 901 Eimco, Electric LHD, w/Ejector Bucket
- 2 - Wagner EHST-1A, Electric
- 4 - 150-D Toro 2.2 Yd. Scooptram
- 1 - ST2B Wagner Scooptram
- 3 - ST5 Wagner Scooptram
- 2 - Atlas Copco T2GH Auto Loader, Air Powered
- 2 - Young Buggies, Mdle 936
- 2 - 10 Ton Sein Brute Underground Trucks

LOCOMOTIVES: Battery

- 6 - 1½ Ton Mancha, 18"-24" ga.
- 1 - 2 Ton General Electric, 24" ga.
- 1 - 3 Ton Jeffery, 24" ga.
- 1 - 3 Ton Mancha, 18" ga.
- 2 - 3 Ton National Mine, 24" ga.

LOCOMOTIVES: Diesel

- 1 - 4 Ton Mancha, 24" ga.
- 1 - 7 Ton Ruston & Hornsby, 24" ga.
- 2 - 8 Ton Plymouth, HMD, 24" ga.
- 8 - 3½ Ton Mancha, Type AN, 30" ga.
- 2 - 4 Ton Greensburg, 18" ga.
- 3 - 5 Ton Mancha, Type ANX, 24" ga.
- 5 - 8 Ton New River, 42" ga.
- 1 - 8 Ton Goodman, 30" ga.
- 1 - 15 Ton Goodman, #158, 42" ga.

MINE CARS

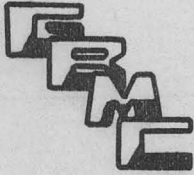
- 3 - 20 Cu. Ft. Rocker-Dump, 18" ga.
- 2 - 47 Cu. Ft. C.S. Card Rocker-Dump, 24" ga.
- 9 - 32 Cu. Ft. Ajax Side-Dump, 18" ga.
- 4 - 60 Cu. Ft. Wabi Granby Type, 30" ga.
- 5 - 127 Cu. Ft. Granby Type, 24" ga.
- 40 - 90 Cu. Ft. Lift-Off Type, 24" ga.
- 26 - 100 Cu. Ft. Dorr-Oliver Long, 30" ga.

DRILL JUMBOS: Rail-Type

- 1 - Gardner-Denver Mini-Bore 2-Boom, 24" ga.
- 1 - Gardner-Denver 3-Boom, 24" ga., w/PR-55 Drifter
- 1 - Gardner-Denver 4-Boom, 30" ga.

LATE ADDITIONS

- 1 - Warwick Tilting Melt Furnace, 4,000 oz. capacity, Complete
- 1 - Durco 4' x 107' S.S. Pressure Leaf Filter, Type HC
- 1 - 10' x 10' Wemco Heavy Media Filter, HMS
- 1 - Eimco 6 x 6 Conditioner Mechanism
- 1 - 28' dia. Denver Thickener, w/Bridge, Less Tank
- 1 - Durco 15-20' Thickener Mechanism, Less Tank
- 6 - 18' x 12' Eimco Type BX Thickeners
- 8 - #10 Denver Conditioner Drives, w/40 HP and 60" Props
- 1 - 10' Dravo Pelletizing Disc
- 36 - 30" dia. x 6' Ding 1-Stage Magnetic Separators
- 48 - 36" dia. x 4' Ding 3-Stage Magnetic Separators
- 1 - Dings Type 303IR 3-Roll Induced Roll Magnetic Separator with Controls
- 3 - Spur Gear Sets for 6' Allis-Chalmers Ball Mills
- 4 - 60" OD, V-Belt Sheaves, 11 Groove, D-Section
- 4 - Electric Motors, 125 hP, 750 RPM, 440V, Slip Ring
- 1 - #6 Wilfley Concentration Table, New Deck
- 40 - Oxy-SR 60B Self Rescuers
- 1 - Heyl & Patterson Rotary Railroad Car Dumper
- 1 - 4' x 20' Cedar Rapids Rotary Dryer, Complete
- 1 - 6'10" x 35' Louisville Rotary Dryer
- 1 - 42 x 42 Pan American Duplex Jig
- 1 - Gardner-Denver 2 Boom Drill Jumbo, Electric/Hydraulic, w/4 PR-5 Drills
- 3 - 1½" x 2" Galigher Pump, Mdle 1.5VRD-100
- 2 - 2" x 2" Galigher Vac-Seal Pumps, w/Motors
- 1 - 8" x 10" Galigher Vac-Seal Pump, 125 HP
- 4 - 12" x 14" Galigher Vac-Seal Pumps, Mdle D-12-VRA-200
- 15 - Derrick Mdle K48-120A-35M Screens, 3 Deck
- 1 - 24" x 20'8" Channel Frame Conveyor
- 1 - 5' x 60' Rotary Kiln
- 1 - 12' 6" x 180' Vulcan Rotary Kiln
- 1 - 13' x 11'6" x 400' Rotary Kiln
- 1 - 13'6" x 12' x 14' F.L. Smidth Rotary Kiln
- 100 - Tons Used 40# Mine Rail
- 1 - 75' All Steel Belted Head Frame
- 1 - 10' x 70' Weightronix Electronic Platform Scale, 60 Ton Capacity
- 1 - 20" x 65' Bucket Elevator, w/20 HP Motor
- 1 - 80 TPH Stark-Aire Fluid Bed Dryer, Complete, Near New



GENE BROWER Machinery Co., Inc.
P.O. BOX 11794 SPOKANE, WA 99211
(509) 535-5332
TELEX 5106012087
FAX (509) 535-5002

BULLETIN 1187
Page 1

The Northwest Mining Association's 93rd Convention is almost upon us - Dec. 3, 4 & 5. While we will not be having a booth this year at the NWMA Trade Show, we invite you to visit our office and equipment yard during your stay in Spokane. We are located at N. 2406 Dollar Rd., about 10 minutes from the Sheraton Hotel. Call (509) 535-5332 for easy directions. We are looking forward to visiting with you!

CONE CRUSHERS

- 2 - 18" Telsmith Intercones
- 1 - 322 Allis-Chalmers Hydrocone
- 1 - 2' Std. Symons, w/30 HP
- 2 - 3' Std. Symons, w/75 HP
- 2 - 4' SH Symons, Reconditioned
- 2 - 4' SH Rexnord
- 1 - 4½' SH Symons, w/150 HP
- 1 - 4½' Std. Symons
- 2 - 5½' Std. Symons, w/300 HP
- 1 - 5½' SH Symons, w/250 HP
- 4 - 7' Std. Symons

JAW CRUSHERS

- 1 - 8" x 8" Universal
- 1 - 8" x 12" Wheeling PB, w/o Power
- 1 - 8" x 15" Pacific
- 1 - 8" x 24" Kue Ken, w/New Dies
- 1 - 10" x 16" Hewitt-Robins, Roller Bearing Jaw, with 20 HP
- 1 - 10" x 20" Cedar Rapids, w/40 HP
- 1 - 10" x 24" Austin Western
- 1 - 10" x 36" BLH
- 1 - 10" x 36" Telsmith, w/40 HP
- 1 - 12" x 16" Cedar Rapids, Twin
- 1 - 12" x 16" Cedar Rapids, Twin
- 1 - 12" x 18" Universal
- 1 - 14" x 24" Pacific
- 1 - 15" x 24" Austin Western, w/30 HP plus 24" x 66" Vibrating Grizzly
- 1 - 15" x 28" Pacific, w/60 HP
- 2 - 24" x 36" Kue Ken, w/50 HP
- 2 - 30" x 42" Traylor, Blake Type
- 1 - 36" x 48" Birdsboro Buch.
- 1 - 42" x 48" Lima Austin Western
- 2 - 48" x 60" Allis-Chalmers, 4 pc. Frame, w/250 HP
- 1 - 48" x 60" Traylor, w/250 HP

ROLL CRUSHERS

- 1 - 8" x 16" Double Roll
- 1 - 20" x 12" Denver Roll
- 1 - 24" x 24" Williams Single Roll, w/15 HP
- 1 - 30" x 14" Davis, w/Motor & Frame
- 1 - 20" x 16" Allis-Chalmers Double Roll
- 1 - 30" x 18" Cedar Rapids Double Roll
- 1 - 30" x 22" Cedar Rapids w/Motor & Frame
- 1 - 36" x 36" Jeffrey Single Roll
- 1 - 42" x 24" Universal, w/ Tire Drive, w/o Motor

HAMMER MILLS & IMPACTORS

- 3 - 24" x 24" Jacobson Hammer Mills, w/o Motor
- 1 - 30" x 36" Jeffery, Modle A2, w/100 HP
- 1 - 42" x 48" KVS, Type E
- 1 - 50" x 40" Dixie Hammer Mill
- 1 - Cedar Rapids 30-42, w/2-75 HP Motors
- 1 - Cedar Rapids 4033, w/ 200 HP
- 1 - "Knittel" Knife Blade Fine Grinding , with 2-15 HP Motors
- 1 - 4th Mikro-Pulverizer, 20 HP
- 1 - Pennsylvania C-4-30 Hammer Mill, w/75 HP
- 1 - Pennsylvania C-100-42 Hammer Mill, w/75 HP

SCREENS

- 1 - 18" Sweco, w/1 Deck & Top
- 1 - 24" x 36" Derrick 1 Deck, Hi Speed Vibrating
- 69 - 24" x 48" Dorr-Oliver Rapifine DSM
- 1 - 24" x 60" Derrick 1 Deck, Hi Speed Vibrating
- 1 - 30" Sweco S.S. 2 Deck
- 1 - 36" x 96" Derrick 1 Deck, Mdle 36-K-460
- 6 - 3' x 5' Tyler Hummer
- 4 - 3' x 5' Tyler Hummer, Single Deck
- 5 - 3' x 8' Allis-Chalmers 2 Deck, Angling Type
- 1 - 3' x 8' Hewitt-Robins, Single Deck
- 1 - 3' x 8' Link Belt, 2 Deck
- 1 - 3' x 8' Symons, 2 Deck
- 4 - 3' x 10' Tyler Hummer Double Deck
- 1 - 48" Sweco S.S., 3 Deck
- 1 - 4' x 6' SECO Mdle S-36, Type C, NEW
- 1 - 4' x 8' Allis-Chalmers, Lo-Head Single Deck
- 1 - 4' x 8' Allis-Chalmers Lo-Head, Double Deck, Horizontal Base Mounted
- 1 - 4' x 8' Overstrum 3 Deck
- 4 - 4' x 10' Tyler Hummer Single Deck
- 4 - 4' x 10' Tyler Hummer Double Deck
- 4 - 4' x 15' Tyler Hummer Single Deck
- 1 - 5' x 10' Kolman Vib. Grizzly, Less Motors
- 1 - 5' x 10' Pioneer Vib. Screen
- 1 - 5' x 12' Tyler Ty-Rock 1 Deck, Mdle 600
- 1 - 5' x 14' Horizontal Screen, Single Deck, w/30 HP
- 1 - 5' x 16' Tabor Horiz. 1 Deck, w/Motor
- 1 - 6' x 12' Tyler Ty-Rock F-900, 25 HP
- 4 - 7½' x 42" Derrick Screens, Mdle K-3
- 2 - 8' x 16' Allis-Chalmers Vib. Screens, Mdle SH
- 2 - 10' x 20' Allis-Chalmer 2 Deck
- 1 - 10' x 24' 3-D Tyler Ty-Rock, 75 HP
- 1 - Derrick Mdle D-36 Vib. Head (only)

CYCLONES

- 10 - Krebs D-6B
- 10 - Krebs D-10B
- 8 - Krebs D-15B
- 36 - Krebs D-20B
- 4 - Krebs D-26B
- 2 - Wemclones, Series 2000
- 3 - 24" x 20" Townley, Mdlc D0480

ROD MILLS

- 1 - 4' x 6' Denver, w/40 HP Motor
- 1 - 5' x 10' Allis-Chalmers, 150 HP
- 1 - 6' x 12' Marcy, w/150 HP Motor
- 1 - 7' x 12' March, w/250 HP Motor
- 1 - 9' x 14' Allis-Chalmers, 500 HP
- 1 - 9' x 22' Marcy, 500 HP
- 5 - 10' x 16' Allis-Chalmers, 800 HP
- 3 - 10'8" x 15' Marcy, 1000 HP

WE WELCOME YOUR INQUIRIES!

BALL MILLS

- 1 - 3' x 33" Marcy, 10 HP, Steel Frame Mtd.
- 1 - 3' x 4' Denver, 10 HP, Steel frame Mtd.
- 1 - 38" x 25" Galigher Lab Mill
- 1 - 42" x 43" Shop Made, 20 HP
- 1 - 5' x 5' C.I.W., 50 HP
- 1 - 5' x 6' Marcy, 100 HP
- 1 - 6' x 24" Hardinge Conical, w/Power
- 2 - 6' x 48" Hardinge, w/o Motor
- 1 - 64½" Marcy, w/100 HP, Steel Skid Mtd.
- 2 - 7' x 10' Traylor, w/250 HP
- 3 - 7' x 20' Hardinge Pebble Mills
- 3 - 7' x 20' Allis-Chalmers Pebble Mills, w/150 HP
- 1 - 7' x 22' Allis-Chalmers Pebble Mills, w/200 HP
- 1 - 8' x 7' Marcy
- 2 - 8' x 48" Hardinge Pebble Mills, 100 HP
- 1 - 8' x 60" Hardinge, 250 HP
- 1 - 8' x 9' Marcy, w/400 HP
- 1 - 8' x 10' Allis-Chalmers, w/350 HP
- 1 - 9' x 12' Allis-Chalmers, 500 HP
- 1 - 10' x 48" Hardinge, w/350 HP
- 5 - 10'6" x 13' Allis-Chalmers, 800 HP
- 2 - 10'6" x 17'3" Allis-Chalmers, 1000 HP
- 6 - 10'8" x 15' Marcy, w/1000 HP
- 1 - 11' x 14' Dominion Iron Works, 900 HP
- 1 - 11' x 18' KVS Finish Mill, 1100 HP
- 2 - 18' x 24' Allis-Chalmers Ball Mill, 5000 HP

CLASSIFIERS

- 1 - 30" x 18'11" Denver
- 2 - 36" x 19'3" Wemco, RHTP
- 1 - 40" x 15' Dorr, Rake Type, w/5 HP
- 1 - 48" x 19' Akins, 7½ HP Motor
- 1 - 60" x 31'9" Wemco S-H
- 2 - 66" x 35' Akins, Mdlc SDPH
- 3 - 78" x 35'4" Wemco Spiral
- 1 - 84" x 27'1" Akins
- 1 - 84" x 41'9" Wemco, Type SH

CONVEYORS

- 2 - 18" x 30' Channel Frame, w/Power
- 1 - 18" x 40' Channel Frame
- 1 - 24" x 25' Channel Frame
- 1 - 24" x 100' Lattice Frame
- 1 - 30" x 43' Portable Screening Plant
- 1 - 30" x 100' Truss Frame
- 1 - 30" x 2200' Hewitt-Robins
- 1 - 36" x 25' Channel Frame
- 1 - 36" x 42' S-A Hitemp Vibrating Conveyor
- 3 - 48" x 200' to 500' Channel Frame
- 1 - 2500' of 30" Cable, suspended w/Drive

FLOTATION MACHINES

- 11 - Denver #5, w/Power
- 3 - Denver #7, w/Power
- 1 - Denver #15, Sub-A, 6 Cell Bank
- 1 - Denver #18, Sub-A, 4 Cell
- 2 - Denver #21, 6 Cell, w/Motor
- 2 - Denver #21, Sub-A, 6 Cell
- 2 - Denver #24, 10 Cell, w/Motor
- 1 - Denver #24, 12 Cell, w/Motor
- 1 - Galigher #36, 2 Cell, Complete
- 1 - Galigher #36, 7 Cell, Complete
- 1 - Galigher #36, 8 Cell, Complete
- 6 - Galigher #48, 6 Cell, Rubber Liners
- 4 - Galigher #48, Banks of 6, Rubber Liners
- 4 - Wemco #66, 8 Cell, w/Motor
- 4 - Wemco #120, 4 Cell, w/Motors, 300 cu. ft.
- 20 - Wemco, 1000 cu. ft. Flote Cells

FILTERS

- 1 - 2' x 12' Eimco Horizontal Belt Extractor
- 1 - 2' x 15' Straight Line Horiz. Belt Filter, 3 HP
- 1 - 2' x 22' Eimco Horiz. Belt Filter, 316 SS
- 1 - 4' x 2' Denver Disc Filter
- 1 - 4' x 3' Eimco Disc Filter
- 2 - 4' x 4' Denver Duplex Pan Filters
- 1 - 48" x 48" Schriver Filter Press
- 1 - 4' x 4' Eimco Drum Filter Package
- 1 - 4' x 20' Straight Line Belt Filter, w/100 HP Vacuum Package
- 1 - 4' x 30' Eimco Horiz. Belt Filter, 304 SS
- 1 - 6' x 3' Oliver Disc Filter
- 1 - 6' x 6' Dorr-Oliver Drum, Knife Dishcharge, 25 HP Vacuum Pump
- 1 - 6' x 8' Eimco, S.S., Precoat Drum, Complete
- 1 - 80" x 26' Denver Horiz. Belt, Complete
- 1 - 7' x 6' Disc Eimco, w/Vari-Speed Drive
- 2 - 8' x 47' Eimco Horiz. Belt, 304 S.S.
- 1 - 10' dia. x 6' Disc Agidisc, w/5 HP
- 1 - 10' x 10' Wemco Heavy Media Filter, HMS
- 1 - 15' dia. Dorr-Oliver Horiz. Pan
- 2 - 800 sq. ft. U.S. Auto Jet Pressure Leaf, 316 S.S.

Generate Cash Flow.
 Let us sell your surplus equipment!

PUMPS: Centrifugal

- 1 - 1½" Intergoll-Rand 1½ GT, w/50 HP
- 1 - 1½" MRV Ingersoll-Rand w/25 HP Motor
- 1 - 2" Ingersoll-Rand 2 GT, w/100 HP
- 2 - 3 x 2 Warman Type HH, w/o Motor
- 3 - 5" Ingersoll-Rand 5 GT, 1200 GOM @ 420',
200 HP
- 1 - 6" x 6" x 10" Union, 1750 GPM @ 231 TDH,
150 HP
- 1 - Ingersoll-Rand 5 GT, Less Motor, NEW

PUMPS: Piston & Diaphragm

- 8 - 1" x 1½" Sandpiper Air, w/New Spares
- 2 - 1½" Dorr ODS Air, w/New Spares
- 1 - 2" Dorr ODS Air, w/New Spares
- 2 - 2CL-ODS Pumps
- 1 - Wilden M-8 Air
- 1 - Wilden M-15 Air
- 1 - SA-1½ Sandpiper
- 1 - SA-2A Sandpiper
- 1 - CAT Triplex, 25.9 GPM @ 700 PSI Max,
7½ HP

PUMPS: Submersible

- 2 - Chicago Pneumatic, pneumatic
- 1 - Thor Pneumatic
- 1 - Tate 1250-2, 115V
- 7 - Flygt, Mdle BS-2050, 1.1 HP
- 5 - Flygt Mdle B-2125P, 13 HP
- 1 - Flygt, Mdle B-2400, 140 HP
- 3 - Flygt Mdle CS3100, 3", 8 HP
- 3 - Flygt Mdle DS-3060, 11 HP
- 1 - Grindex, Type 230275, 12 HP
- 3 - Grindex, Type 112560, 33½ HP
- 2 - Gorman-Rupp, 4", 25 HP
- 1 - Gorman-Rupp, Mdle 54B1, 50 HP
- 1 - Gorman-Rupp, 95 HP

PUMPS: Vacuum

- 3 - Nash Mdle A HC-50, 3 HP
- 1 - Nash Mdle CL403
- 1 - Nash Mdle CL4001
- 1 - 824 x 4500 Sutorbilt
- 1 - 1437 x V3200 Sutorbilt
- 2 - Roots, Mdle 1030VJ, 3700 CFM @ 10" Hg

PUMPS: Sump

- 3 - 1½" Denver, 3 HP
- 2 - 2" Denver, w/o Motor
- 3 - 3½" x 72" Galigher, 20 HP
- 1 - 4" x 48" Galigher, 30 HP
- 1 - 6" x 60" Galigher, w/o Motor

MAGNETIC SEPARATORS

- 1 - Dings Type 303IR 3-Roll Induced Roll Magnetic
Separator w/Controls
- 36 - 30" dia. x 6' Dings 3-Stage
- 48 - 36" dia. x 4' Dings 3-Stage

PUMPS: Slurry

- 1 - 2½" x 2' Denver SRL, Frame 3
- 1 - 3" x 3" Goyne Mdle SP, w/3 HP Motor
- 1 - 5" x 4" Denver SRL, Frame 3
- 1 - 5" x 4" Denver SRL-C, w/Power
- 1 - 5" x 4" Linatex
- 3 - 5" x 5" Denver SRL, Frame 3
- 1 - 6" x 4" Warman Type AM, w/15 HP
- 1 - 6" x 6" Allis-Chalmers SRL
- 1 - 6" x 6" x 17" Ash
- 1 - 6" x 8" Goyne Mdle SP, w/40 HP
- 1 - 6" x 8" Goyne Mdle SP, w/100 HP
- 1 - 8" x 6" Denver SRL-C
- 1 - 8" x 6" Denver SRL, Frame 4
- 1 - 8" x 6" Warman Type AM, w/40 HP
- 1 - 8" x 6" Wilfley, Mdle 6K
- 6 - 8" x 10" Galigher, 75 HP
- 1 - 8" x 10" Galigher Vac-Seal, 2000 GPM @
51 TPH
- 2 - 10" x 8" Ash SRL, w/o Motors
- 9 - 10" x 8" Denver SRL-C, w/Power
- 1 - 10" x 8" Warman Type M, w/125 HP
- 1 - 12" x 10" Allis-Chalmers, w/300 HP
- 1 - 12" x 12" Linatex
- 1 - 12" x 14" Ash, Mdle CD
- 1 - 12" x 14" Denver SRL Frame
- 2 - 14" x 12" Allis-Chalmers SRL
- 1 - 14" x 12" Denver SRL, Frame 5
- 4 - 14" x 12" Diamond Alloy, 300 HP

AGITATORS & MIXER DRIVES

- 8 - Denver #7 Agitator Drives, 15 HP
- 14 - Denver #10 Agitator Drives
- 1 - Denver #15 Agitator, 75 HP
- 1 - Galigher Air Powered Agitator Drive, Mdle GPO
- 1 - Philadelphia Agitator Mechanism
- 1 - Eimco 6 x 6 Conditioner Mechanism
- 1 - Lightnin Mixer, Mdle ND-3A, 1 HP
- 1 - Lightnin Mixer, w/Shaft & Prop, 3 HP

FEEDERS

- 3 - 15" x 5' Barber-Greene Apron
- 1 - 16" x 30" Eriez Vibrating
- 1 - 18" x 3½' Stephens-Adamson
- 1 - 24" x 108" Syntron Vibrating
- 1 - 24" x 12' Universal
- 4 - 30" x 5' Link Belt Reciprocating
- 1 - 30" x 7' HD Nico Apron, w/Power
- 1 - 36" x 23' Drag Chain Feeder
- 1 - 42" x 35' Link Belt, Belt Feeder
- 1 - 48" x 10' Nico Apron
- 1 - 60" x 18' Pioneer Arpon
- 1 - 60" x 28' Nico Apron, w/Power
- 2 - 60" x 33' Link Belt Apron
- 1 - 6' x 12' Hewitt-Robins Vibrating Grizzly
- 1 - 72" x 58' Nico Apron, w/Power
- 1 - Eriez Magnetic Reagent Feeder

Have Excess Equipment laying around?
Give us a call to find out about our
appraisals and consignments.

