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Arizona Geological Survey
1520 West Adams St.
Phoenix, AZ 85007
602-771-1601
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inquiries@azgs.az.gov

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Arizona Department of Mines and Mineral Resources Mining Collection

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03/18/88

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES FILE DATA

PRIMARY NAME: REDTAIL MILLSITE

ALTERNATE NAMES:

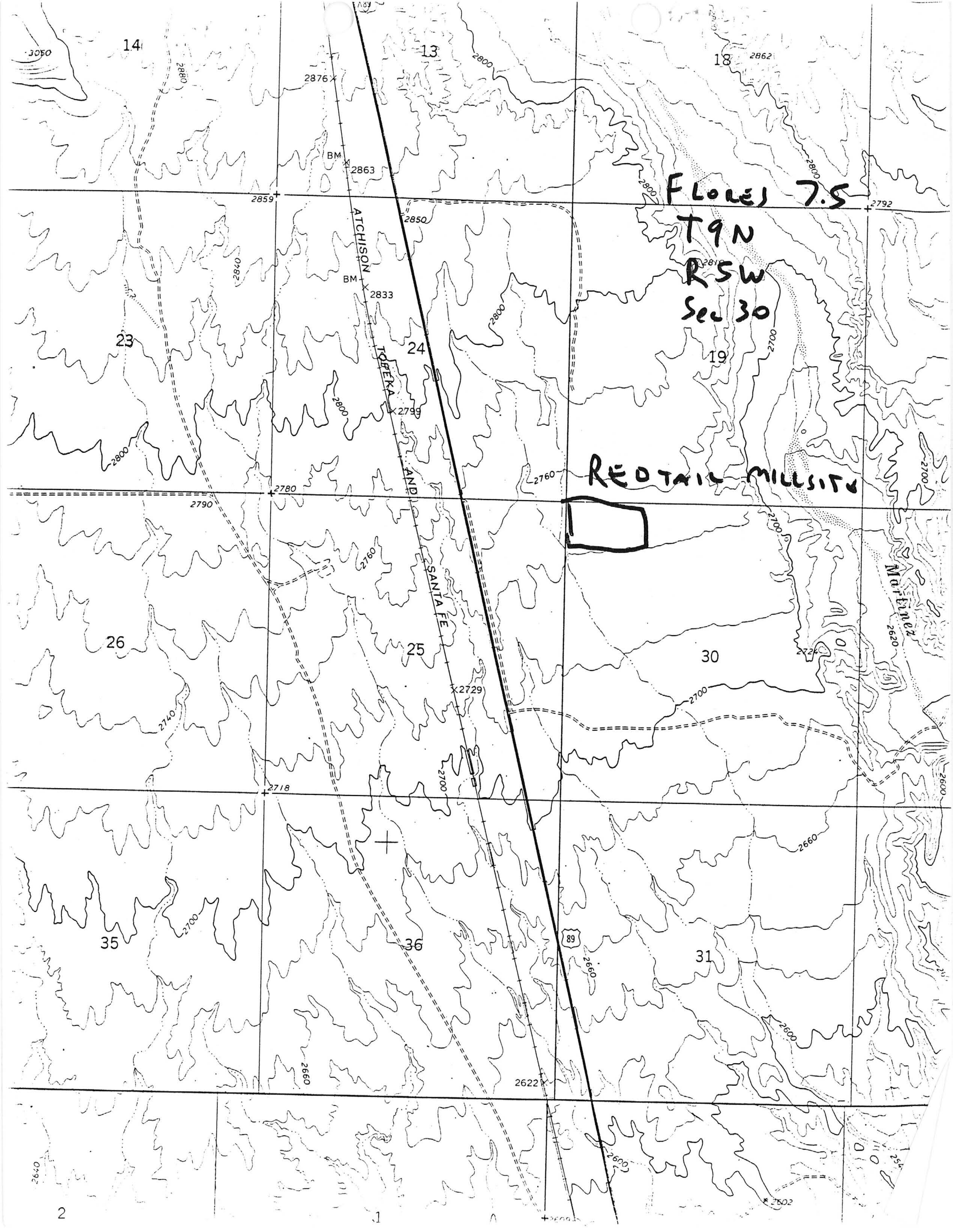
YAVAPAI COUNTY MILS NUMBER: 1376

LOCATION: TOWNSHIP 9 N RANGE 5 W SECTION 30 QUARTER NW
LATITUDE: N 34DEG 07MIN SEC LONGITUDE: W 112DEG 45MIN SEC
TOPO MAP NAME: FLORES - 7.5 MIN

CURRENT STATUS: ACTIVE

COMMODITY:
MILL

BIBLIOGRAPHY:
ADMMR REDTAIL MILLSITE FILE


Flores 7.5
T9N
R5W
Sec 30
REDTAIL MILLSITE
ATCHISON TOPEKA AND SANTA FE
Martinez
89
14
13
18
23
24
19
26
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36
31
2
1
3050
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2622
2640
2602

RED TAIL MILL (A)

COMPLETE AND MAIL TO:

STATE MINE INSPECTOR
1616 WEST ADAMS, SUITE 411
PHOENIX, ARIZONA 85007-2627

FOR OFFICE USE ONLY
START-UP NUMBER 84447243
STATE NUMBER 10196100
DEPUTY NUMBER Angel
NEW ✓ MOVE

STATE MINE INSPECTOR
OCT 28 1988

NOTICE TO ARIZONA STATE MINE INSPECTOR

In compliance with the Arizona Revised Statutes, we are submitting this written notice to the Arizona State Mine Inspector of our intent to start ✓, stop ____, move ____ an operation.

Please check the appropiate boxes: Contractor ☐, Owner ☐, Operator ☑, Open Pit Mine ☐, Underground Mine ☐, Mill ☑, Quarry ☐, Aggregate Plant ☐, Hot Plant ☐, Batch Plant ☐, Smelter ☐, Leach Plant ☐.

If this is a move, please show last location: ____

If you have not operated a previously in Arizona, please check here: ____ If you want the Education and Training Division to assist with your mine safety training, please check here: ____

If this operation will use Cyanide for leaching, please check here: ____

COMPANY NAME: Sonora Development Inc.

DIVISION: None

MINE OR PLANT NAME: Red Tail TELEPHONE: 684-3984

CHIEF OFFICER: John O Rud

COMPANY ADDRESS: P.O. Box 410

CITY: Congress STATE: Az ZIP CODE: 85332

MINE OR PLANT LOCATION: (Include county and nearest town, as well as directions for locating property by vehicle: Hwy 89, Congress

TYPE OF OPERATION: Milling PRINCIPAL PRODUCT: Gold

STARTING DATE: Oct 10, 1988 CLOSING DATE: ____

PERSON COMPLETING NOTICE: John O Rud TITLE: V. Pres.

FORM 101-106 REV. 08/89

Arizona Department of Mines and Mineral Resources
Verbal Information Summary

Property: BRX (file) La Paz County **Date: June 17, 1994**
Property: Red Tail Millsite (f) Yavapai County

Subject: ADMMR meeting with R. (Bob) Barefoot

On June 17, 1994 R. (Bob) Barefoot, Vice President of DCRS (US) Ltd. P.O. Box 20818, Wickenburg, AZ 85358 visited the office and met with Mason Coggin, Director and Nyal Niemuth, Mining Engineer, of ADMMR. The purpose of the meeting was to inform ADMMR of DCRS' recovery methods and their recent work on materials form International Platinum's BRX claims in La Paz County.

Mr. Barefoot briefly presented a summary of his research efforts of the past 15 years that have led to his Swiss patent for the differentially charged recovery process and referred to 2 patents that were pending. These efforts were to collect 18 micron size gold particles. Mr. Barefoot started this conversation by showing several pictures of microscopic gold in octahedral crystals and then claimed that all of the gold "they have seen" was 18 micron in size. He also referred to Lashley? regarding gold sizes.

He referred to work (Wang?, 1979) showing that sluices, jigs and tables could not efficiently recover gold that was 18 micron in size. Apparently he believes that sluices, jigs, tables and such will not recover more than 17% of all gold processed in them. He referenced Peale's Mining Engineers Handbook but failed to come up with page numbers. He did not elaborate on Wang's work and did not mention the effects of liberation and classification on mineral separation and concentration.

He described his process as using acceleration and electricic charges to effect a higher recovery than any other method of recovery. His patented process appears from his explanation, however, to be nothing more than a variation in riffle design. The riffle bottom, he claims, is designed to cause flow across a series of 1/2 inch cells that have been designed to encourage extreme turbulence. He further claimed that his recovery process does not use chemicals and recovers gold that cannot be found by conventional fire assay.

Mr Barefoot claims to currently have 37 clients. Four of the recovery units have been manufactured. He stated emphatically that he is not in the mining business despite acknowledging that he operates a custom mill known as the Red Tail and recently having processed 18,000 tons of material from the Mystic mine and that his tailings are running 0.06 opt in gold.

He reported that for some time his units have been able to recover 20 to 30 times the assayable amount of gold form porphyry copper ores or tailings. He believes this is true for all porphyry copper mineralization. He is trying to convince the major copper companies of this. At present he is demonstrating this at Cyprus Metals' Sierrita Mine and has worked on material from Phelps Dodge's mines with Dan Gurtler(sp.) and Paul

Link of Phelps Dodge during the past 3 years.

He told us he now knows what accounts for this recovery in excess of the amount determined by fire assay or neutron activation analysis. The particles of gold have a coating. If we are willing to sign a secrecy agreement he would reveal the treatment method which allows removes the coating and allows the assay and recovery of the gold.

This coating is reported to be present in the material from International Platinum's BRX property. This was offered as the reason why conventional fire assay procedures were unable to detect gold. He also reported that those samples do not contain any economically significant amount of the platinum group elements. Although his desire for secrecy prevented explaining what treatment removed this coating, he indicated that rain water would increase the values 10 times. Asked what geologic process accounted for the coatings of the BRX material he replied it was the glacial grinding activity and water.

ADMMR Field Visit

Mine **Mystic** (f) Maricopa T5N, R1W, Sec. 12 Date: **February 26, 1993**
Mill **Redtail** (f) Yavapai T9N, R5W, Sec. 30 nw Engineer: **Nyal J. Niemuth**

Operating Company: **Mystic Mine LLC, INC.**, an Oklahoma company registered in Arizona
Local Address: **P.O. Box 71773, Phoenix, AZ 85080** Phone: **602-9938767**
Information from: Joe Stocks and Graham Patterson for Mystic. Bob Barefoot for Redtail mill.

This group has taken over mining and milling following about one year of operation by Fischer Watt Mining. During that time it is reported that Fischer Watt produced approximately 18,000 tons of ore that had a recovered average of 0.32 oz/ton Au (5760 oz Au). This grade is likely lower than the actual grade of material mined reflecting gold mineralization that occurs both as coarse free milling and as fine micron size particles amenable to cyanide mill recovery. Early ore was treated in a small gravity mill on site while later ore was treated at the cyanide mill at Repulbic Goldfield's Congress mine. Some of the gravity tailings were also retreated at the Congress mill.

Mystic mine LLC Inc. has **three** operating groups or partners. These consist of: **Frank Downey and Joe Stocks** (Stock's address and phone above) who put the deal together and handles administration; **RMG Mining Inc.**, Graham Patterson, Vice President, 2814 W. Bell Rd #1465-307, Phoenix, AZ 85023, Phone 602-863-1740, Fax 602-548-9540, Mobile phone 602-541-4321 handles the mining ; and **DCRS (Canada) Ltd.** (contact is Bob Barefoot) P.O. Box 20818, Wickenburg, AZ 85358, Phone 602-684-3032 or 602-684-2867 does the milling at the Redtail facility. For details of the DCRS process see ADMMR's Redtail mill file.

Mystic Mine LLC Ltd. subleased the mine about 18 weeks ago. Fischer Watt shut down before mining out the last 50' vertical of reserves identified by drilling. This was partly due to an attempt, carried out by their contractor, Small Mines Development, to greatly increase tonnage and decrease mining costs by conducting a large vertical blast. Reports on the results are mixed, but it likely resulted in a lot of dilution and problems with support. Mineralization is hosted in a high angle shear zone associated with an intrusive tertiary felsic volcanic dike intruded into metasedimentary schist of the Yavapai series. The dominant gangue mineral is fine grained, massive, earthy, red, hematite. This combination results in bad ground requiring lots of support in the form of bolts, split sets, panels, cyclone fencing, etc. Below the present level, approximately the 300, are only a couple of drill holes, but they intend continue mining to test for ore extensions. Present widths and grades are reported as improving and among the best seen.

The mine is accessed by a spiral ramp decline developed in the foot wall of the shear zone. Grade of the ramp is -16° and it has a total length of 3250'. A misting system similar to that used for summer patios for temperature control is used in the ramp to control dust. As the mineralized shear is approached, much white, coarse calcite is commonly observed in the footwall. Shear widths greater than 50' are reported but observing or estimated the mineralized width is difficult as red earthy specular hematite is pervasive throughout the shear and not confined to the mineralized area. Sampling is conducted by panning, with areas containing 0.2 oz/ton Au or above readily showing a large gold tail in a pan.

It was reported that the current mining operation has produced 2,000 tons of near 1 ounce material which has all been trucked to the Redtail facility. Ore production is targeted at 100 tons per day. Staff consist of 4 office people and 12 miners. Mining equipment on the Mystic site includes a 3 yard loader, 2 - 8 ton underground haul trucks, an underground loader, diesel powered generator and compressor, a storage truck (used as shop and to house parts inventory) and a small trailer used as mine office.

It is interesting to note that the prospect shaft the old timers sunk can observed underground. It was reported that it fell about 3 feet short of intersecting high grade gold mineralization!

ADE & COMPANY
PATENT AND TRADE MARK AGENTS

STANLEY G. ADE, F.P.T.I.C.

ADRIAN D. BATTISON, B.Sc.
F.C.I.P.A. (LONDON)

MURRAY E. THRIFT, B.Eng.
F.P.T.I.C.

RONALD S. ADE, LL.B.

SUITE 1700, WINNIPEG SQUARE
360 MAIN STREET
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TELEPHONE (204) 947-1429
TELEX: 07-57138
PATENTS (WPG)

FACSIMILE (204) 957-0516
CABLES: PATENTS (WINNIPEG)

OUR FILE 75-5645-B

June 29, 1990

DCRS (Barbados) Ltd.
P.O. Box 306 E
Alleyne House
White Park Road
Bridgetown, Barbados

Dear Sirs:

RE: United States Application 412,520
WATERFLOW DIFFERENTIAL ELECTRICAL CHARGING PROCESS FOR ORES

We are pleased to advise that the above application was formally allowed by the United States Patent Office on June 6, 1990. The government final fee now must be deposited at the United States Patent Office on or before September 6, 1990 whereupon the patent will issue and remain in force for the full term of seventeen years subject to the payment of the renewal fees as explained herein.

We shall be pleased to attend to this matter upon receipt of your instructions and your remittance in the amount of $850.00 (assuming you are entitled to claim individual or small company status). This amount includes our fees together with disbursements to be paid to the United States Patent Office covering the issue fee due at this time. Your reply should be in our hands at least fourteen days before the due date to allow sufficient time for transmitting the necessary funds to the United States Patent Office.

With regard to individual or small company status, the rules are complex, but basically you can claim this status if you are an individual or, if any company is involved, it has less than 500 employees. Thus if the patent has been assigned or licenced to a larger company or an agreement to do so has been made you may not be able to claim small company status. If you have any doubts or questions, please do not hesitate to let us know as a false claim could invalidate your patent.

In order to maintain the patent in force for the seventeen year

period, the United States Patent Office requires renewal fees be paid on the anniversary dates 3½, 7½ and 11½ years from the date of issue, and at the present time the fees are $245.00 U.S.; $495.00 (U.S.); and $740.00 (U.S.) respectively for individuals or small companies. If these fees are not paid on the due dates the patent will lapse but they cannot be paid in advance.

At the time, if you wish us to attend to these renewal fees, our service charges will be added.

We ask you to note the following IMPORTANT POINTS

1. The allowance of the application gives us the last possible opportunity to review the protection that will be obtained by the present application. We attach a copy of the claims as they stand at the present time after the minor modifications have been made. We suggest that you have the claims again reviewed by a person technically informed about the current design of the invention so that we can ensure that all of the features defined in the claims are important features. You should particularly note all of the features in Claim 1 including the ratios stated to see whether these are essential features or whether modifications could be made to avoid the stated features. If you have any doubts in this matter we suggest that you contact us immediately by telephone so that we can discuss whether any amendments should be made.

2. We note that a number of accounts remain outstanding at the present time and these must be brought up to date before we can proceed with the payment of the final fee on the present application.

We look forward to receiving your instructions and remittance, and will send a full statement showing the disposition of the funds when the Letters Patent is received and forwarded to you.

Yours truly,

ADE & COMPANY
PER:

ADRIAN D. BATTISON

ADB/dj

ADE & COMPANY
PATENT AND TRADE MARK AGENTS

STANLEY G. ADE, F.P.T.I.C.

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TELEX: 07-57138
PATENTS (WPG)

FACSIMILE (204) 957-0516
CABLES: PATENTS (WINNIPEG)

OUR FILE 75-5645-J

May 31, 1990

DCRS (Barbados) Ltd.
P.O. Box 306 E
Alleyne House
White Park Road
Bridgetown, Barbados

Dear Sirs:

RE: South African Patent Application 89/7333
WATERFLOW DIFFERENTIAL ELECTRICAL CHARGING PROCESS FOR ORES

We now have pleasure in advising you that your application in South Africa has been approved by the patent office as of May 2, 1990.

The Notice of Acceptance will now be published in the Patent Journal in South Africa within the next two months. The patent application will then be sealed and the patent granted with effect from the date of filing of the application.

