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DEFENSE MINERALS ADMINISTRATION
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To:	Iron & Ferro-Alloys	Date	7/25/55
To:	Oper Com	Date	8-16-55
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To:	F. E. Johnson	Date	12-28-55
To:	[illegible]	Date	12-28-55
To:	130	Date	5-14-58
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UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WASHINGTON 25, D. C.

400

RECEIVED
DEC 20 1955

December 19, 1955

Re: DMEA 3905
Arizona Mining Co.
Rattlesnake Mercury Claims
Gila Co., Arizona
$24,700.00 - Mercury

Memorandum

To: W. S. Martin, Defense Minerals Exploration Administration

From: N. E. Nelson, U. S. Geological Survey

Subject: Review of Field Team report.

The examiners and the Field Team recommend denial of the applicant's request for aid in the reopening of old mine workings, drifting, crosscutting and diamond drilling at an estimated cost of $24,700.00.

The examiners conclude that "the chance of making a significant discovery of mercury ore seems remote."

I concur with the recommendations of the examiners and the Field Team.

N. E. Nelson

N. E. Nelson

NENelson:iml
G-12/19/55

cc: Director's reading, 4212
Branch reading, 4212
DMEA (3)
Docket file
H. M. Meyer, 3623

400

DEC 29 1955

Denied

Arizona Mining and Development Co., Inc.
1316 North Central Avenue
Phoenix, Arizona

Re: Docket No. DMEA-3305, Mercury
Rattlesnake and Cypress Claims
Gila County, Arizona

Gentlemen:

Your application for aid for an exploration project and other data available to us in Washington relative to the above-named property have been carefully reviewed.

Projects approved by the Defense Minerals Exploration Administration must, in its judgment, show definite promise of yielding materials of acceptable grade in quantities that will significantly improve the mineral supply position for the National Defense Program.

Careful study of our information indicates that, although mercury mineralization occurs on the property, the probability of disclosing minable ore reserves by your proposed program is not sufficiently promising to justify Government participation. We regret to advise you, under these circumstances, that your application for exploration assistance is denied. Such denial, however, is made without prejudice to the property. In the event further work on your part discloses new and more favorable evidence of ore deposition on the property, we shall be pleased to consider a new application, amply supported by geological mapping, sampling, and assaying.

We wish to thank you for your interest in the Defense Minerals Exploration Administration program and for bringing your property to our attention.

Sincerely yours,

C. O. Mittenzwei

Administrator

cc: Docket
Code 400
Oper. Comm.
Adm. Read. File
T. Kiilsgaard, USGS
Helena Meyer, UBBM
FT, Reg. 3
ADMcMahon/ls 12/22/55

December 23, 1955

MEMORANDUM

To: Administrator, DMEA

From: Iron and Ferro-Alloys Division

Subject: Denial of request for exploration assistance in the amount of $24,750.00
Docket No. DMEA 3905 - Mercury
Arizona Mining and Development Co., Inc.
Rattlesnake and Cypress Claims
Gila County, Arizona

Denial of the subject application is recommended by this Division based on the following information:

(1) The applicant, Arizona Mining and Development Co., Inc., 1316 North Central Avenue, Phoenix, Arizona, requested exploration assistance in the amount of $24,750.00 for diamond drilling, dewatering and rehabilitation of a winze and sub-level and drifting from the sub-level.

(2) The applicant controls, by assignment of a lease, the unpatented Rattlesnake Claims Nos. 1 through 10 situated in the Slate Creek Mining District, Gila County, Arizona, and recorded in the office of the County Recorder, Gila County, in Book 49, pages 207, 240, 241, and 242. Said claims are owned by A. C. and Jeanette Thomas of Tucson, Arizona, and leased to Archie and Sue L. Griffith. The lease was assigned to Arizona Mining and Development Co. Inc., on January 20, 1955.

(3) The proposed program is (a) to explore ore occurrence near the east end of Rattlesnake No. 2 Claim with six diamond drill holes (3 - 75 feet and 3 - 125 feet) totaling 600 feet at a cost of $7.50 per foot, or $4,500.00; (b) rehabilitate upper workings and dewater sub-level for examination and sampling, at an estimated cost of $3,500.00; (c) extend sub-level 200 feet, at $45.00 per foot, for $9,000.00; (d) bulldozing for diamond drill stations, $750.00; (e) bunkhouse, $1,500.00; (f) miscellaneous equipment, maintenance, repairs, and taxes, $2,500.00; and (g) supervision and consulting, $3,000.00; totaling $24,750.00.

(4) The Rattlesnake Mine is located on the Rattlesnake No. 2 Claim. The mine is developed by two adits and approximately 100 feet of drifting on each of the No. 1 and No. 2 levels. Workings under the No. 2 adit consist of 3 separate vertical winzes to sub-levels 125, 175, and 250 feet below, where approximately 100 feet of drifting was accomplished. The winzes and sub-levels are filled with water.

Ore previously mined came principally from one ore body situated at the southwest end of the mine where some showings still remain. Apparently any high-grade ores were selectively mined, leaving only submarginal ores for the present operators.

The examining team could not verify the claims of the Operator nor the reported findings of Mr. C. H. Dunning, the applicant's consultant.

(5) The Field Team concludes that the geological conditions are not favorable for the discovery of other minable ore bodies and recommends denial. The Commodity Division of the Geological Survey and the Bureau of Mines concur in this recommendation.

W. S. Martin, Chief
Iron and Ferro-Alloys Division

cc: Docket
Code 400
Oper. Comm.
Adm. Read. File

ADMcMahon/ls

402

December 6, 1955

Memorandum

To: W. S. Martin, Defense Minerals Exploration Administration

From: J. W. Pennington, Branch of Base Metals

Subject: Review of Examination Report, Docket No. DMEA - 3905 (mercury), Arizona Mining and Development Co., Rattlesnake and Cypress Claims, Gila County, Arizona, $24,750

The applicant proposed to explore this property by drifting, crosscutting, and diamond drilling at a cost of $24,750.00.

However, examination of the property by John H. Faick, Geological Survey, and T. M. Romsle, Bureau of Mines, revealed that geological conditions are not favorable for the discovery of minable ore bodies in the area of the proposed exploration.

The examiners conclude that it does not seem probable that significant amounts of ore will be discovered by the proposed project and recommend that Government participation in the exploration be denied.

I concur with their recommendation.

J. W. Pennington

J. W. Pennington

JWPennington/vr

Copy to: Division of Minerals
Branch of Base Metals
J. W. Pennington
R. W. Gaskan
Thor Kiilsgaard, U.S.G.S.
File #

RECEIVED
DEC - 6 1955

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.

Mr. W. M. Traver, Executive Officer
DMEA Field Team, Region III
224 New Custom House
Denver 2, Colorado

Re: Docket No. DMEA 3905 - Mercury
Arizona Mining and Development
Company, Inc.
Rattlesnake & Cypress Claims
Gila County, Arizona

Dear Mr. Traver:

The above-docketed application for exploration assistance is being referred to your office for a field examination of the property.

In reviewing the subject application, it was noted that the mine was currently producing 25 tons of ore a day. It was also noted that surface mapping and rehabilitation work necessary to support some of the applicant's proposals had not been done. It might be advisable for the examining team to determine whether this work should be done solely by the applicant as documentation for his application.

Two copies of a relevant memorandum dated August 1, 1955, by W. P. Williams, Geological Survey, are enclosed for your information.

Sincerely yours,

Chairman, Operating Committee

Enclosures

APPROVED:

Member, Bureau of Mines

Member, Geological Survey

400

Arizona Mining and Development Co., Inc.
1310 North Central Avenue
Phoenix, Arizona

Re: Docket No. DMEA 3905 Mercury
Rattlesnake & Cypress Claims
Gila County, Arizona

Gentlemen:

The above-docketed application for exploration assistance has been reviewed by the Defense Minerals Exploration Administration and referred to Mr. W. M. Traver, Executive Officer, DMEA Field Team, Region III, 224 New Custom House, Denver 2, Colorado, for a field examination of the property.

Any assistance that you can give members of the Field Team will be appreciated.

Sincerely yours,

C. O. Mittendorf

Administrator

cc: Docket
FT, Reg. 3
Code 400
Oper. Comm.
Adm. Read. File
Thor Kiilsgaard, USGS
H. M. Meyer, USBM

SPHolt/ls
8/15/55

AUG 19 1955

400

Mr. W. M. Traver, Executive Officer
DMEA Field Team, Region III
224 New Custom House
Denver 2, Colorado

Re: Docket No. DMEA 3905-Mercury
Arizona Mining and Development
Company, Inc.
Rattlesnake & Cypress Claims
Gila County, Arizona

Dear Mr. Traver:

The above-docketed application for exploration assistance is being referred to your office for a field examination of the property.

In reviewing the subject application, it was noted that the mine was currently producing 25 tons of ore a day. It was also noted that surface mapping and rehabilitation work necessary to support some of the applicant's proposals had not been done. It might be advisable for the examining team to determine whether this work should be done solely by the applicant as documentation for his application.

In case the report of field examination is favorable, and a contract is recommended, a subordination agreement should be secured from B. W. Stephenson, Della Lucille Stephenson, Archie Griffith, and Sue L. Griffith, to cover the undivided 5% interest retained for themselves by the Griffiths in the assignment of lease to A. C. Thomas and Jeanette Thomas.

Two copies of a relevant memorandum dated August 1, 1955, by W. P. Williams, Geological Survey, are enclosed for your information.

Sincerely yours,

George C. Selfridge
Chairman, Operating Committee

Enclosures

APPROVED:

/s/ Robert W. Geehan
Member, Bureau of Mines

Thor H. Kiilsgaard
Member, Geological Survey

cc: Docket
Oper. Comm.
Code 400
Adm. Read. File
Thor Kiilsgaard, USGS
H. M. Meyer, USBM
FT, Reg. 3

SPHolt/ls 8/17/55

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UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.

August 23, 1955

224 New Customhouse
Denver, Colorado

Memorandum

To: W. H. King (With brochure)
J. N. Faick

From: Executive Officer, DMEA Field Team, Region III

Subject: Docket DMEA 3905 (Mercury), Arizona Mining and Development Company, Inc., Rattlesnake and Cypress Claims, Gila County, Arizona

Enclosed is the subject application in the amount of $24,750. Also enclosed is a copy of a letter from the Chairman of the Operating Committee and a review of the application by W. P. Williams.

The brochure consists of:

1. Form MF103 and accompanying answer sheets
2. Assignment of lease
3. Map showing proposed exploration
4. Report on the property by Charles H. Dunning
5. Report on the property by Roy H. Barnes
6. Claim map

A field examination and a suitable report are required.

W. M. TRAVER,

W. M. Traver

Enclosures

HMC:ab
cc: Docket DMEA 3905
Sec. Op. Com. (2)
Harshman
Chron.

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.

August 23, 1955

224 New Customhouse
Denver, Colorado

Memorandum

To: W. H. King (With brochure)
J. N. Faick

From: Executive Officer, DMEA Field Team, Region III

Subject: Docket DMEA 3905 (Mercury), Arizona Mining and Development Company, Inc., Rattlesnake and Cypress Claims, Gila County, Arizona

Enclosed is the subject application in the amount of $24,750. Also enclosed is a copy of a letter from the Chairman of the Operating Committee and a review of the application by W. P. Williams.

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1. Form MF103 and accompanying answer sheets
2. Assignment of lease
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4. Report on the property by Charles H. Dunning
5. Report on the property by Roy H. Barnes
6. Claim map

A field examination and a suitable report are required.

W. M. TRAVER,

W. M. Traver

Enclosures

HMC:ab
cc: Docket DMEA 3905
Sec. Op. Com. (2)
Harshman
Chron.

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Copy retained 400

August 15, 1955

3905

Memorandum

To: W. S. Martin, Defense Minerals Exploration Administration

From: J. W. Pennington, Branch of Base Metals

Subject: Review of DMEA application, Docket No. 3905 (Mercury) Arizona Mining and Development Company, Rattlesnake and Cypress Claims, Gila County, Arizona

The supporting data submitted with this application make it appear that this property is a favorable area for exploration.

It is recommended, however, that a Field Team examination be made to verify available information and determine that the work proposed by Dunning, who will supervise the work if approved, is the best method of approach.

Signed

James W. Pennington

Copy to: Division of Minerals
Branch of Base Metals
H. M. Meyer
F i l e s
Thor H. Kiilsgaard, Room 5222

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AUG 18 1955

IN REPLY REFER TO:

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UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WASHINGTON 25, D. C.

RECEIVED
AUG - 2 1955

August 1, 1955

Memorandum

To: W. S. Martin, Defense Minerals Exploration Administration

From: W. P. Williams, U. S. Geological Survey

Subject: Review of DMEA application, Docket No. 3905 (Mercury), Arizona Mining and Development Company, Rattlesnake and Cypress claims, Gila County, Arizona.

The applicant, in a vague and indefinite application, proposes a $64,750 exploration program consisting of surface geologic mapping, surface diamond drilling, raise and shaft rehabilitation, drifting, and crosscutting. The work is to be done in and near the Rattlesnake mine. The property that should be covered by Owner's Consent to Lien comprises 16 Rattlesnake claims and 11 Cypress claims, located in the Sunflower mining district, Gila County, Arizona.

The applicant makes a definite proposal as to diamond drilling an ore shoot that outcrops some distance from the mine. He is unable to present feasible proposals for the remaining work, as surface mapping and underground mine rehabilitation have not been done.

The applicant states 25 tons of ore per day are currently being produced, and he estimates 500 to 1,000 tons have been produced in the past. Of twenty-three samples from the mine, taken by the applicant, nine are of ore grade.

I recommend that the application be referred to the Field Team for field examination. It might be advisable for the examining team to ascertain if certain preliminary phases of the work, e.g., the surface geologic mapping, should not be performed solely by the applicant as documentation for the application.

WPWilliams:iml
G-8/1/55
cc: Director's reading, 4212
Branch reading, 4212
DMEA (3)
Docket file
H. M. Meyer, 2623

WPW

W. P. Williams

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.

RECEIVED DEC - 1 1955

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November 28, 1955

224 New Customhouse
Denver 2, Colorado

Memorandum

To: Secretary to the Operating Committee, DMEA

From: Field Team, Region III

Subject: Report of Examination, DMEA Docket 1985 (Mercury), Arizona Mining and Development, Rattlesnake and Cypress claims, Gila County, Arizona

Enclosed are the original and three copies of the report pertaining to the above application.

The field examiners concur that the chance of making a significant discovery of mercury ore is remote. They recommend that the application be denied. We concur in this recommendation.

W. M. Travers

By J. W. Townsend

E. N. Hardman

Enclosures

Reviewed by
DMEA OPERATING COMMITTEE

(date)

TRANSMITTED

NOV 22 1955

November 16, 1955

Memorandum

To : W. M. Traver, Executive Officer, DMEA Field Team, Region III

RECEIVED DEC - 1 1955

From : Superintendent, Southwest Experiment Station

Subject : Field Examination Report, Docket DMEA-3905, Arizona Mining & Development Co.'s Rattlesnake Mercury Claims, Sunflower Mining District, Gila County, Ariz.

Enclosed are original and 8 copies of the section on Summary, Conclusions and Recommendations by John N. Faick of the Geological Survey and T. M. Romalo of the Bureau of Mines, and the section on Engineering by Romalo for the above report. A separate report on Geology already has been submitted by the Geological Survey.

Because the chance of making a significant discovery of mercury ore seems remote the examiners have recommended denial of Government exploration aid. I concur with this recommendation.

Brochure is enclosed.

Walter R. Storms

Walter R. Storms

CC W. M. Traver (8)
J. N. Faick
J. F. Shaw
DMEA-3905
DF

WRStorms:frj

Reviewed by
DMEA OPERATING COMMITTEE

(date)

TRANSMITTED

NOV 22 1955

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UNITED STATES
DEPARTMENT OF THE INTERIOR
DOUGLAS McKAY, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION III

DMEA-3905, Arizona Mining and Development Company

Rattlesnake Mercury Claims

Gila County, Arizona

John N. Faick, Geologist
U. S. Geological Survey

T. M. Romalo, Mining Engineer
U. S. Bureau of Mines

November 1955

Released by
DEFENSE MINERALS ADMINISTRATION

(Date)

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

By John N. Faick[1] and T. M. Romalo[2]

In a recent application to the Defense Minerals Exploration Administration, the Arizona Mining & Development Co. requested Government assistance in exploration for mercury in the Rattlesnake mine, which is situated on Slate Creek, in the Mazatzal Mountains, Gila County, Arizona. Frank O. Ratliff is president of the applicant company, with offices at 1316 N.Central Avenue, Phoenix, Ariz. and A. B. Griffith was resident manager at the time of the examination in September 1955. The applicant's proposed exploration, docketed as DMEA-3905, was to re-open parts of the old mine workings, and explore by drifting, crosscutting and diamond drilling at a total cost of $24,750.00.

The property consists of 21 claims, including the Rattlesnake claims Nos. 1 to 10, and Cypress claims Nos. 1 to 11. The mine has been developed by a 460-foot adit and 2 or 3 thousand feet of drifts, crosscuts and raises; and winzes and sublevels that extend to a depth of 260 feet below the main or No. 2 adit. The mine was actively exploited from late 1928 to early 1930, and again from 1940 to 1945. Most of the production was made from one stope reported to have a strike length of from 60 to 100 feet, a width ranging from 3 to 11 feet, and a pitch length of about 400 feet. Production is not known but it may be from 15,000 to 20,000 tons of ore which may have yielded from 1,000 to 1,500 flasks of quicksilver.

1/ Geologist, U. S. Geological Survey
2/ Mining Engineer, U. S. Bureau of Mines

The Rattlesnake mine is situated in dark gray to maroon slates and phyllites which strike east-northeasterly and dip about 65 degrees northwest. More or less parallel to the foliation of the phyllites are several light gray or white bleached zones of sericitic schist, which represent hydrothermal alteration zones along previously existing shear zones in the phyllite. Irregular, discontinuous lens-like bodies of mercury ore occur along these zones of alteration, and appear to be concentrated principally in zones where structural deformation is greatest. The ore consists of cinnabar and native quicksilver disseminated in the bleached and altered schists; small amounts of cinnabar also occur in thin quartz-carbonate veinlets. Surface cuts reveal that some ore has been mined from at least 3 narrow and closely spaced ore zones having a strike length of about 150 feet. Underground nearly all the ore has been mined from a single ore body. However, apparently unsuccessful efforts have been made to mine another ore shoot which occupies an echelon position on the footwall side of the larger ore shoot.

Sketch mapping of parts of the mine and surface, and compilation of inadequate data from many sources indicate that geological conditions are not favorable for the discovery of other

minable ore bodies in the area of proposed exploration. However, it is believed possible that a few hundred tons of minable ore may be recovered from the old workings in the developed part of the mine.

As it does not seem probable that significant amounts of ore will be discovered by the proposed project, it is recommended that Government participation in exploration be denied.

