



## **CONTACT INFORMATION**

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04/29/91

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES FILE DATA

PRIMARY NAME: FLUX MINE

ALTERNATE NAMES:

GOSHEN

SANTA CRUZ COUNTY MILS NUMBER: 89F

LOCATION: TOWNSHIP 22 S RANGE 16 E SECTION 30 QUARTER SW  
LATITUDE: N 31DEG 29MIN 17SEC LONGITUDE: W 110DEG 45MIN 14SEC  
TOPO MAP NAME: NOGALES - 15 MIN

CURRENT STATUS: PAST PRODUCER

COMMODITY:

ZINC  
LEAD  
STONE DIMENSION  
SILVER  
GOLD

BIBLIOGRAPHY:

KEITH, S.B., 1975 AZBM INDEX OF MINING PROP.  
IN SANTA CRUZ CO.  
AZBM CLIPPING FILE  
AZBM CARD FILE SANTA CRUZ CO.  
USGS BULL. 582, P. 258-263  
USGS PP 658-E  
AZBM BULL. 191, P. 58  
ADMMR FLUX MINE FILE  
AZBM HISTORY OF MINING P. 309-310

MINING WORLD MAY 1963 p37

Mining World July 1963 p40.

SEE: USGS Bull. 582 Page 258-263  
EAGLE-PICHER (geology file) (George M. Fowler report)

See: Arizona Mining Journal Issues of  
Aug. 1919 p. 16, Dec. 1919 p. 31  
Jan. 1920 p. 42, March 1920 p. 24  
April 1920 p. 43, May 1920 p. 52  
Geology Map in geology drawer

Ariz. Mng. Journal June, 1918, p. 42  
" " " December 1, 1922, p. 18

See: ABM Bull. 191, Pg. 58, T22S, R16E, SW1/4 Sec. 30

USGS PP 658-E

ABM Bull 191, p. 58

ABM, History of Mining in Arizona, p. 309-130

~~XXXXXXXXXX, XXXXX, XXXXX~~  
~~XXXXXXXXXX XXXXX XXXXX~~  
Cumero Canyon 7.5 (included in file)

AKA: Goshen Mine

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES

INFORMATION FROM MINE CARDS IN MUSEUM

Az

SANTA CRUZ COUNTY

~~Near Duquesne~~

Patagonia

Flux mine

MM-7212 Cerussite

MM-7489 Cerussite

8064 Cerussite

8065 Cerussite

8492 Pyrite

8531 Cerussite

7864 Cerussite

MILS # 89F

1-AKA

Flux mine (gold)



710 - 1919 ad.  
Jan 30  
OK.

REPORT  
on  
FLUX MINE  
Property of the Flux Mining Company  
Patagonia, Arizona.  
by  
Max Kraut, E. M.

Southwestern Engineering Co.,  
Consulting Engineers,  
Los Angeles, Calif.

Los Angeles, Calif.,  
April 23, 1919.

Mr. Fred B. Kollberg,  
Gen. Mgr., Flux Mining Co.,  
Patagonia, Arizona.

Dear Sir:-

In accordance with your request, I have examined the Flux Mine and property of the Flux Mining Company, and submit to you, in the following pages, a brief report on the conditions of the Flux Mine and Mill existing at the time of my visit.

It is not my object to enter into any lengthy discussion of geological features, and related phases of the subject, but rather, after a brief analysis of the situation, to outline such improvements and development work as will be necessary to make the enterprise economically a success.

I beg to sign

Yours very truly,

E.M.

LOCATION:

The Flux Mine is situated about five and one half miles southeast from Patagonia, in Santa Cruz County, Arizona. It is reached by a good wagon road of easy grade.

PROPERTY:

The property comprises a group of twenty-one unpatented mining claims. Practically all development work done, is on the Flux claim.

HISTORY:

The Flux Syndicate was organized in March 1918. The Company erected a mill of 100 tons daily capacity for the treatment of their carbonate ores. Provisions were made for later treating sulphides by the flotation process. The Mill was put in operation in August 1918, but due to scarcity of water at the plant, operations had to be suspended after a two week's run, pending the installation of a pumping plant and pipe line three miles long from the river to the mill.

Operations were resumed early in October and the mill was running intermittently to the end of January 1919.

Mechanical difficulties in the operation of the tramway from the mine to the mill, were the cause of frequent shut-downs of the plant.

During the operation of the mill, fourteen carloads of concentrates were produced, assaying about 30% lead with  $7\frac{1}{2}$  ounces silver, which brought a gross return of approximately \$16,000.00. About 4000 tons of ore and tailings were milled during this period.

Almost the entire financial resources of the Company were used in the building of the mill, and success depended on the smooth working and continuous operation of both mine and mill.

However, the delays and unforeseen expense incurred, due to the failure of the tramway, soon brought the Company to the end of its resources and finally forced suspension of operations, pending further financial arrangements.

THE MINE:

The Mine is opened up by more than 6000 feet of work, all concentrated on the Flux claim. The work consists of tunnels, shafts, drifts, crosscuts and stopes distributed on four levels, 70, 100, 130 and 260 foot level. All levels are entered by adit tunnels and the main shaft connects with the 260 foot level by a crosscut 120 feet long, as shown on the accompanying plans. An open cut, or glory hole, has been worked to a depth of about 50 feet for a length of about 75 feet and 30 feet wide. The ore body has been stoped in a very irregular fashion, and the caved ground made most of the old workings inaccessible. Under the circumstances, it is extremely difficult, if not impossible, to arrive at any reliable estimate as to available tonnage of ore in the mine at the present time. Various estimates have been made by Engineers, ranging from 20,000 to 40,000 tons, averaging about 14% lead with  $5\frac{1}{2}$  ounces silver in the carbonate ore body. In addition to this, there is a sulphide ore body between the 130 foot and 260 foot levels, which is estimated at about

7,000 tons. This sulphide ore body was carefully sampled and averaged about 12% lead with 6 ounces silver.

Recently a sulphide ore body has been opened up below the carbonate ore body, by a winze 50 feet deep from the 130 foot level. The total width of this sulphide ore body has not been determined, but measures at the bottom of the winze 8 feet across the vein.

#### GEOLOGY:

The principal rock formation at the mine is a Paleozoic limestone associated with some shale, which is intruded by a quartz monzonite and aplite. All of these are intruded and overlain by Tertiary Rhyolite Porphyry. This Rhyolite is considerably brecciated and seems to form by replacement, the main depository for the ore. The ore occurrence seems to be along three principal lines;-First, along a fault contact in the limestone in a north-south direction - another more or less parallel to the fault contact about 100 feet west of it along the contact between the Aplite and Paleozoic limestone. Both these lines of deposition have a north-south course and dip about 35 degrees to the west, and are cut off in the north by the third line of deposition along the contact of the Rhyolite against the limestone and Aplite.

This latter contact has an east-west course and dips about 45 degrees to the north. At the intersection of these three lines of deposition, a large ore body is formed in the shape of a huge chimney, the trend of which is to follow into depth in the angle formed by the intersecting contact planes.

This intersection gives the chimney a pitch in a north-westerly direction, at an angle of 45 degrees, as is shown in plans.

RECOMMENDATION:

Studying the plans of the present workings, it is evident that the present development work failed to reach the ore body on the 260 foot level. It seems that the trend of the ore body in a north-western direction, has not been recognized, and the development work cut short before reaching the ore body.

The strength and size of the ore body at the 130 foot level, and the development work by a winze, show plainly that this ore body is continuing into depth and will be encountered by carrying out the necessary development work.

The principal development work which I wish to propose, would be on the 130 foot level and 260 foot level, as follows:

To continue the new tunnel on the 130 foot level along the contact of the rhyolite and limestone, for a length of approximately 175 feet, and connect this working by continuing a crosscut from the main drift about 100 feet long.

On the 260 foot level, the main tunnel should be continued for a length of approximately 275 feet to intersect the probable ore body.

Of less importance would be the continuation of the crosscut from the shaft to the contact between the aplite and limestone, and to drift along this contact toward the probable ore body north for a distance of approximately 350 to 400 feet.

In addition to this work, crosscuts should be driven at various places to determine the width of the ore body.

The winze in the 130 foot level, which now has reached a depth of about 50 feet, should be continued down to the 260 foot level and drifts driven north and south, also connect this winze with the main tunnel.

This proposed development work should <sup>prove</sup> the ore body in depth. The cost of this new work will be approximately Twenty Thousand Dollars.

It is probable that the ore body encountered at the 260 foot level will be practically all in sulphides. This is indicated by the fact that the winze from the 130 foot level is already entirely in sulphides.

The change from the oxidized zone to the sulphide zone seems to take place a little above the 130 foot level.

### MILL:

The mill was designed to handle the lead carbonates, both by gravity and flotation. The extraction obtained during the mill run was approximately from 65 to 70 per cent of the lead value and about 50 per cent of the silver value. Flotation did not work out on the oxidized ores, the reason being that a large part of the lead values is not in carbonate, but in other oxide forms which are not amenable to treatment by flotation, and of which only a small part can be saved by table concentration.

The extraction of the values will be greatly increased and will probably go far above 90 per cent as soon as the sulphides will be treated in the mill.

The mill has been designed to handle about 100 tons daily by gravity concentration and can be brought up to treat the same tonnage by the flotation process by the addition of one more flotation machine.

### COMPRESSOR PLANT:

A Compressor plant to operate at least three drills and a hoist should be installed. At present

the mining of the carbonate ore body does not require any drilling and blasting, but as soon as the hard sulphide ore bodies are to be worked, this will become necessary.

#### HOISTING EQUIPMENT:

A hoist should be installed to raise the ore from the 260 foot level to the surface to where it is to be brought to the aerial tramway.

#### POWER PLANT:

As it will be necessary to supply power at far-apart places, the mine, the mill, tramway, hoist, pumping plant, etc., it would be advisable to have a central power plant along the river and the railroad track generating electric power and transmitted to the various places where it is needed. This power plant should provide approximately 300 horsepower. At the present time it would be necessary to operate quite a number of gas engines, which is wasteful and troublesome.

#### TRAMWAY:

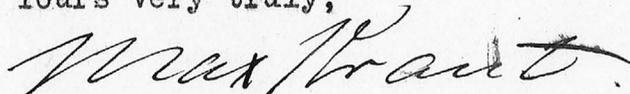
The Tramway should be repaired and put in condition so as to work continually and to have a capacity of at least 100 tons daily.

I estimate that in order to carry out all the improvements indicated, and such improvements as will be found to be necessary upon closer study, will cost about thirty to forty thousand dollars, so that, to carry out the entire plan, it will require capital of from fifty to sixty thousand dollars which should be provided to bring the enterprise to a success.

I cannot enter into details of the proposed improvements at this time, as this would require a much closer study of the subject and take more time than I have been able to devote to this work, but trust that the general outline of the proposed improvements given will indicate in a general way, what is needed to eventually carry the enterprise through successfully.

I beg to sign

Yours very truly,

A handwritten signature in cursive script that reads "Max Grant". The signature is written in dark ink and is positioned below the typed name "E.M.". The signature is somewhat stylized, with a large initial "M" and a long, sweeping underline.

E.M.

PLAN OF 130' LEVEL



Trend of Ore Body

Probable Ore 260' Level

Rhyolite

45°

Vertical Fault

Limestone

Vertical Shaft

35°

PRE-CAMBRIAN Limestone

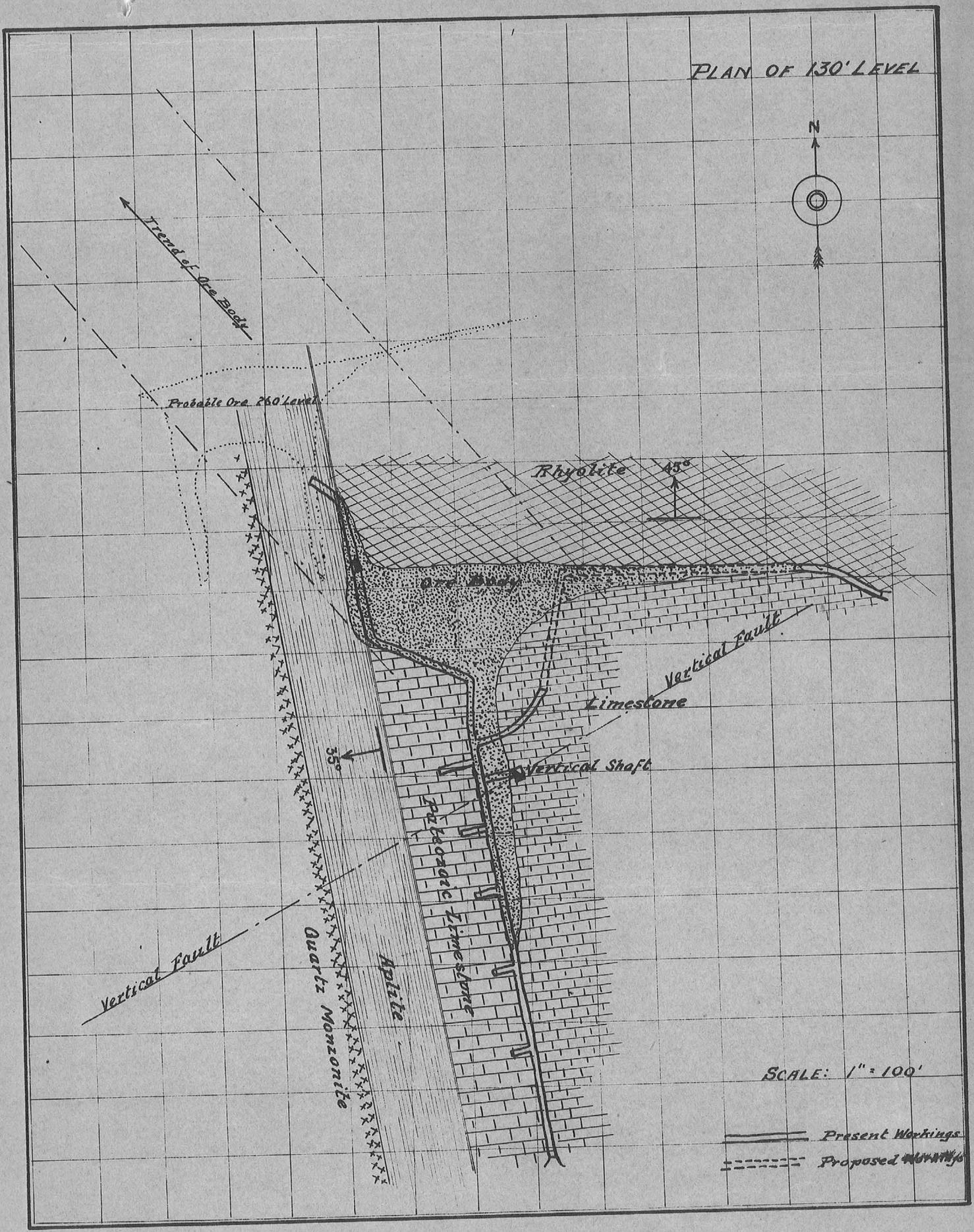
Vertical Fault

Quartz Monzonite

Aplite

SCALE: 1" = 100'