THICKENERS

- 5 - 60" x 8' Eimco Lab Thickeners
- 6 - 18' x 12' Eimco Type BX Thickeners
- 2 - 20' x 9' Dorr Thickeners
- 1 - 48' x 10' Hardinge, Less Tank
- 1 - 50' x 13' Dorr-Oliver
- 1 - 240' x 10' Eimco Type CXX, c/w Power
- 1 - 300' x 20' Eimco
- 1 - 350' x 8'9" Eimco, w/S.S. Rakes, NEW, Never Installed
- 1 - Dorrco 15-20' Thickner Mechanism, Less Tank
- 1 - Dorr-Oliver Thickener Head only, suitable for 200 ft. dia. x ?

DUST COLLECTORS

- 1 - Ameri-Jet #15-24-900, Dry Type
- 1 - Ducon Scrubber #60, UW4, S.S.
- 1 - Ducon Scrubber #84, UW4
- 1 - Rexnord Gravel Bed Filter, Nominal, 75,000 cu. ft., 6' x 10' dia. Modules
- 1 - FLEX-KLEEN, 8500 cu. ft., w/Blower

DRYERS

- 1 - 4' x 28' Lockheed Haggerty, S.S.
- 1 - 5' x 24' Cedar Rapids
- 1 - 5' x 26' Heatherington & Berner
- 1 - 6' x 35' Standard Tool, C.S.
- 1 - 6'4" x 24' Link Belt, Roto Louvre
- 1 - 7' x 45' Hardinge, Complete w/Drive
- 1 - 8' x 30' Rotary Cooler, c/w Power, Dust Collection
- 1 - 8' x 40' Astec Sand Dryer, Complete, Unuser
- 1 - 8' x 50' Hardinge, w/75 HP Drive, Very Good.
- 2 - 8' x 60' Stearns-Rogers, w/75 HP Drive
- 1 - 8' x 77'6" Allis-Chalmers, w/Burner
- 1 - Joy Holo-Flite Mdle D-1215-5, NEW

LAB EQUIPMENT

- 1 - 8" Bico Lab Pulverizer, w/2 HP
- 2 - 8" Braun Pulverizer, 3 HP
- 1 - 2" x 3" IMS Lab Jaw
- 1 - 2½" x 3½" Denver Lab Jaw, w/Motor
- 1 - 5" x 6" Denver Jaw Crusher
- 1 - 10" x 8" UIW Single Roll Lab Crusher
- 1 - 10" x 6" Denver Double Roll Lab Crusher
- 1 - Lab Size Hammer Mill
- 1 - #8 Denver Flotation Cell
- 2 - Sample Splitters
- 1 - Gilson Lab Screener
- 5 - 60" dia. x 8' deep Eimco Lab Thickeners, Poly Tank, 1/3 HP Drives
- 1 - Thermodyne Assay Furnace, Electric
- 1 - Hevi-Duty Electric Lab Furnace, to 1800° F.
- 1 - Small Fire Assay Lab, Complete

We'll be happy to put you on
 our mailing list,
 just let us know!

JIGS

- 1 - 12" x 18" Denver Duplex, w/Power
- 2 - 16" x 24" Denver Duplex
- 1 - 24" x 36" Bandaleri Duplex, w/Power
- 1 - 36" x 36" Bandaleri, 6 Cell Banks
- 2 - 42" x 42" Bandaleri Duplex
- 2 - 42" x 42" Bandaleri, 4 Cell Banks

AIR SEPARATORS

- 2 - 60" C-E Raymond, Double Wizzer, w/50 HP Fan
- 1 - 14' dia. Sturdevant, 50 HP Drive
- 1 - 14' Sturdevant, w/60 HP
- 1 - 16' Sturdevant, w/125 HP
- 1 - 24' Hardinge, NEW

COMPLETE PLANTS

- 1 - 10 TPD Portable Test Plant
- 1 - Vardax 10 Modulized Plant
- 1 - 200 TPD Flotation Plant
- 1 - 250 TPD Flotation Plant Complete, Used within past year, can be moved and put back in service.
- 1 - 500 TPD Flotation Plant

BLUE RANGE PORTABLE MILLS

For your concise needs, the Blue Range Portable Mill is designed to include a variety of equipment for cost effective metallurgical control of your ore. If your needs are 50 to 250 TPD, the Blue Range Portable Mill comes complete with all diesel-electrics or line-power ready, and is designed to eliminate expensive set-ups.

If you are contemplating getting a Mill in 1988, now is the time to make your plans. Write or call us today for our free brochure describing the Portable Mills.

HOISTS: Double Drum

- 1 - 3' dia. x 24" CIR, 100 HP, 6000# @ 450 FPM
- 1 - 3½' dia. x 30" CIR, 100 HP, 8,000# @ 650 FPM
- 1 - 4' dia. x 36" CIR, 125 HP, 10,000# @ 650 FPM
- 1 - 60" dia. x 48" CIR, 500 HP, 14,000# @ 1230 FPM
- 1 - 72" dia. x 60" CIR, 500 HP, 15,000# @ 1240 FPM
- 1 - 7' dia. x 48" Wilde, 350 HP, 17,000# @ 650 FPM
- 1 - 7½' dia. x 38" Vulcan, 600 HP, 14,000# @ 1200 FPM
- 1 - 7'6" dia. x 4'6" Lakeshore, 1,000 HP, 24,000# @ 1500 FPM
- 1 - 8'10" dia. x 6'4" Nordberg, 1250 HP, 45,600# @ 1800 FPM
- 1 - 10' dia. x 62" face CIR, 1000 HP, 28,000# @ 1200 FPM
- 1 - 12' dia. x 5'9" face FH & B, 2500 HP, 75,000# @ 2,034 FPM

HOISTS: Single Drum

- 4 - Beebe Stage Hoists, 7½ HP, 12,000# @ 15 FPM
- 4 - New Era Stage Hoists, 5,000 # @ 8 & 16 FPM
- 1 - 2' dia. x 21' face Sullivan Escape Hoist, 40 HP, 1000# @ 1100 FPM
- 1 - 60" dia. x 45" face C.S. Card Hyd. Escape Hoist
- 1 - 4½' dia. x 42" Vulcan, 125 HP, 8,000# @ 430 FPM
- 4 - 4'7" dia. x 5'10" New Era, 20 HP, 24,000# @ 20 FPM
- 1 - 5' dia. x 60" Lidgerwood, 250 HP, 13,875# @ 535 FPM
- 1 - 5' dia. x 65" Ottumwa, 250 HP, 14,000# @ 530 FPM
- 1 - 5' dia. x 84" Nordberg, 200 HP, 13,000# @ 454 FPM
- 1 - 6' dia. x 60" Nordberg, 400 HP, 12,600# @ 944 FPM
- 1 - 6' dia. x 74" Lakeshore, 250 HP, 13,350# @ 558 FPM
- 1 - 7' dia. x 48" Vulcan, 300 HP, 13,600# @ 655 FPM
- 1 - 7' dia. x 84" Vulcan, 400 HP, 22,000# @ 1000 FPM
- 1 - 8' dia. x 100" Sullivan, 450 HP, 16,280# @ 1821 FPM
- 1 - 8' dia. x 101" Ottumwa, 400 HP, 15,000# @ 800 FPM
- 1 - 9' dia. Step Drum Vulcan, 800 HP, 52,000# @ 600 FPM
- 1 - 10' dia. x 70" Nordberg, 600 HP DC, 97,000# @ 400 FPM
- 1 - 10' dia. x 84" A-C, 300 HP, 22,800# @ 1150 FPM
- 1 - 12' dia. x 120" Vulcan, 1600 HP, 28,200# @ 1700 FPM

SLUSHERS: Electric (2-Drum)

- 10 - Joy Mdlc A2F-211-MS5, 20 HP
- 1 - Joy Mdlc B2F211, 30 HP
- 31 - Joy Mdlc C2F211, 75 HP
- 3 - Joy Mdlc C2F211A, 50 HP
- 15 - Joy Mdlc FF211, 20 HP
- 12 - Pickrose Mdlc S2, 15 HP
- 3 - Ingersoll-Rand Mdlc 25MN3D, 25 HP
- 3 - Ingersoll-Rand Mdlc 30NM31D, 30 HP
- 5 - Ingersoll-Rand Mdlc 75NM41D, 75 HP
- 1 - Sullivan Mdlc HDE35N212, 35 HP
- 1 - Sullivan Mdlc HDE38N212, 50 HP

SLUSHERS: Electric (3-Drum)

- 1 - CIR Mdlc 20MMM, 25 HP
- 1 - Ingersoll-Rand, Mdlc 30MNM-3F, 30 HP
- 1 - Joy Mdlc CF-312, 50 HP
- 1 - Joy Mdlc CF-312N, 60 HP

SLUSHERS: Air (2-Drum)

- 1 - Ingersoll-Rand Mdlc A5NNOH
- 1 - Ingersoll-Rand HNN1J
- 1 - Ingersoll-Rand K5ML-2G
- 1 - Gardner-Denver Mdlc HKE
- 1 - Joy S211

DRILL JUMBOS: Rail Type

- 1 - Gardner-Denver Mini-Bore 2-Boom, 24" ga.
- 1 - Gardner-Denver 3-Boom, 24" ga., w/PR-55 Drifter
- 1 - Gardner-Denver 4-Boom, 30" ga.

COMPRESSORS: Stationary

- 1 - Joy Twistair, Mdlc TA015TAN2A, 15 HP
- 1 - Gardner-Denver Mdlc ECFQJBD, 50 HP
- 4 - Gardner-Denver Mdlc B-1265-CA, 60 HP, 460/220V Electric
- 1 - Gardner-Denver Mdlc R-15-PM, 60 HP
- 1 - Ingersoll-Rand Mdlc 75-C, 383 CFM, 75 HP, 440V
- 1 - Gardner-Denver, 375 CFM, 75 HP
- 2 - Siemens Elmo Low Pressure, 1360 CFM, 75 HP
- 1 - Westinghouse 3-Stage, Mdlc 5051, 75 HP
- 1 - C.I.R., Mdlc 125, Type 40, 125 HP
- 4 - Ingersoll-Rand Mdlc XLE, 250 HP
- 2 - C-P, 1200 CFM, 300 HP
- 1 - Ingersoll-Rand, Mdlc XLE, 300 HP

GENERATORS: Diesel

- 5 - 20 KW General Motors Mdlc 271
- 3 - 30 KW General Motors Mdlc 271
- 1 - 125 KW Cummings
- 1 - 250 KW Cat, w/Trailer
- 1 - 400 KW w/Cummings Diesel Power in Van
- 1 - 600 KW Cat, w/Cat 398 on Trailer

HOISTS: Tugger (air Operated)

- 1 - Atlas Copco, Mdlc MHG-61
- 1 - Atlas Copco, Mdlc MHG-64
- 2 - Chicago Pneumatic, Mdlc 10SP-2000
- 1 - Gardner-Denver, Mdlc HB
- 2 - Ingersoll-Rand, Mdlc BU
- 1 - Ingersoll-Rand, Mdlc EUA
- 1 - Ingersoll-Rand, Mdlc HU
- 1 - Ingersoll-Rand, Mdlc HU-40
- 1 - Ingersoll-Rand, Mdlc K4UL
- 1 - Ingersoll-Rand, Mdlc K6UL
- 1 - Ingersoll-Rand, Mdlc UW5030A

SLUSHER BUCKETS

- 1 - Amsco 30" Slusher Bucket
- 3 - Pacific 36" Slusher Buckets
- 2 - Card 44" Slusher Buckets
- 3 - Joy Vulcan 48" Slusher Buckets
- 1 - Card 50" Slusher Bucket
- 2 - Card 54" Slusher Buckets
- 11 - Joy Amsco 54" Slusher Buckets

DIAMOND DRILLS

- 2 - Longyear Mdlc 34 Diamond Drills, Underground
- 1 - Longyear Mdlc 44 Diamond Drill, Underground
- 1 - Diamond Drill Contractors, Hyd. Power, Skid Mounted
- 2 - C. P. Diamond Drills, Underground
- 1 - Lot of Drill Bits, Reamer Shells, and Rods, Underground

LOCOMOTIVES: Diesel

- 1 - 4 Ton Mancha, 24" ga.
- 1 - 7 Ton Ruston & Hornsby, 24" ga.
- 5 - 10 Ton Plymouth, Mdlc JMD29, 36" ga.
- 1 - 15 Ton Plymouth, Mdlc DMD29, 36" ga.
- 1 - 20 Ton Plymouth, 42" ga.

DRILL JUMBOS: Rubber Tired

- 1 - Ingersoll-Rand Mdle 96RM
- 2 - Atlas Copco Mdle H210, Single-Boom, Electric Hydraulic, w/Diesel Tram
- 1 - Gardner-Denver 2-Boom, Mark III
- 1 - Atlas Copco 4-Boom
- 1 - Atlas Copco 5-Boom
- 1 - Gardner-Denver Mini-Bore, S83 Drills
- 1 - Gardner-Denver Twin Ring Drill, w/123 Drills, NEW, Never Used.

DRILLS

- 13 - Ingersoll-Rand 300M Stoppers
- 1 - Gardner-Denver RB83 Stoper
- 3 - Gardner-Denver PR-123 Drifters
- 3 - Gardner-Denver PR-55 Drifters
- 3 - Gardner-Denver S63F Jacklegs
- 9 - Gardner-Denver S53F Jacklegs
- 35 - Gardner Denver F83 Jacklegs

LOCOMOTIVES: Battery

- 6 - 1½ Ton Mancha, 18" - 24" ga.
- 1 - 3 Ton Mancha, 18" ga.
- 2 - 3 Ton National Mine, 24" ga.
- 7 - 3½ Ton Goodman, Mdle AN, 30" ga.
- 2 - 4 Ton Greensburg, 18" ga.
- 3 - 5 Ton Mancha, Type ANX, 24" ga.
- 5 - 6 Ton Goodman, Mdle 54B, 24" ga.
- 2 - 8 Ton New River, 42" ga.
- 1 - 10 Ton Atlas, 36" ga.
- 3 - 12 Ton New River, 42" ga.

MUCKING MACHINES

- 2 - Eimco 12B, 18" ga.
- 3 - Eimco 12B, 24" ga.
- 7 - Eimco 21B, B-Deck, 30" ga.
- 2 - Eimco 21B, C-Deck, 24" ga.
- 2 - Eimco Mdle 25, 24" ga.
- 2 - Eimco Mdle 25, 36" ga.
- 5 - Eimco Mdle 630 Rocker Shovels
- 1 - Eimco Mdle 634
- 4 - Conway Mdle 100-2, 42" ga.
- 10 - Atlas Copco LM56HE & HE-2, 30" ga.

MINE CARS

- 9 - 32 cu. ft. Ajax Side-Dump, 18" ga.
- 2 - 47 cu. ft. C.S. Card Rocker-Dump, 24" ga.
- 30 - 60 cu. ft. Wabi Granby Type, 30" ga.
- 8 - 70 cu. ft. Granby, 36" ga.
- 40 - 90 cu. ft. Lift-Off Type, 24" ga.
- 26 - 100 cu. ft. Dorr-Oliver Long, 30" ga.
- 5 - 127 cu. ft. Granby Type, 24" ga.
- 5 - 9 Yd. Moran Agitator, 42" ga.
- 12 - 12 Yd. Moran Agitator, 42" ga.

Rail

- 1 Ton 20# Rail
- 2 Tons 30# Rail
- 100 Tons 40# Rail, Used
- 200 Tons 65# Rail
- 300 Tons 85# Rail

RUBBER TIRED EQUIPMENT(Underground)

- 2 - Wagner EHST-1A Electric
- 2 - Wagner ST-2B Scooptram
- 1 - Wagner ST-3½ Scooptram
- 1 - Wagner ST-5 Scooptram
- 2 - CAVO 310
- 1 - CAVO 320
- 2 - 901 Eimco Electric LHD, w/Ejector Bucket
- 3 - 911 Eimco LHD
- 1 - 912 Eimco LHD
- 1 - 913-E Eimco LHD, 3 Yd.
- 2 - Atlas Copco T2GH Auto Loader, Air Powered
- 2 - Young Buggies, Mdle 936
- 3 - 5 Ton Young Buggies
- 2 - 10 Ton Sein Brute Underground Trucks
- 4 - 27 Ton Eimco Mdle 980T-27B Trucks

MISCELLANEOUS

- 1 - Alimak Raise Climber, Mdle STH5L, Air
- 1 - 4' x 16' Pug Mill
- 1 - Eagle Pug Mill
- 1 - 10' Dravo Pelletizing Disc
- 1 - 5' x 30' Bodinson Rotary Trommel
- 1 - 4' x 40' Rotary Trommel
- 2 - 3.8 Million BTU Tunnel Heaters
- 1 - Marion 191M Electric Shovel
- 2 - 9' x 250' F.L. Schmidt Rotary Kilns
- 3 - Spur Gear Sets for 6' Allis-Chalmers Ball Mills
- 4 - 60" OD, V-Belt Sheaves, 11 Groove, D-Section
- 4 - Electric Motors, 125 HP, 750 RPM, 440V, Slip Ring
- 1 - #6 Wilfley Concentration Table, New Deck
- 40 - Oxy-SR 60B Self Rescuers
- 1 - Heyl & Patterson Rotary R.R. Car Dumper
- 1 - Stamler Breaker Feeder, 100 HP
- 1 - 4' x 33' Rotary Trommel
- 1 - Mdle 9HR Hagglunds Loader + 2 Mdle HRS-90CEL Shuttle Cars, 24" ga.

MOVED? NEW COMPANY? CHANGES?

