



CONTACT INFORMATION

Mining Records Curator
Arizona Geological Survey
1520 West Adams St.
Phoenix, AZ 85007
602-771-1601
<http://www.azgs.az.gov>
inquiries@azgs.az.gov

The following file is part of the

Arizona Department of Mines and Mineral Resources Mining Collection

ACCESS STATEMENT

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

CONSTRAINTS STATEMENT

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

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

QUALITY STATEMENT

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

PRINTED: 08/16/2002

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES AZMILS DATA

PRIMARY NAME: STATE OF MAINE MINE

ALTERNATE NAMES:

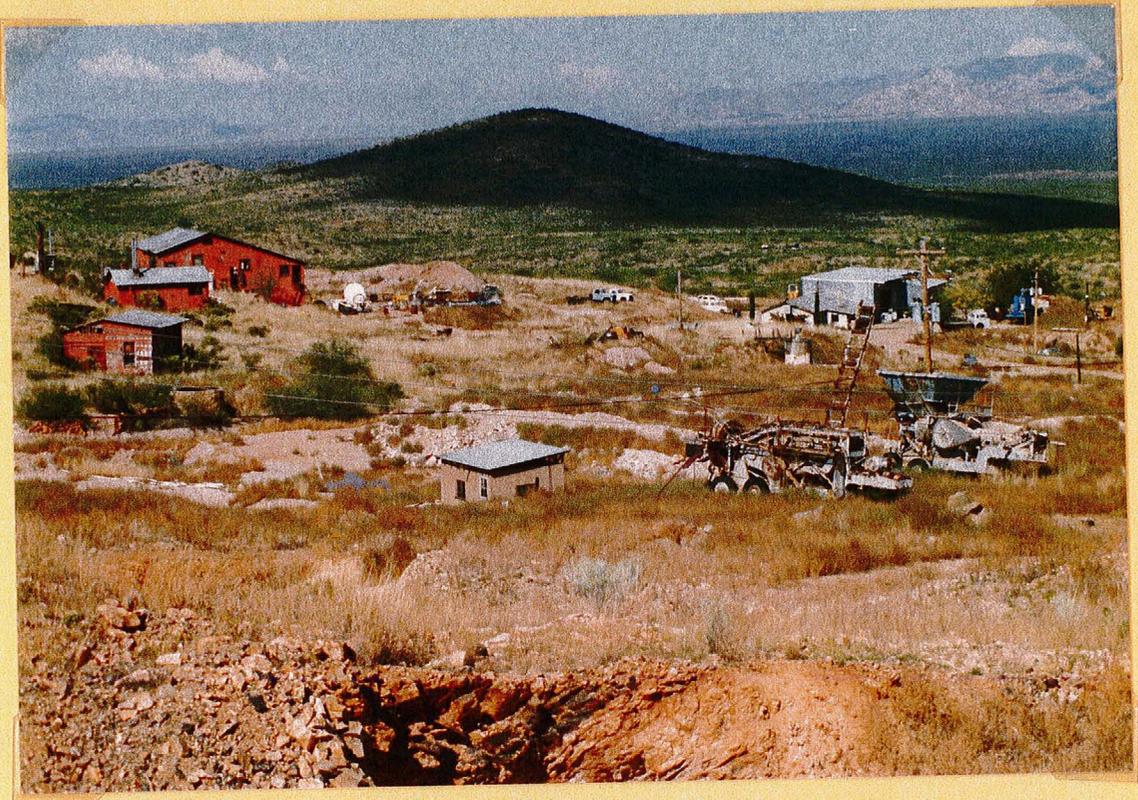
COCHISE COUNTY MILS NUMBER: 208

LOCATION: TOWNSHIP 20 S RANGE 22 E SECTION 16 QUARTER NE
LATITUDE: N 31DEG 41MIN 49SEC LONGITUDE: W 110DEG 05MIN 52SEC
TOPO MAP NAME: TOMBSTONE - 7.5 MIN

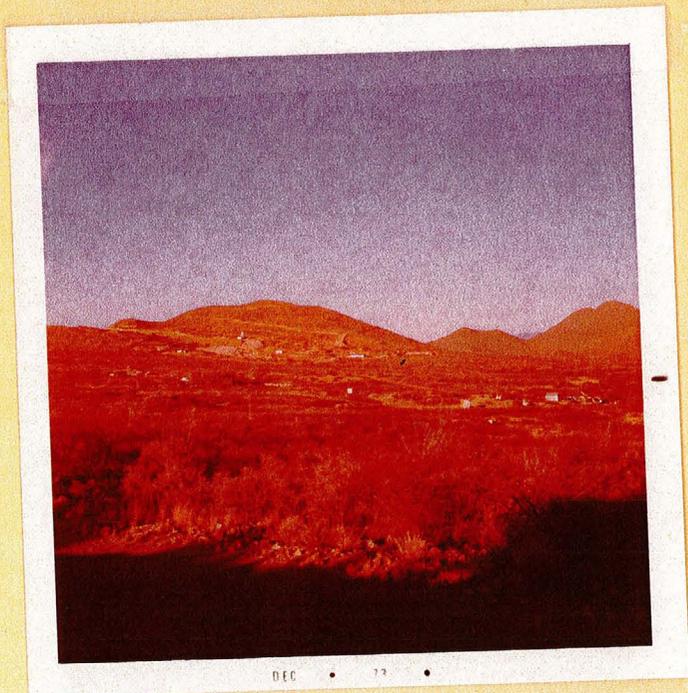
CURRENT STATUS: PAST PRODUCER

COMMODITY:
SILVER
MANGANESE

BIBLIOGRAPHY:
USBM IC 8969, GOLD & SILVER LEACHING
PRACTICES IN U.S., P. 16-22
ADMMR STATE OF MAINE MINE FILE
ANTHONY, J.W, ET AL MINERALOGY OF AZ P 98
AZBM BULL 143, 1938, P 100



State of Maine
10/88



State of Maine
Lombstone Dist
Charleston Road →
1973

STATE OF MAINE

Cochise Co.

See: The Mining Record, September 28, 1983, Pg. 4

See: IC 8969 -- Gold and Silver Leaching Practices in the U.S.: p. 16, 19-21, 22

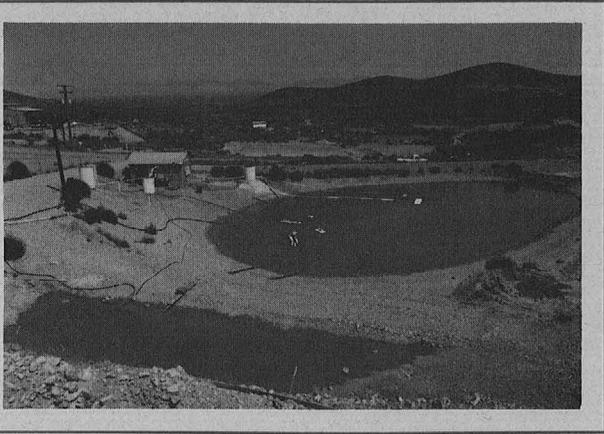
Heap Leaching



Typical heap-pond lay out.



Pad and pond constructed on a hill side.



Decant and pregnant solution ponds.

How it's Done and How it Works"

Cyaniding silver and gold ores is not a new practice, however, some of the methods in use are comparatively new. One such method is to "heap leach" low grade ores. It is a cheap, fast way to recover precious metals from old dumps or open pit mining operations. The term "heap leaching" was probably coined by the copper mining industry, whereby low grade ore is stacked (heaped) on a prepared base (made impervious) and sprayed with a leaching agent, in the case of silver and gold, a dilute cyanide solution. The solution percolates down through the ore, dissolving the metal and collected for subsequent stripping.

Several methods of recovering the dissolved metals are used, such as carbon absorption, electrowinning, etc., but the simplest way is by use of powdered zinc metal. In order for this method to work efficiently certain criteria must be met, first, the solution must be filtered to remove all suspended particles and, second, all or nearly all dissolved oxygen must be removed before adding zinc dust to precipitate the silver and gold, at which time it is a simple matter to filter and collect the metal.

The precipitation plants we have designed and currently manufacturing for sale are rated at 12, 65, 100, 150 and 300 tons of solution per day (24 hours).

We have been manufacturing these precipitation plants since 1977 and have sold them throughout the world.

If you would like further information feel free to contact us or if possible we would like for you to visit our heap leach operation and answer any questions about any part of the process.

**State of Maine
Mining Company**

P.O. Box 1016

Tombstone, Az. 85638

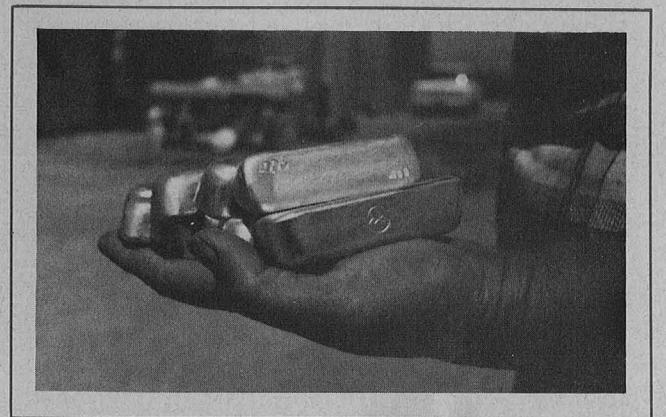
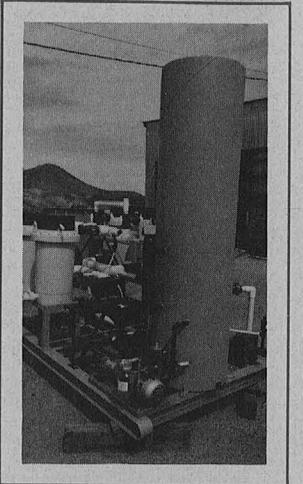
(602) 457-3601



Manufacturing
of



Precipitation
Equipment

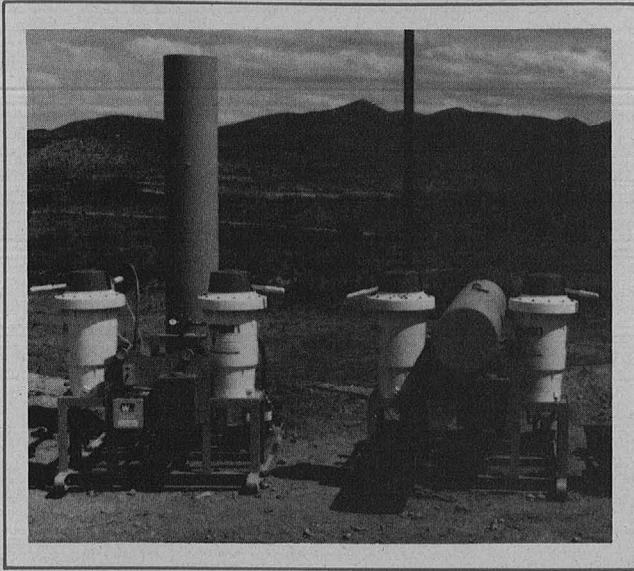


State of Maine Mining Co.