The Letters Patent document can be expected in about three months after the date of publication in the patent journal. Subsequently renewal fees will be payable to maintain the patent in force. We will report further to you in this regard when we receive confirmation concerning the patent document.

Yours truly,

ADE & COMPANY
PER:

ADRIAN D. BATTISON

ADB/dj

(403) 282-7669

October 17, 1988

LEAF BOKAR VENTURE

449 HENDON DR.N.W.
CALGARY, ALBERTA
CANADA, T2K-2A1

REPORT

TO: Whom It May Concern

FROM: R.R. Barefoot

SUBJECT: Demonstration of the Differential Charge Recovery System DCRS, recovering fine gold at high volume throughput, Devon, Alberta, September 28 to October 1, 1988.

BACKGROUND:

1. Matapalo, a Costa Rican placer gold company with leases on the Ricon River, had evaluated several fine gold recovery systems and had determined that the system that had the best chance for success on the Rincon was a DCRS.

2. Ross Sargent, the President of Matapalo, contracted Gui Salazar to set up and assess a demonstration of the system in Canada. Mr. Salazar is an experienced professional geologist with a Master of Science degree in ecconomic geology from Harvard University.

3. Mr. Salazar was given both full disclosure and access to all of the DCRS equipment and documents, including the patent application. He then designed a dual program where: Program 1) he and a professional from Loring laboratories would carry out a series of tests where they would personally operate the system while injecting material that is known to cause other conventional systems to fail, and Program 2) he observe bulk run tests where fine (0.01 inch) placer gold and invisible hard rock gold, the amounts known only by third party witnesses, were to be injected into the system by the witnesses who would then also closely monitor every step in the recovery by the DCRS staff. The tests would be carried out at a production rate of 40 cu yards/hour of bank run material, screened to 3/16 inch for the large DCRS, and one cu yard/hr for the small DCRS.

4. All of the original and produced products would then be assayed by Loring Laboratories and a report of the efficiencies of the DCRS would be written for Matapalo by Mr. Salazar.

5. Mr. Salazar began his first program on September 28, 1988, at a gravel pit on the North Saskatchewan river near Devon, Alberta.

6. On September 30, 1988, he commenced his second program.

7. All of the tests were completed on October 1, 1988.

RESULTS: From the second program (for results of the first program see Mr. Salazar's report)

Test #	Date (1988)	Ore Type	Volume (cu.yd)	Run Time (min.)	Gold In (injected) grams	Gold Out (recovered) grams	Efficiency by weight %
*1	Sept 28	Sand	0.34	21	3.00	2.00	67
2	Sept 29	Gravels	100	140	0	1.85	?
3	Sept 29	Gravels	60	70	120.0	94.0	78
*4	Sept 30	Sand	0.34	20	45.0	36.0	80
5	Sept 30	Gravels	32	40	50.0	42.1	83
6	Oct 1	Gravels	50	60	50.0	38.5	75

* run through small test unit

Note: 1) Total gold injected into large DCRS = (120 + 50 + 50) g
(100 g from Program # 1 not included) = 220 g

2) Total gold injected into small DCRS = (3 + 45) g
(10 g from Progam #1 not included) = 48 g

3) Also, 8.3 g was recovered cleaning up large DCRS
(8.3 x (220/320) = 5.7 g is allocated to Program 2)

- total weight recovered = sum of weight less gold in original gravels
  = (94.0 -1.1) + (42.1 - 0.6) + (38.5 - 0.9) + 5.7
  = (92.9 + 41.5 + 37.6 + 5.7)g
  = 177.7 g (+2.6 g to Prg#1)
- total gold recovered (by large DCRS) = 177.7g
  = (177.7/220)100 %
  = **81 % by weight**
  (conventional systems < 30 %)

4) Also 7.3 g was recovered cleaning up small DCRS
(7.3 x (48.0/58.0) = 6.0 g to program 2)

- total weight recovered = sum of weights
  (2.0 + 36.0 + 6.0) g
  = 44.0 g (+1.3 g to Prg #1)
- total gold recovered (by small DCR) = 44.0 g
  = (44.0/48.0)100 %
  = **92 % by weight**
  (conventional systems < 30 %)

R.R. Barefoot

Ross W. Sargent
Finance, Investments, Marketing

(403) 486-1365
8714 - 160 Street
Edmonton, Alberta
T5R 2H5 Canada

LIST OF PEOPLE ATTENDING SHOW AND TELL

Name	From	Participant Test #	Name	From	Participant Test #
Ross Sargent	Edmonton	2,3,5	Ward Thomas	Edmonton	5*
Gui Salazar	Calgary	1*,2*,3*	Jim Zenchyson	Edmonton	
Vern Estabrook	Grimshaw		Ted Pearce	Edmonton	
M. Estabrook	Grimshaw	4	R Cutcherman	Edmonton	5
Chuck Scobey	Peace River	4	Ben Stang	Edmonton	
Bernie Bartko	Devon	5	Bernard Davies	Edmonton	5
Ken Lambert	Calgary		Tom Zenchyson	Edmonton	
Bernie Lambert	Edmonton		Ernest Yaris	Calgary	
G. Westwood	Calgary		Ken Knew	Edmonton	
Jim Smith	Edmonton		Palset	Edmonton	
Elmer Stewart	Edmonton	6*	John Frey	Calgary	6
LeRoy Walbam	Calgary	4	Greg Dagg	Edmonton	
S. Pankewich	Edmonton		Wes Scheu	Edmonton	
Fausto Rego	Edmonton		Stan Elezka	Clyde	
Frank Thieison	Vancouver		Jim Hilliard	Edmonton	
Hugh Blair	Calgary	6	Bob Hughes	Vancouver	6
John Fleming	Edmonton		Janusz Gasion	Edmonton	
Mel LaVail	Albequrque	6	Len Danard	Edmonton	4
Odd Saether	Edmonton		F. Armstrong	Vegreville	
M. Douziech	Edmonton	4,5	Bill Glazier	Victoria	
Bruno Dobler	Edmonton		Jan Shultz	Edmonton	
Len Matiuk	Vegreville		Jim Semeniuk	Vancouver	4*
Alex Nykolyn	Edmonton		Myron Hayduk	Vegreville	
Tom Day	Edmonton	5	Clayton Day	Edmonton	
Don Higgit	Victoria		Grant Connel	Edmonton	
J.P. Theriault	Edmonton		A. Stafford	Vegreville	
Ian McIntyre	Edmonton				

* Participant team leaders who controlled the amounts of gold, provided to them by Loring Laboratories, that were injected.

Ross W. Sargent

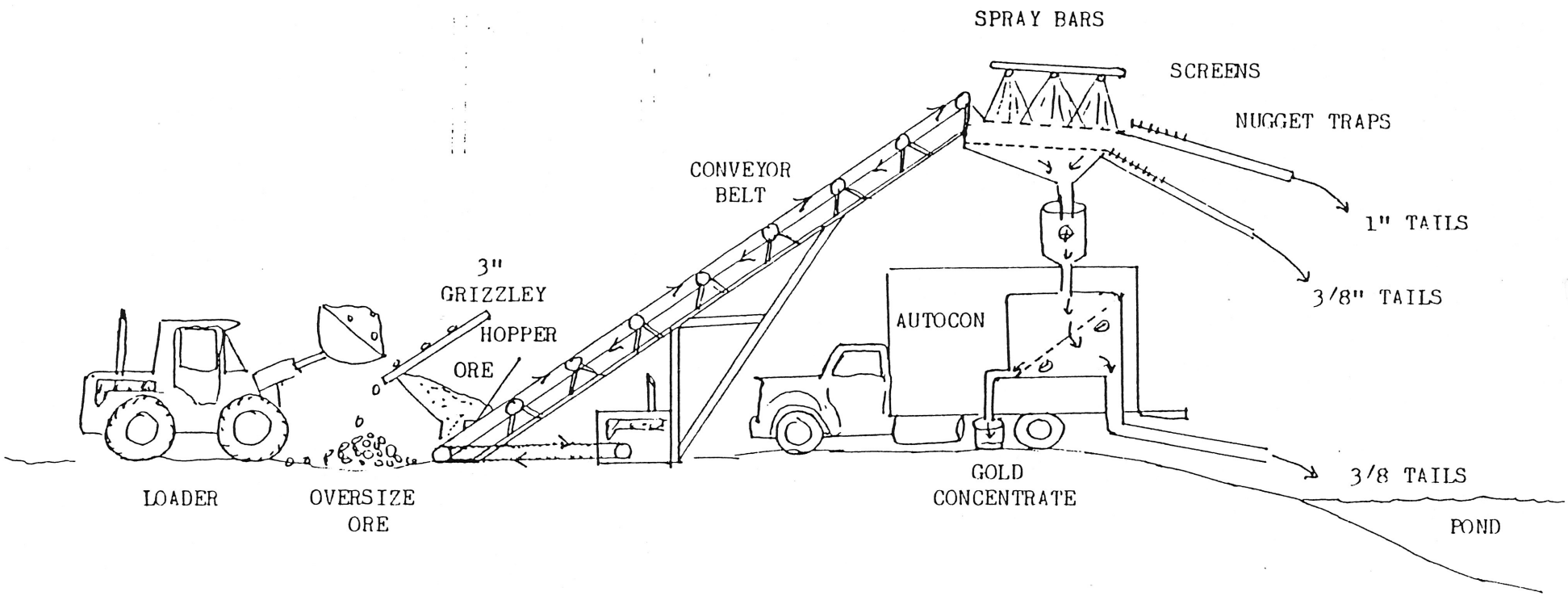
#9, 1236-38th Avenue N.E., Calgary, Alberta
T2E 6N2

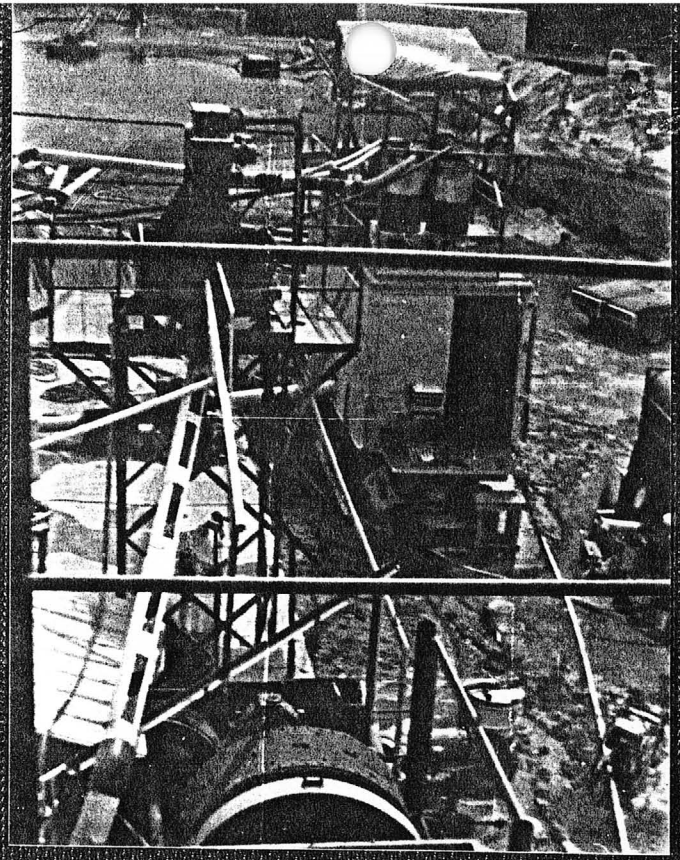
DCRS (Canada) Ltd.

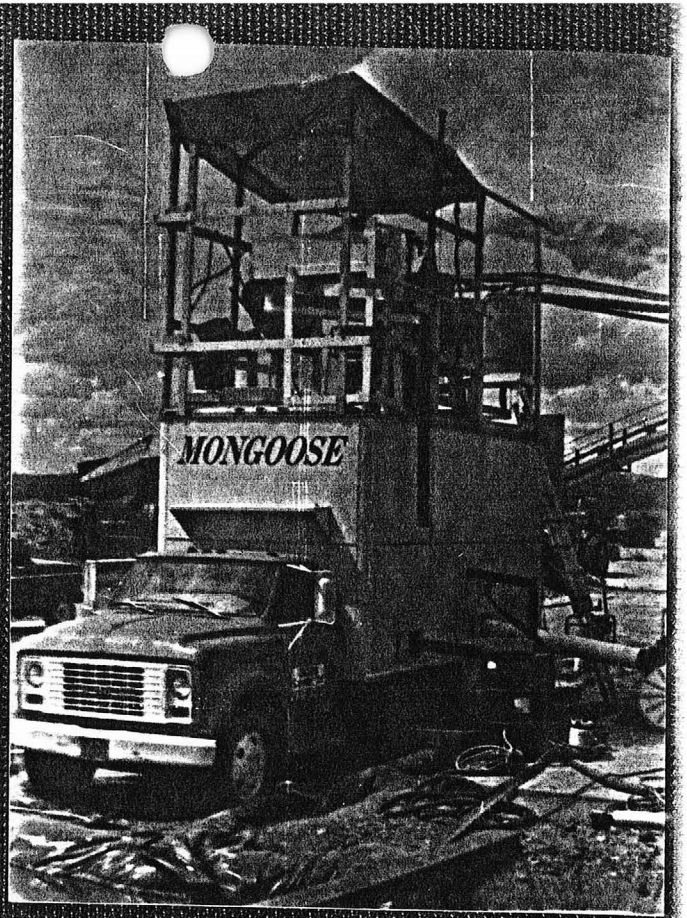
(403) 291-3533

A.F. Downey R.R. Barefoot Bruce Downey

GOLD PROCESSING CIRCUIT



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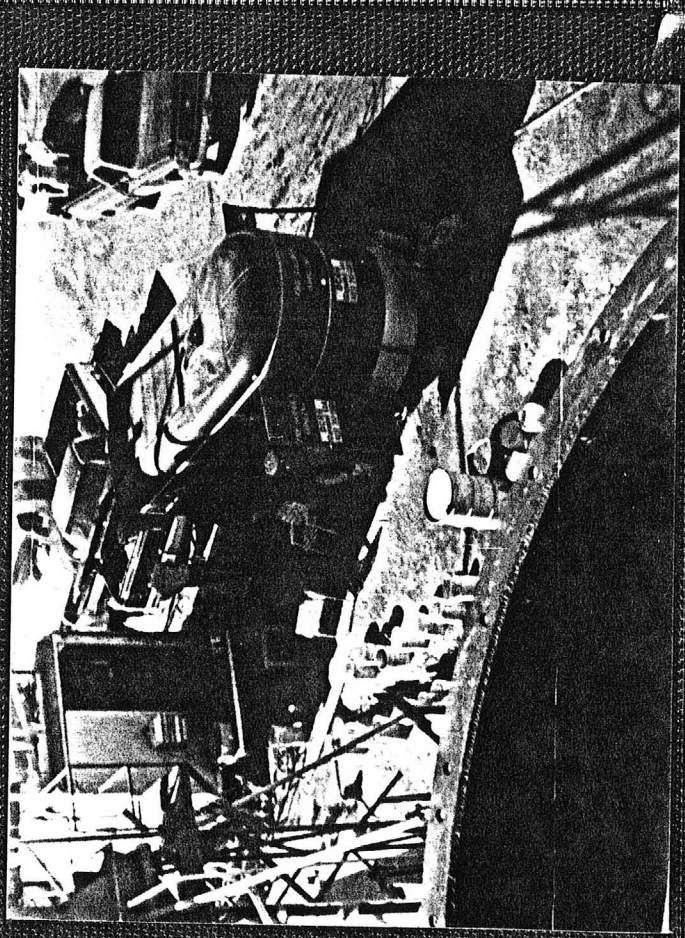

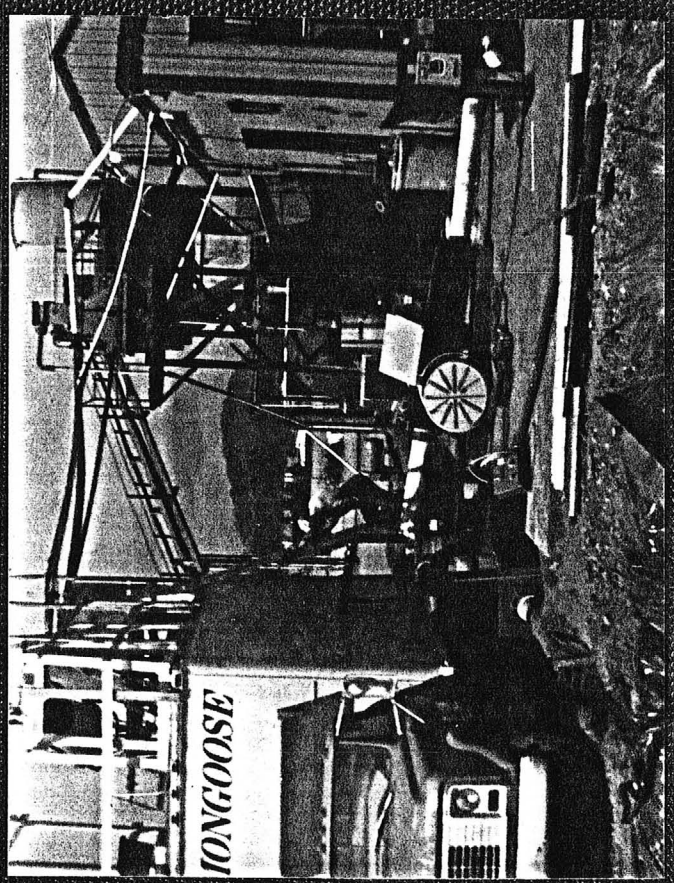
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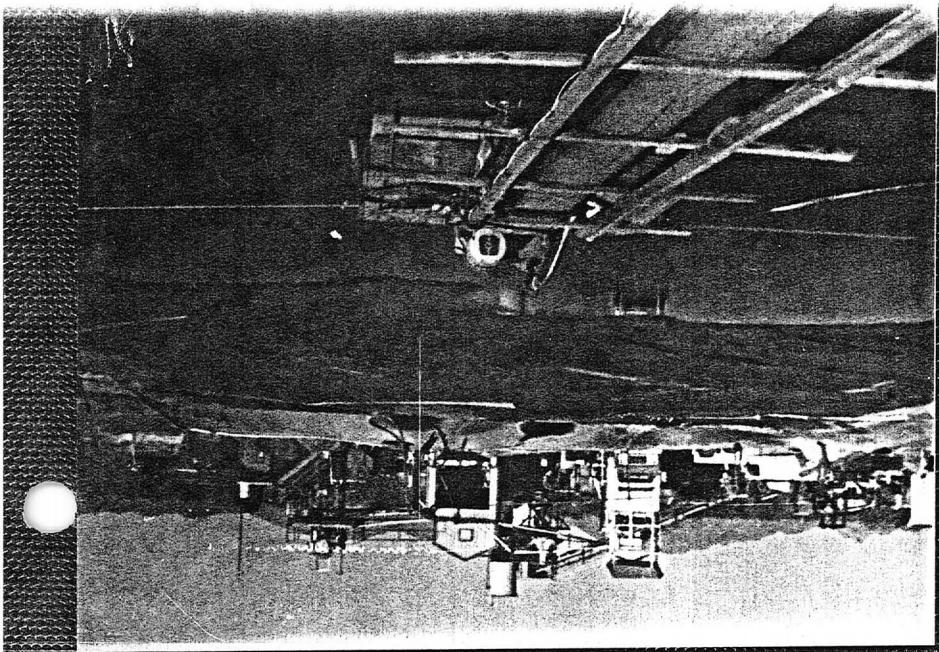