Company _____

Name/Title _____

Street/P.O. Box _____

City, State, Zip _____

Mail to Gene Brower Machinery Co., Inc.
 P.O. Box 11794
 Spokane, WA 99211



M.C. LA BARR

6262 N. SWAN RD. — SUITE 132 / TUCSON, ARIZONA 85718 / TELEPHONE (602) 577-2414 / FAX (602) 577-0952 / TELEX 666448
LAB, PILOT AND RESEARCH EQUIPMENT

ULTRA SONIC INERT GAS ATOMIZER SYSTEM: complete with accessories
36" FLUID BED ROASTER: complete with controls and instrumentation
10" FLUID BED ROASTER: complete with controls and instrumentation
6" FLUID BED ROASTER: bare unit
AUTOCLAVE SYSTEM: 50 gallon, 316SS, 600PSI/300C, complete with controls, feed/letdown system
EMISSION SPECTROMETER: Ebert 3.4 with (2) cameras, (2) gratings, calc board
X-RAY DIFFRACTION: Norelco with processor, recorder, detector, spares
X-RAY ENERGY DISPERSIVE SYSTEM: Kevex 8000 detector/4000 subsystem, Tracor Northern analyzer
X-RAY DIFFRACTION FLOURESCENCE: Norelco complete with spares
MICROSCOPE: petrographic/photographic, Leitz Orthoplan, fluid inclusion stage
CCD CIRCUIT: w/5 15' x 8' acid resistant, R/L sectionalized thickeners w/covers, lifters and
(4) Dorr Oliver ODS pumps, tanks on legs, work platform superstructure
THICKENER: (1) 3' x 3' FRP tank w/rakes, mechanism w/o motor
SX PILOT PLANTS: (2) each 10GPM aqueous at 1.1 organic, (1) is portable
ELECTROWINNING PILOT PLANT: 0-4500 DC amps, w/PB anodes-SS/TI cathodes-bus system cables
NEW SS CATHODES: (30) 42"L x 1/2"W x 3/16" w/copper plate hangers
REFLECTING PROJECTOR: Kail K-5 (for changing scale on maps, drawings or photos)
REFLECTING PROJECTOR/ENLARGER: Artograph 55 (5X plus to 5X minus, with infinite scales)
FEEDER: vibrascrew, 2" x 3' screws, SS, 3CF agitated hopper
FURNACE: 6" x 3', high temp, rotating silicon carbide tube, cap 1500C, insulated zirconium
hopper, Eriez vibrating feeder, Glowbar heaters, cap 2-5#/hr
FURNACE: utility box, Lindberg 11CF, 1200C, w/programmer-controller (new-unused)
FLOTATION CELLS: (1) bank (11) Galigher, SS, 8" x 8", .3CF each
SPIRAL: concentrating, Humphrey, 5-turn, 28.5" OD
FILTER: pressure leaf, Durco Enzinger, SS, domed, 10 leaf, 59 SF
FILTER: pressure leaf, Niagra, SS, domed, 5 leaf, 24.4 square feet
FILTER: pressure 14" x 24", SS shell/basket
FILTER: pressure, 8" x 16", SS, 150 PSI/650F, SS basket/bag
MIST ELIMINATOR: Monsanto, Brink 2' x 5', Carp 20, 1 ATM at 60C max, element 1 1/2' x 4'
BLOWERS: air, CS and FRP, 32"D., General Resources HP-262 (3)
AGITATOR TANK: 9'6" x 9'2", SS, 5000G, cooling coils, baffles, draft tube, sight glass, agitator
TANK: FRP, vertical, (1) 50G, (2) 100G, (1) 200G, HCL resist lining
PUMP: centrifugal, TRW Mission, 1 1/2" x 1", kynar "Stancor" lined
PUMP: dual metering, Yarway cyclo-phram, 14.4GPH, 150PSI, 2 stage, polypropylene const.
PUMP: metering, Pennwalt 44-215, tandem diaph, 104 GPH/75PSI/180F, kynar head, glass balls (2)
PUMP: metering, Pennwalt 44-215, tandem diaph, 104 GPH/75PSI/180F, kynar head, teflon balls (4)
PUMP: metering, American Lewa HKB-1, 133 stokes/min, 50KG
PUMPS: diaph. metering, Pulsafeeder, 0-123GPM, 1/2HP, ext stroke adj, teflon/ceramic ball (2)
PUMP: vacuum, Stokes 212F, rotary piston, 130CFM, 7 1/2HP
PFAUDLER COMPONENTS: (4) baffles, (3) impellers, (for 100G/50G reactors) new
HOT OIL SYSTEM: (2) 3" lined pumps, (2) 4' x 4' R/L tanks, (8) 55 gal barrels Therminol 66,
(6) 50 KW electric heaters, (2) 20 KW electric heaters, manifold system, 3" pipe, (25) 3"
valves, expansion joints, strainers
CENTRIFUGE: 20" batch type, bottom discharge, R/L Tolhurst 1B8, stand mtd, 3HP varispeed
COOLING SYSTEM: new 10T Electro-Impulse D21224, preset temp controller, manifolds, valves
HEAT EXCHANGER: Pfaudler type BEM, 82 SF, 75PSI/200F, SS/Carp 20
HEAT EXCHANGER: Pfaudler type BEM, 85 SF, 75PSI/250F, SS/Carp 20
HEAT EXCHANGER: Pfaudler type BEM, 40 SF, 75PSI/200F, SS/Carp 20
HEAT EXCHANGER: Pfaudler type BEM, 20 SF, 75PSI/200F, CS/316SS
HEAT EXCHANGER: Pfaudler type BEM, 23.5 SF, 75PSI/200F/400F, SS/Carp 20
HEAT EXCHANGER: Fansteel, 8 SF, 100PSI/392F, 50PSI/420F, Tantalum tube and shell
HEAT EXCHANGER: Dupont spagetti type, 2550C-3-4, 1/16" teflon tubes/SS shell, 150PSI/300F
HEAT EXCHANGER: Dupont spagetti type, 2550C-3-4, 1/8" teflon tubes/SS shell, 150PSI/300F

PROCESS EQUIPMENT

6000 TPD CRUSHING/STACKING/HEAP LEACHING/CARBON ADSORPTION/ELECTROLYTIC RECOVERY
w/plate feeder, 42 x 40 jaw, 30" x 1100' belt conveyors, vibrating feeders, 5½' std. cone, 5½' sh. cone, 6 x 12 DD screen. Dust Control Equipment, 24" x 1600' cable belt, 205'w x 23'h stacker, all support equipment, buildings and engineering drawings, new 1978

5000 TPD GRINDING, FLOTATION, FILTRATION, 11'-6" x 18' rod mill, 13'-6" x 20' ball mill, 9'-6" x 15' ball mill, 200 & 100 CF Deco cells, all support equipment, buildings and engineering drawings, new 1978

1000 TPD CONCENTRATOR: 48" apron feeder, 36" x 42" jaw crusher 5' x 12' SD vibrating screen, 5½' SH cone crusher, 32" electromagnet, 300' of 24/30" belt conveyor. (2) 7' x 7" ball mills, (34) flotation cells, 4' x 7' regrind ball mill. (3) thickeners 18'/30'/90', (2) disc filters 6' x 2' & 6' x 5', pumps conditioners, reagent feeders, compressors, blowers, bucket elevators, classifiers, tanks, bins, buildings, spare parts and complete engineering drawings.

THICKENER: 350'D., Eimco, new 1982 used 3 months, 10' head, 175' bridge, centerpost, launders, shaft & rakes.

ROD MILL: 11'6" x 18', 1250 HP, 4160V, steel liners, spout feed, spares, new 1978
BALL MILL: 13'6" x 20', 2500 HP, 4160V, rubber liners, spout feed, spares, new 1978
BALL MILL: 9'6" x 15, 900 HP, 4160V, rubber liners, spout feed, spares, new 1978

FLOTATION CELLS: Denver, 15 Sub A (1) Bank 10, w/feed discharge box, auto level controls
FLOTATION CELLS: Denver, 24 Sub A (2) Banks 10, w/feed discharge box, auto level controls
FLOTATION CELLS: Denver, 30 DR (2) Banks 6, w/feed discharge box, auto level controls
FLOTATION CELLS: Denver, 200V DR (3) Banks 16, w/feed discharge box, auto level controls

FILTER SYSTEMS: Eimco 6' x 6' Disc, Siemens vacuum pumps, barometric legs (2)

ROTARY DRYER: 5' x 25', 25 HP, 12 TPH, w/14" screw feeder, scruber

COPPER LADLES: 325 CF, double lipped, used or rebuilt (4)

COPPER LADLE BAIL ASSEMBLIES AND COMPONENTS: for 325 CF Ladles, new and unused

COPPER LADLES: 204 CF, single lip, new/unused or rebuilt (20)

COPPER LADLE BAIL ASSEMBLIES AND COMPONENTS: for 204 CF Ladles, new and unused

COMMUNICATIONS: Gai Tronics, (9) power pacs, (9) phones

TANK: 10' x 9', vertical, rubber lined, 5300 gal cap, w/cover (2)

TANK: 7' x 14', horiz, 5000 gal cap, acid storage

TANK: FRP, vert, (1) 50G (2) 100G, (1) 200G, HCL resist lining

PUMP: centrifugal 3" x 2", ceramic lined, NGK EU318U, 5HP, varispeed

PUMP: centrifugal Gould, 4" x 6" x 10", insulated, 5 HP varispeed

PUMP: centrifugal Gould 3" x 2", model 3196, CI, 5 HP, 440V

PUMP: centrifugal, TRW Mission, 1 ½" x 1", kynar "Stancor" lined

PUMP: vacuum, Stokes 212F rotary piston, 130 CFM, 7½HP

OIL CLARIFIER: Stokes 145F

LPE71019



VULTURE MINE OPTIONS

	HEAP LEACH	CIL-AGITATED
RESERVES-Rock (tons)	127,000	445,000
Grade (OPT)	0.086	0.062
Waste:Ore	3.6:1	2.9:1
Tails (tons)	225,000	225,000
Grade (OPT)	0.045	0.045
ORE TREATMENT RATE	1000 TPD	500 TPD
PROJECT LIFE	18 months	3.75 years
RECOVERY-Rock ←	55% <i>75%</i>	85%
Tails	70% <i>75%</i>	85%
Total ounces	13,000	32,000
GROSS REVENUES @\$400 per ounce	<i>15,750</i> \$ 5,200,000	\$12,800,000
CAPITAL-Total	<i>6,300,000</i> 650,000	1,700,000
OPERATING		
Mining (Rock)	\$ 875,000	\$ 2,600,000
Mining (Tailings)	225,000	225,000
Treating	<i>2</i> 2,000,000	6,030,000
Total	<i>3</i> 3,100,000	8,855,000
Per ounce	238.50	277
CASH FLOW SUMMARY		
Revenues	<i>6,300,000</i> \$ 5,200,000	\$12,800,000
-Operating	3,100,000	8,855,000
-Royalties + Bonus	203,000	501,000
Operating Profit	<i>2,300,000</i> 1,897,000	3,444,000
-Capital Recovery	650,000	1,700,000
-Sunk Costs	622,000	622,000
NET PROFIT	<i>1,525,000</i> 625,000	1,122,000

1,400 -5% + 15%

To: File

August 24, 1987

From: Pete Flores

RE: Termination of Tony Medina

On November 20, 1986, Tony Medina was hired and assigned to operate the mine hoist. On August 6, 1987 during his pre-operation test the skip/cage assembly became stuck in the shaft and the safety dogs engaged. The reason the skip/cage became stuck is unclear. It is known by all, including Tony Medina, that there are places in the shaft where the shaft guides are a bit tight. Tony Medina knew that total attention is required in operating the hoist even without the possibility of some problem with the guides. It is the hoistman's responsibility to know the exact location of the skip/cage at all times. Since this was a pre-operational test, it is obvious that great care must be taken to insure that the system is fully functional.

Tony Medina was not aware that something was wrong until Joe Davis walking toward the hoist house noticed excessive slack in the hoist rope and strongly suggested that Tony stop the hoist. Tony's view of the hoist rope is not hampered in any way and he can clearly observe the hoist rope. His failure to notice the problem clearly shows his inattentiveness at the time the skip/cage became stuck. Furthermore, something in excess of 175 feet of hoist rope was reeled off the drum after the skip/cage became stuck. Our hoist speed is approximately 4.5 feet per second. Therefore, some 39 seconds or more elapsed between the time the skip/cage became stuck and the time Tony Medina stopped the hoist.

Having found wire rope lubricant on the skip/cage it is believed the the wire rope was, at this point, lying loosely on top of the skip/cage, against the wall of the shaft and hanging between the skip/cage and the shaft wall. We will never know for sure because no visual inspection was made of the situation. With no one in the shaft to guide the wire rope, it was damaged as it was reeled in by Tony Medina. The damage was a kink, a permanent distortion of the rope, caused when a coil in the rope closed as it was being reeled in by Tony Medina. Further damage was done to a steel plate at the safety dog assembly by the wire rope as it was hoisted. We are fortunate that no one was on board the skip/cage. Certainly, had anyone been on board they would have been exposed, unnecessarily, to dangers by the means that Tony Medina took to correct the situation. For instance, when the wire rope passed between the skip/cage and shaft wall, if it then coiled into the cage, a person could have been entangled in it as it was hoisted. Or, the wire rope, as it was hoisted could have done greater damage to the safety dog assembly rendering it useless causing the skip/cage to descend the shaft in a free fall. These and other potential dangers were known to Tony Medina and that knowledge should have prompted a more cautious response to the situation.

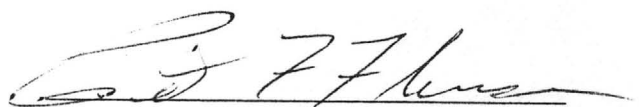
At the time the skip/cage became stuck, Paul Landrum was the supervisor in charge. Tony Medina did not inform Paul Landrum of the situation until after he had hoisted the cage back to the surface. Tony Medina did not ask for any instructions on how to correct the problem. Tony took it upon himself to hoist

the cage without anyone visually inspecting the shaft or skip/cage.

In summary, Tony Medina did not use reasonable care in his operation of the hoist and in his attempt to correct the problem causing damage to the wire rope and skip/cage and risking damage to other shaft facilities. He did not inform the supervisor on shift, Paul Landrum, of the situation. He did not seek the advice of Paul Landrum as to how the problem should have been solved. He was inattentive in operating the hoist at the time the skip/cage became stuck.

The hoistman's responsibilities are great. The safety of many people is at stake. We and our employees must have confidence in the persons we choose to operate the hoist.

For these reasons, the employment of Tony Medina by A. F. Budge (Mining) Limited has been terminated.



Peter F. Flores
Mine Superintendent
A.F. Budge (Mining) Limited



CUSTOM EQUIPMENT CORPORATION

QUOTATION

350 West 300 South
Phone (801) 533-8557

P.O. Box 747

Salt Lake City, Utah 84110
Telex 381014

Inquiry No. 646

Date Sept. 10, 1987

Terms 25% with Order
Bal. Net 30

Prices quoted
are F.O.B. See below

Delivery see below

Your Inquiry _____

A. F. Budge Mining Ltd.
Suite 111 B-E
7340 Shoeman Lane
Scottsdale, Arizona 85251

Attn: Ms. Carol O'Brien

QUANTITY	DESCRIPTION	AMOUNT
1 Only	<p>Custom Equipment Corporation is pleased to quote the following:</p> <p><u>Item 1</u></p> <p>Tilting Furnace, McEnglevan Speedy-Melt, with manual tilting mechanism, #1611 turbo blower, 3450 RPM motor, No. 4 UV ultraviolet flame safeguard system 115/208/230V single phase or 208/230V/460V 3 phase, 60 cycle, 805,000 BTU gas rating for propane or natural gas. (Crucible not included.)</p> <p>(Please specify current characteristics when ordering.)</p> <p>Price, F.O.B. Danville, Illinois</p> <p>Approx. Weight: 1,890 lbs.</p> <p>Delivery: 4-6 Weeks</p>	\$ 9,799.00
1 Only	<p><u>Item 2</u></p> <p>#90 Silicon Carbide Crucible with attached lip.</p> <p>Price, F.O.B. Factory</p> <p>Weight: 79 lbs.</p> <p>Delivery: Stock to 2 weeks</p> <p>Ref.: Page 8 Installation Dimensions Page 10 Specs.</p>	291.75

BY R A Wilson
R. A. Wilson



CUSTOM EQUIPMENT CORPORATION

QUOTATION

350 West 300 South
Phone (801) 533-8557

P.O. Box 747

Salt Lake City, Utah 84110
Telex 381014

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A. F. Budge Mining Ltd.

Page 2

QUANTITY	DESCRIPTION	AMOUNT
	<p><u>Item 3</u></p> <p>2.5 Cu. Ft. Pan Capacity Mercury Retort for gold sludge. Retort and pans to be stainless steel. Furnace will be insulated with fiber lining. Burner train to be designed to FM standards, propane fueled, with water cooled CEC new style condenser, mercury trap with liquid level sight glass, water ring vacuum pump. UV burner safety controls, burner over temperature control (on-off), retort temperature monitor, manual gas control.</p> <p>Unit to be prepiped, prewired and skid mounted.</p> <p>Customer to provide water to condensers, water to vacuum pump, 440/480 3 phase power to control panel.</p> <p>Price:</p> <p>Customer to supply 6" diameter exhaust stack.</p> <p>The retort will be operationally tested by CEC prior to shipment. Customer may have personnel at the test site (SLC) for purposes of inspection and training.</p> <p><u>Item 4</u></p> <p>Scrubbing Column filled with sulfur impregnated carbon to adsorb away residual mercury vapors, sized for retort gases.</p> <p>Price: Addition</p>	<p>\$29,900.00</p> <p>\$ 3,200.00</p>

BY R. A. Wilson
R. A. Wilson



CUSTOM EQUIPMENT CORPORATION

QUOTATION

350 West 300 South
Phone (801) 533-8557

P.O. Box 747

Salt Lake City, Utah 84110
Telex 381014

Inquiry No. 646

Date Sept. 10, 1987

Terms _____

Prices quoted
are F.O.B. _____

Delivery _____

Your Inquiry _____

A. F. Budge Mining Ltd.

Page 3

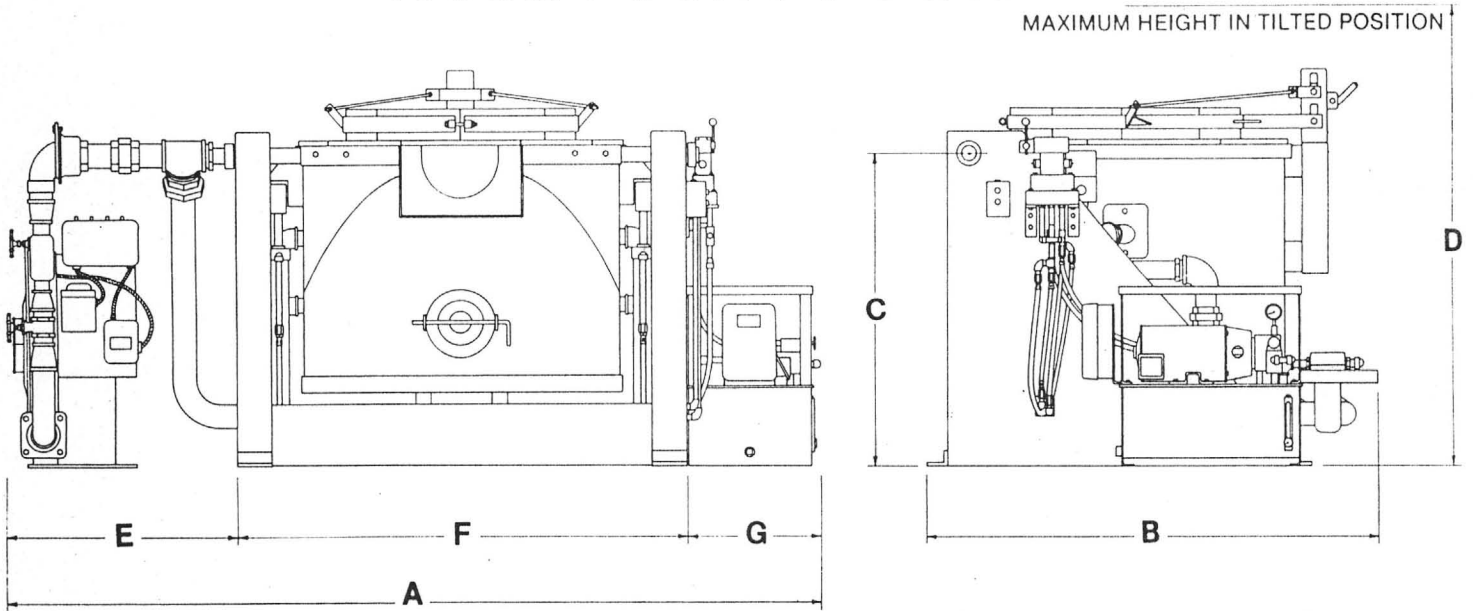
QUANTITY	DESCRIPTION	AMOUNT
	<p><u>Item 4 - Alternate</u></p> <p>Time Temperature Programmable Controller with automatic shutoff, separate drying and distillation cycles, and variable rate burner modulation installed in panel with burner system changes. (To replace on-off control.)</p> <p>Price: Addition</p> <p>Retort to be installed in an enclosed area out of outside elements.</p> <p>Field engineering services are available at \$500.00 per day plus expenses for installation, supervision, training and start-up, if required.</p>	\$ 4,200.00
	<u>Item 5</u>	
1 Each	100 oz. Bullion Mold #CEC BM1	75.00
1 Each	200 oz. Bullion Mold #CEC BM2	125.00
1 Each	300 oz. Bullion Mold #CEC BM3	190.00
1 Each	500 oz. Bullion Mold #CEC BM5	300.00
1 Each	1000 oz. Bullion Mold #CEC BM10	589.00
1 Each	Slag Pot, Sutton Type #CEC SP	750.00
1 Each	Slag Pot Cart	725.00

cc: Frank Millsaps

BY R. A. Wilson
R. A. Wilson

T-200

NOSE POUR FURNACE

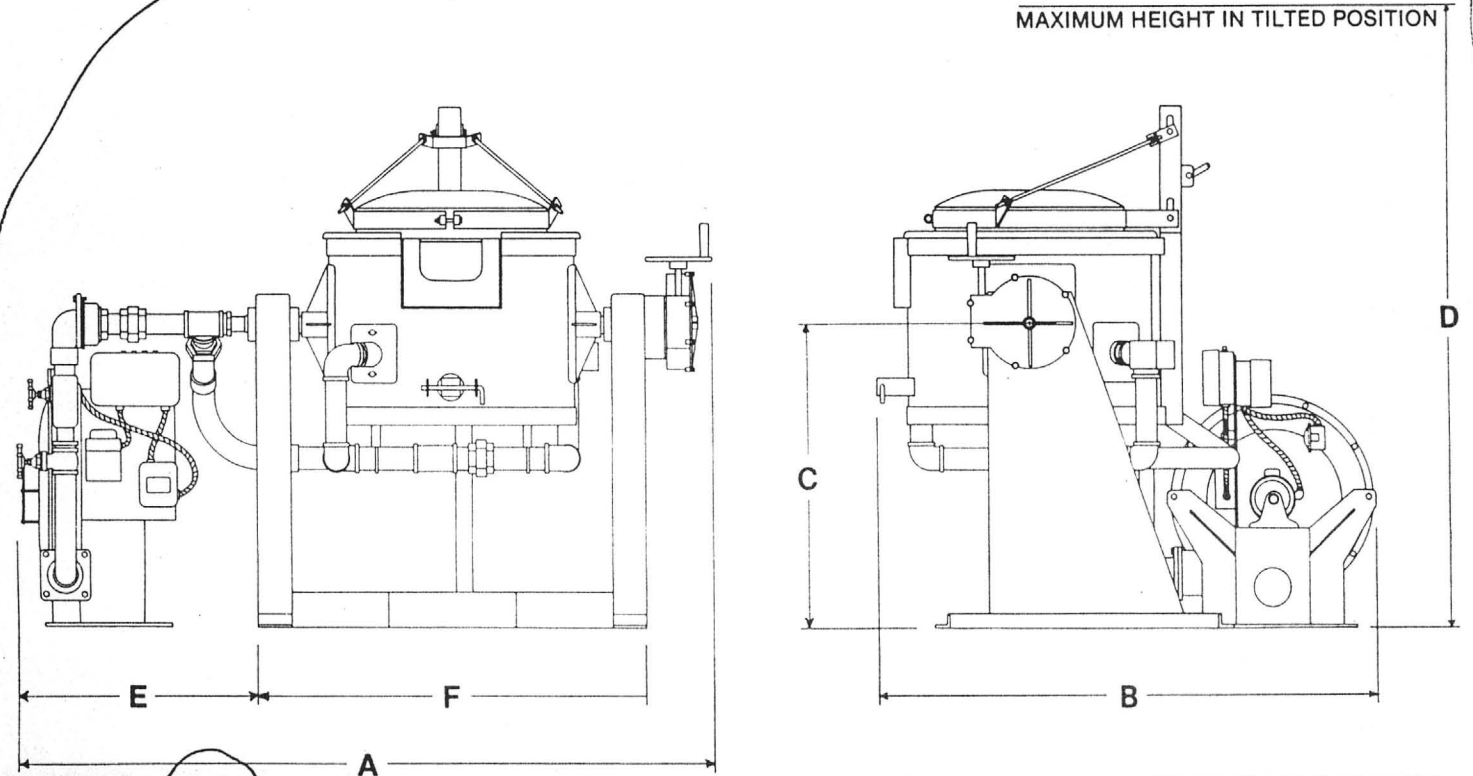


FURNACE MODEL	CRUCIBLE SIZE	CAPACITY PER MELT	COMBUSTION CHAMBER DIMENSIONS		A	B	C	D	E	F	G	BLOWER AND MOTOR RATING	GAS RATING	GAS LINE	GAS VALVE	APPROX. SHIPPING WEIGHT
			DIA.	DEEP												
T-200	No. 200 thru No. 250	750 lbs.	23"	25"	A"	62"	40"	90"	30"	60"	18"	230 CFM 2 HP	1,200,000	2"	1/4	4,000 lbs.