P.O. Box 1016

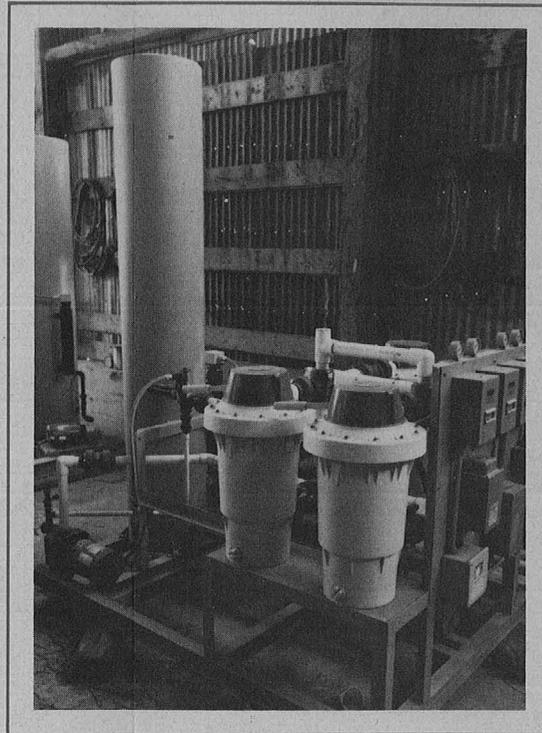
Tombstone, Arizona 85638

Manufacturing of Zinc Precipitation Equipment

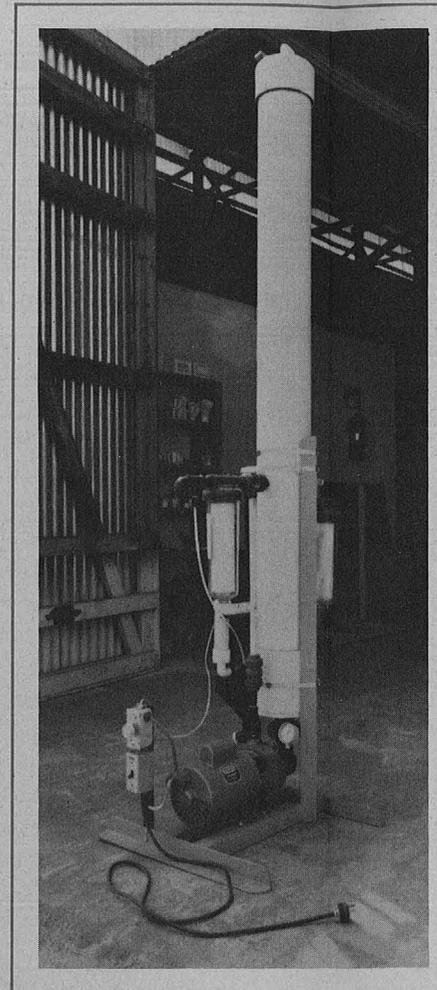
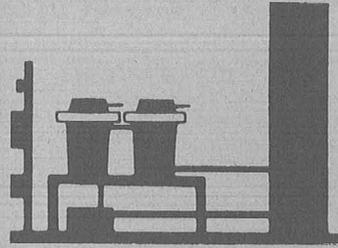


150 TPD plant: The overall dimensions of this plant are 7'2"x4'4"x7'10" high and weighs approximately 1500 pounds. This plant comes with four filters to facilitate continuous operation.

65 and 100 TPD plant: The overall dimensions of these plants are 5'5"x3'6"x7'11" high and weighs approximately 900 pounds. The vacuum tank is designed to fold down for transporting, reducing the height to about four feet, making it handy for transporting in a pickup or small trailer.



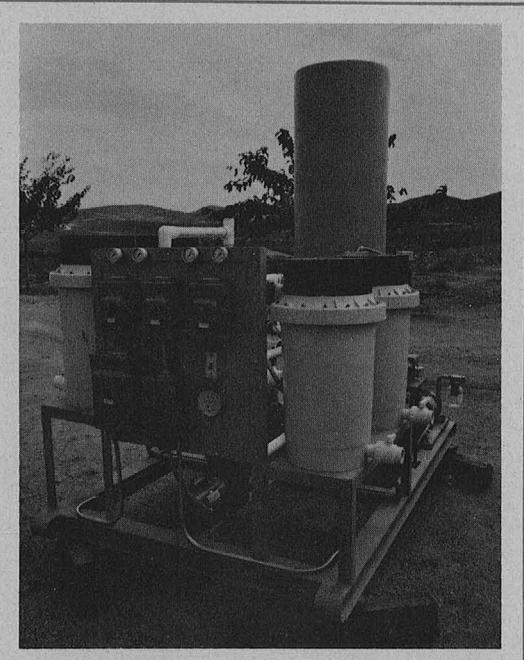
Portable self contained Merrill-Crowe zinc precipitation plants.



12 TPD plant: The dimensions of this plant are 2'x2'x7'6" high and weighs approximately 130 pounds. This plant was designed for test work or for processing small amounts of very high grade ores. This machine is not intended for continuous operation.

The Merrill-Crowe zinc precipitation plants we manufacture will recover dissolved metals from any pregnant cyanide solution. The sources of such solution can come from:

- Heap leaching gold-silver ores
- Vat leaching gold-silver ores
- Aggitation leaching of gold-silver ores
- Aggitation leaching of flotation gold-silver concentrates or tails
- Processing scrap gold and silver metal
- Aggitation leaching of gravity concentrates or tails.



300 TPD plant: The overall dimensions of this plant are 8'x5'x7'11" high and weighs approximately 2000 pounds. This plant comes with four filters to facilitate continuous operation.



State of Maine Mining Company

P.O. Box 1016 Tombstone, Arizona 85638 (602) 457-3601

CHARLES ESCAPULE
LOUIS ESCAPULE

STATE OF MAINE

COCHISE COUNTY

MG WR 8/24/84: Learned that the State of Maine (Cochise Co) people have formed a new company, Tombstone Silver Mines, Inc., as a joint venture with Canadian investors to explore and drill the State of Maine property and surrounding property. Rotary drilling has already begun. The State of Maine Mining Co. continues as the manufacturing arm.

MG WR 12/14/84: Drove to Tombstone with Mrs. Lorraine Burgin and introduced her to the State of Maine operation (Cochise County). The Escapules report they have sold over 350 Merrill-Crowe precipitation plants.

MG WR 10/25/85: Tombstone Silver Mine, Inc. (State of Maine Cochise County) is planning to sell stock on the Vancouver exchange in Canada. Mr. Jim Briscoe, the new manager of exploration, is preparing the prospectus.

MG WR 8/7/87: Mr. Dave Rabb (card) and I visited the State of Maine mine (file) Cochise County. This property is tied up with Tombstone Silver Mine, Inc. and apparently nothing will be done with it in the near future.

The Escapules said they would like to start a new heap-leach operation when silver prices warranted, but they would mine only those ores that they control 100 percent. They would not mine anything from the state of Maine as long as it is controlled by Tombstone Silver Mines, Inc.

MG WR 11/6/87: The State of Maine mine (file) Cochise County is not in operation and apparently there are no immediate plans to begin operations. The Merrill-Crowe manufacturing facility, however, is still being operated by Tombstone Silver Mines, Inc.

STATE OF MAINE

COCHISE COUNTY

KAP WR 6/17/83: Met with Louis Escapule at the State of Maine Mine (not State of Maine Mining Company). Cobb Resources is operating underground and Louis and Charles Escapule are treating the ore. A separate report has been written.

MG WR 8/19/83: The State of Maine Company, Cochise County has sold approximately 240 precipitation plants, foreign and domestic. Cobb Resources is still mining gob underground at the State of Maine mine. The gob averages 4 oz/ton silver. Cobb is beginning a decline on the adjacent Triple X mine; apparently fresh rock will be mined and blended with gob from the State of Maine to maintain a production rate of 100 tpd.

MG WR 9/30/83: Received a report that underground operations at the State of Maine mine, Cochise County have been temporarily suspended. I understand that the operator, Southwest Resources, subsidiary of Cobb Resources is considering a merger with another company.

MG WR 5/18/84: Visited the State of Maine mine (Cochise Co) Cobb Resources has ceased all operations and has left the property. The State of Maine Mining Co. plans to resume leaching soon. Primary ore will be obtained from several surface exposures. The company will soon announce a joint venture to drill the property. The manufacturing arm of the State of Maine has slowed somewhat in response to decrease in equipment orders. A large precipitation plant with a capacity of 750 tons of solution per day has been designed.

CJH WR 7/20/84: Canuto Sena, Deputy State Mine Inspector, reported the possibility of a merger between Tombstone Exploration and the State of Maine properties, Tombstone district, Cochise County. According to Charlie and Louise Escapule all excavating equipment at TEI has been auctioned off since the mine closure.

MG WR 8/28/81: Visited State of Maine mine (Cochise County). Property resumed silver leaching on August 26, 1981, after having been shut down for a few months. Currently the only refined silver being produced is to meet prior commitments; no new orders are accepted. The manufacturing arm of the company has sold 150 zinc precipitation plants. There are now five plant sizes available (rated in tons of solution per 24-hour day):

12 TPD	\$ 1,500
65 "	4,500
100 "	5,400
150 "	10,500
300 "	20,000

MG WR 6/25/82: Visited the State of Maine Mine in Cochise County. The mine is heap leaching freshly mined, high-grade ore. The ore is not crushed or pelletized. These are cost-cutting measures. No silver is sold for less than \$7.00/oz.

KAP WR 2/18/83: Cobb Resources is cleaning out and sampling the State of Maine Mine in Tombstone.

MG WR 4/15/83: As reported earlier, Cobb Resources Corp., 313 Washington SE, Albuquerque, NM 87108, is contract mining at the State of Maine Mine, Cochise County. Three men and a foreman are mining gob from the underground workings. Production is about 100 tpd. The ore is crushed and pelletized prior to placement on the heap leach pad.

MG WR 6/5/83: Visited the State of Maine mine, Cochise County. Underground mining continues at an approximate rate of 100 tpd. Gob, averaging 4 to 5 oz/t silver, is mined and stockpiled. Crushing will begin within a week and leaching soon after.

KAP WR 6/17/83: Met with Louis Escapule at the State of Maine Mining Company (not actually the State of Maine Mine but a manufacturing company located at the same site). They manufacture small Merrill-Crowe system precious metal extraction plants. Over 185 of their production units have been sold. Four more are working full time. Problems with the diatomaceous earth filters were discussed. The filters should be used only for clarification and not for filtering sand, leaves, etc. from the pregnant solution flow.

GI WR 1/6/78: M.V. State of Maine Mine.

MG WR 1/9/78: Charlie and Louie Escapule are preparing a leach pad for their gold-silver ore at the State of Maine mine. They hope to begin leaching, later this month, about 18,000 tons of ore with an average assay of about 6 oz./ton silver. Their expected recovering is roughly 55%.

MG WR 1/9/78: Tom Calvin is building a leach pad just east of the State of Maine with ore trucked from a state lease about one mile north of the State of Maine. We were unable to obtain additional information on this operation.

MG WR 2/23/78: Called Charlie Escapule at the State of Maine mine, Cochise County; he said they hope to begin leaching March 1.

MG WR 4/14/78: Visited the State of Mine operation owned by the Escapule family near Tombstone.

CJH WR 3/20/80: Drove to Tombstone, Arizona. Visited Escapule operations at the State of Maine mine. Will write field engineer's report.

CJH WR 12/26/80: Arthur R. Still, Geologist, 6840 Camino de Fray Marcos, Tucson, Arizona 85718, ph. 742-2507. He will drop in the office and look at various mine files relating to the State of Maine Mine, Tombstone District, Cochise County.

CJH WR 2/13/81: Visitor, Bailey Escapule, State of Maine, Tombstone, Arizona. The Escapules have purchased three claims in the Tombstone District: Red Top, Merrimac, and Clipper and wanted what information we have on them. Since we had nothing, Phoenix DMR was called. A cross reference in the card file pointed to the Amy Group and the Mellgren Mine files which are quite large. Mr. Escapule will go to Phoenix and examine them.

MG Mine Info Rpt. 1/3/81: State of Maine Mine. Have established a small (65 tpd) zinc precipitation plant to recover silver from a second "high-grade" leach pad established to the west of the original pad. Ore going to this new pad is mined by open cut from the patented Triple X claim. Assays on this ore have gone up to 220 oz Ag/ton and 0.9 oz Au/ton.

Someone is reporting production from the State of Maine mill which has been idle for over a year. VBD WR 10/2/75

Wayne Winters said that Charles Hansen of Texas is reported to have sold his Safford open pit copper mine to New Park Mining Co. and now have 20% interest in Higbee's Tombstone holdings. Also that they are trying to activate the mill at the State of Maine property. GWI WR 1/22/76

Charlie and Louie Escapule are preparing a leach pad for their gold-silver ore at the State of Maine mine. They hope to begin leaching, later this month, about 18,000 tons of ore with an average assay of about 6 oz./ton silver. Their expected recovery is roughly 55%. WR MG 1/9/78 2/21/78 sef

WR MG 1/9/78 - Tom Calvin is building a leach pad just east of the State of Maine with ore trucked from a state lease about one mile north of the State of Maine. We were unable to obtain additional information on this operation. 2/21/78 sef

WR/GI 1/6/78 - Visited the State of Maine Mine. 2/24/78 a.p.

MG/WR 11/10/78 - Visited State of Maine Mine. Mr. Escapule reports that production of silver has increased somewhat due to increase of grade from about 5 oz. Ag/ton to 6 oz. Ag/ton. Plan to renew leaching on Nov. 13, after completing 8th lift. Have sold 21 cyanidation plants now - 9 since April. Two plants have gone to Mexico and they hope to sell some in Spain. Mr. Escapule reports that the company, 71 Minerals, ceased its leaching operation near Tombstone September 1, 1978. 1/22/79 a.p.