Present Workings  
Proposed Workings



PLAN OF 260' LEVEL



45°

Argillite

Coatback

Dimestone

Porphyritic Limestone

Vertical Fault

Vertical Shaft

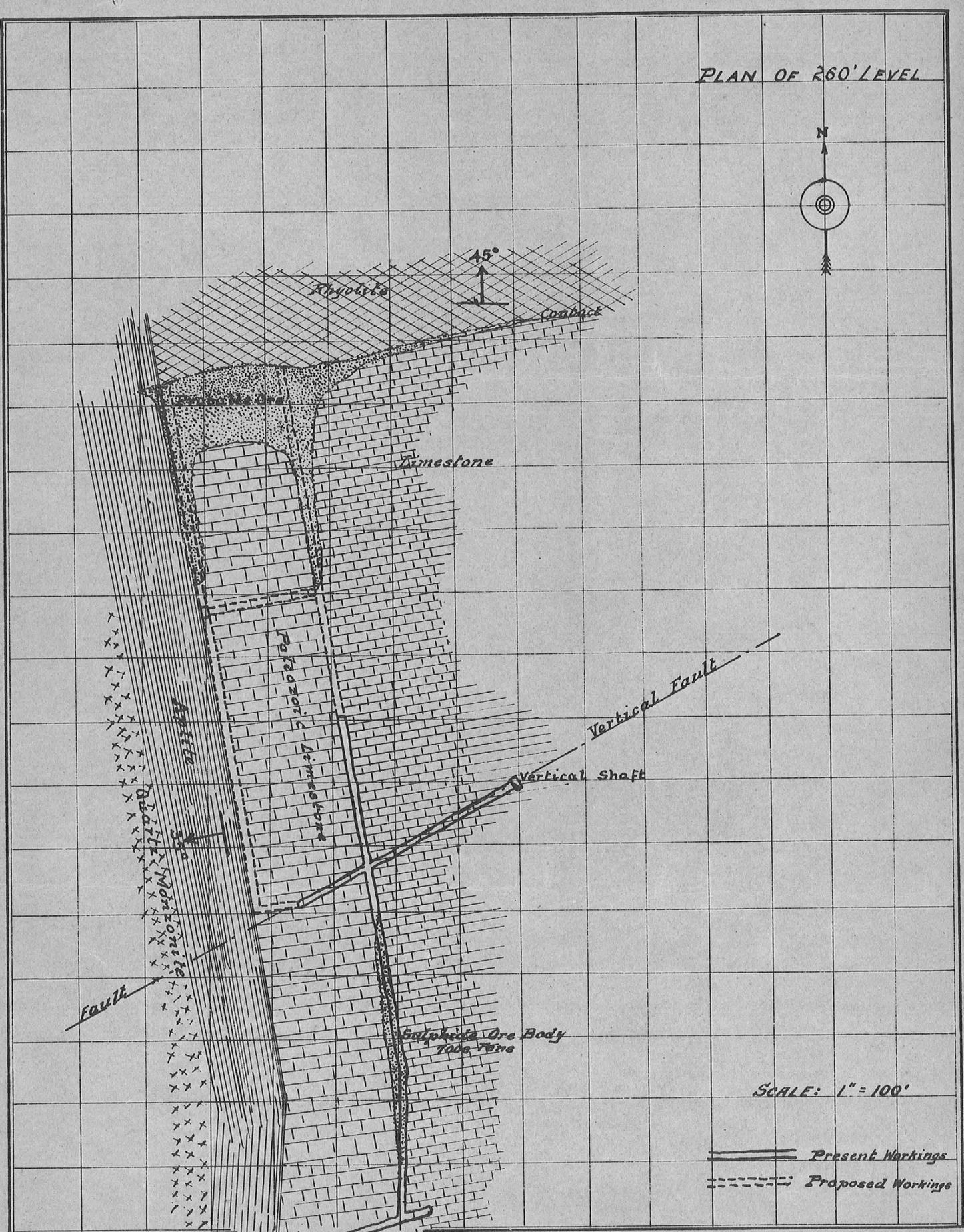
Fault

Quartzite  
350  
Manganese

Sulphate Ore Body  
700± Yds

SCALE: 1" = 100'

==== Present Workings  
----- Proposed Workings



Production from the Flux mine, Harshaw district, Santa Cruz Co., reported to the U.S. Bureau of Mines:

Production reported during years: 1884, 1898, 1902, 1913-21, 1923-24,  
1926-31, 1936-63

Cumulative Totals: 809,950 tons of ore treated, yielding:

3,120,451 pounds of copper  
81,748,117 pounds of lead  
104,281,281 pounds of zinc  
2,598,354 ounces of silver  
1,833 ounces of gold

Cumulative value of silver = \$1,969,314  
" " " gold = 58,237

DEPARTMENT OF MINERAL RESOURCES

STATE OF ARIZONA

FIELD ENGINEERS REPORT

Mine Flux Date May 1, 1985  
District Harshaw Engineer Ken A. Phillips  
Subject: Production

Recorded production from the Harshaw mining district,  
*SANTA CRUZ* County according to an abstract of U. S. Bureau of Mines  
data was obtained from the Arizona Bureau of Geology and Mineral Technology.

Production is recorded for the period 1884-1963  
Cumulative totals are:

Tons of ore	809,950
Pounds of copper	3,120,451
Pounds of lead	81,748,117
Troy ounces of gold	1,833
Troy ounces of silver	2,598,354
Pounds of zinc	104,281,281

The following mines or mining claims in the district contributed to the  
production: Flux

\* GENERAL REFERENCES

- REFERENCE 1 F1 < ABGMT-USBM FL DATA
- REFERENCE 2 F2 < USBM FILES, FLUX MINE
- REFERENCE 3 F3 < SCHRADER, FRANK C. 1915, MINERAL DEPOSITS OF THE SANTA RITA AND PATAGONIA MOUNTAIN ARIZONA; USGS BULLETIN 582 p. 258-263
- REFERENCE 4 F4 < SIMONS, FRANK S. 1974, GEOLOGIC MAP AND SECTIONS OF THE NOGALES AND LOCHIEL QUADRANGLES, SANTA CRUZ COUNTY, ARIZONA; USGS MAP I-762 (1:48000)
- REFERENCES CONTINUED ON SEPARATE SHEET -

C30 < CHRYSOCOLLA >

L110 < ALVAREZ HUGO MILLER AND ASSOCIATES MANUEL ENCINAS, RICHARDSON, MINING AND COMMERCIAL CORP. AMERICAN SMELTING AND REFINING CO. E.E. BOLINGER, JUAN JIMENEZ; MINE IS REPORTED TO BE AN OLD MEXICAN MINE LOCATED IN THE EARLY 1850's; PROPERTY COMPRISES 11 CLAIMS >

K4 < HEMATITE >

K5 < LODE (THE FLUX LODE); LODE NARROWS WITH DEPTH >

N15 < REGIONAL FORMATIONS IS A SHEETING WHICH DIPS 40 NNW; JURASSIC-TRIASSIC VOLCANICS CONTAIN ISOLATED BLOCKS OF LATE PALEOZOIC LIMESTONE WITH SOME ASSOCIATED CONGLOMERATE AND SHALE >

N15 < FAULT >

N75 < SILICIC AND PROPYLITIC WALL ROCK ALTERATION; LIMESTONE IS HIGHLY CRYSTALLINE, CRUSHED, BRECCIATED AND ALTERED >

N85 < OF FLUX MINE AND GRANITE PORPHYRY OF THREE R MOUNTAIN. HARSHAW CREEK FAULT IS MARKED BY BOLDLY CROPPING SILICIFIED REEF EXTENDING FOR SEVERAL MILES IN EITHER DIRECTION FROM MINE - LIMESTONE IS PRESENT ON ALL LEVELS OF MINE AND GENERALLY DIPS TO SE; FLUX LODE TO SOUTH OF MINE IS ASSOCIATED WITH LIMESTONE WHICH ACCOMPANIES IT IN THE FORM OF A REEF; LODE TO NORTH OF MINE LIES MAINLY IN RHYOLITE >

mine # 89 F

U.S. CRIB-SITE FORM

RECORD IDENTIFICATION

RECORD NUMBER B10 < \_\_\_\_\_ > RECORD TYPE B20 < X, I, M > DEPOSIT NUMBER B40 < \_\_\_\_\_ >

REPORT DATE G1 < 8, 2, 03 > INFORMATION SOURCE B30 < 1, 2 > FILE LINK IDENT. B50 < USBM-004023 0054 >

REPORTER (SUPERVISOR) G2 < CALDER, SUSAN R. > (last, first, middle initial)

REPORTER AFFILIATION G5 < ABGMT > SITE NAME A10 < FLUX MINES >

SYNONYMS A11 < GOSHEN MINE >

LOCATION

MINING DISTRICT/AREA A30 < HARSHAW DISTRICT > STATE A50 < AZ > COUNTRY A40 < U.S. >

COUNTY A60 < SANTA CRUZ >

PHYSIOGRAPHIC PROV A63 < 1, 2, 4 >

DRAINAGE AREA A62 < 1, 5, 0, 5, 0, 3, 0, 1, 4, LOWER COLORADO >

QUADRANGLE NAME A90 < NOGALES > (1, 19, 58, 2) LAND STATUS A64 < 4, 1, 4, 4, 1, 9, 7, 9, 1 >

SECOND QUAD NAME A92 < \_\_\_\_\_ > QUADRANGLE SCALE A100 < 1:62,500 >

ELEVATION A107 < 4, 8, 0, 0, 4, FT > SECOND QUAD SCALE A91 < \_\_\_\_\_ >

UTM

NORTHING A120 < 3, 4, 8, 3, 5, 5, 0 >

EASTING A130 < 5, 2, 3, 3, 5, 0 >

ZONE NUMBER A110 < 12 >

\* ACCURACY

ACCURATE  ACC (circle)

ESTIMATED EST < \_\_\_\_\_ >

GEODETTIC

LATITUDE A70 < 3, 1, - 2, 9, - 1, 8, N >

LONGITUDE A80 < 1, 1, 0, - 4, 5, - 1, 5, W >

CADASTRAL

TOWNSHIP(S) A77 < 0, 2, 2, 5, N > RANGE(S) A78 < 0, 1, 6, E >

SECTION(S) A79 < 30 >

SECTION FRACTION(S) A76 < SE OF SW >

MERIDIAN(S) A81 < GILA AND SALT RIVER >

POSITION FROM NEAREST PROMINENT LOCALITY A82 < 4 MILES SOUTH OF PATAGONIA >

LOCATION COMMENTS A83 < LOCATED AT HEAD OF FLUX GULCH (A PARALLEL SOUTHWESTERN TRIBUTARY OF ALUM GULCH) >

\* ESSENTIAL INFORMATION

\* ESSENTIAL SOMETIMES OR HIGHLY RECOMMENDED

COMMODITY INFORMATION

COMMODITIES PRESENT C10 < Zn, Pb, Ag, Mn >
ORE MINERALS C30 < ARGENTIFEROUS CERUSSITE, GALENA, SPHALERITE, PYRITE, CHALCOPYRITE, AZURITE >
COMMODITY SUBTYPES C41 < >
GEN. ANALYTICAL DATA C43 < ASSAY VALUES AVERAGE 8% Zn, 5% Pb, 2.5% Cu, 5.02 TON Ag, MINOR AU, 2.5% Mn >
COM. INFO. COMMENTS C50 < >

\* SIGNIFICANCE

MAJOR PRODUCTS MAJOR < Zn, Pb, Ag, Mn >
MINOR PRODUCTS MINOR < Cu, Au >
POTENTIAL PRODUCTS POTEN < >
OCCURRENCES OCCUR < Mn >

NON-PRODUCER
MAIN COMMODITIES PRESENT C11 < >
MINOR COMMODITIES PRESENT C12 < >
OCCURRENCES OCCUR < >

\* PRODUCTION

PRODUCTION YES (circle)
PRODUCTION SIZE SML (MED) LGE (circle one)

NON-PRODUCER
PRODUCTION UND NO (circle one)

\* STATUS

EXPLORATION OR DEVELOPMENT

PRODUCER
STATUS AND ACTIVITY A20 < H >

NON-PRODUCER
STATUS AND ACTIVITY A20 < >

DISCOVERER L20 < >
YEAR OF DISCOVERY L10 < 1850's >
PRESENT/LAST OWNER A12 < >
PRESENT/LAST OPERATOR A13 < >
EXPL./DEV. COMMENTS L110 < OPERATORS INCLUDED ARIZONA GOLD AND COPPER CO., PATAGONIA MINING CO., STERLING DEVELOPMENT CO., FLUX MINING CO., A.R. BYRD, NASH AND McFARLAND, ALLEN AND KOLBERG, ANGEL >

DESCRIPTION OF DEPOSIT

DEPOSIT TYPE(S) C40 < VEIN/SHEAR ZONE - REPLACEMENT >
DEPOSIT FORM/SHAPE M10 < IRREGULAR ORE SHOOTS >
DEPTH TO TOP M20 < > UNITS M21 < >
DEPTH TO BOTTOM M30 < > UNITS M31 < >
DEPOSIT SIZE M15 < SMALL M15 < MEDIUM M15 < LARGE > (circle one)
STRIKE M70 < N50W - N70W >
DIRECTION OF PLUNGE M100 < > DIP M80 < 45SW - VERTICAL >
PLUNGE M90 < >
REP. DESC. COMMENTS M110 < MINING EFFORTS CONCENTRATED ON LARGE DEPOSIT IN SOUTH SHOULDER OF FLUX RIDGE WHERE SEVERAL VEINS OR LODES INTERSECT; ORE IS POROUS AND HONEYCOMBED >

DESCRIPTION OF WORKINGS

Workings are: SURFACE M120 UNDERGROUND M130 BOTH (M140) (circle one)
DEPTH BELOW SURFACE M160 < 430 > UNITS M161 < FT >
LENGTH OF WORKINGS M170 < 5000 > UNITS M171 < FT >
DESC. OF WORK. COM. M220 < DEVELOPMENTS INCLUDED A 2100-FT MAIN SHAFT, 300 AND 500 FT LONG TUNNELS, 200 FT OF CROSSCUTS ON 2 LEVELS, STOPING ON 70- AND 125-FT LEVELS, DRIFTS AND CROSS-CUTS ON 100- AND 210-FT LEVELS, OPEN CUT (75 FT LONG, 22 FT WIDE, 15 FT DEEP) >

GEOLOGY

\* AGE OF HOST ROCK(S) K1 < T.R.I. - JUR. >
\* HOST ROCK TYPE(S) K1A < RHYOLITE PORPHYRY AND RELATED VOLCANIC SEDIMENTARY DEPOSITS >
\* AGE OF IGNEOUS ROCK(S) K2 < T.R.I. >
\* IGNEOUS ROCK TYPE(S) K2A < RHYOLITIC TO LATITIC LAVA AND TUFF WITH QUARTZITE INTRUSIONS >
\* AGE OF MINERALIZATION K3 < L.C.R.E.T. - T.E.R.T.V. >
\* PERT. MINERALS (NOT ORE) K4 < QUARTZITIC GANGUE, KAOLINITE - MONTMORILLONITE, CHLORITE, EPIDOTE, HORNBLende >
\* ORE CONTROL/LOCUS K5 < COMPLEX FAULT SYSTEM; ORE MAINLY OCCURS IN N-S TRENDING SHEAR ZONE OR >
\* MAJ. REG. TRENDS/STRUCT. N5 < NW-TRENDING HARSHAW CREEK FAULT (N30W); GENERAL STRUCTURE COMMON TO >
\* TECTONIC SETTING N15 < ALUM GULCH FAULT BLOCK; COMPLEX FAULT SYSTEMS ASSOCIATED WITH HARSHAW CREEK >
\* SIGNIFICANT LOCAL STRUCT. N70 < E-W TRENDING APLITE DIKE INTRUDING VOLCANIC COUNTRY ROCK >
\* SIGNIFICANT ALTERATION N75 < SURFACE OXIDATION TO DEPTHS OF 250 FT.; PYRITE GOSSAN AT SURFACE; CHLORITIC >
\* PROCESS OF CONC./ENRICH. N80 < SECONDARY ENRICHMENT ALONG BRECCIATED ZONES, FOLLOWING INTRUSION OF RHYOLITE >
\* FORMATION AGE N30 < >
\* FORMATION NAME N30A < >
\* SECOND FM AGE N35 < >
\* SECOND FM NAME N35A < >
\* IGNEOUS UNIT AGE N50 < T.R.I. >
\* IGNEOUS UNIT NAME N50A < MT. WRIGHTSON FORMATION >
\* SECOND IG. UNIT AGE N55 < >
\* SECOND IG. UNIT NAME N55A < >
\* GEOLOGY COMMENTS N85 < PALEOZOIC SEDIMENTS IN MINE AREA ARE LOCALLY INTRUDED BY QUARTZ MONZONITE (?) AND GRANITIC APLITE; PROPERTY NEAR GREAT FAULT CONTACT BETWEEN THE RHYOLITE PORPHYRY >