Dimensions Approximate

T-80

CENTER PIVOT TILT



FURNACE MODEL	CRUCIBLE SIZE	CAPACITY PER MELT	COMBUSTION CHAMBER DIMENSIONS		A	B	C	D	E	F	BLOWER AND MOTOR RATING	GAS RATING	GAS LINE	GAS VALVE	APPROX. SHIPPING WEIGHT
			DIA.	DEEP											
T-80	No. 80 thru No. 100	300 lbs.	17"	20"	82"	60"	36"	67"	28"	46"	180 CFM 1 1/2 HP	850,000	2"	1/4	2,000 lbs.

Dimensions Approximate

BID SPECIFICATIONS (Con't)

PART NO. 900055 MODEL B-1501 WITH NO. 4UV SAFETY
Stationary Crucible Furnace as specified in Part No. 900050, plus the No. 4UV ultra violet combustion system, consisting of a Fireye UVM system with automatic spark ignition with blower air switch, magnetic line starter. Provides furnace shut down in

event of air blower failure, flame or power failure. Wiring Conforms to the National Electric Code. Electrical components are UL and CSA listed. Approximate shipping weight 1940 pounds. *(Specify voltage and phase when ordering)*

TILTING CRUCIBLE FURNACES

PART NO. 900997 MODEL T-160
High Temperature Crucible Melting Furnace with manual control tilt mechanism. Tilt mechanism to be oil filled gear box with worm-worm gear manual hand wheel. Designed to use No. 16 standard crucible. Tilting mechanism to give infinite control of metal stream when discharging into pouring ladle. Burner system to be equipped with turbo blower and standard induction motor in all standard voltages and phases. Wiring and electrics conform to the National Electric Code. Components UL and CSA listed and approved. Includes one number 8 (eight pound capacity) ladle. Shipped complete with No. 16 standard crucible and crucible rest. Approximate shipping weight 610 pounds. *(Specify voltage and phase when ordering)*

PART NO. 900998 MODEL T-160 WITH 4UV SAFETY
High Temperature Crucible Melting Furnace, same as specified in Part No. 900997, plus automatic spark ignition and the No. 4UV ultra violet combustion safeguard system, with blower air switch and magnetic line starter. Provides furnace shut down and gas line valve closure in event of air blower failure, flame or electric power failure. Approximate shipping weight 660 pounds.

PART NO. 900060 MODEL T-80 MANUAL TILT
Center Pivot Tilting Crucible Furnace, with Pivot Trunnion Bearings at its center of gravity for easy tilting with gear reducer and hand wheel. For crucible sizes number 80 through number 100. Attainable combustion chamber temperature 2400°F., for melting aluminum and copper alloys. With cover derrick, exhaust and charging hole in cover. Furnace lining and cover are high alumina, air rammed sections, backed with high temperature insulation. Chamber size 17" diameter x 20" deep, with two tangent fired burners, nominal BTU. Furnace equipped with manual two valve mixer to use either manufactured or natural fuel gas. With No. 1611 turbo blower, 180 CFM at 12 oz. with 1½ HP, 360-RPM, ODP, ball bearing motor, 115/230 single or 230/460 poly phase motor with magnetic starter. Complete with silicon carbide crucible rest block 11" diameter x 2" high. Floor space required 7' x 5', lowered height to trunnion 3'; maximum overall height tilted 6'. Approximate shipping weight - 2000 pounds. *(Specify voltage and phase when ordering) \$ 850,000 BTU*

PART NO. 900065 MODEL T-80 WITH NO. 4UV SAFETY
Tilting Crucible Furnace, same as part number 900060, plus the No. 4UV ultra violet safeguard system, consisting of Fireye UVM system with automatic spark ignition, with blower air switch and magnetic starter. Provides furnace shut down in the event of electric power failure, air blower failure, or flame outage. Wiring conforms to the National Electric Code. Electrical components are UL and CSA listed. Approximate shipping weight 2000 pounds.

PART NO. 900070 MODEL T-80 MOTORIZED TILT
Tilting Crucible Furnace, same as specified in part number 900065 above, with combustion safeguard system, plus motorized tilt. The motorized tilt employs a reversing switch, magnetic contactor and start-stop station. Available only in poly phase electrics. Approximate shipping weight 2000 pounds.

PART NO. 900075 MODEL T-200 MANUAL TILT
Tilting Crucible Furnace, with nose pour configuration with Pouring Spout Coaxial with trunnions. For crucible sizes 200-250. Attainable combustion chamber temperature to 2300°F., for melting aluminum and copper alloys. With cover derrick and charging hole in cover. Furnace lining and cover are high alumina, air rammed sections, backed with high temperature insulation. Chamber size 23" diameter x 25" deep, with four tangent fired burners, nominal 1,200,000 BTU. Furnace equipped with manual two valve mixer to use either manufactured or natural fuel; with No. 1912 turbo blower, 230 CFM at 16 oz., with 2 HP, 3600 RPM, ODP, ball bearing motor, 115/230 single or 230/460 poly phase, 60 hertz, with magnetic starter, complete with silicon carbide crucible rest block, 11" diameter x 2" high. Hand tilt requires separated over-head hoist (either hand, electric or air driven) to tilt furnace. Hoist not furnished with furnace. Floor space required 9' x 6'; lowered height to trunnion 40" maximum height tilted 8'. Approximate shipping weight 3750 pounds. *(Specify voltage and phase when ordering)*

PART NO. 900080 MODEL T-200 WITH 4UV SAFETY
Tilting Crucible Furnace, same as specified in part number 900075 above, plus the No. 4UV ultra violet combustion safeguard system, consisting of a Fireye UVM System with automatic spark ignition; with blower, air switch and magnetic starter. Provides furnace shut down in the event of electric power failure, air blower failure, or flame outage. Wiring conforms to National Electric Code, electrical components are UL and CSA listed. Approximate shipping weight 4000 pounds.

PART NO. 900085 MODEL T-200 HYDRAULIC TILT
Tilting Crucible Furnace, same as specified in part number 900080 above, with combustion safeguard system, plus hydraulic tilt. The hydraulic tilt employs two rams actuated by a motorized hydraulic pump with self contained reservoir, strainers, safety valves, and three position hydraulic hand valve. With magnetic contactor and start-stop station. Hydraulic system same voltage and phase as blower system. Approximate shipping weight 4000 pounds.



McENGLEEVAN
Makers of *SPEEDY-MELT* Furnaces
700-708 Griggs Street • P.O. Box 31 • Danville, Illinois 61832

BID SPECIFICATIONS (Con't)

PART NO. 900055 MODEL B-1501 WITH NO. 4UV SAFETY
Stationary Crucible Furnace as specified in Part No. 900050, plus the No. 4UV ultra violet combustion system, consisting of a Fireye UVM system with automatic spark ignition with blower air switch, magnetic line starter. Provides furnace shut down in

event of air blower failure, flame or power failure. Wiring Conforms to the National Electric Code. Electrical components are UL and CSA listed. Approximate shipping weight 1940 pounds. *(Specify voltage and phase when ordering)*

TILTING CRUCIBLE FURNACES

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High Temperature Crucible Melting Furnace with manual control tilt mechanism. Tilt mechanism to be oil filled gear box with worm-worm gear manual hand wheel. Designed to use No. 16 standard crucible. Tilting mechanism to give infinite control of metal stream when discharging into pouring ladle. Burner system to be equipped with turbo blower and standard induction motor in all standard voltages and phases. Wiring and electrics conform to the National Electric Code. Components UL and CSA listed and approved. Includes one number 8 (eight pound capacity) ladle. Shipped complete with No. 16 standard crucible and crucible rest. Approximate shipping weight 610 pounds. *(Specify voltage and phase when ordering)*

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PART NO. 900065 MODEL T-80 WITH NO. 4UV SAFETY
Tilting Crucible Furnace, same as part number 900060, plus the No. 4UV ultra violet safeguard system, consisting of Fireye UVM system with automatic spark ignition, with blower air switch and magnetic starter. Provides furnace shut down in the event of electric power failure, air blower failure, or flame outage. Wiring conforms to the National Electric Code. Electrical components are UL and CSA listed. Approximate shipping weight 2000 pounds.

PART NO. 900070 MODEL T-80 MOTORIZED TILT
Tilting Crucible Furnace, same as specified in part number 900065 above, with combustion safeguard system, plus motorized tilt. The motorized tilt employs a reversing switch, magnetic contactor and start-stop station. Available only in poly phase electrics. Approximate shipping weight 2000 pounds.

PART NO. 900075 MODEL T-200 MANUAL TILT
Tilting Crucible Furnace, with nose pour configuration with Pouring Spout Coaxial with trunnions. For crucible sizes 200-250. Attainable combustion chamber temperature to 2300°F., for melting aluminum and copper alloys. With cover derrick and charging hole in cover. Furnace lining and cover are high alumina, air rammed sections, backed with high temperature insulation. Chamber size 23" diameter x 25" deep, with four tangent fired burners, nominal 1,200,000 BTU. Furnace equipped with manual two valve mixer to use either manufactured or natural fuel; with No. 1912 turbo blower, 230 CFM at 16 oz., with 2 HP, 3600 RPM, ODP, ball bearing motor, 115/230 single or 230/460 poly phase, 60 hertz, with magnetic starter, complete with silicon carbide crucible rest block, 11" diameter x 2" high. Hand tilt requires separated over-head hoist (either hand, electric or air driven) to tilt furnace. Hoist not furnished with furnace. Floor space required 9' x 6'; lowered height to trunnion 40" maximum height tilted 8'. Approximate shipping weight 3750 pounds. *(Specify voltage and phase when ordering)*

PART NO. 900080 MODEL T-200 WITH 4UV SAFETY
Tilting Crucible Furnace, same as specified in part number 900075 above, plus the No. 4UV ultra violet combustion safeguard system, consisting of a Fireye UVM System with automatic spark ignition; with blower, air switch and magnetic starter. Provides furnace shut down in the event of electric power failure, air blower failure, or flame outage. Wiring conforms to National Electric Code, electrical components are UL and CSA listed. Approximate shipping weight 4000 pounds.

PART NO. 900085 MODEL T-200 HYDRAULIC TILT
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CUSTOM EQUIPMENT CORPORATION

350 West 300 South
Phone (801) 533-8557

P.O. Box 747

Salt Lake City, Utah 84110
Telex 381014

QUOTATION

Inquiry No. 642

Date Sept. 9, 1987

Terms 25% with Order
Bal Net 30 Days

Prices quoted
are F.O.B. SLC, Utah

Delivery 6-8 Weeks

Your Inquiry _____

DMEA LTD.

SEP 11 1987

RECEIVED

A. F. Budge Mining Ltd.
Suite 111 B-E
7340 Shoeman Lane
Scottsdale, Arizona 85251

Attn: Ms. Carol O'Brien

QUANTITY	DESCRIPTION	AMOUNT
1 Only	<p>At the request of Mr. F. W. Millsaps, we are pleased to quote a C.E.C. Zinc Precipitation System as follows:</p> <p>C.E.C. Zinc Precipitation System skid mounted suitable for flows from 95 to 125 gpm including:</p> <ul style="list-style-type: none"> 24" dia. vacuum tank with polypropylene packing, sight glass and level control valve and spray header. 30" dia. zinc feed cone with motor operated valve. C.E.C. positive belt feeder for feeding zinc powder and lead nitrate. Solution pump for 125 gpm at 100' TDH equipped with double mechanical seals for vacuum service. Vacuum pump, water seal type, 43 cfm displacement at 22" mercury at sea level. 3 HP. Steel skids and platform, steps, handrails. Indicating/totalizing flowmeter. Electrical control panels and skid pre-wiring to motor. Piping between units on the skid. (Piping to and from the unit and power to the panels by others.) Unit is factory assembled, match marked and knocked down for shipping. 	

BY R. A. Wilson
R. A. Wilson



CUSTOM EQUIPMENT CORPORATION

350 West 300 South
Phone (801) 533-8557

P.O. Box 747

Salt Lake City, Utah 84110
Telex 381014

QUOTATION

Inquiry No. 642

Date Sept. 9, 1987

Terms _____

Prices quoted
are F.O.B. _____

Delivery _____

Your Inquiry _____

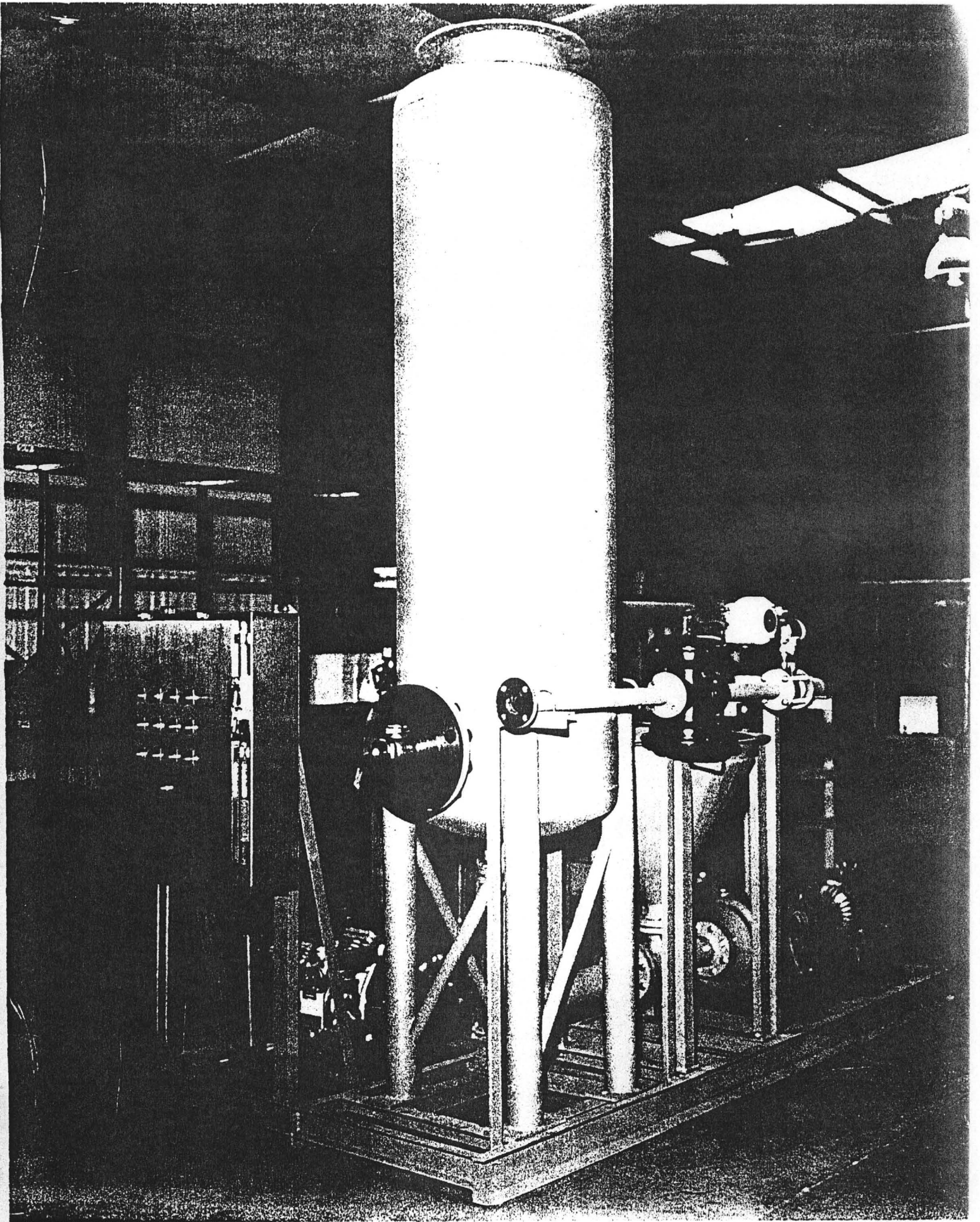
A. F. Budge Mining Ltd.

Page 2

QUANTITY	DESCRIPTION	AMOUNT
	<p>Price, F.O.B. Salt Lake City, Utah</p> <p>Estimated Shipping Weight: 4,200 lbs.</p> <p>Enclosure: Zinc Precipitation System Package</p>	<p>\$44,750.00</p>

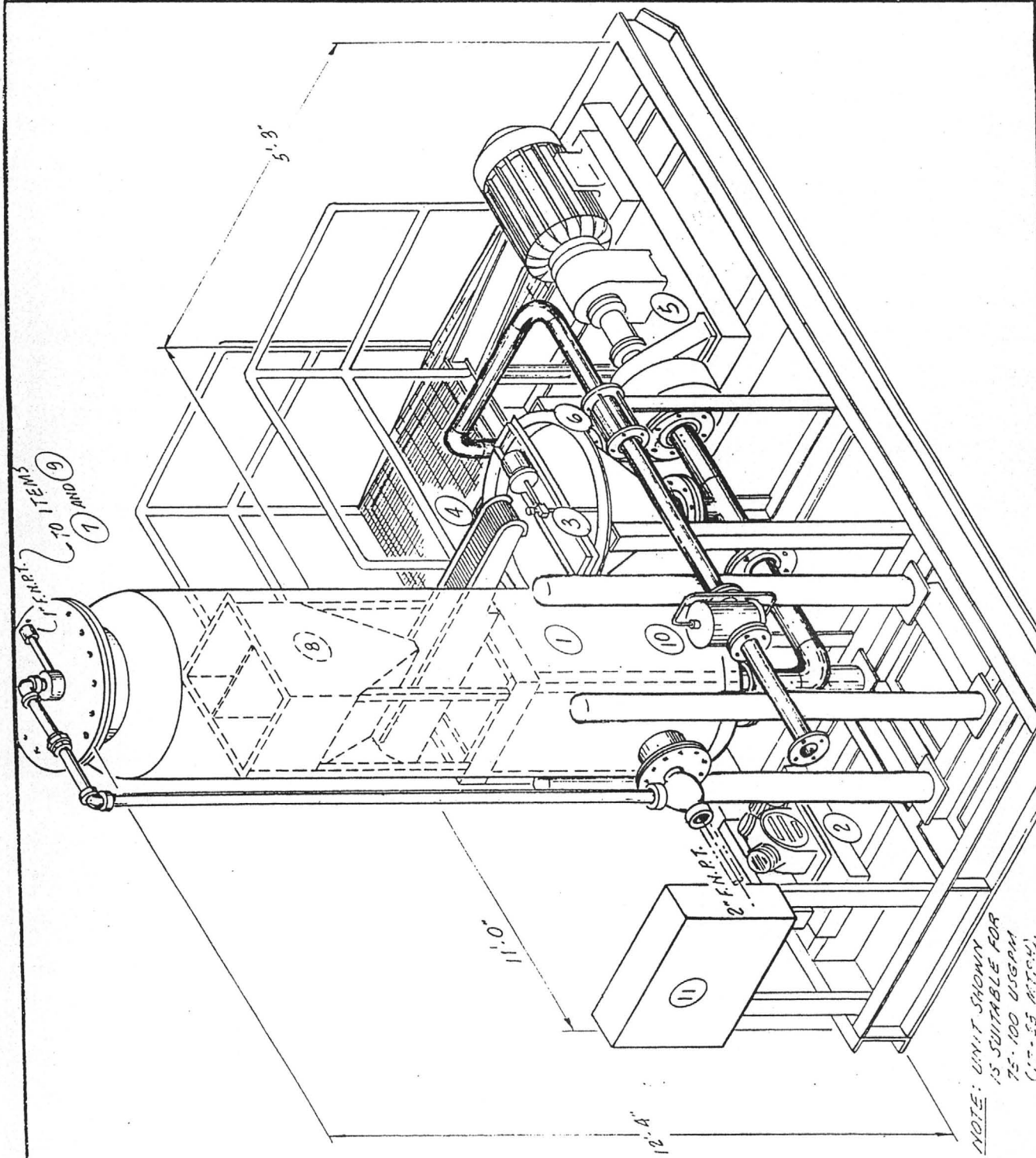
cc: Mr. Frank Millsaps

BY R A Wilson
R. A. Wilson



TYPICAL 75 GPM CUSTOM EQUIPMENT ZINC PRECIPITATION UNIT

ITEM	DESCRIPTION
①	DEAERATION TANKS (VACUUM)
②	VACUUM PUMP
③	ZINC CONE
④	ZINC FEEDER
⑤	PRECIPITATE PUMP
⑥	FLOW METER
⑦	MOISTURE TRAP (SWITCH TO LOCATE AND PIPE)
⑧	ZINC LOADING HOOPER
⑨	SEAL POT (BY OWNER)
⑩	CONTROL VALVE
⑪	CONTROL PANEL
ADDITIONAL RELATED EQUIPMENT AVAILABLE: <ul style="list-style-type: none"> • RETORT FURNACES • CARBON STRIPPING COLUMN'S • MELTING/REFINING SYSTEM • SAMPLERS • REAGENT TANKS, MIXERS AND PUMPS 	
PREPARED FOR:	
ZINC PRECIPITATION SYSTEM (MODULAR)	
Custom Equipment Corp. 05-66-1	



NOTE: UNIT SHOWN IS SUITABLE FOR 75-100 USGPM (17-53 METERS)

Smelting Contract —

Need to draft letter to interested smelters to
accompany samples.