Mine visit to State of Maine. Not in operation. Charles and Louis Escapule are installing electric lighting. Lighting project is completed to 400 foot level. Workings have been exposed that have not been seen since 1900. Mr. E. Escapule Sr. reports that the old drifts contain ore or two hundred thousand tons of millable gob, some carrying as high as 70 oz. of silver. All work is done on weekends. Cyanide plant on property is not operating. KP Report of trip 11/15/72 thru 11/16/72

Mine visit. State of Maine mine. Charles & Lewis Escapule, both work at the Fort and are cleaning up the mine in their spare time. Have drilled a water well 385' lots of water, drilled ore from 220' to 385' sulfides. (Info from E. Escapule Sr.) GWI WR 1/17/73

Telephone call from Charles Escapule of Tombstone explaining the work at the State of Maine mine in Tombstone. They are putting all their effort into the mill now as they expect to start milling dumps when it is completed. They will then return to working in the mine to develop new ore. GWI WR 10/19/73

Visit at State of Maine mine. Charlie Escapule trammed the field engineer over the property from the new head frame to the mill site. GWI WR 12/6/73

Mine visit with State of Maine mill, Charles Escapule estimates mill will be operating by the middle of May. The building is going up, the cyanide tanks and equipment are being hooked up. A trip was made thru the construction area and assay lab. GI WR 3-28-74

I drove to Tombstone area where I examined the Sierra Minerals Management operations at Tombstone, the State of Maine mill which is closed down for expansion of crushing facilities and the operation commencing on the Chance claim by Resources International Inc. whose property adjoins the State of Maine operation on the south. The Sierra Minerals operation in south will Tombstone will be a heap leach operation of dumps. Any high grade material will be treated in the State of Maine mill. It is hoped that the State of Maine mill will be in operation again sometime during March, 1975. VBD WR 12/19/74

It is reported that Sierra Minerals Management is again working at the State of Maine mine near Tombstone. VBD WR 1/20/75

Mine visit - State of Maine mine - Austral Oil Co. retimbering shaft. GWI WR 5-11-68

Austral Oil Co. were drilling, retimbering shafts, and doing other work at the State of Maine, and other properties that they had acquired in Tombstone. GWI QR 6-1968

Mine visit - State of Maine Mine. GWI WR 11-9-68

Louis and Charles Escapule are continuing work on their cyanide mill at the Maine mine, planned capacity is 200 tpd. The ore will come from veins and old gob in the State of Maine mine which belongs to Louis and Charles Escapule. GWI QR 12-1968

Mine visit - talked with Charles and Louis Escapule, owners. GWI WR 1-11-69

Escapule brothers are building a 200 tpd silver-gold cyanide mill at the State of Maine mine near Tombstone. E&MJ March 1969 p. 198

Mine visit to State of Maine mine. Installing cyanide plant. GWI WR 3-8-69

Charles and Louis Escapule are continuing work on their planned 200 tpd cyanide plant at the State of Maine mine. GWI QR 3-1969

Mine visit - State of Maine mine - mill construction proceeding slowly. It is a part time job for Charles and Louis Escapule. GWI WR 9-6-69

Charles and Louis Escapule did some work on their leaching plant at the State of Maine mine. GWI QR 4-1-70

Visited State of Maine mine - not working at present. GWI WR 5-9-70

Charles & Louis Escapule did a little more work on their leaching plant at the State of Maine mine. GWI QR 6-30-70

Ernest's, Sr. & Jr. keep their cyanide plant busy with ore production coming from their famed Santa Ana Mine - brothers Louis and Charles continued with their cyaniding at the State of Maine property. Epitaph 8-13-70

Mine visit - State of Maine mine. GWI WR 1-11-71

Mine visit - State of Maine mine. GWI WR 3-8-71

State of Maine Mining Company

1/2 on
MB
1984

P.O. BOX 1016
CHARLES ESCAPULE

TOMBSTONE, ARIZONA 85638

PHONE 457-3601

LOUIS ESCAPULE

Cyaniding silver and gold ores is not a new practice, however, some of the methods in use are comparatively new. One such method is to "heap leach" low grade ores. It is a cheap, fast way to recover precious metals from old dumps or open pit mining operations. The term "heap leaching" was probably coined by the copper mining industry, whereby low grade ore is stacked (heaped) on a prepared base (made impervious) and sprayed with a leaching agent, in the case of silver and gold, a dilute cyanide solution. The solution percolates down through the ore, dissolving the metal and collected for subsequent stripping.

Several methods of recovering the dissolved metals are used, such as carbon absorption, electrowinning, etc. but the simplest way is by use of powered zinc or aluminum metal. In order for this method to work efficiently certain criteria must be met, first, the solution must be filtered to remove all suspended particles and, second, all or nearly all dissolved oxygen must be removed before adding zinc dust to precipitate the silver and gold, at which time it is a simple matter to filter and collect the metal.

The precipitation plants we have designed and currently manufacturing for sale are rated at 12, 65, 100, 150 and 300 tons of solution per day (24 hours).

They are the Merrill-Crowe type, using zinc dust as the precipitant.

The 300 TPD plant comes complete with three 500 gallon reagent storage tanks, mix pump and 2 hp pump for the spray system. The 150 TPD plant comes with three 300 gallon reagent storage tanks and 1 1/2 hp pump for the spray system. The 65 TPD and 100 TPD plant do not come with tanks as 55 gallon drums can be used for this purpose. A 3/4 hp and 1 hp pump comes with a 65 TPD plant and a 100 TPD plant respectively, for the spray system.

Plants are built on a rigid steel skid type frame for easy handling and transporting. The largest plant weighs less than a ton and the 65 TPD plant around 900 pounds.

They are easily operated by one person, requiring very little attention.

All components are designed for outdoor use and a shelter, although recommended, is not necessary.

State of Maine Mining Company

P.O. BOX 1016
CHARLES ESCAPULE

TOMBSTONE, ARIZONA 85638

PHONE 457-3601
LOUIS ESCAPULE

THE 300 TPD PLANT

The 300 TPD precipitation plant consists of clarifier pump and filters, vacuum deaeration system, zinc dust feeder and mixing cone, precipitation pump and filters, all mounted on a steel skid. Also included are three 500 gallon steel tanks for reagent storage and spray mix tank plus a 2 hp pump for pumping the solution onto a heap and a 1/2 hp pump for mixing reagents.

SPECIFICATIONS

- A. Automatic and continuous vacuum deaeration.
- B. Pressure monitored filter system.
- C. Non-corrosive pumps with mechanical seals.
- D. 10 pound zinc dust hopper capacity.
- E. Variable rate zinc feeder.
- F. Electronic liquid level control in vacuum chamber.
- G. Steel skid mounted.
- H. Rain tight electrical switch gear.
- I. Oil lubed vacuum pump.
- J. Power requirements: 8.5 KVA 220 vlts, 1 ph 60 hz. (or 50 Hz.)

The overall dimensions of this unit are 8' x 5' x 7'11" high. While this plant was designed for heap leaching operation, it can be used in any mill system that generates pregnant cyanide solutions.

F.O.B. State of Maine Mine
Tombstone, Arizona

State of Maine Mining Company

P.O. BOX 1016
CHARLES ESCAPULE

TOMBSTONE, ARIZONA 85638

PHONE 457-3601
LOUIS ESCAPULE

THE 150 TPD PLANT

The 150 TPD precipitation plant consists of clarification pump and filters, vacuum deaeration system, zinc dust feeder and mixing cone, precipitation pump and filters, all mounted on a steel skid. Also included are three 300 gallon steel tanks for reagent storage and spray mix tank plus a 1 1/2 hp pump for pumping the solution onto a heap.

SPECIFICATIONS

- A. Automatic and continuous vacuum deaeration.
- B. Pressure monitored filter system.
- C. Non-corrosive pumps with mechanical seals.
- D. 6 pound zinc dust hopper capacity.
- E. Variable rate zinc feeder.
- F. Electronic liquid level control in vacuum chamber.
- G. Steel skid mounted.
- H. Rain tight electrical switch gear.
- I. Power requirements: 6 KVA 220 volts 1 ph 60 Hz. (or 50 Hz).

The overall dimensions of this plant are 7'2" x 4'4" x 7'10" high.

F.O.B. State of Maine Mine
Tombstone, Arizona

State of Maine Mining Company

P.O. BOX 1016
CHARLES ESCAPULE

TOMBSTONE, ARIZONA 85638

PHONE 457-3601
LOUIS ESCAPULE

THE 100 TPD PLANT

The 100 TPD precipitation plant consists of one clarifier filter and pump, one precipitate filter and pump, vacuum de-aeration system, zinc feeder and mixing cone, all mounted on a steel frame. Also included is a 1 hp pump for pumping solution onto a heap. To save cost to you no tanks are provided, as 55 gallon drums can easily be adapted for this purpose.

SPECIFICATIONS

- A. Automatic and continuous vacuum de-aeration.
- B. Pressure monitored filter system.
- C. Corrosion proof pumps with mechanical seals.
- D. 4 pound zinc dust hopper capacity.
- E. Variable rate zinc dust feeder.
- F. Electronic liquid level control in vacuum chamber.
- G. Steel skid mounted.
- H. Folding vacuum chamber for easy transporting.
- I. Rain tight electrical switch gear.
- J. No lube vacuum pump.
- K. Power requirements: 5 KVA 110/220 volts 1 ph 60 Hz. (or 50 Hz.)

The overall dimensions of this unit are 5'5" x 3'6" x 7'9" high. The vacuum tank is designed to fold down for transporting, reducing the height to about 4 ft., making it handy for transporting in a pickup or small trailer.

F.O.B. State of Maine Mine
Tombstone, Arizona

State of Maine Mining Company

P.O. BOX 1016
CHARLES ESCAPULE

TOMBSTONE, ARIZONA 85638

PHONE 457-3601
LOUIS ESCAPULE

The 65 TPD PLANT

The 65 TPD Plant consists of one clarifier filter and pump, one precipitate filter and pump, vacuum deaeration system, zinc feeder and mixing cone, all mounted on a steel frame. Also included is a 3/4 hp pump for pumping solution onto a heap. To save a cost to you, no tanks are provided, as 55 gallon drums can easily be adapted for this purpose.

SPECIFICATIONS

- A. Automatic and continuous vacuum de-aeration.
- B. Pressure monitored filter system.
- C. Corrosion proof pumps with mechanical seals.
- D. 4 pound zinc dust hopper capacity.
- E. Variable rate zinc dust feeder.
- F. Electronic liquid level control in vacuum chamber.
- G. Steel skid mounted.
- H. Folding vacuum chamber for easy transporting.
- I. Rain tight electrical switch gear.
- J. No lube vacuum pump.
- K. Power requirements: 5 KVA 110/220 volts 1 ph 60 Hz. (or 50 Hz.)

The overall dimensions of this plant are 5' x 3'4" x 7'11" high. The vacuum tank is designed to fold down for transporting, reducing the height to about 4 ft., making it handy for transporting in a pickup or small trailer.

F.O.B. State of Maine Mine
Tombstone, Arizona

State of Maine Mining Company

P.O. BOX 1016
CHARLES ESCAPULE

TOMBSTONE, ARIZONA 85638

PHONE 457-3601
LOUIS ESCAPULE

THE 12 TPD PLANT

The 12 TPD Plant consists of one clarifier filter and one precipitation filter, deaeration system, zinc feeder and mixing cone, and a 1/3 hp pump used for circulating solutions, all mounted on a steel frame.

SPECIFICATIONS

- A. Automatic and continuous deaeration.
- B. Pressure monitored system.
- C. 24 ounce zinc dust hopper capacity.
- D. Corrosion proof pump with mechanical seal.
- E. Variable rate zinc dust feeder.
- F. Automatic internal liquid level control.
- G. Steel frame mounted.
- H. See-through filters with replaceable cartridges.
- I. Power requirements: 1 KVA 110 volts 1 hp 60 hz.

The dimensions of this plant are 2 ft. x 2 ft. x 7 ft. 6 inches high. The weight of the plant is 130 pounds. This plant was designed for test work or for processing small amounts of very high grade ores. This machine is not intended for continuous operation.