GENERAL COMMENTS

GENERAL COMMENTS GEN < >

REFERENCE 1 F1 <

REFERENCE 2 F2 <

REFERENCE 3 F3 <

REFERENCE 4 F4 <

F5 < SIMONS, FRANK S. 1972 MESOZOIC STRATIGRAPHY OF THE PATAGONIA MOUNTAINS AND ADJOINING AREAS, SANTA CRUZ COUNTY, ARIZONA. USGS PROFESSIONAL PAPER 658-E >

F6 < MOORE, RICHARD C. 1972 THE GEOLOGY AND ORE DEPOSITS OF A PORTION OF THE HARSHAW DISTRICT, SANTA CRUZ COUNTY, ARIZONA; M.S. THESIS, UNIVERSITY OF ARIZONA >

F7 < KEITH, STANTON R. 1975 INDEX OF MINING PROPERTIES IN SANTA CRUZ COUNTY, ARIZONA; ARIZONA BUREAU OF MINES BULLETIN 191, p. 58 >

F8 < ARGMT FILES STANTON R. KEITH >

F9 < ARGMT CLIPPINGS FILE, FLUX MINE >

F10 < ARIZONA DEPARTMENT OF MINERAL RESOURCES FILE DATA, FLUX MINE >

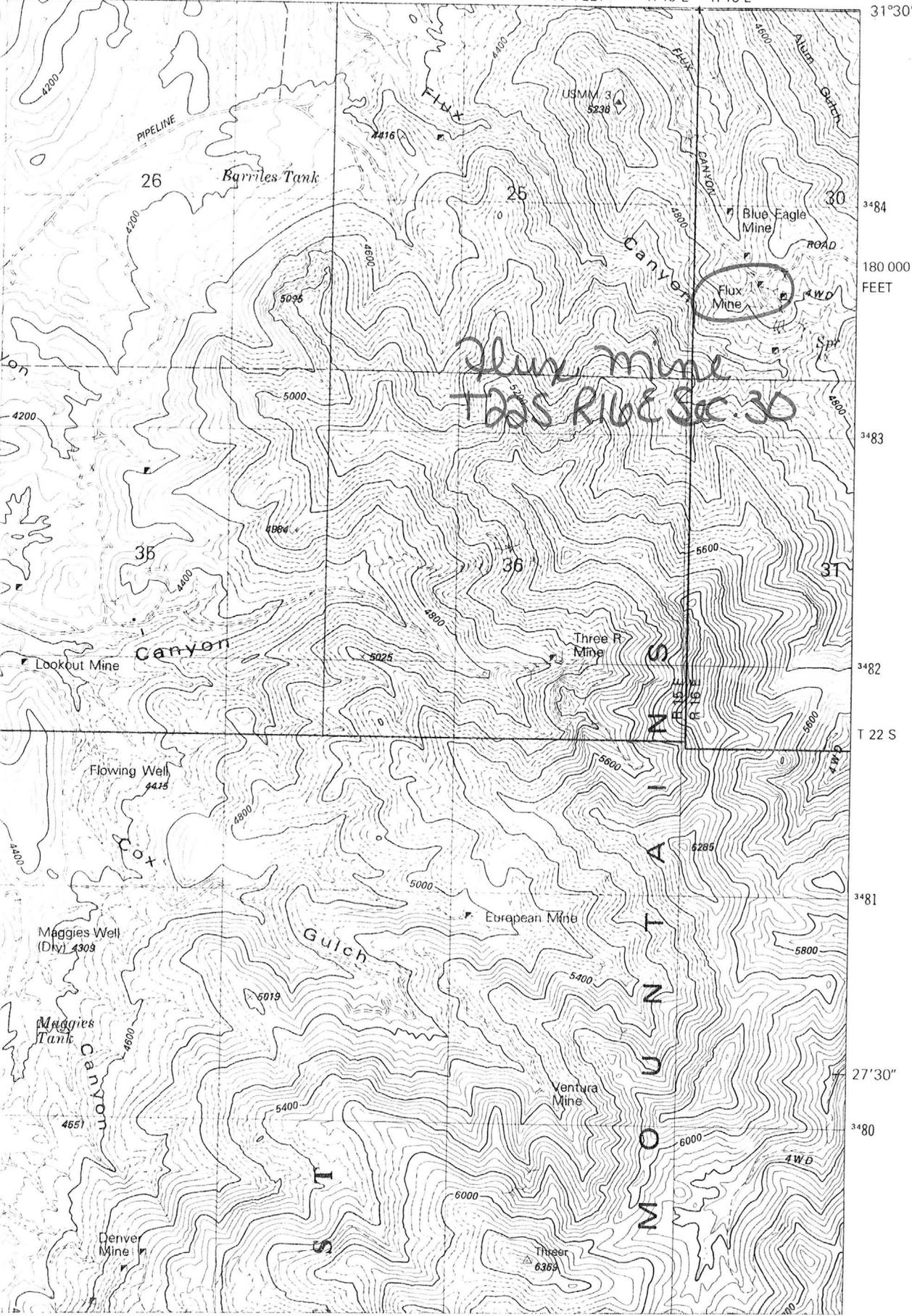
F11 < KARTCHNER, WAYNE E. 1944 THE GEOLOGY AND ORE DEPOSITS OF A PORTION OF THE HARSHAW DISTRICT, PATAGONIA MOUNTAINS, ARIZONA; PH.D. THESIS, UNIVERSITY OF ARIZONA, p. 82-84 >

F12 < TENNEY, JAMES B. 1927-1929, HISTORY OF MINING IN ARIZONA; ARIZONA BUREAU OF MINES, p. 309-310 >

CUMERO CANYON QUADRANGLE  
ARIZONA-SANTA CRUZ CO.  
7.5 MINUTE SERIES (TOPOGRAPHIC)  
NE/4 NOGALES 15' QUADRANGLE

3847 II SW  
(MT. HUGHES)

860 000 FEET R 15 E R 16 E 110°45' 31°30'



Flux mine  
T22S R16E Sec. 30

D

**DEPARTMENT OF MINERAL RESOURCES**  
STATE OF ARIZONA  
**FIELD ENGINEERS REPORT**

Mine Flux Mine & Trench Mill

Date Sept. 4, 1963

District Harshaw District, Santa Cruz Co.

Engineer Axel L. Johnson

Subject: Field Engineers Report. Information from E. W. McFarland.

References Report of May 9, 1963 & previous reports.

Present Activity Operators are making preparations to close the Flux Mine. At present, they are doing clean-up work, removing rail and pipe and other mine equipment. 6 men are working at present in the Flux Mine.

Regular milling operations were terminated at the Trench Mill about 2 weeks ago.

DEPARTMENT OF MINERAL RESOURCES  
STATE OF ARIZONA  
FIELD ENGINEERS REPORT

Mine Flux Mine & Trench Mill

Date May 9, 1963

District Harshaw District, Santa Cruz Co.

Engineer Axel L. Johnson

Subject: Field Engineers Report. Information from E.W. McFarland

References: Report of March 6, 1963 and previous reports.

Present Mining Activity: Mining and milling lead-zinc ores. 20 men working, 15 in the mine, 4 at the mill, and 1 in the shops. Both mine and mill work 1 shift, 6 days per week. Production is about 1200 tons of ore per month.

DEPARTMENT OF MINERAL RESOURCES

STATE OF ARIZONA

FIELD ENGINEERS REPORT

Mine Flux Mine & Trench Mill Date Mar. 6, 1963  
District Harshaw District, Santa Cruz Co. Engineer Axel L. Johnson  
Subject: Field Engineers Report. Information from E. W. McFarland.

References Report of Jan. 10, 1963 and previous.

Present Mining Activity Mining and milling lead-zinc ores. 25 men working, 20 in the mine, 4 at the mill, and 1 in the shops. Both mine and mill work 1 shift, 6 days per week. Production is from 1,500 to 1,600 tons per month.

Stoping is now being done on the 590 ft., the 430 ft., and the 360 ft. levels of the mine.

DEPARTMENT OF MINERAL RESOURCES  
STATE OF ARIZONA  
FIELD ENGINEERS REPORT

Mine Flux Mine & Trench Mill

Date January 10, 1963

District Harshaw District, Santa Cruz Co.

Engineer Axel L. Johnson

Subject: Field Engineers Report. Information from E. W. McFarland.

References: Report of Jan. 4, 1962.

Present Mining Activity: Mining and milling lead-zinc ores. 17 men working, 12 of these working in the mine, 4 at the mill and 1 in the shops. Both mine and mill works 1 shift, 6 days per week. Production about 1,000 tons per month.

Mining operations were discontinued on the 750 ft. and 670 ft. levels, because the ore remaining on these levels was too low grade for a profitable operation at the present prices for lead.

Stoping is being continued on the 590 ft., 430 ft. and 360 ft. levels of the mine.

Mill was shut down from Nov. 15 to Dec. 15 for repairs on motors. During this time, the mine continued to operate, stockpiling the ore.

DEPARTMENT OF MINERAL RESOURCES  
STATE OF ARIZONA  
FIELD ENGINEERS REPORT

Mine Flux Mine & Trench Mill

Date Jan. 4, 1962

District Harshaw District, Santa Cruz Co.

Engineer Axel L. Johnson

Subject: Field Engineers Report. Information from E. W. McFarland. *Box 172, Nogales, Ariz.*

Rererences Report of Sept. 7, 1961

Present Mining Activity Mining and milling lead-zinc ores. 30 men working, 26 of these working in the mine, 3 at the mill, and 1 in the shops. Both mine and mill now works 1 shift, 6 days per week. Production now about 2,000 tons per month.

Operators are not, at present, doing any custom milling.

Alvaro Alvarez and Armando Majalco, who operates the Indiana Mine, and who, previous to about Oct. 1, shipped their ore to the Trench mill for milling, are now shipping their ore to the Peru Mining Co. mill at Deming, N. Mex.

Mr. McFarland reports that no work is done on the Bonanza Mine at the present time. A small amount of exploration work was done at this mine by McFarland and Nash in Oct. and Nov. (see Memorandum of Nov. 9, 1961), but this was discontinued some time ago. Mr. McFarland states, however, that some diamond drilling on the Bonanza will be considered at a later date.

*Actual 10-62 - 20 men working  
+ at Trench mill*

DEPARTMENT OF MINERAL RESOURCES  
STATE OF ARIZONA  
FIELD ENGINEERS REPORT

Mine Flux Mine & Trench Mill

Date Sept. 7, 1961

District Harshaw District, Santa Cruz Co.

Engineer Axel L. Johnson .

Subject: Field Engineers Report. Information from E. W. McFarland.

References Report of July 6, 1961

Present Mining Activity Mining and milling lead-zinc ores. 47 men working, 4 38 working in the mine, 7 at the mill, and 2 in the shops. Mine is now working one shift, 6 days per week. Mill is working two shifts, 6 days per week. Production now about 3,000 tons per month.

Operators are also doing custom milling for Alvaro Alvarez and Armando Majalca, who are operating the Indiana Mine. This amounts to about 50 tons per month.

DEPARTMENT OF MINERAL RESOURCES  
STATE OF ARIZONA  
FIELD ENGINEERS REPORT

Mine Flux Mine & Trench Mill

Date July 6, 1961

District Harshaw District, Santa Cruz Co.

Engineer Axel L. Johnson

Subject: Present Status. Information from E. W. McFarland.

References: Report of April 6, 1960 and previous reports.

Present Mining Activity Production of lead and zinc ores, mining same at the Flux Mine and milling the ore in the Trench mill. 47 men working, of which 38 are working in the mine, 7 at the mill, and 2 in the shops. Mine is working 1 shift, 5 days per week, and 2 shifts when the mill is short of ore. Mill is working 2 shifts, 5 days per week. Production is about 2,800 tons per month. The lead concentrates are shipped to the A. S. & R. smelter at El Paso, and the zinc concentrates are shipped to Amarillo, Texas.

Ore Purchases Operators are also purchasing ore for the Indiana Mine, operated by Alvaro Alvarez and Armando Majalca. This amounts to about 20 tons per month, one shipment of 52 tons being made in March, and another of 50 tons in June.



Mining World July, 1960

---

This property active Sept. 1960, Feb. 1961

DEPARTMENT OF MINERAL RESOURCES

STATE OF ARIZONA

FIELD ENGINEERS REPORT

Mine Flux Mine & Trench Mill

Date April 6, 1960

District Harshaw District, Santa Cruz Co.

Engineer Axel L. Johnson

Subject: Present Status. Information from E.W. McFarland and personal visit.

References: Reports of December 2 and September 18, 1959, and previous reports.

Present Mining Activities: Producing lead and zinc ores and milling same. 47 men working, of which 38 are working in the mine, 7 at the mill, and 2 in the shops. Both the mine and mill are working 2 shifts, 6 days per week, production is about 3100 tons per month. The lead concentrates are shipped to A.S. & R. at El Paso and the zinc concentrates are shipped to Amarillo, Texas.

Ore Values: The ore mined is reported by McFarland to run approximately as follows:

Lead	4%
Zinc	8%
Silver	3.5 to 4.0 ounces
Gold	Trace

Ore Purchases: The operators Nash and McFarland are also purchasing ore from Armando De La Ossa and Oswaldo De La Ossa, operators of the Pride of the West mine, and concentrating this ore in the Trench mill. Since January 1, 1960, 156 tons of this ore has been purchased, which is reported to run approximately 2.5% copper, 2.5% lead and 10 to 11% zinc.

DEPARTMENT OF MINERAL RESOURCES  
STATE OF ARIZONA  
FIELD ENGINEERS REPORT

Mine Flux Mine & Trench Mill

Date Dec. 2, 1959

District Harshaw District, Santa Cruz Co,

Engineer Axel L. Johnson

Subject: Present Status. Information from E. W. McFarland and personal visit.

References Report of Sept. 18, 1959, and previous reports

Present Mining Activity Producing lead and zinc ores and milling same. 37 men working, of which 29 are working in the mine, 6 at the mill and 2 in the shops. The mine is working one shift and the mill 2 shifts, each 6 days per week. Production about 2,500 tons of ore per month. The ~~lead~~ lead concentrates are being stockpiled for the duration of the strike, while the zinc concentrates are being shipped to Amarillo, Texas, for smelting. Mr. McFarland reported that he will have a stockpile of from 750 to 800 tons of lead concentrates by Jan. 1, 1960.

DEPARTMENT OF MINERAL RESOURCES

STATE OF ARIZONA

FIELD ENGINEERS REPORT

Mine Flux Mine and Trench Mill

Date September 18, 1959

District Harshaw District, Santa Cruz County

Engineer Axel L. Johnson

Subject: Present Status -- Information from L. T. O'Brien.

References: Report of April 9, 1959 and previous.

Present Mining Activity: Producing lead and zinc ores and milling same. 31 men working, of which 23 are working in the mine (17 on days and 6 on nights), 6 at the mill and 2 in the shops. Production about 2000 tons of ore per month. The lead concentrates are being stockpiled for the duration of the strike, while the zinc concentrates are being shipped to Amarillo, Texas, for smelting.

DEPARTMENT OF MINERAL RESOURCES  
STATE OF ARIZONA  
FIELD ENGINEERS REPORT

Mine Flux Mine and Trench Mill Date April 9, 1959  
District Harshaw District --- Santa Cruz Co. Engineer Axel L. Johnson  
Subject: Present Status. Information from E. W. McFarland, operator, and personal visit.

References: Reports of Sept. 25, 1958 and Feb. 12, 1958.

Present Mining Activity: Producing lead and zinc ore and milling same. 38 men working 1 shift, 6 days per week. Production about 2,600 tons of ore per month. 4 men are employed on exploration and development. Exploration consists of U.G. diamond drilling with 1 rig, and some long hole drilling.

Additional: Electric power for the milling operations is now obtained from the Citizens Utility Company. Connection to this power supply was made on Mar. 12, 1959.

DEPARTMENT OF MINERAL RESOURCES

STATE OF ARIZONA

FIELD ENGINEERS REPORT

Mine Flux Mine and Trench Mill

Date Sept. 25, 1958

District Harshaw District --- Santa Cruz Co.