DMEA-3905, ARIZONA MINING AND DEVELOPMENT COMPANY
RATTLESNAKE MERCURY CLAIMS
GILA COUNTY, ARIZONA

Engineering Report

By T. M. Homalo
Mining Engineer
U. S. Bureau of Mines

November 1955

Reviewed by
DMEA OPERATING COMMITTEE

_____
(date)

BMSA-3905, ARIZONA MINING AND DEVELOPMENT COMPANY
RATTLESNAKE MERCURY CLAIMS
GILA COUNTY, ARIZONA

CONTENTS

Engineering report

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ILLUSTRATIONS

Figure No.		Following page
1	Location map	1
2	Claim map	4
3	Part of Rattlesnake mine property	(See Geologic report)
4	Rattlesnake mine	" " "

INTRODUCTION

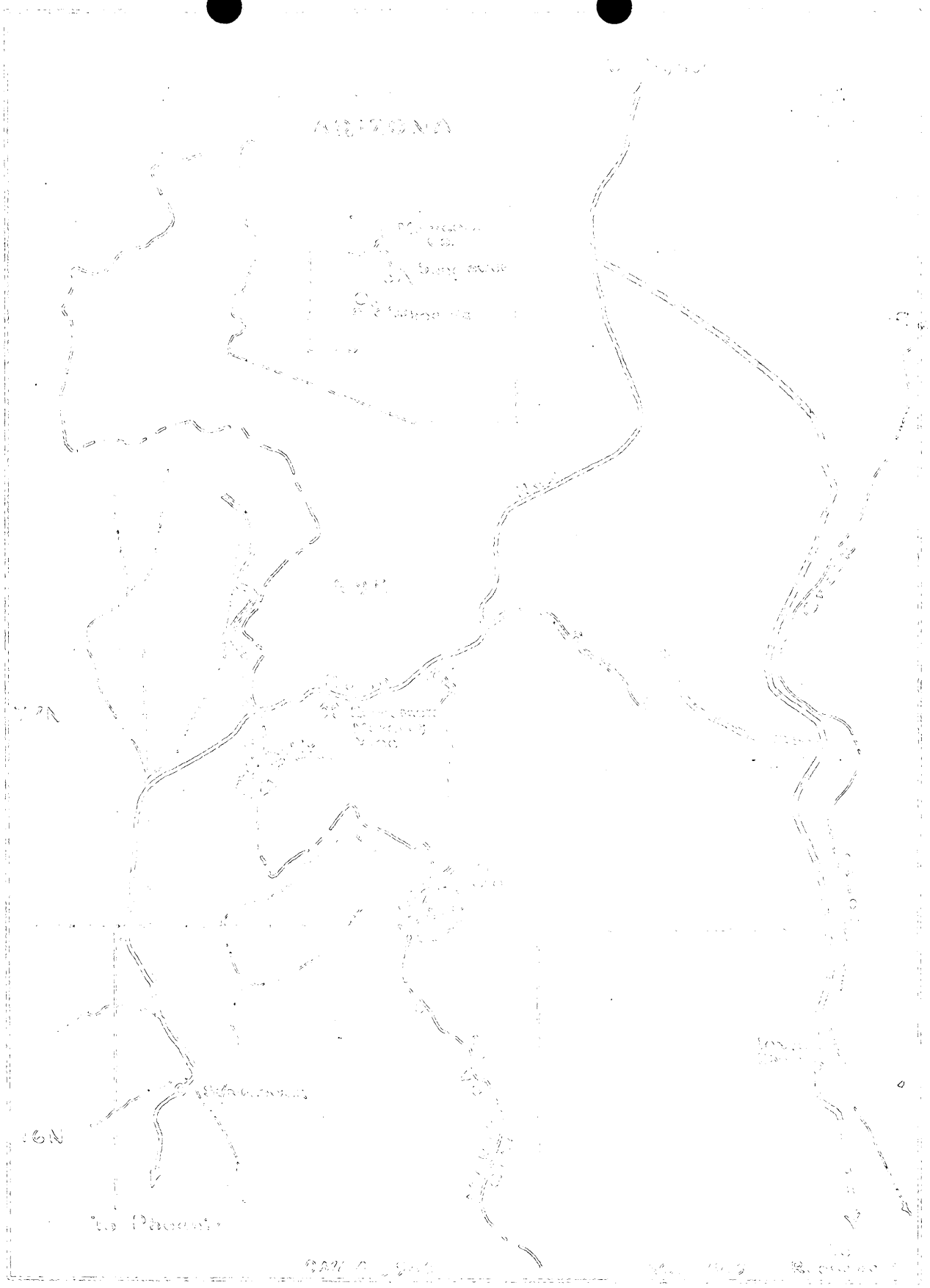
The Defense Minerals Exploration Administration received an application from the Arizona Mining & Development Co. on July 13, 1955 for aid in a proposed exploratory project for mercury on the Rattlesnake and Cypress claims in Gila County, Ariz. The application was docketed as DMEA-3905, reviewed by the Operating Committee, then referred to the Field Team, Region III, for a field examination of the property.

The applicant's proposed exploratory work involved 650 feet diamond drilling, dewatering and rehabilitation of a winze and sub-level, and 200 feet of drifting from the sub-level. The total cost of the work was estimated at $24,750.00.

The mine was examined by J. K. Faick, geologist, U. S. Geological Survey, on September 13 and 14, 1955, and by T. M. Romslo, mining engineer, U. S. Bureau of Mines, on September 21, 1955. A. E. Griffith, resident manager for the applicant, was present during both examinations. Completion of the reports of examination were held up until the last of the data requested from the applicant was received on Oct. 31, 1955.

LOCATION AND ACCESSIBILITY

The Rattlesnake mine is about 50 air miles northeast of Phoenix, Ariz. It is situated about in sec. 16 of unsurvyed T. 7 N., R. 9 E., Gila County, Ariz. (figure 1). It is accessible from Phoenix by driving 24 miles easterly on U. S. Highway 60



[illegible]

GILA COUNTY [illegible]

to its junction with the Bush Highway. Proceed 50 miles northeasterly on the graded Bush Highway to the access mine road which branches to the left at 1.9 miles beyond the "signed" Maricopa and Gila County boundary line. The access road is followed 0.5 mile to a camp that comprises 2 10- by 30-foot wooden buildings and a floored 16- by 26-foot tent.

TOPOGRAPHY, PHYSICAL FEATURES, AND CLIMATE

The Rattlesnake mine is on the western slope of the slightly west of north-trending Mazatzal Mountains. It lies near the head of Slate Creek that drains easterly to Tonto Creek. The area near the mine is rather rugged. It comprises high ridges that are separated by deep V-shaped canyons. The altitude of the portal of No. 2 Adit is about 3,500 feet.

Vegetation near the mine is confined mainly to a dense growth of brush.

Summers are pleasant and winters are mild. Precipitation of about 15 inches yearly occurs principally as heavy rainfalls during the period June through September, and as showers and light snowfalls during January and February.

There are no permanent streams in the area. Springs and mine works furnish adequate water for small mining and milling operations.

HISTORY AND PRODUCTION

The Rattlesnake mine, also referred to as the Gus Packard mine, was located in 1925 by Gus Packard, A. M. Packard and Robert S. Packard.

Little work was done on the property until 1928 when the Mercury Mines of America started operations. It operated until 1930 when the operations were terminated. Nos. 1 and 2 adits had been driven and stopes had been worked to a depth of 50 feet below the lower adit. The mine next was operated from 1940 to 1945 by the Ord Mercury Co. In 1947, McWhorter obtained a lease and option on the property and treated ore from the mine in a retort that he built on the property. The mine then was inactive until Oct. 1954 when the applicant, the Arizona Mining & Development Co.,obtained control of the property.

The company repaired roads to the mine, opened the adits, installed track and pipe in the lower adit, and drove 160 feet of drift on the main level. During these operations about 230 tons of ore was mined from old workings. The ore was treated at the company's new reduction plant about 5 miles northeast of the Rattlesnake mine. Both the mine and mill were shut down on August 11, 1955.

Separate production records probably were not kept on Ord and Rattlesnake ore, and there are no reliable records for other periods of operation of the Rattlesnake mine. Consequently size of workings and reported grades of ore were considered in arriving at a possible total production of 1,000 to 1,500 flasks of mercury.

EXTENT AND OWNERSHIP OF PROPERTY

The applicant claims property rights to 21 claims, Rattlesnake claims Nos. 1 to 10, and Cypress claims 1 to 11 (figure 2).

The Rattlesnake claims 1 to 10 are owned by A. C. Thomas and Jeanette Thomas of Tucson, Ariz. Archie Griffith and Sue L. Griffith obtained the claims under a lease and option agreement that they have assigned to the Arizona Mining & Development Co.

The applicant's right to the Cypress claims was not stated in the application for aid in the proposed exploratory project.

PRESENT STATUS

Both the mine and mill were idle during the field investigations of the BMRA examiners.

Mine

The major portion of the principal workings above No. 2 adit are presently accessible (figure 4). Workings below this adit are filled with water. They reportedly comprise 3 levels at 125, 175, and 250 feet from the adit, and about 100 feet of drifting. The levels reportedly were developed from 3 separate vertical winzes.

Major equipment at the mine and nearby camp consists of a 315 C.F.M. compressor, a 5 K.V.A. light plant, 4 mine cars, 3 jackhammers, a 7-ton dump truck, and a ½-ton pickup truck. The camp comprises 2 10- by 30-feet buildings of wood construction, and a floored 16- by 26-feet tent.

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Mill

The mill flow-sheet comprises a 15-ton coarse ore bin, a 16- by 32-inch jaw crusher, a 90-ton fine ore bin, a belt conveyor to hopper, a 50-ton rotary Gould furnace, and 14 condensor tubes. Power is supplied by a 40-K. W. diesel-electric generator. Other equipment consists of a 3-K.W. light plant, a Fordson dozer-loader, and a 5,600-gallon fuel storage tank. Water for both domestic and plant usage is obtained from a spring and a drilled well.

DESCRIPTION OF THE DEPOSIT

Mercury mineralization on the Rattlesnake property occurs in 3 nearly parallel zones of bleached and altered schist. Near the principal workings, the zones strike about N. 65° E. and dip about 60 to 70 degrees northwesterly. Cinnabar, the ore mineral, occurs as disseminations in the schist, and as blebs and discontinuous veinlets in quartz. It is confined to irregular lenticular ore bodies that appear to rake slightly to the northwest.

Unverified reports indicate the principal ore body was mined to a depth of 400 feet below the surface. Widths and lengths of the ore body were reported as 3 to 11 feet, and 60 to 100 feet, respectively. Also mined were smaller deposits in both the hanging wall and footwall of the main ore body.

ORE RESERVES

The mine contains no measureable ore reserves.

Indicated reserves are estimated at a few hundred tons of low-grade ore.

Inferred reserves are confined to a few small low-grade deposits that are present at widely scattered places.

CONCLUSIONS

Essentially all mercury produced from the Rattlesnake mine, 1,000 to 1,500 flasks, came from one ore body that probably has been mined out. Other mineralized zones, that might be present at unpredictable places, are likely to be very small and of low grade.

RECOMMENDATION

Denial of the requested aid in exploration of the Rattlesnake mine is recommended because chances of indicating the presence of significant amounts of mercury ore are considered unfavorable.

TRANSMITTED

NOV 22 1955

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MINERAL DEPOSITS
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U. S.
GEOLOGICAL SURVEY,
DENVER, COLORADO

Box 4126 University Station
Tucson, Arizona

November 3, 1955

MEMORANDUM

To: E. N. Marshman

From: J. N. Faick

Subject: DMEA 3905 (Mercury) Geologic Report of Examination of Rattlesnake and Cypress Claims; Arizona Mining and Development Co., Gila County, Arizona

Enclosed are the original and 3 copies of my report recommending denial of Government participation in exploration of the above subject property. Geologic conditions do not indicate that significant amounts of ore of minable grade would be found by the proposed exploration. It is possible that a few thousand tons of ore may be present in or near the old stoped areas, and the operators probably will recover most of the commercial grade ore as a result of the current rehabilitation program.

John N. Faick
J. N. Faick

JNF:ms

cc. Marshman (3)
Storms

P.S. The application is enclosed herewith. J.N.F.

Reviewed by
DMEA OPERATING COMMITTEE

_____
(date)

TRANSMITTED
NOV 22 1955

U. S. DEPARTMENT OF THE INTERIOR
DOUGLAS McKAY, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION

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REGION III

GEOLOGY

EXAMINATION REPORT

DMEA 3905

ARIZONA MINING AND DEVELOPMENT COMPANY
RATTLESNAKE AND CYPRESS CLAIMS

GILA COUNTY, ARIZONA

(Mercury)

By
John N. Faick
Geologist
U. S. Geological Survey

Reviewed by
DMEA OPERATING COMMITTEE
(date)

November 3, 1955

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U. S. DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
FIELD TEAM III

EXAMINATION REPORT

DMEA 3905

ARIZONA MINING AND DEVELOPMENT COMPANY
RATTLESNAKE AND CYPRESS CLAIMS

GILA COUNTY, ARIZONA
(Mercury)

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ILLUSTRATIONS

Fig. 1 Location Map	See Engineering Report
Fig. 2 Claim Map	" " "
Fig. 3 Sketch Map - Part of Rattlesnake Property	Following Page 1
Fig. 4 Rattlesnake Mine	Following Page 1

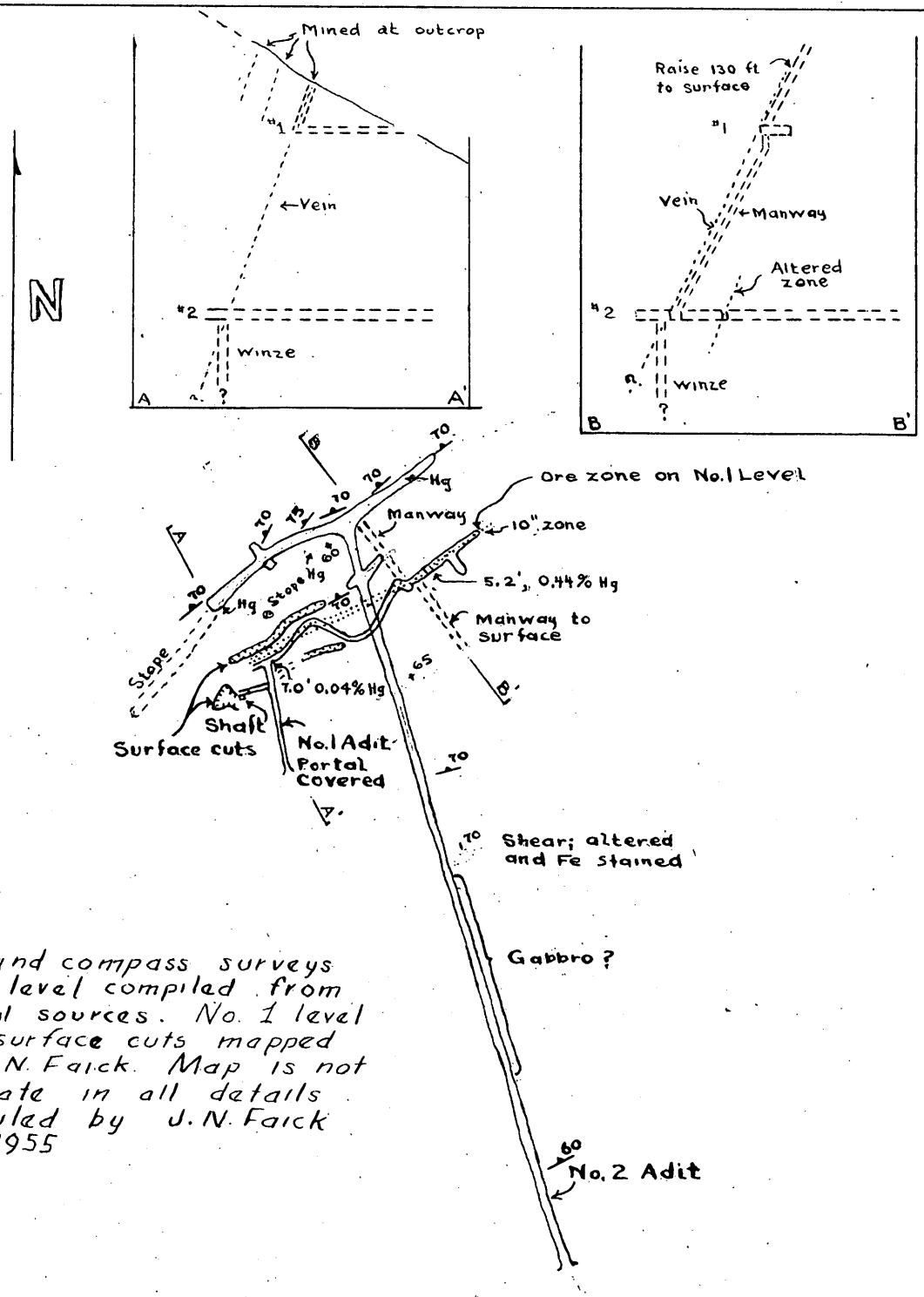
INTRODUCTION

The Rattlesnake Mine property is situated in the canyon of Slate Creek, and adjoins the Ord group of claims on the west end. The property is readily accessible from the new Bush Highway which crosses obliquely over the ore zone and over some of the mine workings, as shown on figure 3. The main part of the ore zone crops out on the steep slope north of the highway. The mine is now developed (see fig. 4) by a 460-foot long crosscut adit driven from near the bottom of Slate Creek Canyon and by several hundred feet of drifts, raises, shafts, winzes and a couple of stopes. The property is now controlled by the Arizona Mining and Development Company, 1316 N. Central Avenue, Phoenix, Arizona, phone Alpine 8-8675. Frank O. Ratliff is president, and the resident manager is A. B. "Archie" Griffith, who guided this writer during an examination of the property.

HISTORY, PRODUCTION AND GRADE

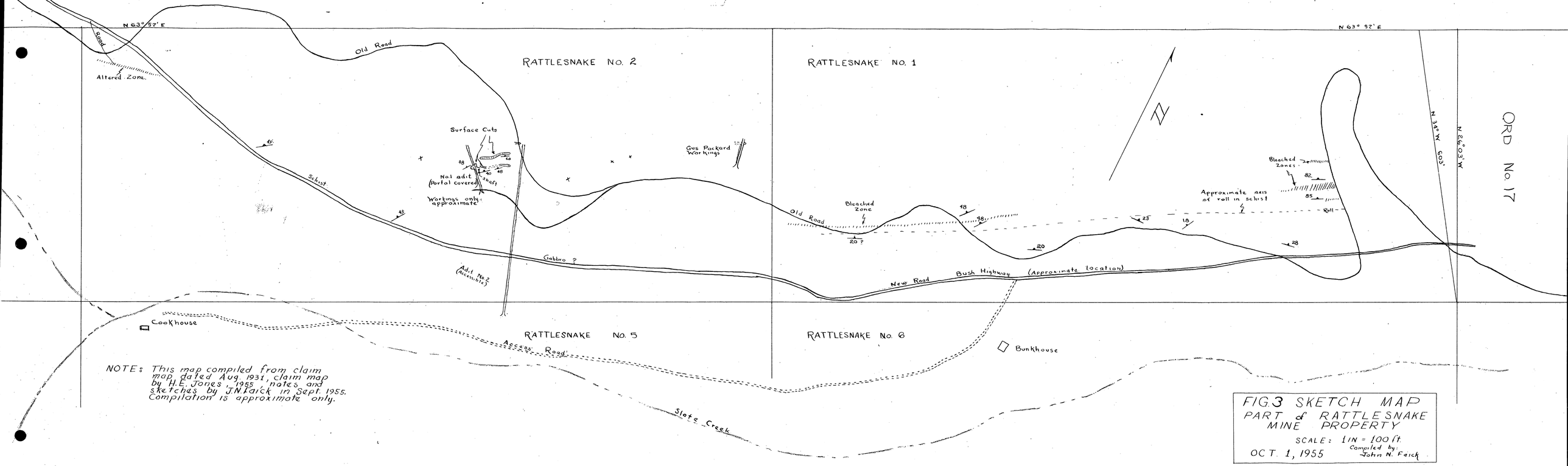
The Rattlesnake mine was located in April 1925 by A. M. Packard, Robert S. Packard, and Gus Packard and is sometimes referred to as the Gus Packard mine. It was nearly always operated in conjunction with the Ord mine and the ore was treated in the Ord furnace, and separate production records were not kept, or at least are not available to this writer.

The Rattlesnake property was visited in December 1925 by Carl Lausen and F. L. Ransome. A private report by Ransome mentions the presence of streaks of good ore in prospect pits at the outcrop for a strike distance of about 150 feet. The Mercury Mines of America



NOTE:
Tape and compass surveys No. 2 level compiled from several sources. No. 1 level and surface cuts mapped by J. N. Faick. Map is not accurate in all details.
Compiled by J. N. Faick
Oct. 1955

FIG. 4
RATTLESNAKE MINE
Composite Plan of Workings
SCALE: 1 in = 100 ft. Oct. 1955



NOTE: This map compiled from claim map dated Aug. 1931, claim map by H.E. Jones, 1955, notes and sketches by J.N. Faick in Sept. 1955. Compilation is approximate only.

FIG. 3 SKETCH MAP
PART of RATTLESNAKE MINE PROPERTY
SCALE: 1 IN = 100 ft.
OCT. 1, 1955
Compiled by: John N. Faick

worked the property from 1928 to 1930 and by August 1931 adits No. 1 and No. 2 had been completed, and a short tunnel and winze, locally known as the Gus Packard workings, had been driven near the east end of the Rattlesnake No. 2 claim. The mine had been worked to a depth of 50 feet below the No. 2 level by 1930. Archie Griffith, representing the applicant company, reviewed the recent history of the property for this writer. He reports that the mine was leased with option to purchase to the Ord Company in 1939. The mine was operated continuously by the Ord Company from 1940 to 1945 and in 1946 control passed to L. V. Smith, Orangegrove, California and in 1947 McWhorter took a lease and option on the property. McWhorter, according to Griffith, built a 5 tube retort on the property and produced quicksilver worth $60,000 in late 1946 and 1947. Operations ceased in 1947 and the claims were allowed to lapse, but were relocated in 1950 by Gus Packard and Irl Conway. Packard soon sold his interest to Ed Conway and on October 1, 1954 Ed and Irl Conway gave a lease and option to purchase to B. W. Stephenson and A. B. Griffith, who deeded the property to the present operating company, the Arizona Mining and Development Company. This company developed a water supply, undertook development of the mine and built a reduction plant about one-half mile northeast of the Ord mine.

