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

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ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES AZMILS DATA

PRIMARY NAME: EAGLE-PITCHER MILL TAILINGS

ALTERNATE NAMES:
SAHUARITA MILL

PIMA COUNTY MILS NUMBER: 573

LOCATION: TOWNSHIP 17 S RANGE 13 E SECTION 13 QUARTER W2
LATITUDE: N 31DEG 57MIN 06SEC LONGITUDE: W 110DEG 58MIN 21SEC
TOPO MAP NAME: SAHUARITA - 15 MIN

CURRENT STATUS: PAST PRODUCER

COMMODITY:
MILL TUNGSTEN
MILL PB
MILL ZN
COPPER

BIBLIOGRAPHY:
USBM SUMMARY REPORT DALE NO. 56
USBM REPORT FILE NO. 467, TUNGSTEN, SUMMARY REPORTS, ARIZONA
ADMMR EAGLE-PITCHER MILL TAILINGS

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine SAHUARITA MILL Date June 2, 1966

District PIMA-PIMA COUNTY Engineer G.W. Irvin

Subject: #### VISIT to mill and interview with K. Erickson.

The Sahuarita, Mill owned by Mcfarland & Hullinger has been sold to Anaconda Co. Anaconda has purchase the old Eagle Picher office building, assay lab. building and the old experimental test shop.

All of the other buildings are being dismantled and moved. All of the equipment from the mill is being hauled to McFarland and Hullinger's Mammoth Yard where it will be stored until needed.

Anaconda will take over the property approx 240 acres on the first of July.

This was originally the location of the Pioneer smelter, which started operations about 1912. It was located on the Twin Buttes railroad and smelted ore from the Twin Buttes mines.

During World War 2, the Eagle-Picher Company built a custom mill and replaced the old railroad from Sahuarita to the mill on the old Twin Buttes R.R. grade.

Further####### comment of this area should be under Anaconda Twin Buttes operations.

MEMORANDUM

May 18, 1961

By Axel L. Johnson

Information from G. H. Stoffers, McFarland & Hullinger - May 11, 1961

The Sahuarita mill is still standing idle, and is still owned by McFarland & Hullinger. He understands the property is for sale, but does not know for sure if it is, nor does he know what they would consider a fair price for same.

SAHUARITA MILL

PIMA COUNTY
JOHNSON CAMP

McFarland and Hullinger, Tucson, Arizona, are closing their Sahuarita mill. This plant had been milling the ore from the Coronado Copper and Zinc Company's property, near Dragoon, but with the completion of repairs at Coronado's Republic mill that source of ore supply is no longer available. McFarland and Hullinger are lesses and operators of the Coronado property.

Taken from MINING WORLD, June, 1960, p 61

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine Sahuarita Mill Date Jan. 22, 1960 & Jan. 27, 1960

District Pima County Engineer Axel L. Johnson

Subject: Present Status. Information K.L. Erickson and Ralph Peterson

Reference: Report of Sept. 25, 1959.

Present Milling Activity: Milling ore from the Republic and Moore Mine, about 175 tons per day or 4,500 tons per month. 17 men are working in the mill. Mill is working 2 shifts, 6 days per week. No custom ore has been milled since the Mar-Pak Corporation closed down the Illinois & Venados Mines at Washington Camp on December 31, 1959.

The copper concentrates are shipped to the International smelter at Miami, and the zinc concentrates are shipped to the National Zinc Co. mill at Bartlesville, Okla.

Proposed Plans: The company expects to close down the Sahuarita mill about March 1st, when repairs to the Republic Mill at Johnson Camp will have been completed. (See report of Republic and Moore under date of Jan. 29, 1960.)

SAHUARITA MILL

The old Johnson mine camp near Willcox, Arizona is active again after a two-year shutdown. McFarland and Hullinger, a Utah mining concern has leased the property from Coronado Copper and Zinc Company, Bill Stoffers, mine manager, reports that two cars of copper ore per day are shipped to McFarland and Hullinger's mill at Sahuarita, Arizona. Maximum production is expected to provide about three cars per day. A 30-man crew is working one shift per day at the Moore shaft. Johnson was once a boom town when copper was discovered there in 1881, before the Southern Pacific Railroad was built through southeastern Arizona. A smelter was erected at Russelville in 1882, where there was abundant water. The deposit has been worked intermittently, production peaks coinciding with high copper prices and stopping entirely during price slumps. In 1913, shortly after the main ore body was discovered, the mine had 1,000 employes. Coronado Copper and Zinc has owned the property since 1942.