F.O.B. State of Maine Mine
Tombstone, Arizona

on file
8-27-81 K

State of Maine Mining Company

P. O. BOX 453

TOMBSTONE, ARIZONA 85638

PHONE (602) 457-3601

CHARLES ESCAPULE

LOUIS ESCAPULE

Cyaniding silver and gold ores is not a new practice, however, some of the methods in use are comparatively new. One such method is to "heap" leach low grade ores. It is a cheap, fast way to recover precious metals from old dumps or open pit mining operations. The term "heap leaching" was probably coined by the copper mining industry, whereby low grade ore is stacked (heaped) on a prepared base (made impervious) and sprayed with a leaching agent, in the case of silver and gold, a dilute cyanide solution. The solution percolates down through the ore, dissolving the metal and collected for subsequent stripping.

Several methods of recovering the dissolved metals are used, such as carbon absorption, electrowinning, etc. but the simplest way is by use of powdered zinc or aluminum metal. In order for this method to work efficiently certain criteria must be met, first, the solution must be filtered to remove all suspended particles and, second, all or nearly all dissolved oxygen must be removed before adding zinc dust to precipitate the silver and gold, at which time it is a simple matter to filter and collect the metal.

The two precipitation plants we have designed and are currently manufacturing for sale are rated at 65 and 300 tons of solution per day (24 hrs.). (See additional plants below.)

They are the Crowe-Merrill type, using zinc dust as the precipitant.

The 300 TPD Plant comes complete with reagent storage tanks, mix pump and a 2 HP pump for the spray system. The 65 TPD Plant does not come with tanks as 55 gallon drums can be used for this purpose.

Both are built on a rigid steel skid type frame for easy handling and transporting. The larger plant weighs less than a ton and the smaller around 400 lbs.

Both are easily operated by one person, requiring very little attention.

All components are designed for outdoor use and a shelter, although recommended, is not necessary.

12 TPD	1,500.00	Completion time -	3 weeks
65 TPD	4,500.00	"	" 60 days
100 TPD	5,400.00	"	" "
150 TPD	10,500.00	"	" "
300 TPD	20,000.00	"	" "

Terms - Half down at time of order - Balance at time of pick up.

State of Maine Mining Company

P. O. BOX 453
CHARLES ESCAPULE

TOMBSTONE, ARIZONA 85638

PHONE (602) 457-3601
LOUIS ESCAPULE

THE 65 TPD PLANT

The 65 TPD Plant consists of one clarifier filter and pump, one precipitate filter and pump, vacuum deaeration system, zinc feeder and mixing cone, all mounted on a steel frame.

Also included is a ½ HP pump for pumping solution onto a heap. To save a cost to you, no tanks are provided, as 55 gallon drums can easily be adapted for this purpose.

SPECIFICATIONS

- A. Automatic and continuous vacuum deaeration.
- B. Pressure monitored filter system.
- C. Corrosion proof pumps with mechanical seals.
- D. 10 lb. zinc dust hopper capacity.
- E. Variable rate zinc dust feeder.
- F. Electronic liquid level control in vacuum chamber.
- G. Steel skid mounted.
- H. Folding vacuum chamber for easy transporting.
- I. Rain tight electrical switch gear.
- J. No lube vacuum pump.
- K. Power requirements: 2 KVA 110/200 volts 1 ph 60 Hz. (or 50 Hz.)

The overall dimensions of this plant are 5 ft. x 3 ft. 4 inches and 7 ft. 11 inches high. The vacuum tank is designed to fold down for transporting, reducing the height to about 4 ft., making it handy for transporting in a pickup or small trailer.

F.O.B. State of Maine Mine
Tombstone, Arizona

State of Maine Mining Company

P. O. BOX 453
CHARLES ESCAPULE

TOMBSTONE, ARIZONA 85638

PHONE (602) 457-3601
LOUIS ESCAPULE

THE 300 TPD PLANT

The 300 TPD Precipitation Plant consists of clarifier pump and filters, vacuum deaeration system, zinc dust feeder and mixing cone, precipitation pump and filters, all mounted on a steel skid. Also included are three 500 gallon steel tanks for reagent storage and spray mix tank plus a 2 HP pump for pumping the solution onto a heap and a ½ HP pump for mixing reagents.

SPECIFICATIONS

- A. Automatic and continuous vacuum deaeration.
- B. Pressure monitored filter system.
- C. Non-corrosive pumps with mechanical seals.
- D. 20 lb. zinc dust hopper capacity.
- E. Variable rate zinc feeder.
- F. Electronic liquid level control in vacuum chamber.
- G. Steel skid mounted.
- H. Rain tight lectrical switch gear.
- I. Oil lubed vacuum pump.
- J. Power requirements: 6 KVA 220 volts, 1 ph 60 Hz. (or 50 Hz.)

The dimensions of this unit are 8' x 5' x 7'11" high.

While this plant was designed for heap leaching operation it can be used in any mill system that generates pregnant cyanide solutions.

F.O.B. State of Maine Mine
Tombstone, Arizona

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES

VERBAL INFORMATION SUMMARY

May be Reproduced

- 1. Information from: Mr. Arley Escapule
- Address: P.O. Box 453, Tombstone, AZ 85638
- 2. Mine: STATE OF MAINE 3. ADMMR Mine File State of Maine
- 4. County Cochise 5. District Tombstone
- 6. Township _____ Range _____ Sec(s) _____
- 7. Location: _____
- 8. No. of Claims - Patented _____ Unpatented _____
- 9. Owner (if different from above) _____
- 10. Address: _____
- 11. Operating Company: _____
- 12. Pertinent People and/or Firm: _____
- 13. Commodities: Silver
- 14. Operational Status: Exploration
- 15. Summary of Information received, comments, etc.: The State of Maine Mining

Company is doing business as the Charlou Corp. (same address). The Charlou Corp. has a joint venture with Canadian and U.S. investors to explore, mine, and produce silver from the State of Maine, and adjacent, properties.

The joint venture is called Tombstone Silver Mines, Inc. Mr. Joe Graves, former mine superintendent for Tombstone Exploration, Inc., is consulting engineer. For the past several months, Tombstone Silver has been drilling rotary holes, 100-110 feet deep, on the property. Shallow ore has been identified.

A gyratory crusher has been ordered and plans call for minor surface stripping (in about two weeks), crushing, and agglomerating of the ore. This material will be placed on a leach pad and treated with cyanide. The company hopes for full production in three months; planning is based on a silver price of \$7.40 although operators would like \$9.00.

Date: November 13, 1984

Michael W. Greeley
(Signature) ADMMR

RRS
N

State of Maine Mining Company

P.O. BOX 1016
CHARLES ESCAPULE

TOMBSTONE, ARIZONA 85638

PHONE 457-3601
LOUIS ESCAPULE

Cyaniding silver and gold ores is not a new practice, however, some of the methods in use are comparatively new. One such method is to "heap leach" low grade ores. It is a cheap, fast way to recover precious metals from old dumps or open pit mining operations. The term "heap leaching" was probably coined by the copper mining industry, whereby low grade ore is stacked (heaped) on a prepared base (made impervious) and sprayed with a leaching agent, in the case of silver and gold, a dilute cyanide solution. The solution percolates down through the ore, dissolving the metal and collected for subsequent stripping.

Several methods of recovering the dissolved metals are used, such as carbon absorption, electrowinning, etc. but the simplest way is by use of powered zinc or aluminum metal. In order for this method to work efficiently certain criteria must be met, first, the solution must be filtered to remove all suspended particles and, second, all or nearly all dissolved oxygen must be removed before adding zinc dust to precipitate the silver and gold, at which time it is a simple matter to filter and collect the metal.

The precipitation plants we have designed and currently manufacturing for sale are rated at 12, 65, 100, 150 and 300 tons of solution per day (24 hours).

They are the Merrill-Crowe type, using zinc dust as the precipitant.

The 300 TPD plant comes complete with 2 hp pump for the spray system. The 150 TPD plant comes with 1 1/2 hp pump for the spray system. A 3/4 hp and 1 hp pump comes with a 65 TPD plant and a 100 TPD plant respectively, for the spray system.

Plants are built on a rigid steel skid type frame for easy handling and transporting. The largest plant weighs less than a ton and the 65 TPD plant around 900 pounds.

They are easily operated by one person, requiring very little attention.

All components are designed for outdoor use and a shelter, although recommended, is not necessary.

12 TPD	\$ 1,500.00	Completion time - 3 weeks
65 TPD	\$ 4,500.00	" " 60 days
100 TPD	\$ 5,400.00	" " " "
150 TPD	\$10,500.00	" " " "
300 TPD	\$20,000.00	" " " "

Terms - Half down at time of order - Balance at time of pick up.
Exfactory Tombstone, AZ - Crating if needed extra.

State of Maine Mining Company

P.O. BOX 1016
CHARLES ESCAPULE

TOMBSTONE, ARIZONA 85638

PHONE 457-3601
LOUIS ESCAPULE

THE 12 TPD PLANT

The 12 TPD Plant consists of one clarifier filter and one precipitation filter, deaeration system, zinc feeder and mixing cone, and a 1/3 hp pump used for circulating solutions, all mounted on a steel frame.

SPECIFICATIONS

- A. Automatic and continuous deaeration.
- B. Pressure monitored system.
- C. 24 ounce zinc dust hopper capacity.
- D. Corrosion proof pump with mechanical seal.
- E. Variable rate zinc dust feeder.
- F. Automatic internal liquid level control.
- G. Steel frame mounted.
- H. See-through filters with replaceable cartridges.
- I. Power requirements: 1 KVA 110 volts 1 hp 60 hz.

The dimensions of this plant are 2 ft. x 2 ft. x 7 ft. 6 inches high. The weight of the plant is 130 pounds. This plant was designed for test work or for processing small amounts of very high grade ores. This machine is not intended for continuous operation.

F.O.B. State of Maine Mine
Tombstone, Arizona

State of Maine Mining Company

P.O. BOX 1016
CHARLES ESCAPULE

TOMBSTONE, ARIZONA 85638

PHONE 457-3601
LOUIS ESCAPULE

The 65 TPD PLANT

The 65 TPD Plant consists of one clarifier filter and pump, one precipitate filter and pump, vacuum deaeration system, zinc feeder and mixing cone, all mounted on a steel frame. Also included is a 3/4 hp pump for pumping solution onto a heap. To save a cost to you, no tanks are provided, as 55 gallon drums can easily be adapted for this purpose.

SPECIFICATIONS

- A. Automatic and continuous vacuum de-aeration.
- B. Pressure monitored filter system.
- C. Corrosion proof pumps with mechanical seals.
- D. 4 pound zinc dust hopper capacity.
- E. Variable rate zinc dust feeder.
- F. Electronic liquid level control in vacuum chamber.
- G. Steel skid mounted.
- H. Folding vacuum chamber for easy transporting.
- I. Rain tight electrical switch gear.
- J. No lube vacuum pump.
- K. Power requirements: 5 KVA 110/220 volts 1 ph 60 Hz. (or 50 Hz.)

The overall dimensions of this plant are 5' x 3'4" x 7'11" high. The vacuum tank is designed to fold down for transporting, reducing the height to about 4 ft., making it handy for transporting in a pickup or small trailer.

F.O.B. State of Maine Mine
Tombstone, Arizona

State of Maine Mining Company

P. O. BOX 453
CHARLES ESCAPULE

TOMBSTONE, ARIZONA 85638

PHONE 457-3601
LOUIS ESCAPULE

THE 100 TPD PLANT

The 100 TPD precipitation plant consists of one clarifier filter and pump, one precipitate filter and pump, vacuum de-aeration system, zinc feeder and mixing cone, all mounted on a steel frame. Also included is a 1 hp pump for pumping solution onto a heap. To save cost to you no tanks are provided, as 55 gallon drums can easily be adapted for this purpose.

SPECIFICATIONS

- A. Automatic and continuous vacuum de-aeration.
- B. Pressure monitored filter system.
- C. Corrosion proof pumps with mechanical seals.
- D. 4 pound zinc dust hopper capacity.
- E. Variable rate zinc dust feeder.
- F. Electronic liquid level control in vacuum chamber.
- G. Steel skid mounted.
- H. Folding vacuum chamber for easy transporting.
- I. Rain tight electrical switch gear.
- J. No lube vacuum pump.
- K. Power requirements: 5 KVA 110/220 volts 1 ph 60 Hz. (or 50 Hz.)

The overall dimensions of this unit are 5'5" x 3'6" x 7'9" high. The vacuum tank is designed to fold down for transporting, reducing the height to about 4 ft., making it handy for transporting in a pickup or small trailer.

