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PRINTED: 02-06-2013

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES AZMILS DATA

PRIMARY NAME: MISSION MINE

ALTERNATE NAMES:

EAST PIMA MINE
MISSION COMPLEX INCLUDING UG

PIMA COUNTY MILS NUMBER: 230

LOCATION: TOWNSHIP 16 S RANGE 13 E SECTION 31 QUARTER NW
LATITUDE: N 31DEG 59MIN 23SEC LONGITUDE: W 111DEG 04MIN 15SEC
TOPO MAP NAME: TWIN BUTTES - 7.5 MIN

CURRENT STATUS: PRODUCER

COMMODITY:

COPPER SULFIDE
MOLYBDENUM SULFIDE
SILVER
ZINC SULFIDE
LEAD SULFIDE
GOLD PLACER
TIN PLACER

BIBLIOGRAPHY:

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CONTINUATION OF MISSION MINE

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AIME AZ. SECT. MAY 17, 1965, 4 PP.
(NOW PART OF MISSION COMPLEX, 1986)
AIME 105TH ANNUAL MEETING, LAS VEGAS, NV.
FEB. 22, 1976, 15 PP.
RESERVES & PRODUCTION - ASARCO ANNUAL REPORTS
1961 - 1976, ASARCO S.E.C. 10-K, 12/31/76,
P. A4, WORLD MINING , SEPT. 1977, P. 174
PIMA MINE STORY, 2000, HEINRICHS, W.E. JR.

Arizona Copper Reserves and Resources

Compiled by the
Arizona Department of Mines and Mineral Resources

Property:

MISSION COMPLEX

Operator and/or Owner:

Asarco Inc.
180 Maiden Lane
New York, NY 10038
212-510-2000

Location:

Township 16 S Range 12 E Section 31
County - Pima AZMILS - 230
Description - 15 miles south of Tucson

Mineralization type and reserve/resource:

Sulfide OP - 494.6 Million tons at 0.70% Cu (a)
Sulfide UG - 5.1 Million tons at 2.07% Cu (b)

Reserve Info.: Open Pit Sulfide includes 0.17 oz/ton Ag. and 0.02% molybdenum.

Sources:

(a) Asarco 10-K 1998. (b) Pay Dirt November 1994.,

Comments:

Reserves include Mission, Eisenhower, Pima and San Xavier (including San Xavier North), Anamax's Eisenhower reserves acquired in April 1987 and the Mineral Hill Deposit adjacent to the Pima Mine acquired in late 1987.

SELECTED NEW CONTRACTS, INVESTMENTS, EXPANSIONS, AND EXPLORATION ACTIVITIES: UNITED STATES

<u>Commodity and company</u>	<u>Operation and/or location</u>	<u>Notes</u>
CEMENT		
Ideal Basic Industries.	Mobile, AL.	Ideal Basic Industries announced that it will reopen its Mobile, AL, plant, in the second half of 1988. The plant has been idle since 1984. The fall in the dollar's value has made the cost of imported cement higher than the cost to produce it domestically. Ideal will spend \$3.1 million for modifications to the 1.5 million st/yr plant; production will be geared at two-thirds of capacity.
CLAY		
American Colloid Co.	Bentonite mining and processing facilities, eastern, Wyoming.	American Colloid Co., Arlington Heights, IL, purchased more mining and processing facilities and mineral reserves in the eastern Wyoming sodium bentonite belt from Federal Ore and Chemical Co., a wholly owned subsidiary of M-I Drilling Fluids Co., Houston, TX. M-I is a 60/40 venture between Dresser Industries Inc. and IMCO Services of the Halliburton Co. The purchase also included Federal's taconite-dedicated facility in Burnett, MN. This acquisition continues Colloid's plans to expand its customer base and add to its reserves of specialty minerals. Bentonite producers have seen a sharp drop in demand for their products, largely in the steel, foundry, and oil- and gas-well-drilling industries, and other smokestack activities because of a combination of imports, overcapacity, changing technology, and OPEC actions.
CLAYS-KAOLIN		
Engelhard Corp.	Kaolin plant, McIntyre, GA.	In December 1987, Engelhard Corp. broke ground for an \$80 million expansion of its facilities at its McIntyre, GA, plant. The expansion is expected to be completed in late 1988 and will add 300,000 st of kaolin-processing capacity.
CLAYS - LIGHTWEIGHT AGGREGATES		
Big River Industries Inc.	Manufacturing plants in Louisiana, Alabama, and Georgia.	Holdings PLC (CRH) based in Dublin, Ireland, has acquired Big River Industries Inc. (Baton Rouge, LA) for \$22 million including debt acquired. Big River is a major U.S. producer of expanded clay and/or shale lightweight aggregate with manufacturing plants in Louisiana, Alabama, and Georgia. Big River successfully barges expanded aggregates along the Mississippi River and its tributaries. CRH already owns concrete block, pipe, and aggregate operations in the United States.
CLAYS- REFRACTORIES		
Adience Equities Inc. and J. H. France Refractories Co.	Pittsburgh, PA (Adience) and Snow Shoe, PA (France).	Adience Equities Inc., Pittsburgh, PA, has agreed to a merger with J. H. France Refractories Co, Snow Shoe, PA, pending approval of both management boards. J. H. France will be operated as a subsidiary of Adience Equities. J. H. France mines and manufactures high-alumina and clay-based refractories.
COPPER		
ASARCO Incorporated.	Mission Complex, Tucson, AZ. <u>Mission (+)</u>	Asarco announced expansion at its Mission Complex to increase copper production by about 25,000 mt/yr or 46%. The current capacity is about 60,000 mt/yr. The copper concentrate output will increase from about 186,000 to about 272,000 mt/yr. Purchases will include additional open pit mining equipment and an on-line computer analysis system for the mission mill. Expected to be completed by the end of 1988, the project will cost about 13.1 million and will supply 67% of the concentrates to keep the Asarco copper smelter operating. The smelter is operating at 60% capacity.
Inspiration Consolidated Copper Co.	Miami, AZ.	Inspiration Consolidated Copper announced a \$15 million program to increase leach-solvent extraction production capacity from 100 million lb/yr to about 125 million lb/yr and reduce production costs by 5¢/lb of copper. Construction of a new solvent extraction plant, new solution transfer systems, and conversion of some cells at the tankhouse from electrorefining to electrowinning were expected to be completed by the fourth quarter of 1988.

ASARCO

Mission Mine

T. C. Osborne
Executive Vice President

December 8, 1988

VIA FEDERAL EXPRESS

Ms. Chris Lavelle, Editor
Phoenix Gazette
120 East Van Buren Street
Phoenix, AZ 85004

Dear Ms. Lavelle:

A recent Gazette news story ("Mining company finds gold in state laws") implies that ASARCO Incorporated has avoided paying fair royalties for ore removed from State land at our Mission copper mine south of Tucson. That's just not so.

At our Mission operation, we mine ore in one pit from three kinds of land: Federal land to which State severance taxes apply; State land to which the State royalty applies; and Indian lands to which royalties apply in accord with several agreements negotiated many years ago covering mineral and water rights. During the most recent ten year period up to the end of 1987, Asarco paid the State \$17.2 million in royalties on State ore from Mission. During that same ten year period, Asarco's total profit from the entire Mission operation amounted to \$50.3 million. In other words, the State school trust, without risking a single penny or meeting a single payroll, received an amount equal to 34% of Asarco's profit.

The assertion that Asarco has underreported mineral production from State land, and that we report different figures to the Securities and Exchange Commission is flat wrong. If your reporter got this information from State records, he must have mixed up Asarco with some other lessee.

The article charges that at times we have mined State ore at Mission without paying any royalties at all. That does not fit the facts, as the lowest amount we have ever paid was \$404,556 in the first full year of production twenty-two years ago when the copper price was 36¢ a pound. It is true that in the month of October 1983 royalties were disrupted when the mine and much of southern Arizona suffered catastrophic floods. But even during that year and with copper prices at low levels, we paid \$689,356.

Ms. Chris Lavelle
Phoenix Gazette
December 8, 1988
Page 2

It is confusing to call the State royalty a "fixed fee." The royalty is based on 5% of the sale value of Mission mine concentrate after deduction of State severance tax and milling cost. Mining costs are not deductible. Since the royalty is a percentage of gross revenue, the amount paid to the State trust fund rises when copper prices rise. This year (1988) with record copper prices, the trust fund is receiving record copper royalties from Asarco.

As your article points out, the broad question of the adequacy of the State leasing regulations has been in litigation for years and is currently before the U.S. Supreme Court. It would, therefore, be inappropriate for Asarco to comment on the general issues. However, I would be pleased if you would publish these statements of fact and clarification in the interest of keeping the public record straight.