There are no reliable production records of the Rattlesnake mine available to this writer. In August 1931 Webber and Foster[1] reported that the Ord and Rattlesnake together had produced 1078 flasks of quicksilver valued at $125,000 from ore averaging 0.4 percent mercury. From early 1940 to February 11, 1941 the property was operated in conjunction with the Ord Mine by W. V. Ranney and associates, and 430 flasks of mercury are credited to the combined operations for this period. It is reported by Wilson[2] that most of the 1940 production was obtained from the Rattlesnake mine. Griffith, who supposedly is quoting T. J. Long and L. E. Foster, former operators of the mine, says that the Rattlesnake mine produced more ore than the Ord from 1940 to 1943, during which period the two mines were operated jointly. This statement is not supported by the best information available to the writer. The ore mined in 1941 was reported to contain one percent quicksilver.[3]

The average grade and the amount of ore produced from the Rattlesnake mine is not known but my guess is that production probably was not much over 1000 flasks total and that the average grade was about 0.4 percent mercury. In surface cuts Lausen and Gardner reported obtaining 1.42 percent quicksilver across a sample width of 2.5 feet and obtained 0.44 percent quicksilver from a small stockpile. Samples taken by the writer from unmined remnants of the outcrop in the same

1/ Webber, B. N. and Foster, L. E., Private report.
2/ Wilson, E. D., Ariz. Bur. of Mines Circular No. 9, p. 7, 1941.
3/ Wilson, E. D., Op. Cit. p. 7

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area as those sampled by Lausen and Gardner contained 0.01 percent mercury or less. Only one sample of six taken by the writer contained appreciable amounts of mercury, and this was taken 18 feet east of the manway on the upper level, above an old stope, and contained 0.44 percent mercury, across a mineralized zone 5.2 feet wide. In May 1955 C. H. Dunning, representing the applicant company, took 23 samples, which ranged in grade from 0.02 to 1.95 percent mercury. After eliminating 3 samples, which are probably outside the ore zone, Dunning obtained an average grade of 0.548 percent mercury in the drift and raise, this representing 20 samples and an average "vein" width of about 38 inches. Because of mining and rehabilitation work that had been done after the samples were taken, and because of deficiencies in the map, it was impossible for this writer to find the locations of most of Dunning's samples. Only a few sample locations were found and visual inspection indicated that the grade was so low, and the amount of material so small that check sampling did not appear justified. Along the upper edge, or west side, of the stope Dunning obtained several samples representing ore of possible mining grade. Dunning's samples 10 to 20 inclusive average 0.7 percent mercury. The ore represented by these samples has since been mined and either processed or stockpiled. Griffith says 230 tons of this ore were treated in the new reduction plant and that the first 100 tons yielded 3 pounds of mercury per ton and 130 tons yielded 1½ pounds of mercury per ton. Griffith says the low grade is due to waste dilution, which is probably

true to a considerable extent, but it is also true that the high grade ores were selectively mined in the past, leaving only submarginal ores for the present operators. About 6 flasks of quicksilver were recovered and sold as a result of this test run, and Griffith believes about 170 pounds of quicksilver were stolen.

Nearly all of the production from the Rattlesnake mine, according to reports, was made from one orebody situated at the southwest end of the mine. Various reports indicate this had a strike length of from 60 to 100 feet, a width from 3 to 11 feet and extended 440 (?) feet below the surface, and as far as this writer could determine the stope was mined within 30 or 40 feet of the surface. If these dimensions are correct it can be shown that as much as 32,000 tons of ore may have been produced from this stope. It is reported that the average grade was 28 pounds quicksilver per ton. It is extremely doubtful if these reports are correct, but there is no way to verify them at present. This writer believes the production is much less than 32,000 tons and the grade is probably about 0.4 percent mercury, otherwise the Rattlesnake mine would have been the source of at least half of the quicksilver believed to have been produced from the Mazatzal Mountains, and we are reasonably certain that this is not possible.

An assay book loaned to the applicant company by Tom Russell shows the results of analyses of about 800 samples, apparently taken during a period of operations from August 4, 1928 to November 15, 1929, and representing the ore in that part of the mine above the

50-foot sublevel in the winze. Inspection of these analyses shows that the mercury content of the ore ranged from nil to about 3 percent and that many of the samples ranged from 0.2 to 0.7 percent mercury. Unfortunately the locations of most of these samples are not known to the writer, but it is obvious that most of them represent ore mined from the large stope near the west end of the mine.

During earlier discussions (June 1955) with Griffith he told this writer of 4 places in the mine where minable ore was available. Near the collar of the 29-foot deep shaft at the west end of the workings he claimed the existence of a northeasterly trending cross vein which was 4 feet wide and reportedly contained 1.74 percent mercury. In the shallow Gus Packard workings it was claimed that there is a zone from 1.5 to 3.0 feet wide containing 10 percent mercury, but this was inaccessible at the time of my examination. On 1 level, between the 29-foot deep shaft and the raise-manway to the surface he claimed the ore was 3 feet wide, 110 feet long and contained 1 percent mercury. On 2 level he claimed ore extended westward from the manway for about 230 feet, averaged 4 feet wide and contained 1 percent mercury. During my examination I was unable to verify any of these claims.

GEOLOGY

The Rattlesnake mine is located in a belt of metamorphosed sedimentary rocks of Precambrian age that follows along Slate Creek for about 3 miles. The prevailing rock type in this belt is dark gray, brown or maroon slate and associated with it are some prominent beds of light gray or white quartzite. In places the slate has been

altered to phyllite or schist, and bleached by hydrothermal solutions. Wilson reports that in most places the foliation of the schist is approximately parallel to the bedding planes of the original sediments. At the Rattlesnake mine the general direction of foliation is about N 65° E. and dips about 65°-70° northwest. Rhyolite porphyry, also of Precambrian age, crops out a few hundred feet north of the mine.

Conspicuous in the slates and phyllites exposed along Slate Creek are a number of zones in which these rocks have been bleached and altered to a thinly laminated schist which is white or very light gray in color. These zones range from a foot or two in width to about 30 feet wide, are somewhat silicified, and most of them have a relatively high content of sericite. These zones apparently owe their origin to the passage of mineralizing solutions as all known ore bodies have been found associated with these altered zones; however, these zones contain ore bodies in only a few places. These zones apparently are also zones of shearing and faulting, most of which are parallel to the foliation, but which in some places is found to cross the foliation at acute angles. These zones, apparently, are not continuous along the strike for great distances, but only mapping would reveal their extent and probable correlation in the area.

On the Rattlesnake property there are reported to be 5 nearly parallel zones of bleaching and alteration, but only 3 of them are believed to be large enough to be of importance. Near the principal mine workings these strike about N 65° E. and dip about 60 to 70 degrees

northwest but several hundred feet east of the mine dips of only about 15 to 20 degrees northwest may be observed. In cuts along the old road on Rattlesnake No. 2 claim it is apparent that the slates and the bleached zones are warped or folded along a nearly horizontal fold axis, the location of which is shown on figure 3.

Many, but not all of the altered zones along Slate Creek contain bodies of mercury ore, and these bodies appear to be localized in the zones where the schist has been folded and crinkled or where the shearing cuts across the foliation. Relatively intense structural deformation of the schist apparently is a prerequisite to the localization of ore, but such deformation is not readily apparent at the Rattlesnake because of the lack of suitable maps and because of the inaccessibility of some of the principal workings. The main stope reportedly had a strike of N. 40° E., which diverges about 25 degrees from the normal strike of the foliation, and the schist is intensely contorted near the stope.

Apparently small ore bodies were found on the 3 principal zones of alteration and mineralization at the Rattlesnake mine. Near the original site of Tunnel No. 1 (see Fig. 4) and at a shaft 29 feet deep, which connects with the No. 1 level, there are 2 zones which have been mined by surface cuts for a strike length of about 75 feet, and in the hanging-wall side of these is a caved or filled shaft which is believed to connect on 1 level to the main underground stope. Thus there are believed to be 3 zones, a footwall, intermediate and hanging-wall zone, and it is believed that a small

orebody has been mined from each of these near the west end of the mine. It is probable that these orebodies were irregular, lenticular sheets that were arranged more-or-less en echelon, and each probably had a slight rake to the northwest. The largest of these, which may be in the intermediate zone, is believed to have been mined from near the 1-level to a considerable distance below the 2-level. Unverified reports indicate that this ore shoot may have been mined to a depth of about 400 feet below the surface. A small sheet, possibly in the footwall zone, was recently partly mined by the present operators.

The mine was partly developed below the No. 2 adit level by a winze. This was sunk from a depth of 125 feet to a depth of 175 feet in 1940 and is now reported to be 250 feet deep. It is stated by the applicant that the winze is in reality a series of winzes and levels. It is said that the first winze was 125 feet deep, at which depth a 50-foot long sublevel was driven northwesterly to the ore zone where a 50-foot deep winze was sunk. At this depth (175 feet) another crosscut was driven northwesterly about 50 or 75 feet. At this point a 75-foot deep winze was sunk and another crosscut (250 level) was driven northwesterly toward the ore zone. This last mentioned crosscut, 250 feet below the No. 2 adit, failed to find ore and it was later found that the ore stopped at a flat fault about 187 feet below the No. 2 adit according to reports.

During the early forties ore reported to contain one percent mercury was mined from the lower part of the workings of the winze. T. J. Long reports that he mined the oreshoot to the bottom and that it stopped against a nearly horizontal plane. Griffith says deeper ore was found at a later date, but this is probably not true. It is interesting to note that operators familiar with the property report scooping up native quicksilver after each blast during the sinking of the winze. Apparently native quicksilver was abundant in this deposit in the lower part of the mine.

APPLICANTS' PROPOSED EXPLORATION PROJECT

A possible exploration program was suggested by Dunning as follows:

1. Prepare geological map of surface.

2. Re-open the upper workings and de-water the winze for examination and sampling, estimated cost about $2,000 for rehabilitation of the winze and $1,000 for rehabilitation of the upper workings.

3. Explore by levels, sublevels, drifts, crosscuts and raises as required after rehabilitation is completed, cost about $7,000.

4. Explore ore occurrence near east end of Rattlesnake No. 1 claim by diamond drilling about 3 holes about 75 feet long and 3 holes about 125 feet long. This to cost about $4500.

The total cost of exploration items recommended by Dunning is $12,500, but apparently no allowance is made for surface mapping. Some of the work has been completed since Dunning's report and part of the old workings can now be entered, as the operators have drifted eastward on the No. 2 level for a couple hundred feet.

The principal merit of the proposed exploration program is that it may result in the production of small amounts of ore which undoubtedly remains in the old part of the mine. It is reasonable to believe that additional ore may exist in any of the 3 mineralized zones because they do not appear to have been fully exploited. It is also possible that a small orebody may exist in the area for which diamond drilling is exposed, i.e. near the east end of the Rattlesnake No. 2 claim, in the vicinity of the Gus Packard workings.

As the orebodies tend to be localized in zones of intense deformation, and these appear to be quite small, it is evident that the orebodies are also small. It is probable that most of the ore of the Rattlesnake mine has been mined out, and that only unimportant reserves of submarginal ore remain. Although a few thousand tons of ore may remain in the deposit, the data available to this writer indicate that its average grade is very low and the present operation probably cannot succeed. This writer was unable to verify the claims of the applicant or the sample results of the company's consulting engineer. Adequate reasons for Government participation in exploration of the Rattlesnake mine could not be found. Admittedly additional ore may be recovered from this deposit, but I doubt if it will be in significant quantity and the operation will probably be unprofitable. However, the operators have stated orally that they expect to go ahead with the exploration even if the Government refuses to participate.

CONCLUSIONS AND RECOMMENDATIONS

From an examination of the Rattlesnake mine it is concluded that only relatively small reserves of submarginal ore remain in the deposit and that exploitation of these reserves will be unprofitable. Optimistic claims made by the applicants for this deposit could not be verified in most respects and it appears that the applicant company may be misled by its own enthusiasm. No adequate basis for Government participation in the proposed exploration could be found; therefore it is recommended that the application be denied.

400

DOCKET
McMahon
Martin
Kildegaard
Gehne
Selbridge
Johnson

DEC 29 1955

Arizona Mining and Development Co., Inc.
1316 North Central Avenue
Phoenix, Arizona

Re: Docket No. DMEA-3905, Mercury
Rattlesnake and Cypress Claims
Gila County, Arizona

Gentlemen:

Your application for aid for an exploration project and other data available to us in Washington relative to the above-named property have been carefully reviewed.

Projects approved by the Defense Minerals Exploration Administration must, in its judgment, show definite promise of yielding materials of acceptable grade in quantities that will significantly improve the mineral supply position for the National Defense Program.

Careful study of our information indicates that, although mercury mineralization occurs on the property, the probability of disclosing minable ore reserves by your proposed program is not sufficiently promising to justify Government participation. We regret to advise you, under these circumstances, that your application for exploration assistance is denied. Such denial, however, is made without prejudice to the property. In the event further work on your part discloses new and more favorable evidence of ore deposition on the property, we shall be pleased to consider a new application, amply supported by geological mapping, sampling, and assaying.

We wish to thank you for your interest in the Defense Minerals Exploration Administration program and for bringing your property to our attention.

Sincerely yours,

C. O. Hitchcock

Administrator

cc: Docket
Code 400
Oper. Comm.
Adm. Read. File
T. Kiilsgaard, USGS
Helena Meyer, USBM
FT, Reg. 3
ADMcMahon/ls 12/22/55

P.S.

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.

December 23, 1955

MEMORANDUM

To: Administrator, DMEA

From: Iron and Ferro-Alloys Division

Subject: Denial of request for exploration assistance in the amount of $24,750.00
Docket No. DMEA 3905 - Mercury
Arizona Mining and Development Co., Inc.
Rattlesnake and Cypress Claims
Gila County, Arizona

Denial of the subject application is recommended by this Division based on the following information:

(1) The applicant, Arizona Mining and Development Co., Inc., 1316 North Central Avenue, Phoenix, Arizona, requested exploration assistance in the amount of $24,750.00 for diamond drilling, dewatering and rehabilitation of a winze and sub-level and drifting from the sub-level.

(2) The applicant controls, by assignment of a lease, the unpatented Rattlesnake Claims Nos. 1 through 10 situated in the Slate Creek Mining District, Gila County, Arizona, and recorded in the office of the County Recorder, Gila County, in Book 49, pages 207, 240, 241, and 242. Said claims are owned by A. C. and Jeanette Thomas of Tucson, Arizona, and leased to Archie and Sue L. Griffith. The lease was assigned to Arizona Mining and Development Co., Inc., on January 20, 1955.

(3) The proposed program is (a) to explore ore occurrence near the east end of Rattlesnake No. 2 Claim with six diamond drill holes (3 - 75 feet and 3 - 125 feet) totaling 600 feet at a cost of $7.50 per foot, or $4,500.00; (b) rehabilitate upper workings and dewater sub-level for examination and sampling, at an estimated cost of $3,500.00; (c) extend sub-level 200 feet, at $45.00 per foot, for $9,000.00; (d) bull-dozing for diamond drill stations, $750.00; (e) bunkhouse, $1,500.00; (f) miscellaneous equipment, maintenance, repairs, and taxes, $2,500.00; and (g) supervision and consulting, $3,000.00; totaling $24,750.00.

(4) The Rattlesnake Mine is located on the Rattlesnake No. 2 Claim. The mine is developed by two adits and approximately 100 feet of drifting on each of the No. 1 and No. 2 levels. Workings under the No. 2 adit consist of 3 separate vertical winzes to sub-levels 125, 175, and 250 feet below, where approximately 100 feet of drifting was accomplished. The winzes and sub-levels are filled with water.

Ore previously mined came principally from one ore body situated at the southwest end of the mine where some showings still remain. Apparently any high-grade ores were selectively mined, leaving only submarginal ores for the present operators.

The examining team could not verify the claims of the Operator nor the reported findings of Mr. C. H. Dunning, the applicant's consultant.

(5) The Field Team concludes that the geological conditions are not favorable for the discovery of other minable ore bodies and recommends denial. The Commodity Division of the Geological Survey and the Bureau of Mines concur in this recommendation.

W S Martin

W. S. Martin, Chief
Iron and Ferro-Alloys Division

400 DOCKET
Surname
McMahon
Chandler

December 23, 1955

MEMORANDUM

To: Administrator, DMEA

From: Iron and Ferro-Alloys Division

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Ore previously mined came principally from one ore body situated at the southwest end of the mine where some showings still remain. Apparently any high-grade ores were selectively mined, leaving only submarginal ores for the present operators.

The examining team could not verify the claims of the Operator nor the reported findings of Mr. C. H. Dunning, the applicant's consultant.

(5) The Field Team concludes that the geological conditions are not favorable for the discovery of other minable ore bodies and recommends denial. The Commodity Division of the Geological Survey and the Bureau of Mines concur in this recommendation.

W. S. Martin, Chief
Iron and Ferro-Alloys Division

cc: Docket
Code 400
Oper. Comm.
Adm. Read. File

ADMcMahon/ls

Docket

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WASHINGTON 25, D. C.

RECEIVED
DEC 20 1955

December 19, 1955

Copy retained 400

Re: DMEA 3905
Arizona Mining Co.
Rattlesnake Mercury Claims
Gila Co., Arizona
$24,700.00 - Mercury

W/109

Memorandum

To: W. S. Martin, Defense Minerals Exploration Administration

From: N. E. Nelson, U. S. Geological Survey

Subject: Review of Field Team report.

The examiners and the Field Team recommend denial of the applicant's request for aid in the reopening of old mine workings, drifting, crosscutting and diamond drilling at an estimated cost of $24,700.00.

The examiners conclude that "the chance of making a significant discovery of mercury ore seems remote."

I concur with the recommendations of the examiners and the Field Team.

N. E. Nelson

N. E. Nelson

Docket

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
WASHINGTON 25, D. C.

Copy retained 400

December 6, 1955

Memorandum

WSM

To: W. S. Martin, Defense Minerals Exploration Administration

From: J. W. Pennington, Branch of Base Metals

Subject: Review of Examination Report, Docket No. DMEA - 3905 (mercury), Arizona Mining and Development Co., Rattlesnake and Cypress Claims, Gila County, Arizona, $24,750

The applicant proposed to explore this property by drifting, crosscutting, and diamond drilling at a cost of $24,750.00.

However, examination of the property by John N. Faick, Geological Survey, and T. M. Romslo, Bureau of Mines, revealed that geological conditions are not favorable for the discovery of minable ore bodies in the area of the proposed exploration.

The examiners conclude that it does not seem probable that significant amounts of ore will be discovered by the proposed project and recommend that Government participation in the exploration be denied.

I concur with their recommendation.

J. W. Pennington

Copy to: Division of Minerals
Branch of Base Metals
J. W. Pennington
R. W. Geehan
Thor Kiilsgaard, U.S.G.S.
F i l e s

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Docket

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UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.

November 22, 1955

224 New Customhouse
Denver 2, Colorado

Memorandum

To: Secretary to the Operating Committee, DMEA

From: Field Team, Region III

Subject: Report of Examination, DMEA Docket 3905 (Mercury), Arizona Mining and Development, Rattlesnake and Cypress claims, Gila County, Arizona

Enclosed are the original and three copies of the report pertaining to the above application.

The field examiners concur that the chance of making a signigicant discovery of mercury ore is remote. They recommend that the application be denied. We concur in this recommendation.

W. M. Traver

By J. W. Townsend
J. W. Townsend

E. N. Harshman
E. N. Harshman

Enclosures

Reviewed by
DMEA OPERATING COMMITTEE
12-5-55
(date)

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November 16, 1955

Memorandum

To : W. M. Traver, Executive Officer, DMEA Field Team, Region III

From : Superintendent, Southwest Experiment Station

Subject : Field Examination Report, Docket DMEA-3805, Arizona Mining & Development Co.'s Rattlesnake Mercury Claims, Sunflower Mining District, Gila County, Ariz.