F.O.B. State of Maine Mine
Tombstone, Arizona

State of Maine Mining Company

P.O. BOX 1016
CHARLES ESCAPULE

TOMBSTONE, ARIZONA 85638

PHONE 457-3601
LOUIS ESCAPULE

THE 150 TPD PLANT

The 150 precipitation plant consists of clarification pump and filters, vacuum deaeration system, zinc dust feeder and mixing cone, precipitation pump and filters, all mounted on a steel skid. Also included is a 1 ½ hp pump for pumping the solution onto a heap.

SPECIFICATIONS

- A. Automatic and continuous vacuum deaeration.
- B. Pressure monitored filter system.
- C. Non-corrosive pumps with mechanical seals.
- D. 6 pound zinc dust hopper capacity.
- E. Variable rate zinc feeder.
- F. Electronic liquid level control in vacuum chamber.
- G. Steel skid mounted.
- H. Rain tight electrical switch gear.
- I. Power requirements: 6 KVA 220 volts 1 ph 60 Hz. (or 50 Hz).

The overall dimensions of this plant are 7'2" x 4'4" x 7'10" high.

F.O.B. State of Maine Mine
Tombstone, Arizona

State of Maine Mining Company

P.O. BOX 1016
CHARLES ESCAPULE

TOMBSTONE, ARIZONA 85638

PHONE 457-3601
LOUIS ESCAPULE

THE 300 TPD PLANT

The 300 TPD precipitation plant consists of clarifier pump and filters, vacuum deaeration system, zinc dust feeder and mixing cone, precipitatin pump and filters, all mounted on a steel skid. Also included is a 2 hp pump for pumping the solution onto a heap.

SPECIFICATIONS

- A. Automatic and continuous vacuum deaeration.
- B. Pressure monitored filter system.
- C. Non-corrosive pumps with mechanical seals.
- D. 10 pound zinc dust hopper capacity.
- E. Variable rate zinc feeder.
- F. Electronic liquid level control in vacuum chamber.
- G. Steel skid mounted.
- H. Rain tight electrical switch gear.
- I. Oil lubed vacuum pump.
- J. Power requirements: 8.5 KVA 220 vlts, 1 ph 60 hz. (or 50 Hz.)

The overall dimensions of this unit are 8' x 5' x 7'11" high. While this plant was designed for heap leaching operation, it can be used in any mill system that generates pregnant cyanide solutions.

F.O.B. State of Maine Mine
Tombstone, Arizona

Abstract of new

ARIZONA DEPARTMENT OF MINERAL RESOURCES
Mineral Building, Fairgrounds
Phoenix, Arizona

- 1. Information from: Charles Escapule
- Address: _____
- 2. Mine: State of Maine 3. No. of Claims - Patented _____
Unpatented _____
- 4. Location: Approximately 2 mi SW of Tombstone, via Charleston Road (Cochise Co.)
- 5. Sec 16 Tp 20 S Range 22 E 6. Mining District _____
- 7. Owner: State of Maine Mining Co.
- 8. Address: P. O. Box 453, Tombstone, AZ 85638
- 9. Operating Co.: State of Maine Mining Co.
- 10. Address: _____
- 11. President: _____ 12. Gen. Mgr.: Charles B. Escapule
- 13. Principal Metals: Ag 14. No. Employed: _____
- 15. Mill, Type & Capacity: _____
- 16. Present Operations: (a) Down (b) Assessment work (c) Exploration
(d) Production (e) Rate _____ tpd.
- 17. New Work Planned: Plan to install pelletizing facility.

18. Misc. Notes: Have established a small (65 TPD) zinc precipitation plant to recover silver from a second "high-grade" leach pad established to the west of the original pad. Ore going to this new pad is mined by open cut from the patented Triple X claim. Assays on this ore have gone up to 220 oz Ag/ton and 0.9 oz Au/ton.

Date: 1-3-81

Michael W. Greeley
(Signature) (Field Engineer)

DEPARTMENT OF MINERAL RESOURCES

STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine STATE OF MAINE Date March 20, 1980
District Tombstone Engineer Clifford J. Hicks *CJH*
Subject: Escapule Cyanide Leaching

Location: NW $\frac{1}{4}$, Sec. 16, T20S, R22E. About ten minutes via the Charleston Road out of Tombstone.

Toured State of Maine property with Bailey Escapule, son of Charles and nephew of Louis, and examined their cyanide leach pads and recovery units.

The pad base is 15" of compacted mill slimes plus a layer of gravel to prevent scouring. The heap consists of 4000 t. of Ag ore (no sulphides) in a 5' lift. The material is from the State of Maine mine dump. This lift was leached for six weeks. Another 5' lift was then added because of a drop in recovery. The caustic cyanide solution at a pH of 10+ is sprinkled over the top. It percolates through the heap and the now pregnant solution is discharged at the base into a holding pond from where it is pumped to a zinc powder stripping unit with a capacity of 300 t. of solution per day. The precipitated Ag (with some Au) is melted into dore in a bullion furnace and then electrolytically refined on the property. The barren solution is pumped to holding tanks and recharged with makeup cyanide and caustic.

The Escapules manufacture the stripping units which have varying capacities, i.e., 65 t. of solution per day, 100 t., 150 t., and 300 t. They plan to produce a 12 t. size in the near future. The 65 t. and 100 t. units are portable. They will fit in a pickup truck. The larger units are usually housed in small steel sheds.

Plans are to finish leaching the State of Maine dump, then crush it to minus 1-1/2" (the crusher is now in place) and replace it on the pad for a second leaching. Some State of Maine gob-filled stopes come to surface. the gob will be mined, crushed and leached. It reportedly runs 20 oz. Ag/t. It is possible that the mine may be reopened in a few years.

CJH:mw

MEMORANDUM

To: John H. Jett, Director
From: Mike Greeley, Field Engineer
Subject: Visit to State of Maine Mining Co. - April 14, 1978
Date: April 17, 1978

12
RECEIVED

APR 25 1978

DEPT. MINERAL RESOURCES
PHOENIX, ARIZONA

The State of Maine Mining Co., owned and operated by the Escapule family, is a double-pronged enterprise. The business consists of mining and refining silver and manufacturing cyanidation plants.

Both operations are carried out at the State of Maine mine on the northeast flank of the Uncle Sam Hill approximately three miles southwest of Tombstone. The site may be reached by taking the paved road from Tombstone toward Charleston. Eventually plans call for manufacturing to be moved away from the mine site.

Charlie and Louis Escapule run the entire business; their older brother Ernie apparently helps them in the manufacturing phase. The cyanidation plants are constructed to treat low-grade, fine grain gold-silver ores. The plants are made to treat 65 tons solution/day or 300 tons solution/day and require 30 and 45 days, respectively, to manufacture. No patents are held by the company.

To date 12 plants have been sold and inquiries and orders continue to filter in. Several plants have been sold in Arizona, California, Nevada, and Texas. Mexican interest increases.

In addition to the operating facility at the State of Maine, there are five plants in use in Arizona. A 300-ton unit is installed at each of the Eocene Research and Silver Bonanza properties in the Tombstone area. The Vokal property on the Papago Indian reservation also has a 300-ton plant. A 65-ton unit is employed testing mine dumps at Ruby (Santa Cruz Co.) and another 65-ton unit is used periodically on the May claim, owned by the Escapule family, near Tombstone. It is expected that a plant will be installed soon in the Congress area (Yavapai Co.).

The basic cyanidation process consists of pumping the pregnant cyanide solution through clarifying filters, then a vacuum cylinder (to remove oxygen), then adding metallic zinc to precipitate gold and silver, and finally filtering the precipitate. The filtering medium used in both cases is diatomaceous earth which, in addition, provides silica to the fluxing material used in the first firing of the precipitate to form a dore. Plant specifications are attached.

In the company's silver mining and refining operation, a 300-ton solution/day plant is employed. Currently ore containing about 5 oz Ag/ton is moved from the State of Maine mine dump onto a leach pad. The bottom of the leach pad consists of -100 mesh slimes compacted to about 15 inches thick. Cyanide solution is sprayed onto the ore pile at the rate of 50 gal/min. The pH is carefully controlled.

The pregnant solution flows by gravity into a decantation pond and then via pipe into a large holding pond. From there a skimming pump delivers the pregnant solution to the precipitation plant, initially through the clarifier filters.

My visit occurred at the end of one cycle of leach production. Limited experience indicates that a new lift of ore is required after about 6 weeks. The plant operates 24 hours a day, 7 days a week. A new lift will be 4 - 5 feet high.

Initial production is about 300 oz Ag/day eventually dropping to $\frac{1}{2}$ -1 oz/day. The State of Maine ore has very little gold and very little metallic contaminants such as copper.

The company refines its silver electrolytically to 99.9 percent pure. Seven people, in addition to the owners, are employed full time. Operating costs for production of refined silver are roughly \$140/day, requiring, at today's prices, an average of about 30oz Ag/day.

Bars of silver weighing 10 to 11 troy oz are sold by quoted spot price to individuals. The company is not interested in large production contracts.

ARIZONA DEPARTMENT OF MINERAL RESOURCES
Mineral Building, Fairgrounds
Phoenix, Arizona

1. Information from: Charles Escapule
Address: Tombstone
2. Mine: State of Maine 3. No. of Claims - Patented _____
Unpatented _____
4. Location: Charles Road next to Santa Ana
5. Sec 16 Tp 20S Range 22E 6. Mining District Tombstone
7. Owner: Charles and Louis Escapule
8. Address: _____
9. Operating Co.: _____
10. Address: _____
11. President: _____ 12. Gen. Mgr.: _____
13. Principal Metals: _____ 14. No. Employed: 0
15. Mill, Type & Capacity: 100 to 200 tpd when finished Cyanide plant.
16. Present Operations: (a) Down (b) Assessment work (c) Exploration
(d) Production (e) Rate _____ tpd.
17. New Work Planned: Hope to start up in the near future

18. Misc. Notes: _____

Date: May 6, 1970


(Signature)

G. W. Irvin
(Field Engineer)

INDEX
K COPY
1/11/66

HEAP LEACHING AND SILVER RECOVERY AT
THE STATE OF MAINE FILE

Charles B. Escapule

Louis W. Escapule

C. Bailey Escapule

State of Maine Mining Company
Tombstone, Arizona

David D. Rabb, P.E.

Tucson, Arizona

ABSTRACT

The large scale cyanide leaching of several large dumps has been in continuous successful operation at the Tombstone site for more than four years. This paper presents a description of the leaching of silver ores at the State of Maine property near Tombstone, Arizona. It includes discussions of preliminary test work, site selection and pad preparation; heap construction, reagent preparation, solution application systems and leaching operations; solution recovery, precipitation and refining; and the analytical control procedures.

Ore selection is on the basis of metal solubility or percent extraction rather than total grade. Safety precautions and flood and disaster controls are paramount.

Pictures of equipment and plant layout and flow diagrams depict each phase of the operation from raw ore to 999-fine bullion.

INTRODUCTION

The first successful heap leach of silver ores in the State of Arizona has been under continuous operation since early 1976 at the State of Maine Mine, two miles southwest of Tombstone, Arizona. The silver produced from leaching old mine dumps at this property was the first in the Tombstone mining district to achieve a 999+ purity.

While cyanide leaching of silver and gold ores is a time-proven accepted practice, a relatively new method of treatment called "heap" leaching was employed. Heap leaching is a comparatively inexpensive fast way to recover precious metals from low grade material.

SYSTEM DESCRIPTION

Using material from old mine dumps or from current open pit mining, the ore is stacked or heaped on a prepared base and sprayed with dilute cyanide solution. The solution percolates down through the ore dissolving the metal and is collected, filtered to remove all suspended particles and all or nearly all dissolved oxygen is removed before zinc dust is added to precipitate the silver and gold. A simple filter collects the metal precipitates which are then melted and refined and cast into anodes and further refined by electrolysis.

HISTORY

In 1878 John Escapule arrived in Tombstone to photograph the activity for the San Francisco Chronicle and stayed to locate the State of Maine Mine (S/MM). Heap leaching requires relatively few workers per ton of ore treated and economy of work force is one of the outstanding features of this method. Being entirely family owned and operated, paperwork and expenses at the State of Maine have been greatly reduced and a closely-knit, efficient work force is the result.

Detailed production figures from the S/MM prior to 1976 are not available but published estimates⁽¹⁾ range from two to three hundred thousand dollars, almost all in silver.

By mid 1981 there was an estimated 50,000 tons of ore under leach at three locations on the S/MM property.

Elsewhere in the Tombstone area, there are three other major heap leach operations with a total of over one million (estimated) tons under leach. There are no flotation or gravity operations, but one company is considering the use of hyposulphite as a leaching agent.