Yours very truly,



Thomas C. Osborne
Executive Vice President
ASARCO Incorporated

**WALLER
& Associates**

copy in ASARCO (MISSION MINE FILE)
MS K on
News Release

PUBLIC RELATIONS

32 N. Stone Avenue • Home Federal Tower • Suite 605 • Tucson, Arizona 85701 • (602) 623-5488

CONTACT: Mike Hogan

FOR IMMEDIATE RELEASE

**\$32 MILLION CAPITAL REINVESTMENT
AT ASARCO MISSION MINE**

RECEIVED

SEP 23 1981

DEPT. MINERAL RESOURCES
PHOENIX, ARIZONA

ASARCO Incorporated, at its Mission Mine, 15 miles southwest of Tucson, is nearing the end of a 24-month, \$32 million capital reinvestment effort. The total direct and indirect impact of this expenditure on Arizona's economy is estimated to be in excess of \$100 million. By the end of 1981, six major projects will have been funded by the capital outlay. These include: modification of the molybdenum by-products plant; installation of new copper flotation cells; purchase of 20 new 170-ton-capacity Terex trucks; construction of five new truck shop bays, and the addition of solar water heat and women's facilities to the employee change house.

Increased efficiency and competitive pricing for its concentrate is the reason Mission's molybdenum flotation circuit, or by-products plant, is being modified at a cost of \$6.9 million. A 12-month construction project scheduled for completion in October of this year, it is the first major overhaul of the circuit since it was installed in 1964 at a cost of \$1.9 million.

Age and expensive upkeep mandated replacement of the copper flotation cells last year. Installation of larger, more efficient units was completed with a price tag of \$6.5 million. Capacity (volume base) was increased from 22,500 cubic feet to 30,000 cubic feet and has resulted in less down time, lower energy use, and

(more)

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improved metallurgy.

Copper ore is transported from the mine's open pit by giant Terex trucks, each weighing 117 tons and costing in excess of \$825,000. In a single trip one such truck carries up to 170 tons of material, the equivalent of 340 average-sized pickup loads. Just one of its 10.5-foot-high tires costs over \$50,000 new. Manufactured in Canada by the Terex truck division of General Motors, the giant trucks are capable of speeds up to 28 miles per hour.

Twenty of them have been purchased during the last two years, the major benefits having been greater efficiency and lower per unit operating costs. Fewer total truck runs to the pit have resulted in less wear and tear and less down time for repairs.

To provide facilities for routine maintenance of the new trucks, Asarco spent \$2 million on construction of five shop bays. Each of these "garages" measures 65 feet high and 60 feet deep with bay doors 24 feet tall by 28 feet wide. Total length of the addition is 175 feet.

Two of the Mission projects involved its employee change house. Until March of this year, female employees used temporary quarters behind the original building. A \$400,000 construction project added space to the building's east and west ends, providing full facilities and lockers for the women, a new office for mine safety operations, and additional men's lockers.

In an effort to cut change house operating costs, a solar water

(more)

B64

ASARCO Mission Mine
\$32 Million Capital Reinvestment
Page 3

heating unit was also added to the original men's facility and has been operational since late January. The \$77,000 system was supplied by SUNWORKS, a subsidiary of Asarco, and is expected to provide long-term cost savings over the original gas-fired system. A series of 40 solar energy panels totaling 828 square feet of collecting surface is the backbone of the system. As few as two of the 3' X 7' panels are adequate for heating the water supply of an average Arizona household. Should the new unit prove cost effective, the water heating system for the entire change house can be converted to solar heat.

-30-

9/22/81

B63

Arizona mine may close as copper prices ebb

By Max Jarman The Arizona Republic Oct. 26, 2002

Arizona's struggling copper industry took another blow Friday when Asarco Inc. announced it might close its Mission Mine near Tucson by the end of the year.

It would be the third Arizona copper mine to close in as many years and would leave a state that once had at least a dozen working copper mines with only five.

Asarco notified the mine's 350 employees Friday of the possible closure and said it would make a decision on the mine's fate during the next few weeks. Arizona's Worker Adjustment and Retraining Notification Act requires Asarco to give workers 60 days notice of possible layoffs.

"This is not an easy decision for us," said Clay Allen, an Asarco spokesman. "Three hundred fifty people represent 350 families."

Allen said Asarco is considering the move because of the mine's relative high production costs and the prolonged slump in copper prices. After selling for over \$1 per pound in the late 1990s, copper prices have hovered below 70 cents for much of the past two years.

The prolonged slump has created cash flow problems at Asarco, owned by Mexico City-based Grupo Mexico. Asarco is in technical fault on \$450 million in bank debt due in November and is facing resistance from the U.S. Justice Department over a possible solution. Asarco wants to sell its stake in Southern Peru Copper Corp. and use proceeds to repay the bank loans. The Justice Department has temporarily blocked the sale on the grounds it would strip Asarco of a valuable asset and leave it unable to perform environmental cleanups at closed mines.

Allen said Asarco is working with the Justice Department to complete the sale.

Allen said the Mission would not be permanently closed but put on "care and maintenance" until copper prices are sufficient to warrant reopening the mine. As a result, Asarco won't have to perform costly reclamation and environmental hazard work at the mine.

Closing the Mission would leave Arizona with five working copper mines and about 6,500 employees. In 1974, the state had a dozen copper mines that employed close to 30,000 miners.

Once a cornerstone of Arizona's economy, the state's copper industry has steadily declined due to rising production costs and cheap imports. More than 6,000 jobs have been lost in the past five years.

A year ago, Phelps Dodge closed its Miami mine and put its Bagdad and Sierrita properties on half production, cutting 790 jobs. Asarco laid off 100 miners at Mission in December and 200 at its Ray mine in July. In 1999, Australia's Broken Hill Proprietary Co. laid off 2,700 when it closed its mine in San Manuel.

The 42-year-old Mission Mine is considered a high cost operation because its ore does not lend itself to new lower cost refining methods.

*To the City of Phoenix
Mission Mine
Dedication
November
7, 1961*

Mr. Chairman - Gentlemen:

It is a privilege and a pleasure to have the opportunity to pay tribute to A. S. & R.'s distinguished and helpful part in Arizona's mining and smelting history, culminating in this marvelous Mission operation which we've seen this morning. Budgeted at \$43½ million and actually accomplished at a cost of \$34 million, it is a job so marvelous that it is going to be difficult for those with future projects to explain any excess of costs over estimates.

These fellows who have brought the Mission Project to fruition are so terrific, I'm sure that, were he living Meyer Guggenheim would be re-examining the pros and cons of mining versus ore reduction.

It is hoped that the people of Arizona, particularly of Tucson, are, or soon will become cognizant of the tremendous asset in the presence of this and the other operating companies who have found and largely created the wealth of mines in this area. It also is to be hoped that the people will treat them accordingly, because they are perishable if not fed by profits. Dr. James Douglas once wrote of profit motive thus: "This motive may seem ignoble; nevertheless, a profit is, in the last resort, the inevitable object of pursuit in our profession; and, after all, profit, legitimately earned, is the measure of our usefulness to our fellows, and their recognition of the service." These companies are deserving of such recognition.

Congratulations, Mr. Chairman, to those responsible for the outstanding Mission Project achievements. May the future of the Mine be as successful as its development to date has been.

ASARCO'S MISSION COPPER PROJECT GETS GO-AHEAD -

American Smelting and Refining Company has launched its \$43,500,000 Mission copper project, located about 15 miles southwest of Tucson, Arizona. The Board of Directors has authorized this amount to prepare and equip for production an open-pit copper mine and mill in Pima County. Operation is predicated on a yearly tonnage of 5,400,000 . . . exactly double the output of Asarco's Silver Bell property which is 40 miles northwest of Tucson.

Asarco has been exploring the area for several years by surface drill holes and a shallow shaft from which drifts and crosscuts were driven for bulk sampling and to secure metallurgical test samples. These samples proved that the ore is "simple to treat"; however, it varies greatly from very soft to very hard, depending on location in the deposit. Grade will also vary widely as the pit develops, so it will be a mining problem to maintain both tonnage and grade.

As the ore body does not crop out, it will be necessary to strip about 200 feet of unconsolidated alluvium and caliche overlying the deposit. Various methods of stripping have been considered, including bucket-wheel excavators, dragline, and shovel stripping with conveyor belts. Final decision is to use 8-yard electric shovels and 30-cubic-yard Diesel trucks.

For additional information on this project, see MINING WORLD, July and September 1957, and September 1959.