Deliver samples promptly with letter.

DATA = Annual Production ?

Representative Sub analysis

20 lb sample

Precise metal content

smelting flux ?

direct shipping ?

P-D To: Phelps Dodge

~~Re~~ PLAYAS N.M. 88009

attention

~~Let~~ Pete Chen Supt

cc: to Don Ferguson @ Moroni

~~Newmont Mining~~ Newmont Exploration Ltd.

200 W. Dent St. 85737

Teeg Rich phone 297-7281

5/19/87

1

CIMARRON

PETE HAHN'S LATEST RESERVE INDICATES

ore 660,000 TONS @ .053 OPT Au
Waste 1,900,000 TONS WASTE

stripping ratio 2.9:1

Metallurgical Testing indicates HEAP LEACH RECOVERIES
OF APPROXIMATELY 70%

Therefore recoverable ounces = 24,500 ounces

or @ \$400/ounce → \$9,800,000

@ \$450/ounce → \$11,025,000

CAPITAL

Leach Ponds & PAD @ \$0.77/TON = \$510,000
based on Vulture cost

EXTRACTION PLANT = \$480,000
based on Vulture cost x 1.5

Contingency @ 15% = \$150,000

TOTAL \$1,140,000

OPERATING COST

Mining cost @ \$1.50/TON
2560 x \$1.50 = \$3,840,000

EXTRACTION Cost @ \$5.00/TON = 3,300,000

ORE CRUSHING & HANDLING cost = 660,000
@ \$1/TON
7,800,000

5/15/87

2

Cimarron

Summary

	\$400	\$450
GROSS REVENUE	\$ 9,800,000	11,025,000
OPERATING COST	<u>7,800,000</u>	7,800,000
OPERATING PROFIT	2,000,000	3,225,000
CAPITAL	1,140,000	1,140,000
TO DATE SUNK COSTS	<u>350,000</u>	350,000
NET PROFIT	1,510,000	1,735,000

$$\begin{array}{l} @\$400 \\ 510,000 \div 4 = \$128,000 \end{array}$$

Therefore, BASED ON your criteria we would have to profit \$128,000 from sale of Cimarron or Sale price of \$512,000

TO DATE COST per ounce \$14.30

Price per ounce @ \$512,000 SALE PRICE \$21.10

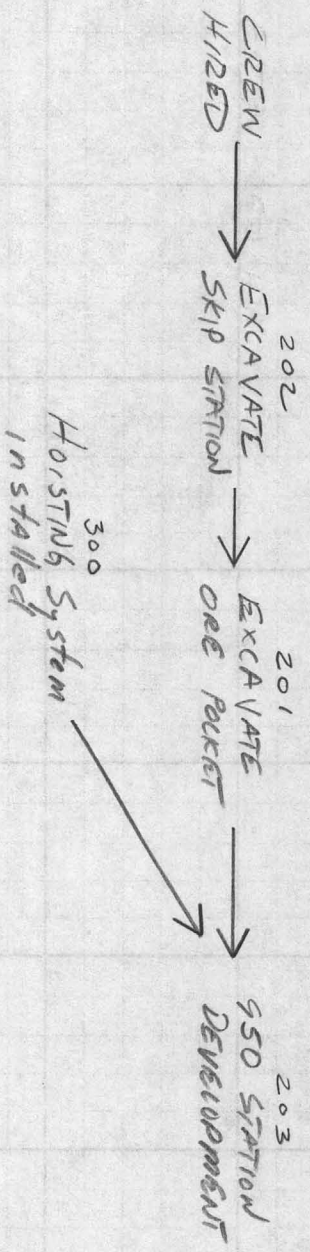
$$\begin{array}{l} @\$450 \\ \$1,735,000 \div 4 = \$434,000 \end{array}$$

Sale Price \$784,000

WVX DEVELOPMENT SCHEDULE

200 UNDERGROUND FACILITIES DEVELOPMENT

5/6/87



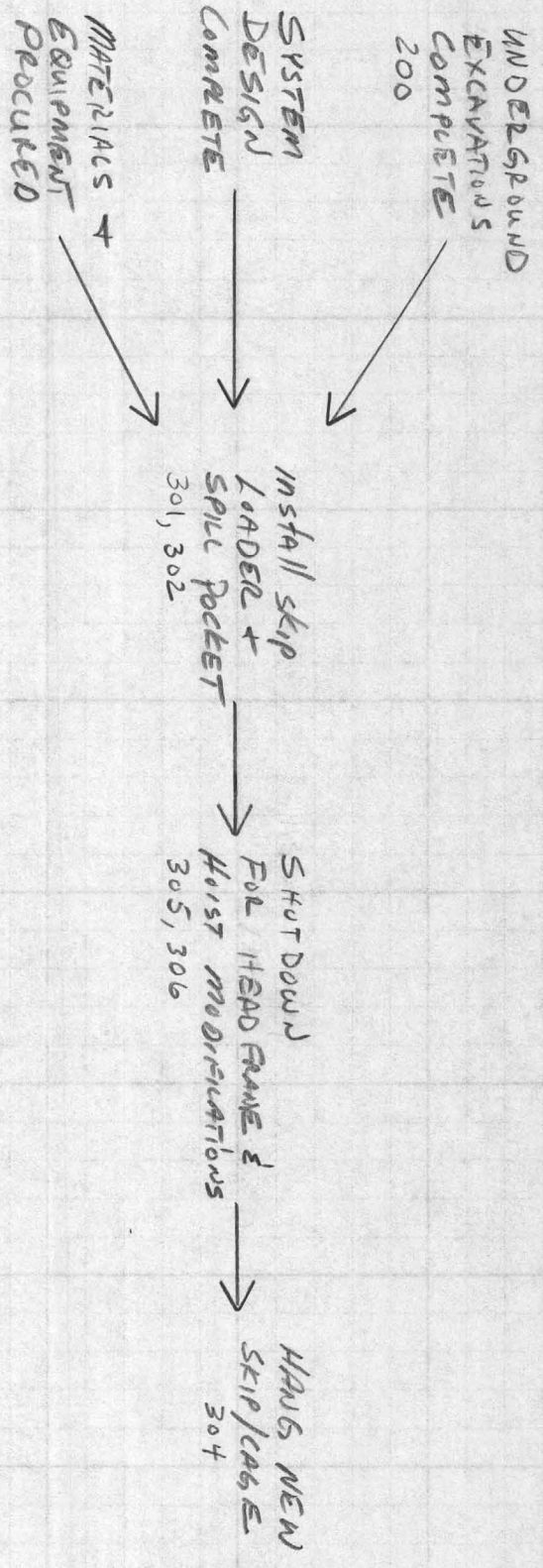
204 EMERGENCY Escape System design included in other design activities
Construction must commence concurrent with initial stoping

205 Mine Ventilation design included in other design activities
Installation of Equipment and Air doors As needed.

WVX DEVELOPMENT SCHEDULE

300 Hoisting System

5/6/87

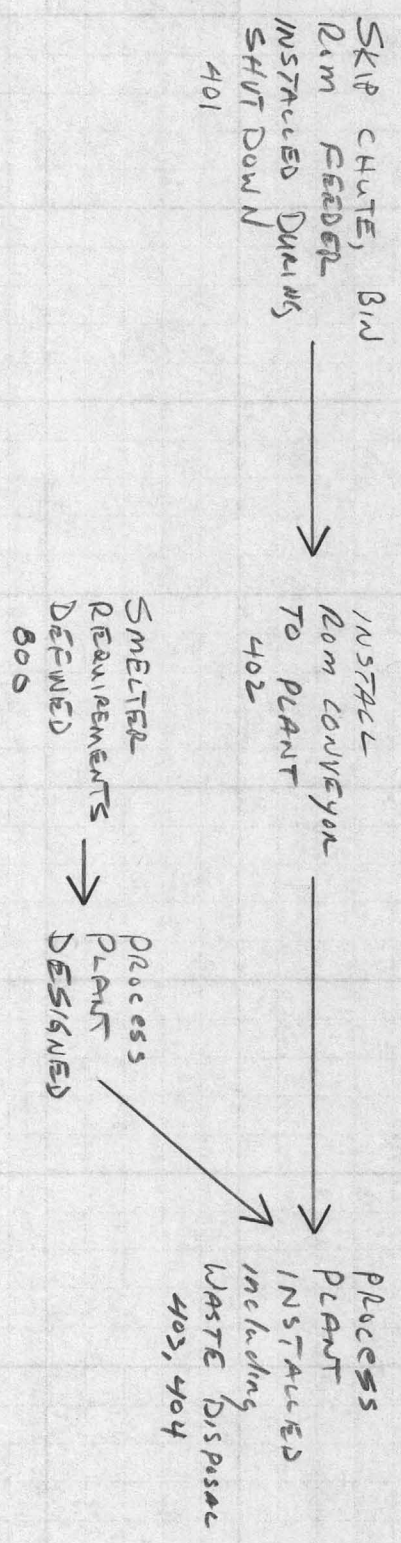


303 DUMP GRIZZLEY AND SLASHER INSTALLED AS 950 STATIONS WORK IS PERFORMED

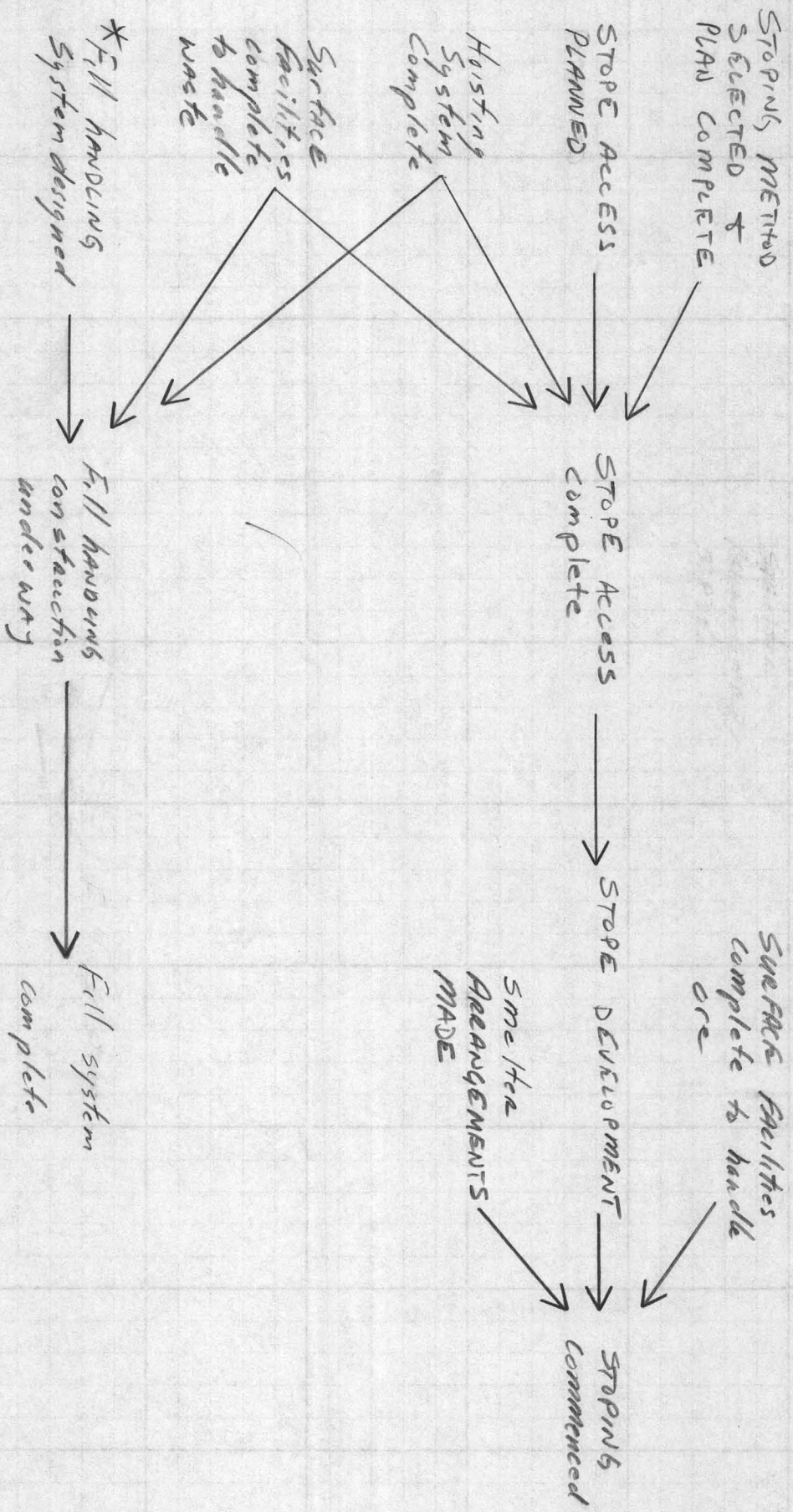
VIX DEVELOPMENT SCHEDULE

5/6/87

400 SURFACE MATERIAL HANDLING FACILITIES



405 Mobile Equipment needs to be determined in process plant design.



* Assume Fill method selected

5/11/87

CAPITAL Cost Estimate

SKIP + CAGE	Purchase	\$ 8000
	Modifications	
	MISC raise bins for skidder etc	17,000
Pocket Excavation		13,000
	LABOR 300 + 400	55,000
Skip loading hardware installation		
Pocket Concrete Work		12,000
Headframe Mod's materials		2,000
Headframe body equipment		
	Steel	10,000
SSD STATION Work		10,000
Feeder + Hopper used?		10,000
Belts		

5/8/87

ESTIMATE OF WASTE Volume from 950 SHAFT STATION &
Dump pocket EXCAVATION (FROM HK'S Conceptual Design)

SKIP LOADING STATION

$$26 \times 12 \times 10 = 3,120 \text{ cu ft in place}$$

$$60\% \text{ swell} \rightarrow \approx 5000 \text{ cu ft}$$

Ore Pocket

HK's calc.

$$2000 \text{ cu. ft.} \times 1.6 = 3200 \text{ cu. ft}$$

Slashed trench

$$6' \times 6' \times 100' \times 1.6 = 5700 \text{ cu. ft}$$

TAIL DRIFT

$$6' \times 8' \times 30' \times 1.6 = 2,300 \text{ cu. ft}$$

Summary

5000
3200
5700
<u>2300</u>
16,200 cu. ft

SHAF x section

$$4' \times 5.5' = 22 \text{ sq ft}$$

$$\frac{16200}{22} = 735 \text{ feet of drift needed for Volume}$$

100 Site Work

- 101 Clear and Prepare Yard Area
- 102 Water and Power Distribution
- 103 Rebuild R.R. Car Loading Site (Clarksdale)

200 Mining / Underground Excavation

- ~~201 Tunnel to Drill Station~~
- ~~202 Tunnel to Ore Body~~
- ~~203 Ore Body Development~~
- 204 Ore and Waste Storage Excavation (shaft loadout)
- 205 Skip Loading Pocket Excavation
- 206 Tunnel Development at 950 Level Dump Site
- 207 Emergency Escape System
- 208 Mine Ventilation

300 Shaft / skip / Headframe / Hoist

- 301 Skip Loading System
- 302 Skip spill Pocket
- 303 Trip Dump Grizzley & Slusher System
- 304 Skip and Cage
- 305 Headframe Modifications
- 306 Hoist & Hoisthouse Modifications

400 Surface Material Handling Facilities

- 401 Skip Chute, Surge Bin, R.O.M. Feeder
- 402 Conveyor to R.O.M. storage
- 403 Ore Processing System
- 405 Waste Disposal System
- 406 Mobil Equipment

500 MISC. Economics

- 501 Ore Body No. 1 Evaluation
- 502 Production Cost Estimates
- 503 Preliminary Capital Cost Estimate
- ~~504 Equipment Procurement Schedule~~
- 505 Smelter Return Estimates
- 506 Transportation Cost Estimates
- 507 Cash Flow Forecast & R.O.R.

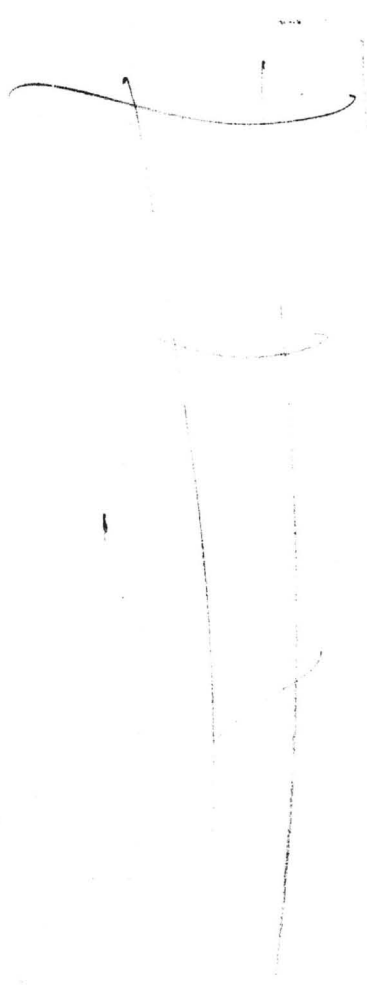
- Legend
- Eng'g
 - Procurement
 - Fabrication
 - Construction

UVX

Date: _____
 Rev: _____
 By: _____

No:	Item	% Comp	Week of 1987				
			May	Jun	Jul	Aug	Sep
100	Site Work						
200	Mining, etc						
300	Shaft/Skip/Windframe						
400	Surface Plant						
500	Misc.						

1 day = 0.1 inches
 150 days = 15 inches



200

1

	Eng	Procure	FMS	Est
201				
201	5/11-6/1	N/A	N/A	5/25-6/15
202	"	"	"	"
203	5/11	NA	NA	8/3-8/24

~~204~~

~~205~~

400

401	6/11-6/15	6/15-7/6	6/29-7/6	7/6-8/3
-----	-----------	----------	----------	---------

402

403

404

405

? }
 ? } Depends on master contract
 ? } at ~~minimum~~ minimum Trade fraction for
 ? } RSM see & water handling.

Field Work
EXCAVATION
Construction
6/15 -
~~5/25 - 6/15~~ ET
6/15 -

300
301
Eng Procure FAB
5/11 - 6/1 5/11 - 6/1 5/25 - 6/8

1


301 ENG PRGC FAB INSTALLATION
5/11 - 6/1 5/11 - 6/1 5/25 - 6/8 6/15 - 7/27

302 Determine need after system operational

303 5/11 - 6/1 5/25 - 7/1 6/8 - 6/15 6/15 - 7/27

304 5/25 - 6/8 5/11 - 6/8 6/8 - 7/6 7/27 - 8/3

305. ~~5/11~~ 6/1 - 6/15 6/15 - 6/29 6/29 - 7/6 7/27 - 8/3

306 

5/4/87

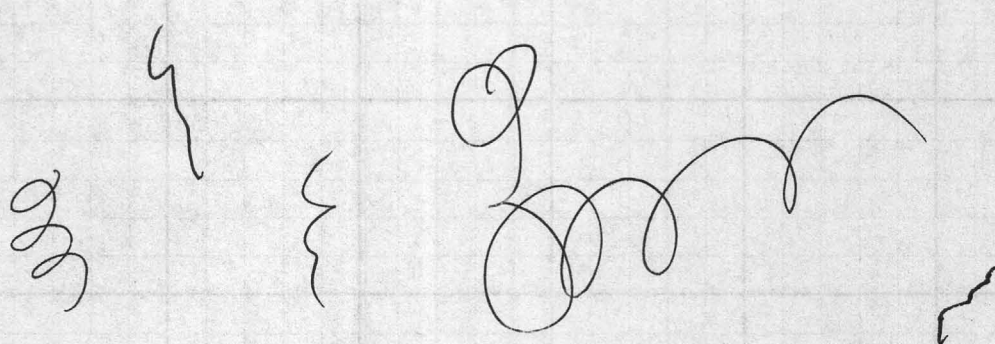
UVX- Milestones to Production -
(NOT ORDERED)

- ✓ ① Decision to produce -
- ✓ ② Engineering drawings of skip loading station AND ④ surface facilities.
- ✓ ③ Commitments from smelters to purchase ore
- ✓ ④ Above
- ✓ ⑤ Modification Skip, cage, hand frame
- ✓ ⑥ Construction of Dump pocket + skip loading station
- ✓ ⑦ Installation of surface facilities.
- ✓ ⑧ Decision? our own crushing, hauling to smelter / rail head
or contractor crushing / hauling.
- ✓ ⑨ Mining Method determined + designed.
- ✓ ⑩ Test stope?
- ✓ ⑪ Fill source required?
- ✓ ⑫ Fill source secured.
- ✓ ⑬ Stope development commenced
- ✓ ⑭ Exploration drilling
- ✓ ⑮ Hire additional manpower
- ✓ ⑯ Fill placement facilities designed + installed.
- ✓ ⑰ Additional mining equipment purchased.
- ✓ ⑱ Metallurgical Tests - Agitated Leach?
- ✓ ⑲ Smelter Fly - bulk sample?
- ✓ ⑳ Sign crushing / hauling contract
- ✓ ㉑ Mining Plans Approved MSHA? At Mine Inspector?