GEOLOGY

The country rocks in the Tombstone district range from pre-Cambrian to Quaternary in age. At the S/MM in the western-southwestern part of the district, the important ore bodies, predominantly silver with very little gold (average ratio 200:1), occur in a quartz latite porphyry and in Mesozoic sediments. Geograph-

ically, in the Tombstone district, ore with significant gold values seems to be restricted to the northeastern part.

The ore in the State of Maine appears to be in narrow stringers in the crushed sericitized rock in a fault zone, with wall rock alterations (mainly sericitization) extending only a few feet from the vein. All of the rock in the fissured zone weathers to a brownish or reddish color with some rather strong stains of manganese in some areas. Very little copper staining is evident and assay maps indicate that only small concentrations of lead are present in the S/MM area.

Extensive development (seven levels off an inclined shaft) resulted in several large dumps; total - about sixty thousand tons with recoverable values averaging 0.01 ounces of gold per ton and 2.0 ounces of silver. An additional estimated fifty thousand tons of broken ore are available in old stopes and fill material underground.

MINERALOGY

Studies of the mineralogy of the Tombstone district have shown a large number and variety of lead, silver and zinc minerals plus manganese, tellurium, molybdenum, and vanadium.

The silver minerals in the State of Maine ore are predominantly halides: cerargyrite with a little bromyrite and embolite plus some native silver and argentiferous galena. Some manganese, principally polianite and pyrolusite, occur in quantities of economic importance in several areas. The silver is frequently complexed with the manganese and, if so, lower extractions result. The silver-manganese minerals are resistant to cyanide leaching and the bulk of the silver can be recovered only by the Russell or Patera or similar process in which the manganese is first rendered soluble and removed. Difficult settling and filtration problems usually result and the treatment is inordinately expensive. Also, neither flotation or gravity separation tests have been successful on these refractory manganese silver ores.

TEST WORK

In heap leaching the controlling factor as to whether or not a particular batch of ore is to be added to the heap is not the total precious metal content but rather the amount of precious metal which can be made soluble in the leaching solution in a reasonable time. Batch tests as described below cannot only determine reagent consumption and extraction data but also observations can be made as to the character of the ore under leach. Preliminary testing is the key to a successful leach operation, particularly if some of the ore is gathered from various old mine dumps in the district. Each potential lot of ore must be tested and evaluated individually.

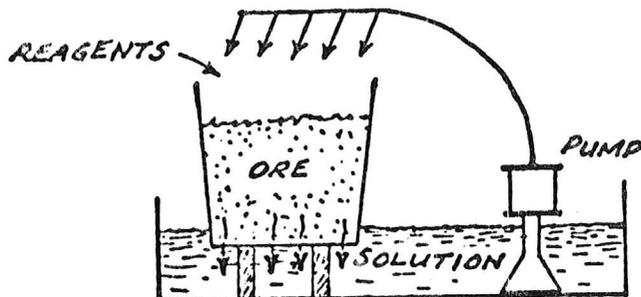
Barrel Test

50 pounds ore
3 gallons water
11 grams caustic (1 lb. per ton of ore)
11 grams cyanide (NaCN)

A 5-gallon container with a perforated bottom sits in a tray (bathinette) with a small circulating pump from an air conditioner.

Add caustic; e.g. pure slacked lime, $\text{Ca}(\text{OH})_2$, until solution has a pH of at least 10 or better. Then add cyanide; sodium cyanide, NaCN .

Run percolating solution over the ore in the bucket for 24 hours and take small samples of OFF solution for testing. Add fresh water to system so as to make up for losses from evaporation and sampling.



Continue to take samples every 24 hours until precious metal values in solutions level off (do not increase). Titrate for free cyanide in the OFF solution and check the pH each time a sample is taken. Adjust pH to 10 or better each time and add more cyanide each time as needed.

This test will tell:

Reagent consumption
Extractions versus time
Percolation rates
Amenability to cyanidation percolation

Shaker Test

42 grams ore (pulverized)
42 ml of cyanide solution (2 pounds of cyanide per ton of solution at pH 10 or better)

Add a flake or two of caustic before adding the cyanide solution.

Place in 125 ml flask, shake for 30 to 60 minutes. Filter and assay the solution for soluble precious metals.

This test will tell quickly if values will go into solution.

Agitation Tests

Can be in a variety of ways: a small 1 or 2 pound test in a bottle on rolls or in a cement mixer (about 25 pounds).

Add caustic to a unit pH of 10, then add cyanide.

To determine optimum leaching for that particular ore, tests should be done at different grinds with different concentrations of reagents. An idea of retention time can be determined from the periodic

removal and assay of clear preg solution samples.

This type of test should be done only on higher grade ores.

Tests at the S/MM on certain batches of ore which contained clay and fine material indicated that better and faster extraction of metal values was achieved if the material could be pelletized or agglomerated prior to loading on the heap. Barren preg, at a pH of 10 and strong in cyanide, was sprayed on crushed ore on a moving belt. Pellets form as the belt moves, tilted at an angle of about 50 degrees from the horizontal. Leaching time was roughly cut in half to attain the same extraction.

SITE SELECTION AND PREPARATION

Criteria for site selection were:

1. Proximity to the ore to be leached.
2. Natural slope drainage that required minimal devegetation and grading. At S/MM a 8 to 9 percent slope was found to be the most satisfactory.
3. No interference or impoundment of streams or natural run-off.
4. Availability of utilities (especially water) and accessibility to roads.
5. Room for expansion, if desired. Size is determined by the amount of ore to be leached. An area 100 by 100 feet will hold about 4000 tons of ore stacked to 5 feet high.

At the S/MM all criteria were met in a succession of separate pads. All the OFF solutions could be collected in one preg storage pond and processed by one precipitation unit.

Subsurface hydrology and the proximity of Tombstone city water wells demanded that all plant solutions and run-off had to be controlled and contained on the property. Consequently, not one but two earth and rock dams were constructed within (1) 100 yards and (2) 250 yards downstream from the site. Each was lined with an impermeable clay bottom as described later. See pad construction.

Each dam was lined with clay and rock cover and was of sufficient size to contain the volume of run-off water from a 100-year flood plus the total of all solutions in the proposed leaching operation.

This demonstration of good faith and cooperation with the State Water Engineer's Office helped establish excellent rapport with that state agency and the Water Quality Control officials.

A willingness to work with county, state, and federal officials has been helpful in the State of Maine start-up and in subsequent operations.

PAD CONSTRUCTION

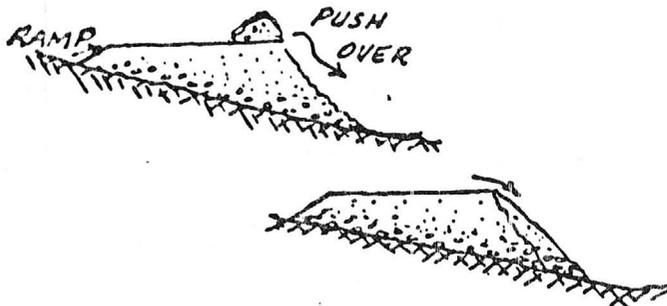
After the site was prepared, a pad base consisting of about 15 inches of mill slimes or a fine bentonitic clay from an old nearby tailings pond was laid down. The pad was constructed slightly larger than the dimensions of the heap to go on it; i.e., about

5 feet all around. Subsequent experiments have shown that this base is most effective if it is spread while slightly damp, 2 or 3 inches at a time and rolled or compacted between each application. A multi-stage build-up is the recommended procedure to insure an impermeable base. The final stage of pad construction is the addition of a layer of several inches of ore crushed to minus 1-inch and spread evenly over the clay base at about a 9 percent slope. Some operators favor the use of welded plastic sheeting of about 10 mil thickness, laid on a clay base and covered with gravel and/or fine sand. The most recent pad base now being installed at the S/MM will employ a reinforced plastic on a clay base and a clay and crushed ore cover. In any case, it is essential that an absolutely impervious barrier be emplaced and maintained so as to completely contain the leach solutions from the heap. Pad construction and pond linings were a major point of inspection by governmental agencies both Federal and County.

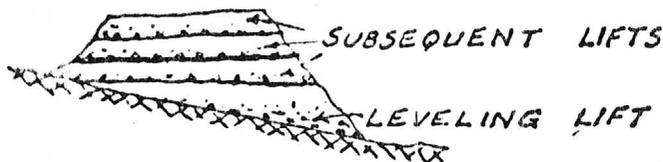
No solution leakage problems have been encountered at the S/MM due to pad base failure. The integrity of all pads and pond linings has been maintained completely.

LOADING THE HEAP

After the pad is constructed, the ore is placed on the pad with a 1½ yard loader in 5 foot lifts. Loading the heap should be done so that the coarse is at the bottom of the pile and the finer material is at the top. This allows for better solution distribution and decreases the possibility of vertical channels of solution flow through the heap. To do this a ramp is started up to the final level of the lift. Ore is dumped on the edge of the ramp and pushed over. This lets the larger rock roll to the bottom and the finer rock stays at the top.



A leveling lift will have to be put down first, then all subsequent lifts will be an even thickness throughout.



After each lift is loaded, the ore is ripped to loosen the areas compacted by machinery. After each lift is

leached, the ore is ripped before loading the next lift.

About 800 tons of ore could be loaded in one day, taking 6 working days per lift.

WHY 5 FOOT LIFTS?

The cyanide solution works best if there is an ample supply of oxygen in the solution. Using rain-bird plastic sprinklers, the solution is broken down into a spray, allowing oxygen from the atmosphere to be dissolved into the solution.

Frequently, it has been found that the amount of dissolved oxygen is depleted after it has percolated 10 feet into the heap. Beyond this point the cyanide solution will not dissolve the silver or gold effectively. For this reason no lift should be more than 10 feet thick. Also, shallower lifts usually work better for finer material.

PREGNANT SOLUTION PONDS

Pregnant solution moving under the ore heap, along the pad, flows through a small decantation pond. This small pond is used to let some of the solids settle out before entering the main pregnant solution storage pond. Solution is decanted off the top of this small pond through a stand pipe into the main pond. When the solution is very slimy (for example, after heavy rains or a new batch of clayey ore is added to the heap), a mixture of water and lime is added into the decant pipe. This helps to settle some of the slimes and also helps maintain pH control.

The main pregnant solution pond was constructed with a capacity of 400,000 gallons just below the ore heap and the small decantation pond. The bases or liners in these ponds were prepared in the same way as the pad. The pond is designed to hold all solution from the leaching system (72,000 gallons), plus the added volume of water from a 100-year rain over the leach area. A second large dam with a impervious lined pond has been constructed below the main pond to collect and control all cyanide solutions and run-off that could overflow from the primary leach area. This second pond provides additional insurance against accidental overflows in the system.

The values contained in the main pond vary from the time cyanide is first added to the new batch ore until 6 to 8 weeks later, when a new lift of ore is needed for leaching.

Solution from the first days of leaching will have the highest values, ranging from 0.8 to 1.0+ ounces of silver per ton of solution. After 10 to 14 days, values usually drop to about 0.3 to 0.4 ounces of silver per ton of solution. The heap becomes "passive". At this time the heap may be allowed to drain and to aerate. It is then ripped to a depth of 4 or 5 feet with a single scorpion ripper behind a D-8 CAT. Spacing of the ripper pattern is about 6 feet. The pregnant solution then assays 0.6 to 0.8 ounces per ton coming OFF the heap.

After 6 to 8 weeks, depending upon the amount of fines in the heap, values in the solution drop to about 0.3 ounces per ton. The average value in the pregnant solution pond during this 6 to 8 week period

is about 0.5 ounces per ton. The plan is always to leach the heap until an economic cut-off point has been reached. Then after ripping again, another 5 foot lift is added and leaching continued in the same manner. While the upper lift is undergoing its initial leach phase, the remaining values in the lower lift(s) are slowly being worked on, if oxygen and free cyanide (in solution) are available.



PLANT OPERATION

Solution from the pregnant storage pond is pumped into a clarifier filter where any remaining slimes are removed from the solution.

After clarification, the solution is run through a vacuum chamber to remove the dissolved oxygen (de-aeration).

As the solution leaves the vacuum chamber, zinc dust is introduced and precipitation of the silver and gold takes place almost immediately. At this point the cyanide strength should not be excessive because some of the precipitated precious metal values may redissolve before they can be removed from the circuit in the precipitation filter. The solution with the suspended solids then passes through another filter to remove the silver and gold precipitate. The barren preg solution flows out of the precipitate filter and into a barren solution storage tank. Here samples are taken to determine the amounts of silver and gold remaining in solution.