PRINTED: 03/22/2002

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES AZMILS DATA

PRIMARY NAME: MISSION MINE

ALTERNATE NAMES:

EAST PIMA MINE
MISSION COMPLEX INCLUDING UG

PIMA COUNTY MILS NUMBER: 230

LOCATION: TOWNSHIP 16 S RANGE 13 E SECTION 31 QUARTER NW
LATITUDE: N 31DEG 59MIN 23SEC LONGITUDE: W 111DEG 04MIN 15SEC
TOPO MAP NAME: TWIN BUTTES - 7.5 MIN

CURRENT STATUS: PRODUCER

COMMODITY:

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MOLYBDENUM SULFIDE
SILVER
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10/28/97

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ASARCO MISSION COMPLEX

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MOLYBDENUM SULFIDE
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P. A4, WORLD MINING , SEPT. 1977, P. 174

SAN XAVIER DEL BAC MISSION 9 MI

93

3748 II SE
R 12 E (SAN XAVIER MISSION) R 13 E

95



Mission Mine
 T. 13 E Sec. 31
 NW

Twin Buttes 7.5

14

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MISSION MINE

PIMA COUNTY

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MISSION (P) PIMA CO.

Arizona Department of Mines and Mineral Resources

Verbal Information Summary

Mine: Mission Underground
County: Pima
Location: T16S, R13E, Sec. 31

Date: Dec. 4, 2000
Engineer: Nyal Niemuth

Summary of talk presented by Peter Graham of Asarco Mission at Arizona Conference SME meeting held in Tucson on December 4, 2000.

Brief History of Mission Complex

Mission was discovered in 1955.

Stripping of overburden began in 1961.

Asarco took over Cyprus and Anamax portions of deposit in 1985 and 1987 creating Mission Complex.

In 1993 Asarco did a feasibility study for the underground mine, and developed an underground mine plan.

The North and South portals were begun within Mission open pit in 1994.

In 1996 production began.

Operation summary

The underground is producing at 3,000 TPD of 1.86% Cu. Ore and 720 TPD waste and employees 60 people in production. The mining method is a highly mechanized room and pillar. Mine surface is 3,250, elevation of south portal is 2,200 (ventilation in), and the North portal's elevation is 2,300 (ventilation exhaust). Recently developed a new lower portal called Pima. For this portal sixty horizontal holes were drilled, rebar inserted and then grouted. This preparation was designed to require less maintenance of the ground during the portal's life. Lowest underground development will be 1490' level. Underground mine areas are generally 300' both vertically and horizontally from the open pit. It's important to have good drill patterns and blast practices to produce good ground conditions and surfaces. When the South portal was removed to make way for the pits continuing expansion the steel sets and other misc. equipment were salvaged for reuse.

The underground mine's maintenance facility was located on the surface of the pit to circumvent the 8-hour underground limitation imposed by Arizona statute that existed at startup. Mine operated with no lost time accidents for most of 1998 and 1999.

Generally pump 220 GPM of water except in wet rainy periods like October 2000. Ground conditions require a lot of bolting and matting. Blasting is all done by ANFO.

Some of the underground equipment includes: a 6 yard loader cat 980, Toro 40D trucks, a Gradall scaler (dimensions are 14' wide and 14.5' tall) whose boom extends 45' along with 2 smaller ones, jumbo drills, etc. Ore is transported to the surface and dumped. Then loaded into the open pit's haul trucks.

Sampling for grade control is generally done with plastic tarps catching blast hole drill cuttings.

Recent production has been averaging 3,000 TPD at 1.4% Cu. Reserves are currently 7.5 million tons at 1.4%, about 7 years of production at present rates.

Date Printed: 12/21/93

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES

VERBAL INFORMATION SUMMARY

Information from: **Eric Olson**

Company: ASARCO Mission Complex
Address: P.O. Box 111
City, State ZIP: Sahuarita, Arizona 85629
Phone: 602-648-2500

MINE: Mission Complex Tailings

ADMMR Mine File: Mission Mine File
County: Pima
AzMILS Number: 230

SUMMARY

In the process of obtainig specification data on a number of Arizona mined products information on the Mission Mine Complex tailings was acquired.

Eric Olson of the Mission Mine's Metals Lab provided a copy of a report by American Cyanamid titled "Copper and Zinc Occurrences in a Final Tails Sample from Asarco's Mission Unit". Acopy was made for the appropriate file and added to the Geology file and database.

Ken A. Phillips, Chief Engineer Date: December 9, 1993

Pima County

ABSTRACTED FROM ADMMR ACTIVE MINES DIRECTORY, 1992

ASARCO INCORPORATED

Tucson Office

1150 N. 7th Avenue, P.O. Box 5747, Tucson, AZ 85703 - Phone 792-3010.

Southwestern Mining Department

General Manager T. E. Scartaccini
Assistant to General Manager D. F. Skidmore
Accounting Manager G. H. Myers
Chief Environmental Engineer P. J. Maley

Mining Department/Corporate Office

Assistant to Vice President A. D. Coumides
Chief Geologist S. A. Anzalone

Mineral Beneficiation Department

Director D. E. Crowell
Chief Metallurgist T. D. Henderson

Exploration Department

Manager, Western U.S.A W. L. Kurtz
Manager, Southwestern US Division J. D. Sell

Acid Sales Department

National Sales Manager G. P. Gillen

Governmental Affairs

Manager, State Legislative Affairs R. E. Quick

Safety Department

Director of Safety - Mining B. G. Brumbaugh
Director of Safety - Smelting R. Maxwell

Mission Mine T16S R12E Sec. 36

Box 111, Sahuarita, AZ 85629 - West Pima Mine Road - Phone 791-2920 -
Employees: 745 - Open pit copper mine - Two concentrators: Mission and South
with a total rated capacity of 59,000 TPD.

Manager John D. Low

Operations Manager J. B. Lichtenhan

Mine Manager S. L. Lakosky

Chief Engineer B. M. Williams

Senior Geologist R. B. Cummings

Chief Chemist C. A. Cunningham

Senior Metallurgist J. P. Reynolds

Maintenance Manager H. E. Hughes

Mill Manager, Mission C. A. Carroll

Mill Manager, South S. D. Lawrence

Accounting Manager D. J. Hoffman

Industrial Relations Manager J. F. Coxon

General Electrical Supervisor J. B. Barton

Safety Administrator R. E. Jordan

Environmental Engineer A. T. Cooper

ABSTRACTED FROM ADMMR ACTIVE MINES DIRECTORY, 1991

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Mining Department/Corporate Office

Assistant to Vice President A.D. Coumides

Chief Geologist S.A. Anzalone

Mineral Beneficiation Department

Director D.E. Crowell

Chief Metallurgist T.D. Henderson

Exploration Department

Manager, Western U.S.A. W.L. Kurtz

Manager, Southwestern US Division J.D. Sell

Acid Sales Department

National Sales Manager G.P. Gillen

Mission Open Pit Copper Mine T16S R12E Sec. 36

R12E Sec. 31

Box 111, Sahuarita, AZ 85629 - West Pima Mine Road - Phone 791-2920

- Employees: 625 - Open pit copper mine - Concentrator 40,000 TPD.

Manager

John D. Low

Superintendent - Service J.B. Lichtenhan

Mine Superintendent S.L. Lakosky

Chief Engineer M.A. Melcher

Geologist R.B. Cummings

Chief Chemist C.D. Loble

Chief Metallurgist J. P. Reynolds

Mechanical Superintendent H.E. Hughes

Superintendent C. A. Carroll

Purchasing Agent W.B. Manakee

Chief Accountant D.J. Hoffman

Personnel Administrator J.F. Coxon

Safety Administrator R. E. Jordan

Jordan

ABSTRACTED FROM ADMMR ACTIVE MINES DIRECTORY, 1990

ASARCO INCORPORATED

Tucson Office

1150 N. 7th Avenue, P.O. Box 5747, Tucson, AZ 85703 - Phone 792-3010.
Southwestern Mining Department

General Manager T.E. Scartaccini
Assistant to General Manager D.F. Skidmore
Accounting Manager G.H. Myers
Chief Environmental Engineer P.J. Maley

Mining Department/Corporate Office

Assistant to Vice President A.D. Coumides
Chief Geologist S.A. Anzalone

Mineral Beneficiation Department

Director D.E. Crowell
Chief Metallurgist T.D. Henderson

Exploration Department

Manager, Western U.S.A. W.L. Kurtz
Manager, Southwestern US Division J.D. Sell

Acid Sales Department

National Sales Manager G.P. Gillen

Mission Open Pit Copper Mine T16S R12E Sec. 36

R12E Sec. 31

Box 111, Sahuarita, AZ 85629 - West Pima Mine Road - Phone 791-2920
- Employees: 625 - Open pit copper mine - Concentrator 40,000 TPD.