Enclosed are original and 8 copies of the section on Summary, Conclusions and Recommendations by John N. Faick of the Geological Survey and T. M. Romalo of the Bureau of Mines, and the section on Engineering by Romalo for the above report. A separate report on Geology already has been submitted by the Geological Survey.

Because the chance of making a significant discovery of mercury ore seems remote the examiners have recommended denial of Government exploration aid. I concur with this recommendation.

Brochure is enclosed.

Walter R. Storms

Walter R. Storms

CC W. M. Traver (8)
J. N. Faick
J. F. Shaw
DMEA-3805
DF

WRStorms:frj

Reviewed by
DMEA OPERATING COMMITTEE
12-5-55
(date)

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UNITED STATES
DEPARTMENT OF THE INTERIOR
DOUGLAS McKAY, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION III

DMEA-3905, Arizona Mining and Development Company

Rattlesnake Mercury Claims

Gila County, Arizona

John N. Faick, Geologist
U. S. Geological Survey

T. M. Romslo, Mining Engineer
U. S. Bureau of Mines

November 1955

Reviewed by
DMEA OPERATING COMMITTEE
12-5-55
(date)

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SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

By John N. Faick[1] and T. M. Romslo[2]

In a recent application to the Defense Minerals Exploration Administration, the Arizona Mining & Development Co. requested Government assistance in exploration for mercury in the Rattlesnake mine, which is situated on Slate Creek, in the Mazatzal Mountains, Gila County, Arizona. Frank O. Ratliff is president of the applicant company, with offices at 1316 N.Central Avenue, Phoenix, Ariz. and A. B. Griffith was resident manager at the time of the examination in September 1955. The applicant's proposed exploration, docketed as DMEA-3905, was to re-open parts of the old mine workings, and explore by drifting, crosscutting and diamond drilling at a total cost of $24,750.00.

The property consists of 21 claims, including the Rattlesnake claims Nos. 1 to 10, and Cypress claims Nos. 1 to 11. The mine has been developed by a 460-foot adit and 2 or 3 thousand feet of drifts, crosscuts and raises; and winzes and sublevels that extend to a depth of 260 feet below the main or No. 2 adit. The mine was actively exploited from late 1928 to early 1930, and again from 1940 to 1945. Most of the production was made from one stope reported to have a strike length of from 60 to 100 feet, a width ranging from 3 to 11 feet, and a pitch length of about 400 feet. Production is not known but it may be from 15,000 to 20,000 tons of ore which may have yielded from 1,000 to 1,500 flasks of quicksilver.

1/ Geologist, U. S. Geological Survey
2/ Mining Engineer, U. S. Bureau of Mines

The Rattlesnake mine is situated in dark gray to maroon slates and phyllites which strike east-northeasterly and dip about 65 degrees northwest. More or less parallel to the foliation of the phyllites are several light gray or white bleached zones of sericitic schist, which represent hydrothermal alteration zones along previously existing shear zones in the phyllite. Irregular, discontinuous lens-like bodies of mercury ore occur along these zones of alteration, and appear to be concentrated principally in zones where structural deformation is greatest. The ore consists of cinnabar and native quicksilver disseminated in the bleached and altered schists; small amounts of cinnabar also occur in thin quartz-carbonate veinlets. Surface cuts reveal that some ore has been mined from at least 3 narrow and closely spaced ore zones having a strike length of about 150 feet. Underground nearly all the ore has been mined from a single ore body. However, apparently unsuccessful efforts have been made to mine another ore shoot which occupies an echelon position on the footwall side of the larger ore shoot.

Sketch mapping of parts of the mine and surface, and compilation of inadequate data from many sources indicate that geological conditions are not favorable for the discovery of other

minable ore bodies in the area of proposed exploration. However, it is believed possible that a few hundred tons of minable ore may be recovered from the old workings in the developed part of the mine.

As it does not seem probable that significant amounts of ore will be discovered by the proposed project, it is recommended that Government participation in exploration be denied.

DMEA-2905, ARIZONA MINING AND DEVELOPMENT COMPANY
RATTLESNAKE MERCURY CLAIMS
GILA COUNTY, ARIZONA

Engineering Report

By T. M. Romslo
Mining Engineer
U. S. Bureau of Mines

November 1955

Reviewed by
DMEA OPERATING COMMITTEE
12-5-55
(date)

DMEA-3905, ARIZONA MINING AND DEVELOPMENT COMPANY
RATTLESNAKE MERCURY CLAIMS
GILA COUNTY, ARIZONA

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Ore reserves	6
Conclusions	6
Recommendations	6

ILLUSTRATIONS

Figure No.		Following page
1	Location map	1
2	Claim map	4
3	Part of Rattlesnake mine property	(See geologic report)
4	Rattlesnake mine	" "

INTRODUCTION

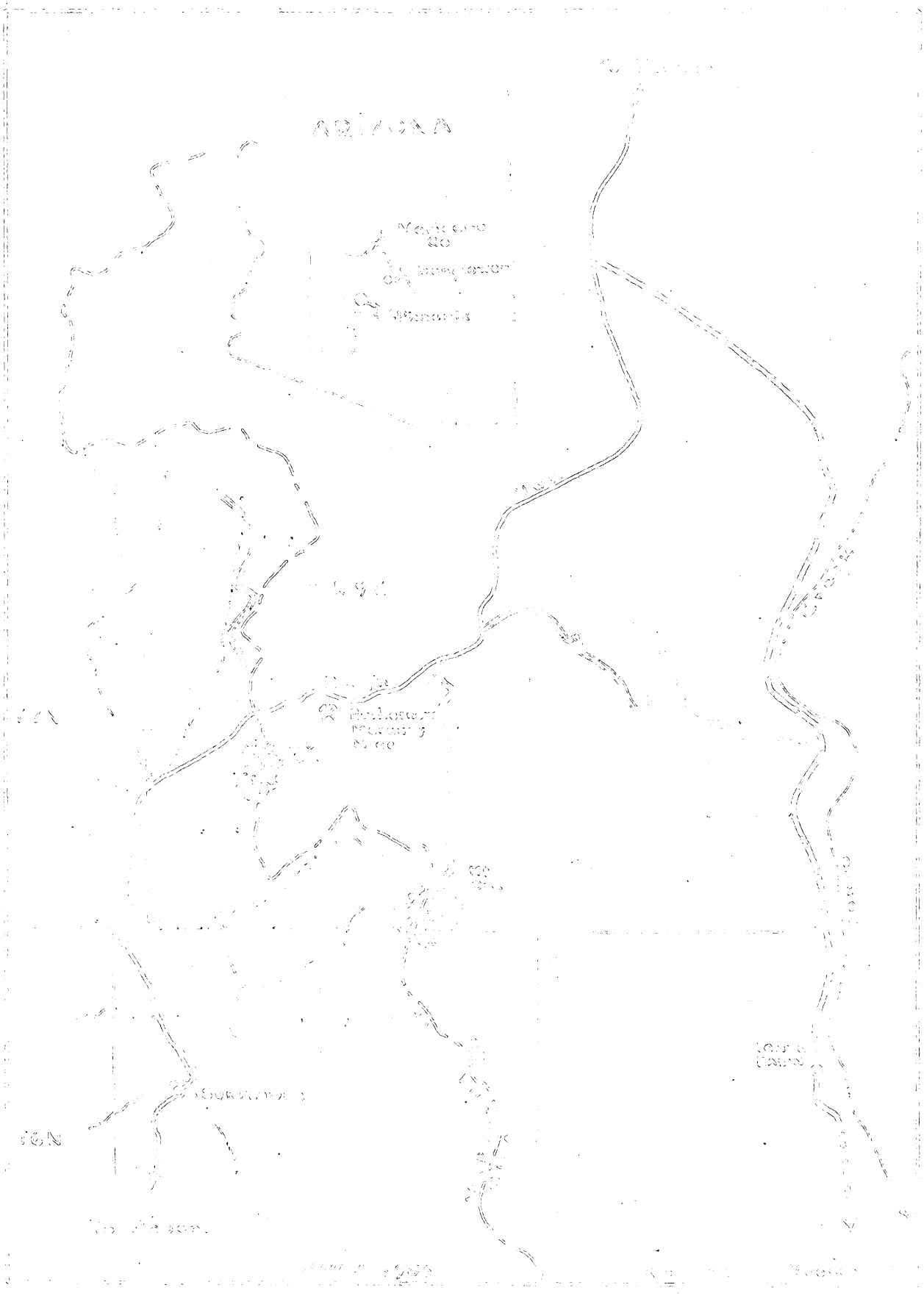
The Defense Minerals Exploration Administration received an application from the Arizona Mining & Development Co. on July 13, 1955 for aid in a proposed exploratory project for mercury on the Rattlesnake and Cypress claims in Gila County, Ariz. The application was docketed as DMEA-3905, reviewed by the Operating Committee, then referred to the Field Team, Region III, for a field examination of the property.

The applicant's proposed exploratory work involved 650 feet diamond drilling, dewatering and rehabilitation of a winze and sub-level, and 200 feet of drifting from the sub-level. The total cost of the work was estimated at $24,750.00.

The minewas examined by J. N. Faick, geologist, U. S. Geological Survey, on September 13 and 14, 1955, and by T. M. Romslo, mining engineer, U. S. Bureau of Mines, on September 21, 1955. A. B. Griffith, resident manager for the applicant, was present during both examinations. Completion of the reports of examination were held up until the last of the data requested from the applicant was received on Oct. 31, 1955.

LOCATION AND ACCESSIBILITY

The Rattlesnake mine is about 50 air miles northeast of Phoenix, Ariz. It is situated about in sec. 16 of unsurvyed T. 7 N., R. 9 E., Gila County, Ariz. (figure 1). It is accessible from Phoenix by driving 24 miles easterly on U. S. Highway 60



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to its junction with the Bush Highway. Proceed 50 miles northeasterly on the graded Bush Highway to the access mine road which branches to the left at 1.9 miles beyond the "Signed" Maricopa and Gila County boundary line. The access road is followed 0.5 mile to a camp that comprises 2 10- by 30-foot wooden buildings and a floored 16- by 26-foot tent.

TOPOGRAPHY, PHYSICAL FEATURES, AND CLIMATE

The Rattlesnake mine is on the western slope of the slightly west of north-trending Mazatzal Mountains. It lies near the head of Slate Creek that drains easterly to Tonto Creek. The area near the mine is rather rugged. It comprises high ridges that are separated by deep V-shaped canyons. The altitude of the portal of No. 2 Adit is about 3,500 feet.

Vegetation near the mine is confined mainly to a dense growth of brush.

Summers are pleasant and winters are mild. Precipitation of about 15 inches yearly occurs principally as heavy rainfalls during the period June through September, and as showers and light snowfalls during January and February.

There are no permanent streams in the area. Springs and mine works furnish adequate water for small mining and milling operations.

HISTORY AND PRODUCTION

The Rattlesnake mine, also referred to as the Gus Packard mine, was located in 1925 by Gus Packard, A. M. Packard and Robert S. Packard.

Little work was done on the property until 1928 when the Mercury Mines of America started operations. It operated until 1930 when the operations were terminated. Nos. 1 and 2 adits had been driven and stopes had been worked to a depth of 50 feet below the lower adit. The mine next was operated from 1940 to 1945 by the Ord Mercury Co. In 1947, McWhorter obtained a lease and option on the property and treated ore from the mine in a retort that he built on the property. The mine then was inactive until Oct. 1954 when the applicant, the Arizona Mining & Development Co.,obtained control of the property.

The company repaired roads to the mine, opened the adits, installed track and pipe in the lower adit, and drove 160 feet of drift on the main level. During these operations about 230 tons of ore was mined from old workings. The ore was treated at the company's new reduction plant about 5 miles northeast of the Rattlesnake mine. Both the mine and mill were shut down on August 11, 1955.

Separate production records probably were not kept on Ord and Rattlesnake ore, and there are no reliable records for other periods of operation of the Rattlesnake mine. Consequently size of workings and reported grades of ore were considered in arriving at a possible total production of 1,000 to 1,500 flasks of mercury.

EXTENT AND OWNERSHIP OF PROPERTY

The applicant claims property rights to 21 claims, Rattlesnake claims Nos. 1 to 10, and Cypress claims 1 to 11 (figure 2).

The Rattlesnake claims 1 to 10 are owned by A. C. Thomas and Jeanette Thomas of Tucson, Ariz. Archie Griffith and Sue L. Griffith obtained the claims under a lease and option agreement that they have assigned to the Arizona Mining & Development Co.

The applicant's right to the Cypress claims was not stated in the application for aid in the proposed exploratory project.

PRESENT STATUS

Both the mine and mill were idle during the field investigations of the DMEA examiners.

Mine

The major portion of the principal workings above No. 2 adit are presently accessible (figure 4). Workings below this adit are filled with water. They reportedly comprise 3 levels at 125, 175, and 250 feet from the adit, and about 100 feet of drifting. The levels reportedly were developed from 3 separate vertical winzes.

Major equipment at the mine and nearby camp consists of a 315 C.F.M. compressor, a 5 K.V.A. light plant, 4 mine cars, 3 jackhammers, a 7-ton dump truck, and a $\frac{1}{2}$-ton pickup truck. The camp comprises 2 10- by 30-foot buildings of wood construction, and afloored 16- by 26-foot tent.

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Mill

The mill flow-sheet comprises a 15-ton coarse ore bin, a 16- by 32-inch jaw crusher, a 90-ton fine ore bin, a belt conveyor to hopper, a 50-ton rotary Gould furnace, and 14 condensor tubes. Power is supplied by a 40-K. W. diesel-electric generator. Other equipment consists of a 3-K.W. light plant, a Fordson dozer-loader, and a 5,600-gallon fuel storage tank. Water for both domestic and plant usage is obtained from a spring and a drilled well.

DESCRIPTION OF THE DEPOSIT

Mercury mineralization on the Rattlesnake property occurs in 3 nearly parallel zones of bleached and altered schist. Near the principal workings, the zones strike about N. 65° E. and dip about 60 to 70 degrees northwesterly. Cinnabar, the ore mineral, occurs as disseminations in the schist, and as blebs and discontinuous veinlets in quartz. It is confined to irregular lenticular ore bodies that appear to rake slightly to the northwest.

Unverified reports indicate the principal ore body was mined to a depth of 400 feet below the surface. Widths and lengths of the ore body were reported as 3 to 11 feet, and 60 to 100 feet, respectively. Also mined were smaller deposits in both the hanging wall and footwall of the main ore body.

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ORE RESERVES

The mine contains no measureable ore reserves.

Indicated reserves are estimated at a few hundred tons of low-grade ore.

Inferred reserves are confined to a few small low-grade deposits that are present at widely scattered places.

CONCLUSIONS

Essentially all mercury produced from the Rattlesnake mine, 1,000 to 1,500 flasks, came from one ore body that probably has been mined out. Other mineralized zones, that might be present at unpredictable places, are likely to be very small and of low grade.

RECOMMENDATION

Denial of the requested aid in exploration of the Rattlesnake mine is recommended because chances of indicating the presence of significant amounts of mercury ore are considered unfavorable.

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MINERAL DEPOSITS
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U. S.
GEOLOGICAL SURVEY
DENVER, COLORADO

Box 4126 University Station
Tucson, Arizona

November 3, 1955

MEMORANDUM

To: K. N. Harshman

From: J. N. Faick

Subject: DMEA 3905 (Mercury) Geologic Report of Examination of Rattlesnake and Cypress Claims; Arizona Mining and Development Co., Gila County, Arizona

Enclosed are the original and 8 copies of my report recommending denial of Government participation in exploration of the above subject property. Geologic conditions do not indicate that significant amounts of ore of minable grade would be found by the proposed exploration. It is possible that a few thousand tons of ore may be present in or near the old stoped areas, and the operators probably will recover most of the commercial grade ore as a result of the current rehabilitation program.

John N. Faick
J. N. Faick

JNF:ms

cc. Harshman (8)
Storms

P.S. The application is enclosed herewith. J.N.F.

Reviewed by
DMEA OPERATING COMMITTEE
12-5-55
(date)

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U. S. DEPARTMENT OF THE INTERIOR
DOUGLAS McKAY, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION

REGION III

GEOLOGY

EXAMINATION REPORT

DMEA 3905

ARIZONA MINING AND DEVELOPMENT COMPANY
RATTLESNAKE AND CYPRESS CLAIMS

GILA COUNTY, ARIZONA

(Mercury)

By
John N. Faick
Geologist
U. S. Geological Survey

November 3, 1955

Reviewed by
DMEA OPERATING COMMITTEE
12-5-55
(date)

U. S. DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
FIELD TEAM III

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EXAMINATION REPORT

DMEA 3905

ARIZONA MINING AND DEVELOPMENT COMPANY
RATTLESNAKE AND CYPRESS CLAIMS

GILA COUNTY, ARIZONA
(Mercury)

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APPLICANTS' PROPOSED EXPLORATION PROJECT	10
CONCLUSIONS AND RECOMMENDATIONS	12

ILLUSTRATIONS

Fig. 1	Location Map	See Engineering Report
Fig. 2	Claim Map	" " "
Fig. 3	Sketch Map - Part of Rattlesnake Property	Following Page 1
Fig. 4	Rattlesnake Mine	Following Page 1

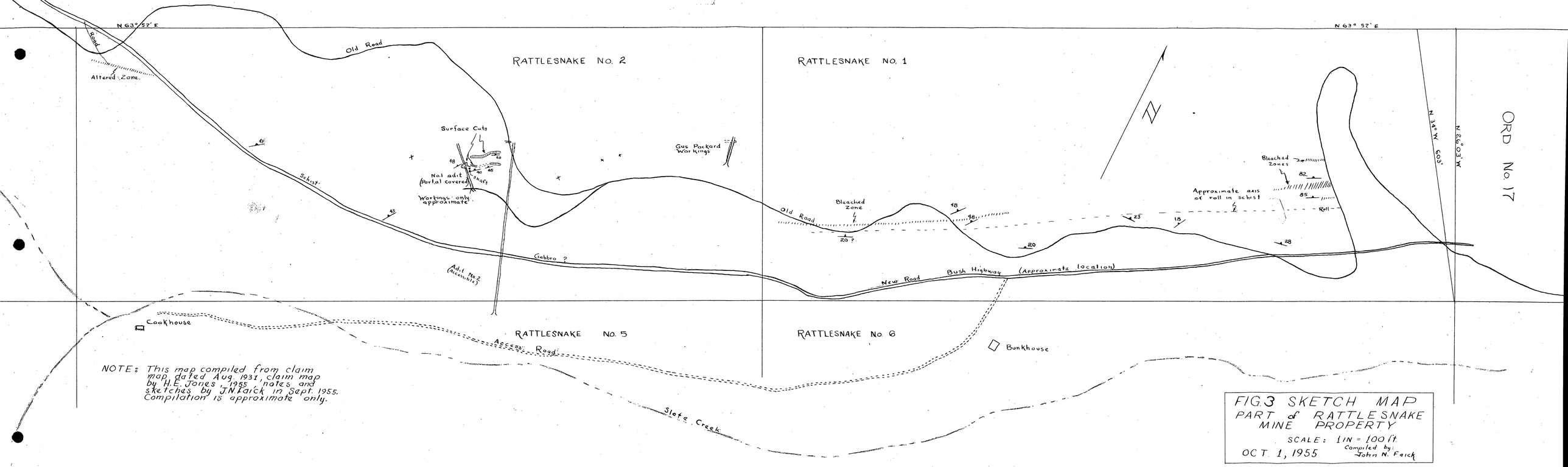
INTRODUCTION

The Rattlesnake Mine property is situated in the canyon of Slate Creek, and adjoins the Ord group of claims on the west end. The property is readily accessible from the new Bush Highway which crosses obliquely over the ore zone and over some of the mine workings, as shown on figure 3. The main part of the ore zone crops out on the steep slope north of the highway. The mine is now developed (see fig. 4) by a 460-foot long crosscut adit driven from near the bottom of Slate Creek Canyon and by several hundred feet of drifts, raises, shafts, winzes and a couple of stopes. The property is now controlled by the Arizona Mining and Development Company, 1316 N. Central Avenue, Phoenix, Arizona, phone Alpine 8-8675. Frank O. Ratliff is president, and the resident manager is A. B. "Archie" Griffith, who guided this writer during an examination of the property.