Engineer Axel L. Johnson

Subject: Present Status. Information from E. W. McFarland, operator and Personal Visit.

References Report of Feb. 12, 1958

Present Mining Activity

Producing lead and zinc ores, and milling same.

48 men working -- 38 men in the mine

4 men in the mill

6 men in the shops

Production about 120 tons per day or 3,000 to 3,200 tons per month.

Mine is run day shift only -- 6 days per week.

Mill is run two shifts per day (grave yard & night) -- 6 days/week.

Ore Values

Reported by Mr. McFarland viz:

✓ Lead --- 4 %

Zinc --- 8 %

Silver - 3 oz.

Additional

Mr. McFarland states that they will accept no custom ore, at present.

DEPARTMENT OF MINERAL RESOURCES  
STATE OF ARIZONA  
FIELD ENGINEERS REPORT

Ref. Made in  
Trench Mill file

Mine Flux Mine & Trench Mill

Date June 5, 1958

District Harshaw District, Santa Cruz Co.

Engineer Axel L. Johnson

Subject: Mine Report. Personal visit and information from D. C. Gilbert, Geologist

References: Report of Feb. 12, 1958 and March 15, 1957.

Present Mining Activity: Producing lead and zinc ore and milling same. 28 men working - 17 men in the mine, remainder in the mill and power house.

Present production is from 100 to 110 tons of ore per day. Both mine and mill now working 1 shift.

Ore Values: Ore being mined at present time reported by Mr. Gilbert as averaging 5% Lead and 8% Zinc.

Milling and Marketing Facilities: See report of Feb. 12, 1958.

# BYRD INVESTMENT COMPANY

MAIN OFFICE  
TUCSON, ARIZONA  
P. O. BOX 5226  
TELEPHONES 2032 AND 8529

September 10, 1946

Hon. Charles B. Henderson  
Chairman of the Board  
Reconstruction Finance Corporation  
Washington, D. C.

Dear Sir:

After receiving a telegram from Mr. G. S. Burk, Secretary, assuring me that my letter would be given attention by the office of the Metals Reserve Company, I am enclosing twelve copies of my letter dated August 31 which I have prepared in printed form in an effort to make it easier reading.

There are several points that I wish to make in this accompanying letter:

(1) If excessive profits result from uncancellable premiums, the State and Federal income taxes will take plenty of care of them;

(2) While I think stock-piling of foreign metals is important and desirable, it cannot in any manner solve the problem of enlarging our domestic reserves, and it would be unfortunate, as some suggest, to tie up stock-piling with any legislation calculated to encourage the enlargement of domestic reserves of strategic metals;

(3) I wish also to add the figures of Arizona metal production, '42 to '45 incl., supplied by the Arizona Department of Mineral Resources:

	Gold oz.	Silver oz.	Copper lbs	Lead lbs.	Zinc lbs
1942 .....	253,651	7,064,467	786,774,000	29,544,000	37,044,000
1943 .....	171,810	5,713,889	806,362,000	27,454,000	39,354,000
1944 .....	112,162	4,394,039	716,606,000	33,414,000	58,154,000
1945 .....	75,000	3,357,000	571,000,000	41,500,000	76,500,000

I call your attention, particularly, to the production relation between lead and zinc, as disclosed by these figures; to wit, the increase in zinc production is in closely direct ratio to the increase in lead production. Obviously, Arizona cannot produce more lead without producing more zinc, and any discouragement of zinc production cannot but reduce the lead production. These figures, it seems to me, unequivocally prove my statements as to the necessity of supporting zinc prices if more lead is to be produced.

Furthermore, the extent of the decline in the copper production trend cannot but be alarming, and these figures undoubtedly justify the fear of exhaustion of our copper reserves unless new reserves are discovered and developed.

Almost all zinc in Arizona contains copper, and the ratio of copper content usually increases at depth. Encouragement of zinc production, likewise, cannot but enlarge copper production in Arizona and in most parts of the West.

Yours very truly,

J. H. BYRD  
President

BYRD INVESTMENT COMPANY

MAIN OFFICE  
TUCSON, ARIZONA  
P. O. BOX 5226  
TELEPHONES 2032 AND 8529

*7 August 1946*

September 10, 1946

Hon. Charles B. Henderson  
Chairman of the Board  
Reconstruction Finance Corporation  
Washington, D. C.

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Yours very truly,

J. H. BYRD  
President

## American Smelting and Refining Co

The Trench and Flux units at Patagonia, the Trench mine being located 12 miles east of Patagonia, and the Flux mine about 6 miles south <sup>of Patagonia</sup>. These two mines work as a unit, producing 220 tons lead-zinc ores per day. The ores from the Flux mine are hauled to the Trench mine to be concentrated in the Trench flotation mill.

They have on the payroll for the two mines, mill and surface crew 240 men,

Due to the nature of the ore bodies it is difficult to keep large tonnage of ore blocked out, but by extensive development work enough ore is developed to keep up a uniform production record which has been maintained for several years.

Information from F.V. Richard  
Gen. Mgr.  
DEPARTMENT OF MINERAL RESOURCES

News Items

Date Sept. 7, 1951

Mine Flux Mine

Location 6 miles S.W. of Patagonia

Owner Amer. Smelting & Refining Co.

Address 813 Valley National Bldg.  
Tucson, Arizona

Operating Co. Amer. Smelting & Refining Co.

Address 813 Valley National Bldg.  
Tucson, Arizona

Pres.

Genl. Mgr. F.V. Richard

Mine Supt. Mr. Waidler

Mill Supt.

Principal Metals Lead & Zinc

Men Employed about 150

Production Rate about 150 tons per day

Mill, Type & Capacity All ore produced  
is treated at their own mill.

Power, Amt. & Type Trench Mill located  
at Trench Mine (mine inactive)

Mill is 12 miles S. of Patagonia

Signed

April L. Johnson  
(Over)

DEPARTMENT OF MINERAL RESOURCES  
STATE OF ARIZONA  
FIELD ENGINEERS REPORT

Mine Flux Mine & Trench Mill

Date November 7, 1963

District Harshaw District, Santa Cruz Co.

Engineer Axel L. Johnson

Subject: Field Engineers Report. Information from E.W. McFarland.

References: Report of Sept. 4, 1963 & previous reports.

Present Activity: None. Mine closed down about one month ago. Mill closed down about Aug. 20.

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Visited Flux Mine, all of the equipment seems to have been removed, including buildings, etc. (GWI WR 3/9/68).

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Flux and Trench properties are inactive. GW WR 5/8/70

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DEPARTMENT OF MINERAL RESOURCES

STATE OF ARIZONA

FIELD ENGINEERS REPORT

*notations in trench mill?*

Mine Flux Mine and Trench Mill Date February 12, 1958  
District Harshaw District, Santa Cruz Co. Engineer Axel L. Johnson  
Subject: Mine Report. Personal visit and information from E. W. McFarland, operator.

Location Flux mine located about 7 miles south of Patagonia. Trench mill located about 10 miles south of Patagonia.

Number of Claims 45 mining claims - 16 patented and 29 unpatented.

Owners - Mine American Smelting and Refining Co., 813 Valley National Bank Bldg. Tucson, Arizona.

Owners - Mill Jas. P. Nash, 406 Nash Bldg., Austin, Texas  
E. W. McFarland, 23 Anza Drive, Nogales, Arizona

*Mill owned by New York party and is leased by Nash & McFarland. J.P.R.*

Lessees & Operators Jas. P. Nash, 406 Nash Bldg., Austin, Texas  
& E. W. McFarland, 23 Anza Drive, Nogales, Arizona.  
Lease dated Dec. 19, 1957. (A.S. & R. Co. to Jas P. Nash & E. W. McFarland). Lease to be in force and effect until Dec. 31, 1964.  
E. W. McFarland, Mine Manager  
D. C. Gilbert, Consulting Geologist.

Principal Minerals Lead & Zinc

Present Mining Activity Producing lead & zinc ore and milling same.  
34 men working - 23 men in the mine  
6 men in the mill  
5 men in the power house.  
Present Production is 130 tons a day. This is to be increased to 150 tons per day soon. <sup>one</sup> shift mine & <sup>at</sup> 2 shifts mill.

Geology and Mineralization See Mineral Deposits of the Santa Rita and Patagonia Mts. (Bulletin 582) by Franck C. Schrader 1915.-- pages 258 to 263.

Ore Values Ore mined at the present time reported by Mr. McFarland as averaging about 6% lead and 10% zinc.

Ore in Sight and Probable No figures reported by the management. Additional ore reserves are, from time to time, developed by the exploration work. This may be sufficient to continue mining operations for several years.

Milling & Marketing Facilities Ore mined in the Flux mine is milled at the Trench Mill. Lead concentrates are shipped to the A.S. & R. Smelter at El Paso, Texas, and the Zinc concentrates to the A.S. & R. Smelter at Amarillo, Texas. 8 lead cells and 10 zinc cells are used for the flotation. Methyl amyl alcohol is used to float the lead, and 226 Air Float is used to float the zinc. Slacked lime is used to depress the iron & Z-9 Zanthate, Copper sulphate, zinc sulphate and cyanide are also used to assist the flotation.

*6-20-58 Developed good body of ore about 10% Pb, 6% Zn r/c to D. Gilbert - J.P.R.*

Information from MINE INSPECTOR'S OFFICE - August 15, 1957

✓ FLUX MINE (A.S.& R CO) Patagonia - Henshaw Dist SANTA CRUZ CO. 6-18-57

✓ AMERICAN SMELTING & REFINING CO., Box 5, Patagonia, Ariz.  
✓ Pres - H. Y. Walker 120 Broadway, New York City  
Sec - Geo. Brockington " "  
✓ Supt - A. E. Haeseler, Box 5, Patagonia

✓ L - Z - CU 4200 tons mo. 131 men 63 claims

L.A.S.

DEPARTMENT OF MINERAL RESOURCES  
STATE OF ARIZONA  
FIELD ENGINEERS REPORT

Mine Flux Mine and Trench Mill

Date March 15, 1957

District Harshaw District, Santa Cruz Co.

Engineer Axel L. Johnson

Subject: Mine Report. Information from A. E. Haeseler, Supt. Trench Unit, and R. S. Burton, Mine Superintendent.

Location Flux mine located about 7 miles south of Patagonia. Trench mill located about 10 miles south of Patagonia.

Owners and Operators American Smelting and Refining Co., 813 Valley National Bank Bldg., Tucson, Ariz. T. A. Snedden, Mgr. A. E. Haeseler, Supt. Trench unit. Jack Preston, Mill Supt. Trench mill. R. S. Burton, Mine Supt. Flux mine. S. H. Carlton, Mine Foreman, Flux mine. Ray Kenney, Master Mechanic Trench unit.

Principal Minerals Lead and Zinc.

Present Mining Activity Production of lead and zinc concentrates.

Number of men employed ----- 135 men; 105 at the Flux mine, 15 men at the Trench mill, and 15 men at the power house and shops.

Production ---- 4,000 to 4,200 tons per month from the Flux mine. This is milled at the Trench mill. In addition about 500 to 600 tons per month of custom ore, mostly from the Washington Camp area, is milled at the Trench. This ore is purchased by Co.

Geology and Mineralization See Mineral Deposits of the Santa Rita and Patagonia Mts. (Bulletin 582 ) by Frank C. Schrader 1915.----pages 258 to 263.

Ore Values Ore mined at the Flux mine is reported as averaging about 3.5 % lead, 3.5 % zinc, and 3 oz. of silver. There is very little copper in the ore, and there is no direct separation of the copper made at the mill. The lead concentrates are reported as running 2.8 % in copper.

Ore in Sight and Probable No figures reported by the management. Additional ore reserves are, from time to time, developed by the exploration work. This may be sufficient to continue mining operations for several years.

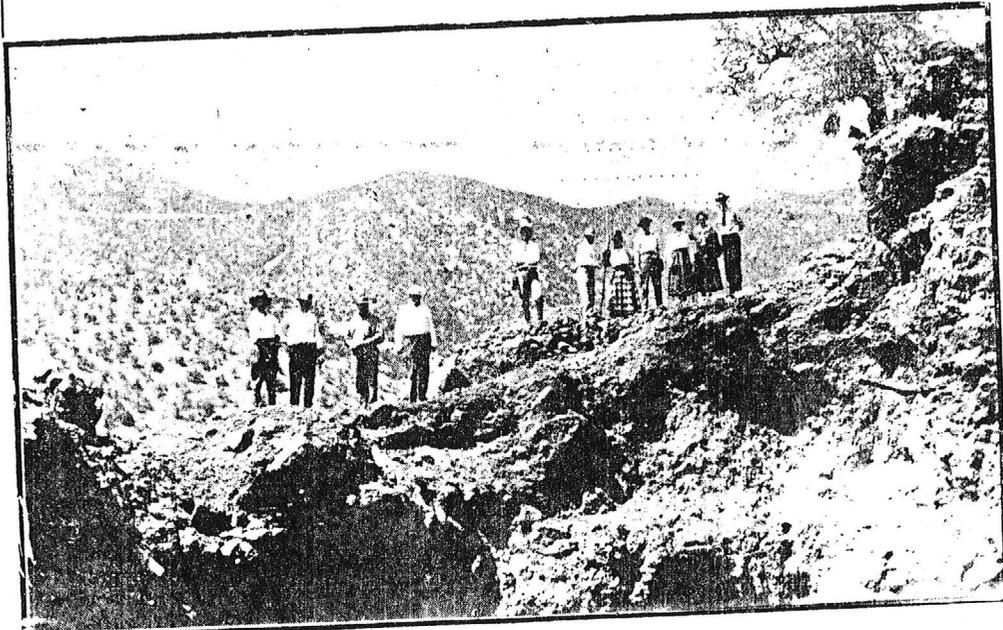
Milling and Marketing Facilities Ore from the Flux mine is milled at the Trench mill. Concentrates are shipped to the A. S. & R. Smelter at El Paso, Texas. In addition, the company purchases complex lead-zinc sulphide milling ores from producers in the Washington Camp and Patagonia districts. The company purchases this ore on schedules derived by a mill test of the ore made by their Deming concentrating plant at Deming, N. Mex.

# FLUX MINING COMPANY

INCORPORATED

MINES NEAR PATAGONIA,  
SANTA CRUZ COUNTY,  
ARIZONA

HOME OFFICE  
BANK OF BISBEE BUILDING  
BISBEE, ARIZONA



EDGE OF GLORY HOLE

## OFFICERS AND DIRECTORS

F. E. BENNETT, PRESIDENT  
F. B. KOLLBERG, VICE-PRESIDENT  
T. B. READ, SECRETARY - TREASURER  
MAURICE CLARK, CONSULTING ENGINEER  
H. D. PALMER,  
Z. F. READ  
C. W. BOSWELL  
J. M. MCGREGOR  
A. R. BERGQUIST

BISBEE, ARIZONA  
BISBEE, ARIZONA  
BISBEE, ARIZONA  
LOS ANGELES CAL.,  
DOUGLAS ARIZONA  
BISBEE, ARIZONA  
BISBEE, ARIZONA  
BISBEE, ARIZONA  
BISBEE, ARIZONA

THE FLUX MINING COMPANY was incorporated under the laws of the State of Arizona, June 12th, 1918, with an authorized capital of \$1,500,000, divided into 1,500,000 shares of common stock with a par value of \$1.00.