MINING WORLD
November, 1959

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine Sahuarita Mill Date Sept. 25, 1959

District Pima County Engineer Axel L. Johnson

Subject: Field Engineers Report. Information from Mr. Peterson, Assayer, and Personal Visit.

References Reported previously under "San Xavier Mine" --- reports of May 29, 1958, Feb. 11, 1958 and previous reports. Since most of the ore milled now comes from the Republic and Moore Mine, and some ore from the Mar-Pak Corp. is also milled on a fee basis, the Sahuarita Mill, in the future, will be reported separately.

Location About 1.5 miles SW of Sahuarita, Ariz.

Owners & Operators McFarland & Hullinger, Box 238, Tooele, Utah.
(Local Address --- Box 811, Tucson, Ariz.)
K. L. Erickson, Mill Superintendent.

Principal Minerals Milled Zinc, Copper, Lead.

Present Milling Activity
(1) Milling zinc-copper ores from the Republic & Moore mine.
(2) Milling zinc-lead ores from the San Xavier Mine.
(3) Milling zinc-copper ores from the Mar-Pak Corp. mines near Washington Camp.
9 men working at the mill.

Type of Mill
300 ton per day flotation mill.

Present Milling Operations
At present, about 165 tons of ore per day is milled from the Republic & Moore, about 1,000 tons per month from the San Xavier Mine, and about 110 tons per week from the Mar-Pak Corp. mines at Washington Camp. The ores from the Mar-Pak Corp. mines are milled on a fee basis. The first two named mines are operated by McFarland & Hullinger.

From the Republic & Moore, the [redacted] copper concentrates are shipped to the International smelter at Miami, and the zinc concentrates to Bartlesville, Okla.

From the San Xavier Mine, the zinc concentrates are shipped to Bartlesville, and the lead concentrates are stockpiled.

From the Mar-Pak Corp. mines, the zinc concentrates are shipped to Amarillo, Texas, and the [redacted] copper concentrates are stockpiled.

CUSTOM MILLING AT THE SAHUARITA MILL
Of
EAGLE-PICHER MINING & SMELTING COMPANY

Sahuarita, Arizona

By

E. H. Crabtree, Jr. & Neil Parker *

The custom milling plant of Eagle-Picher is located at Sahuarita, Arizona, approximately 20 miles south of Tucson. It is connected by a two-mile railroad spur to the main line of the Southern Pacific Railroad between Tucson and Nogales. The capacity of the plant is 500 tons per day.

The mill is conventional except perhaps in the rather wide variety of ores treated. These vary from straight copper ores from which only one concentrate is produced, and lead-zinc or copper-zinc ores from which two concentrates are produced, to complex gold-silver-copper-lead-zinc ores which require the simultaneous production of three or four concentrates.

Custom ores are received in lots varying in size from a few truck loads to several car loads. Similar ores, after crushing and sampling, may be commingled, or individual lots may be milled individually. The ores are first dumped either into one of two 200-ton railroad bins, or into one of the two 75-ton truck bins. From these bins the lot of ore is individually crushed in a 24-inch x 16-inch jaw crusher to 3-inch size and then to 1/2-inch size in a 3-ft. Symons Shorthead Crusher. After crushing to 1/2-inch, the ore is conveyed to the automatic sampling plant. This consists of three Vezin samplers in series, each successively cutting out 10%, 10%, and 5% of its feed. After No. 1 sampler, the material passes through a mixing barrel, and is then crushed to 1/4-inch in a set of rolls before passing to No. 2 sampler. Between No. 2 and No. 3 samplers, the ore is again mixed in a mixing barrel. The final sample, consisting of one pound per ton of ore, is taken to the laboratory where it is further crushed to 1/8-inch in a coffeemill, and then riffled down to the size required for grinding in a pulverizer. The capacity of the crushing and sampling plant is up to 100 tons per hour, depending upon the character of the ore.

After sampling, the ore is stored in five ore storage bins, consisting of four two-hundred-ton bins and one one-hundred seventy-five-ton bin. Each of these bins is discharged by means of belt feeders and conveyor to the ball mills, so that ores may be composited for milling in any required ratio, or milled separately by themselves.

* Chief Metallurgist, Eagle-Picher Mining & Smelting Company and Mill Superintendent, Sahuarita Mill, respectively.

FOUR PRODUCT FORMULA RATIOS of CONCENTRATION.