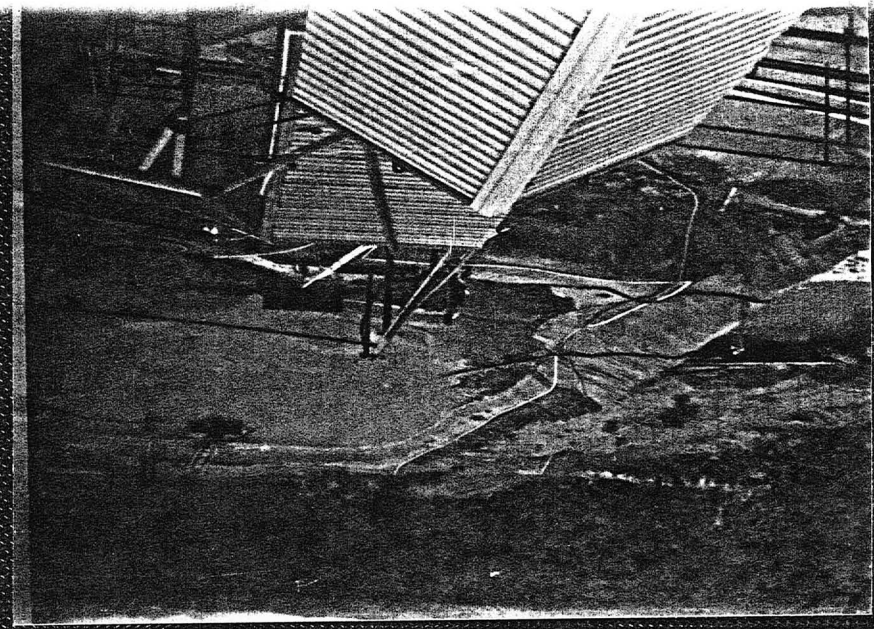

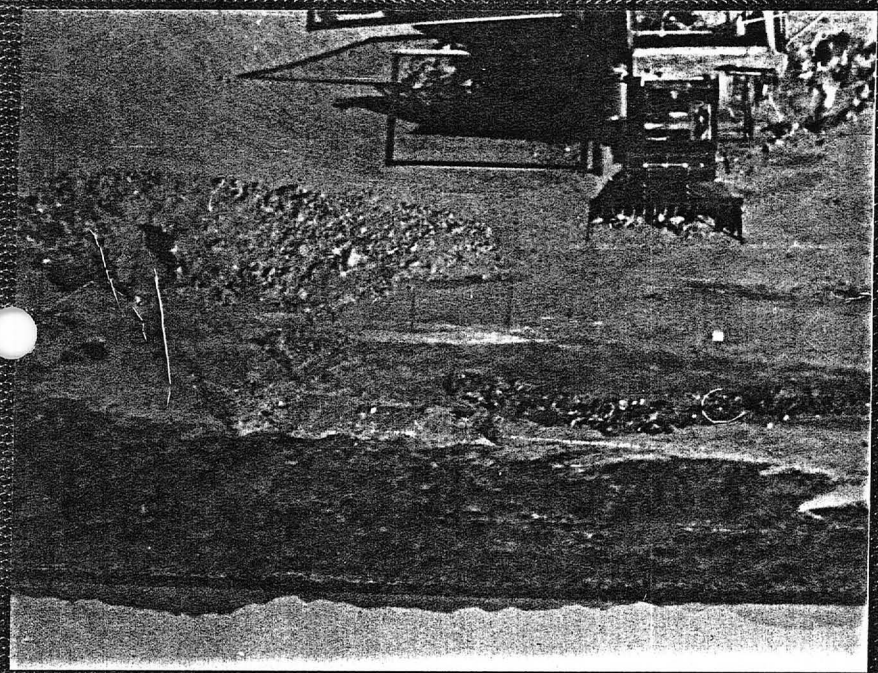

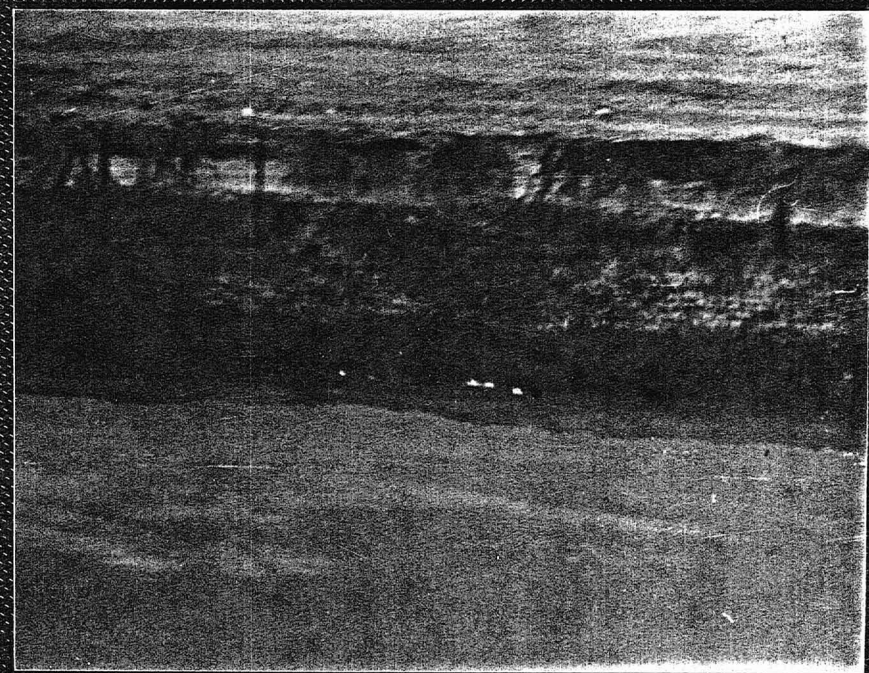

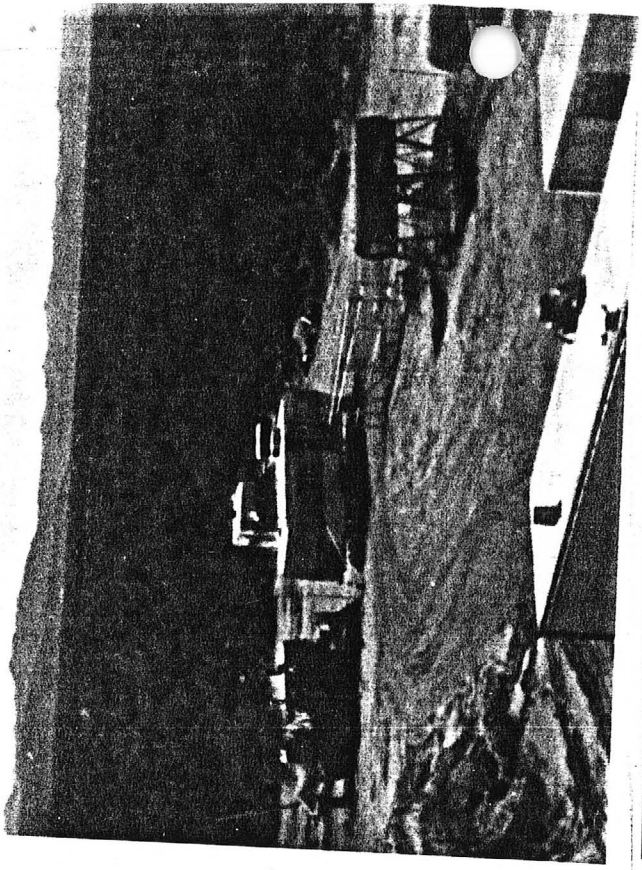

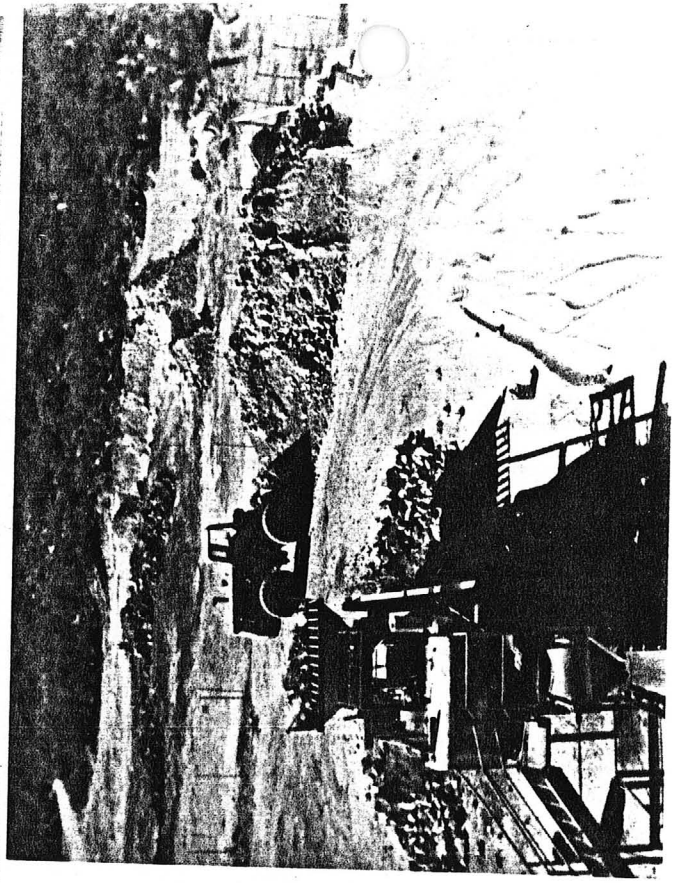

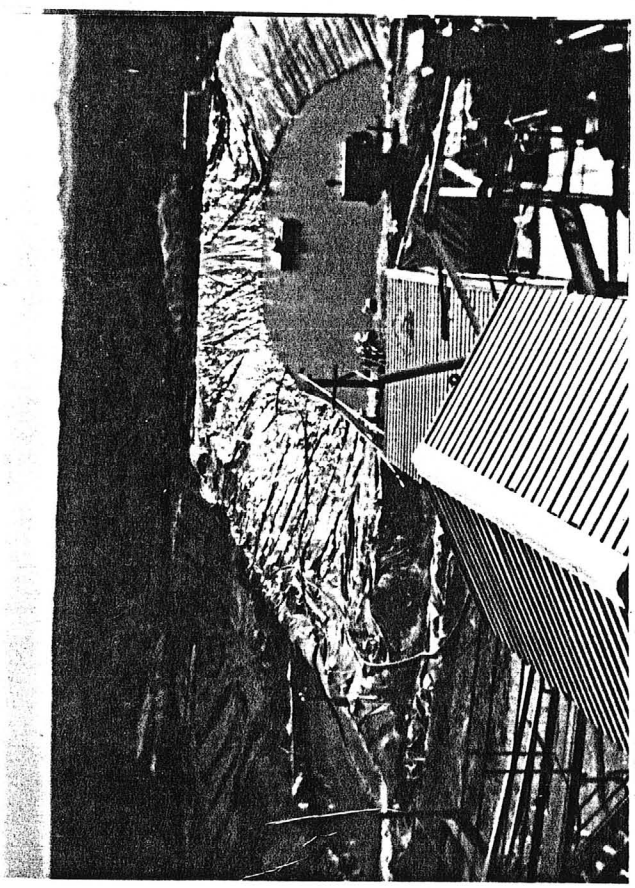

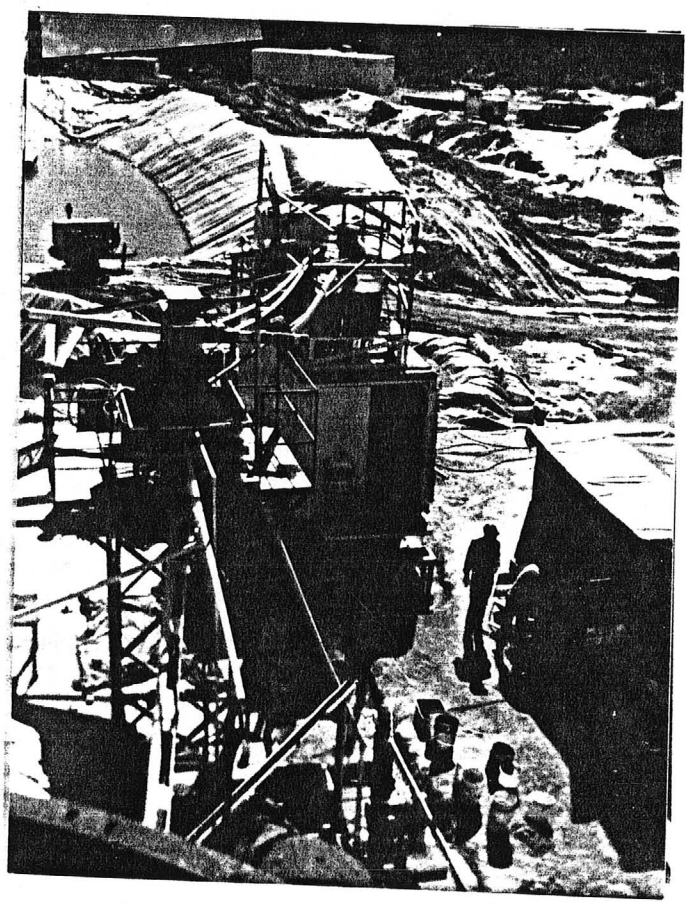

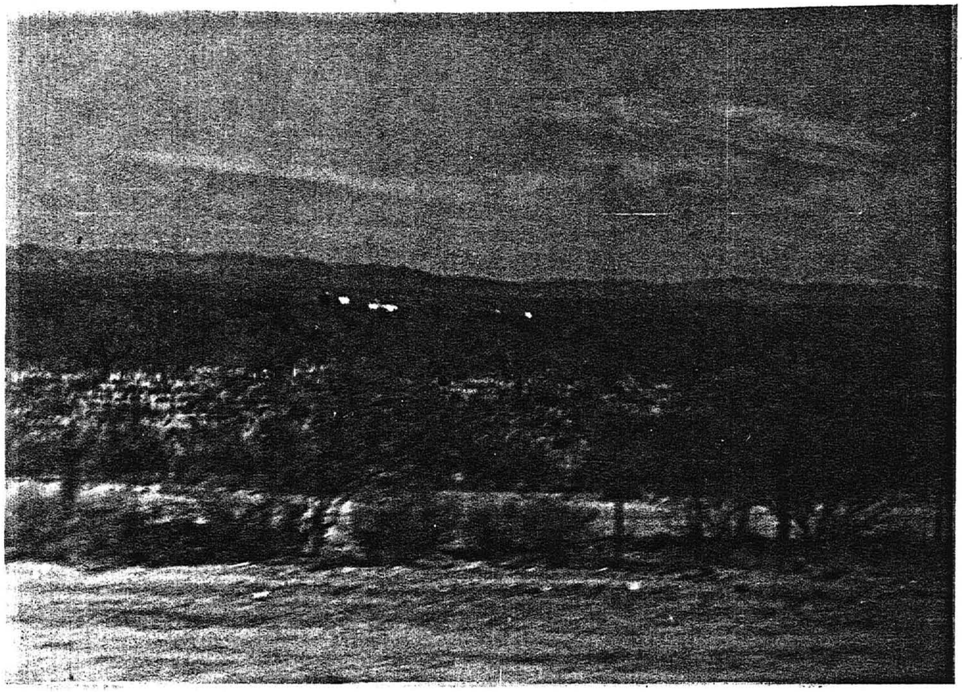

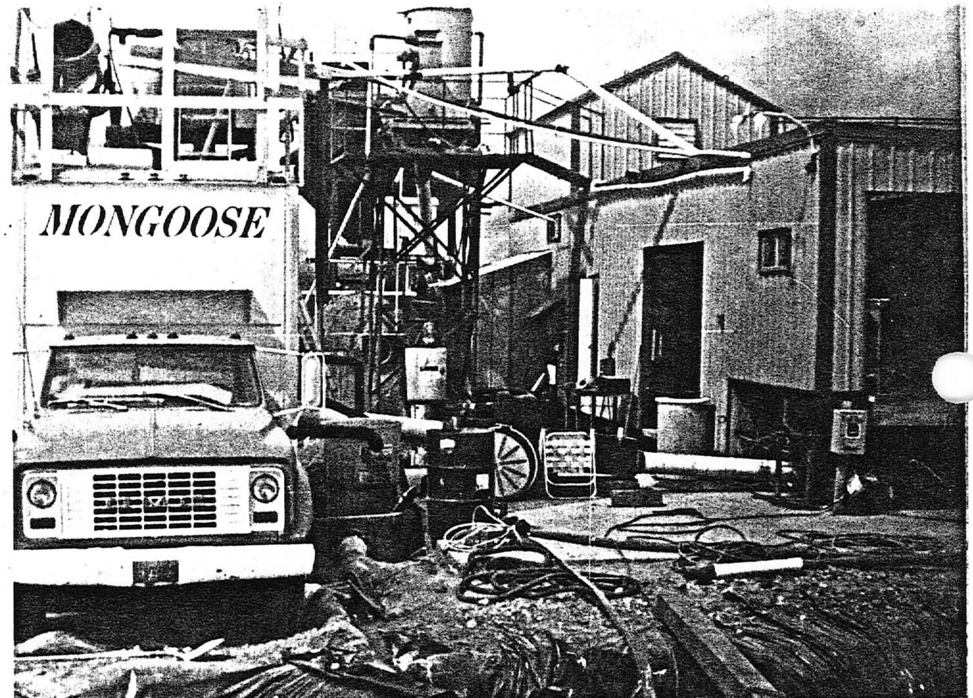
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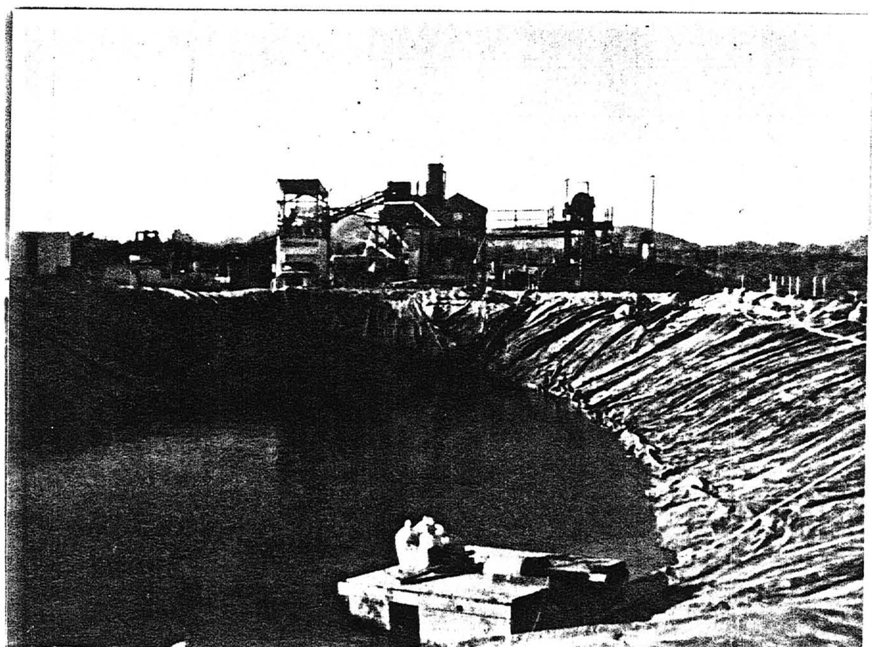

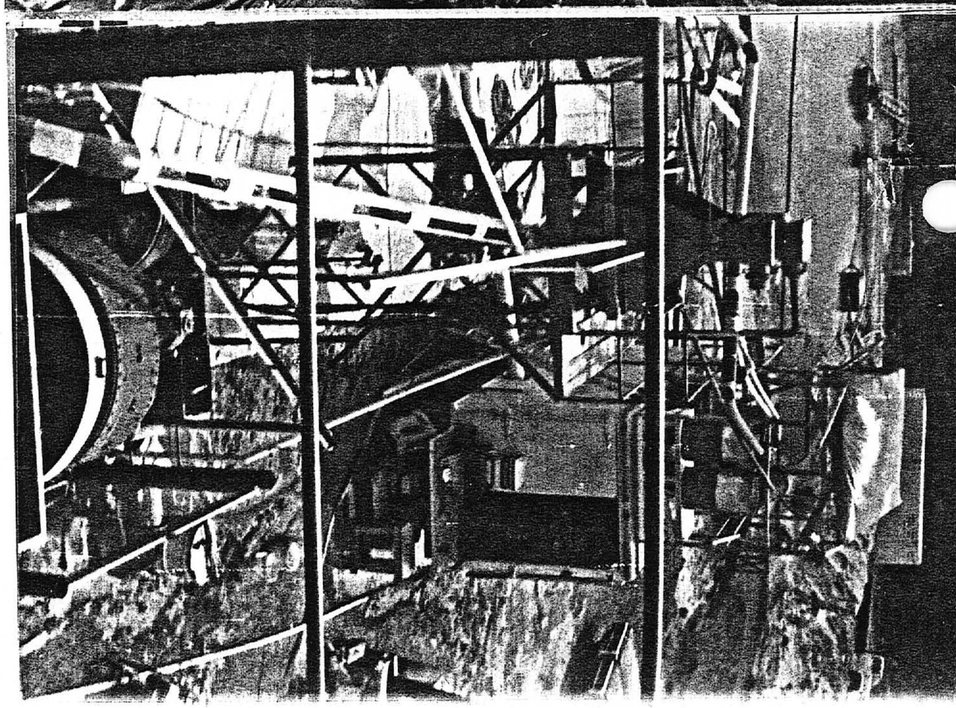

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TEST OF THE DCRS FINE GOLD RECOVERY SYSTEM

By

Guillermo Salazar S., P. Eng. (B.C.)

Calgary, November 7, 1988.

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SUMMARY & CONCLUSIONS

This report describes our testing of the DIFFERENTIAL CHARGE RECOVERY SYSTEM ("DCRS") for fine grained gold recovery. These tests were carried out near Devon, Alberta, at the request of Mr. Ross W. Sargent. It is an update on our report dated October 20, 1988 which lacked the results from Test No. 2, now included.

Test No. 1 consisted of running 100.0 yards of pit gravels from the North Saskatchewan river intentionally spiked with 102.52 grams of gold, most of which was recently recovered from a Yukon placer operation. Sizing of these gravels prior to the test runs indicated that 25% of them passed through the 3/16 inch screen and were fed through the DCRS system. A total of 90.174 grams of this gold was recovered and an overall recovery of 88.% is reported. 92% of the recovered gold reports to the system's first concentrate and is mainly tied in the produced amalgam. This remarkably high recovery included 13.65% of (-100) mesh size gold particles, which is a two fold increase over the amount recovered by the placer operators whose gold was processed. Results from this test are summarized in Table No. 5.1 and 5.2.

A comparative fraction analysis between feed and gold recovered by amalgam shows a significant increase in the amounts of (-200) mesh gold recovered. Possible explanations for these results are given.

Test No. 2 entailed processing sulphide concentrates spiked with gold and gold alloys. These results are presented in Tables No. 6.1 through 6.4. A total recovery of 72.1% is reported. Most of this gold was won in the gravity portion of the recovery system rather than with the mercury and 71.5% of the recovered gold reported to the system's first two concentrates. Sieving analysis of the gold recovered by amalgamation in this test shows that 30% passed through the (100) mesh sieve. Table No. 6.4 shows that 22.5% of the gold recovered by gravity with the DCRS system also passes through the (100) mesh sieve. This is five to six times better than the recoveries obtained by the placer operators that supplied the placer gold.

Three other tests were run. One hundred yards of pit gravels were run without spiking to find out the background grade of the gravels. We recovered 1.85 grams of fine grained gold from this test. Another test included running 200. k. of laboratory sand spiked with 3.0 grams of flour gold. A recovery of 66.7% is reported. A last test involved running 50 yards of pit gravels spiked with 120.925 grams of gold. A recovery of 77.7% is

reported.

We conclude that high percentages of the spiked gold was recovered with the DCRS system. This includes a significant portion of (-200) mesh gold particles. The larger tests were run at test speeds of 50 to 70 yards per hour, thus reaching the present capacity of medium size placer operations.

Wear and tear at the end of the test runs was virtually negligible. Longer term testing in this regard is recommended.

Calgary, November 7, 1988

Guillermo Salazar S.
P. Eng. (B.C.)

1. Objective.

Mr. Ross W. Sargent instructed us to test the DIFFERENTIAL CHARGE RECOVERY SYSTEM ("DCRS") for the recovery of fine gold. We were to design the test and methodology to be used for this purpose. We, in turn, engaged Loring Laboratories Ltd. ("LORING") for laboratory control and field assistance.

2. Process Description.

The DIFFERENTIAL CHARGE RECOVERY SYSTEM ("DCRS") was designed by R. R. Barefoot. The system is described by Barefoot in his patent application as "...directed to simple, economical, fast and efficient methods which cause both metals and minerals in a moving aqueous slurry to become differentially (from the other ore particles) charged positively so that, when they pass over an oppositely charged negative field, they are driven into the lower, oppositely charged field by both the strong force of electrical attraction and the relatively weaker force of gravity. Should the negative collector contain mercury and the ore contain gold, electrons are exchanged providing instant amalgamation ..."

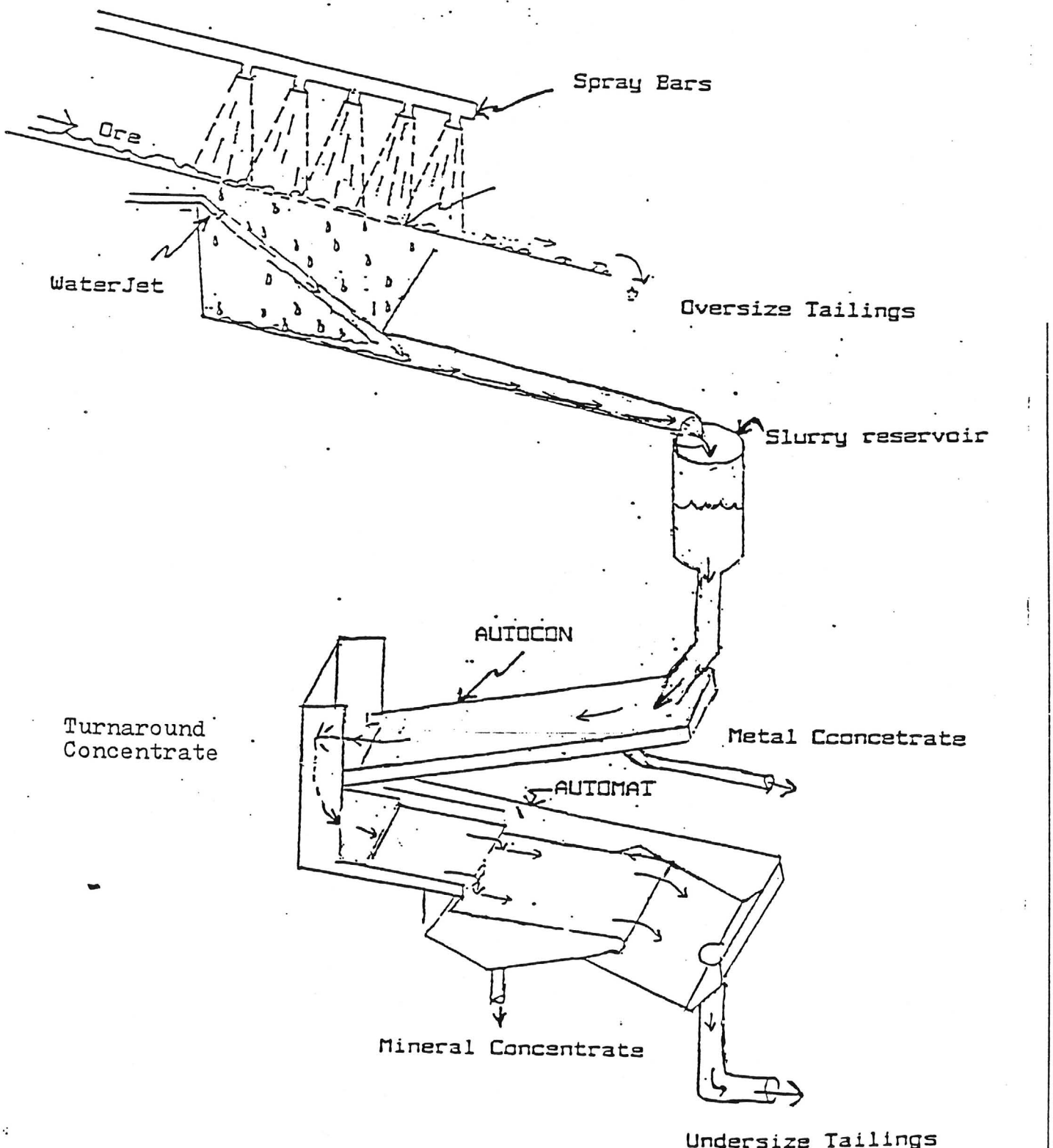
Figure No. 1 is a schematic representation of the system prepared by Barefoot. Here, it is seen that the slurried ores are fed to the Slurry Reservoir at the head of the system through a pipe after proper sizing (in the case of gravels) and density of slurry has been achieved. In the case of a gravel or placer gold operation, the bank material is washed and the cleaned oversize (+3/16 inch size) is disposed as tails. In the case of a mining operation, the system can receive the effluent from a ball or rod mill or the floatation tails.