Five hundred thousand shares of the capital stock of this company were issued to parties whose names are herewith attached for investments of cash and for services rendered the company during the period the company operated as a close corporation, and one million shares of stock now remain in the treasury. The five hundred thousand shares above mentioned were issued to the following parties:

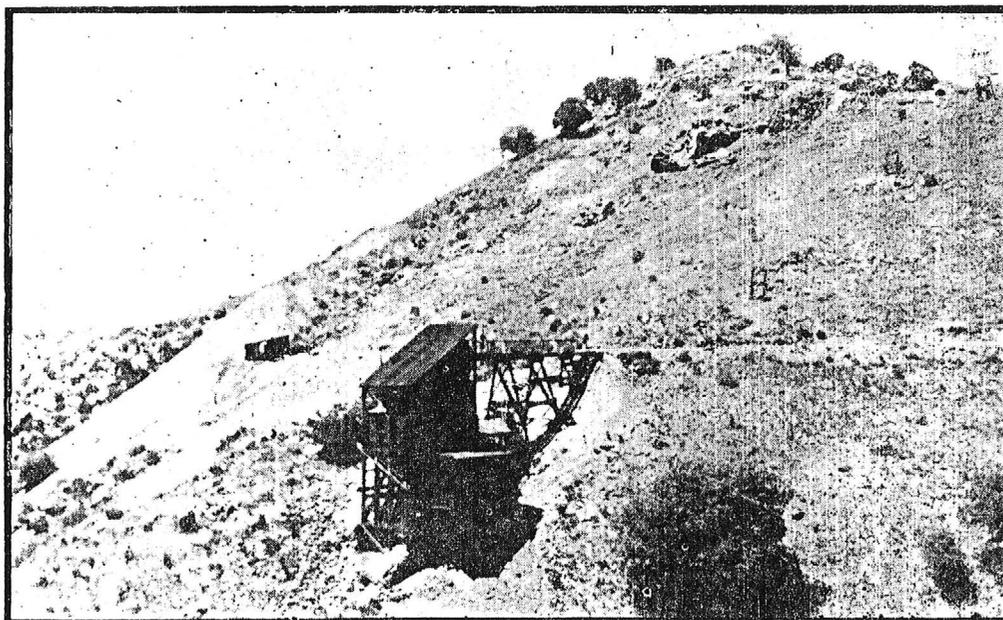
I. J. Johnson	12,500	H. D. Palmer	12,500
T. O. McGrath	12,500	Emma J. Palmer	12,500
Frank J. Ludwig	7,500	J. E. Kenney	25,000
Geo. W. Ludwig	30,000	Kathryn Welty	6,250
Eugenia R. Flora	12,500	R. L. Gibson	18,750
Eliza U. Flora	12,500	J. A. M. Vonk	6,250
C. F. Flora	12,500	Anna M. Kenney	18,750
Z. F. Read	37,500	Dr. J. S. Shurie	6,250
T. B. Read	12,500	Ada F. Maxam	10,938
F. E. Bennett	12,500	J. M. McGregor	45,312
Jacob M. White	12,500	John Towner	6,250
Leonard McWhorter	3,125	A. R. Bergquist	6,250
Byron McWhorter	3,125	Theresa Seiffert	6,250
C. W. Boswell	25,000	W. B. Gehring	6,250
J. E. Curry	6,250	Fred B. Kollberg	75,000
M. J. Elsing	12,500		
R. T. Pelton	12,500	Total	500,000

The company has received permission from the Arizona Corporation Commission to sell five hundred thousand shares of the one million shares in the treasury at fifteen cents per share.

The company has a bond and lease on twenty-one lode mining claims in the Harshaw Mining District, Santa Cruz County, Arizona, known as Flux, Flux No. 2 to 19, inclusive, Terminal and Grove.

The purchase price of these claims, together with all improvements, machinery, tools, etc., is one hundred thousand dollars, payable on or before February 20th, 1923, and a royalty of 25 per cent of smelter returns is to be paid, said royalty to apply on purchase price.

Mr. H. C. Beauchamp says. "Between the 130-foot level and the 260-foot level a raise has developed a block of lead sulphides, representative samples of which assay 10.4 ounces silver, 23.8 per cent lead, 21.8 per cent zinc and 4.6 per cent iron. Flotation tests upon sulphide ore of similar characteristics proved that the lead-silver values can be separated from the zinc and from the iron contents, recovering two grades of concentrates, both commercial products. There is a block of this ore ready for stoping, representing 5000 to 6000 tons." (Since increased to 15,000 tons). Mr. Beauchamp says also: "About 100 feet, vertical depth, below the 260-foot tunnel level, and down the canyon some 500 feet from the portal of this tunnel some prospect work, by open cut, has disclosed a 14 to 15 foot vein of quartz material showing disseminated chalcocite. A sample returned 0.54 per cent copper and 10.50 ounces of silver. This material will also lend itself readily to treatment by flotation." Selected ore from this vein assays as high as 8 per cent copper and 149 ounces of silver per ton.



LOADING STATION FOR AERIAL TRAM TO MILL. NOTE BOLD OUT-CROP NEAR TOP. GLORY HOLE JUST "OVER THE TOP,"

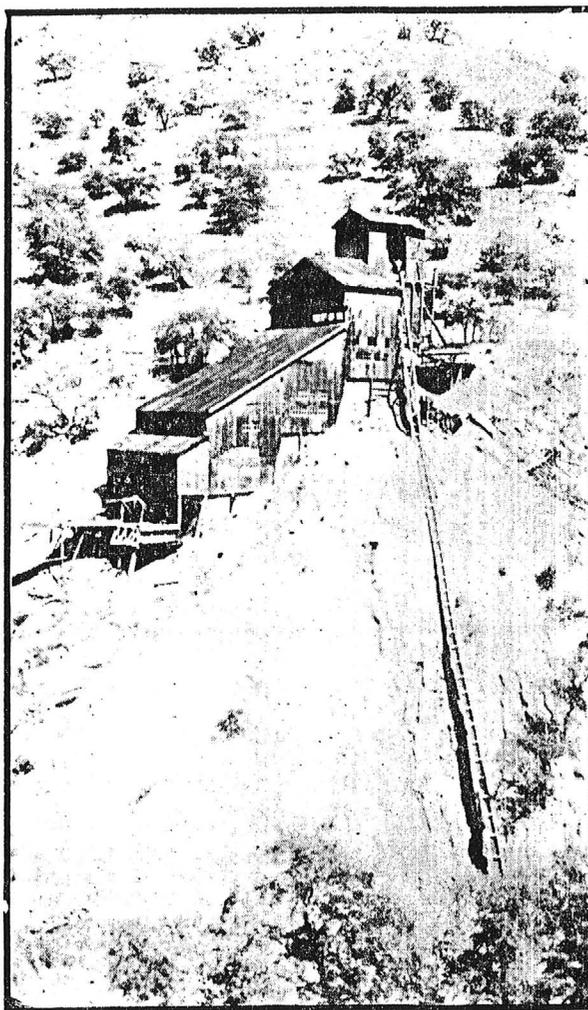
Working conditions are particularly favorable; the mine may be worked through tunnels to a vertical depth of about 700 feet, or 1000 feet on the dip of the ore body; labor is cheap and abundant, and the climate permits of work being carried on at all seasons of the year. The proximity to a railroad is also a favorable feature. An electric power line crosses the property within a mile of the shaft.

Adjacent to the Flux on the south is the World's Fair Mine, which has been developed to a depth of 600 feet by about 15,000 feet of drifts, tunnels etc. From the main entrance the openings and croppings extend for an eighth of a mile southward and about 400 feet higher, which, together with the 600 feet sunk on the vein in the mine gives a total depth of about 1000 feet. It is reported that this property has produced more than \$1,000,000, of which \$500,000 was in high grade ore.

Adjoining the Flux Mine on the west is the well known Three R Mine, which is said to contain about 300,000 tons of ore carrying 3 per cent copper and has been developed to a depth of about 700 feet.

Within the last two and one-half years the Flux Mine has been examined by the following engineers: L. C. Penhoel, C. T. Schultz, H. C. Beauchamp, and Max Kraut, and copies of their reports may be seen in the company's office.

Since this company took possession of the property it has erected a gravity-flotation concentrating mill of a capacity of 100 tons per 24 hours.



**ONE HUNDRED TON CONCENTRATING MILL**

It has put in a pumping plant on the Soncita River near the railroad, and 8,800 feet of 3 inch pipe conveys water to storage tanks above the mill.

Ore from the mine is brought to the mill by an aerial rope tram 6,200 feet long, with a capacity of 150 tons per 24 hours.

The company has built a camp near the mill and several houses at the mine.

The Flux mine is four miles south of Patagonia, Santa Cruz County, Arizona, and three miles from the Benson-Nogales branch of the Southern Pacific Railroad, at an elevation of 4,800 feet. It is reached by a good wagon road of easy grade. The mill is between the mine and the railroad, about a mile and a quarter from the mine, and 800 feet lower.

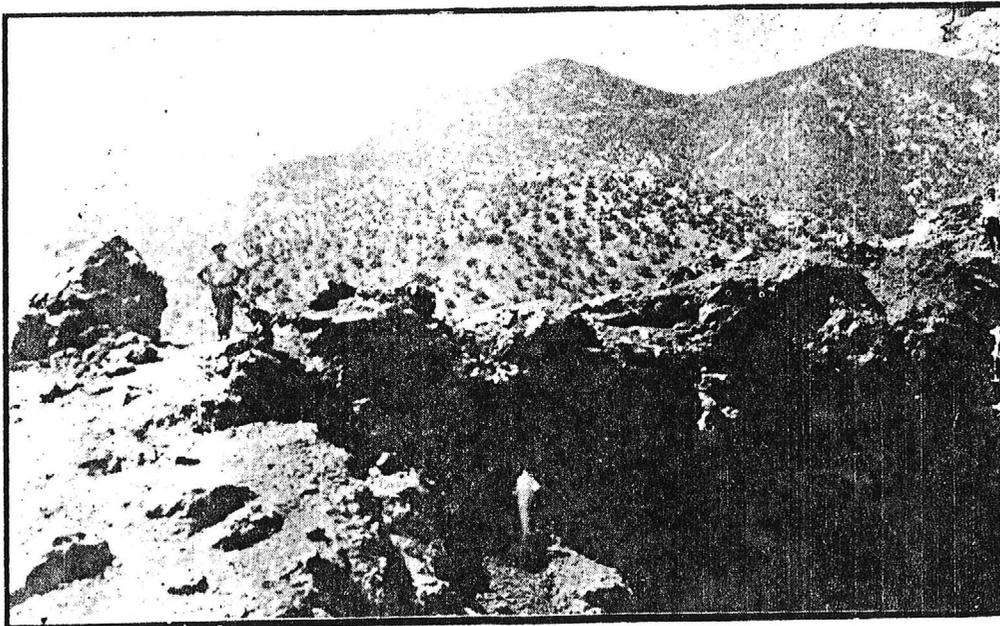
The Flux mine is reported to be an old Mexican mine, and to have been located in the early fifties. In 1858 ore from it was smelted in an adobe furnace near by, and later it is said the mine furnished lead for bullets in the Civil War. It has shipped more than 50,000 tons of silver-lead ore, most of which was treated in the Benson smelter in the early eighties.

Ten carloads of high grade ore, averaging \$60 to \$100 per ton, were shipped to El Paso in 1904.

In 1914-15 several thousand tons were shipped to the smelter at El Paso.

In 1917 one thousand tons were shipped, which netted as high as \$1265.48 per carload.

This company has shipped concentrates of a gross value of over \$26,000.



**SOUTH SIDE OF GLORY HOLE: 75 BY 100 FEET AND 70 FEET DEEP. ORE EXTENDS 20 FEET FURTHER TO LEFT OF MAN. NOTE LARGE OUT-CROP.**

The property is developed by more than 6,000 feet of work, mostly on the Flux claim, where several veins come together in a large deposit of silver-lead ore. The principal works are a 260-foot vertical shaft, and tunnels from the surface at 70, 100, 150 and 260 feet below the collar of the shaft. These tunnels are connected with the shaft, and a number of raises and winzes between levels and many cross-cuts and drifts prove the extent and value of the ore body.

There is also much open-cut work; for instance the pit or glory hole near the shaft, 100 feet long, 75 feet wide and 70 feet deep, from which over 35,000 tons of ore have been extracted.

At 260 feet below the collar of the shaft, a tunnel has been run from the surface 800 feet and connects with the shaft, but has not reached the large ore deposit shown on the upper levels. It is estimated it will take about 300 feet of drifting to get to that ore body. This tunnel has run through a smaller body of silver-lead sulphide ore for 200 feet, showing a width of three to eight feet. A 150-foot upraise in this ore body connects with the 130-foot level. A 60-foot winze from the 260 foot level is in ore all the way down. This ore body contains 15,000 tons and averages about 11 per cent lead, 30 per cent silica, 30 per cent iron, 14 per cent zinc, and 6 ounces silver per ton, which is a very profitable concentrating grade of ore.

Other tunnels can be driven at 400 feet, at 550 feet and at 700 feet below the collar of the shaft. Since the vein dips at an angle of 45 degrees, there will be 1000 feet of ore-backs above the lowest tunnel.

For the present the development of the mines will be directed principally towards opening up the large deposit, or chimney of silver-lead ore on the Flux Claim, at about the center of the group of twenty-one claims. This ore has been developed to a width of over 100 feet and 240 feet in length, and 130 feet in depth, and the new work will prove the ore in the lower levels.

The topography is hilly, but not rugged. As the ores are exposed at the surface in the upper end of the steep, narrow north-south ridge and a canyon or gulch several hundred feet deep lies on either side and at the south end, nature has all but mined the deposit herself.

The oldest rock formation at the mine is a small area of Paleozoic limestone with some associated conglomerate and shale. These sedimentary rocks are intruded by quartz monzonite and granite aplite, and together with them are surrounded, overlain, and intruded by the Tertiary rhyolite or so-called porphyry, while but a few hundred yards distant near the deep gulch on the west, occurs the great fault contact between the rhyolite of the Flux Mine and the granite porphyry of the Three R Mountain, which probably also intrudes the Paleozoic beds in the vicinity of the mine. The course of this fault, which is about N. 30 degrees W., is approximately followed by the 2½ mile canyon nearby on the west, and is marked by a boldly cropping silicified reef extending for several miles across the country from a point about three-fourths of a mile southwest of the World's Fair mine to the north base of the mountains.

Though several veins center on the Flux claim the ore deposits occur principally in a main north-south shear zone, or lode, which has a known extent of over 1½ miles and is covered by the company's claims for more than 6,000 feet. Four of the other veins meeting in the large deposit have been worked and have produced shipping ore to points from 250 to 300 feet from the main vein. These side veins are from 3 to 14 feet wide and have been developed to the 130 foot level.

"The main lode seems to be composed mainly of crushed altered, silicified ore-bearing rhyolite. The entire mass in the upper workings from the surface down to the 130-foot level is said to have been ore and much good ore, probably several thousand tons, is still available. The ore contains lead and silver, with considerable associated iron and in the lower part of the mine, some copper and zinc. The ore which has been produced was about all oxidized and averaged \$12.00 or more per ton. At the present the average run of mine ore contains about 7 ounces to the ton in silver and 15 per cent in lead. The ore contains also much iron, which makes it a very good flux, and for this reason much of it was formerly sent to the Mowry smelter, six miles distant, and used as a flux in smelting the refractory ore from other mines. Some of the lead ore, it is said, smelts easily on a common domestic stove." ♦

In the lower levels the ore contains some copper and zinc. On the 130 foot level a sample across 15 feet assayed 8.6 ounces silver, 10 per cent lead, 14 per cent zinc and 0.6 per cent copper. Another sample across 10 feet assayed 24.8 ounces silver, 8.15 per cent lead, 9.16 per cent zinc and 1.5 per cent copper.

♦ U. S. Geological Survey 1915.

Four hundred and eighty feet of development, principally on the 130-foot level, has been done by the company, and many ore chutes have been put in to handle the large body of silver-lead ore in the oxidized zone above this level.

About 4,000 tons of this ore—silver-lead carbonates and oxides—were run through the mill and the results show this character of ore cannot be treated profitably by concentration.

About 700 tons of silver-lead sulphide ore, assaying 11.6 per cent lead, 12 per cent zinc, and 7 ounces silver, have been treated in the mill with satisfactory results, details of which will be found in the manager's report to the company, and under normal operating conditions and shipping concentrates to smelter at El Paso, ore of this kind can be handled at a profit of \$4.00 per ton. (Not including profit from zinc by-product.)

There are 32,500 tons of the same kind of ore "in sight" between the 130-foot level and the 260-foot level, representing a profit of \$130,000.