Cyanide and caustic are added to bring solution back up to the desired pH strength and free cyanide.

Solution from this tank is then pumped back through the sprays and onto the heap.

Titration for cyanide concentration is done with standard silver nitrate reagent on the pregnant solution coming OFF the heap. This is to determine how much free cyanide is left in solution after leaching. If the solution does not show any cyanide, then all of the available silver and gold may not be taken into solution. When the solution shows that some cyanide is present (usually a few hundredths of a pound per ton), then the available silver and gold is being taken into solution. But, as mentioned before, an excess of cyanide may redissolve silver and gold from the precipitation filter. For this reason, fresh cyanide is added only after precipitation before the barren preg goes back onto the heap.

REFINING

Precipitates mixed with diatomaceous earth from the precipitation filter unit are dried in a filter press and mixed with borax and soda ash. This mixture is then melted in a diesel-fired furnace and cast in a silver dore' cone. This cone is then melted in another furnace into an anode 7 inches by 9 inches by 1/2 inch thick for electrolytic refining.

The silver dore' anode is refined to 999+ fine silver crystals using silver nitrate electrolyte and stainless steel cathodes in an electrolytic refining cell. The silver crystals are scraped off the cathodes, rinsed, dried, and melted again into 10 ounce bars or whatever size is on order. Each bar is stamped 999 fine and the S/M logo added.

The gold is collected with the other impurities from the bottom of the cell and is chemically recovered by using a nitric acid bath to dissolve everything but the gold. This small amount of gold is collected and when enough has been processed, it is melted into 1.5 ounce bars.

TYPICAL OPERATING DATA

Leach 4000 to 5000 tons per lift
Heap size: 180 by 100 feet, 5 feet high
300 tons of solution in 24 hours (50 gpm)
Fresh water make-up 50 tons (worst conditions:
dry, hot, windy day and night)
Values in preg solution, ounces of silver per
ton of solution:
First 16 hours - 0.8 to 1.0
10 to 14 days - 0.3 to 0.4
After ripping - 0.6 to 0.8
At shut down - 0.3
Average 6 to 8 weeks - 0.5

Pump out decant pond about every two years due to slime build-up.

Precipitates from the Merrill-Crowe precipitation filters average about 50 percent silver. Most of the remainder is diatomaceous earth (silica) used in the filter media.

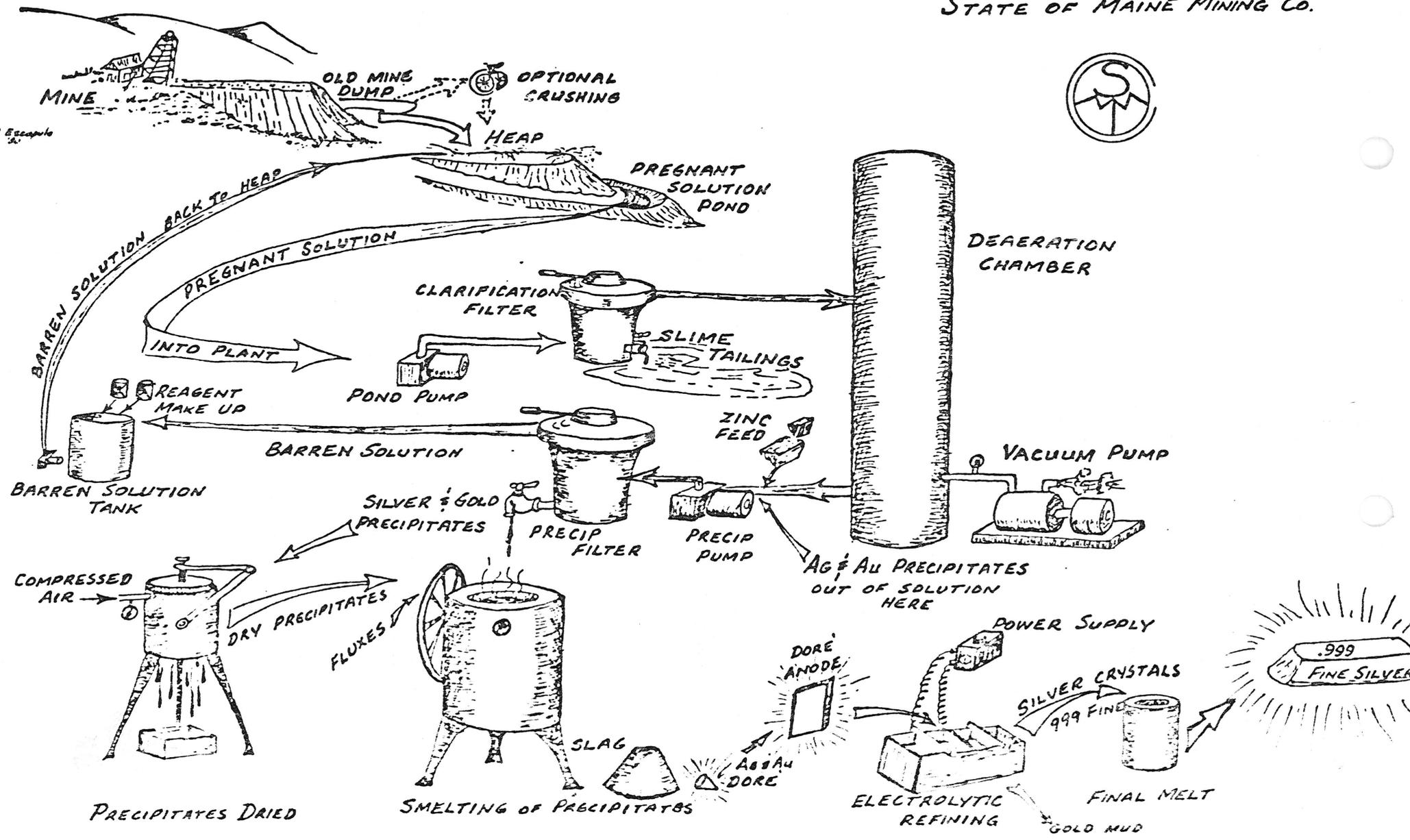
Use a flux mix of 30 percent borax and 3 percent soda ash (dry weight) when smelting the precipitates. The raw silver anodes measure 7 inches by 9 inches by 1/2 inch.

Power requirements for the refining cell are 1.8 to 4 volts and 10 amperes D.C. per anode in cell. Power varies with the number of anodes in the cell. Capacity, 6 anodes.

The pH of the barren preg solution ON to the heap is maintained at 10 or slightly better in order to stabilize the cyanide. The free cyanide in the ON solution is dependent upon the determination of how much is coming OFF. Pregnant solutions coming OFF the heap should show between 0.01 and 0.05 pounds of free cyanide per ton of solution. If less, increase the strength of ON solution in an appropriate amount.

The integrated heap leaching and Merrill-Crowe precipitation circuit required a minimum of operating labor; e.g., one full time worker and one part-time helper per 8 hours, 3 shifts per day, seven days a week.

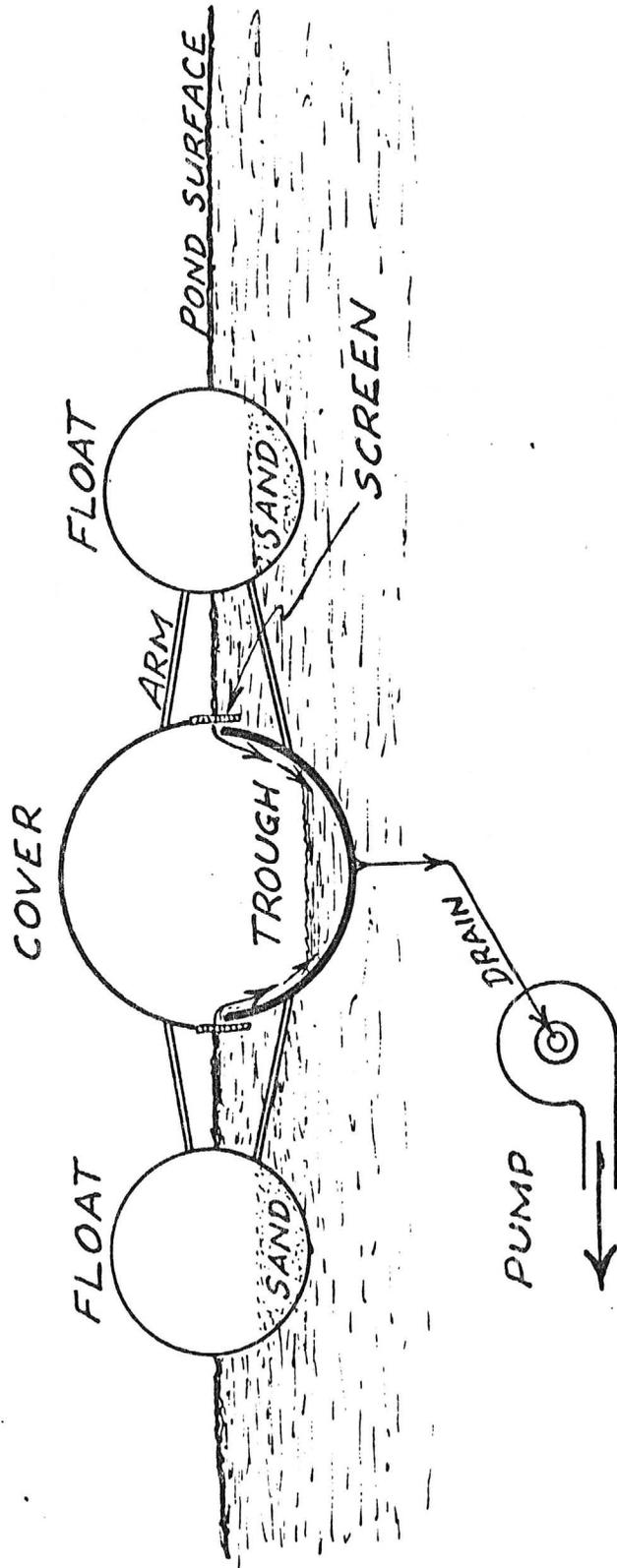
FLOW SHEET OF HEAP LEACH OPERATION
 FROM MINE TO 999 FINE SILVER
 STATE OF MAINE MINING CO.



B. Escapulo

POND SKIMMER

END VIEW



SKIMMER

Notes: The trough is 8 to 20 feet long, with closed ends, supported by two outrigger floats, one on each side. The floats are attached to the trough and to the cover with several outrigger arms spaced on each side. The precise levelling and adjustment of trough lip below the pond surface is made by adding sand as a ballast to the two floats.

This skimmer pulls the top 1/8 inch of solution off the surface; therefore, maximum aeration and since it is screened and covered, there are no birds, bugs, or debris in the recovered solution.

Further, there is a minimum of silt or suspended solids trapped and taken off in the out-flow.

When pumping from strong preg storage ponds to the precipitation unit, care should be exercised to avoid any air entrapment by vortices, cavitation, or stirring in of extra air. Any extra air puts an unnecessary load on the deaeration unit.

REFERENCES

1. Butler, B.S., Wilson, E.D., and Rasor, C.A.
"Geology and Ore Deposits of the Tombstone
District, Arizona", Arizona Bureau of Mines,
Bulletin No. 143, 1938, 114 pp.

Jane Perham ~~Stevens~~
Graduate Gemologist
Route 1, Box 144
West Paris, Maine 04289

RECEIVED
APR 4 1980
DEPT. MINERAL RESOURCES
PHOENIX, ARIZONA

March 31, 1980

Mr. Ken A. Phillips, Mineral Resources Specialist
State of Arizona
Department of Mineral Resources
Mineral Building, Fairgrounds
Phoenix, Arizona 85007

Dear Mr. Phillips:

In April of 1975 we had some correspondence regarding the State of Maine Mine in the Tombstone area.

At that time you mentioned the opening in 1974 of the location and the termination of this activity in December of 1974.

Has there been any mining at this location since that time? If so, could you possibly give me an estimate of the yield?

This information will be helpful in completion of an article about the State of Maine Mine. Thank you for any inconvenience this may cause you.

Sincerely,



Jane Perham, G.G.