5/4/87

UVX - Milestones to Production - (NOT ORDERED)

- ✓ (22) Certify (drop test) / skip / case
- ✓ (23) Determine Water Requirements (cut/fill)
- ✓ (24) MATCH Water requirements with source capacity (Verone and/or mine)
- ✓ (25) ADOT ROAD CONSTRUCTION - Problems/Solutions?
- ✓ (26) Verde's AVAILABLE LAND? Do we need more surface area?



100 AS is

200 "

300 "

400 "

500 "

600 EXPLORATION Drilling

700 Economics

800 Smelter Contract

900 Misc.

Time Line (4 colored bars)

Eng, Proc, Fab, Construction.

completion dates only

900 Misc.

901 MSHA & AZ Mine Inspectors Review

902 Public Relations

903 Accounting System

904 Employee policies

500 STOPING ENGINEERING / DEVELOPMENT

501 SELECT STOPING METHOD

502 Design STOPING ACCESS AND FACILITIES

* 503 Fill source secured (including haulage means)

* 504 Fill HANDLING System Designed & Constructed

505 ~~DR~~ STOPING Development completed

506 STOPING commenced

* Assumes A BACKFILL METHOD would be selected

700 Misc.

701 DRILL STATION ACCESS AND DEVELOPMENT

702 EQUIPMENT Procurement Schedule

703 MSHA AND A₂ Mine Insp. ~~REVIEW~~
REVIEW

704 Public RELATIONS

800 Smelter Contract

801 Samples to interested smelters

802 Analysis, in house, of ore

803 Negotiate Smelter Contract

900 Exploration Drilling

901 REVIEW Drilling STRATEGY

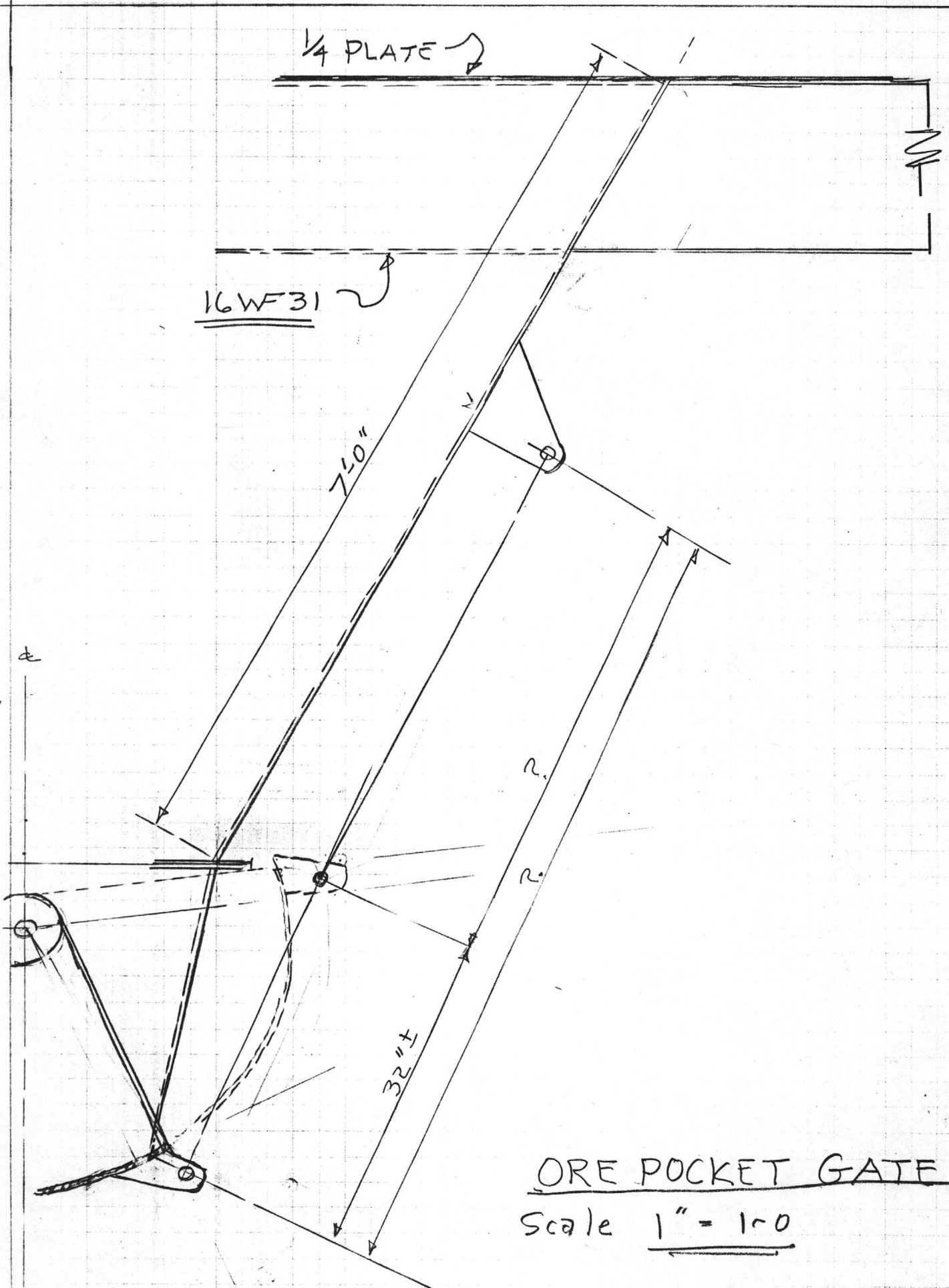
902 Access DRILL STATIONS

903 DRILL TARGET

904 ESTIMATE Reserve

UXX

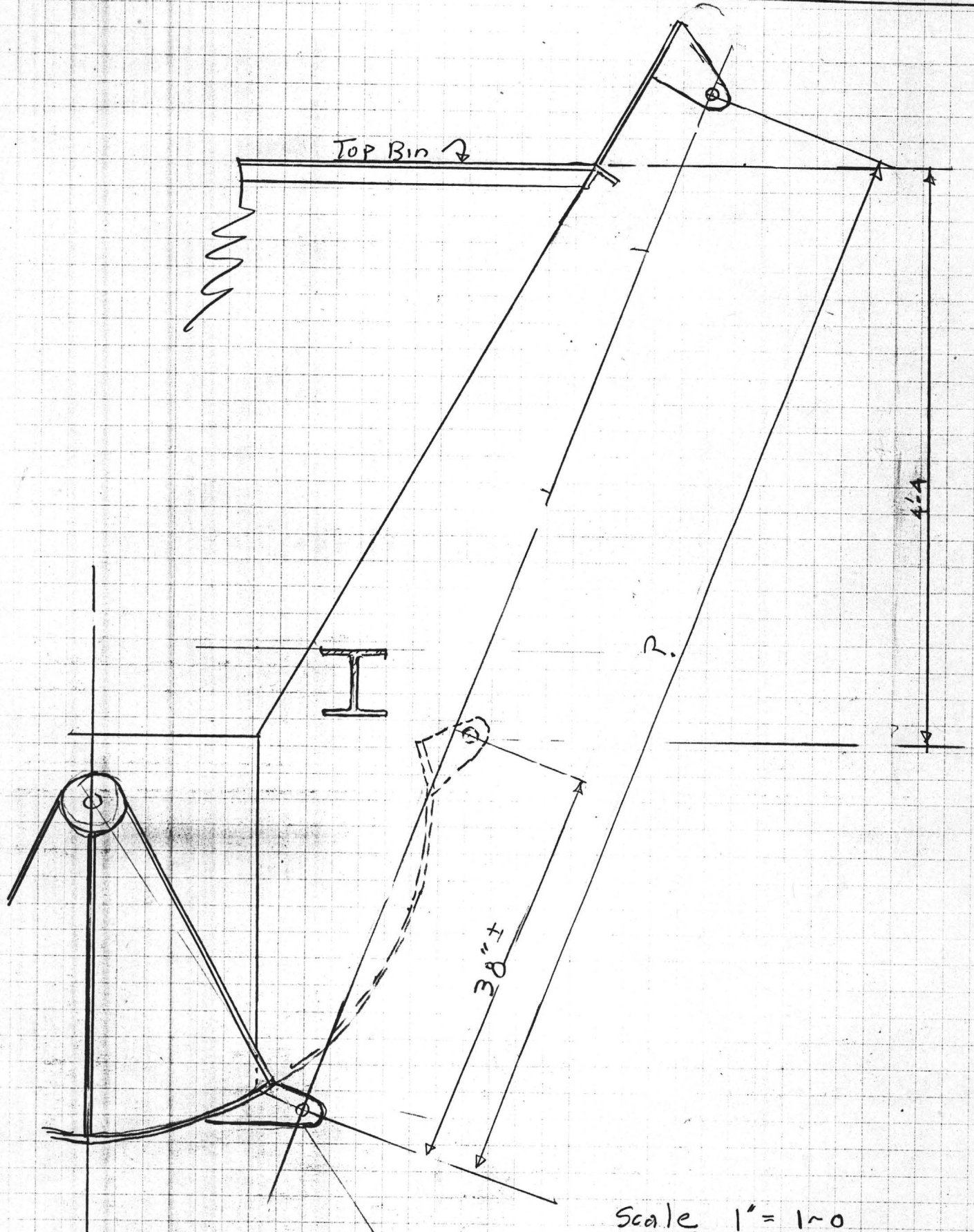
7/22/87



ORE POCKET GATE
Scale 1" = 1'-0"

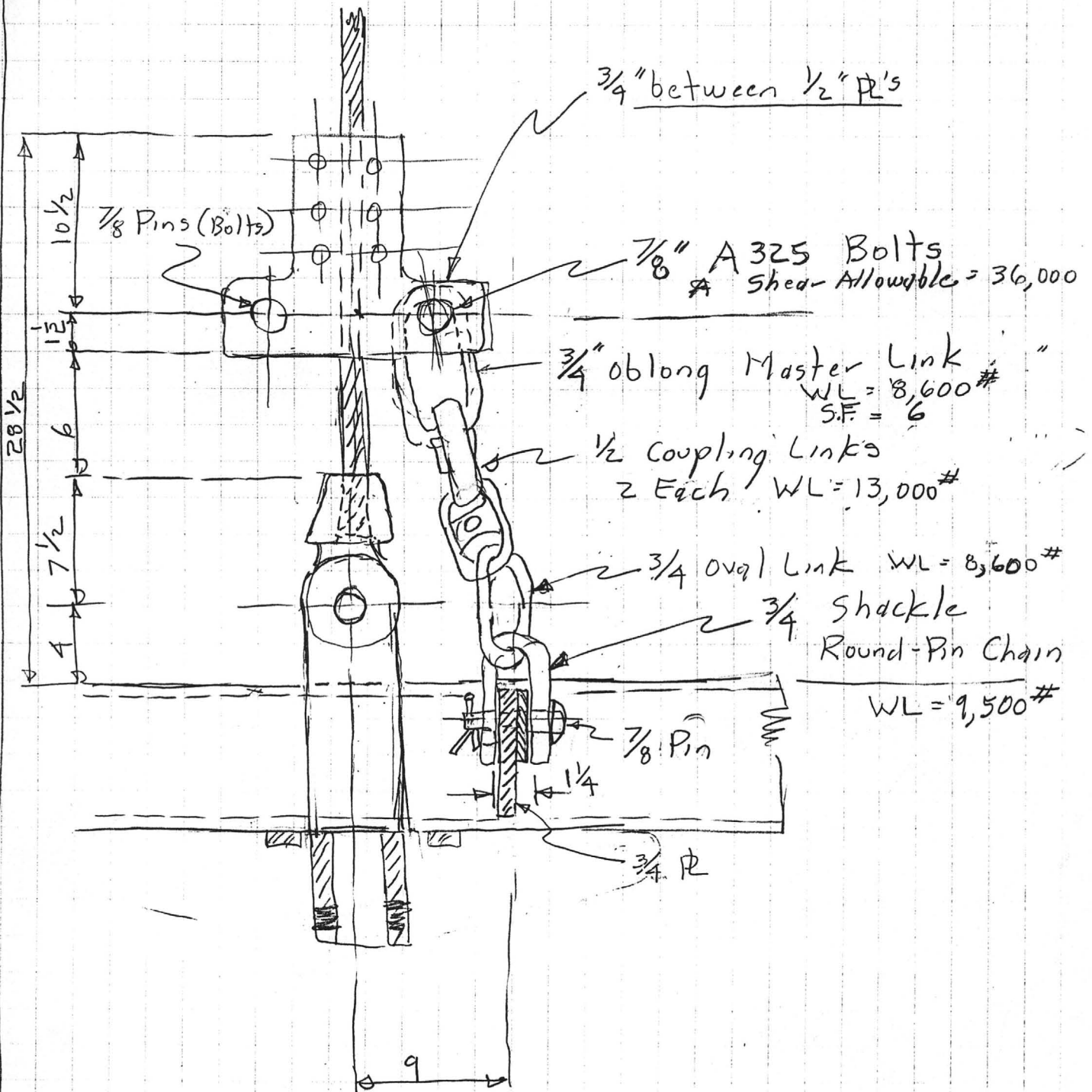
UVX

7/22/87



BATCH HOPPER

Scale 1" = 1'-0"



On Order with "Marty" @ ARIZ Wire Rope & Rigging

- [4 - $\frac{1}{2}$ " ϕ Round Pin Chain Shackles
2 - $\frac{3}{4}$ " do do do

25⁹⁸

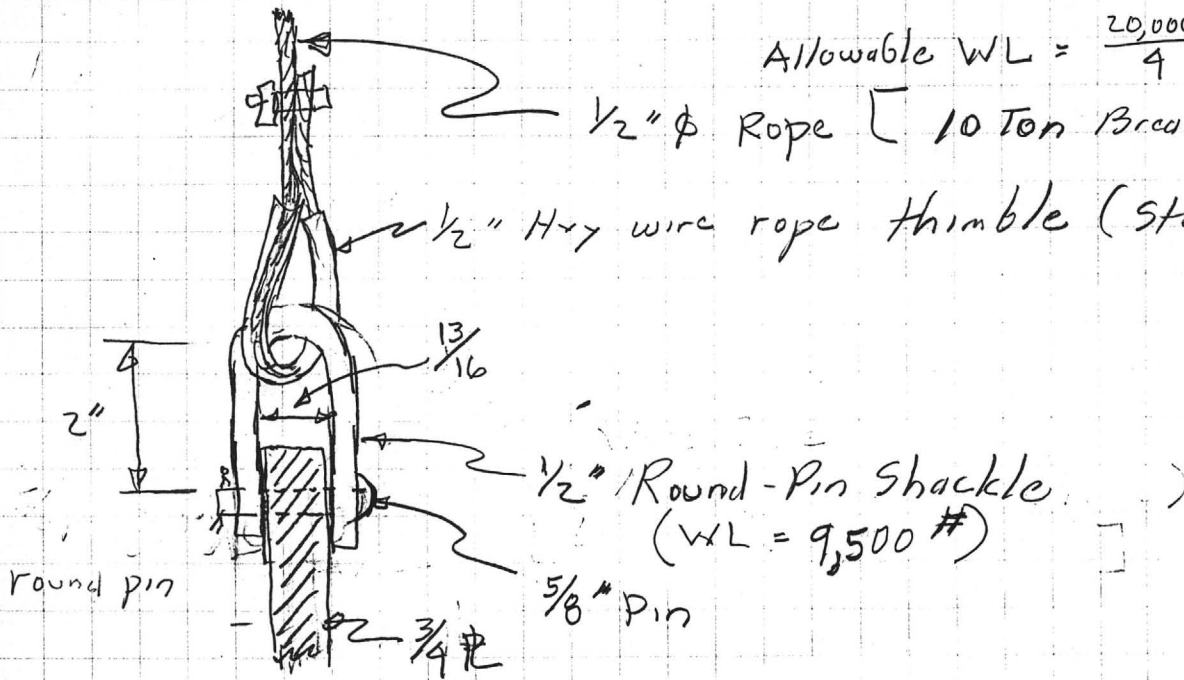
2 blank w thims

3114 N 30TH Ave

Allowable WL = $\frac{20,000\#}{4} = 5,000\#$

1/2" ϕ Rope [10 Ton Breaking Strength

1/2" Hvy wire rope thimble (Standard)



1/2" Round-Pin Shackle (WL = 9,500#)

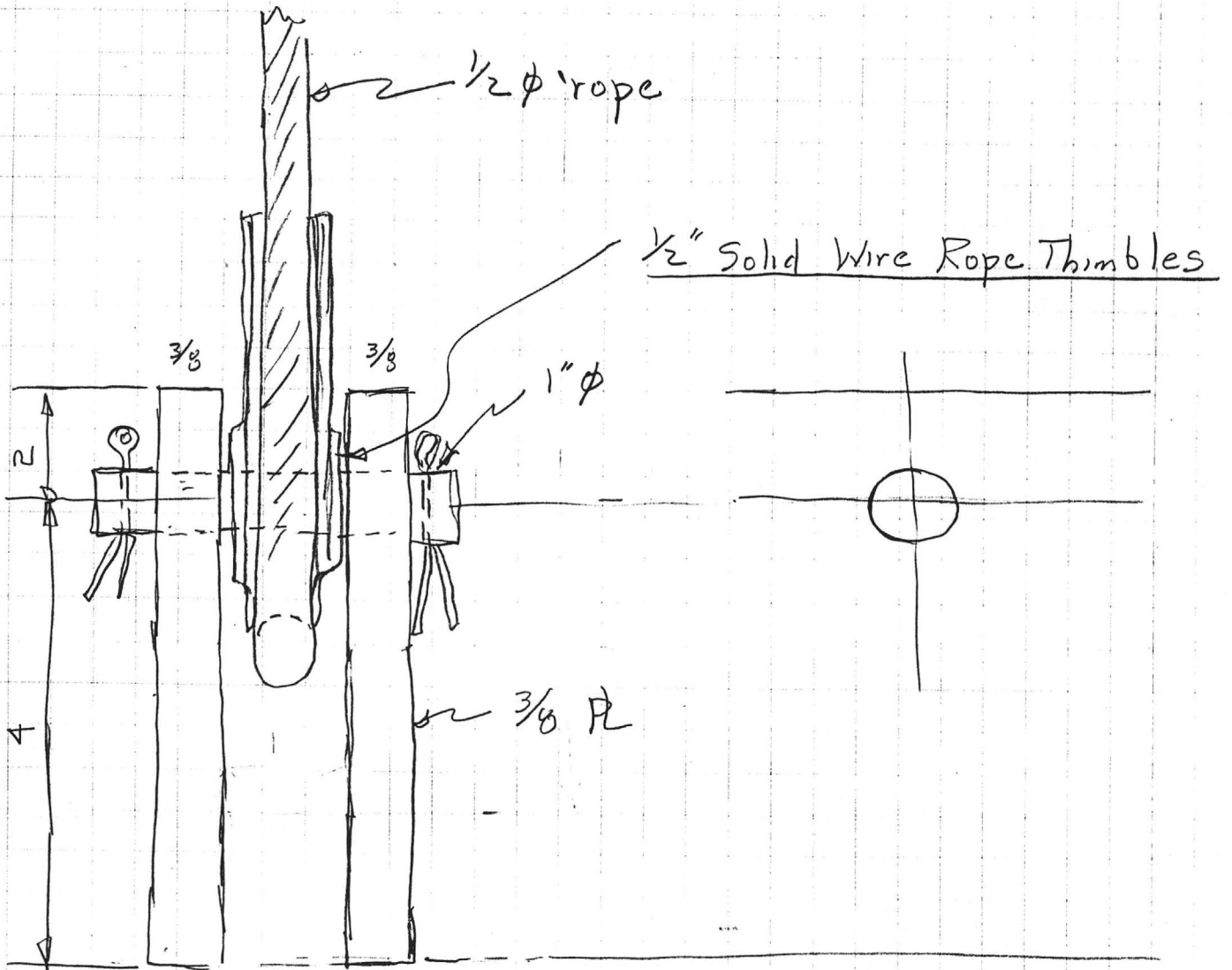
4 Eq.

1/2" Rope For Counter Wt.