HISTORY, PRODUCTION AND GRADE

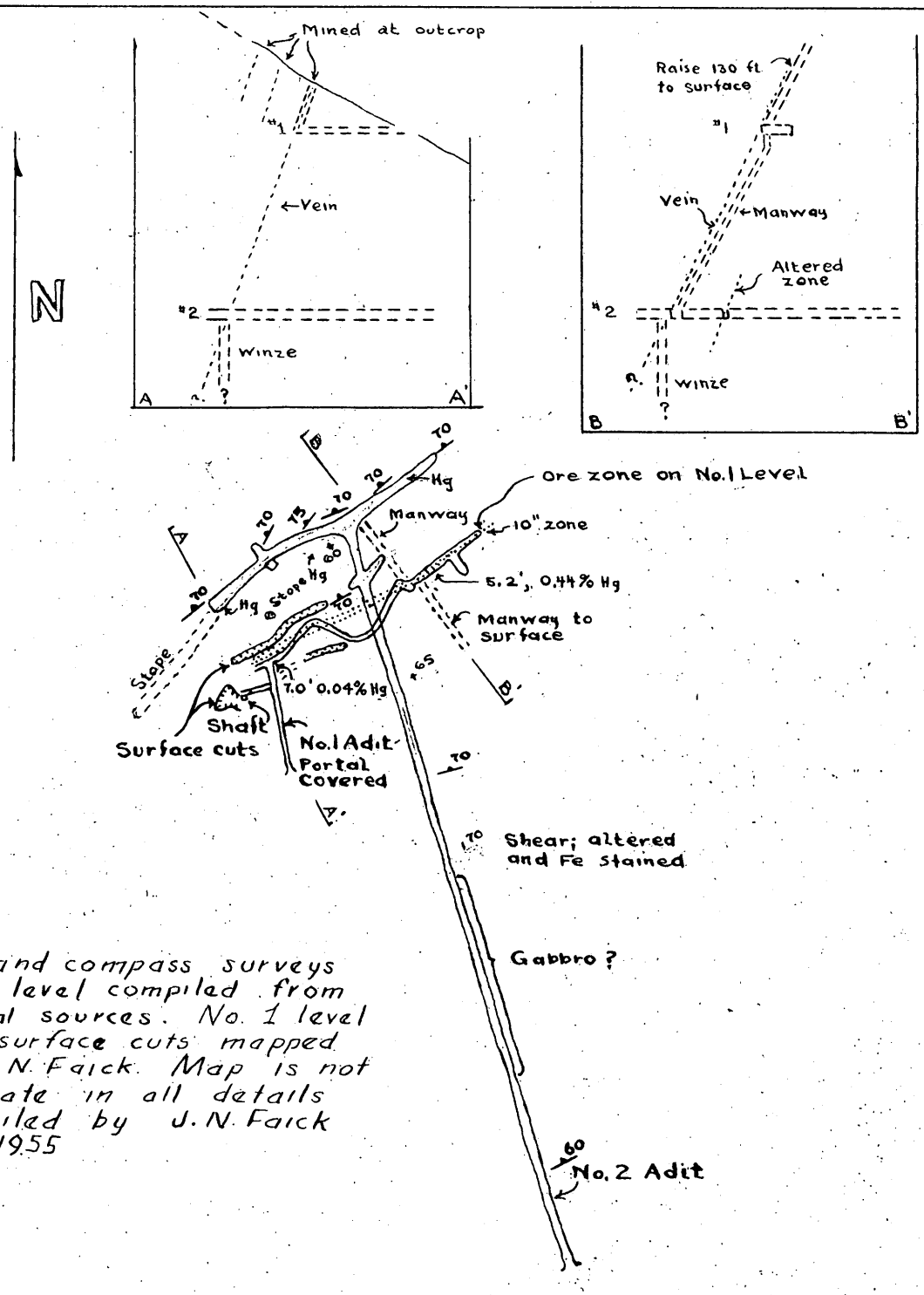
The Rattlesnake mine was located in April 1925 by A. M. Packard, Robert S. Packard, and Gus Packard and is sometimes referred to as the Gus Packard mine. It was nearly always operated in conjunction with the Ord mine and the ore was treated in the Ord furnace, and separate production records were not kept, or at least are not available to this writer.

The Rattlesnake property was visited in December 1925 by Carl Lausen and F. L. Ransome. A private report by Ransome mentions the presence of streaks of good ore in prospect pits at the outcrop for a strike distance of about 150 feet. The Mercury Mines of America



NOTE: This map compiled from claim map dated Aug. 1931, claim map by H.E. Jones 1955, notes and sketches by J.N. Farck in Sept. 1955. Compilation is approximate only.

FIG. 3 SKETCH MAP
PART of RATTLESNAKE MINE PROPERTY
SCALE: 1 IN = 100 ft.
OCT. 1, 1955
Compiled by: John N. Farck



NOTE:
Tape and compass surveys No.2 level compiled from several sources. No. 1 level and surface cuts mapped by J.N. Faick. Map is not accurate in all details
Compiled by J.N. Faick
Oct. 1955

FIG. 4
RATTLESNAKE MINE
Composite Plan of Workings
SCALE: 1 in = 100 ft. Oct. 1955

worked the property from 1928 to 1930 and by August 1931 adits No. 1 and No. 2 had been completed, and a short tunnel and winze, locally known as the Gus Packard workings, had been driven near the east end of the Rattlesnake No. 2 claim. The mine had been worked to a depth of 50 feet below the No. 2 level by 1930. Archie Griffith, representing the applicant company, reviewed the recent history of the property for this writer. He reports that the mine was leased with option to purchase to the Ord Company in 1939. The mine was operated continuously by the Ord Company from 1940 to 1945 and in 1946 control passed to L. V. Smith, Orangegrove, California and in 1947 McWhorter took a lease and option on the property. McWhorter, according to Griffith, built a 5 tube retort on the property and produced quicksilver worth $60,000 in late 1946 and 1947. Operations ceased in 1947 and the claims were allowed to lapse, but were relocated in 1950 by Gus Packard and Irl Conway. Packard soon sold his interest to Ed Conway and on October 1, 1954 Ed and Irl Conway gave a lease and option to purchase to B. W. Stephenson and A. B. Griffith, who deeded the property to the present operating company, the Arizona Mining and Development Company. This company developed a water supply, undertook development of the mine and built a reduction plant about one-half mile northeast of the Ord mine.

There are no reliable production records of the Rattlesnake mine available to this writer. In August 1931 Webber and Foster[1] reported that the Ord and Rattlesnake together had produced 1078 flasks of quicksilver valued at $125,000 from ore averaging 0.4 percent mercury. From early 1940 to February 11, 1941 the property was operated in conjunction with the Ord Mine by W. V. Ranney and associates, and 430 flasks of mercury are credited to the combined operations for this period. It is reported by Wilson[2] that most of the 1940 production was obtained from the Rattlesnake mine. Griffith, who supposedly is quoting T. J. Long and L. E. Foster, former operators of the mine, says that the Rattlesnake mine produced more ore than the Ord from 1940 to 1945, during which period the two mines were operated jointly. This statement is not supported by the best information available to the writer. The ore mined in 1941 was reported to contain one percent quicksilver.[3]

The average grade and the amount of ore produced from the Rattlesnake mine is not known but my guess is that production probably was not much over 1000 flasks total and that the average grade was about 0.4 percent mercury. In surface cuts Lausen and Gardner reported obtaining 1.42 percent quicksilver across a sample width of 2.5 feet and obtained 0.44 percent quicksilver from a small stockpile. Samples taken by the writer from unmined remnants of the outcrop in the same

1/ Webber, B. N. and Foster, L. E., Private report.
2/ Wilson, E. D., Ariz. Bur. of Mines Circular No. 9, p. 7, 1941.
3/ Wilson, E. D., Op. Cit. p. 7

area as those sampled by Lausen and Gardner contained 0.01 percent mercury or less. Only one sample of six taken by the writer contained appreciable amounts of mercury, and this was taken 18 feet east of the manway on the upper level, above an old stope, and contained 0.44 percent mercury, across a mineralized zone 5.2 feet wide. In May 1955 C. H. Dunning, representing the applicant company, took 23 samples, which ranged in grade from 0.02 to 1.95 percent mercury. After eliminating 3 samples, which are probably outside the ore zone, Dunning obtained an average grade of 0.548 percent mercury in the drift and raise, this representing 20 samples and an average "vein" width of about 38 inches. Because of mining and rehabilitation work that had been done after the samples were taken, and because of deficiencies in the map, it was impossible for this writer to find the locations of most of Dunning's samples. Only a few sample locations were found and visual inspection indicated that the grade was so low, and the amount of material so small that check sampling did not appear justified. Along the upper edge, or west side, of the stope Dunning obtained several samples representing ore of possible mining grade. Dunning's samples 10 to 20 inclusive average 0.7 percent mercury. The ore represented by these samples has since been mined and either processed or stockpiled. Griffith says 230 tons of this ore were treated in the new reduction plant and that the first 100 tons yielded 3 pounds of mercury per ton and 130 tons yielded 1½ pounds of mercury per ton. Griffith says the low grade is due to waste dilution, which is probably

true to a considerable extent, but it is also true that the high grade ores were selectively mined in the past, leaving only submarginal ores for the present operators. About 6 flasks of quicksilver were recovered and sold as a result of this test run, and Griffith believes about 170 pounds of quicksilver were stolen.

Nearly all of the production from the Rattlesnake mine, according to reports, was made from one orebody situated at the southwest end of the mine. Various reports indicate this had a strike length of from 60 to 100 feet, a width from 3 to 11 feet and extended 440 (?) feet below the surface, and as far as this writer could determine the stope was mined within 30 or 40 feet of the surface. If these dimensions are correct it can be shown that as much as 32,000 tons of ore may have been produced from this stope. It is reported that the average grade was 28 pounds quicksilver per ton. It is extremely doubtful if these reports are correct, but there is no way to verify them at present. This writer believes the production is much less than 32,000 tons and the grade is probably about 0.4 percent mercury, otherwise the Rattlesnake mine would have been the source of at least half of the quicksilver believed to have been produced from the Mazatzal Mountains, and we are reasonably certain that this is not possible.

An assay book loaned to the applicant company by Tom Russell shows the results of analyses of about 800 samples, apparently taken during a period of operations from August 4, 1928 to November 15, 1929, and representing the ore in that part of the mine above the

50-foot sublevel in the winze. Inspection of these analyses shows that the mercury content of the ore ranged from nil to about 3 percent and that many of the samples ranged from 0.2 to 0.7 percent mercury. Unfortunately the locations of most of these samples are not known to the writer, but it is obvious that most of them represent ore mined from the large stope near the west end of the mine.

During earlier discussions (June 1955) with Griffith he told this writer of 4 places in the mine where minable ore was available. Near the collar of the 29-foot deep shaft at the west end of the workings he claimed the existence of a northeasterly trending cross vein which was 4 feet wide and reportedly contained 1.74 percent mercury. In the shallow Gus Packard workings it was claimed that there is a zone from 1.5 to 3.0 feet wide containing 10 percent mercury, but this was inaccessible at the time of my examination. On 1 level, between the 29-foot deep shaft and the raise-manway to the surface he claimed the ore was 3 feet wide, 110 feet long and contained 1 percent mercury. On 2 level he claimed ore extended westward from the manway for about 230 feet, averaged 4 feet wide and contained 1 percent mercury. During my examination I was unable to verify any of these claims.

GEOLOGY

The Rattlesnake mine is located in a belt of metamorphosed sedimentary rocks of Precambrian age that follows along Slate Creek for about 3 miles. The prevailing rock type in this belt is dark gray, brown or maroon slate and associated with it are some prominent beds of light gray or white quartzite. In places the slate has been

altered to phyllite or schist, and bleached by hydrothermal solutions. Wilson reports that in most places the foliation of the schist is approximately parallel to the bedding planes of the original sediments. At the Rattlesnake mine the general direction of foliation is about N 65° E. and dips about 65°-70° northwest. Rhyolite porphyry, also of Precambrian age, crops out a few hundred feet north of the mine.

Conspicuous in the slates and phyllites exposed along Slate Creek are a number of zones in which these rocks have been bleached and altered to a thinly laminated schist which is white or very light gray in color. These zones range from a foot or two in width to about 30 feet wide, are somewhat silicified, and most of them have a relatively high content of sericite. These zones apparently owe their origin to the passage of mineralizing solutions as all known ore bodies have been found associated with these altered zones; however, these zones contain ore bodies in only a few places. These zones apparently are also zones of shearing and faulting, most of which are parallel to the foliation, but which in some places is found to cross the foliation at acute angles. These zones, apparently, are not continuous along the strike for great distances, but only mapping would reveal their extent and probable correlation in the area.

On the Rattlesnake property there are reported to be 5 nearly parallel zones of bleaching and alteration, but only 3 of them are believed to be large enough to be of importance. Near the principal mine workings these strike about N 65° E. and dip about 60 to 70 degrees

northwest but several hundred feet east of the mine dips of only about 15 to 20 degrees northwest may be observed. In cuts along the old road on Rattlesnake No. 2 claim it is apparent that the slates and the bleached zones are warped or folded along a nearly horizontal fold axis, the location of which is shown on figure 3.

Many, but not all of the altered zones along Slate Creek contain bodies of mercury ore, and these bodies appear to be localized in the zones where the schist has been folded and crinkled or where the shearing cuts across the foliation. Relatively intense structural deformation of the schist apparently is a prerequisite to the localization of ore, but such deformation is not readily apparent at the Rattlesnake because of the lack of suitable maps and because of the inaccessibility of some of the principal workings. The main stope reportedly had a strike of N. 40° E., which diverges about 25 degrees from the normal strike of the foliation, and the schist is intensely contorted near the stope.

Apparently small ore bodies were found on the 3 principal zones of alteration and mineralization at the Rattlesnake mine. Near the original site of Tunnel No. 1 (see Fig. 4) and at a shaft 29 feet deep, which connects with the No. 1 level, there are 2 zones which have been mined by surface cuts for a strike length of about 75 feet, and in the hanging-wall side of these is a caved or filled shaft which is believed to connect on 1 level to the main underground stope. Thus there are believed to be 3 zones, a footwall, intermediate and hanging-wall zone, and it is believed that a small

orebody has been mined from each of these near the west end of the mine. It is probable that these orebodies were irregular, lenticular shoots that were arranged more-or-less en echelon, and each probably had a slight rake to the northwest. The largest of these, which may be in the intermediate zone, is believed to have been mined from near the 1-level to a considerable distance below the 2-level. Unverified reports indicate that this ore shoot may have been mined to a depth of about 400 feet below the surface. A small shoot, possibly in the footwall zone, was recently partly mined by the present operators.

The mine was partly developed below the No. 2 adit level by a winze. This was sunk from a depth of 125 feet to a depth of 175 feet in 1940 and is now reported to be 260 feet deep. It is stated by the applicant that the winze is in reality a series of winzes and levels. It is said that the first winze was 125 feet deep, at which depth a 50-foot long sublevel was driven northwesterly to the ore zone where a 50-foot deep winze was sunk. At this depth (175 feet) another crosscut was driven northwesterly about 50 or 75 feet. At this point a 75-foot deep winze was sunk and another crosscut (250 level) was driven northwesterly toward the ore zone. This last mentioned crosscut, 250 feet below the No. 2 adit, failed to find ore and it was later found that the ore stopped at a flat fault about 187 feet below the No. 2 adit according to reports.

During the early forties ore reported to contain one percent mercury was mined from the lower part of the workings of the winze. T. J. Long reports that he mined the oreshoot to the bottom and that it stopped against a nearly horizontal plane. Griffith says deeper ore was found at a later date, but this is probably not true. It is interesting to note that operators familiar with the property report scooping up native quicksilver after each blast during the sinking of the winze. Apparently native quicksilver was abundant in this deposit in the lower part of the mine.

APPLICANTS' PROPOSED EXPLORATION PROJECT

A possible exploration program was suggested by Dunning as follows:

1. Prepare geological map of surface.

2. Re-open the upper workings and de-water the winze for examination and sampling, estimated cost about $2,000 for rehabilitation of the winze and $1,000 for rehabilitation of the upper workings.

3. Explore by levels, sublevels, drifts, crosscuts and raises as required after rehabilitation is completed, cost about $7,000.

4. Explore ore occurrence near east end of Rattlesnake No. 1 claim by diamond drilling about 3 holes about 75 feet long and 3 holes about 125 feet long. This to cost about $4500.

? No2, claim on the following page

The total cost of exploration items recommended by Dunning is $12,500, but apparently no allowance is made for surface mapping. Some of the work has been completed since Dunning's report and part of the old workings can now be entered, as the operators have drifted eastward on the No. 2 level for a couple hundred feet.

The principal merit of the proposed exploration program is that it may result in the production of small amounts of ore which undoubtedly remains in the old part of the mine. It is reasonable to believe that additional ore may exist in any of the 3 mineralized zones because they do not appear to have been fully exploited. It is also possible that a small orebody may exist in the area for which diamond drilling is exposed, i.e. near the east end of the Rattlesnake No. 2 claim, in the vicinity of the Gus Packard workings.

As the orebodies tend to be localized in zones of intense deformation, and these appear to be quite small, it is evident that the orebodies are also small. It is probable that most of the ore of the Rattlesnake mine has been mined out, and that only unimportant reserves of submarginal ore remain. Although a few thousand tons of ore may remain in the deposit, the data available to this writer indicate that its average grade is very low and the present operation probably cannot succeed. This writer was unable to verify the claims of the applicant or the sample results of the company's consulting engineer. Adequate reasons for Government participation in exploration of the Rattlesnake mine could not be found. Admittedly additional ore may be recovered from this deposit, but I doubt if it will be in significant quantity and the operation will probably be unprofitable. However, the operators have stated orally that they expect to go ahead with the exploration even if the Government refuses to participate.

CONCLUSIONS AND RECOMMENDATIONS

From an examination of the Rattlesnake mine it is concluded that only relatively small reserves of submarginal ore remain in the deposit and that exploitation of these reserves will be unprofitable. Optimistic claims made by the applicants for this deposit could not be verified in most respects and it appears that the applicant company may be misled by its own enthusiasm. No adequate basis for Government participation in the proposed exploration could be found; therefore it is recommended that the application be denied.

DOCKET
Surname:
Holt
Chapman
Mey-
Kilsgaard
Gerkan
Selfridge

AUG 19 1955

Arizona Mining and Development Co., Inc.
1316 North Central Avenue
Phoenix, Arizona

Re: Docket No. DMEA 3905 - Mercury
Rattlesnake & Cypress Claims
Gila County, Arizona

Gentlemen:

The above-docketed application for exploration assistance has been reviewed by the Defense Minerals Exploration Administration and referred to Mr. W. M. Traver, Executive Officer, DMEA Field Team, Region III, 224 New Custom House, Denver 2, Colorado, for a field examination of the property.

Any assistance that you can give members of the Field Team will be appreciated.

Sincerely yours,

C. O. Mittendorf

Administrator

cc: Docket
FT, Reg. 3
Code 400
Oper. Comm.
Adm. Read. File
Thor Kiilsgaard, USGS
H. M. Meyer, USBM

SPHolt/ls
8/15/55

DOCKET
Surname:
Holt
Chapman
Meade
Selfridge

Mr. W. M. Traver, Executive Officer
DMEA Field Team, Region III
224 New Custom House
Denver 2, Colorado

Re: Docket No. DMEA 3905-Mercury
Arizona Mining and Development
Company, Inc.
Rattlesnake & Cypress Claims
Gila County, Arizona

Dear Mr. Traver:

The above-docketed application for exploration assistance is being referred to your office for a field examination of the property.

In reviewing the subject application, it was noted that the mine was currently producing 25 tons of ore a day. It was also noted that surface mapping and rehabilitation work necessary to support some of the applicant's proposals had not been done. It might be advisable for the examining team to determine whether this work should be done solely by the applicant as documentation for his application.

In case the report of field examination is favorable, and a contract is recommended, a subordination agreement should be secured from B. W. Stephenson, Della Lucille Stephenson, Archie Griffith, and Sue L. Griffith, to cover the undivided 5% interest retained for themselves by the Griffiths in the assignment of lease to A. C. Thomas and Jeanette Thomas.

Two copies of a relevant memorandum dated August 1, 1955, by W. P. Williams, Geological Survey, are enclosed for your information.