The Slurry Reservoir feeds the AUTOCON unit. Material which has passed this unit flows through the AUTOMAT unit first and through a SLUICE later before it is disposed as tails. The fluid flow between the Autocon and Automat units is described in Figure No. 1 as a turnaround. Here, the slurry is forced to do a 180 degree turn before reaching the Automat. The heavy minerals concentrated in the backwash of this turnaround are collected in matting. The measured amounts of mercury were added to the system at the Slurry Reservoir or at the top of the Autocon unit.

Each unit produces its own concentrate. The Autocon and Automat units are equipped to be washed with minimum system disruption or down time. Dismantling and a certain amount of down time is required to clean the turnaround and sluice areas.

Figure 1. Differential Charge Recovery Systems: Mobile TEst Unit

Scale 1:50



3. Test Methodology.

The DCRS mobile units, a large one capable of processing up to 40 tons of slurry per hour and a smaller one capable of processing up to 10 tons of slurry per hour, were set up at a gravel quarry operation in the North Saskatchewan River near Devon, Alberta. Prior to start up, we confirmed that the machines and gold traps were perfectly clean.

The gravels to be used for the experiment had been dug from a small nearby island and left at the quarry to dry. In addition to the DCRS units, a 926 Front-End Loader, a hopper with a grizzly and a conveyor belt feeding a screen with spray assemblage were used. The washed oversize was well cleaned denoting the absence of clay lumps in the gravels. The undersize fell into a wooden tub shaped like a coffin which fed the plastic pipe at the head of the DCRS system. The yardage of material pushed through the system was measured as the number of front end loader buckets dumped at an average rate of three yards per bucket, as defined by the operator.

The gold content of the gravels was defined by running 100 yards of bank gravel through the system after its cleanliness was confirmed (See Section 5.4.1).

Measured amounts of gold (See 'Loring samples', Section 4) were added to the slurry below the screen and into the coffin. The gold thus added to the slurry is free floating and not attached to any clays or surrounded by mud. This may be the only significant difference between the material run in our tests and those to be found at an operating placer. We feel, however, that the amount of fines and particulate matter included in the water used for the disposal of the oversize material at a placer operation is a measurable amount which can be reduced by lengthening the punch plate or screen used before discarding the oversize. This difference does not exist when the system is installed after crushing of ores because most mills grind their ores until they have liberated the desired percentage of gold particles.

The mercury used in the tests was supplied by Barefoot. We sampled this mercury for analytical testing before it was added to the system. Analytical results show that the mercury was not contaminated with gold prior to the experiments.

Once the sample processing was finished, all of the material deposited in the Autocon, The Turnaround, the Automat and the Sluice were collected as separate samples. Each sample was labelled in the field and taken to Loring's facilities in Calgary for further processing and weighing. Additionally,

samples of the tails were collected with a 0.20 m. diameter household colander every 15 minutes.

At the laboratory, the gold and mercury were recovered from each sample by panning, this concentrate was weighed and the gold recovered by continuing the amalgam process. Once the amalgamated gold was won, it was dried, weighed and sieved. We are, thus, able to compare not only the weights of the gold added to -and won from- the system but also its characteristics. Additionally, a one assay-ton pulp was prepared from the remainder of the concentrate and fire assayed. The results from both portions are reported as "amalgam" and "gravity" results, respectively.

4. The Gold Used for Tests.

4.1: Sources.

Two sources of gold are reported.

4.1.1. Most important source is the gold added to the system by us.

This gold consists of recently washed gold from the placer operations owned by Mr. Peter Estabrook in the Indian River, Yukon Territory; some gold previously recovered with the DCRS equipment; and gold included in the concentrates fed to a smelter located in Quebec.

The placer gold provided the bulk of the gold added to the system.

and 4.1.2. The gold added to the system from the pit gravels.

This was measured by running 100.0 yards of pit gravels through DCRS's large machine and by weighing the amount of gold recovered by the machine (See Section No. 5.4).

4.2: Purity, Fineness & Fraction Analysis of placer gold fed to system.