UYX ~ Jerome

6/5/87

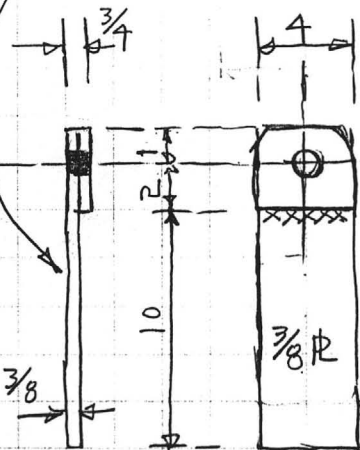
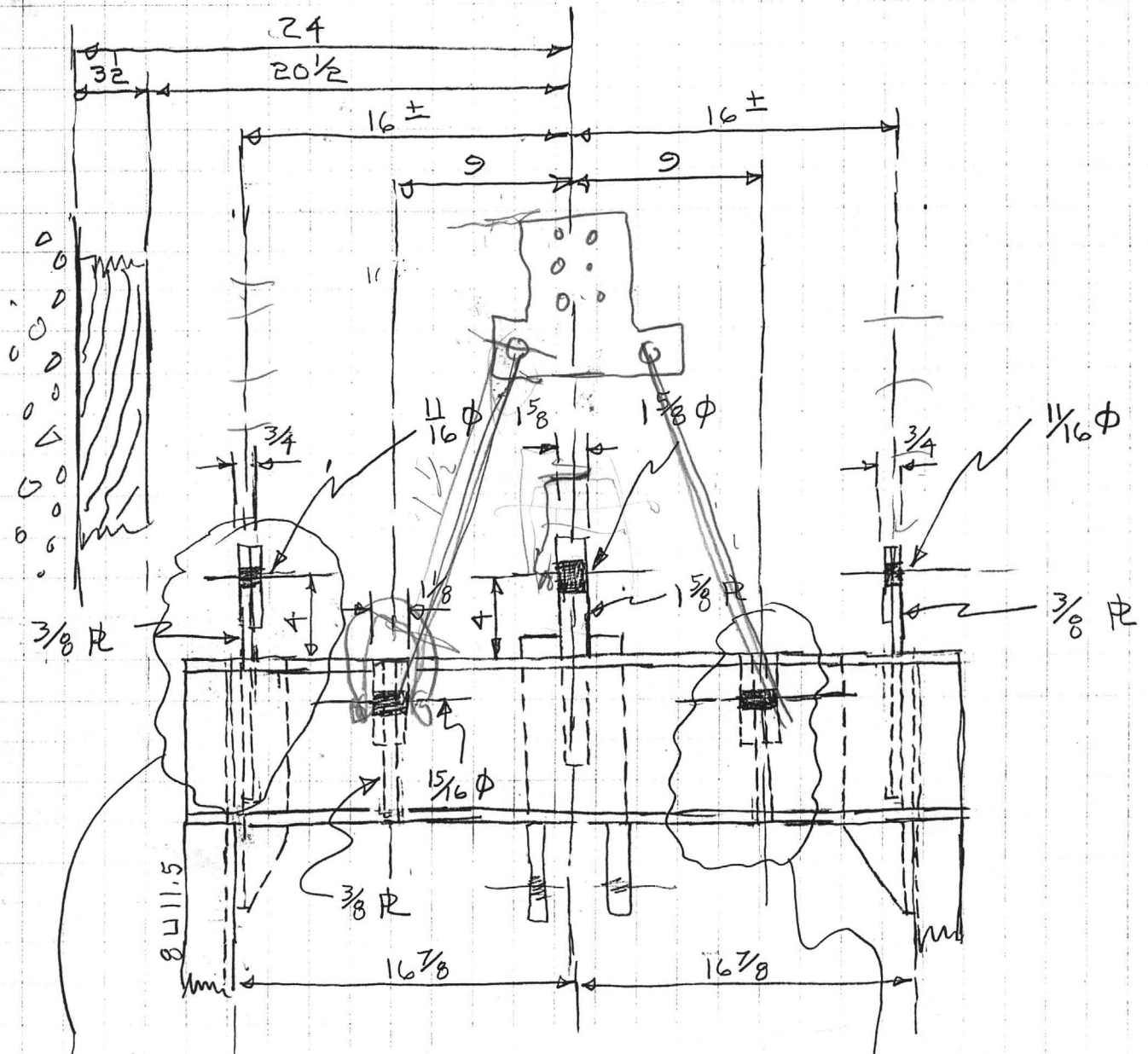
COUNTER WT ROPE CONNECTOR



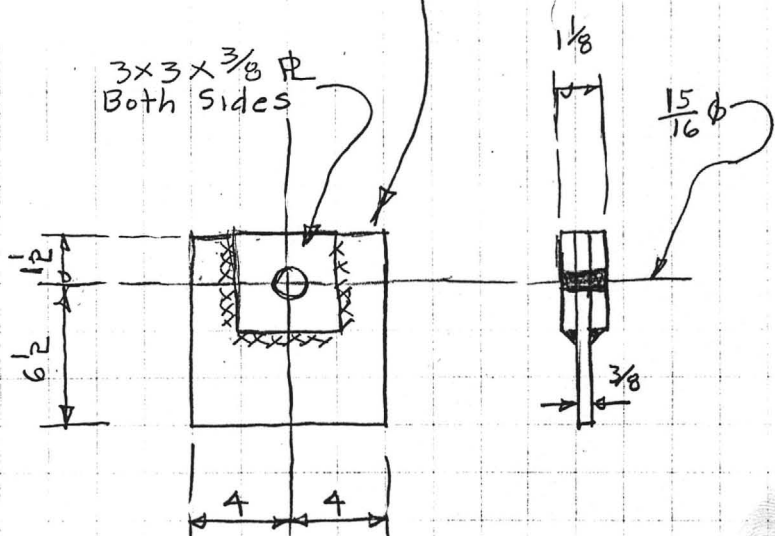
wire rope $1/2" \phi$ rope wt/ft .46 lbs maximum
 \$0.39/ft. import - Korea
 6x19 STANDARD Arist Rope \$0.67
 extra up and p burstal 13.3 tons
 2- 1400' continuous
 Arwin Rope - 44 ft/ft force

~~check $7/16" \phi$ as well~~

2- Bolts A 325 $7/8"$ STANDARD threads
 length $3\ 1/2"$



MAKE - 2



MAKE - 2

A) Counter wt

✓ 20 - 1/2" Drop forged wire rope clips

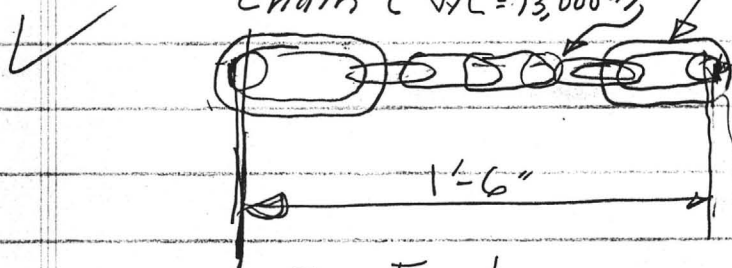
~~4 - 3/4" Round Pin Shackles (WL = 9500#)~~
~~(Equip with 1/8 pins)~~

✓ ⑤ - 1/2 Heavy standard wire rope thimbles

B) Safety Chains

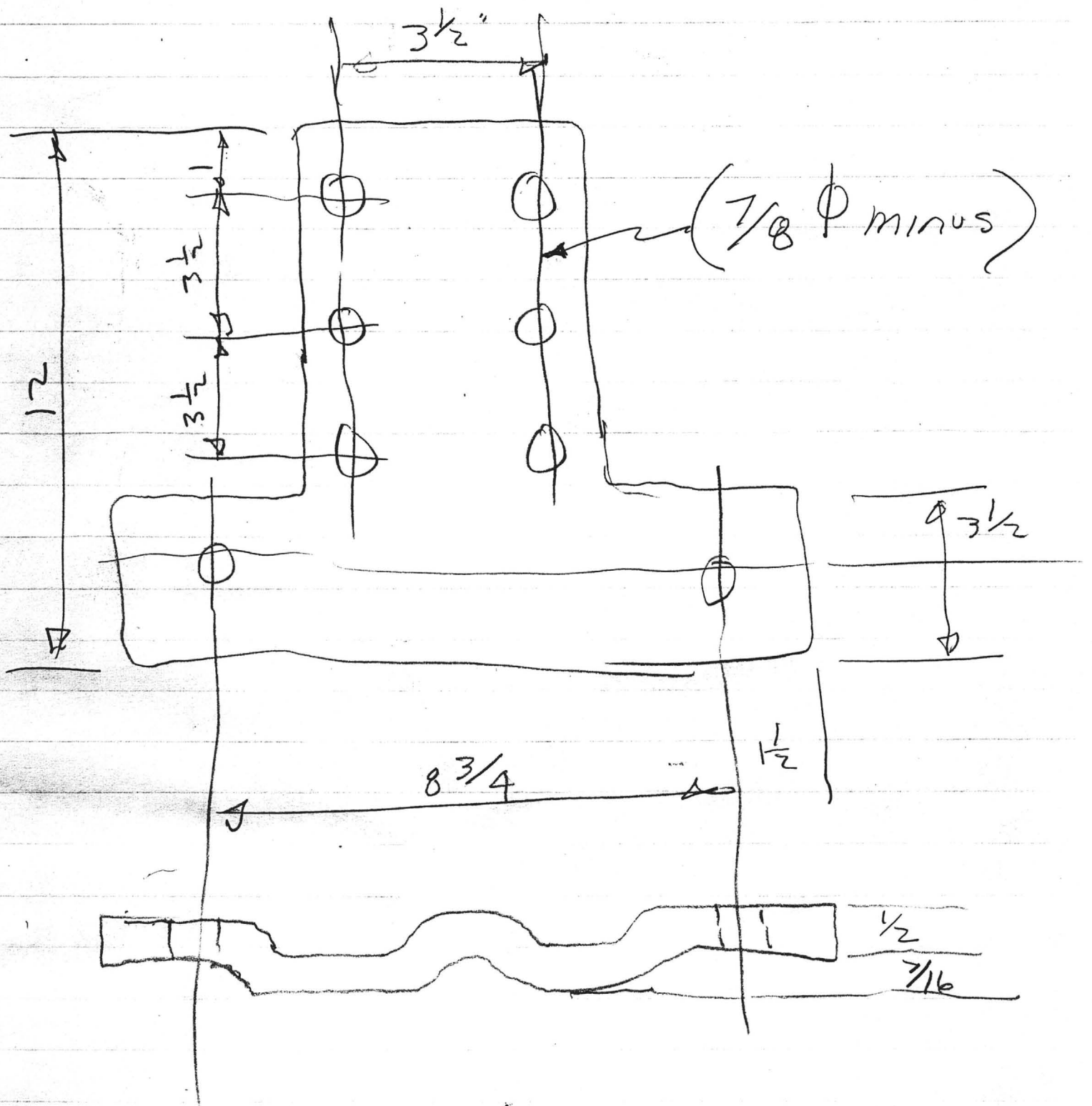
1/2" System 8 (Cam-Alloy)
Chain (WL = 13,000#)

1/8 Oval Links
WL = 12,000#



2 Each

~~2 - 1/8 Round Pin Chain Shackles WL = 13000#~~



ELECTRICAL WORK FOR LOADING STATION

INSTALL 10 CONDUCTOR CABLE FROM 950 Level to
LOADING STATION to junction box (stainless steel)
Box located above MANWAY entrance on shaft wall
CONNECT pull switches for call bells + hoist

signals in parallel to circuits in junction box
on 950 level using 2 pair in CABLE
Call bell pull switch to be located in or near
MANWAY - hoist signals to be located at
station entry from shaft.

Skip tender's "hoist indicator light" to be connected
to ABANDONED 110 convenience outlet - pull switch
mounted near control valves - light mounted near
hoist down. circuit will use 3RD pair in
cable (950 to station)

STATION Lighting - one 8' fluorescent fixture
suitable for US use mounted on overhead steel.
Second similar fixture mounted below operator
deck. will use 4TH pair in cable

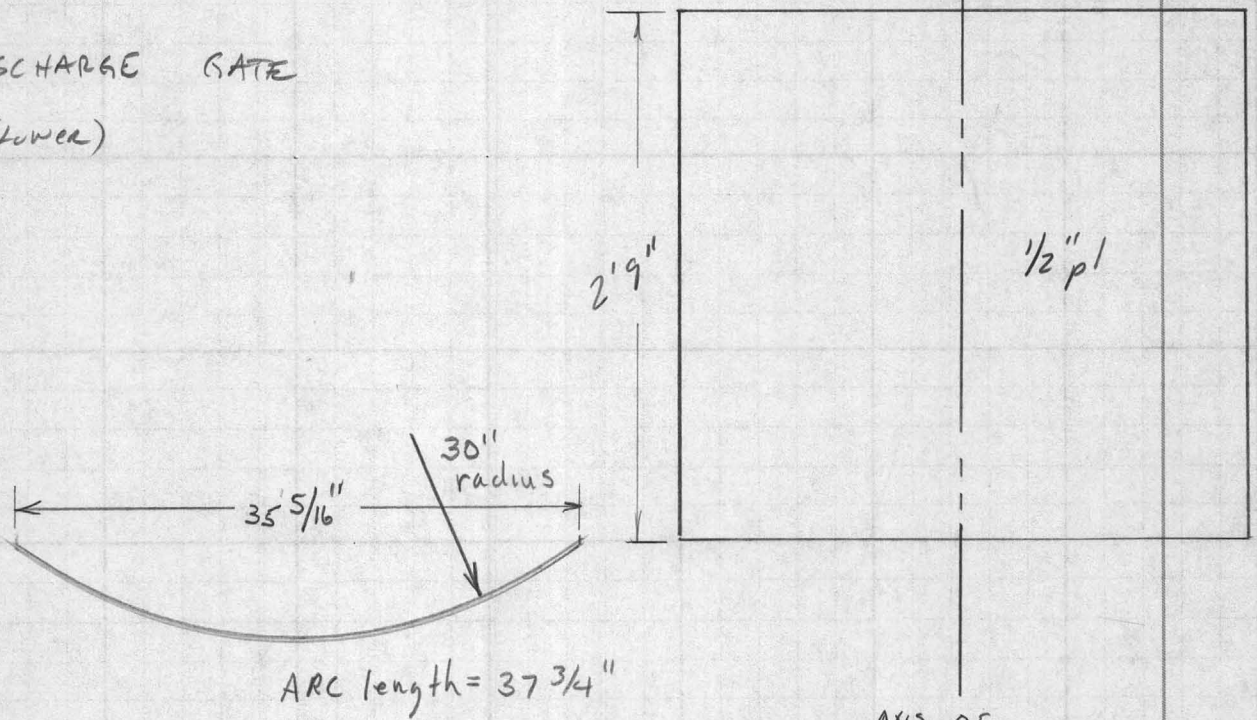
Mine phone mounted to AIR CONTROL PANEL?
OR SHAFT WALL
OR IN MANWAY

LOADING STATION WORK SCHEDULE

EVENT	7/16	7/17	7/20	7/21	7/22	7/23	7/24
FABRICATE TIPPING SCARUS	DONE						
FABRICATE LOADING CHUTE		DONE					
EXCAVATE SLOT FOR LOADING CHUTE		DONE					
INSTALL SUPPORTS FOR HOPPER			DONE				
INSTALL HOPPER							
INSTALL OPERATOR DECK							
INSTALL LOADING CHUTE							
INSTALL TIPPING SCARUS							
INSTALL HOIST SIGNALS + LIGHTS							
INSTALL AIR CYLINDERS, CONTROLS & PIPING							

EVENT	7/16	7/17	7/20	7/21	7/22	7/23	7/24
FABRICATE TIPPINGS SCROLLS	DONE						
FABRICATE LOADING CHUTE	DONE						
EXCAVATE SLOT FOR LOADING CHUTE	DONE						
INSTALL supports For Hopper		DONE					
INSTALL Hopper			1/2 DONE				
INSTALL OPERATOR DECK				1/2 DONE			
INSTALL LOADING CHUTE					1/2 DONE		
INSTALL TIPPINGS SCROLLS							
INSTALL FIRST SIGNALS + LIGHTS							
INSTALL AIR CYLINDERS, CONTROLS & PIPING							

DISCHARGE GATE
(Lower)



$$\text{Arc} = \frac{\theta}{180^\circ} \pi r$$

$$37.75" = \frac{\theta}{180^\circ} \pi 30"$$

$$\frac{37.75"}{\pi 30"} \times 180^\circ = \theta$$

$$\theta = 72^\circ 05'$$

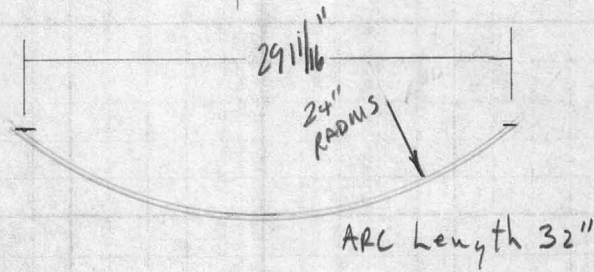
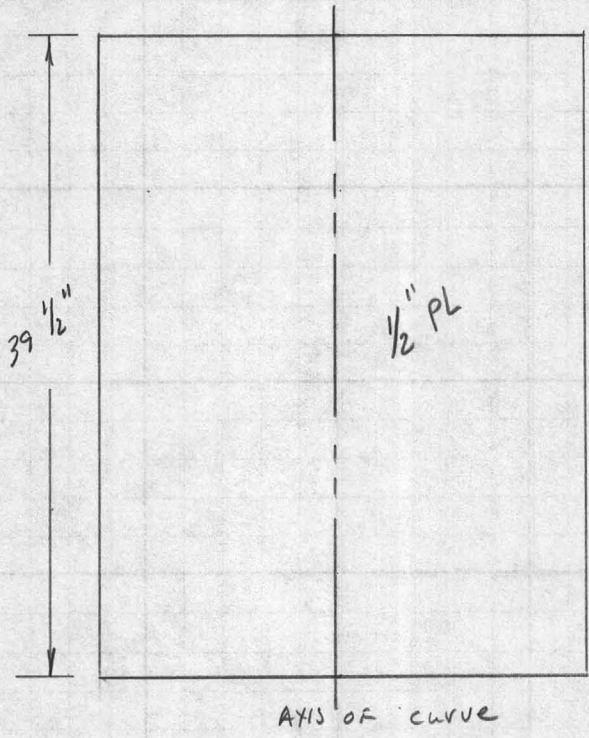
$$\sin \frac{1}{2}\theta = \frac{\text{opp}}{\text{hyp}}$$

$$.59 = \frac{\text{opp}}{30"}$$

$$\text{opp} = 17.65"$$

$$\times 2 = 35.31" = \text{chord subtended by } 72^\circ 05' \text{ at } r = 30"$$

FEED GATE
(Upper)



RADIUS = 2' or 24"
Arc length 2'8" or 32"

$$32'' = \frac{\cancel{x}}{180^\circ} \pi 24''$$

$$x = 76^\circ 23'$$

$$\sin \frac{1}{2} x = \frac{OPP}{24}$$

$$\sin 38.20^\circ = \frac{OPP}{24}$$

$$OPP = 14.84''$$

$$x2 = 29.68'' \text{ or } 29 \frac{1}{16}''$$

To: A. F. Budge

October 12, 1987

From: A. J. Fernandez

RE: Difference in tram times to 911 station.

I estimate three additional shifts are required to tram with one car versus two.

Calculations follow.

ESTIMATE OF TIME DIFFERENCE ONE CAR VS.
TWO TRAMMING FROM 911 ACCESS DRIFT TO
DUMP POCKET.

GIVENS & Assumptions:

Avg. TRAM DISTANCE 1000 FT. (one way)

LENGTH OF NEW DRIFT 180 FT.

DIMENSIONS OF DRILL STATION 10 X 15 X 15 FEET

CARS PER ROUND (6 X 7 X 5 FEET) = 17

Average TIME TO SWITCH OUT CAR = 1.5 minutes

EVALUATE Two AVERAGE TRAM SPEEDS

3 + 5 mph.

CALCULATIONS:

VOLUME OF MATERIAL TO BE EXCAVATED =

$$6' \times 7' \times 180' = 7560 \quad (\text{DRIFT})$$

$$10' \times 15' \times 15' = 2250 \quad (\text{STATION})$$

$$9810 \text{ FT}^3 \quad \text{TOTAL}$$

Volume (in place) per CAR:

$$\frac{6 \times 7 \times 5 \text{ (round)}}{17 \text{ (CARS)}} = 12.4 \text{ FT}^3/\text{CAR}$$

$$\text{CARS REQUIRED: } 9810 \div 12.4 = \underline{\underline{790 \text{ CARS}}}$$

PER TRIP:

TRAM TIME 5 mph:

$$\frac{2000 \times 60}{5 \times 5280} = 4.5 \text{ minutes}$$

TRAM TIME 3 mph:

$$\frac{2000 \times 60}{3 \times 5280} = 7.6 \text{ minutes}$$

TOTAL TIMES:

	5 MPH	3 MPH
ONE CAR	$790 \times 4.5 = 60 \text{ hours}$	$790 \times 7.6 = 100 \text{ hours}$
TWO CARS	$\frac{790}{2} \times (4.5 + 1.5) = 40 \text{ hours}$	$\frac{790}{2} \times (7.6 + 1.5) = 60 \text{ hrs}$
Δ	20 hours	40 hours

AS A BALL PARK ESTIMATE I WOULD USE
 3 SHIFTS, SINCE OUR TRUE AVERAGE TRAM
 SPEED IS LIKELY TO BE BETWEEN 3 & 5 MPH.

TO: JOE FERNANDEZ

October 12, 1987

Your reply missed the point.

My concern was two-fold:

1. Pete had not installed a switch despite your believing that it had been agreed that a switch was to be installed.
2. Was Pete's decision correct?

To me, a journey of that length to the pocket with only one car appeared wrong.

You may care to calculate the overall theoretical time difference on mucking the 911 drift with one car versus two. This is obviously on the assumption that the switch had been installed at the correct time, i.e. when the rail was at either the 990/902 or at the intersection immediately before the commencement of the new drift.

I do not intend to impede progress now by backtracking, but the purpose of the question is to assess whether the project is best run by a reasoned assessment or "gut-feeling".

I do not want you to spend long on the calculation - a quick and early ball park figure will be adequate.