Sincerely yours,

George C. Selfridge

Chairman, Operating Committee (HB)

Enclosures

APPROVED:

/s/ Robert W. Geehan (HB)

Member, Bureau of Mines

Thor H. Kiilsgaard (HB)

Member, Geological Survey

cc: Docket
Oper. Comm.
Code 400
Adm. Read. File
Thor Kiilsgaard, USGS
H. M. Meyer, USBM
FT, Reg. 3

SPHolt/ls 8/17/55

DOCKET
Surname
Holt
Chapman
Meyer

Mr. W. M. Traver, Executive Officer
DMEA Field Team, Region III
224 New Custom House
Denver 2, Colorado

Re: Docket No. DMEA 3905 - Mercury
Arizona Mining and Development
Company, Inc.
Rattlesnake & Cypress Claims
Gila County, Arizona

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Two copies of a relevant memorandum dated August 1, 1955, by W. P. Williams, Geological Survey, are enclosed for your information.

Sincerely yours,

Chairman, Operating Committee

Enclosures

cc: Docket
FT, Region 3
Oper. Comm.
Code 400
Adm. Read. File
Thor Kiilsgaard, USGS
H. M. Meyer, USBM

APPROVED:

Member, Bureau of Mines

Member, Geological Survey

SPHolt/ls
8/15/55

Docket

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
WASHINGTON 25, D. C.

August 15, 1955

Copy retained 200

Memorandum

To: W. S. Martin, Defense Minerals Exploration Administration

From: J. W. Pennington, Branch of Base Metals

Subject: Review of DMEA application, Docket No. 3905 (Mercury) Arizona Mining and Development Company, Rattlesnake and Cypress Claims, Gila County, Arizona

The supporting data submitted with this application make it appear that this property is a favorable area for exploration.

It is recommended, however, that a Field Team examination be made to verify available information and determine that the work proposed by Dunning, who will supervise the work if approved, is the best method of approach.

James W. Pennington

James W. Pennington

Copy to: Division of Minerals
Branch of Base Metals
H. M. Meyer
F i l e s
Thor H. Kiilsgaard, Room 5222

8/15 - F.T. referral already to Op. Com.

RECEIVED
AUG 16 1955

August 15, 1955

Memorandum

To: W. S. Martin, Defense Minerals Exploration Administration

From: J. W. Pennington, Branch of Base Metals

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Signed

James W. Pennington

Copy to: Division of Minerals
Branch of Base Metals
E. M. Meyer
F i l e s
Thor H. Kiilsgaard, Room 5222

RECEIVED
AUG 16 1955

August 15, 1955

Memorandum

To: W. S. Martin, Defense Minerals Exploration Administration

From: J. W. Pennington, Branch of Base Metals

Subject: Review of DMEA application, Docket No. 3905 (Mercury) Arizona Mining and Development Company, Rattlesnake and Cypress Claims, Gila County, Arizona

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Signed

James W. Pennington

Copy to: Division of Minerals
Branch of Base Metals
H. M. Meyer
F i l e s
Thor H. Kiilsgaard, Room 5222

RECEIVED
AUG 16 1955

IN REPLY REFER TO:

Hackett

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WASHINGTON 25, D. C.

RECEIVED
AUG - 3 1955

August 1, 1955

Memorandum

WSM

To: W. S. Martin, Defense Minerals Exploration Administration

From: W. P. Williams, U. S. Geological Survey

Subject: Review of DMEA application, Docket No. 3905 (Mercury), Arizona Mining and Development Company, Rattlesnake and Cypress claims, Gila County, Arizona.

The applicant, in a vague and indefinite application, proposes a $24,750 exploration program consisting of surface geologic mapping, surface diamond drilling, raise and shaft rehabilitation, drifting, and crosscutting. The work is to be done in and near the Rattlesnake mine. The property that should be covered by Owner's Consent to Lien comprises 16 Rattlesnake claims and 11 Cypress claims, located in the Sunflower mining district, Gila County, Arizona.

The applicant makes a definite proposal as to diamond drilling an ore shoot that outcrops some distance from the mine. He is unable to present feasible proposals for the remaining work, as surface mapping and underground mine rehabilitation have not been done.

The applicant states 25 tons of ore per day are currently being produced, and he estimates 500 to 1,000 tons have been produced in the past. Of twenty-three samples from the mine, taken by the applicant, nine are of ore grade.

I recommend that the application be referred to the Field Team for field examination. It might be advisable for the examining team to ascertain if certain preliminary phases of the work, e.g., the surface geologic mapping, should not be performed solely by the applicant as documentation for the application.

W P Williams

W. P. Williams

Copy retained 400

July 25, 1955

Memorandum

To: Executive Officer, DMEA Field Team, Region III

From: Chief, Operation's Control and Statistics Division

Subject: Assignment of Docket Number

There is listed below the assigned docket number to an application recently received from Region III.

DMEA-3905 Arizona Mining and Development Co., Inc.

Robert E. Adams,
Chief, Operation's Control
and Statistics Division

July 25, 1955

Arizona Mining and Development Co, Inc.
1316 N. Central Avenue
Phoenix, Arizona

Subject: DMEA-3905
Re: Exploration Assistance
Rattle Snake Mine

Gentlemen:

The receipt of your application dated July, 1955 for exploration assistance under the Defense Production Act of 1950, as amended, is hereby acknowledged.

Your application has been assigned Docket Number DMEA-3905 and referred to the Iron and Ferro-Alloys Division.

Kindly identify all future correspondence relating to your application by this docket number.

Sincerely yours,

Robert E. Adams, Chief
Operations Control and
Statistics Division

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.

RECEIVED
JUL 1 3 1955

224 New Customhouse
Denver 2, Colorado

July 14, 1955

Memorandum

To: Secretary to the Operating Committee

From: Executive Officer, DMEA Field Team, Region III

Subject: Application for DMEA assistance (Mercury), Arizona Mining and Development Company, Rattlesnake and Cypress claims, Gila County, Arizona

Enclosed are three copies of the subject application in the amount of $24,750.00.

The property is presently in operation so it is presumed the workings are available for examination, although at the time the attached reports were written certain parts of the property were not accessible.

W. M. Traver

Enclosures

MF-103
(Revised April 1952)

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

DMEA
Date Rec'd.
JUL 13 1955

Form Approved.
Budget Bureau No. 42-R1035.2.

BUREAU OF MINES
Denver, Colorado

RECEIVED
JUL 18 1955

APPLICATION FOR AID IN AN EXPLORATION PROJECT, PURSUANT TO DMEA ORDER 1, UNDER THE DEFENSE PRODUCTION ACT OF 1950, AS AMENDED

Not to be filled in by Applicant

Docket No. 3905
Metal or Mineral Mercury
Date Received 7-18-55
Estimated Cost $24,750
Participation (Government %)

INSTRUCTIONS

1. *Name of applicant.*—(*a*) State here your full legal name, in the form in which you will wish to contract, and your mailing address: Arizona Mining and Development Co., Inc.
1310 N. Central Avenue, Phoenix, Arizona
Frank O. Ratcliffe, 1714 N. Thomas Road, Phoenix — President
Paul W. Thomas — East Willetta, Phoenix — Secretary

(*b*) If other than an individual, add to your name above whether a corporation, partnership, etc., and the name of the State in which incorporated or otherwise organized.

(*c*) If a corporation, add to above statement, titles, names and addresses of officers.

(*d*) If a partnership, add to the above statement the names and addresses of all partners.

2. *General.*—Read DMEA Order 1, "Government Aid in Defense Exploration Projects," before completing this application. Submit this application and all accompanying papers in quadruplicate (four copies), with your name and address on each sheet of the application and on all accompanying papers. Where sufficient space is not provided on the form for all required information, state it on an accompanying paper, with a reference in each case to the instruction to which it refers by number. Comply with all applicable instructions; or, if not applicable, so state. File the application with Defense Minerals Exploration Administration, Department of the Interior, Washington 25, D. C., or with the nearest field executive officer thereof.

3. *Applicant's property rights.*—(*a*) State the legal description of the land upon which you wish to explore, including all land which you possess or control that may be benefited by the exploration, and excluding any land or interest in land which is not to be included in the exploration project contract See Exhibit 3-A

(*b*) State any mine name by which the property is known. Rattle Snake

(*c*) State your interest in the land, whether owner, lessee, purchaser under contract, or otherwise Purchaser under contract

(*d*) If you are not the owner, submit with this application a copy of the lease, contract, or other document under which you control the property. See Exhibit B

(*e*) If you own the land, describe any liens or encumbrances on it See Exhibit C-1

(*f*) If the land consists of unpatented claims, add to the description above, the book and page numbers for each recorded location notice. See Exhibit C-2

4. *Physical description.*—(*a*) Describe in detail any mining or exploration operations which have been or now are being conducted upon the land, including existing mine workings and production facilities. State your interest, if any, in such operations. Also describe accessibility of mine workings for examination purposes. See Exhibit D-1

(*b*) State past and current production, and ore reserves, if any, giving quantities and grades. Exhs. 1, 2, 3, 4 & D-2

(*c*) Describe the geologic features of the property, including mineralization, type of deposit (vein, bedded, etc.), and your reasons for wishing to explore. Illustrate with maps or sketches. Send with your application (but not necessarily as a part of it) any geologic or engineering report, assay maps, or other technologic information you may have, indicating on each whether you require its return to you. See Exh. 1, 2, 3, and 4

(*d*) State the facts with respect to the accessibility of the project: Access roads, distances to shipping, supply and residence points. See exhibit 3 and D-3

(*e*) State the availability of manpower, materials, supplies, equipment, water, and power. See Exh. 4-D

16—66551-1

5. *The exploration project.*—(a) State the mineral or minerals for which you wish to explore Mercury

(*b*) Describe fully the proposed work, including a map or sketch of the property showing a plan (and cross sections if needed) of any present mine workings, and the location of the proposed exploration work as related to such features as contacts, veins, ore-bearing beds, etc. Exhibit 1,2,3, & 4

(*c*) The work will start within 30 days and be completed within 6 months from the date of an exploration project contract.

(*d*) State the operating experience and background of the applicant with relation to the ability to carry out such exploration project, and also that of the person or persons who will supervise the operations. See Exhibit E-1

6. *Estimate of costs.*—Furnish a detailed estimate of the costs of the proposed work (you will have to use a separate sheet), under the following headings. Add the totals under all headings to give the estimated total cost of the project: Exh. E-1

(*a*) *Independent contracts.*—(Note.—If the applicant does not intend to let any of the work to contractors, write "none" after this item. To the extent that the work is to be contracted, do not repeat the cost of the contract-work in subsequent items.) State the cost of any proposed independent contracts for the performance of all or any part of the work, expressed in terms of units of work (such as per foot of drilling, per foot of drifting, per hour of bulldozer operations, per cubic yard of material moved, etc.). Exh. E-2

(*b*) *Labor, supervision, consultants.*—Include an itemized schedule of numbers, classes and rates of wages, salaries or fees for necessary labor, supervision and engineering and geological consultants. Exh. E-3

(*c*) *Operating materials and supplies.*—Furnish an itemized list, including items of equipment costing less than $50 each, and power, water and fuel. Exh. E-4

(*d*) *Operating equipment.*—Furnish an itemized list of any operating equipment to be rented, purchased, or which is owned and will be furnished by the Operator, with the estimated rental, purchase price, or suggested use-allowance based on present value, as the case may be. Exh. 5-E

(*e*) *Rehabilitation and repairs.*—Furnish a detailed list showing the cost of any necessary initial rehabilitation or repairs of existing buildings, installations, fixtures, and movable operating equipment, now owned by the Operator and which will be devoted to the exploration project. Exh. E-6

(*f*) *New buildings, improvements, installations.*—Furnish a detailed list showing the cost of any necessary buildings, fixed improvements, or installations to be purchased, installed or constructed for the benefit of the exploration project. Exh. 7-E

(*g*) *Miscellaneous.*—Furnish a detailed list showing the cost of repairs to and maintenance of operating equipment (not including initial rehabilitation or repairs of the Operator's equipment), analytical work, accounting, workmen's compensation and employers' liability insurance, and payroll taxes. Exh. E-8

(*h*) *Contingencies.*—Give an estimate of any necessary allowances for contingencies not included in the costs stated above.

NOTE.—No items of general overhead, corporate management, interest, taxes (other than payroll and sales taxes), or any other indirect costs, or work performed or costs incurred before the date of the contract, should be included in the estimate of costs. Exh. E-9

7. (*a*) Are you prepared to furnish your share of the cost of the proposed project in accordance with the regulations on Government participation (Sec. 7, DMEA No. 1)? Exh. 1-G

(*b*) How do you propose to furnish your share of the costs? Exh. 2-G

[X] Money [X] Use of equipment owned by you [ ] Other

Explain in detail on acompanying paper.

CERTIFICATION

The undersigned, whether as an individual, corporate officer, partner, or otherwise, both in his own behalf and acting for the applicant, certifies that the information set forth in this form and accompanying papers is correct and complete, to the best of his knowledge and belief.

Dated Phoenix, Arizona, July, 1955

Arizona Mining and Development Co. Inc
(Applicant)

By Frank O. Raldiff, Pres.

Title 18, U. S. Code (Crimes), Section 1001, makes it a criminal offense to make a willfully false statement or representation to any department or agency of the United States as to any matter within its jurisdiction.

U. S. GOVERNMENT PRINTING OFFICE 16—66551-1

RECEIVED

ARIZONA MINING AND DEVELOPMENT CO.INC.
1316 N.CENTRAL AVE., PHOENIX,ARIZONA
FRANK O. RATCLIFFE,PRESIDENT

Exhibit 3-A
3-a-- Applicant's Property Rights -

The claims on which the exploration will be performed are known as Rattle Snake claims Nos. 1 through No. 10 as recorded in Docket 24, Pages 498 through 507, in the office of the County Recorder of Gila County,State of Arizona. The claims possessed by the applicant, which will be benefited by exploration, are known as the Rattle Snake Extension claims Nos. 1 through 7 as recorded in Docket No. 24, pages 508 through 514 in the office of the County Recorder of Gila County, State of Arizona, and the Cypress Claims Nos. 1 through 11, as recorded in Docket 24, pages 487 through 497 in the office of County Recorder of Gila County,State of Arizona.

Exhibit C-1
3-e

The land is held inder contract of purchase with a balance of $20,000 to be paid by 10% royalty on minerals produced.

Exhibit C-2
3-f

Rattle Snake claims Nos. 1 through 10 recorded in Docket No. 24,pages 498 through 507, in the office of the county recorder of Gila County, State of Arizona.

Exhibit D-1
4-a - Physical Description

At the present time the Arizona Mining and Development Co.,Inc. is carrying on extensive operations on the claims under consideration in this application. You will note from the attached report of Mr. C. H. Dunning, which was prepared in May of 1955, known as Exhibit 1 - the graphic description of the operations have been and are now being accomplished. You will further note from the report of C. H. Dunning, made on June 1, 1955, known as Exhibit #2 the type of operations and a complete survey of these particular mining claims.

The Arizona Mining & Development Co.Inc. holds a purchase contract on all these mining claims with a balance due in the amount of $20,000 which is to be in 10% royalty payments out of production.

These mining claims are transversed by the Bush Highway and all operations are immediately excessible thereto.

Arizona Mining and Development Co.Inc.
1316 N. Central Avenue, Phoenix, Arizona

4-a - Physical Description (continued)

Exhibit D-2
4-b

With reference to the current production, the Arizona Mining and Development Co.Inc., is producing approximately 25 tons per day. There are approximately 1,000 tons in reserve stock pile. The ore which is now being produced is explained in the report map of G.H.Dunning known as Exhibit 1/ It will be noted from this report that the ore averages .548Hg.

Exhibit D-3
4-d

As stated above the property is immediately excessible to excellent roads. The mines are approximately 60 miles from the first rail head. However, because processing will be performed on the property shipping becomes an immaterial matter.

Exhibit 4-D
4-e

The Arizona Mining & Development Co.Inc. has had no problem in securing sufficent manpower, materials, supplies and equipment which are all available. The company supplies its own water and power.

5. Exploration project

Exhibit E1
5-d

The work to be performed in pursuance to this grant will be under the supervision of G. H. Dunning, who is well known to the mining industry in Arizona and the Southwest. The immediate operations will be directed by the superintendent of the Arizona Mining & Development Co., Inc., Mr. A. B. Griffith who has had 20 years of experience in mining, particularly in mercury operations.

6. Estimate of Costs
Exhibit F-1

Diamond Drilling,Drifting,Exploring as explained in Engineer's report.....	13,500.00
Bull dozer work on property for setting machinery for drilling, etc.	750.00
Supervision	2,000.00
Consultant	1,000.00
Labor,Mucking,Tramming,Servicing machinery etc.	3.500.00
1 Bunk House	1,500.00
Miscellaneous, taxes and insurance	500.00
	$22,250.00

Arizona Mining and Development Co.Inc.
1316 N.Central Ave.,Phoenix, Arizona

Exhibit F-1 (Continued)

Brought forward	$22,750.00
Equipment,Maintenance	500.00
Repairs and maintenance to mess hall	500.00
Contingences	1,000.00
Total	$24,750.00

6-a - Independent Contracts
Exhibit F-2

The Arizona Mining and Development Co.,Inc. plan to perform all of the proposed work except that diamond drilling will be contracted. It is estimated that diamond drilling will cost approximately $7.50 per foot and it is proposed that 600 feet will be drilled at a total cost of $4,500. There is a possibility that the drifting will be contracted. It is estimated it will be necessary to run a drift some 200 feet at a cost of $35.00 per foot. According to Mr. Dunning's report Exhibit 2 on page 4 thereof, you will note that because the company will be limited "to a tugger hoist at the collar of the winze, and no mucking machine in the drifts" that the estimated cost of the drifting will be $9,000.

Labor,supervision,consultants (6-b)
Exhibit F-3

Bull dozer work on property for setting machinery for drilling,etc.	$ 750.00
Supervision	2000.00
Consultant	1000.00
Labor,mucking,tramming,servicing machinery,etc	3500.00

6-c Operating materials and supplies
Exhibit 4-F

Fuel and powder on hand sufficient for 4 weeks	$350.00

6-d Operating equipment
Exhibit 5-F

Diamond drilling,drifting,exploring as explained in Exhibit #2	13,500.00

6-e Rehabilitation and repairs
Exhibit 6-F

Repairs and maintenance to Mess Hall	1500.00

6-f New buildings,improvements,installations

Exh.7-F Bunk House	1500.00

Arizona Mining and Development Co.Inc.
1316 N.Central Ave.,Phoenix,Arizona

6-g Miscellaneous
Exhibit 8-F
Miscellaneous,taxes and insurance $ 500.00

6-h Contingencies
Exhibit 9-F
Contingencies 1000.00

7-a
Exhibit 1-G

Arizona Mining and Development Co.Inc., is prepared to share in the costs of the proposed project in accordance with regulations of the government.

Exhibit 2-G

Use of equipment now owned by the Arizona Mining and Development Co.Inc. and such necessary cash as will be required.

EXHIBIT #2

CHARLES H. DUNNING
MINING ENGINEER
PHOENIX, ARIZONA

OFFICE
817 W. MADISON ST.
PHONE ALPINE 3-6272

RESIDENCE
1635 W. EARLL DR.
PHONE AMHERST 5-1132

RECEIVED
JUL 18 1955

June 1, 1955

To: Arizona Mining and Development Co.
1316 No. Central Ave.
Phoenix, Arizona

Att: Mr. Frank O. Ratcliffe
Subject - Rattlesnake Mine

Gentlemen:

In November and December, 1954, I made a preliminary examination, and sampled available ore exposures at your Rattlesnake Mine. No report was written because certain areas of supposed ore were not then accessable for sampling, and I wished to wait until they were made so. This was not done before I left for South America in January (and I understand has not yet been done). While it is expedient to write a report at this time, it will necessarily be vague in some details.

Location.

The property is known as the Rattlesnake Mine and consists of several (10) unpatented mining claims. The group is located on the Payson highway, and on Slate Creek, about 11 miles north of Sunflower store, and 3 miles south of the Ord Mine, and adjoining same.

History.

The property has been known for several years and has produced sporadically during times of high mercury prices. Observation of the old stopes indicates that 500 - 1000 tons have been previously mined. From samples of pillars and margins, and knowledge of costs and the price of mercury during those times, the ore probably averaged over 1.00% Hg. While far from being the largest producer in the district in the past, it was probably the most successful.

The Rattlesnake Mine is written up in the Arizona Bureau of Mine Bulletin No. 122, June, 1927, by Lausen and Gardner.

Geology.

The mine is in the Slate Creek sector of a large zone of pre-Cambrian schist which courses through the terrain for several miles. Within this general area are several minor zones, somewhat parallel, which contain commercial mercury orebodies.