This ore cannot be mined in quantity and sent to the mill by the aerial tram because the aerial tram loading station is at the 130-foot level, and there is no hoist to raise the ore to that level. The company has no power drills, and mining by hand is expensive and slow.

Another reason for not mining and concentrating the sulphide ore and shipping the silver-lead concentrates, is that the company is considering a project to erect a smelter at the mine and save the freight charges on concentrates from the mine to El Paso, amounting to \$3.50 to \$4.00 per ton.

A smelter at the mine will insure the profitable treatment, in connection with the sulphide concentrates, of the large body of silver-lead ore in the oxidized zone that cannot be concentrated successfully, and which contains 50,000 tons of ore assaying 10 per cent lead and 5 ounces silver, and worth, net, \$4.00 per ton, and 75,000 to 100,000 tons of ore of a value not yet determined.

It will not be wise to erect a smelter at the mine until a larger tonnage of sulphide ore is placed "in sight" and it is the intention of the company to extensively open up the mine on the lower levels in the sulphide zone with this object in view.

To do this work, the company needs more money, and to raise this money the company is offering five hundred thousand shares of treasury stock (par value \$1.00) at fifteen cents per share.

This stock has been deposited with the Miners and Merchants Bank, Bisbee, Arizona, and will be issued by the bank to purchasers.

The company expects to complete the proposed development by the first of April, 1920, and will by that time decide about putting up a smelter at the mine. If a smelter is put up, it will have a capacity of 100 tons per 24 hours and will cost about \$100,000.

To obtain money for this purpose another offering will be made of treasury stock at not less than fifty cents per share; a price which will be warranted by the larger tonnage placed "in sight" by the proposed development campaign.

The Flux Mining Company estimates the development work as outlined will place "in sight" and ready to mine not less than 200,000 tons of silver-lead ore in the sulphide zone, which will yield a profit of \$4.00 per ton by concentrating and shipping concentrates to smelter at El Paso; and a profit of \$5.00 to \$6.00 per ton by concentrating and smelting concentrates in smelter at the mine. (Not including profit from zinc by-product.) In case a smelter is erected at the mine, the 50,000 tons of ore now developed in the oxidized zone can be smelted in connection with the sulphide concentrates, at a profit of \$4.00 per ton, and in this case from the 250,000 tons of ore then in sight, there will be a profit of \$1,200,000 to \$1,400,000.

Patagonia is on the State Highway, 22 miles from Nogales, 67 miles from Tucson, and 76 miles from Bisbee. The Flux Camp is 4 miles from Patagonia and the road is good. Come and spend the week end at the camp and see the mine—take samples if you like. You'll be welcome.



A GROUP OF FRIENDS AT THE FLUX CAMP.

Applications for shares may be made to the Flux Mining Company, Bank of Bisbee building, or to the Miners and Merchants Bank, Bisbee, Arizona. Checks in payment for shares to be made payable to the Miners and Merchants Bank, and the shares will be issued to purchasers by that bank. Remember, the par value of these shares is one dollar and the selling price is fifteen cents a share.

*Duplicate*

BYRD INVESTMENT COMPANY

MAIN OFFICE  
TUCSON, ARIZONA  
P. O. BOX 5226  
TELEPHONES 2032 AND 8529

August 31, 1946

Hon. Charles B. Henderson  
Chairman of the Board  
Reconstruction Finance Corporation  
Washington, D. C.

Dear Sir:

My associates and I have been mining in the Southwest for many years. I think that such observations as I make here should be considered by the Administration and all federal agencies having the power to deal with the tragic shortage of strategic metal reserves in the United States.

I submit herewith a practical plan that will do much to solve what has come to be an acute, if not a desperate, situation.

The old prospectors found the outcrops of metal that were surface exposed. I believe any geologist will agree that there are vast quantities of ores, at minable depth, that have never been exposed. The mining industry should be encouraged to explore for and develop these ores. I believe it can be stated, as a truism, that the big companies, except in areas contiguous to ore bodies they are mining, will take little of the gambling hazard necessary to explore for blind veins and ore bodies. Almost every great mine in the country was discovered and/or initially developed by the prospector and small operator. The major companies, able to finance large-scale operations, mills, smelters and refineries, can produce ore at very much less cost than the small operator. The result is that, after mines are discovered and opened up by the small operators, they quickly fall into the hands of the large companies. I wish to illustrate, in our own experience here in Arizona, the statement that the major companies will seldom risk any substantial amount of capital to explore for hidden ore bodies or to undertake to develop new ore bodies in mines that have been worked out. In the caption "Application of Premiums at Duquesne" I have illustrated what I consider to be a weakness in the present application of the Premium Plan.

**Duquesne Mines**

The Duquesne properties in Southern Arizona, which had produced since the early 60's, were practically abandoned as being non-commercial before 1920, although it is estimated that the twenty or more mines of the Duquesne Group had produced more than \$20,000,000 worth of lead, copper and zinc ores prior to that year. My brother and I bought the property in 1938, and opened up many of the old mines and found floors and faces of what we believed would develop into sizable tonnages of commercial ore. The American Smelting & Refining Company, Phelps-Dodge Corporation, and practically all the major companies operating in the West, when we presented the property to them, turned it down. We had no money for its development. We finally leased the property to Callahan Zinc-Lead Company which built a mill on the property just prior to the outbreak of the war. Since that time, and largely for the war effort, Duquesne has produced \$2,700,000 in zinc, lead and copper concentrates, and it is still producing. We are now operating it ourselves, but without sufficient capital to provide milling facilities. We are mining the ore in a hand-to-mouth fashion. We are unable at present prices of metals, even with the premiums, to carry on extensive development work to open up new replacement ore bodies. Since all the mines, except one, are very shallow, few over 150 feet in depth, we are sure that an adequately financed program of development work would open up many sizable if not large mines on this property. The only mine on the property having any depth (635 feet) produced more than \$3,500,000 when it was operated by George Westinghouse about thirty years ago. Zinc-lead ores that he could not then mine profitably are now processed by modern selective flotation. No big company operating in this section will take this property or help us to develop it because we do not have a large amount of blocked-out or proven ore. We have tried them all.

**Application of Premiums at Duquesne.** Our firm lost money during the war period, notwithstanding the fact that, with premiums, we produced essential metals from four mines other than Duquesne, all of which were abandoned prior to 1946. Then in 1946, when we were at last able to show a profit on Duquesne operation, the Committee threatened to reduce our premiums and in August 1946 did eliminate our C premium on zinc. No one is suggesting that the Government repay us for the losses that we incurred in the three preceding years, but now when we have an opportunity to get something like a compensating return for an extremely venturesome investment the Committee has advised us that we have been making too much money. Applying this theory, we would only be entitled to the premiums we have been receiving after we had demonstrated that the operations were unprofitable. It seems to me that this attitude of the Committee must be changed if the Premium Price Plan is to accomplish its purpose. When any operator takes the gamble that we took at Duquesne, when none of the big companies would touch it, he should not be subjected to the constant hazard of premium reduction or cancellation. The small operator must believe that he has a chance to make money when he engages risks such as we have undertaken.

### **Flux Mine**

In 1939 we acquired a lease and option on the old **Flux**, after it had been examined and rejected by every major company operating in this section. We opened up new ore bodies on the Flux property and had in sight in a few months about 40,000 tons of zinc-lead ore. We were unable to finance a milling operation and had to practically give it away to a major company. The Flux has produced for the American Smelting & Refining Company, we believe, much more than \$3,000,000 of lead-zinc concentrates since 1940.

Thus the Duquesne and Flux properties, rejected by the major companies, opened up by us, small miners who knew no better than to gamble, have produced some \$6,000,000 of zinc, lead and copper concentrates since 1940 and largely for the war effort.

There may be some, but I do not know of any, of our really big producing mines, or any important virgin mining area in the United States, discovered by any one of the major companies.

### **Small Miners' Problems and Excessive Costs.**

The small miner always explores and gambles if he feels he has a ghost of a chance. The Premium Price Plan, tied as a rider to OPA legislation, was never adequate because of the provision which gave the premium authorities the option to cancel premiums at any time. Furthermore, it was extended only from year to year, and development work, sometimes requiring months and years to complete, could never be prosecuted with any confidence. Therefore, the hazards of exploration and cancellation made it practically impossible for the small operator to ever secure any adequate financing.

Besides the hazards of exploration and cancellation that have confronted the small operator, he is also faced with heavy costs in marketing his ores, some of which are as follows:

(a) A large percentage of newly opened up mining properties are inaccessible, involving heavy cost for road building and trucking to the railroad for shipment;

(b) Even though he can afford new equipment and can get delivery of it, he must use, initially, small equipment, usually gasoline powered, resulting in an abnormal fuel cost as compared with the power costs of the big companies;

(c) Lack of comfortable housing in remote areas makes him unable to secure the class of labor that is attracted to the big plants offering community conveniences;

(d) In Arizona, the small operator pays 13% of his payroll for insurance. The big companies, carrying part or all of their industrial insurance themselves, pay less than half the insurance costs of the small operator;

(e) Overhead costs are in great disproportion to those of the large companies;

(f) **Smelter and Transportation Costs:** Three per cent copper ore was an average grade shipped by hundreds of small operators during the war. They received from the smelter, not including premiums, after all deductions, including railroad transportation, smelting charges, and penalties, 3½c to 4½c per pound for their ore in the bin at the mine, against which they had to charge all their mining expenses, and I can support this factual statement with numerous Settlement Sheets from three smelters to whom we have shipped such ores. Without the premiums our shipments would have averaged less than \$3.00 per ton in the bin at the mine, and less than 5c per pound for our copper.

*Duplicate*

## Remedies

The Bills now before Congress, to divorce the Premium Price Plan from the OPA, are inadequate in their provisions. The Congress should effect legislation that would authorize and include the following desiderata:

- (a) A premium Price Plan extending over not less than a five-year period;
- (b) Premiums should be uncancellable, except for fraud and misrepresentation;
- (c) Premium payments should be applicable to all properties alike, whether or not applications were made prior to any specific dates;
- (d) The Reconstruction Finance Corporation should be authorized and directed to pursue a constructive and liberal lending policy; only those experienced in mining should be financed, and they should be adequately financed to carry out the development programs they would undertake;
- (e) Enlarged appropriations for the Bureau of Mines to continue and expand its exploration work.

## Conclusion

With a wider use of inexpensive geophysical prospecting for underground ores, the large operators will undoubtedly enlarge and extend their ore reserves, but I wish to impress upon you the fact that, **whereas large operators are numbered by the dozens, the prospectors and small operators are numbered by the thousands.** (There are more than 4,300 members of the Arizona Small Mine Operators' Association alone), and the greatest assurance, if we have any regard for the history of the mining business, is the encouragement of these thousands of small operators and prospectors to search for, explore, and develop vital new ore reserves. The small operators in the aggregate are developers, rarely substantial producers, because as soon as a worth-while development is accomplished, the big companies take over and, since the small operator produces such a very small part of the country's tonnage, the cost to the Government of extending premium assistance to him would involve a small amount of money in comparison with the total value of strategic metals produced in the country.

**All authorities having to do with premium payment matters should be reminded that, for illustration, when lead supplies are short, nothing is gained by increasing the premiums on lead and correspondingly reducing them on other strategic metals, because lead in the West is found almost invariably associated with zinc and/or copper:** The effect of such readjustment, in most cases, would be to cripple the operator and reduce the volume of all the metals he produces. There are few purely lead mines in the western states.

It may be argued that a non-cancellable premium extending over a period of several years will make it possible for some operators to make huge profits on their investment. There won't be many instances of this kind, and such a contingency I think should be made entirely possible as an incentive and an inducement to the venture-capital that must be enlisted in the exploration work so badly needed.

The RFC made hundreds or perhaps thousands of small loans (access loans, etc.) to small operators during the war. These loans were practically all losses because, in the first place, they were made with little or no consideration of the mining ability or experience of the borrower; and, secondly, the objective which had to be reached could not, perhaps one time in a thousand, be financed with so small a sum as \$5,000; in the third place, nothing but obsolete and worn-out machinery was available to the small operator, which fact in itself was enough to defeat in most cases the success of any \$5,000 investment program; and, in the fourth place, war-time mining costs were excessive, and the Army took practically all the best labor. These small loan projects were, therefore, practically all doomed to failure before they were begun; for that reason they cannot be fairly regarded as a criterion on which to base RFC credit.

Underground rock work is expensive and requires months and, in many cases, years to complete; therefore, unless the premiums are made uncancellable, there is small incentive to take the risk involved in undertaking a program of extensive exploration work.

I think that those to whom this letter is presented should realize the fact that an extremely small percentage of so-called marginal miners and small operators have made any money, notwithstanding the premiums they were granted, since the beginning of World War II. As a matter of fact, with a rather extensive acquaintance with the mines and operators in Arizona and New Mexico, I do not know as many as ten men who are on the credit side of the ledger as a result of their mining operations since the Premium Price Plan was established. The fact is that most of them are broke. Most of them have not only lost their own money but lost money for those who furnished them financial help.

As one of the Senators wrote me recently, since the war is not ended officially, **the desiderata generally covered by what I recommend in this letter can be accomplished by presidential order or directive** until such time as appropriate legislation can be secured.

If the Premium Price Plan is revised, I believe it should not restrict its applicability to mines or properties as such, because an operator may suffer losses in a half dozen mining ventures before he succeeds in developing one that is profitable.

Mining is a precarious and hazardous business; the ratio of failures to successes involves overwhelming figures.

While Bureau of Mines authorities and other statisticians have given a limited number of years of life to the metal reserves now proven, these reserves were further sadly depleted during the recent war effort. The thoughtless citizen, in the face of these figures widely published, has answered that "We can import our strategic metals from foreign countries at much lower prices in many cases than the cost of producing these metals in our own country." This argument, it seems to me, was adequately negated during World War II. And there arises a further thought that—in another war, who is to know who our enemies may be or whether we shall have any allies that can supply our metal requirements. This seems to me to be the answer to the foolish argument that we can rely upon foreign sources for our defense metal requirements.

If it is desirable to produce more copper, zinc and lead, the incentives which I have proposed will put thousands of small miners to work, and I believe the results will astonish the statisticians who tell us that our reserves of strategic metals, further depleted by the war, will last only a few years.

Yours very truly,

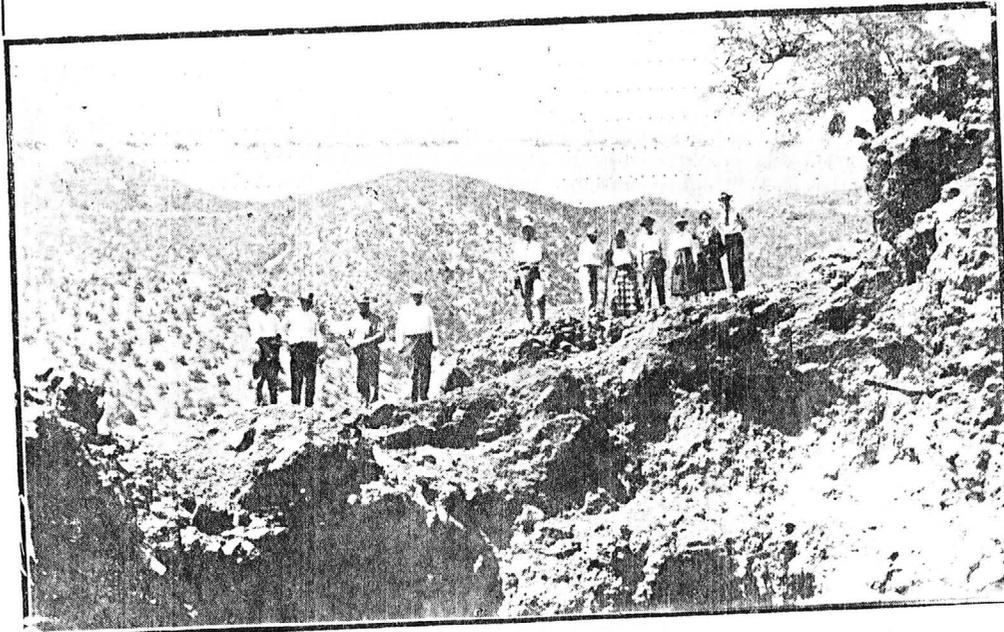
J. H. BYRD  
President

# FLUX MINING COMPANY

INCORPORATED

MINES NEAR PATAGONIA,  
SANTA CRUZ COUNTY,  
ARIZONA

HOME OFFICE  
BANK OF BISBEE BUILDING  
BISBEE, ARIZONA



EDGE OF GLORY HOLE

## OFFICERS AND DIRECTORS

F. E. BENNETT, PRESIDENT  
F. B. KOLLBERG, VICE-PRESIDENT  
T. B. READ, SECRETARY - TREASURER  
MAURICE CLARK, CONSULTING ENGINEER  
H. D. PALMER,  
Z. F. READ  
C. W. BOSWELL  
J. M. MCGREGOR  
A. R. BERGQUIST

BISBEE, ARIZONA  
BISBEE, ARIZONA  
BISBEE, ARIZONA  
LOS ANGELES CAL.  
DOUGLAS ARIZONA  
BISBEE, ARIZONA  
BISBEE, ARIZONA  
BISBEE, ARIZONA  
BISBEE, ARIZONA

THE FLUX MINING COMPANY was incorporated under the laws of the State of Arizona, June 12th, 1918, with an authorized capital of \$1,500,000, divided into 1,500,000 shares of common stock with a par value of \$1.00.