Mr. Ross Sargent brought 20.88 troy ounces, or 649.37 grams, of 'raw' gold concentrate from Estabrook's Indian River placer gold operations to Loring Laboratories Ltd. on September 27, 1988. This was apportioned as follows:

155.50 grams were returned to Mr. Sargent -Sample A.
155.50 grams were placed in Loring's safe for later use,

and 338.45 grams were dried and sieved. Sieving results from this returned the following:

MESH	WEIGHT grs.	%
+60	181.54	53.64
60x100	141.47	41.80
100x200	15.26	4.51
200x400	0.11	0.03
-400	0.06	0.02
TOTALS:	338.44 grs.	100.0 %

A fineness of 78.35% is reported by Loring.

Each fraction was then de-magnetized and weighed by Loring prior to processing. Table No. 1 shows the results at this stage.

TABLE No. 4.1: PLACER GOLD SIZING & PURITY

MESH	WEIGHT RAW (gr)	MAGNETICS (gr)	NET WEIGHT (gr)	%
+60	181.54	0.1093	181.4307	53.7
60x100	141.47	0.5118	140.9582	41.7
100x200	15.26	0.0300	15.23	4.5
200x400	0.103	N.A.	0.103	0.1
TOTALS:	338.373	0.6511	337.7219	100.0

Loring then prepared a total of 66 vials with 5.0 grams of gold with a similar size distribution to that shown in Table No. 1. This was done by mixing 30. gr batches in the percentages indicated in Table No. 1 with the exception that the -200 mesh material was not included. This portion was saved in its entirety to be included in a test.

5. The Tests.

Tests No. 1 and 2 were supervised and run by the author and Mr. Sodi Berar of Loring Laboratories Ltd. with the aid of DCRS personnel. Mr. Berar and myself had complete access to -and control of- all sections of the DCRS equipment during these tests. We also supervised the collection of each concentrate. The

other tests (100 yards of bank gravels, laboratory sands, etc.) were done by the author and Mr. R. R. Barefoot. Tests No. 1 and 2 were run on Friday, September 30, 1988 while the other tests were run on September 28th and 29th, 1988.

5.1: Site.

The two DCRS machines were set up at a gravel pit in the North Saskatchewan River near Devon, Alberta. The location was conveniently located near Edmonton and its International airport. The gravel pit operators dig up gravels from a small nearby island and let them dry prior to processing. We used a small portion of last years' supply for our tests. Chunks of sub-bituminous coal were seen in the cleaned gravels. Prior sizing tests of this gravel indicate that the -3/16 inch portion constitutes 25% of the total gravels.

Throughout the test, the volume of gravels processed was measured as the number of 3. yard buckets of the 926 front-end-loader reported by the gravel pit operator. No attempt was made to convert these results to consolidated bank yards.

5.2: Test No. 1.

This test included adding a total of 100. gr. of de-magnetized placer gold prepared by Loring into 100 yards of pit gravels. Also added to the slurry were two 20 lb. buckets of gold bearing sulphide concentrates which are feed to a copper smelter in Quebec and two 7 lb. buckets of sub-bituminous coal. Head samples from the sulphide concentrates indicates gold grades of 0.406 and 1.655 oz Au/ton for buckets # 10 and 15, respectively. Bucket # 15 was found to have a significant metallics portion contributed from computer chips and gold alloys included in the sample.

The large DCRS unit was operational and running water through by 11:00 am. Sixty millilitres of mercury were added into the Slurry Reservoir at 11:15 am. A further 5. millilitres of mercury were added to the system every 30 minutes, for a total of 80.0 millilitres.

The gold was added to the system in 5.0 gr 'spurts' at variable times to best simulate gold feed at a placer operation. The finding -and processing- of higher grade material was emulated by adding twice the amount at certain times. The sulphide concentrate and coal were added near the end of the test in an attempt to dislodge whatever gold may have been trapped mechanically in the system.

The gold added to the system in this test is:

5.2.1: From placer vials:	100. gr.
5.2.2: Bank contribution:	1.85 gr.
5.2.3: From concentrates:	
20 lbsX0.406/2,000.X31.2=	0.13 gr.
20 lbsX1.655/2,000.X31.2=	0.52 gr.
TOTAL GOLD ADDED:	102.52 gr.

The bank contribution, as found by running 100 yards of bank material, is extremely fine grained and so is the concentrate sample. Both are considered to contribute to the (-200) mesh size. The computer chips and gold alloys did not report to the mercury so, fortunately, the fraction comparisons in progress were not affected. The test took 2 hr and 54 min to conduct. This includes a total of 24 minutes lost in three stoppages due to increases of slurry density which caused the pipe and coffin feeding the DCRS system to seal up. Clean up and collection of all the material concentrated in the AUTOCON, AUTOMAT, TURNAROUND and SLUICEBOX (plus cleanup from AUTOMAT) took one hour. Details of this experiment are found in Appendix No. 3.

The samples collected from this experiment were taken to Loring for laboratory processing and analysis. The results reported here are based on results measured and analyzed under standard laboratory conditions and procedures.

A total of 79.65 millilitres of mercury were recovered by the system. 97.93% was recovered in the AUTOCON concentrate, 1.0 % in the TURNAROUND concentrate, 0.13 % in the AUTOMAT concentrate and 0.94 % in the SLUICEBOX concentrate.

Table No. 5.1 shows that an overall recovery of 88% of the gold added to the system was recovered in the four concentrates taken. Such a high overall recovery is very unusual in the placer mining industry. The method's productivity is further enhanced, as shown in Table No. 5.2, by the recovery of 7.714 grams of -200 mesh gold, or 9.34% of total gold recovered. A fineness of 77.87 for the recovered gold is reported. The placer operators who lent the gold to Mr. Sargent were not able to achieve such production of fine grained gold.

Table No. 5.1 also shows that 91.6% of the recovered gold was recovered by amalgam related processes, and that 98.9% of this amount reported to the concentrate from the AUTOCON.

Also reported in Table No. 5.1 is the recovery of a significant portion of gold alloys dumped with the sulphide concentrate. They reported to the TURNAROUND concentrate and do

TABLE No. 5.1: TEST No. 1 DATA SUMMARY.

SAMPLE SITE	DRY WEIGHT (gr)	%	AMAL GAM gr	%	GOLD RECOVERY GRAV ITY oz/ton	gr	%	TOTAL gr	%
AUTOCON	16,063	32	81.690	98.915	2.730	1.502	19.79	83.192	92.26
TURNAROUND	3,718	7	0.647	0.783	36.580	4.658	61.39	5.305	5.88
AUTOMAT	11,471	23	0.097	0.045	1.568	0.616	8.12	0.653	0.72
SLUICEBOX ++	18,898	38	0.212	0.257	1.254	0.812	10.7	1.024	1.14
	50,151	100	82.586	100		7.588	100	90.174	100
TOTAL RECOVERY (File gssdcrs report)				80.6%			7.4%		88. %

TABLE No. 5.2: TEST No. 1 = AMALGAM RECOVERY FRACTION ANALYSIS.

MESH SIZE	FE ED gr.	%	RECO VERY gr	%	FRACTION LOST (gr)
+60	53.64	52.36	31.655	38.33	21.985
60x100	41.80	40.8	39.658	48.02	2.142
100x200	4.51	4.4	3.56	4.31	0.95
200x400	Nil		4.154	5.03	(5.214)*
-400	Nil		3.56	4.31	
-200 Conc.	2.5	2.44	N.A.		
	102.45		82.587		19.983

(*): Is total recovered (-200) mesh gold.
File: gssdcrs report

TABLE No. 6.1: TEST No. 2 DATA SUMMARY.

SAMPLE SITE	DRY WEIGHT (gr)	DRY WEIGHT %	AMALGAM gr	AMALGAM %	GOLD RECOVERY GRAVITY oz/ton	GRAVITY gr	GRAVITY %	TOTAL gr	TOTAL %
AUTOCON	1644.3	22.03	2.615	100	111.410	6.265	42.2	8.880	50.8
TURNAROUND	1814.0	24.30	0	0	58.195	3.610	24.3	3.610	20.7
AUTOMAT	219.7	2.904	0	0	75.044	0.563	3.8	0.563	3.2
SLUICEBOX ++	3784.1	50.71	0	0	94.090	4.413	29.7	4.413	25.3
TOTAL	7462.1	99.95	2.615	100		14.851	100	17.466	100
TOTAL RECOVERY				10.8			61.9		72.1

TABLE No. 6.2: TEST No. 2
AMALGAM RECOVERY FRACTION ANALYSIS.

MESH SIZE	FEED gr.	FEED %	RECOVERY gr	RECOVERY %
+60	5.364	22.13	0.096	3.66
60x100	4.180	17.25	1.744	66.7
+100 CONC.	10.01	41.31	See T. No. 6.4	
100x200	0.456	1.881	0.252	9.65
200x400	Nil		0.146	5.56
-400	Nil		0.377	14.43
-100 CONC.	4.22	17.41	See T. No. 6.4	
	24.23		2.615	100

TABLE No. 6.3: TEST No. 2
ANALYSIS OF TAILINGS SAMPLES

SAMPLE No.	GOLD oz/ton	MERCURY ppm	WEIGHT DRY, gr	TIME
# 1	0.944	15.2	124.8	18:45
# 2	0.510	108.0	175.2	18:49
# 3	0.522	7.41	151.1	18:50
# 4	2.134	nss	8.5	18:53
# 5	1.307	nss	13.9	18:58

TABLE No. 6.4: TEST No. 2 GOLD RECOVERED BY GRAVITY

SAMPLE SITE	DRY WEIGHT (gr)	DRY WEIGHT %	In oz/ton	GOLD Pulp %	RECOVERED In Metallics oz/ton	RECOVERED In Metallics %	BY TOTAL Pulp	GRAVITY GOLD Metallics	RECOVERED Total	(grams) %
AUTOCON	1644.3	22.03	59.724	7.37	115.523	92.69	0.248	6.018	6.266	42.19
TURNAROUND	1814.0	24.30	21.000	45.35	89.06	54.65	0.591	3.019	3.61	24.31
AUTOMAT	219.7	2.90	55.600	13.04	77.96	86.96	0.054	0.509	0.563	3.79
SLUICEBOX ++	3784.1	50.71	38.244	49.39	90.036	50.61	2.445	1.967	4.412	29.71
TOTAL	7462.1	99.94					3.338	11.513	14.851	100

not seem to have been amalgamated.

Table No. 5.2 compares the reported sieved results from the calculated feed and recovered gold. It is restricted to gold recovered with the mercury only. It shows that 9.34%, or 7.714 gr., of the recovered gold reported to the (-200) mesh fraction. This is 5.214 gr. more than included in the calculated feed. Possible sources for this difference are:

-The bank material run higher for this test than when the 100. yards of bank material was run, which is discounted.

-More gold was added to the system by the sulphide concentrates. The discovery of the accidental inclusion of gold alloys in the sample is recognized as creating a nugget effect preventing achieving the desired homogenization of pulp before taking the one assay ton used for fire assaying. It certainly made us measure the amount of metallics in the sample. It does not, however, appear to affect the amount of gold recovered with mercury.

or -That the DCRS equipment liberates the more loosely accreted gold particles from the coarser fractions and collects them later as the finer portions reported.

DCRS personnel report finding gold lodged in the pipe joints upon teardown. This priming of the system may account for a small portion of the reported losses.

A review of the analytical results reported from the tail samples indicates a pretty good correlation between the reported slight increases in their gold content and the addition of the sulphide concentrates. It also shows slight increases related to the addition of the fine coal dust (See App. No 3).

5.3: Test No. 2.

A total of 126.59 k. of Quebec smelter-feed concentrates assaying 3.28 oz Au/ton spiked with 10.0 grams of placer gold were fed through DCRS's smaller plant. The system was primed with 25. millilitres of mercury prior to delivery of sample. Sample feed started at 6:25 pm and finished at 6:50 pm.

The gold fed through the system is:

-From placer vials:		10.00 grams
-From concentrates (126.59 k @ 3.28 oz Au/ton):		
Pulp:	117.425 k @ 35.928 g/t	4.22 grams
Metallics:	9.165 k @ 1,092.670 g/t	10.01 grams
		======
TOTAL:		24.23 grams

TABLE No. 6.1: TEST No. 2 DATA SUMMARY.

SAMPLE SITE	DRY WEIGHT (gr)	DRY WEIGHT %	AMALGAM gr	AMALGAM %	GOLD RECOVERY GRAVITY oz/ton	GRAVITY gr	GRAVITY %	TOTAL gr	TOTAL %
AUTOCON	1644.3	22.03	2.615	100	111.410	6.265	42.2	8.880	50.8
TURNAROUND	1814.0	24.30	0	0	58.195	3.610	24.3	3.610	20.7
AUTOMAT	219.7	2.904	0	0	75.044	0.563	3.8	0.563	3.2
SLUICEBOX ++	3784.1	50.71	0	0	34.090	4.413	29.7	4.413	25.3
TOTAL	17462.1	99.95	2.615	100		14.851	100	17.466	100
TOTAL RECOVERY				10.8			61.3		72.1

TABLE No. 6.2: TEST No. 2
AMALGAM RECOVERY FRACTION ANALYSIS.

MESH SIZE	FEED gr.	FEED %	RECOVERY gr	RECOVERY %
+60	5.364	22.13	0.096	3.66
60x100	4.180	17.25	1.744	66.7
+100 CONC.	10.01	41.31	See T. No. 6.4	
100x200	0.456	1.881	0.252	9.65
200x400	Nil		0.146	5.56
-400	Nil		0.377	14.43
-100 CONC.	4.22	17.41	See T. No. 6.4	
	24.23		2.615	100

TABLE No. 6.3: TEST No. 2
ANALYSIS OF TAILINGS SAMPLES

SAMPLE No.	GOLD oz/ton	MERCURY ppm	WEIGHT DRY, gr	TIME
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# 2	0.510	108.0	175.2	18:49
# 3	0.522	7.41	151.1	18:50
# 4	2.134	nss	8.5	18:53
# 5	1.307	nss	13.9	18:58

TABLE No. 6.4: TEST No. 2 GOLD RECOVERED BY GRAVITY

SAMPLE SITE	DRY WEIGHT (gr)	DRY WEIGHT %	In oz/ton	GOLD Pulp %	RECOVERED In Metallics oz/ton	RECOVERED In Metallics %	BY TOTAL Pulp	GRAVITY GOLD Metallics	RECOVERED Total	(grams) %
AUTOCON	1644.3	22.03	59.724	7.37	115.523	92.63	0.248	6.018	6.266	42.19
TURNAROUND	1814.0	24.30	21.000	45.35	89.06	54.65	0.591	3.019	3.61	24.31
AUTOMAT	219.7	2.90	55.600	13.04	77.96	86.96	0.054	0.509	0.563	3.79
SLUICEBOX ++	3784.1	50.71	38.244	49.39	90.036	50.61	2.445	1.967	4.412	29.71
TOTAL	17462.1	99.94					3.338	11.513	14.851	100

No pit gravels were used in this test. The general composition of the concentrates was determined by producing a composite sample as it was dumped into the feed reservoir. A 30 element ICP analysis shows that this sample also contained 9.6% Cu, 0.17% Pb, 1.47% Zn, 105.4 ppm Ag and 27.4% Fe. "Metallics", in this case, are defined by the laboratory as those particles which do not pass through the 100 mesh sieve prior to pulverizing. This report covers only the recovery of gold by the small DCRS system.

The concentrates were raised to the slurry reservoir (See Figure No. 1) by a centrifugal suction pump which proved to be a good gold trap upon clean up. The system normally uses the type of gravity feed used in Test No. 1, so this problem is circumvented.

The material collected from the AUTOCON, AUTOMAT, TURNAROUND and SLUICEBOX (plus cleanup from AUTOMAT) during this experiment was also taken to Loring for laboratory processing and analysis. The results reported here are, once again, based on results measured and analyzed under their standard laboratory conditions and procedures.

A total of 24 millilitres of mercury were recovered, all in the concentrate collected from the Autocon. Mercury analysis of the tail samples (See Table No. 6.3) shows a marked change of the mercury content in the tails with time, which is most probably a reflection of the complexity of the sample fed. The low levels reported in #s 1 and 3 samples indicate the system's success in recovering mercury.

Tables No. 6.1 to 6.4 show the results of this test.

Table No. 6.1 shows that the gold recovered by gravity is 61.3% of the gold fed to the system whereas the gold recovered with the amalgam is only 10.8%. A total recovery of 72.1% is, thus, reported. The bulk of this unusually high recovery reported, again, to the AUTOCON and TURNAROUND concentrates.

The most significant difference between this test and Test No. 1 is that the relative proportions of the gold recovered with the amalgam and gravity fractions have reversed as a result of the marked differences in the feed. The gold alloys present as crushed computer chips constitute the bulk of the 'metallics' fed through the system, are obviously not amenable to amalgamation but were won back by the system.

In this test, 25.3% of the recovered gold reported to the SLUICEBOX concentrate while the AUTOMAT concentrate carried only 3.2% of the recovered gold (See Table No. 6.1). This is

possibly due to the high volumes fed through the system without prior optimization of speed of feed. An alternate possibility is that the alloys included in the feed as chopped computer chips do not behave as gold nuggets do. A third possibility is that a part of the AUTOMAT concentrate may have been inadvertedly washed to the SLUICEBOX during cleanup. A comparison of the weights of sample recovered in the AUTOCON (219.7 k) and the SLUICEBOX (3,784.1 k) favours the latter explanation.

The comparative fraction analysis presented in Table No. 6.2 is hampered by the small percentage of the total gold recovered with the mercury. Nonetheless, it shows that close to 30% of the gold recovered with the mercury passed through the 100 mesh sieve. This performance is remarkably superior to the original sample from Mr. Estabrook's placer operation, which carried a total of 4.56% by weight of this size.

The analysis of the gold recovered by gravity is presented in Table No. 6.4. This Table shows that 66.5% of the recovered gold was won in the AUTOCON and TURNAROUND concentrates. It also shows that 22.5% of the gold recovered by gravity is of (-100) mesh size.