JP

State of Maine Mining Company

P. O. BOX 489

TOMBSTONE, ARIZONA 85638

PHONE 457-3601

CHARLES ESCAPULE

LOUIS ESCAPULE

Cyaniding silver and gold ores is not a new practice, however, some of the methods in use are comparatively new. One such method is to "heap" leach low grade ores. It is a cheap, fast way to recover precious metals from old dumps or open pit mining operations.

The term "heap leaching" was probably coined by the copper mining industry, whereby low grade ore is stacked (heaped) on a prepared base (made impervious) and sprayed with a leaching agent, in the case of silver and gold, a dilute cyanide solution. The solution percolates down through the ore, dissolving the metal and collected for subsequent stripping.

Several methods of recovering the dissolved metals are used, such as carbon adsorption, electrowinning, ect. but the simplest way is by use of powdered zinc or aluminum metal. In order for this method to work efficiently certain criteria must be met, first, the solution must be filtered to remove all suspended particals and second, all or nearly all dissolved oxygen must be removed before adding zinc dust to precipitate the silver and gold, at which time it is a simple matter to filter and collect the metal.

The two precipitation plants we have designed and are currently manufacturing for sale are rated at 65 and 300 tons of solution per day (24 hrs).

They are the Crowe-Merrill type, using zinc dust as the precipitant.

The 300tpd plant comes complete with reagent storage tanks, mix pump and a 2hp pump for the spray system. The 65tpd plant does not come with tanks as 55 gallon drums can be used for this purpose.

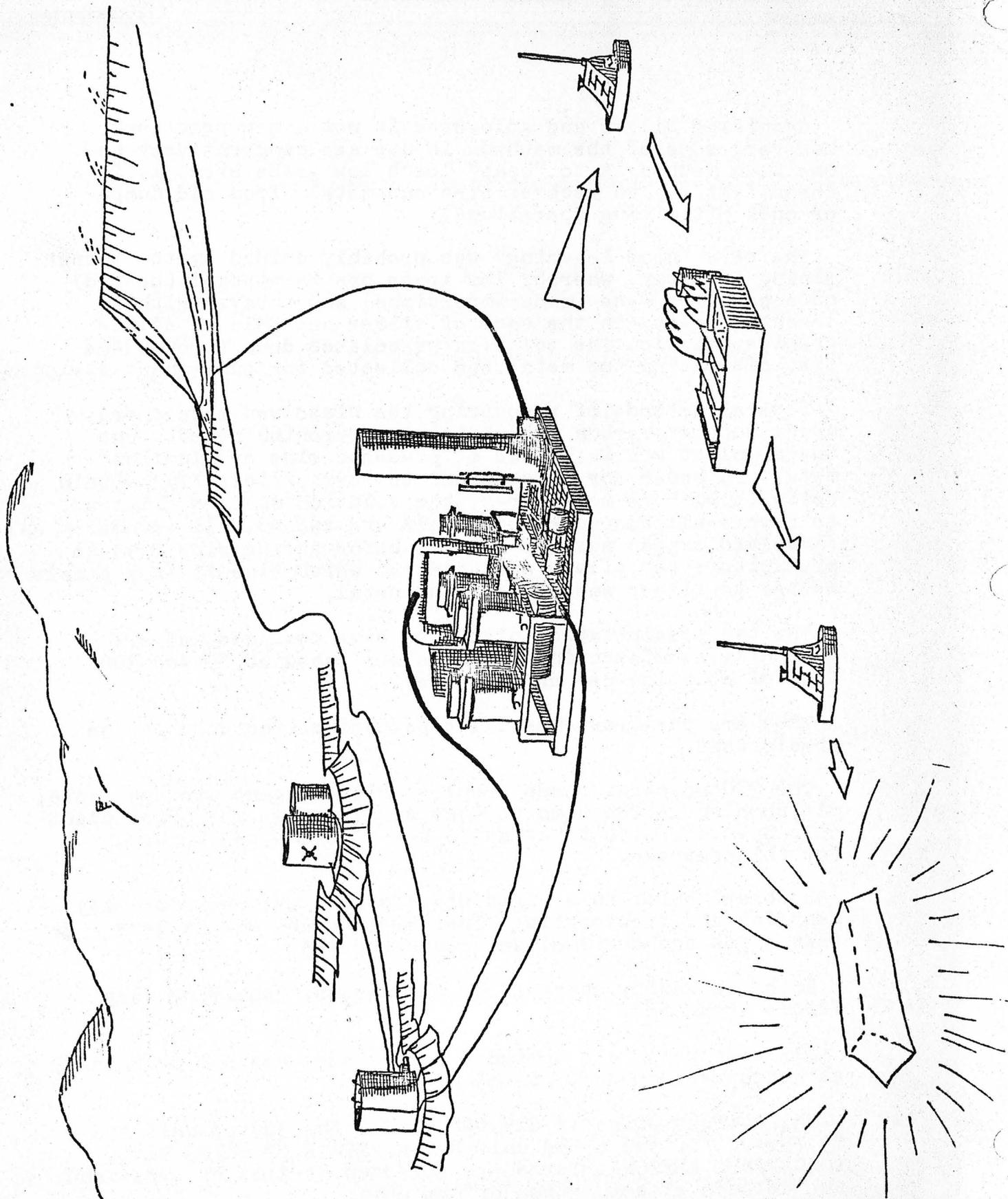
Both are built on a rigid steel skid type frame for easy handling and transporting. The larger plant weighs less than a ton and the smaller around 400 lbs.

Both are easily operated by one person, requiring very little attention.

All components are designed for outdoor use and a shelter, although recommended, is not necessary.

The current price is \$15,000.00 for the 300tpd unit and \$3,750.00 for the 65tpd unit F.O.B. STATE OF MAINE MINE, TOMBSTONE, ARIZONA. Terms are 50% down at time of order and the balance at completion of the unit.

Construction time is 45 days for the larger unit and 30 days for the smaller unit. Time depending on availability of components.



State of Maine Mining Company

P. O. BOX 483
CHARLES ESCAPULE

TOMBSTONE, ARIZONA 85638

PHONE 457-3601

LOUIS ESCAPULE

The 300tpd Precipitation plant consists of clarifier pump and filters, vacuum deaeration system, zinc dust feeder and mixing cone, precipitation pump and filters, all mounted on a steel skid. Also included are three 5 hundred gallon steel tanks for reagent storage and spray mix tank plus a 2hp pump for pumping the solution onto a heap and a 2hp pump for mixing reagents.

SPECIFICATIONS

- A. Automatic and continuous vacuum deaeration.
- B. Pressure monitored filter system.
- C. Non corrosive pumps with mechanical seals.
- D. 20 lb. zinc dust hopper capacity.
- E. Variable rate zinc feeder.
- F. Electronic liquid level control in vacuum chamber.
- G. Steel skid mounted.
- H. Rain tight electrical switch gear.
- I. Oil lubed vacuum pump.
- J. Power requirements; 6 KVA 220 volts, 1 ph 60 Hz.

The demensions of this unit are 8'X 5' X 7'11" high.

While this plant was designed for heap leaching operation it can be used in any mill system that generates pregnant cyanide solutions.

RECEIVED

STATE OF MAINE

State of Maine Mining Company

P. O. BOX 483
CHARLES ESCAPULE

TOMBSTONE, ARIZONA 85638

PHONE 437-3601

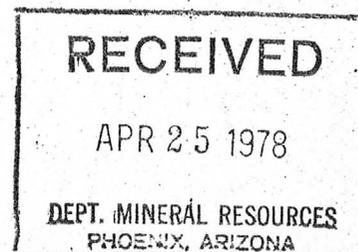
LOUIS ESCAPULE

THE 65TPD plant consists of One clarifier filter and pump, one precipitate filter and pump, vacuum deaeration system, zinc feeder and mixing cone, all mounted on a steel frame. Also included is a 1/2 hp pump for pumping solution onto a heap. To save a cost to you, no tanks are provided, as 55 gallon drums can easily be adapted for this purpose.

SPECIFICATIONS

- A. Automatic and continuous vacuum deaeration.
- B. Pressure monitored filter system.
- C. Corrosion proof pumps with mechanical seals.
- D. 10 lb. zinc dust hopper capacity.
- E. Variable rate zinc dust feeder.
- F. Electronic liquid level control in vacuum chamber.
- G. Steel skid mounted.
- H. Folding vacuum chamber for easy transporting.
- I. Raintight electrical switch gear.
- J. No lube vacuum pump.
- K. Power requirements; 2 KVA 110/ 220 volts 1 ph 60 Hz.

The overall dimensions of this plant are 5 ft X 3 ft 4 inches and 7ft 11 inches high. The vacuum tank is designed to fold down for transporting, reducing the height to about 4ft, Making it handy for transporting in a pickup or small trailer.



Mining and milling equipment on property. 200-ton cyanide plant - Rod & ball mills, rake classifier, grind in solution; about 15 settling tanks, filters & 2 small gold furnaces.

Past production (if any) Per A.B.M. Bill, 187, several ~~thous~~ 10's of thousand tons of ore.

Present rate of production (if any) None

Sampling (describe briefly, or attach sketch) obviously unsatisfactory

Tentative Estimate of Reserves

(Subject to revision when assays are received or after engineering calculations)

Measurable Unknown tons Grade

Indicated " tons Grade

Inferred " tons Grade

Mining method (actual or suggested) Mill processed dumps.

Milling or processing method (actual or suggested)

Processing tests suggested

Tentative conclusion and decision. Mill poorly designed and management inadequate.

To be accompanied by brief letter giving examining engineer's general impression of the deposit, his impression of the owner, and any other confidential information he may care to submit. Refer to any known prior examinations and reports. May be executed in pencil. Should be mailed within 24 hours after examination is completed.

Equipment & metallurgy did not yield clear solutions and essentially no metals recovered from the mill. A jaw crusher had been removed and Chas. Escapate said a large jaw crusher and short-head cone crusher were to be installed to increase capacity to 600 tons per day, and operations would resume in March 1975. About 6 men were running tests in the laboratory for heap leaching of dumps from the Contention claim at south edge of Tombstone.

SUMMARY REPORT OF MINERALS EXPLORATION

Tombstone District

State Ariz. County Cochise Mineral Products silver-goldName of property or deposit State of Maine Mine & MillDate examined 12/29/74 Engineer V.B. Sals Date of this report 12/26/74Reason for examination Initial VisitEngineer accompanied by No one Address _____Easement of property UnknownOwner Escapule Family Address Tombstone, Ariz.Leased or optioned to Sierra Minerals Management Address 4741 E. Sunrise Drive
TulsonLocation of property (be specific) NW 1/4 Sec. 16, T. 20 S. R. 22 E,
Approx. 2.5 miles southwest of TombstoneType of deposit and mineralogy (brief description) Fissures near
contact of ~~Cretaceous~~ Cretaceous Bisbee group and Tertiary
Uncle Sam Porphyry containing gold and silver minerals.Known dimensions of the deposit Unknown
Length _____ Width _____ Depth _____Attitude of the deposit (strike, dip, etc.) Unknown

Possible extensions; correlation of known showings _____

Mine workings (brief description or attach map or sketch) (indicate whether accessible) _____

Mine and mill ceased operations about a
month ago for lack of funds. State of Maine
shaft was retimbered to about 100 feet below
collar.
(over)

April 11, 1980

Jane Perham, G.G.
Route 1, Box 144
West Paris, Maine 04289

Dear Ms. Perham:

The State of Maine Mine at Tombstone, Arizona, has been the site of intermittent mining activity throughout the second half of the 1970's. A summary is listed below:

January 1975: We received an unconfirmed report that Sierra Minerals Management was again working at the mine.

January 1978: A report was received that Charlie and Louie Escapule are preparing a leach pad for their silver ore at the State of Maine Mine. They hope to begin leaching later this month (January 1978). They will leach 18,000 tons of ore with an average assay of about 6.0 tr.oz.Ag/ton. They expect their recovery to be about 55%.

February 1978: They (the Escapule's (see above)) had reportedly not started leaching yet, but planned to by the first of March 1978.

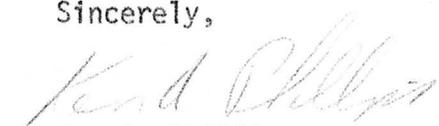
We have no report as to whether the leaching started or was successful.

March 1980: A visit to the mine was made by one of our field engineers, C. J. Hicks. The report is not yet completed but the Escapule's are reported to be continuing work at the mine.

Some copies of newspaper clippings of activity at the mine are enclosed.

Please feel free to contact us any time we might be of further assistance.

Sincerely,



Ken A. Phillips
Mineral Resources Engineer

KAP:mw

Enclosures