Five hundred thousand shares of the capital stock of this company were issued to parties whose names are herewith attached for investments of cash and for services rendered the company during the period the company operated as a close corporation, and one million shares of stock now remain in the treasury. The five hundred thousand shares above mentioned were issued to the following parties:

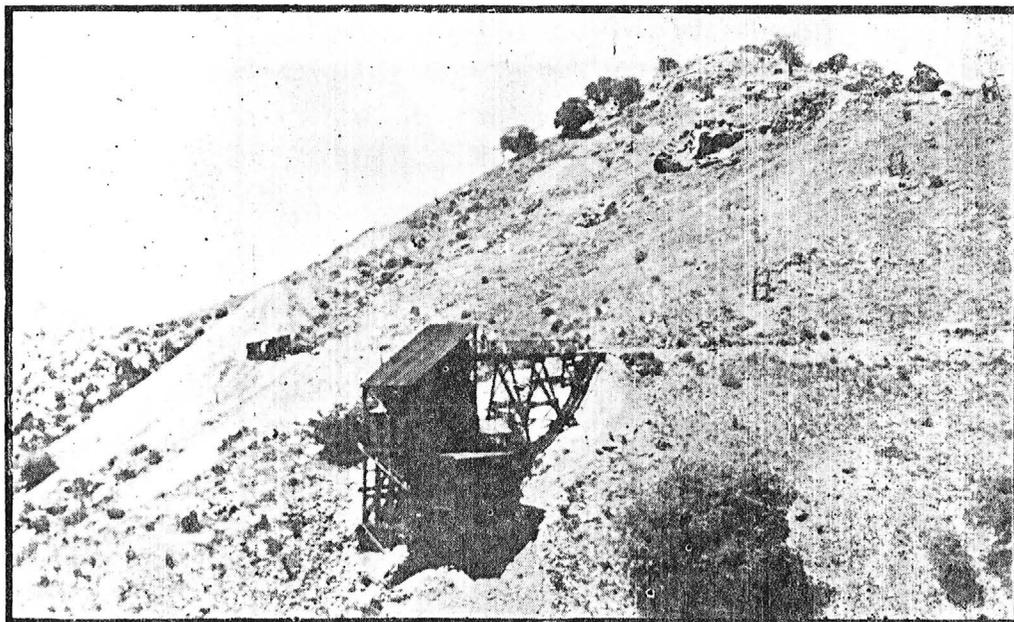
I. J. Johnson .....	12,500	H. D. Palmer .....	12,500
T. O. McGrath .....	12,500	Emma J. Palmer .....	12,500
Frank J. Ludwig .....	7,500	J. E. Kenney .....	25,000
Geo. W. Ludwig .....	30,000	Kathryn Welty .....	6,250
Eugenia R. Flora .....	12,500	R. L. Gibson .....	18,750
Eliza U. Flora .....	12,500	J. A. M. Vonk .....	6,250
C. F. Flora .....	12,500	Anna M. Kenney .....	18,750
Z. F. Read .....	37,500	Dr. J. S. Shurie .....	6,250
T. B. Read .....	12,500	Ada F. Maxam .....	10,938
F. E. Bennett .....	12,500	J. M. McGregor .....	45,312
Jacob M. White .....	12,500	John Towner .....	6,250
Leonard McWhorter .....	3,125	A. R. Bergquist .....	6,250
Byron McWhorter .....	3,125	Theresa Seiffert .....	6,250
C. W. Boswell .....	25,000	W. B. Gehring .....	6,250
J. E. Curry .....	6,250	Fred B. Kollberg .....	75,000
M. J. Elsing .....	12,500		
R. T. Pelton .....	12,500	Total .....	500,000

The company has received permission from the Arizona Corporation Commission to sell five hundred thousand shares of the one million shares in the treasury at fifteen cents per share.

The company has a bond and lease on twenty-one lode mining claims in the Harshaw Mining District, Santa Cruz County, Arizona, known as Flux, Flux No. 2 to 19, inclusive, Terminal and Grove.

The purchase price of these claims, together with all improvements, machinery, tools, etc., is one hundred thousand dollars, payable on or before February 20th, 1923, and a royalty of 25 per cent of smelter returns is to be paid, said royalty to apply on purchase price.

Mr. H. C. Beauchamp says. "Between the 130-foot level and the 260-foot level a raise has developed a block of lead sulphides, representative samples of which assay 10.4 ounces silver, 23.8 per cent lead, 21.8 per cent zinc and 4.6 per cent iron. Flotation tests upon sulphide ore of similar characteristics proved that the lead-silver values can be separated from the zinc and from the iron contents, recovering two grades of concentrates, both commercial products. There is a block of this ore ready for stoping, representing 5000 to 6000 tons." (Since increased to 15,000 tons). Mr. Beauchamp says also: "About 100 feet, vertical depth, below the 260-foot tunnel level, and down the canyon some 500 feet from the portal of this tunnel some prospect work, by open cut, has disclosed a 14 to 15 foot vein of quartz material showing disseminated chalcocite. A sample returned 0.54 per cent copper and 10.50 ounces of silver. This material will also lend itself readily to treatment by flotation." Selected ore from this vein assays as high as 8 per cent copper and 149 ounces of silver per ton.



LOADING STATION FOR AERIAL TRAM TO MILL. NOTE BOLD OUTCROP NEAR TOP. GLORY HOLE JUST "OVER THE TOP."

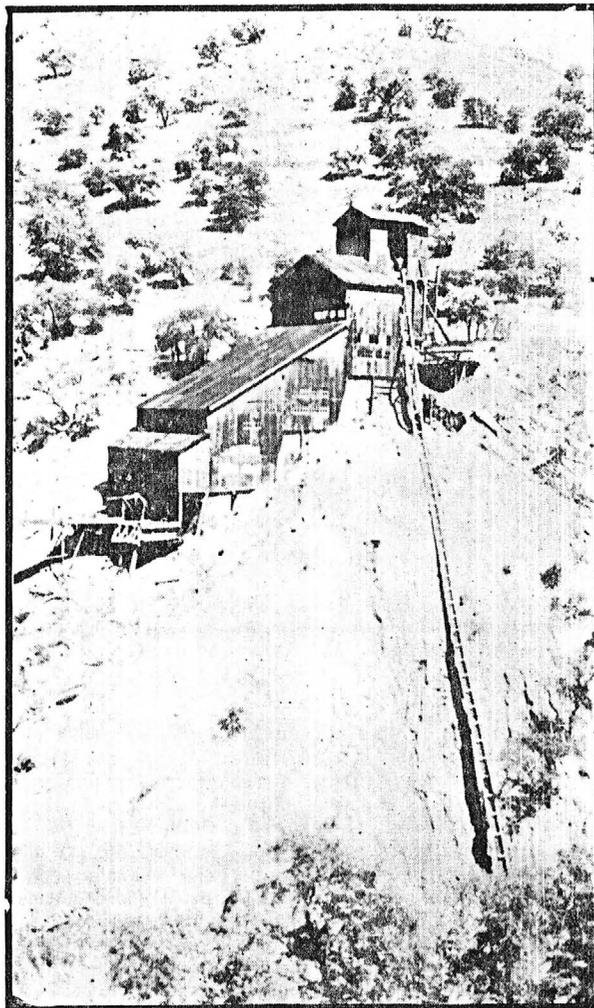
Working conditions are particularly favorable; the mine may be worked through tunnels to a vertical depth of about 700 feet, or 1000 feet on the dip of the ore body; labor is cheap and abundant, and the climate permits of work being carried on at all seasons of the year. The proximity to a railroad is also a favorable feature. An electric power line crosses the property within a mile of the shaft.

Adjacent to the Flux on the south is the World's Fair Mine, which has been developed to a depth of 600 feet by about 15,000 feet of drifts, tunnels etc. From the main entrance the openings and croppings extend for an eighth of a mile southward and about 400 feet higher, which, together with the 600 feet sunk on the vein in the mine gives a total depth of about 1000 feet. It is reported that this property has produced more than \$1,000,000, of which \$500,000 was in high grade ore.

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**ONE HUNDRED TON CONCENTRATING MILL**

It has put in a pumping plant on the Soncita River near the railroad, and 8,800 feet of 3 inch pipe conveys water to storage tanks above the mill.

Ore from the mine is brought to the mill by an aerial rope tram 6,200 feet long, with a capacity of 150 tons per 24 hours.

The company has built a camp near the mill and several houses at the mine.

The Flux mine is four miles south of Patagonia, Santa Cruz County, Arizona, and three miles from the Benson-Nogales branch of the Southern Pacific Railroad, at an elevation of 4,800 feet. It is reached by a good wagon road of easy grade. The mill is between the mine and the railroad, about a mile and a quarter from the mine, and 800 feet lower.

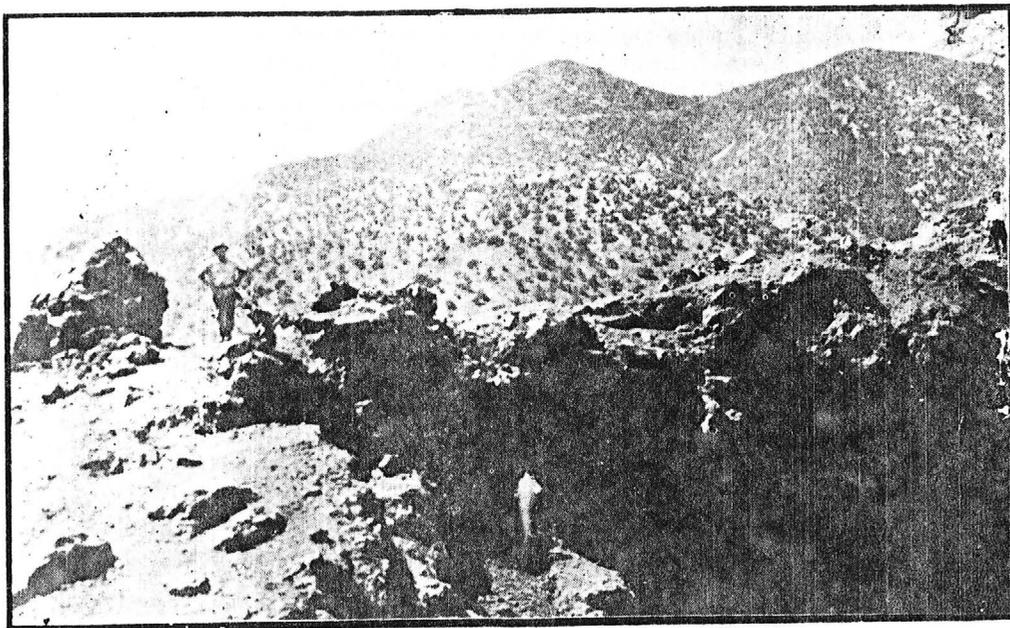
The Flux mine is reported to be an old Mexican mine, and to have been located in the early fifties. In 1858 ore from it was smelted in an adobe furnace near by, and later it is said the mine furnished lead for bullets in the Civil War. It has shipped more than 50,000 tons of silver-lead ore, most of which was treated in the Benson smelter in the early eighties.

Ten carloads of high grade ore, averaging \$60 to \$100 per ton, were shipped to El Paso in 1904.

In 1914-15 several thousand tons were shipped to the smelter at El Paso.

In 1917 one thousand tons were shipped, which netted as high as \$1265.48 per carload.

This company has shipped concentrates of a gross value of over \$26,000.



**SOUTH SIDE OF GLORY HOLE: 75 BY 100 FEET AND 70 FEET DEEP. ORE EXTENDS 20 FEET FURTHER TO LEFT OF MAN. NOTE LARGE OUT-CROP.**

The property is developed by more than 6,000 feet of work, mostly on the Flux claim, where several veins come together in a large deposit of silver-lead ore. The principal works are a 260-foot vertical shaft, and tunnels from the surface at 70, 100, 150 and 260 feet below the collar of the shaft. These tunnels are connected with the shaft, and a number of raises and winzes between levels and many cross-cuts and drifts prove the extent and value of the ore body.

There is also much open-cut work; for instance the pit or glory hole near the shaft, 100 feet long, 75 feet wide and 70 feet deep, from which over 35,000 tons of ore have been extracted.

At 260 feet below the collar of the shaft, a tunnel has been run from the surface 800 feet and connects with the shaft, but has not reached the large ore deposit shown on the upper levels. It is estimated it will take about 300 feet of drifting to get to that ore body. This tunnel has run through a smaller body of silver-lead sulphide ore for 200 feet, showing a width of three to eight feet. A 150-foot upraise in this ore body connects with the 130-foot level. A 60-foot winze from the 260 foot level is in ore all the way down. This ore body contains 15,000 tons and averages about 11 per cent lead, 30 per cent silica, 30 per cent iron, 14 per cent zinc, and 6 ounces silver per ton, which is a very profitable concentrating grade of ore.

Other tunnels can be driven at 400 feet, at 550 feet and at 700 feet below the collar of the shaft. Since the vein dips at an angle of 45 degrees, there will be 1000 feet of ore-backs above the lowest tunnel.

For the present the development of the mines will be directed principally towards opening up the large deposit, or chimney of silver-lead ore on the Flux Claim, at about the center of the group of twenty-one claims. This ore has been developed to a width of over 100 feet and 240 feet in length, and 130 feet in depth, and the new work will prove the ore in the lower levels.

The topography is hilly, but not rugged. As the ores are exposed at the surface in the upper end of the steep, narrow north-south ridge and a canyon or gulch several hundred feet deep lies on either side and at the south end, nature has all but mined the deposit herself.

The oldest rock formation at the mine is a small area of Paleozoic limestone with some associated conglomerate and shale. These sedimentary rocks are intruded by quartz monzonite and granite aplite, and together with them are surrounded, overlain, and intruded by the Tertiary rhyolite or so-called porphyry, while but a few hundred yards distant near the deep gulch on the west, occurs the great fault contact between the rhyolite of the Flux Mine and the granite porphyry of the Three R Mountain, which probably also intrudes the Paleozoic beds in the vicinity of the mine. The course of this fault, which is about N. 30 degrees W., is approximately followed by the 2½ mile canyon nearby on the west, and is marked by a boldly cropping silicified reef extending for several miles across the country from a point about three-fourths of a mile southwest of the World's Fair mine to the north base of the mountains.

Though several veins center on the Flux claim the ore deposits occur principally in a main north-south shear zone, or lode, which has a known extent of over 1½ miles and is covered by the company's claims for more than 6,000 feet. Four of the other veins meeting in the large deposit have been worked and have produced shipping ore to points from 250 to 300 feet from the main vein. These side veins are from 3 to 14 feet wide and have been developed to the 130 foot level.