The ore "veins" are not true veins but zones without well defined walls, containing veinlets. These veinlets are usually quartz containing cinnabar (sometimes almost pure cinnabar). Mercury also occurs as crystals and smears in the laminations of the schist. The veinlets are usually parallel to the schistosity but sometimes cross it.

Both pre-mineral and post-mineral faulting have taken place. Ore deposition sees allied to the pre-mineral faulting although no definite controls have been worked out. Displacement by post-mineral faulting is usually minor.

Geology of the district has been thoroughly studied and written up in the above mentioned bulletin.

At the Rattlesnake Mine development and extractive mining has been confined to one known shoot of ore about 100 feet long, three feet wide, and of unknown depth. The vein itself strikes a little north of east and dips about 70 degrees to the north. The main shoot apparently rakes steeply to the west. Within the shoot the mercury values are spotty and lensey but average well. There are possibilities of other shoots along the strike, and of parallel mineralized zones.

Development and Sampling.

The mine was originally developed by a shaft from the surface 350 (?) feet deep. Later a crosscut tunnel was driven from Slate Creek north (at right angles to the vein) intersecting the vein near the shaft at 550 feet from the portal, and 200 ft. below the surface. This was then used as an adit and the shaft practically abandoned. Drifts were run on the vein east and west, and stopes started above the level. The "section on vein" sketch attached shows these workings and also my samples and assays.

The location of sample #20 was as high as I could get in the raise because of lack of ladders, but from there I could see a level above as outlined on the sketch. I was advised by persons supposed to know that from this level on up the ore was virgin and of commercial grade. It has not been measured or systematically sampled and assayed, but it is feasible that it could be there if it were a bit undergrade for the then requirements, which would have been at least 1.00% Hg.

I was also advised that the old shaft from the tunnel level on down was in ore with a wide width of excellent ore in the bottom. In the bottom level westward however, it was stated that this ore was soon cut off by a fault, and there was no ore to the east. The winze (shaft) was full of water at the time of my last visit, and I understand has not been unwatered since.

On the surface a few hundred feet to the east there is a strong outcrop. While this was not sampled it contains enough visible mercury to be considered the outcrop of another shoot. I saw this before I examined the underground workings and never went back to it, so I am unable to state positively whether it is on the same vein or a parallel condition. Nor can I accurately spot it on a sketch. In any event it is well worth exploration.

Metallurgy.

It is common practice to treat mercury ores by roasting at the mine in small rotary furnaces. Small stationary furnaces called "retorts" are not continuous and must be operated in "batch" manner. They are used for

very high grade ore or concentrates.

In some instances concentration by flotation has successfully preceded retorting but tests made on the Rattlesnake ore by the Arizona Bureau of Mines and by myself indicate that the ore is not amenable to flotation.

Economics.

Considering a furnace of 50 ton capacity per 24 hours your cost for treatment should be about $5.00 per ton. Extraction should be about 85%.

Mining should be done carefully and selectively to keep the ore clean as possible. At the best there will be at least a 20% dilution as compared to stope assays. I could not at this time judge whether cut-and-fill, open stope, or shrinkage stope mining methods should be used. Possibly each in various places. But it is important that knowledge, experience, and care be exercised. The dip of the vein is ideal for cheap mining but the schisty hangingwall can overbreak very easily and the ore can quickly change from commercial grade to undergrade - and you cannot make a profit roasting waste. I would estimate mining costs, if carefully conducted, at $15.00 per ton.

Allowing $5.00 for overhead and miscellaneous we would have a total operating cost of $25.00 per ton.

At present price of $4.00 per lb. this would require ore containing 7 lbs. of mercury (0.35%) per ton. At Government price of $225.00 per flask, 8.5 lbs. (0.425%) would be required.

The average of the ore as sampled, per sketch, is 0.548% (10.96 lbs.).

Exploration Advised.

First-A survey should be made of surface conditions spotting in the various mineralized zones in the vicinity of the main workings, ore outcrops, rough topography, and some geological features such as faults.

The old "upper workings" should be made accessable for examination and sampling. The shaft/winze should be unwatered and examined and sampled.

After this is done a more detailed program of exploration can be outlined, but irrespective of details it should consist of the following:
After sampling the upper workings determine what further exploration by extension of levels, sub levels, or raises might yield further ore. Correlate with surface conditions to determine advisability of crosscutting by drifts or drill holes. In these schist formations parallel or overlapping lenses often occur a few feet away and should be continually watched for or probed for.

There is ore in the bottom of the present drift in the vicinity of the winze. After unwatering and sampling the winze determine what sub-levels may be necessary to delineate commercial ore, or what extension of bottom drifts may be advisable. If ore is faulted at west bottom drift as reported, try to work out fault with view to probing with drill holes.

CHARLES H. DUNNING
MINING ENGINEER

Feel out the surface exposure to the east by coming down the hill about 50 ft. and running flat diamond drill holes to cut across vein. About 3 holes in one plane. Then tip drill downward at same locations and cut vein at 100 ft. If this work discloses an ore shoot correlate same with present underground workings with view to exploring further from underground. See sketch for proposed drill plan.

Definite Preliminary Program.

The surface diamond drilling program outlined above is a definite project advised at this time regardless of any correlation between that surface outcrop and the underground workings. This should take three holes of approximately 75 ft. each, and 3 of 125 ft. each. This would total 600 ft., which at $7.50 per foot would cost $4500.00

The unwatering of the winze and delineation of the ore by 200 feet of sub level drifting at some point in the winze, can also be a definite project. I would estimate the cost of unwatering and repairs to shaft, and sampling, at $2000, providing only minor timbering repair is necessary. (This winze was in working order 10 years ago and has been entirely under water since. Most of the timbering should at least be in shape to permit exploration. However, the $2000 estimate must be considered as a rough guess. Unwatering alone should not cost over $300, and could be followed by an estimate of cost of necessary repairs.)

The 200 feet of drifting might cost $35.00 per foot considering that you will be limited to a tugger hoist at the collar of the winze, and no mucking machine in the drifts.

We thus have an estimate of $9000.00 for this project.

Making the "upper workings" accessable for examination and the then outlining of a definite exploratory program should not cost over $1000.00

Considerable other exploration will no doubt be found advisable, but cannot be definitely outlined until these first stages are completed. Such would be:

Additional sub-levels in the winze.
Probing for parallel orebodies by underground drilling after correlating with the surface conditions.
Probing for, or connecting with underground workings, the area above recommended for surface drilling.

Conclusion.

In conclusion I will state that the Rattlesnake Mine is a good mining prospect and fully justifies speculative expenditures for exploration and development.

REGISTERED MINING ENGINEER
CERTIFICATE EXPIRES
DEC. 31, 1955
ARIZONA, U.S.A.

Respectfully Submitted,

Charles H. Dunning

Charles H. Dunning

Exhibit #3

Phoenix, Arizona
February 12, 1955

Mr. Frank O. Ratcliff
Arizona Mining and Development Co.
Phoenix, Arizona

Dear Sir:

Herewith is my report on the Rattlesnake Mercury Mining Property, in Sunflower Mining District, Gila County, Arizona.

I made a complete surface study of the geology and vein structure over the entire length of the sheared zone, which is ore bearing, where conditions were suitable for same, and it was noticeable that the chloritic schist was ever present when any mercury ores were visible. I also made a study of conditions up in the stoped section of raise up from main cross cut level.

No doubt a good tonnage can be obtained from this stope, and held up to a good grade of ore by careful mining--more or less selective in order to keep grade up.

This operation can be carried on at low cost by shrink stoping, keeping stope full and working top face off ore, thereby not requiring but very small amount of timber. This can be car ried on while development on main level is carried on to reach the various ores that no doubt are ahead, as per surface conditions as well as showings of mercury ore in place.

My No. 1 thought is to continue the main drift on shear zone, as I made close study on surface--places showing cinnabar--and judging from production stopes in the mine, I cannot see other than opportunity of repeating ahead of present workings. Surface conditions are very suitable for same. And I also suggest prospecting be carried on immediately off the main workings to the very prominent quartzite dike. That is ideal for a trap or embankment of any mineralizing solutions or gasses. This suggestion is well worth the try and expense. To date that is virgin structure and never tested on contact at depth.

A good tonnage can be broken and stored in main stope, and surplus stockpile outside where handy to get into furnace when ready.

In conclusion, will add, to first get a fairly good tonnage of ore ahead, then install furnace. I do not believe you will regret doing this. REMEMBER, YOU MUST HAVE ORE RESERVES pretty

well opened up and developed in order to keep a 25 to 50 ton furnace in continuous 24 hour operation. And one cannot shut down and have the furnace cool off for starting up and cooling down will ruin bricking, etc. This costs plenty in dollars and time.

When conditions warrant, it would be good prospecting to pump main winze down and put in test drill holes in hanging wall; as in small cross cut opposite main winze, good ore is showing and I believe was left in hanging wall of winze as looks too far in hanging wall from winze to have been mined out.

Submitted by

Yours truly,

Roy H Barnes, E.M.

ROY H. BARNES, E. M.

RHB:wg

Exhibit B

MINING LEASE AND OPTION

THIS INDENTURE, made this 29 day of Sept., 1954, between ED CONWAY and IRL CONWAY of Tonto Basin, Gila County, Arizona, Parties of the First Part, hereinafter called "Lessors," and ARCHIE GRIFFITH and B. W. STEPHENSON, c/o Tonto Basin Store, Tonto Basin, Gila County, Arizona, Parties of the Second Part, hereinafter called "Lessees",

W I T N E S S E T H THAT:

The Lessors for and in consideration of the royalties, hereinafter reserved and the covenants and agreements hereinafter expressed, and by the Lessees to be kept and performed, have leased, let and demised, and by these presents do lease, let and demise unto the Lessees, all of their interest in the following described unpatented lode mining claims, to-wit:

All those certain unpatented lode mining claims situated in the Slate Creek Mining District, Gila County, Arizona, the names of which, together with the location notices thereof are of record in the office of the County Recorder of said Gila County, in the Books, Records of Mines, of said County, at the Pages thereof, as follows, to-wit:

NAME OF CLAIM	BOOK	PAGE
RATTLESNAKE NO. 1	49	207
RATTLESNAKE NO. 2	49	207
RATTLESNAKE NO. 3	49	240
RATTLESNAKE NO. 4	49	240
RATTLESNAKE NO. 5	49	241
RATTLESNAKE NO. 6	49	241
RATTLESNAKE NO. 7	49	242
RATTLESNAKE NO. 8	49	242
RATTLESNAKE NO. 9	49	242
RATTLESNAKE NO. 10	49	242

TO HAVE AND TO HOLD the same unto the said Lessees for the term of five (5) years from and after the 1st day of October, 1954, unless sooner forfeited, or terminated, through the violation of any covenant herein contained against the Lessees, or other termination as hereinafter provided.

The Lessees understand that on the 1st day of August, 1952, the Lessors leased the premises herein leased to one C. O. CARLSON

of Mesa, Arizona, for a period of five (5) years. Lessees further understand that on the 27th day of September, 1954, the Lessors gave Notice of Forfeiture of said mining lease to C. O. Carlson, as provided in said lease, because of certain violations of the terms of said lease by the said C. O. Carlson. The Lessees, therefore, enter into this lease with full knowledge of the prior lease and accept this lease subject to the said prior lease and the rights, if any, of the said C. O. Carlson, or any person or persons holding any rights as assignees or otherwise of the said C. O. Carlson. The Lessees do hereby release the Lessors of any damages which they may incur because of any defects in the title to said mining claims occasioned by the lease entered into by the Lessors with C. O. Carlson.

In consideration of the leasing of said premises, the Lessees hereby covenant and agree with the Lessors as follows:

1. To take possession of said mining claims and premises immediately upon the execution of this instrument and to commence mining operations thereon immediately and to do and perform at least sixty (60) shifts of eight (8) hours each during the first sixty (60) days of the term of this lease, and thereafter to perform at least three hundred (300) shifts of eight (8) hours each for each year that this lease and option shall be in effect.

2. To do and perform in each year during the existence of this lease within the time required by law, sufficient work and improvements upon said mining claims to cover all assessment or annual labor required by law to be done and performed upon or for the benefit of each of said mining claims on or before April 1st, for each year during the term hereof and to cause an affidavit, showing the performance of said work, to be made and filed in the office of the County Recorder of said Gila County, within the time required by law.

3. To do and perform all work upon said mining claims in accordance with good mining and laws of the State of Arizona and to properly timber all workings wherever necessary.

4. To keep at all times the drifts, shafts, tunnels or other workings where work may be carried on by Lessees thoroughly drained and clear of loose rock and rubbish, unless prevented by extraordinary mining casualties.

5. To furnish at their own expense all tools, machinery, equipment and supplies necessary to work the said mines or premises hereby leased, and to supervise and fully do and perform all work hereunder, according to their own manner or method and system, and the Lessors to reserve and hold no control over said Lessees in the doing of such work, other than as to the result to be accomplished.

6. To carry industrial insurance covering all employees engaged in work on said mining claims, and to assume all liability for injuries to or death of any person in their employ or to third persons, occasioned by any of their acts and the Lessees covenant to save and hold the Lessors harmless on account thereof.

7. To pay for all labor, material and supplies to be done for or furnished to the said Lessees or to any person or persons under or in privity with them upon said premises, and in the event the Lessees shall fail to pay for such labor, material and supplies, then the Lessors may, at their election, declare a forfeiture of this lease as hereinafter provided.

8. To post and keep posted at all times during the existence of this lease notice of non-liability for labor performed or material furnished at all places, as required by the laws of the State of Arizona.

9. The Lessees agree to pay to the Lessors as royalty, ten (10) per cent of the gross smelter or mill returns of all ores, minerals or other products extracted from said mining claims and premises and sold or disposed of by them. Said ores shall be shipped promptly in lots as mined to some smelter, mill or ore buyer. The gross smelter or mill returns, as herein used, shall mean the gross sales price of all ores, minerals or concentrates recovered from said property, without deductions of any kind for smelter treatment charges or any other charges. All royalties herein provided, to be

paid shall be deducted at the smelter or mill or by the paying agency and mailed direct to the Lessors after each shipment is made. In the event that the paying agency will not pay royalties direct to the Lessors, then the Lessees shall make full reports to the Lessors of all ores and minerals sold by them and will immediately, after each shipment, remit to the Lessors their ten (10) per cent royalty. It is agreed that no royalty shall be payable to the Lessors for ores shipped within the first sixty (60) days of the term hereof.

10. The Lessees agree to keep accurate books of accounts of all mining operations carried on by them under this lease and agree to furnish to the Lessors, on written request, a complete record of all work done and all ore or other minerals mined, milled and sold or disposed of by them.

11. The Lessees hereby agree to allow the Lessors or their agent or representative, to examine all books and records of the Lessees respecting their mining operations under this lease, and to inspect any and all parts of said mining claims and premises or the workings therein, at all reasonable business hours, without unreasonable interfering with the work then in progress, at the sole risk and expense of the Lessors.

12. In the event the Lessees or their assigns shall make any default in the terms or provisions herein contained, then the Lessors may terminate this Lease upon Thirty (30) days' notice to the Lessees of their intention to declare this lease at an end. If the Lessees shall fail within said Thirty (30) days to correct and make good any violations of the terms and provisions of this lease on account of which such notice of default has been given, then and thereupon this lease shall terminate.

13. Notwithstanding the foregoing provisions with reference to default, it is stipulated and agreed that if the Lessees shall fail to do and perform the annual assessment work within the time hereinbefore provided, or shall fail to pay royalties as and when

hereinabove provided, or shall fail to post and keep posted notice of non-liability as hereinbefore provided, or shall fail to secure proper liability insurance as provided for herein, the Lessors may terminate this lease forthwith without notice.

14. In the event of a termination of this lease, the Lessees shall forthwith deliver to the Lessors the peaceable possession of said mining claims and premises and shall be relieved of any further liability hereunder, and in such event any and all sums of money theretofore paid by the Lessees or their heirs or assigns unto the Lessors, shall be retained by the Lessors as rent for use and occupation of said property and as agreed liquidated damages for and on account of the termination of this lease.

15. It is agreed that upon the termination of this lease, all tools, machinery, including machinery attached to surface, equipment and supplies owned by the Lessees and placed upon said premises, may be removed therefrom at any time within Thirty (30) days after the expiration or other termination hereof, provided that all royalties due hereunder shall have been paid in full; provided, that all timbering, ladders, car-rails, water systems, pipe lines, gallows-frames, and other permanent improvements placed in or upon said premises, with exception of buildings, shall remain on said property and shall be and become the property of the Lessors.

16. The Lessors, in consideration of the mutual covenants and agreements herein contained and for the further consideration of One Dollar ($1.00) to them in hand paid by the Lessees, receipt whereof is hereby acknowledged, do hereby give and grant unto the Lessees, the exclusive right and option to purchase the hereinbefore described mining claims and premises, at any time on or before the expiration or other termination of this lease and option, for the sum of TWENTY THOUSAND ($20,000.00) DOLLARS, payable in cash at the time said option is exercised. All royalties paid by the Lessees, pursuant to the terms of this lease and option, shall be applied on the purchase price of Twenty Thousand ($20,000.00) Dollars.

17. The Lessors expressly agree that the Lessees may apply for and, if possible, obtain a loan from the United States Government or from any other source, and such application for the granting of such loan or loans is hereby approved by the Lessors.

18. Time is of the essence of this lease and option and all of the terms and conditions and agreements herein contained shall extend to and be binding upon the heirs, executors, administrators and assigns of the parties hereto.

IN WITNESS WHEREOF, the parties hereto have executed this lease the day and year first above written.

Ed Conway

Irl Conway

"Lessors"

Archie Griffith

B W Stephenson

"Lessees"

STATE OF ARIZONA, }
COUNTY OF GILA. } ss:

On this the 29th day of September, 1954, before me, the undersigned officer personally appeared ED CONWAY, IRL CONWAY, ARCHIE GRIFFITH and B. W. STEPHENSON, known to me to be the persons whose names are subscribed to the foregoing instrument and acknowledged that they executed the same for the purpose therein contained.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal.

John A. Hathaway
Notary Public

My Commission expires:
June 15th 1957

ASSIGNMENT OF LEASE

THIS AGREEMENT made and entered upon this the _____ day of November, 1954, by and between ARCHIE GRIFFITH and SUE L. GRIFFITH, husband and wife, whose address is in care of Tonto Basin Store, Tonto Basin, Gila County, Arizona, and B. W. STEPHENSON and DELLA LUCILLE STEPHENSON, husband and wife, whose address is in care of Tonto Basin Store, Tonto Basin, Gila County, Arizona, hereinafter referred to as ASSIGNORS, and A. C. THOMAS and JEANETTE THOMAS, husband and wife, whose address is 4619 Oracle Road, Tucson, Pima County, Arizona, hereinafter referred to as ASSIGNEES,

W I T N E S S E T H:

WHEREAS ASSIGNORS are the owners of that certain lease-hold interest more particularly described and set forth in that certain agreement entitled "Mining Lease and Option" dated the 29th day of September, 1954, and executed by and between ED CONWAY and IRL CONWAY, of Tonto Basin, Gila County, Arizona, as parties of the first part and ARCHIE GRIFFITH and B. W. STEPHENSON, in care of Tonto Basin Store, Tonto Basin, Gila County, Arizona, as parties of the second part, a copy of which said agreement is attached hereto and marked Exhibit "A" and by reference thereto the same is hereby made a part hereof, and

WHEREAS ASSIGNORS AND ASSIGNEES have agreed

that ASSIGNEES shall acquire from ASSIGNORS, upon terms and conditions hereinafter set forth, all interest of the said B. W. STEPHENSON and DELLA LUCILLE STEPHENSON, husband and wife, in said mining claims described in said agreement together with all interest of the said B. W. STEPHENSON and DELLA LUCILLE STEPHENSON in said "Mining Lease and Option", a copy of which is attached hereto and marked Exhibit "A", and all interest of the said ARCHIE GRIFFITH and SUE L. GRIFFITH, husband and wife, in said mining claims and said "Mining Lease and Option", save and except an undivided five (5%) per cent interest in said mining claim and said "Mining Lease and Option" agreement which said undivided 5% interest the said ARCHIE GRIFFITH and SUE L. GRIFFITH are retaining for themselves.