5.4: Other Tests.

5.4.1: Gravels Run.

One hundred yards of gravels were run through DCRS's large machine on September 29, 1988. No gold was added.

Processing took approximately 1.5 hours. The concentrate from the AUTOCON weighed 11.14 k. wet. A total of 1.85 grams of very fine grained gold was recovered. Included in this weight is one flake of gold. We used this factor to determine the amount of gold contributed by the pit gravels throughout the report.

5.4.2: Silica Sand & Flour Gold Experiment.

Added 3.0 grams of flour gold (including four flakes) to 200. k. of SIL # 7 silica sand, which is sand normally used by laboratories to clean their grinding circuits between grinding cycles. The flour gold had previously been recovered with DCRS equipment. Fed this through DCRS's small system which had been spiked with 21 millilitres of mercury.

Started at 4:31 pm, finished at 4:42 pm. Clean up of AUTOCON took ten minutes. Recovered 2.0 grams (including 3 flakes) of fine grained gold. Recovery: 66.7%.

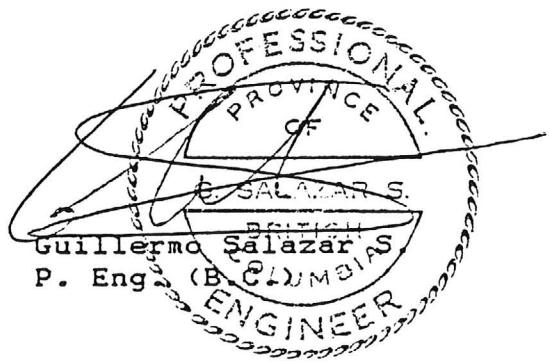
5.4.3: Fed 50 yards of pit gravels through DCRS's large system. Added to the gravels were:

-110 grams of placer gold (not cleaned, Sample A)
- 10 grams of -80 mesh gold.
and - 0.925 grams of estimated bank contribution.

120.925 grams of gold

Started at 6:24 pm, finished at 7:30 pm. Gold was added in spurts at coffin below spray bars. Recovered 94.0 grams after through clean up. Recovery is 77.7%.

Calgary, November 7, 1988



Guillermo Salazar S.
P. Eng. (B.C.)

Appendix No. 1. G. Salazar S.'s Certificate & Disclaimer.

STATEMENT OF QUALIFICATIONS AND DISCLAIMER

I, Guillermo Salazar S., of 23 Brabourne Mews SW, Calgary, Alberta T2W-1V9, hereby certify that:

1. I attended and graduated from the Universidad Nacional de Ingenieria de Lima, Peru with a Bachelor's of Science and a Engineering Degrees in Mining Engineering and Mining Geology in 1967. I also attended Harvard University from which I was awarded a Master's of Arts degree in Economic Geology in 1969.

2. I am a registered Professional Engineer in the Province of British Columbia (No. 10,220) and Professional Geologist in the Province of Alberta (No. 27456). I am also a member in good standing of the Society of Economic Geologists of America and of the Society of Mining Engineers of the AIME.

3. I have in excess of fifteen years of experience in my field in the U.S.A., Canada and South America.

4. I have not, directly or indirectly, received, and do not expect to receive, any interest, direct or indirect, in the property of Ross W. Sargent or the DCRS equipment, or any affiliate.

November 7, 1988
Calgary, Alberta.

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA G. SALAZAR S.

Guillermo Salazar S. P.Eng. (B.C.)
(File No. DCRS)

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES

FIELD VISIT

1. Information from: Nyal J. Niemuth and Ken A. Phillips, ADMMR Engineers
2. ADMMR Mine File: RED TAIL MILL
3. County: Yavapai
4. MILS Number:
5. District:(mining) (or mineral)
6. Township: Range Sec(s)
7. USGS Topographic Map:
8. Location (descriptive):
9. Number of Claims: Patented Unpatented
10. Owner(s): (if different from above) Congress Mining Limited
    Unit 6, Placita San Rafael, Box 1600, Tubac, AZ 85646
11. Address:
12. Operating Company: Morgan Millsite Inc.
13. Pertinent People and/or Firm: Philip P. Sharples, Gen. Part. Congress Mng. Ltd.; Bruce Comer, Ltd Partner; Rune Kraft, Mgr. Morgan Millsite
14. Commodities: Au, Ag, Pb, Zn, Cu
15. Operational Status: Operating custom mill
16. Summary of information received, comments, etc.:

The mill was operating at the time of our visit running a bulk sample from the Clementine Mine (file) produced by East-West Minerals. Next in line is a bulk sample P & G's from the Pikes Peak Mine (file).

The mill is currently operated by Morgan Millsite Inc. of which Rune Kraft is in charge. Morgan Millsite leases the plant from Congress Mining Ltd. (see above). Mr. Kraft reports the mill capacity at 75 tons per day (as compared to 50 tpd previously stated by others). Daily operation of the mill is handled by Hank DiCamillo of DMC Mining Inc., P.O. Box 63, Yarnell, AZ 85362.

Rune Kraft also stated that he has control of ore at the Champion Mine and at the Santa Ana Mine (file) near Tombstone. He also believes that most of the major companies have significant values in their dumps and tailings he can recover.

Date: 1-19-89

Ken A. Phillips, Chief Engineer
(Signature) AzDMMR

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES

VERBAL INFORMATION SUMMARY

1. Information from: Bruce Coomer

   Company: Redtail Mining (c)

   Address: P.O. Box 598

   Congress, AZ 85332

2. Phone: 427-3553

3. Mine: Redtail Millsite

4. ADMMR Mine File: Same

5. County: Yavapai

6. Summary of information received, comments, etc.:

Bruce Coomer reports Redtail Mining has leased the mill to Sonora Development a group working for (or with) Highland Resources. It is Highland Resources who have been mining at the George Washington (f) and trucking the material to the Redtail Millsite. So now Sonora Development will be using the mill and doing the processing themselves. They may be interested in doing custom milling.

Date: September 28, 1988

Nyal J. Niemuth, Mining Engineer

COMPLETE AND MAIL TO

STATE MINE INSPECTOR
1616 WEST ADAMS, SUITE 411
PHOENIX, ARIZONA 85007-2627

RED TAIL MILL @ YAVAPAI

FOR OFFICE USE ONLY
START-UP NUMBER 04305029
STATE NUMBER 141233
DEPUTY NUMBER HAMM
NEW ✓ MOVE

STATE MINE INSPECTO
FEB 07 1990

NOTICE TO ARIZONA STATE MINE INSPECTOR

In compliance with the Arizona Revised Statute, we are submitting this written notice to the Arizona State Mine Inspector of our intent to start ____, stop ____, move ____ an operation.

Please check the appropiate boxes: Contractor ☐, Owner ☐, Operator ☐ UPRATE. Open Pit Mine ☐, Underground Mine ☐, Mill ☐, Quarry ☐, Aggregate Plant ☐, Hot Plant ☐, Batch Plant ☐, Smelter ☐, Leach Plant ☐.

If this is a move, please show last location: ____

If you have not operated a previously in Arizona, please check here: ____ If you want the Education and Training Division to assist with your mine safety training, please check here: ✓

If this operation will use Cyanide for leaching, please check here: ____

COMPANY NAME: DCRS (Arizona) LTD

DIVISION: Differential Charge Recovery Systems

MINE OR PLANT NAME: Senate (Redtail) Mill TELEPHONE: 684-7417

CHIEF OFFICER: DCRS (Barbados) LTD, MR Downey

COMPANY ADDRESS: P.O. Box 3100, Sta B, Calgary, Alberta, Canada
P.O. Box 410, Congress, AZ 85332

CITY: Calgary STATE: Alberta Canada ZIP CODE: T2M 4L6

MINE OR PLANT LOCATION: (Include county and nearest town, as well as directions for locating property by vehicle: Highway 89, 3 miles East of Highway 89-93 Junction.

Pilot Testing of Chemical Free

TYPE OF OPERATION: Gold Recovery Systems PRINCIPAL PRODUCT: Gold

STARTING DATE: August, 1987 CLOSING DATE: ____

PERSON COMPLETING NOTICE: John Rup TITLE: Consultant

FORM 101-106 REV. 01/88

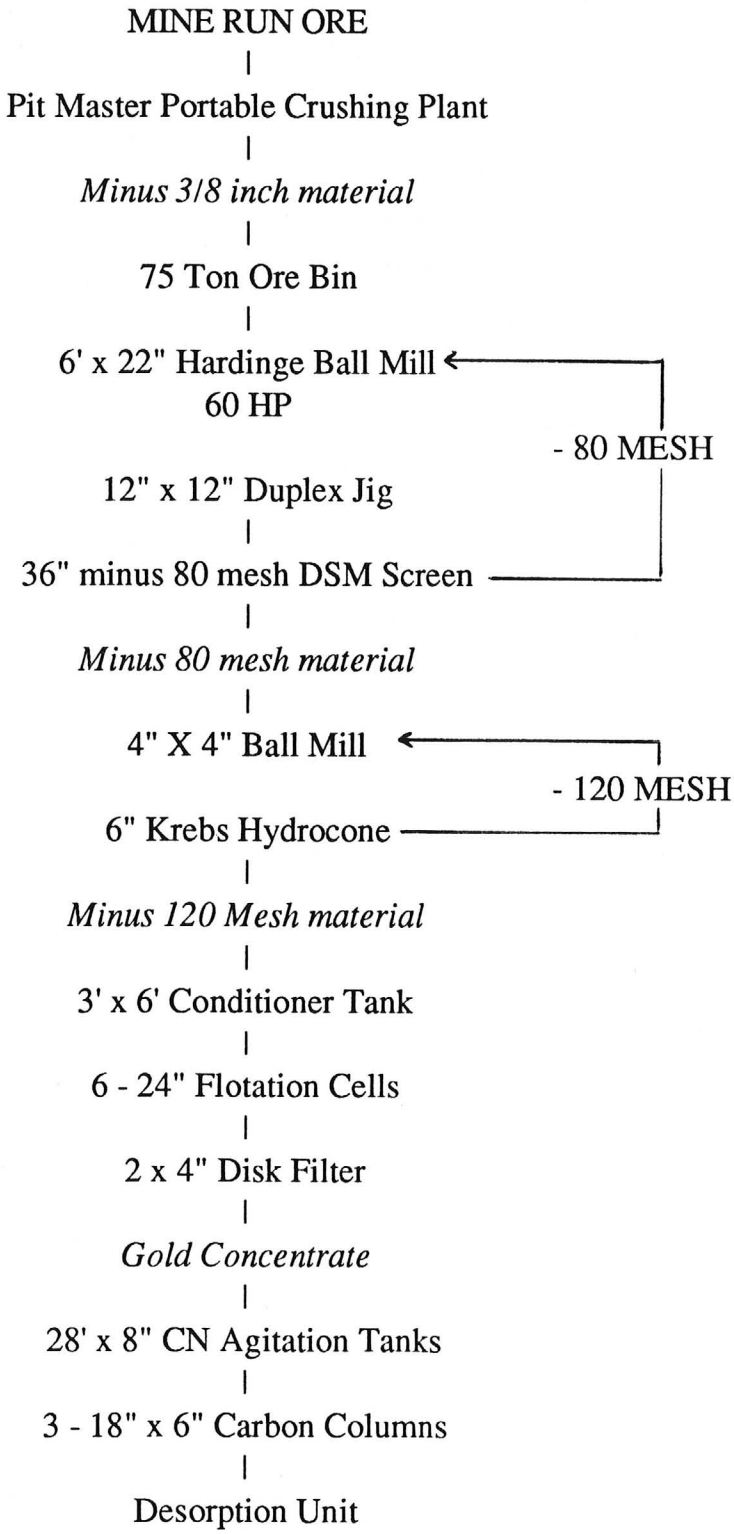
REDTAIL GOLD MILL

A Custom Milling Facility Operated by

MORGAN MILLSITES, INC.