Manager John D. Low
Superintendent - Service J.B. Lichtenhan
Mine Superintendent S.L. Lakosky
Chief Engineer M.A. Melcher
Geologist R.B. Cummings
Chief Chemist C.D. Lobley
Chief Metallurgist J. P. Reynolds
Mechanical Superintendent H.E. Hughes Mill
Superintendent C. A. Carroll
Purchasing Agent W.B. Manakee
Chief Accountant D.J. Hoffman
Personnel Administrator J.F. Coxon
Safety Administrator R. E. Jordan

ABSTRACTED FROM ADMMR ACTIVE MINES DIRECTORY, 1989

ASARCO INCORPORATED

Tucson Office

1150 N. 7th Avenue, P.O. Box 5747, Tucson 85703 - Phone 792-3010.

Southwestern Mining Department

General Manager T.E. Scartaccini
Assistant to General Manager D.F. Skidmore
Accounting Manager G.H. Myers
Chief Environmental Engineer P.J. Maley

Mining Department/Corporate Office

Assistant to Vice President A.D. Coumides
Chief Geologist S.A. Anzalone

Mineral Beneficiation Department

Director D.E. Crowell
Chief Metallurgist T.D. Henderson

Exploration Department

Manager, Western U.S.A. W.L. Kurtz
Manager, Southwestern US Division J.D. Sell

Acid Sales Department

National Sales Manager G.P. Gillen

Mission Open Pit Copper Mine

T16S R12E Sec. 36

Mission Concentrator

T16S R12E Sec. 31

Box 111, Sahuarita 85629 - West Pima Mine Road - Phone 791-2920 -
Employees 555 - Open pit copper mine - Concentrator 42,000 TPD.

Manager John D. Low
Superintendent - Service J.B. Lichtenhan
Mine Superintendent S.L. Lakosky
Chief Engineer M.A. Melcher
Geologist R.B. Cummings
Chief Chemist C.D. Lobley
Chief Metallurgist J. P. Reynolds
Mechanical Superintendent H.E. Hughes
Mill Superintendent H.W. Walker
Purchasing Agent W.B. Manakee
Chief Accountant D.J. Hoffman
Personnel Administrator J.F. Coxon
Safety Administrator R. E. Jordan

ABSTRACTED FROM ADMMR ACTIVE MINES DIRECTORY, 1988

ASARCO INCORPORATED

Tucson Office

1150 N. 7th Avenue, P.O. Box 5747, Tucson 85703 - Phone 792-3010.

Southwestern Mining Department

General Manager T.E. Scartaccini
Assistant to General Manager D.F. Skidmore
Accounting Manager G.H. Myers
Chief Environmental Engineer V.C. Martz

Mining Department/Corporate Office

Assistant to Vice President A.D. Coumides
Chief Geologist S.A. Anzalone

Mineral Beneficiation Department

Director D.E. Crowell
Chief Metallurgist T.D. Henderson

Exploration Department

Manager, Western U.S.A. W.L. Kurtz
Manager, Southwestern US Division J.D. Sell

Acid Sales Department

National Sales Manager G.P. Gillen

Mission Unit

Open Pit Copper Mine
Concentrator

T16S R13E Sec. 31
T16S R12E Sec. 36

Box 111, Sahuarita 85629 - West Pima Mine Road - Phone 791-2920 - Employees
433 - Open pit copper mine - Concentrator 42,000 TPD.

Manager B.K. Malone
Superintendent - Service J.B. Lichtenhan
Mine Superintendent S.L. Lakosky
Chief Engineer M.A. Melcher
Geologist R.B. Cummings
Chief Chemist C.D. Lobley
Chief Metallurgist C.A. Carroll
Mechanical Superintendent H.E. Hughes
Mill Superintendent H.W. Walker
Purchasing Agent W.B. Manakee
Chief Accountant D.J. Hoffman
Personnel Administrator J.F. Coxon
Safety Administrator P.J. Maley

Silver Production from the Mission Mine

- ASARCO -

	<u>AG (Troy ounces)</u>	<u>AG (oz/ton)</u>
1977	290,000	0.12
76	407,000	0.12
75	292,000	0.10
74	511,000	0.14
73	571,000	0.16
72	465,000	0.12
71	489,000	0.13
70	624,000	0.13
1969	660,000	Not reported
68	496,000	Not reported
67	Not reported	Not reported
66	Not reported	Not reported
65	Not reported	Not reported
64	Not reported	Not reported
63	Not reported	Not reported

Source: Company annual reports
9-14-78

The Pima and Mission pits continue to look like one large open pit. GWI QR Oct-Dec '71

Pima and the Mission projects continue producing full blast. GWI QR Jan.-March '72

The Mission continued usual production. Apparently some negotiation is going on regarding the mining of the Eisenhower ore body adjoining the Mission mine. GWI 4 1/2 '72

Active Mine List 1972 (1971 figures 6,724,900 T Ore, 20,028,600 T Waste, 40,600 T Cu
Empl. 700

MG WR 3/13/80: Visited Mission, Pima, Sierrite and Twin Buttes Mines. The Mission Mill is operating at capacity, treating ore mined at the Mission, Palo Verde, and San Xavier pits. ASARCO would mine and mill more ore but its allotment of water from the State prohibits increased milling.

MG WR 1/17/86: Visited the Mission mine (Pima Co) and donated Directory of Active Mines. ASARCO began mining in the Pima pit during October, 1985. The mill at the Mission property is operating at capacity, 29,000 TPD.

MG WR 1/9/88: Attended quarterly fieldtrip of the Arizona Section -AIPG. Attendance was about 15. We toured the Mission Mine (file) Pima County and concentrator. The old Pima mine, the Mission and the Palo Verde (Eisenhower) are basically mega-pit now. An expansion at the mill may increase its capacity to about 45,000 tons per day.

RRB WR 6/24/88: Visited the Mission Units of Asarco to gather information for Copper Report. Bruce Malone, Manager gave me a comprehensive tour of the property. They are increasing the capacity of the mill by lengthening the existing ball mills by two feet and by bringing in two more ball mills and a regrind ball mill from the Sacaton Unit. Existing flotation cells will all be roughers and six column cells 8 X 52 feet will be installed as cleaner cells. Although pit is now all under Asarco there is still a complex bookkeeping job to distribute royalties among the Indians, state, Cyprus, Anamax, etc. Some ore is mined each year from the San Xavier North Pit and is blended with and reported as Mission Complex production.

MISSION MINE

PIMA COUNTY

Active Nov. 1967

The Mission unit of Asarco operated for a short period for the mill during the strike, storing concentrates at their Rillito railhead, near their mill plus a large pile of precipitates at Silver Bell. GWI QR 4-1968

Active Mine List April 1968 - 575 men

The Mission mine in production. GWI QR 6-1968

Copper production - the Mission mine at 25,000 tpd, nominal capacity. GWI Annual Report 7-1968

Active Mine List Oct. 1968 - 555 men

Asarco Mission is mining at a 25,000 tpd rate. It is reported that the flux pit on the reservation produces at about 1,000 tpd. GWI QR 3-1969

Active Mine List April 1969 - 606 men - P.A. Lewis, Supt., P.O. Box 5605, Tucson

The Mission mine was operating at capacity. GWI QR 9-1969

Active Mine List Oct. 1969 - 607 men - P.A. Lewis, Supt.

The Pima and Mission pits were becoming one as the remaining rock between them was being mined. GWI QR 4-1-70

Active Mine List May 1970 - 607 men - P.A. Lewis, Supt.

The Pima and Mission Pits are beginning to look like one operation with the removal of the rock between the two operations. GWI QR 6-30-70

Mission and Pima continue to become one pit for all appearances. GWI QR 10-1-70

Active Mine List Oct. 1970 - 659 men - P.A. Lewis, Supt.

Asarco is being sued by the Papago Indians who claim that Asarco has not diligently proceeded with mineral development adjoining the Mission Mine. GWI QR 4-1-71

Dir. of Mining - August 1971 - Mission Unit - 700 men.

Mine visit. Mission, Pima-Pit View Area. GWI WR 9/21/71

Mission at Capacity. GWI QR 9/71

MISSION MINE

PIMA COUNTY
TWIN BUTTES AREA
PIMA DIST.

ASARCO STRIPS MISSION, PLANS \$17-MILLION MILL

Overburden stripping has begun at American Smelting & Refining Co's new Mission Project, on a porphyry copper deposit 15 miles southwest of Tucson, Ariz.

Production is expected in early 1962 from the \$43.5-million plant, which will include a \$17-million concentrator for 15,000-tpd ore throughput. Some 45,000 tons of metal per year will be the final product, with concentrate going from the Western-Knapp Engineering Co.-designed mill to Asarco's Hayden, Ariz. smelter. Mill construction was to begin March 1, with completion due in September 1961.