NOW THEREFOR, for value received, the receipt of which is hereby acknowledged, we, W. B. STEPHENSON and DELLA LUCILLE STEPHENSON, husband and wife, do hereby and by these presents sell, transfer, assign, convey and set-over unto ASSIGNEES, their successors and assigns all our right, title and interest in and to the following described mining claims, to-wit:

All those certain unpatented lode mining claims situated in the Slate Creek Mining District, Gila County, Arizona, the names of which, together with the location notices thereof are of record in the office of the County Recorder of said Gila County, in the Books, Records of Mines, of said County, at the Pages thereof, as follows, to-wit:

NAME OF CLAIM	BOOK	PAGE
RATTLESNAKE NO. 1	49	207
RATTLESNAKE NO. 2	49	207
RATTLESNAKE NO. 3	49	240

NAME OF CLAIM	BOOK	PAGE
RATTLESNAKE NO. 4	49	240
RATTLESNAKE NO. 5	49	241
RATTLESNAKE NO. 6	49	241
RATTLESNAKE NO. 7	49	242
RATTLESNAKE NO. 8	49	242
RATTLESNAKE NO. 9	49	242
RATTLESNAKE NO. 10	49	242

together with all our right title and interest in and to that certain "Mining Lease and Option", a copy of which is attached hereto and marked Exhibit "A", including all rights of action or otherwise, to us accrued or hereafter to accrue thereunder, and we, the said W. B. STEPHENSON and DELLA LUCILLE STEPHENSON, hereby authorize the said ASSIGNEES, in their own names to sue for and take all legal steps necessary which they may deem proper or necessary in connection therewith, and

NOW THEREFORE for value received, the receipt of which is hereby acknowledged, together with the promises and agreements of ASSIGNEES herein below stated we, ARCHIE GRIFFITH and SUE L. GRIFFITH, husband and wife, do hereby and by these presents sell, transfer, assign, convey and set-over unto ASSIGNEES all our right title and interest in and to said mining claims hereinabove described and said "Mining Lease and Option" agreement, a copy of which is attached hereto and marked Exhibit "A", save and except an undivided five per cent (5%) interest in and to said mining claims and said "Mining Lease and Option", which we are reserving to ourselves and excluding from this agreement, and we do hereby authorize ASSIGNEES in their own names to sue for and take all legal steps

they may deem proper or necessary in connection therewith.

ASSIGNEES DO hereby and by these presents agree to be bound by the terms and provisions contained in said "Mining Lease and Option", a copy of which is attached hereto and marked Exhibit "A", and do further agree to keep mining operations on said mining claims in progress for so long as said operations are profitable, provided however, that if said operations do not earn a profit for a period of SIX months then and in such event said operations may be discontinued at ASSIGNEES option.

IN WITNESS WHEREOF the parties hereto have set their hands this the day and year first above written.

Archie Griffith
ARCHIE GRIFFITH

Sue L. Griffith
SUE L. GRIFFITH

B. W. Stephenson
B. W. STEPHENSON

Della Lucille Stephenson
DELLA LUCILLE STEPHENSON

A. C. Thomas
A. C. THOMAS

Jeannette Thomas
JEANETTE THOMAS

STATE OF ARIZONA)
) ss
COUNTY OF MARICOPA)

On this the 18th day of November, 1954, before me the undersigned officer personally appeared ARCHIE GRIFFITH, known to me to be the person who subscribed to the foregoing instrument, and acknowledged to me that he executed the same for the purposes therein contained.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal.

Robert L. Bruce
Notary Public

My Commission Expires Aug. 26, 1958

My commission expires:

STATE OF ARIZONA)
) ss
COUNTY OF MARICOPA)

On this the 18TH day of November, 1954, before me the undersigned officer personally appeared SUE L. GRIFFITH, known to me to be the person who subscribed to the foregoing instrument, and acknowledged to me that she executed the same for the purposes therein contained.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal.

My Commission Expires Aug. 26, 1956

Notary Public

My Commission expires:

STATE OF ARIZONA)
) ss
COUNTY OF MARICOPA)

On this the 18TH day of November, 1954, before me the undersigned officer personally appeared B. W. STEPHENSON, known to me to be the person who subscribed to the foregoing instrument, and acknowledged to me that he executed the same for the purposes therein contained.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal.

Notary Public

My Commission expires:

My Commission Expires Jan. 13, 1958

STATE OF ARIZONA)
) ss
COUNTY OF MARICOPA)

On this the 18TH day of November, 1954, before me the undersigned officer personally appeared DELLA LUCILLE STEPHENSON, known to me to be the person who subscribed to the foregoing instrument, and acknowledged to me that she executed the same for the purposes therein contained.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal.

Notary Public

My Commission expires:

My Commission Expires Jan. 13, 1958

STATE OF ARIZONA)
) ss
COUNTY OF MARICOPA)

On this the 18TH day of November, 1954, before me the undersigned officer personally appeared A. C. THOMAS, known to me to be the person who subscribed to the foregoing instrument, and acknowledged to me that he executed the same for the purposes therein contained.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal.

Robert L. Bruce
Notary Public

My Commission Expires:
My Commission Expires Aug. 26, 1958

STATE OF ARIZONA)
) ss
COUNTY OF MARICOPA)

On this the 18TH day of November, 1954, before me the undersigned officer personally appeared JEANETTE THOMAS, known to me to be the person who subscribed to the foregoing instrument, and acknowledged to me that she executed the same for the purposes therein contained.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal.

Robert L. Bruce
Notary Public

My Commission Expires:
My Commission Expires Aug. 26, 1958

~~ED CONWAY~~ and IRL CONWAY of Tonto Basin, Gila ~~County,~~ Arizona, ~~LESSORS in that~~ certain ~~"Mining~~ Lease

Exhibit B

ASSIGNMENT OF LEASE

THIS AGREEMENT, made and entered into this 20th day of January, 1955, by and between A. C. THOMAS and JEANETTE THOMAS, husband and wife, whose address is 4619 Oracle Road, Tucson, Pima County, Arizona, and ARCHIE GRIFFITH and SUE L. GRIFFITH, husband and wife, whose address is in care of Tonto Basin Store, Tonto Basin, Gila County, Arizona, hereinafter referred to as ASSIGNORS, and ARIZONA MINING AND DEVELOPMENT CO., INC., a corporation, hereinafter referred to as ASSIGNEE, WITNESSETH:

WHEREAS, Assignors are the owners of that certain leasehold interest more particularly described and set forth in that certain agreement entitled "Mining Lease and Option," dated the 29th day of September, 1954, and executed by and between Ed Conway and Irl Conway, of Tonto Basin, Gila County, Arizona, as parties of the first part, and Archie Griffith and B. W. Stevenson, in care of Tonto Basin Store, Tonto Basin, Gila County, Arizona, as parties of the second part, a copy of which said agreement is attached hereto and marked Exhibit "A" and by reference thereto the same is hereby made a part hereof, and

WHEREAS, Assignors and Assignee have agreed that Assignee shall acquire from Assignors, all interest of the said Assignors in said mining claims described in that certain Mining Lease and Option dated the 29th day of September, 1954;

NOW, THEREFORE, for value received, the receipt of which is hereby acknowledged, we, A. C. THOMAS and JEANETTE THOMAS, husband and wife, and ARCHIE GRIFFITH and SUE L. GRIFFITH, husband and wife, do hereby and by these presents, sell, transfer, assign, convey and set over unto the ARIZONA MINING AND DEVELOPMENT CO., INC., a corporation, its successors and assigns, all right, title and interest of the said Assignors in and to the following described mining claims, to wit:

1.

JAMES S. RIGGS
LAWYER
TITLE & TRUST BUILDING
PHOENIX, ARIZONA

All those certain unpatented lode mining claims situated in the Slate Creek Mining District, Gila County, Arizona, the names of which, together with the location notices thereof are of record in the office of the County Recorder of said Gila County, in the Books, Records of Mines, of said County, at the Pages thereof, as follows, to wit:

NAME OF CLAIM	BOOK	PAGE
RATTLESNAKE NO. 1	49	207
RATTLESNAKE NO. 2	49	207
RATTLESNAKE NO. 3	49	240
RATTLESNAKE NO. 4	49	240
RATTLESNAKE NO. 5	49	240
RATTLESNAKE NO. 6	49	241
RATTLESNAKE NO. 7	49	241
RATTLESNAKE NO. 8	49	242
RATTLESNAKE NO. 9	49	242
RATTLESNAKE NO. 10	49	242

together with all right, title and interest in and to that certain "Mining Lease and Option," a copy of which is attached hereto and marked Exhibit "A", including all rights of action or otherwise, to us accrued or hereafter to accrue thereunder, and we hereby authorize the said Assignee, in its own name, to sue for and take all legal steps necessary which it may deem proper or necessary in connection therewith.

ASSIGNEE does hereby and by these presents agrees to be bound by the terms and provisions contained in said "Mining Lease and Option," a copy of which is attached hereto and marked Exhibit "A", and does further agree to keep mining operations and said mining claims in progress for so long as said operations are profitable, provided however, that if said operations do not earn a profit for a period of SIX months, then and in such event, said operations may be discontinued at ASSIGNEE'S option.

IN WITNESS WHEREOF, the parties hereto have caussd this instrument to be executed on the day and year first above written.

A. C. Thomas

Jeanette Thomas

Archie Griffith

ARIZONA MINING AND DEVELOPMENT CO., INC., a corporation,

By Frank Ratcliff

Sue L. Griffith

JAMES S. RIGGS
LAWYER
TITLE & TRUST BUILDING
PHOENIX, ARIZONA

STATE OF ARIZONA)
SS.
COUNTY OF P I M A)

On this the 20th day of January, 1955, before me the undersigned officer personally appeared A. C. THOMAS and JEANETTE THOMAS, husband and wife, known to me to be the persons who subscribed to the foregoing instrument, and acknowledged to me that they executed the same for the purposes therein contained.

In witness whereof, I have hereunto set my hand and affixed my seal.

Martin S. Rogers
Notary Public

My Commission Expires:
Nov. 8, 1958

STATE OF ARIZONA)
SS.
COUNTY OF ~~P I M A~~ MARICOPA)

On this the 22nd day of January, 1955, before me the undersigned officer personally appeared ARCHIE GRIFFITH and SUE L. GRIFFITH, husband and wife, known to me to be the persons who subscribed to the foregoing instrument, and acknowledged to me that they executed the same for the purposes therein contained.

In witness whereof, I have hereunto set my hand and affixed my official seal.

Notary Public

My Commission Expires:
My Commission Expires [illegible]

STATE OF ARIZONA)
SS.
COUNTY OF ~~MARICOPA~~ Pima)

On this the 20th day of January, 1955, before me the undersigned officer, personally appeared FRANK RATCLIFF, known to me to be the President of ARIZONA MINING AND DEVELOPMENT CO., INC., an Arizona corporation, and acknowledged that he executed the foregoing instrument for and on behalf of the said corporation, as such President, for the purposes therein contained.

In witness whereof, I have hereunto set my hand and affixed my official seal.

Martin S. Rogers
Notary Public

My Commission Expires:
Nov. 8, 1958.

JAMES S. RIGGS
LAWYER
TITLE & TRUST BUILDING
PHOENIX, ARIZONA

PLAT OF SURVEY OF THE RATTLESNAKE, RATTLESNAKE EXTENSION & CYPRESS MINING GROUPS
BROWN MINING DISTRICT, GILA COUNTY, ARIZONA
SURVEY Nº 54-12-01 BY: HARRY E. JONES
FOR: ARIZONA MINING AND DEVELOPEMENT CO INC.
BY ARCHIE GRIFFITH, SUPT.

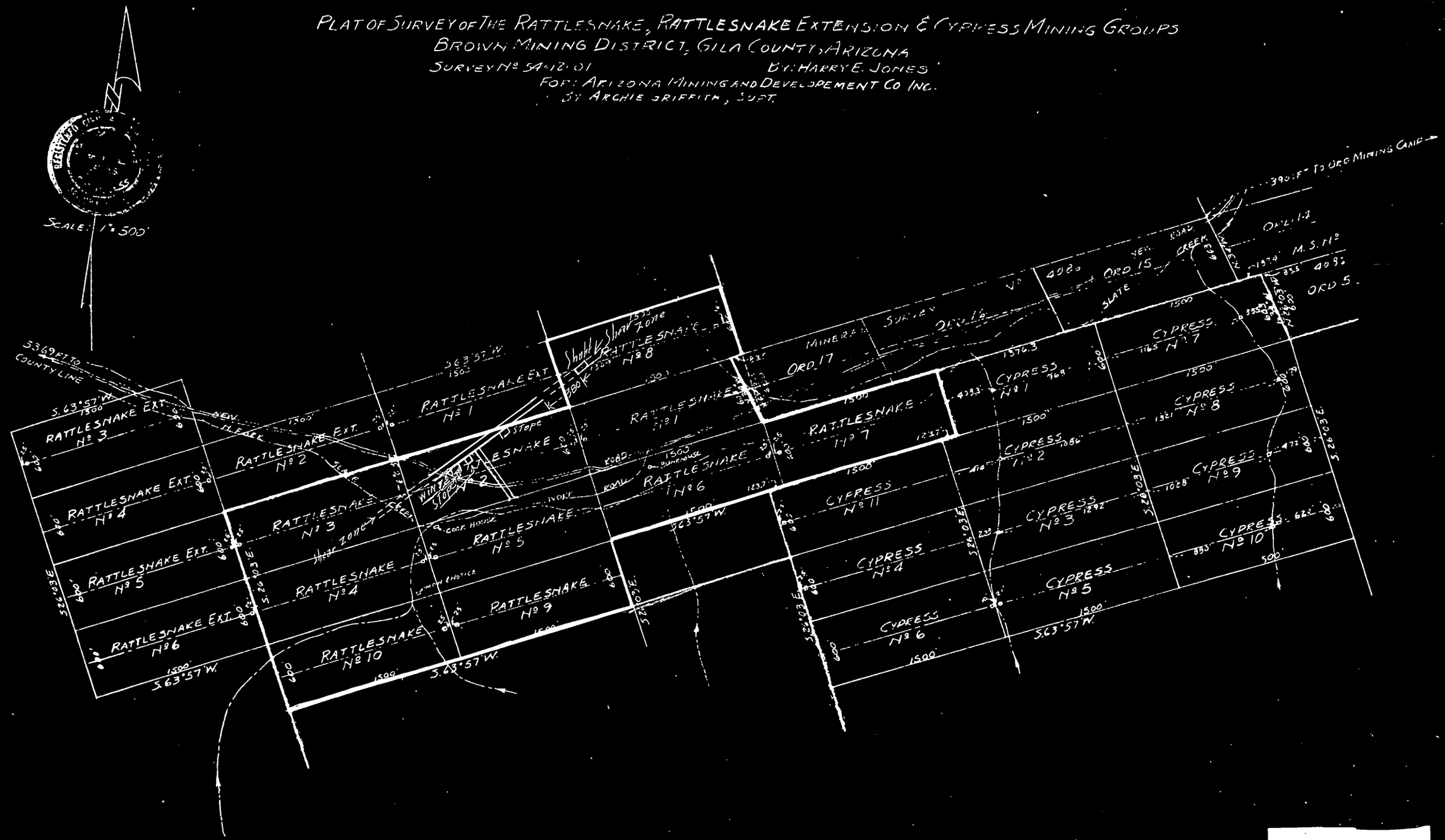
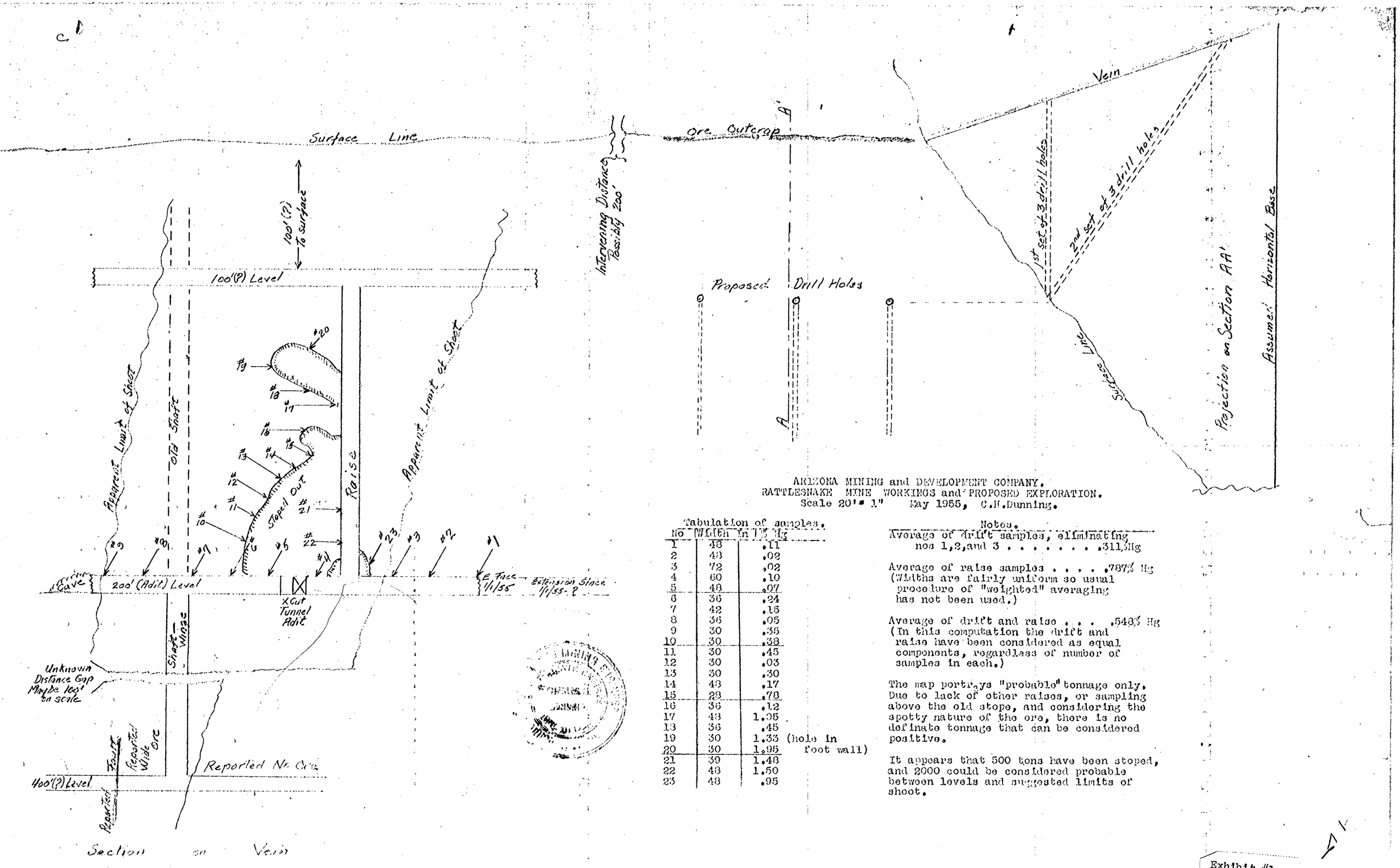


Exhibit #4

Knoxville, Tenn.
OFFICIAL BUSINESS

KNOXVILLE
JUL 1
430PM
1953
TENN.

Mr. George C. Selfridge, Chairman
Operating Committee, D.M.E.A.
Dept. of the Interior
Washington 25, D.C.



ARIZONA MINING and DEVELOPMENT COMPANY,
RATTLESNAKE MINE WORKINGS and PROPOSED EXPLORATION.
Scale 20' = 1" May 1955, C.H.Dunning.

Tabulation of samples.

No	Width In	% Hg
1	48	.11
2	48	.02
3	72	.02
4	60	.10
5	48	.07
6	36	.24
7	42	.15
8	36	.05
9	30	.35
10	30	.38
11	30	.45
12	30	.03
13	30	.30
14	48	.17
15	28	.78
16	36	.12
17	48	1.05
18	36	.45
19	30	1.33 (hole in foot wall)
20	30	1.95
21	39	1.48
22	48	1.50
23	48	.95

Notes.

Average of drift samples, eliminating nos 1,2,and 3 . . . . . .311%Hg

Average of raise samples . . . . .787% Hg
(Widths are fairly uniform so usual procedure of "weighted" averaging has not been used.)

Average of drift and raise . . . .548% Hg
(In this computation the drift and raise have been considered as equal components, regardless of number of samples in each.)

The map portrays "probable" tonnage only. Due to lack of other raises, or sampling above the old stope, and considering the spotty nature of the ore, there is no definate tonnage that can be considered positive.

It appears that 500 tons have been stoped, and 2000 could be considered probable between levels and suggested limits of shoot.

Exhibit #1

DMEA 3905

FIG.-2- CLAIM MAP, ARIZ. MINING & DEVELOPMENT CO., GILA COUNTY, ARIZONA