MORGAN MILLSITES

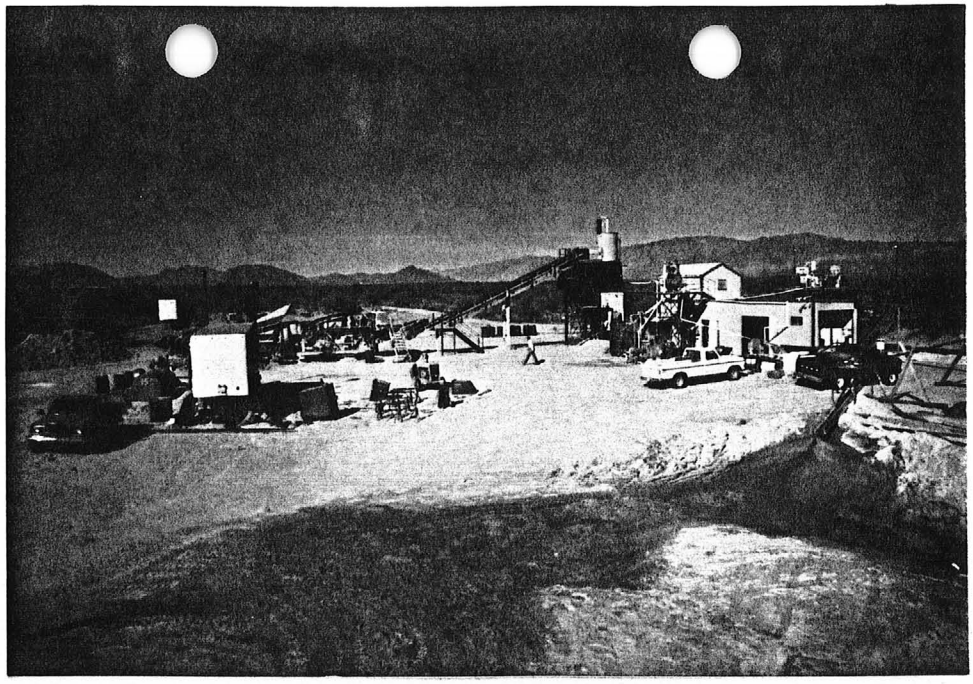
REDTAIL MILL FLOW SHEET

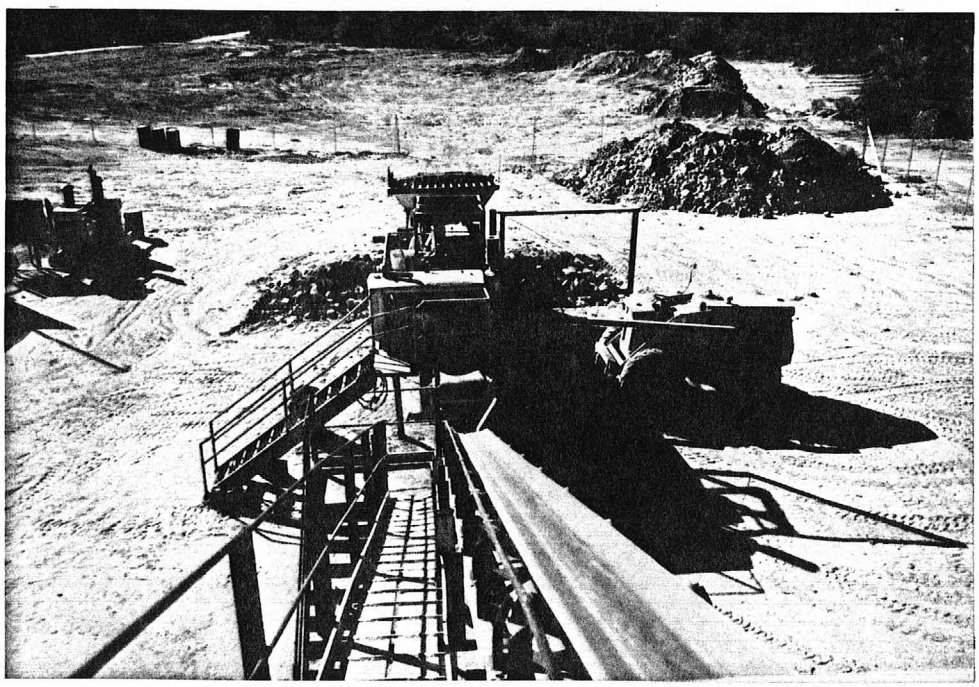


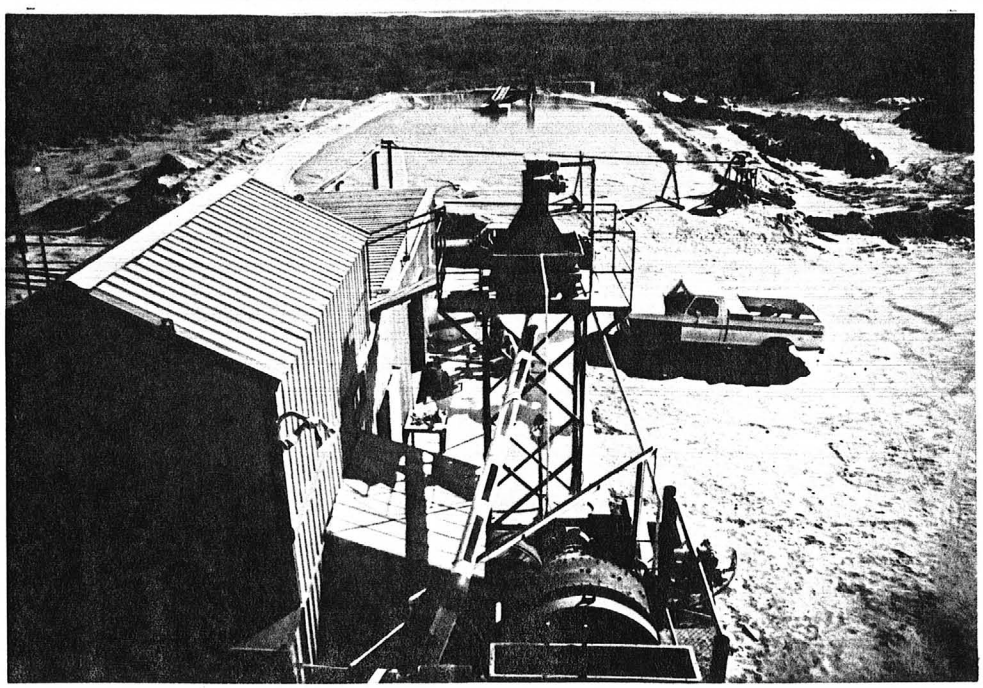
MORGAN MILLSITES

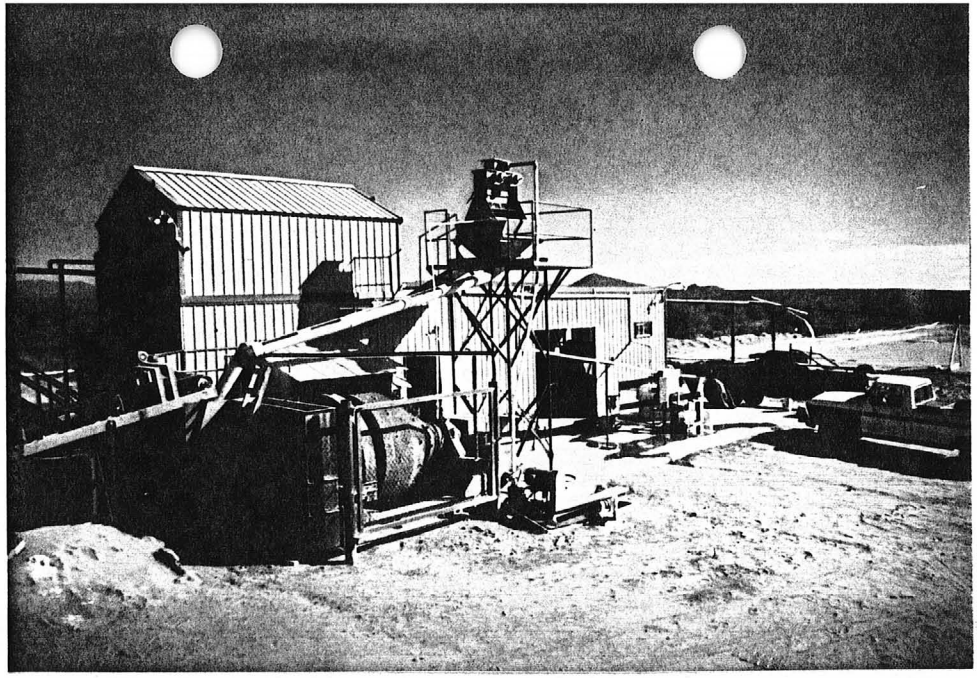
REDTAIL MILL HISTORICAL COSTS

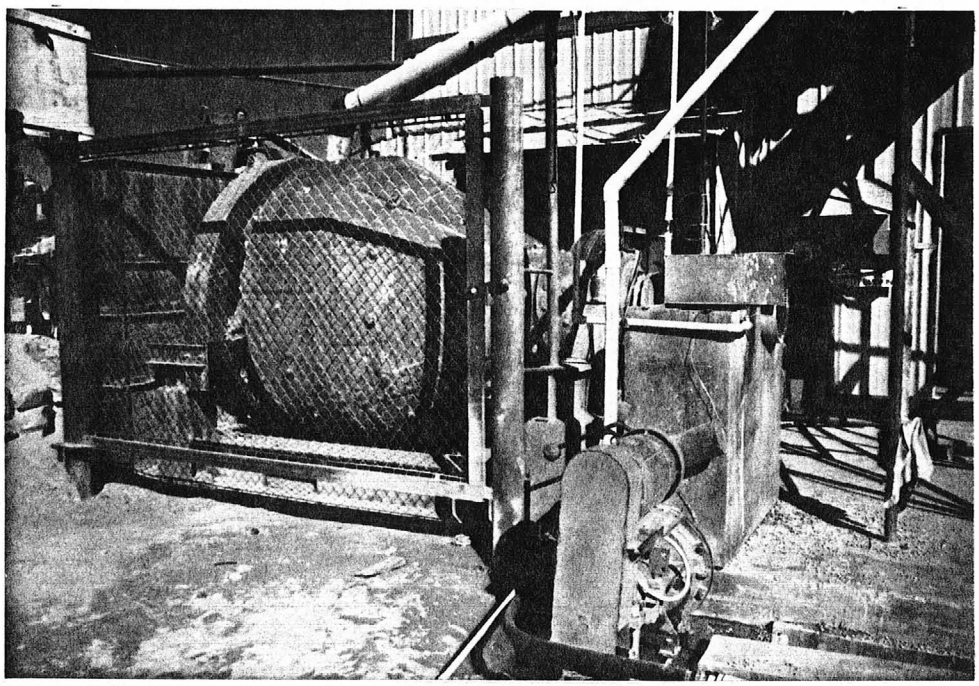
Labor	$ 8.80/ton
Fuel	$ 3.40/ton
Crushing costs	$ 2.50/ton
Grinding media	$ 0.40/ton
Water	$ 0.20/ton
Reagents	$ 0.25/ton
Total	$ 15.55/ton