From ENGINEERING & MINING JOURNAL March 1960, p 22

ASARCO MODERNIZES SMELTER
TO PREPARE FOR MISSION OUTPUT

The American Smelting & Refining Co. is modernizing its Hayden Smelter at Hayden, Arizona, preparing for the time that copper production from the Mission Project mine becomes available. Target date for production from Asarco's Mission mine is the spring of 1962. The Fisher Contracting Co. of Phoenix, Arizona, has the contract for the modernization program on which work began a few weeks ago. (See MINING WORLD, Aug. 1960, p 26).

Some new equipment for dust collecting is being installed at the smelter, and the capacity of the power plant is being increased. In addition, the smelting furnace is being rehabilitated and modernized, and some of the wornout equipment will be replaced. No appreciable expansion of smelting capacity is planned at this time.

Asarco's Hayden plant started production in 1912. Changes made during the ensuing 50 years are said to have given the plant an annual capacity of about 300,000 tons of ore and concentrates. For many years the Hayden smelter handled the production from the Ray Mines Division of Kennecott Copper Corp. under a long-standing smelting agreement. That agreement ended August 31, 1958., when Kennecott's own smelter at Hayden went on a full production basis. Since then, Asarco's plant has operated on a straight custom basic and on production from its own Arizona mines.

Taken from MINING WORLD, April, 1961, p 28.

B66

MISSION PROJECT

PIMA COUNTY
TWIN BUTTES AREA

WESTERN-KNAPP ENGINEERING CO. OF SAN FRANCISCO, CALIF., has been awarded a contract to design and engineer the 15,000 tpd copper flotation concentrator for American Smelting and Refining Co.'s Mission Project near Tucson (E&M.J. Sept. p 18). Cost of the total project has been estimated at over \$40, million.

Estimates are that the annual through-put of the mill is to be 5.4 million tons, producing approximately 45,000 tons of copper per year. E.H.Scheick, project engineer for Asarco, will work with WKE.

The total project, including construction, is scheduled for completion in approximately two and one-half years.

Taken from ENGINEERING AND MINING JOURNAL - November, 1959

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine Mission Mine. (American Smelting & Refining Company)
District Pima
Subject: Visit to mine and information from Superintendent P. A. Lewis

Date November 18, 1966
Engineer G. W. Irvin

REFERENCES See previous reports. Also PAY DIRT page 4, Col. 3 November 66

The Company hopes to have mine production up to 25,000 TPD by next April. The strike at Westinghouse, may delay this because of some critical switchgear that is on order. Oth rwise plans are progressing satisfactorily.

The test pit at North San Xavier Unit is now a scraper cut about 60' in depth. A few hundred tons of ore have been mined and will be batch tested in a test plant set up at the mine. The ore is siliceous, but will probably have to be a batch leaching process instead of heap leaching.

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine MISSION MINE Date June 2, 1966
District PIMA DISTRICT- PIMA COUNTY Engineer G. W. Irvin
Subject: Mine visit. Information from Mr. P. A. Lewis, General Supt.

Present Mining Activity- See previous reports. Approximately 20,000 TPD. Removal of the old Pima Dump to the west of the pit will soon be started. The waste and ore between the Mission, and the Pima mine will be mined by both companies.

The original Euclid trucks now have approximately 25,000 hours of operating time and will be replaced by 85 ton KW Darts.

By April 1967 production is expected to average somewhat less than 30,000 TPD depending upon the hardness of the ore and resultant mill limitations.

Mill Construction- The grinding circuits are being increased by 50%, the same applies to the tailing thickner capacity. One more is being added to the original two. Another tailings pond is being added.

Note: Mr. Lewis took FE on a trip thru the Pit, new construction areas and the rest of the property.

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine Mission Mine

Date March 10, 1965

District Pima District, Pima Co.

Engineer Axel L. Johnson

Subject: Mine Visit. Information from P.A. Lewis

References: Report of Aug. 28, 1964 & previous reports.

Present Mining Activity: Both mine and mill working 3 shifts - 7 days per week. Production averages about 21,000 tons per day. This production comes from 6 benches - 2890, 2850, 2810, 2770, 2730 and 2690 benches.

A total of 561 were employed on all the operations, including mine, mill, shops, offices, and salaried personnel as of March 1, 1965.

By-Products Plant: The By-Products plant constructed on contract to Western Knapp Construction Co. was finished the last part of September, 1964, and operation of the plant was started in October. However, not much production was obtained from the plant until December and January, because the area which was mined at the time contained very little molybdenum and zinc. Since the molybdenum and zinc areas of the mine are very spotty, the molly plant is operated only part of the time when the ore mined contains a certain amount of molly, and the zinc plant is also operated only when the ore has a certain amount of zinc. It is expected that a paper on the By-Products plant will be presented at the American Mining Congress annual convention in Las Vegas, Nev. - Oct. 11-14, 1965. This paper will include the construction, general flow sheet and operation of the plant.

DEPARTMENT OF MINERAL RESOURCES

STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine Mission Mine

Date May 13, 1964

District Pima District, Pima Co.

Engineer Axel L. Johnson

Subject: Mine Visit. Information from P.A. Lewis

References: Report of Sept. 27, 1963 & previous reports.

Owners & Operators: American Smelting & Refining Co., Mission Unit, P.O. Box 111, Sahuarita, Ariz.
'P.A. Lewis, Superintendent
'J.J. Sense, Asst. Superintendent
'Roy H. Herde, Mine Superintendent
'J.D. Vincent, Mill Superintendent
'C.W. McClain, Master Mechanic
'S.L. Tainter, Chief Engineer
'Sal Anzalone, Resident Geologist
'Art Schaefer, Safety Engineer

Principal Mineral: Copper

Present Mining Activity: Both mine and mill are operating 3 shifts - 7 days per week. Production averages about 21,000 tons per day. This production comes from 6 benches - from the 2930 bench to the 2730 bench.

A total of 536 men are employed on all the operations, including mine, mill, shops, and offices.

Mining Operations: Substantially the same as shown in report of Sept. 27, 1963, except that 4 new 65 ton trucks have been added.

The following shovels are in use: 2 Bucyrus Erie - 190B
3 P & H 1800
1 P & H 1900

The following truckes are now in use:
35 - 60 ton Euclid trucks
6 - 55 ton K-W Dart trucks
1 - 65 ton K-W Dart truck
5 - 65 ton LeTourneau-Westinghouse trucks

Additions to Mill: A by-products plant is now being constructed on contract to Western Knapp Construction Co. This is to be used primarily for the purpose of recovering the molybdenum, and also to recover some lead and zinc.

The plant is composed of 1 ball mill, 1 regrind ball mill, flotation cells, filters, etc. Construction was started on Feb. 1, 1964, and the plant will be ready for operation about Sept. 1st.

Additions to Mine Plant: The change house has been enlarged, and 200 more lockers have been installed.

3 bays have been added to the shop.

DEPARTMENT OF MINERAL RESOURCES

STATE OF ARIZONA

FIELD ENGINEERS REPORT

Mine Mission Mine

Date Sept. 27, 1963

District Pima District, Pima County

Engineer Axel L. Johnson

Subject: Field Engineers Report. Information from R.B. Meen, Superintendent.

References: Report of Dec. 21, 1963 & previous reports

Present Mining Activity: Mill operates 3 shifts - 7 days per week.
Mine operates 3 shifts - 6 days per week.
Production about 23,000 tons per day.

A total of 450 men are employed on all the operations, including mine, mill, shops and offices.

Mining Operations: Substantially the same as shown in report of Dec. 21, 1962 with production increase as noted.

6 - 60 ton Euclid trucks, 1 - 65 ton K-W Dart truck and 1 - 65 ton LeTourneau-Westinghouse truck, were purchased by the company and put into operation to provide this increase in production.

The following trucks are now in use:

- 35 - 60 ton Euclid trucks
- 6 - 55 ton K-W Dart trucks
- 1 - 65 ton K-W Dart truck
- 1 - 65 ton LeTourneau-Westinghouse truck

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine Mission Mine Date July 26, 1961
District Pima District, Pima County Engineer Axel L. Johnson
Subject: Field Engineers Report. Information from R. B. Meen Superintendent.

References Report of Feb. 1, 1961

Present Mining Activity

- (1) Stripping of overburden ---- 3 shifts, 6 days per week.
 - (2) Mining ore and hauling to the mill --- 1 shift, 6 days per week.
 - (3) Milling ore --- part time at present --- to start 3 shifts, 7 days per wk. as soon as mill is fully completed next month.
 - (4) Mill construction by Western-Knapp Engineering Co. is still continuing, but will be finished next month.
- 220 men are now working on the mining operation, and 45 men are employed on supervisory duties and office work. In addition, 50 men will be employed in the mill, when the mill goes on full time.