	% Pb		% Zn			% Cu			
Heads / Tails (a)		Zn. Concent. / Tails × (f)		=		Cu. Concent. / Tails (j)	× (f)	=	
Zn Concent. / Tails (c)		Heads / Tails × (e)		=		Zn Concent. / Tails (l)	× (h)	=	
Pb. Concent. / Tails (b)		× (f)		=	A	Heads / Tails (i)	× (f)	=	C
(c)		Pb Concent. / Tails × (g)		=	B	(l)	× (e)	=	D
Cu. Concent. / Tails (d)		× (f)		=		Pb. Concen. / Tails (k)	× (f)	=	
(c)		Cu. Concen. / Tails × (h)		=	F	(l)	× (g)	=	E
(e)	× (j)			=		A	× C	=	
(h)	× (i)			=	G	D	× F	=	2
(b)	× (j)			=		B	× C	=	3
(d)	× (k)			=	H	E	× F	=	4
(g)	× (j)			=		G	× H	=	6
(h)	× (k)			=	I	I	× J	=	7
(a)	× (j)			=		C	× H	=	9
(d)	× (i)			=	J	I	× K	=	10
(c)	× (j)			=		D	× B	=	12
(d)	× (l)			=	K	A	× E	=	13
									14

Tons Heads

$\frac{2}{5}$ [ ] = % Pb. Concen. [ ]

Tons. Pb. Concen. = $\frac{\text{Tons Head} \times \% \text{ Pb.}}{100}$ [ ]

$\frac{8}{11}$ [ ] = % Zn. Concen. [ ]

Tons Zn. Concen. = $\frac{\text{Tons Heads} \times \% \text{ Zn.}}{100}$ [ ]

$\frac{14}{5}$ [ ] = % Cu. Concen. [ ]

Tons Cu. Concen. = $\frac{\text{Tons Heads} \times \% \text{ Cu.}}{100}$ [ ]

THREE PRODUCT FORMULA
RATIOS of CONCENTRATION

$$R = \frac{C - T}{H - T}$$

Assays

	% Pb.		% Zn.	
Heads – Tails (a)		Zn. Concl. – Tails × (b)		=
Zn. Concl. – Tails (e)		Heads – Tails × (c)		=
				A
Pb. Concl. – Tails (d)		× (b)		=
(e)		Pb. Concl. – Tails × (b)		=
				B

Dry Tons Heads

% Pb. Concl. ÷ (100A / B) = % Tons Pb. Concl.

(c) / (a)		× (d) / × (b)		= / =	–

C

% Zn. Concl. ÷ (100C / B) = % Tons Zn. Concl.

Date

Total Concl. %

Tails % Tons Tails

Total 100%

Fine grinding is done in one 6-ft. x 4-ft. Allis Chalmers ball mill and one 8-ft. x 36-inch Hardings mill. These two mills both discharge to one 54-inch Akins Simplex Highweir classifier. The classifier sands can be returned to either or both mills, so that flexibility in grinding for different ores is easily obtained.

Flotation equipment consists of four 66-inch Fagergren machines for copper-lead roughing and six similar machines for zinc roughing. Lead-copper bulk concentrate is cleaned and recleaned in eight No. 18 S Denver machines, and zinc concentrate is cleaned in three 66-inch Fagergrens. Copper-lead differential separation takes place in six 18 S Denvers. Pyrite recovery, when required, is obtained from the zinc rougher tailings by treatment in 18 S Denver machines. Conditioning equipment is provided between the flotation circuits.

All concentrates are thickened, and filtered in American filters from which they are conveyed to storage. They are then conveyed directly from storage into railroad box cars.

Metallurgical accounting when only one or two concentrates are produced from one ore is relatively simple. This becomes increasingly involved when two or three concentrates are made simultaneously from commingled ores. At Sahuarita, the accounting procedure has been simplified by use of slotted sheets which solve the three-product or four-product algebraic formulae as given in TAGGART'S HANDBOOK OF ORE DRESSING. Copies of these sheets are appended.

For example, when it is required to know the tonnage of lead and of zinc concentrates produced from a given tonnage of ore of a given assay, the three-product formula sheet is used. In the appropriate slots are inserted the lead and zinc assays of the heads, lead concentrates, zinc concentrates, and tails. Simple cross multiplication, subtraction, and division, as indicated, give the final results in tons of concentrates produced from the individual lot of ore.

When lead, zinc, and copper concentrates are simultaneously produced, the four-product formula sheet is similarly used. The figures representing tonnage of concentrates produced from the individual lots are cumulated throughout the month to determine total monthly production. At the end of each month the concentrate bins are cleaned and a check obtained on actual mill recoveries. Discrepancies, which are always small, are then allocated back to the individual lots of ore.

Use of these sheets can be made by any competent office accountant without metallurgical knowledge and it is estimated that many hours of work are saved each month by their use. Comparison of the use of these slotted sheets with the solution of the previously referred to formulae, from which they are constructed, indicates the simplification obtained.