Tony Budge

To: Anthony F. Budge
A.F. Budge Limited
Retford, Notts., DN22 7SW

From: DMEA Ltd., Scottsdale, AZ 85251

Date: September 24, 1986

Tony:

Re: UVX

Assuming \$400/gold and \$0.50/unit for silica above 75% (ignoring silver) cut off flux rock grade will be about 0.16 oz/ton IF reasonably uniform mineable bodies are encountered. This is after a mining cost of \$45/ton, since payment for silica should cover most of transportation costs.

On the same basis, 0.30 oz/t should return \$50/ton; 0.40 oz/t, around \$90/ton. Note that a 33 percent increase in grade raises the return 80 percent. (As an aside, 1.0 oz/t rock would return about \$300/ton).

The above approximate figures are provided to give you some feeling for the tonnage of flux ore required, at differing grades, to recoup capital outlay.

"Ore" is a man defined word. However, almost all mineral deposits contain more metal in disseminated form than in concentrated bodies. What this means at the UVX is there is a greater probability of finding 0.20 oz/t "ore" than there is of finding 0.50 oz/t. This doesn't mean that there is no 0.50 oz/t (or better) material, however. It does mean that these smaller bodies are more difficult to locate.

It also means that "high grade" may be more valuable in increasing the tonnage of "low or medium grade" ores than it will in itself.

Costs

Due to the large number of uncertainties involved I have little basis on which to prepare a detailed, step-by-step, breakdown. Any individual stage cost figures would, very probably, mislead both you and myself. I am willing, however, to hazard the following "educated guesses":

cleanout and exploration on 950 and 903 levels, an additional \$185,000 to \$220,000; if mining ensues, an additional \$200,000 to \$240,000. The

to \$220,000; if mining ensues, an additional \$200,000 to \$240,000. The latter range includes skip pocket, new skip, escapeway, surface plant, etc.

Since the smelters do not want the minus 1/4 inch fraction (which may be enriched in gold), we should give some preliminary consideration to a small vat leach plant for additional revenue. I hope to get some additional information on this at the AMC meeting.

If we only find 10,000 tons (1/3 of the Gold Stope) of 0.40 oz. or its equivalent in post mining dollars, at gold prices of \$385/oz. or more, I believe that you have quite a good chance of recovering the whole investment, plus a profit. The latter will be dependent on actual prices. I think we have a fairly good chance of finding this many ounces though it may be in several bodies.

Current news

The crew has hit a bell sectioned void about 30 ft. high and 15 ft. across just at the raise ladder way. Better ground can be seen beyond. The void walls are pretty loose and they are advancing very slowly with extra caution, but advancing.

Montana

Lehmann has proposed for October 10, a minimum 3,000 ft. reverse circulation drilling program on the south half of section 24. The holes will be drilled at a 45 degree angle, 200 - 300 ft. deep in order to determine the general character and nature of the known mineralized zones. Dependent upon the speed of assay turn around and their results and the weather conditions, we may be able to drill more hole if warranted. This whole program, to which I agreed, will cost \$55,000 - \$60,000. The initial work on the Long prospect has produced the most attractive initial results I have ever seen for a gold property. Lehmann is muttering about collecting a fat \$1.00/oz. bonus for every ounce exceeding 300,000 ozs.

Vulture

We are now sorting through the various, and often conflicting, statements given out by governmental agencies involved in Az. mining. These

To: Anthony F. Budge

October 9, 1987

From: A. J. Fernandez

RE: Track Switch to 911 Drill Station

Pete decided not to install a switch. Since we can only dump two cars at a time at the dump pocket, Pete would rather take the added tram time than install a switch. In other words, in Pete's judgement he will make as much advance without the switch.

This decision doubles the tram time for all the muck to be excavated. Yet it may be not be advisable to install a switch now. That would mean duplicating effort already spent with dubious return.

A switch installed at the intersection of the 990 and 902W drifts would be useful in completing the "loop". Now to backup, retimber and install a switch at this intersection would push back our advance by about a week. The other alternative for a switch, one beyond the turn into virgin ground to the 911 station, would appear to take less time to install but may have only a one time use.

Since we are now past the two possible locations for a switch, we would only push our completion date back.

MEMO

Date: May 21, 1987

To: A. F. Budge

From: A. J. Fernandez

Subject: Vulture Profitability; Heap/CIL Combined

This estimate of profitability of the Vulture mine is based on previous cost estimates and recent conversations with Frank Millsaps. Frank is working up a more detailed capital and operating cost estimate for a combined heap leach and agitated leach plant. That estimate will be available next week. For now, we have assumed the plant capital to be 130% of a carbon extraction plant for heap leach only and that tails would be disposed of on the leach pad. Operating cost for the agitated leach plant is also estimated to be 30% higher.

There are actually two estimates here. One estimate is based on the smaller high grade reserve. The second is based on my preliminary pit design. Both include the tails.

The recovery figures quoted are very preliminary, as the test work is incomplete. Frank seems optimistic that we will be able to achieve these results.

We should bear in mind that this plant design will give us greater flexibility during operation to achieve the maximum recovery.

I will revise these estimates as soon as Frank's numbers on recoveries and costs are available.

TAILS AND HIGH GRADE

Reserves Rock 127,000 tons @ 0.086 OPT Au Waste:Ore 3.6:1

Tails 225,000 tons @ 0.045 OPT Au

Recovery	Rock(3/4) +48 mesh	70%	5,700	ounces
	Rock(1/4) -48 mesh	85%	2,300	ounces
	Tails	70%	7,000	ounces
	TOTAL		15,000	ounces

Gross Revenues @ \$450 price \$ 6,750,000

Capital 750,000

Operating 3,454,000

Royalty and Bonus 310,000

Sunk Cost 622,000

NET PROFIT 1,614,000

LOW GRADE RESERVE

Reserves Rock 445,000 tons @ 0.062 OPT Au Waste:Ore 2.9:1

Tails 225,000 tons @ 0.045 OPT Au

Recovery	Rock(3/4) +48 mesh	70%	14,500	ounces
	Rock(1/4) -48 mesh	85%	5,800	ounces
	Tails	70%	<u>7,000</u>	ounces
	TOTAL		27,300	ounces

Gross Revenues @ \$450 price \$ 12,285,000

Capital 865,000

Operating 7,400,000

Royalty and Bonus 520,000

Sunk Costs 622,000

NET PROFIT 2,878,000

Meeting with Frank Millsaps, Thursday, March 27, 1987

Alternative processing of ore at Vulture: Agitated Leach (CIL) for
500 tpd capacity

2-stage crushing plant	\$ 250,000
400 h.p. 9x9 ball mill	\$ 275,000
50' thickener	\$ 100,000
5, carbon columns	\$ 25,000
tank, agitator & screens	\$ 90,000
stripping circuit	\$ 90,000
electrolytic circuit	\$ 30,000
regeneration	\$ 70,000
cyanide destruction	\$ 15,000
retort and refining	\$ 30,000
tailings disposal	\$ 500,000
	<hr/>
	\$1,475,000
Contingency @ 15%	220,000
	<hr/>
	\$1,695,000

plus excavation for
foundation on ball mill, building.

thickener and leach tanks can be cut to move to another site
crushing plant will produce $\frac{1}{2}$ in. feed for ball mill
grind with cyanide

Will need further tests; grindability tests on Qpi plus a composite sample from UVX (150 to 200 pounds from 925 drift).

one leach test on tails reduced to 200 mesh

agitated leach on Qpi at various sizing (i.e. 200 mesh, 150 mesh, etc.) to determine optimum grind.

also could run test, splitting material at, for example 35 mesh; +35 to heap leach; -35 to agitated leach.

slow feed of high grade to increase retention time in tanks for maximum recovery of silver.

4/9/87

ROYALTIES IN CIL CASE

(85% RECOVERY)

Rock 445,000 TONS @ .062 OPT 23 450 ounces

TAILS 225,000 TONS @ .045 OPT 8 550 ounces

Deductible Costs estimated to be \$8⁰⁰ per ton

@ \$400/ounce

$$\text{Net Return (Rock)} = \$400 - \frac{\$8}{(.062)(.85)} = \$248.20$$

$$\text{Royalty (Rock)} = \$248.20 \times .06 = \underline{\$14.90/\text{oz.}}$$

$$\text{NET RETURN (TAILS)} = \$400 - \frac{\$8}{(.045)(.85)} = \$190.85$$

$$\text{Royalty (Rock)} = \$190.85 \times .06 = \underline{\$11.45/\text{oz.}}$$

TAILS ON VCT CONTAIN 1868 ounces

TOTAL Royalties

$$\text{Rock } (23\,450 \times \$14.90) = \$349,400$$

$$\text{TAILS } (8550 - 1868)(11.45) = \underline{76,500}$$

$$\$425,900$$

$$\text{PLUS PRODUCTION BONUS} \quad \underline{75,000}$$

$$\$500,900$$

4/9/87

ROYALTIES IN HEAP LEACH

Rock 127,000 TONS @ .086 OPT 55% Recovery 6000 oz.

TAILS 225,000 TONS @ .045 OPT 70% Recovery 7000 oz.

Deductible cost estimated to be \$8.00/TON

@ \$400 /ounce

$$\text{NET RETURN (Rock)} = \$400 - \frac{\$8}{(.086)(.55)} = \$230.90$$

$$\text{Royalty} = \$230.90 \times .06 = \underline{\$13.85 / \text{oz}}$$

$$\text{NET RETURN (TAILS)} = \$400 - \frac{\$8}{(.045)(.7)} = \$146.03$$

$$\text{Royalty} = \$146.03 \times .06 = \underline{\$8.76 / \text{oz}}$$

TAILS ON VCT = 1868 ounces

TOTAL Royalties

$$\text{Rock } (6000 \times \$13.85) = \$83,100$$

$$\text{TAILS } (7000 - 1868) \times \$8.76 = \underline{45,000}$$

$$\$128,100$$

$$\text{PLUS PRODUCTION BONUS} \quad 75,000$$

$$\text{Royalties + Bonus} \quad \$203,100$$

4/8/27

MINING COST ESTIMATE

TAILS @ \$1.00/TON - \$225,000

Rock @ \$1.50/TON -

CIL OPERATING COST ESTIMATE 500 TPD PER TON

GRINDING MEDIA \$.50

ELECTRIC POWER 2.75

REAGENTS 2.00

Personnel 2.25

ASSAYING + REFINING .25

Cyanide Destruction .25

CRUSHING 1.50

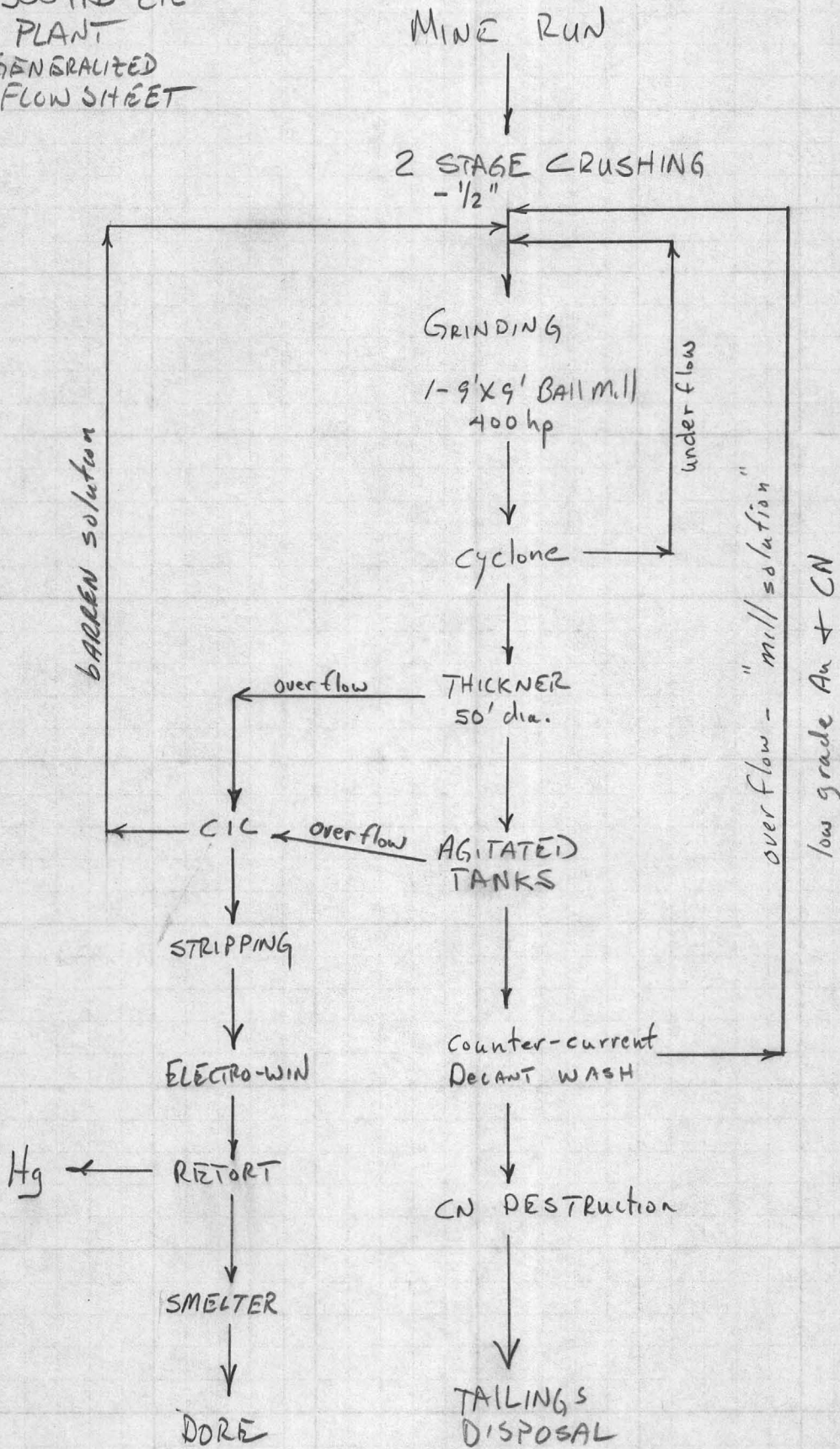
TOTAL \$ 9.50

\$ 9.50 for rock

\$ 8.00 for tails

4/9/87

500 TPD CIL
PLANT
GENERALIZED
FLOW SHEET



VULTURE MINE OPTIONS

	HEAP LEACH	CIL-AGITATED
RESERVES-Rock (tons)	127,000	445,000
Grade (OPT)	0.086	0.062
Waste:Ore	3.6:1	2.9:1
Tails (tons)	225,000	225,000
Grade (OPT)	0.045	0.045
ORE TREATMENT RATE	1000 TPD	500 TPD
PROJECT LIFE	18 months	3.75 years
RECOVERY-Rock	55%	85%
Tails	70%	85%
Total ounces	13,000	32,000
GROSS REVENUES @\$400 per ounce	\$ 5,200,000	\$12,800,000
CAPITAL-Total	650,000	1,700,000
OPERATING		
Mining (Rock)	\$ 875,000	\$ 2,600,000
Mining (Tailings)	225,000	225,000
Treating	2,000,000	6,030,000
Total	3,100,000	8,855,000
Per ounce	238.50	277
CASH FLOW SUMMARY		
Revenues	\$ 5,200,000	\$12,800,000
-Operating	3,100,000	8,855,000
-Royalties + Bonus	203,000	501,000
Operating Profit	1,897,000	3,444,000
-Capital Recovery	650,000	1,700,000
-Sunk Costs	622,000	622,000
NET PROFIT	625,000	1,122,000

Agitated Lead Operating Cost Estimate

Grinding media	Per ton
Grinding media	\$.50
Electric power	2.75
Reagents	2.00
Personnel	2.25
Assaying & Refining	.26
Cyanide Destruction	.26
Tailings Disposal	

~~H₂O₂ .25 - .30 gal -
.50 gal -~~

~~\$8.00~~ / TON
use \$8.00

Crushing \$1.50/ton	-	\$9.50/TON	-	OP COSTS
Tails 225,000 @ .045	85% Recovery	-	8600	
"High GRADE" 127,000 @ .086	85% Recovery	-	9300	
352,000			17,900	

$17500 \times 400 = \$7,160,000$

CAPITAL 1,700,000

OP COSTS 3,344,000

2,116,000

MINING COST 1,100,000

1,016,000

- 670,000

NET PROJECT \$ 346,000

To: Anthony F. Budge
A.F. Budge Limited
Retford, Notts., DN22 7SW

From: A.J. Fernandez

Date: March 12, 1987

Re: Vulture Evaluation

This is an evaluation of processing the Vulture tailings alone. I have revised Frank Millsaps' previous estimates based on new information. Metallurgical parameters are based on Dawson's report of 5/84. The gold price is assumed to be \$400/ounce.

Base data: 225,000 tons of tails
0.045 oz/ton gold
70 percent recovery
7100 recoverable ounces

Gross Revenues: 7100 x \$400 = \$2,840,000

Capital Cost Summary:

A. Zinc precipitation plant & site	\$ 302,600
B. Building, 25 ft. x 20 ft.	25,000
C. Electrical, including generator	21,000
D. Process piping in plant	2,000
E. Spray piping	7,500
F. Leach pad	80,000
G. Solution ponds	19,500
H. Final construction	6,500
Total A thru H	\$ 464,100
I. Engineering	15,000
J. Contingency @ 5 percent	23,200
Total Estimated Capital Cost	\$ 502,300

Capital Cost/ounce Au = \$70.75

Operating Cost Summary:

	Per ton	Total
Mining	\$ 1.00	\$ 225,000
Agglomeration	0.50	112,500
Stacking	0.40	90,000
Reagents	2.00	450,000
Personnel (Zinc plant)	2.25	506,250
Assaying & refining	0.20	45,000
Fuel & electrical power	0.35	78,750
	<u>\$ 6.70</u>	<u>\$ 1,507,500</u>

Operating Cost/ounce = \$212.30

Total cost (operating + capital)/ounce = \$283.05

Cash Flow Summary:

Gross Revenue	\$ 2,840,000
Capital Cost	- 502,300
Operating Cost	- 1,507,500
"Net"	<u>\$ 830,200</u>

Sunk Costs (as of 2-28-87) 670,000

Net Project Profit \$ 160,200

A quick evaluation of possible high grade from near surface and in the east end of the pit, indicates approximately 125,000 tons at 0.087 oz/ton gold, available at a stripping ratio of about 3.5:1. These numbers are rough and I will refine them over the weekend. These numbers assume that processing tails will cover the capital and sunk costs.

Base data: 125,000 tons of rock
0.087 oz/ton gold
55 percent recovery
6000 recoverable ounces

Gross Revenue: 6000 x \$400 = \$ 2,400,000

Mining @ \$1.40/ton	- 800,000	1.142
Crushing @ \$2.50/ton	- 320,000	384
Agglomeration, Stacking & Leaching	- 725,000	
"Net"	<u>\$ 555,000</u>	

Total estimated possible "Net Profit" on project \$ 715,000.

With -040 OPT cut off on Vulture ore
+ 10% dilution with -010 OPT rock

Reserve becomes 445,000 tons @ -062 OPT
2.9:1 SR

Reconable ounces @ 95% 23,450 ounces

Tails 8600

Rock 23450

$$32,050 \times 400 = \$12,820,000$$

Capital 1,700,000

Crushing & Milling 6,365,000

Mining 2,860,000

1,955,000

Sunk costs 670,000

\$ 1,285,000

Nick

Depth to bedrock - under tails
locations

4 cells

Definite sizes on volumes of solution

- Solution Volume per foot
Baux & Pyromat -

Frank - piping shown in part of last -

- C-1	18 tails	@ 42 feet	bedrock
- C-2	17 tails	@ 33 feet	bedrock
- C-3	20 tails	@ 20 feet	bedrock

	N	E
C-1	25 150	20 780
C-2	25 250	20 630
C-3	25 470	20 630

Ed Jaccie

Tailings - coating - Sulfate attrition bag up recovery

Opit nut leach rock

agitation leach - tails & rock -
CIP circuit

4 ⁴ ~~sumies~~ CIP plant -

3-5 # Line tails

3 line on

> 1 # CN/TM

\$2.50

- no column tests -

- finer grinding

- CN leach CIP

- no other reagents -

.01 on best tails some
for ag leach

700 000 TMS

\$40
14 \$54
800,000

500 TPD

100

-200

\$3,500,000
300,000

\$3.0 mill
400

4.2 mill total cost -

90%

\$23.4 per unit

SM 28 Apr Sam Kamin -

GRIND - CIP - Brain storming

Vulture ore 450,000 tons @ .063 3:1 stripping
 Vulture Tails 225,000 ton @ .045
 UVX potential ore 100,000 TONS @ .250

Assume 50% Recovery @ \$400/oz Au

V. ore	25,500	ozs	} over costs \$4.05 mil
V. Tails	9,100	ozs	
UVX	22,500	ozs	\$ 2.75 mil
	57,100	ozs	6.8 mil -
	or \$22,840,000 gross revenue -		

Capital Costs 500 TPD 4.3 years

Mill \$7000 x 500 = \$3.5 million

CIP Circuit \$300,000

Tails Disposal \$200,000
 \$ 4.0 million

<u>OP Costs</u>		UVX	Vulture
MINING	\$40		6.00
Transport	\$14		—
Crushing	\$223		2.50
Milling	600		600
	<u>\$6250</u>		<u>\$1,450</u>
	\$278/oz		\$283

UVX -

50,000 TONS @ .25 OPT 85% RECOVERY

$$10,600 \text{ oz.} \times \$400 = \$4,240,000$$

Gross Revenue \$ 4,240,000

Mining @ \$40/ton 2,000,000

40

Shipping @ .10/ton 700,000

14

Milling + Crushing 475,000

950

1,065,000

sunk cost 1,300,000

(-235,000)