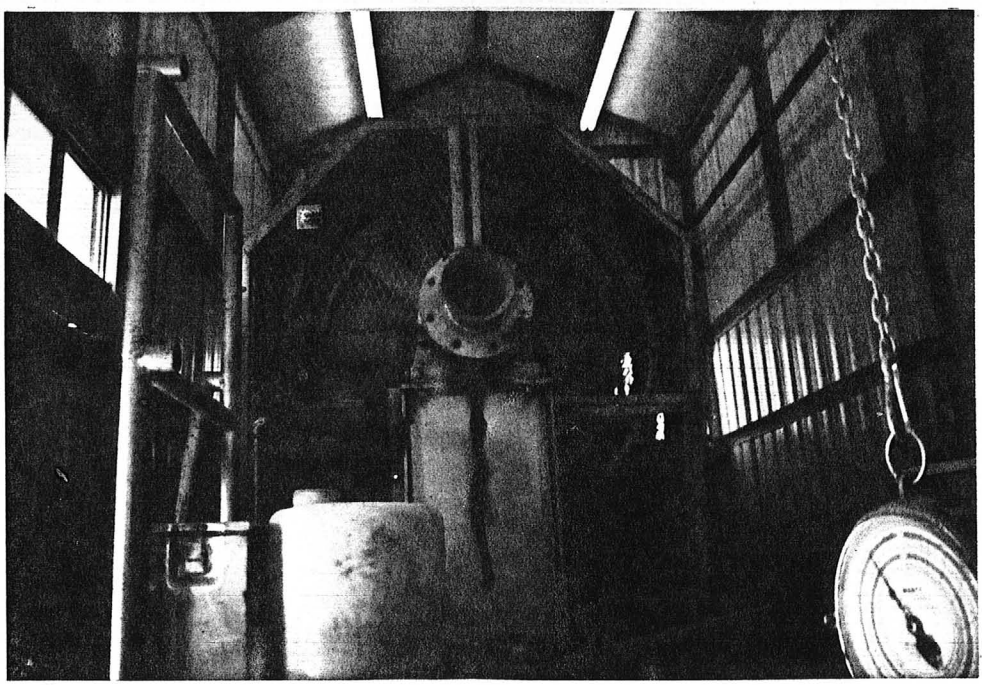


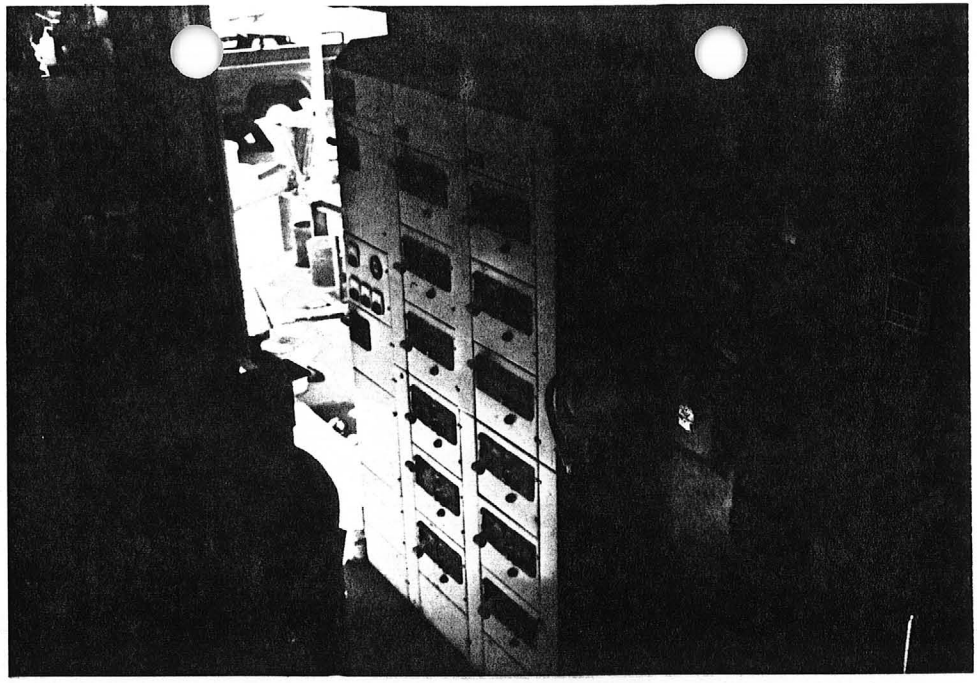


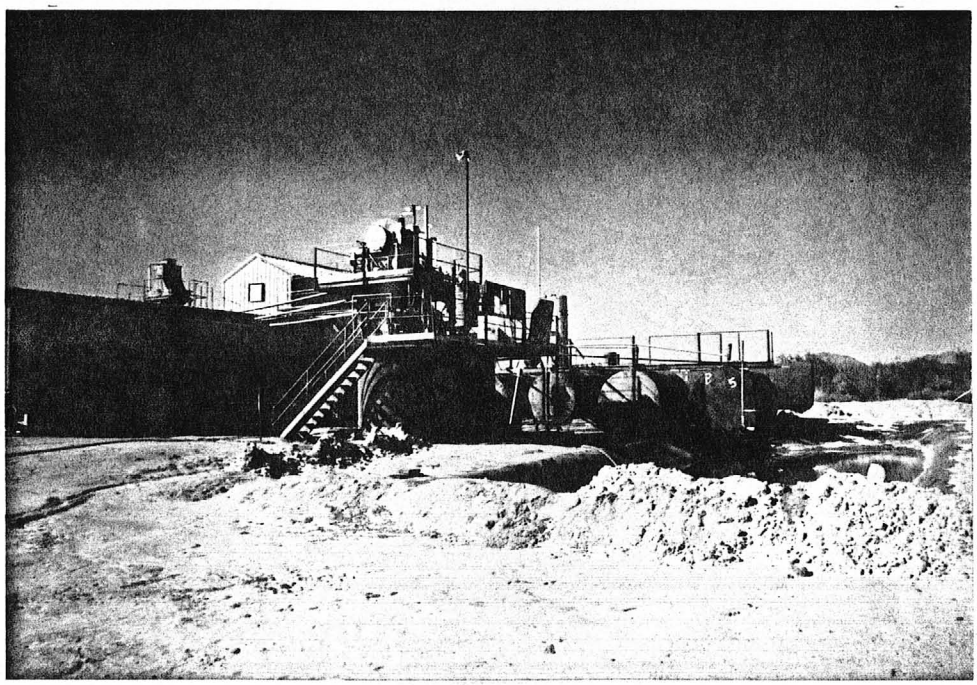


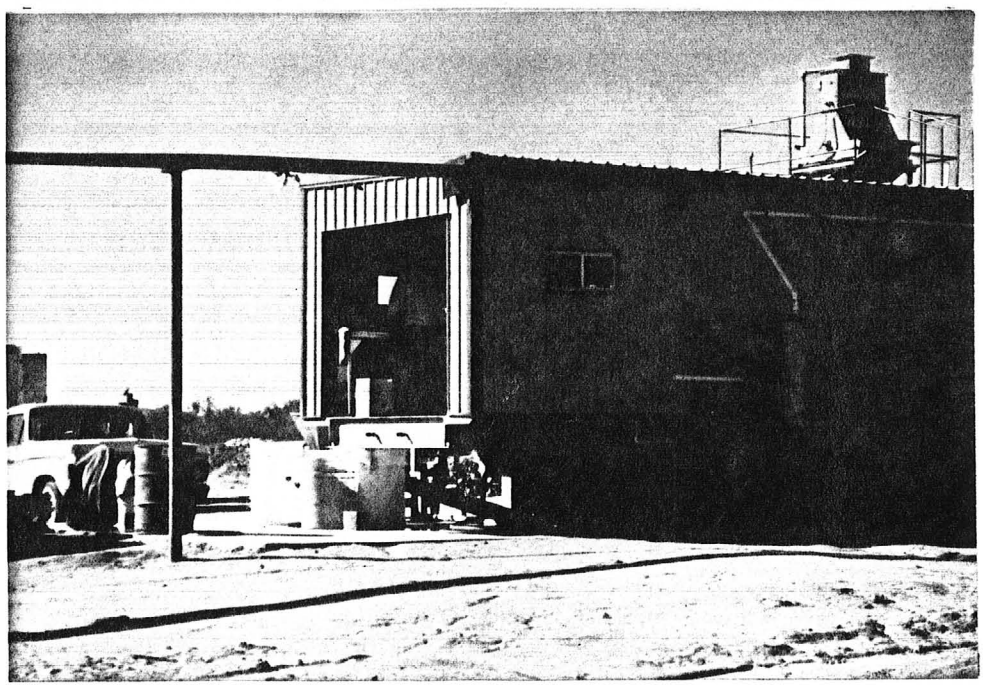


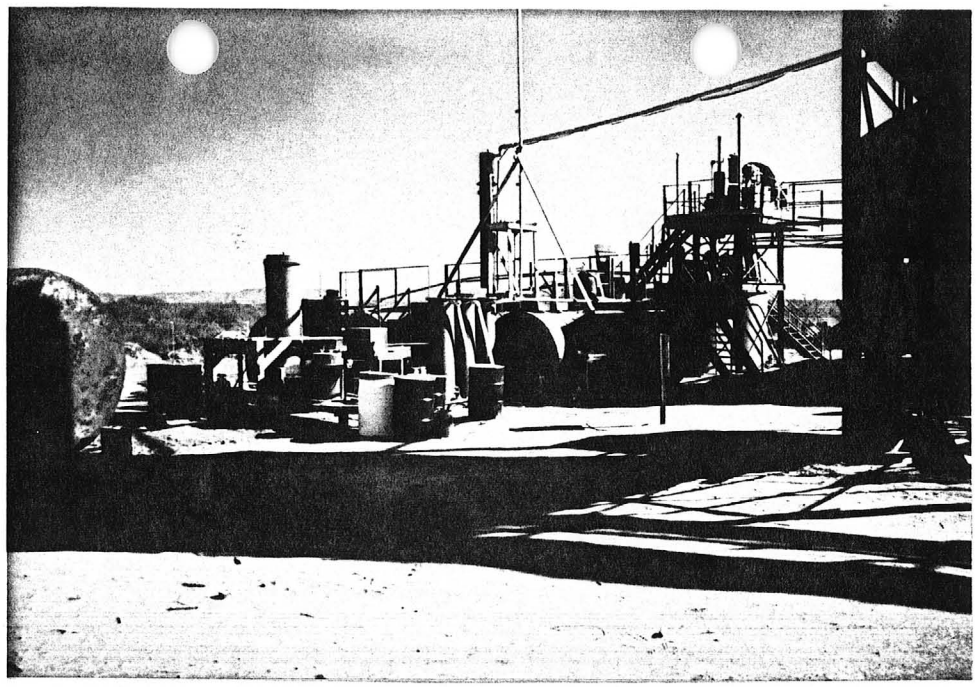


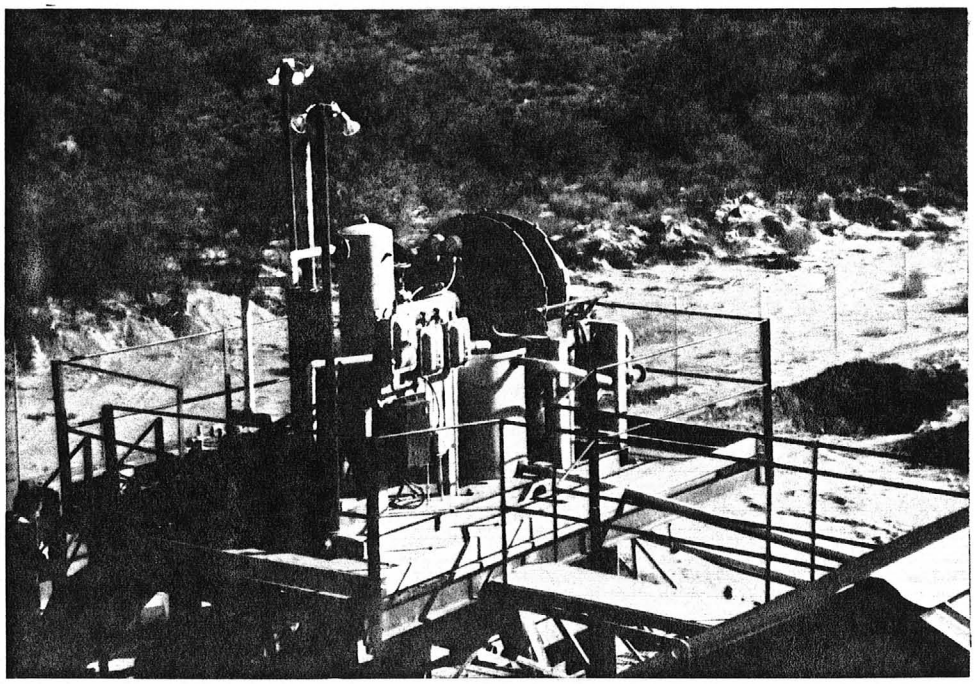


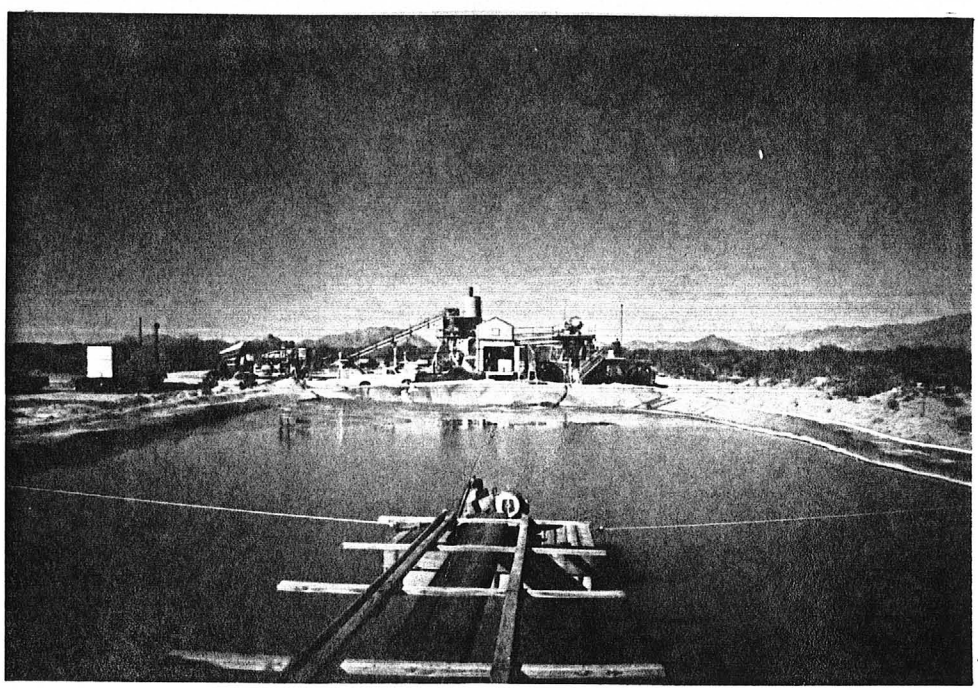












REDTAIL MILL YAVAPAI COUNTY

NJN WR 3/4/88: John Rudd (card) visited and reported he has been working for Redtail Mining, an eastern group, about whom he declined to reveal any more details. The company has established a 75 ton per day combination cyanide/flotation and gravity mill, the Redtail Mill off of Highway 89, north of Highway 93 junction, Yavapai County. The legal description of this mill is T9N R5W Sec 30 NW. The mill will be supplied with gold ore developed from local mines.

NJN WR 5/13/88: Jan Lamb of Redtail Mining (card) P O Box 598, Congress, AZ 85332, 427-3553 reported that Redtail Mining is looking for a millman to operate their Redtail Millsite (file) Yavapai County. Interested parties should contact either Ms. Lamb or Bruce Commer.

NJN WR 6/3/88: John Rud (card) reported that Redtail Mining has 1000 tons of material mined at the George Washington (file) Yavapai County and are trucking it to the Redtail Mill (file) Yavapai County for processing.

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES

FIELD VISIT

1. Information from: Nyal J. Niemuth and Ken A. Phillips, ADMMR Engineers
2. ADMMR Mine File: RED TAIL MILL
3. County: Yavapai
4. MILS Number:
5. District:(mining) (or mineral)
6. Township: Range Sec(s)
7. USGS Topographic Map:
8. Location (descriptive):
9. Number of Claims: Patented Unpatented
10. Owner(s): (if different from above) Congress Mining Limited
    Unit 6, Placita San Rafael, Box 1600, Tubac, AZ 85646
11. Address:
12. Operating Company: Morgan Millsite Inc.
13. Pertinent People and/or Firm: Philip P. Sharples, Gen. Part. Congress Mng. Ltd.; Bruce Comer, Ltd Partner; Rune' Kraft, Mgr. Morgan Millsite
14. Commodities: Au, Ag, Pb, Zn, Cu
15. Operational Status: Operating custom mill
16. Summary of information received, comments, etc.:

The mill was operating at the time of our visit running a bulk sample from the Clementine Mine (file) produced by East-West Minerals. Next in line is a bulk sample P & G's from the Pikes Peak Mine (file).

The mill is currently operated by Morgan Millsite Inc. of which Rune' Kraft is in charge. Morgan Millsite leases the plant from Congress Mining Ltd. (see above). Mr. Kraft reports the mill capacity at 75 tons per day (as compared to 50 tpd previously stated by others). Daily operation of the mill is handled by Hank DiCamillo of DMC Mining Inc., P.O. Box 63, Yarnell, AZ 85362.

Rune' Kraft also stated that he has control of ore at the Champion Mine and at the Santa Ana Mine (file) near Tombstone. He also believes that most of the major companies have significant values in their dumps and tailings he can recover.

Date: Jan 19, 1989

Ken A. Phillips, Chief Engineer
(Signature) AzDMMR

MINE: REDTAIL MILL
COUNTY: Yavapai
ADMMR FILE: Redtail Millsite (file)

ENGINEER: Ken A. Phillips
DATE: June 22, 1988

SUBJECT: Visit to Redtail Mill on above date.

Location: NW 1/4, Sec. 30, T.9N.,R5W. G&SR B&M
(approximately 1/4 mile north and 1/2 mile east of a gate in the east highway right of way fence at Mile Post 262.7 on US Highway 89 between Wickenburg and Congress)

Owner: Bruce Commer, Grand View Avenue, Congress, Arizona phone 427-3553

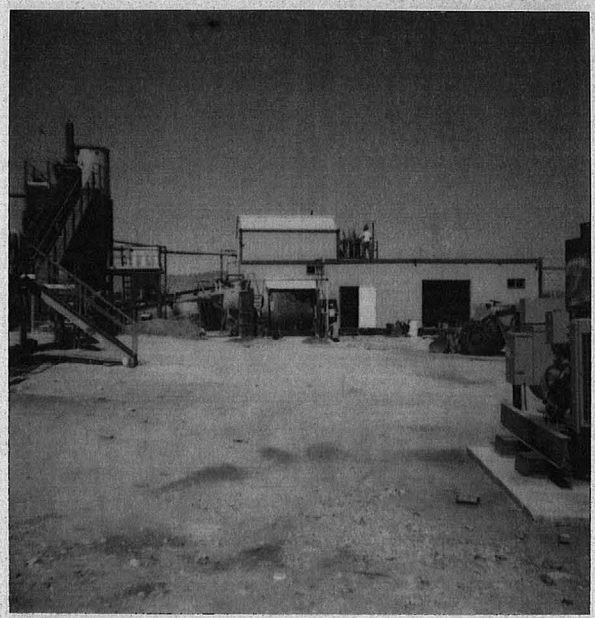
Mill manager (or Superintendent): Phil Crubaugh

Mill Circuit: The mill circuit, rated at approximately 50 tons/24hrs. consists of crush, grind, float, cyanide leach, and precipitation capabilities.

Crude ore is dumped across a grizzly to feed a 10" X 20" jaw crusher which feeds a set of 18" rolls in closed circuit with a 5/16" screen. Minus 5/16 material goes to a 50 ton fine ore storage bin. Fine ore is feed from the bin were lime is added on the feeder to a 6′ Hardage conical ball mill. Ball mill pulp is discharged through a classifier screen to a conditioner. The conditioner feeds a bank of 6 Gallager 24" flotation cells set up as 2 roughers and 4 cleaners. Flotation concentrate is dewatered by disc filters which discharge into two 8′ X 8′ 2000 gallon agitation cyanidation tanks. Pregnant solution from the cyanidation tanks is fed to a Merrill-Crowe recovery plant. The Merrill-Crowe plant consists of settling tank followed by sock filters for clarification. The clarified solution is deaerated in a vacuum column after which lead acetate solution is added as an activator before powdered zinc is added for precipitation. The precipitate is then filtered off and shipped to another site for refining.

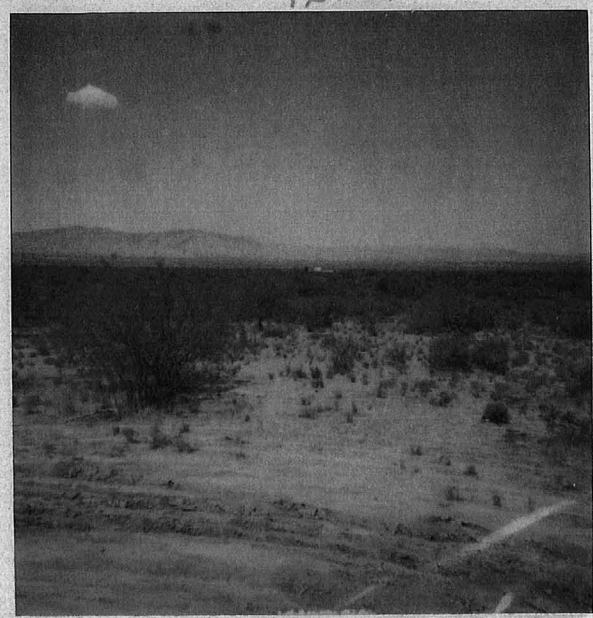
The mill can be configured to use only the flotation circuit. A second ball mill, 4′ X 8′ is mounted in the plant, but is not currently used. Tailings are discharged to a plastic lined pond. Power is supplied on site by a diesel powered generator.

A number of Polaroid photographs were taken for the file.

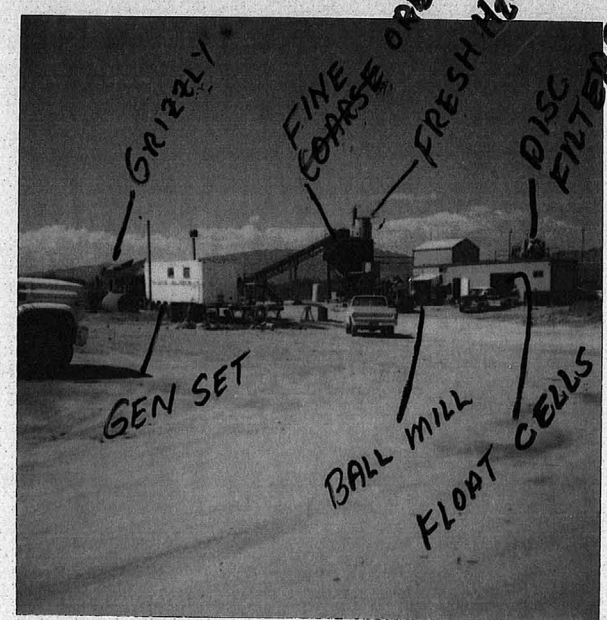


RED TAIL MILL
LOOKING EAST
6-22-88

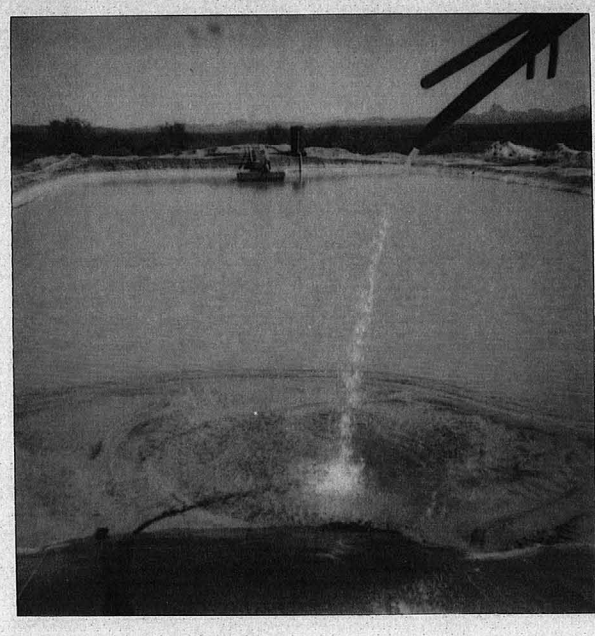
↑EAST



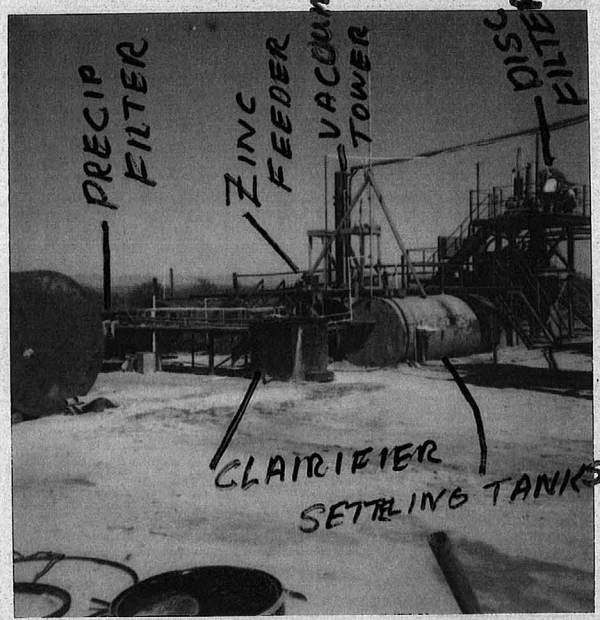
RED TAIL MILL AS SEEN
FROM HIWAY BETWEEN
WICKENBURG + CONGRESS 6-22-88



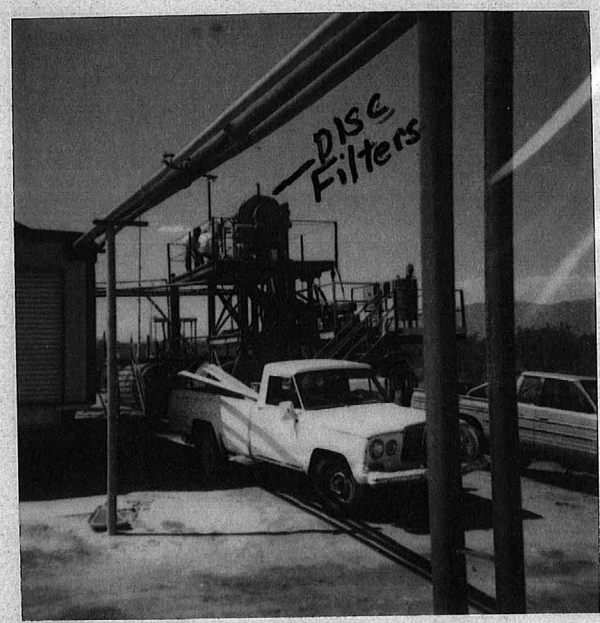
RED TAIL MILL
6-22-88



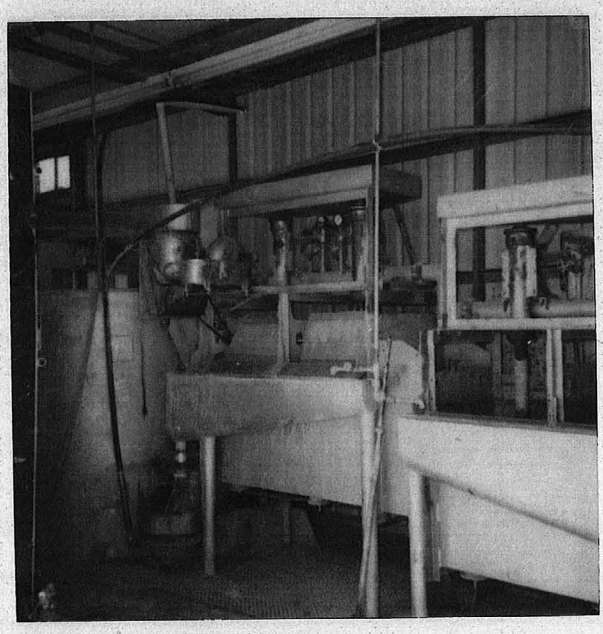
RED TAIL MILL
TAILINGS POND
6-22-88



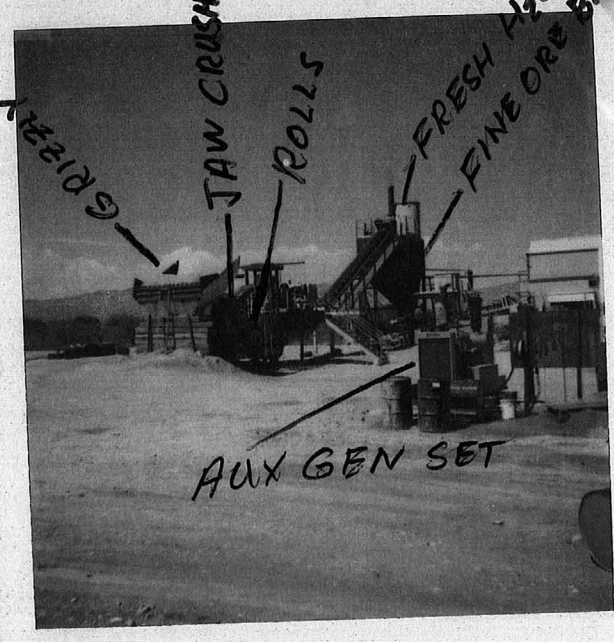
RED TAIL MILL
MERRILL-CROWE PLANT
6-22-88



RED TAIL MILL
6-22-88



RED TAIL MILL
CONDITIONER + 4 of 6
GALLAGHER CELL 6-22-88



RED TAIL MILL
6-22-88