"The main lode seems to be composed mainly of crushed altered, silicified ore-bearing rhyolite. The entire mass in the upper workings from the surface down to the 130-foot level is said to have been ore and much good ore, probably several thousand tons, is still available. The ore contains lead and silver, with considerable associated iron and in the lower part of the mine, some copper and zinc. The ore which has been produced was about all oxidized and averaged \$12.00 or more per ton. At the present the average run of mine ore contains about 7 ounces to the ton in silver and 15 per cent in lead. The ore contains also much iron, which makes it a very good flux, and for this reason much of it was formerly sent to the Mowry smelter, six miles distant, and used as a flux in smelting the refractory ore from other mines. Some of the lead ore, it is said, smelts easily on a common domestic stove." ♦

In the lower levels the ore contains some copper and zinc. On the 130 foot level a sample across 15 feet assayed 8.6 ounces silver, 10 per cent lead, 14 per cent zinc and 0.6 per cent copper. Another sample across 10 feet assayed 24.8 ounces silver, 8.15 per cent lead, 9.16 per cent zinc and 1.5 per cent copper.

♦ U. S. Geological Survey 1915.

Four hundred and eighty feet of development, principally on the 130-foot level, has been done by the company, and many ore chutes have been put in to handle the large body of silver-lead ore in the oxidized zone above this level.

About 4,000 tons of this ore—silver-lead carbonates and oxides—were run through the mill and the results show this character of ore cannot be treated profitably by concentration.

About 700 tons of silver-lead sulphide ore, assaying 11.6 per cent lead, 12 per cent zinc, and 7 ounces silver, have been treated in the mill with satisfactory results, details of which will be found in the manager's report to the company, and under normal operating conditions and shipping concentrates to smelter at El Paso, ore of this kind can be handled at a profit of \$4.00 per ton. (Not including profit from zinc by-product.)

There are 32,500 tons of the same kind of ore "in sight" between the 130-foot level and the 260-foot level, representing a profit of \$130,000.

This ore cannot be mined in quantity and sent to the mill by the aerial tram because the aerial tram loading station is at the 130-foot level, and there is no hoist to raise the ore to that level. The company has no power drills, and mining by hand is expensive and slow.

Another reason for not mining and concentrating the sulphide ore and shipping the silver-lead concentrates, is that the company is considering a project to erect a smelter at the mine and save the freight charges on concentrates from the mine to El Paso, amounting to \$3.50 to \$4.00 per ton.

A smelter at the mine will insure the profitable treatment, in connection with the sulphide concentrates, of the large body of silver-lead ore in the oxidized zone that cannot be concentrated successfully, and which contains 50,000 tons of ore assaying 10 per cent lead and 5 ounces silver, and worth, net, \$4.00 per ton, and 75,000 to 100,000 tons of ore of a value not yet determined.

It will not be wise to erect a smelter at the mine until a larger tonnage of sulphide ore is placed "in sight" and it is the intention of the company to extensively open up the mine on the lower levels in the sulphide zone with this object in view.

To do this work, the company needs more money, and to raise this money the company is offering five hundred thousand shares of treasury stock (par value \$1.00) at fifteen cents per share.

This stock has been deposited with the Miners and Merchants Bank, Bisbee, Arizona, and will be issued by the bank to purchasers.

The company expects to complete the proposed development by the first of April, 1920, and will by that time decide about putting up a smelter at the mine. If a smelter is put up, it will have a capacity of 100 tons per 24 hours and will cost about \$100,000.

To obtain money for this purpose another offering will be made of treasury stock at not less than fifty cents per share; a price which will be warranted by the larger tonnage placed "in sight" by the proposed development campaign.

The Flux Mining Company estimates the development work as outlined will place "in sight" and ready to mine not less than 200,000 tons of silver-lead ore in the sulphide zone, which will yield a profit of \$4.00 per ton by concentrating and shipping concentrates to smelter at El Paso; and a profit of \$5.00 to \$6.00 per ton by concentrating and smelting concentrates in smelter at the mine. (Not including profit from zinc by-product.) In case a smelter is erected at the mine, the 50,000 tons of ore now developed in the oxidized zone can be smelted in connection with the sulphide concentrates, at a profit of \$4.00 per ton, and in this case from the 250,000 tons of ore then in sight, there will be a profit of \$1,200,000 to \$1,400,000.

Patagonia is on the State Highway, 22 miles from Nogales, 67 miles from Tucson, and 76 miles from Bisbee. The Flux Camp is 4 miles from Patagonia and the road is good. Come and spend the week end at the camp and see the mine—take samples if you like. You'll be welcome.



A GROUP OF FRIENDS AT THE FLUX CAMP.

Applications for shares may be made to the Flux Mining Company, Bank of Bisbee building, or to the Miners and Merchants Bank, Bisbee, Arizona. Checks in payment for shares to be made payable to the Miners and Merchants Bank, and the shares will be issued to purchasers by that bank. Remember, the par value of these shares is one dollar and the selling price is fifteen cents a share.

Duplicate

**BYRD INVESTMENT COMPANY**

MAIN OFFICE  
TUCSON, ARIZONA

P. O. BOX 5226

TELEPHONES 2032 AND 8529

August 31, 1946

Hon. Charles B. Henderson  
Chairman of the Board  
Reconstruction Finance Corporation  
Washington, D. C.

Dear Sir:

My associates and I have been mining in the Southwest for many years. I think that such observations as I make here should be considered by the Administration and all federal agencies having the power to deal with the tragic shortage of strategic metal reserves in the United States.

I submit herewith a practical plan that will do much to solve what has come to be an acute, if not a desperate, situation.

The old prospectors found the outcrops of metal that were surface exposed. I believe any geologist will agree that there are vast quantities of ores, at minable depth, that have never been exposed. The mining industry should be encouraged to explore for and develop these ores. I believe it can be stated, as a truism, that the big companies, except in areas contiguous to ore bodies they are mining, will take little of the gambling hazard necessary to explore for blind veins and ore bodies. Almost every great mine in the country was discovered and/or initially developed by the prospector and small operator. The major companies, able to finance large-scale operations, mills, smelters and refineries, can produce ore at very much less cost than the small operator. The result is that, after mines are discovered and opened up by the small operators, they quickly fall into the hands of the large companies. I wish to illustrate, in our own experience here in Arizona, the statement that the major companies will seldom risk any substantial amount of capital to explore for hidden ore bodies or to undertake to develop new ore bodies in mines that have been worked out. In the caption "Application of Premiums at Duquesne" I have illustrated what I consider to be a weakness in the present application of the Premium Plan.

**Duquesne Mines**

The Duquesne properties in Southern Arizona, which had produced since the early 60's, were practically abandoned as being non-commercial before 1920, although it is estimated that the twenty or more mines of the Duquesne Group had produced more than \$20,000,000 worth of lead, copper and zinc ores prior to that year. My brother and I bought the property in 1938, and opened up many of the old mines and found floors and faces of what we believed would develop into sizable tonnages of commercial ore. The American Smelting & Refining Company, Phelps-Dodge Corporation, and practically all the major companies operating in the West, when we presented the property to them, turned it down. We had no money for its development. We finally leased the property to Callahan Zinc-Lead Company which built a mill on the property just prior to the outbreak of the war. Since that time, and largely for the war effort, Duquesne has produced \$2,700,000 in zinc, lead and copper concentrates, and it is still producing. We are now operating it ourselves, but without sufficient capital to provide milling facilities. We are mining the ore in a hand-to-mouth fashion. We are unable at present prices of metals, even with the premiums, to carry on extensive development work to open up new replacement ore bodies. Since all the mines, except one, are very shallow, few over 150 feet in depth, we are sure that an adequately financed program of development work would open up many sizable if not large mines on this property. The only mine on the property having any depth (635 feet) produced more than \$3,500,000 when it was operated by George Westinghouse about thirty years ago. Zinc-lead ores that he could not then mine profitably are now processed by modern selective flotation. No big company operating in this section will take this property or help us to develop it because we do not have a large amount of blocked-out or proven ore. We have tried them all.

**Application of Premiums at Duquesne.** Our firm lost money during the war period, notwithstanding the fact that, with premiums, we produced essential metals from four mines other than Duquesne, all of which were abandoned prior to 1946. Then in 1946, when we were at last able to show a profit on Duquesne operation, the Committee threatened to reduce our premiums and in August 1946 did eliminate our C premium on zinc. No one is suggesting that the Government repay us for the losses that we incurred in the three preceding years, but now when we have an opportunity to get something like a compensating return for an extremely venturesome investment the Committee has advised us that we have been making too much money. Applying this theory, we would only be entitled to the premiums we have been receiving after we had demonstrated that the operations were unprofitable. It seems to me that this attitude of the Committee must be changed if the Premium Price Plan is to accomplish its purpose. When any operator takes the gamble that we took at Duquesne, when none of the big companies would touch it, he should not be subjected to the constant hazard of premium reduction or cancellation. The small operator must believe that he has a chance to make money when he engages risks such as we have undertaken.

### **Flux Mine**

In 1939 we acquired a lease and option on the old Flux, after it had been examined and rejected by every major company operating in this section. We opened up new ore bodies on the Flux property and had in sight in a few months about 40,000 tons of zinc-lead ore. We were unable to finance a milling operation and had to practically give it away to a major company. The Flux has produced for the American Smelting & Refining Company, we believe, much more than \$3,000,000 of lead-zinc concentrates since 1940.

Thus the Duquesne and Flux properties, rejected by the major companies, opened up by us, small miners who knew no better than to gamble, have produced some \$6,000,000 of zinc, lead and copper concentrates since 1940 and largely for the war effort.

There may be some, but I do not know of any, of our really big producing mines, or any important virgin mining area in the United States, discovered by any one of the major companies.

### **Small Miners' Problems and Excessive Costs.**

The small miner always explores and gambles if he feels he has a ghost of a chance. The Premium Price Plan, tied as a rider to OPA legislation, was never adequate because of the provision which gave the premium authorities the option to cancel premiums at any time. Furthermore, it was extended only from year to year, and development work, sometimes requiring months and years to complete, could never be prosecuted with any confidence. Therefore, the hazards of exploration and cancellation made it practically impossible for the small operator to ever secure any adequate financing.

Besides the hazards of exploration and cancellation that have confronted the small operator, he is also faced with heavy costs in marketing his ores, some of which are as follows:

- (a) A large percentage of newly opened up mining properties are inaccessible, involving heavy cost for road building and trucking to the railroad for shipment;
- (b) Even though he can afford new equipment and can get delivery of it, he must use, initially, small equipment, usually gasoline powered, resulting in an abnormal fuel cost as compared with the power costs of the big companies;
- (c) Lack of comfortable housing in remote areas makes him unable to secure the class of labor that is attracted to the big plants offering community conveniences;
- (d) In Arizona, the small operator pays 13% of his payroll for insurance. The big companies, carrying part or all of their industrial insurance themselves, pay less than half the insurance costs of the small operator;
- (e) Overhead costs are in great disproportion to those of the large companies;
- (f) **Smelter and Transportation Costs:** Three per cent copper ore was an average grade shipped by hundreds of small operators during the war. They received from the smelter, not including premiums, after all deductions, including railroad transportation, smelting charges, and penalties,  $3\frac{1}{2}c$  to  $4\frac{1}{2}c$  per pound for their ore in the bin at the mine, against which they had to charge all their mining expenses, and I can support this factual statement with numerous Settlement Sheets from three smelters to whom we have shipped such ores. Without the premiums our shipments would have averaged less than \$3.00 per ton in the bin at the mine, and less than 5c per pound for our copper.

Duplicate

### Remedies

The Bills now before Congress, to divorce the Premium Price Plan from the OPA, are inadequate in their provisions. The Congress should effect legislation that would authorize and include the following desiderata:

- (a) A premium Price Plan extending over not less than a five-year period;
- (b) Premiums should be uncancellable, except for fraud and misrepresentation;
- (c) Premium payments should be applicable to all properties alike, whether or not applications were made prior to any specific dates;
- (d) The Reconstruction Finance Corporation should be authorized and directed to pursue a constructive and liberal lending policy; only those experienced in mining should be financed, and they should be adequately financed to carry out the development programs they would undertake;
- (e) Enlarged appropriations for the Bureau of Mines to continue and expand its exploration work.

### Conclusion

With a wider use of inexpensive geophysical prospecting for underground ores, the large operators will undoubtedly enlarge and extend their ore reserves, but I wish to impress upon you the fact that, **whereas large operators are numbered by the dozens, the prospectors and small operators are numbered by the thousands.** (There are more than 4,300 members of the Arizona Small Mine Operators' Association alone), and the greatest assurance, if we have any regard for the history of the mining business, is the encouragement of these thousands of small operators and prospectors to search for, explore, and develop vital new ore reserves. The small operators in the aggregate are developers, rarely substantial producers, because as soon as a worth-while development is accomplished, the big companies take over and, since the small operator produces such a very small part of the country's tonnage, the cost to the Government of extending premium assistance to him would involve a small amount of money in comparison with the total value of strategic metals produced in the country.

**All authorities having to do with premium payment matters should be reminded that, for illustration, when lead supplies are short, nothing is gained by increasing the premiums on lead and correspondingly reducing them on other strategic metals, because lead in the West is found almost invariably associated with zinc and/or copper:** The effect of such readjustment, in most cases, would be to cripple the operator and reduce the volume of all the metals he produces. There are few purely lead mines in the western states.

It may be argued that a non-cancellable premium extending over a period of several years will make it possible for some operators to make huge profits on their investment. There won't be many instances of this kind, and such a contingency I think should be made entirely possible as an incentive and an inducement to the venture-capital that must be enlisted in the exploration work so badly needed.

The RFC made hundreds or perhaps thousands of small loans (access loans, etc.) to small operators during the war. These loans were practically all losses because, in the first place, they were made with little or no consideration of the mining ability or experience of the borrower; and, secondly, the objective which had to be reached could not, perhaps one time in a thousand, be financed with so small a sum as \$5,000; in the third place, nothing but obsolete and worn-out machinery was available to the small operator, which fact in itself was enough to defeat in most cases the success of any \$5,000 investment program; and, in the fourth place, war-time mining costs were excessive, and the Army took practically all the best labor. These small loan projects were, therefore, practically all doomed to failure before they were begun; for that reason they cannot be fairly regarded as a criterion on which to base RFC credit.

Underground rock work is expensive and requires months and, in many cases, years to complete; therefore, unless the premiums are made uncancellable, there is small incentive to take the risk involved in undertaking a program of extensive exploration work.

I think that those to whom this letter is presented should realize the fact that an extremely small percentage of so-called marginal miners and small operators have made any money, notwithstanding the premiums they were granted, since the beginning of World War II. As a matter of fact, with a rather extensive acquaintance with the mines and operators in Arizona and New Mexico, I do not know as many as ten men who are on the credit side of the ledger as a result of their mining operations since the Premium Price Plan was established. The fact is that most of them are broke. Most of them have not only lost their own money but lost money for those who furnished them financial help.

As one of the Senators wrote me recently, since the war is not ended officially, **the desiderata generally covered by what I recommend in this letter can be accomplished by presidential order or directive until such time as appropriate legislation can be secured.**

If the Premium Price Plan is revised, I believe it should not restrict its applicability to mines or properties as such, because an operator may suffer losses in a half dozen mining ventures before he succeeds in developing one that is profitable.

Mining is a precarious and hazardous business; the ratio of failures to successes involves overwhelming figures.

While Bureau of Mines authorities and other statisticians have given a limited number of years of life to the metal reserves now proven, these reserves were further sadly depleted during the recent war effort. The thoughtless citizen, in the face of these figures widely published, has answered that "We can import our strategic metals from foreign countries at much lower prices in many cases than the cost of producing these metals in our own country." This argument, it seems to me, was adequately negated during World War II. And there arises a further thought that—in another war, who is to know who our enemies may be or whether we shall have any allies that can supply our metal requirements. This seems to me to be the answer to the foolish argument that we can rely upon foreign sources for our defense metal requirements.

If it is desirable to produce more copper, zinc and lead, the incentives which I have proposed will put thousands of small miners to work, and I believe the results will astonish the statisticians who tell us that our reserves of strategic metals, further depleted by the war, will last only a few years.

Yours very truly,

J. H. BYRD  
President