Stripping Operations

Stripping of the overburden is continuing, but almost all the pre-mine stripping is now completed.

The stripping equipment is the same as shown on my last report (Feb. 1, '61). The bottom level of the mine is now the 280 foot level, at an elevation of 2930.

Stripping is continuing on 3 shifts, with 2 shovels working on each shift.

Ore Mining Operations

Ore is now mined on 1 shift, 6 days per week, with 2 shovels working, and hauled to the mill for milling.

Benches are 40 ft. apart. 12" blast holes are drilled with Reichdrill rotary drills to a depth of 50 ft.

Carbomite, manufactured by Apache Powder Co. and also prilled ammonium nitrate are used as explosives.

A thin layer of oxidized ore, from a few inches to 2 ft. thick, is found on the top of the ore body. Some of this will be run through the mill, and the remainder, not amenable to milling, will be dumped on a separate stock pile.

6 more trucks are on order to supplement the present fleet of trucks. The new trucks ordered are Kenworth-Dart, Model 50 T of 55 ton capacity.

Milling Operations

Mr. Meen reports that the mill is practically completed and that Western-Knapp Engineering Co. is now putting on the finishing touches to the mill. Western-Knapp will be finished with this work next month, and will be pulling out.

At present, the mill is running part time from the ore being mined in the pit, but will go on 3 shifts, 7 days per week, as soon as the mill construction is fully completed. The full capacity of the mill is 15,000 tons per day. No molybdenum circuit was installed, but is being considered as a future installation.

Concentrates will be shipped to the A. S. & R. smelter at Hayden, Ariz.

Buildings

2 more offices are being constructed to take care of the office personnel.

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine Mission Mine

Date Feb. 1, 1961

District Pima District, Pima County

Engineer Axel L. Johnson

Subject: Field Engineers Report. Information from R. B. Meen, & T. A. Snedden, & Pers. Visit.

References Report of Aug. 16, 1960

Present Mining Activity (1) Stripping of overburden --- 3 shifts, 6 days per week. 225 men working on the stripping operation, with an additional 45 men on supervisory duties and in the office, making a total of 270 men employed by the A. S. & R.

(2) Construction of a 15,000 ton mill by the Western-Knapp Engineering Co. of San Francisco on contract. Work is carried on one shift, 5 days per week. A total of 560 men are now employed by Western-Knapp on mill construction. Mill is reported to be about 60 % completed.

Stripping Operations The stripping equipment consists of the following:

- 3 - P & H Model 1800 electric shovels (9 cu. yd.) manuf. by Harnischfeger Co.
- 2 - Bucyrus Erie Model 190 B electric shovels (9 cu. yd.)
- 3 - S - 18 Euclid Scrapers
- 29 Euclid trucks, LLD model - 60 tons capacity.
- 2 - Reichdrill Rotary drills, model C-850 (12") manuf. by Chicago Pneumatic Tool.

Approximately 200 feet of alluvial material, and about 100 feet of waste rock will have to be removed to uncover the ore body. The average depth of the pit is now a little over 200 feet, with one shovel working on the 240 ft. level, 3 shovels on the 200 ft. level, and one shovel on the 150 ft. level. The depth of the benches are 50 ft. down to the 200 ft. level, and will be 40 ft. below the 200 ft. level. Some oxidized ore material is now being removed by the shovel working on the 240 ft. level. Some of this material is now being stockpiled for possible future leaching.

12" blast holes are being drilled with the Reichdrill rotary drills to a depth of 55 ft. on the 50 ft. benches, and to depth of 50 ft. on the 40 ft. benches. Carbomite, manufactured by Apache Powder Co., is used as explosive.

Stripping is scheduled for completion on Sept. 1, 1961.

Milling & Marketing See report of Aug. 16, 1960.

No molybdenum circuit is being installed in the mill at the present time. It may be installed later if required.

Mining Officials

Officials of the Mission project are viz.:

- R. B. Meen, Superintendent
- P. A. (Al) Lewis, Asst. Superintendent
- Chief engineer ---- Stanley Tainter
- Mill Supt. ----- J. D. Vincent
- Mine Supt. ----- J. J. Sense
- Project Engineer -- W. R. Mahoney

Address Address is P. O. Box 111, Sahuarita, Ariz. Tel. No. -- AX 4-3491

DEPARTMENT OF MINERAL RESOURCES

STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine Mission Mine

Date Aug. 16, 1960

District Pima District, Pima County

Engineer Axel L. Johnson

Subject: Field Engineers Report. Information from P. A. (Al) Lewis, Asst. Supt. & Pers. Visit.

Location About 18 miles south of Tucson (22 miles by road). Drive south from Tucson on the Tucson-Nogales road for 16 miles to "Pima Mines" sign. Turn right (west) and drive about 6 more miles to the mine.

Number of Claims The A. S. & R. Co. leases and owns approximately 24 sections of land, over 15,000 acres, in the area. The largest amount of this is leased from the San Xavier Indian Reservation, administered by the Papago Indian Reservation Tribal Council at Sells, and from individual Papago Indian land owners. A large amount, however, lies south of the San Xavier Indian Reservation on both Federal and State lands. A large number of these claims were located directly by the American Smelting and Refining Co., on both Federal and State lands. Some claims, also, have been purchased outright from individual claim owners, and some are held on option from private locators. The offices, shops, mill, and the present pit location are all located south of the County road, and south of the San Xavier Indian Reservation land.

Owners and Operators American Smelting and Refining Co., 813 Valley National Bank Bldg., Tucson, Ariz. --- T. A. Snedden, Manager, SW Division
R. B. Meen, Superintendent, Mission Unit
P. A. (Al) Lewis, Asst. Superintendent, Mission Unit.

Principal Minerals Copper

Present Mining Activity (1) Stripping of overburden -- 3 shifts, 6 days per week --- 210 men working on the stripping operations, with an additional 40 men on supervisory duties and in the office ---- a total of 250 men employed by the A. S. & R. Co.

(2) Construction of a 15,000 ton mill by the Western-Knapp Engineering Co., 650 - 5th St., San Francisco, Calif. on contract, working one shift, 5 days per week. A total of 485 men are now employed with the Western-Knapp Co.

A total of 95,000 to 100,000 tons of stripping is excavated each working day.

Milling & Marketing The ore will be milled in the 15,000 ton mill now under construction. The mill may have a molybdenum circuit for saving the molybdenum found in small quantities in the ore. The mill is scheduled for completion on Sept. 1, 1961. The mill foundations are now well along, and the work progressing on ~~schedule~~ schedule. Water for the milling operations will be obtained from 3 company wells in the Santa Cruz valley, 7 miles from the mill site. An 18" pipe line has been installed from the wells to the mill, and is already in use. A railroad spur has been laid by Southern Pacific Railroad from the S. P. main line to the mine and mill site, and is already in use. The concentrates will be shipped to the ASR smelters at Hayden and El Paso.

Past History The A. S. & R. Co. began exploration of the area about 1954, and over 300 drill holes were sunk to determine the grade of ore and extent of the ore body.

In May, 1957, the company obtained exclusive prospecting rights on the San Xavier Indian Reservation lands with a bid of \$ 1, 066, 007 to the Papago Indian Reservation and individual Papago Indian land owners in the reservation. This gives the company exclusive rights to prospect the area, and contains a provision that a lease will be given to the A. S. & R. Co. after the commencement of mining operations in the area. According to Mr. T. A. Snedden, this lease will be negotiated according to the grade of ore mined, with a maximum of 10 % royalty.

B5

Mission Mine (continued)

Aug. 16, 1960

Pima District, Pima County

Axel L. Johnson

Field Engineers Report.

Past History (continued)

Stripping of overburden was started on a small scale in Aug. 1959, and operations have gradually increased since that time. The first shovel went into operation in Dec. 1959, the second shovel was started in Jan. 1960, and the third shovel began digging in Feb. 1960.

Present Mining Operations The stripping equipment consists of the following:

- 3 -P & H model 1800 electric shovels (9 cu. yd.) manf. by Harnischfeger Co.
- 2 -Bucyrus-Erie model 190 B electric shovels (9 cu. yd.)
- 3 - S-18 Euclid Scrapers
- 29 - Euclid Trucks, LLD model - 60 ton capacity.

2 Reichdrill Rotary drills, model C-850 (12") manuf. by Chicago Pneumatic Tool. Four shovels are now working in the pit, and a 5th shovel will be in operation by Oct. 1. Operations are carried on an 8 shovel shifts per day basis--- 3 shovels on day shift, 3 on swing shift, and 2 on grave yard. Blasting is required to loosen the hard overburden, prior to excavation. 12" blast holes are drilled with the Reichdrill rotary drills to a depth of 55 ft., providing for 50 ft. benches. Carbomite, manufactured by Atlas Powder Co. is used for explosive.

The waste overburden is hauled to the waste dumps in the Euclid trucks. Two waste dumps are in use --- one south of the San Xavier Indian Reservation, and one on the reservation, north of the County road forming the southern boundary of the reservation. The county is now constructing an overpass on this road, a short distance west of the pit, which will allow the company trucks to pass under the county road without any traffic hazards.

The A. S. & R. Co. pays royalty to the Papago Indian Council for the areas used for stripping dumps (later on tailings). Later, when there is ore production on the reservation lands, a lease will be negotiated, as described in previous paragraph.

The present pit, now being excavated, is not on the San Xavier Indian Reservation, but is located a short distance south of it, and south of the County road, forming the boundary.. It now comprises an area over 1/2 mile long & slightly less than 1/2 mile in width. The average depth of the pit is now about 100 ft., and excavation on the 150 ft. bench has just been started. An average of 200 ft. of overburden will have to be removed to uncover the ore. It is expected that ore mining will be started some time before Sept. 1, 1961, the scheduled time for mill completion, and the ore will be stockpiled until the mill is completed. When ore mining and milling starts, the pay roll will be increased by an additional 100 men ---- from 250 to 350.

Buildings Besides the 15,000 ton mill under construction by Western-Knapp Engr. Co., the followings buildings have been completed:

- Office building
- Change House and First Aid building
- Warehouse
- Shops
- Tire shop
- Lubricating center.

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine Mission Unit

Date Jan. 21, 1960

District Pima District, Pima County

Engineer Axel L. Johnson

Subject: Field Engineers Report. Information from R. B. Meen, et. al. & personal visit.

Location About 18 miles S. of Tucson (23 miles by road). Drive S. from Tucson for about 16 miles to the Pima Mine road, 2 miles N. of Sahuarita. Turn right (west) and drive about 7 miles to the mine.

Number of Claims Approximately 24 sections of land, or 15,423 acres.

Owners & Operators American Smelting & Refining Co., 813 Valley National Bank Bldg., Tucson, Ariz. ----- R. B. Meen, Superintendent, Mission Unit.

Principal Minerals Copper

Present Mining Activity Stripping of overburden. About 100 men working. Operations carried on 3 shifts per day.

Milling & Marketing It is planned to construct a 15,000 ton mill on the property. The construction work will be done by the Western-Knapp Engineering Co., 650 - 5th St., San Francisco, Calif. on contract. Water for the milling operations will be obtained from company wells near the Santa Cruz River, about 7 miles from the mill. An 18" water line is now being laid, extending the 7 miles from the wells to the mill location.

Past History A. S. & R. Co. began exploration of the ^{area} ~~property~~ about 1954, and over 300 drill holes were put down to determine the quality and extent of the ore body.

In May, 1957, the company won exclusive prospecting rights, when it made a bid of \$ 1, 066, 007 to the Papago Indian Reservation and individual Papago land owners for the prospecting rights, with a lease to follow after commencement of mining operations. According to T. A. Snedden, this lease will be negotiated according to the grade of ore mined, with a maximum of 10 %X royalty.

Stripping of the overburden was started on a small scale in August, 1959, and operations have been gradually increased since that time. The first shovel went into operation in December, the second shovel was started on Jan. 18, and the third ~~shovel~~ will go into operation in 3 or 4 weeks.

Present Mining Operations The A. S. & R. Co. is doing the stripping with the use of their own personnel and equipment. Their equipment consists, at present, of 4 electric shovels of 9 cu. yd. capacity, 3- S 18 Euclid Scrapers of 21 cu. yd. capacity, and several ore trucks, with several more ore trucks on order. Only 2 shovels are in use at the present time, one working 3 shifts and the other ~~one~~ one shift. Operations will be expanded soon to 7 shovel shifts per day, compared to the present 4. The Euclid Scrapers, now in use, will be replaced by trucks, as soon as these trucks are delivered by manufacturer.

Blasting is required to loosen the hard overburden, prior to excavation. The blast holes are drilled with 9" Rotary drills to a depth of 55 ft. for 50 ft. benches. Ammonium nitrate with primacord is used for the blasting.

The pit is now down to a depth of 40 to 50 ft. Eventually, about 200 ft. of overburden will have to be removed to uncover the ore body.

The concentrates will be shipped to the A. S. & R. smelters at Hayden & El P. A spur railroad track will be laid from the S. P. tracks at the Nogales Highway to the mine.

The company has constructed an administration building, a warehouse and a truck repair shop. Other buildings, including the main shops, are in process of construction.

Proposed Plans To start ore production in 1962, with an approx. production of 15,000 tons per day.

Mission PIMA

Handwritten initials and numbers: "On 1", "K", "Jeff", and "H..."

NOTICE OF THE PRELIMINARY DECISION TO ISSUE AN INDIVIDUAL AQUIFER PROTECTION PERMIT

Pursuant to Arizona Administrative Code (A.A.C.), Title 18, Chapter 9, Article 1, the Director of the Arizona Department of Environmental Quality intends to issue an individual Aquifer Protection Permit (APP) to the following applicant:

Public Notice No. 97-98AZAP
ASARCO Mission Complex

On or about
October 9, 1998
Arizona Daily
Star & Tucson
Citizen

ASARCO Incorporated
Mission Complex
4201 W. Pima Mine Rd.
P.O. Box 111
Sahuarita, AZ 85629

Aquifer Protection Permit No. P-100508

The ASARCO Incorporated, Mission Complex is located approximately 15 miles south of Tucson in Sahuarita, Pima County, Arizona in portions of Sections 35 and 36 of Township 16S, Range 12E; Sections 31, 32, 33, and 34 in Township 16S Range 13E; Section 1 and portions of 2 and 12 in Township 17S Range 12E; and Sections 3, 4, 5, 6, 7, 8, 9, 10, and 15 in Township 17S, Range 13E of the Gila and Salt River baseline and meridian.

The Mission Complex consists of tailing impoundments, waste rock deposition areas, an open pit, concentrators, and other facilities. The Mission Complex extracts and processes copper ore from open pit and underground mines and operates two mills, the Mission Mill and the South Mill. The operations are capable of processing in excess of 60,000 tons of ore per day. The output produced by the Mission Complex is a copper concentrate which is shipped off-site for final processing.

The permit and technical documents are available for public review Monday through Friday 8:00 a.m. to 5:00 p.m. at the Arizona Department of Environmental Quality, 3033 N. Central Avenue, Records Management Center, Lower Level, Phoenix, AZ 85012. Please call 207-4378, 24 hours in advance, to schedule an appointment to view the file. Persons may submit comments or request a public hearing on the proposed action, in writing, to Tony Bode, ADEQ, at 3033 N. Central Avenue, Phoenix, AZ 85012 within thirty (30) days from the date of this notice. Public hearing request must include the reason for such request.

For further information contact Tony Bode, Environmental Program Specialist, Aquifer Protection Program, Arizona Department of Environmental Quality at 1-800-234-5677, extension 2255 or 1-602-207-2255.

Mission (P) Pima Co.

or HMC

**NOTICE OF THE PRELIMINARY DECISION TO ISSUE AN
INDIVIDUAL AQUIFER PROTECTION PERMIT**

Pursuant to Arizona Administrative Code (A.A.C.), Title 18, Chapter 9, Article 1, the Director of the Arizona Department of Environmental Quality intends to issue an individual Aquifer Protection Permit (APP) to the following applicant:

Public Notice No. 40-97AZAP
Tailing Facility No. 4

On or about
July 9, 1997
Arizona Daily Star
& Tucson Citizen

ASARCO Incorporated
Mission Complex
4201 W. Pima Mine Rd.
P.O. Box 111
Sahuarita, AZ 85629

Aquifer Protection Permit No. P-100508

Tailing Facility No. 4 is located in Sahuarita, Arizona, Pima County. The impoundment lies within Township 16 South, Range 13 East, Sections 33 and 34 E½; and Township 17 South, Range 13 East, Section 3; E½ of the Gila and Salt River Baseline and Meridian.

Tailing Facility No. 4 is a proposed base metal tailing facility that will receive tailing, in a slurry form, from the ASARCO, Mission Complex concentrators. The capacity shall be approximately 309 million tons (dry weight). Placement of tailing in Tailing Facility No. 4 is scheduled for approximately 30 years.

The No. 4 Tailing Facility is the only facility to be constructed, operated, and closed under this individual Aquifer Protection Permit. The existing facilities at the ASARCO - Mission Complex, including the facilities located on San Xavier Indian Community land, will be added to this permit under an area-wide permit provision pursuant to Arizona Revised Statutes (A.R.S.) § 49-243.P.

The design, construction, and operational activities conducted under the Aquifer Protection Permit specifically address the discharging facility. Specific information regarding design, construction, operation, and closure activities for the facility can be found in Part II of the permit.

The permit and related file are available for public review Monday through Friday, 8:00 a.m. to 5:00 p.m., at the Arizona Department of Environmental Quality, Aquifer Protection Program Section, Mining Unit, 3033 N. Central Avenue, 4th Floor, Phoenix, Arizona. If you would like additional information, please contact Tony Bode at (602) 207-2255, or the Mining Unit secretary at 207-4692.

Persons may submit written comments or request a public hearing in writing, to Tony Bode at ADEQ, Aquifer Protection Program Section, Mining APP Unit, 3033 N. Central Avenue, Phoenix, AZ 85012 within 30 days from the date of this notice. Public hearing requests must include the reason for the request.



Mission (A)

84018229
Taylor

Office of State Mine Inspector

705 West Wing, Capitol Building
Phoenix, Arizona 85007
602-255-5971

NOTICE TO ARIZONA STATE MINE INSPECTOR

In compliance with Arizona Revised Statute Section 27-303*, we are submitting this written notice to the Arizona State Mine Inspector (705 West Wing, Capitol Building, Phoenix, Arizona 85007) of our intent to start/stop (please circle one) a mining operation.

COMPANY NAME Longyear Company

CHIEF OFFICER Allen Krause

COMPANY ADDRESS 7773 W. Seldon Lane, Peoria, Az. 85345

COMPANY TELEPHONE NUMBER (602) 486-1881

MINE OR PLANT NAME Mission Mine

MINE OR PLANT LOCATION (including county and nearest town, as well as directions for locating by vehicle)

Sahuarita, Arizona

TYPE OF OPERATION Drilling PRINCIPAL PRODUCT Unknown

STARTING DATE 9-26-88 CLOSING DATE Unknown

DURATION OF OPERATION Unknown

PERSON SENDING THIS NOTICE Allen Krause, Manager

TITLE OF PERSON SENDING THIS NOTICE Manager, Southwestern Zone Contract Drilling Division

DATE NOTICE SENT TO STATE MINE INSPECTOR 9-15-88

*A.R.S. Section 27-303 NOTIFICATION TO INSPECTOR OF BEGINNING OR SUSPENDING OPERATIONS: When mining operations are commenced in any mine or when operations therein are permanently suspended, the operator shall give written notice to the inspector at his office prior to commencement or suspension of operations.



Mission Unit (P)

16th Kelly
mountain states mineral enterprises, inc.

4370 South Fremont Ave.
Tucson, Arizona 85714
(602) 792-2800
Telex: TWX 5106007949
ELN 62914139

APR 19 1988

87204095
10176000
7/1/88

April 19, 1988

State Mine Inspector
1616 West Adams, Suite 111
Phoenix, AZ 85007-2627

Subj: Notice of Start of a Mining Project
Mission Unit Mill Expansion 1988
3076-MLO-006, File 8.2

Gentlemen:

Mountain States Mineral Enterprises (MSME), on or about the date of this letter, intends to start construction work on the ASARCO Mission Unit Mill Expansion.

The ASARCO Mission Unit Mill is located in Pima County, 20 miles southwest of Tucson, Arizona. Mission Unit Mill is reached by driving south on I-19 to Pima Mine Road and then west 3 miles on said road.

The task assigned to MSME is to Engineer and construct an expansion to an existing mine/plant facility. The project will run from March 1, 1988 through December 31, 1988.

Yours truly,

Stephen F. Munsell
Project Manager
for
E. S. Frohling, President

SFM:wm

cc: D. C. Dixon, ASARCO

**DEVELOPMENT AND DESIGN
OF THE MISSION UNIT BY-
PRODUCTS PLANT**

Paper to be presented at the
1965 Mining Show, Las Vegas,
Nevada, October 11-14.

J. D. Vincent, Mill Supt.,
Mission Unit, Sahuarita, Ariz.,
and G. W. Bossard, Asst.
Milling Engr., American Smelting
& Refining Co., Tucson, Ariz.

Ore from Asarco's Mission mine contains a small percentage of molybdenite which is encouraged to float with the copper and other base metals in the main flotation plant. Two separate concentrates are made here: (1) the twice-cleaned copper concentrate, which contains about half of the recoverable molybdenite, and (2) a scavenger concentrate from rougher and cleaner tailings, which contains copper, lead, and zinc, and the other half of the molybdenite. These two concentrates are then pumped to a separate plant for recovery of molybdenite and other values in two separate circuits. One circuit makes a lead-copper and a zinc concentrate from the low-grade feed; the zinc concentrate is shipped to the smelter. The other circuit separates molybdenite from the copper and copper-lead concentrates.

The present paper gives a description of the test work, flow sheet, economic considerations, and design factors.

oo0oo

MINES AND PLANTS

MINING AND MINE DEVELOPMENT—Normal operations at the Mission mine in Arizona were resumed in April at the conclusion of the strike. The mill treated an average of 22,500 tons of ore per day and produced 144,547 tons of concentrates containing 39,144 tons of copper and 495,684 ounces of silver during the remainder of the year. In addition, 549,016 pounds of molybdenum in concentrates were produced. In the San Xavier lease area north of the Mission mine, 831,900 tons of waste material were stripped and 41,873 tons of copper-bearing siliceous ore were produced for use as converter flux at the Company's smelters.

The Silver Bell mine in Arizona, unaffected by the strike, operated at full capacity through the year producing 83,331 tons of concentrates containing 22,520 tons of copper and 223,086 ounces of silver. In addition, 2,479 tons of copper in precipitates and 297,846 pounds of molybdenum in concentrates were produced.

Galena mill
expansion nearing
completion

At the Galena mine in Idaho, the second largest silver producing mine in the United States, expansion of the mill from the present 500 to 750 tons per day is nearing completion and is expected to be ready for operation by May, 1969. The new No. 3 main shaft is being deepened from the 3,700-foot level and it is expected to reach 200 feet below the projected bottom operating level of 4,900 feet early in 1971. Mine development during the year resulted in an increase of ore reserves.

The Page mine in Idaho has about depleted its available ore reserves and it is expected that operations will be discontinued during the third quarter of 1969.

Buchans' operations
at capacity

The Buchans Unit in Newfoundland operated at full capacity throughout the year and produced 9,211 tons of copper concentrates, 38,429 tons of lead concentrates and 68,550 tons of zinc concentrates. The concentrates also contained 1,354,860 ounces of silver.

On the south coast of Newfoundland at the Grey River settlement an adit has been driven approximately 3,300 feet to develop a tungsten orebody. Economic studies are under way to determine the feasibility of bringing this property into production.

Production at
Quiruvilca up 50%
— ore reserves
increased

At the Quiruvilca mine of the Northern Peru Mining Corporation, a wholly-owned subsidiary of Asarco, expanded operations have resulted in an increase of approximately 50 percent in production. The expanded mill operating at practically full capacity produced 22,084 tons of copper concentrates, 1,849 tons of lead concentrates and 5,215 tons of zinc concentrates. The concentrates also contained 910,567 ounces of silver. In addition, 489 tons of copper in precipitates were produced from mine drainage water. Development work during the past year resulted in further increase of copper and complex ore reserves.

Operations of the Chilete lead-zinc mine in northern Peru were terminated in April due to exhaustion of its ore reserves.

Progress made on
silver and copper
mine development
projects

In Leadville, Colorado, work is in progress at the Resurrection mine to develop a silver-lead-zinc deposit. Reserves totalling about 2,400,000 tons of commercial grade ore with significant amounts of gold are indicated at this time. The mine surface plant including facilities such as the main hoist, compressors, warehouse, shops and change house were practically completed by the end of the year. Sinking of the main production shaft to a depth of 1,635 feet will commence early in 1969 and permit further development of the mine. This is a joint venture in which the Company has a 50% interest. Management and operation of the project is under the direction of Asarco.

Further progress was made during the year on various other mine development projects previously reported. These include two potential silver properties in the Southwest—the Waterloo project near Barstow, California and the Hardshell project near Patagonia, Arizona, each of which has significant reserves of silver, and also the Sacaton copper prospect in Arizona. Drilling at Sacaton has disclosed two porphyry copper deposits. One deposit, mineable by open pit method, has approximately 17 million tons of copper-bearing material averaging .8% copper. A deeper deposit which may be mined by underground methods has approximately 12 million tons of copper-bearing material averaging 1.5% copper. Mention should also be made of Asarco's Michiquillay porphyry copper deposit near Cajamarca, Peru where estimated ore reserves of 592 million tons of open pit ore averaging .75% copper have been delineated. Further development of this Peruvian property will depend upon the negotiation of an appropriate bilateral agreement with the Peruvian Government.