



CONTACT INFORMATION

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

The following file is part of the

Arizona Department of Mines and Mineral Resources Mining Collection

ACCESS STATEMENT

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

CONSTRAINTS STATEMENT

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

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

QUALITY STATEMENT

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

07/16/92

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES FILE DATA

PRIMARY NAME: TENSTRIKE

ALTERNATE NAMES:

ARAVAIPA LEASING CO.
KLONDYKE MINING CO.
LONE PINE LEAD
DEMPSEY
CASSIDY
ARAVAIPA PAT. CLAIMS MS 1783
RUBAL
STONE

GRAHAM COUNTY MILS NUMBER: 165B

LOCATION: TOWNSHIP 6 S RANGE 20 E SECTION 17 QUARTER S2
LATITUDE: N 32DEG 54MIN 22SEC LONGITUDE: W 110DEG 19MIN 29SEC
TOPO MAP NAME: COBRE GRANDE MTN - 7.5 MIN

CURRENT STATUS: PAST PRODUCER

COMMODITY:

LEAD SULFIDE
SILVER
GOLD
COPPER SULFIDE
VANADIUM
SILICON QUARTZ

BIBLIOGRAPHY:

USGS PP. 461, GEOLOGY OF THE KLONDYKE QUAD,
1964, P. 146
ROSS, CLYDE P., USGS BULL. 763, 1925, P. 88
ADMMR TENSTRIKE MINE FILE
AZBM BULL. 156, AZ ZINC AND LEAD DEPOSITS,
PART 1, 1956, P. 63
ADMMR U FILE
FLAGG, A.L., VANADIUM REPORTS 2, 1942, P. 4
ELEVATORSKI, E.A., AZ INDUSTRIAL MINERALS,
ADMMR 1978, P. 34

TEN STRIKE MINE

GRAHAM COUNTY

Imperial Group (file)

V-II A. L. Flagg vanadium reports

USGS Bull. 763 p.88

TEN STRIKE MINE

GRAHAM

This property is idle. VBD WR 9/25/75

October 18, 1943

Mr. W. B. Gohring
R.F.C. Mine Loan Division
325 Heard Building
Phoenix, Arizona

Dear Bill:

Please refer to my letter of September 30
regarding the Lone Pine Mine.

I am enclosing herewith the original
application.

Yours very truly,

J. S. Coupal, Director

JSC:LP
Enc.

September 30, 1943

RFC Mine Loan Division
325 Heard Building
Phoenix, Arizona

Gentlemen:

I am enclosing two copies of the Field Engineers' report on the Lone Pine Lead Mine together with blue prints of the workings, by Andrew Macfarlane. I understand that an application for a loan has been submitted by C. W. Cassidy to you on this property.

Very truly yours,

J. S. Coupal
Director

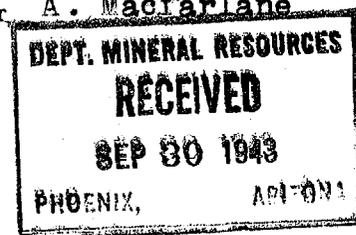
JSC:JE

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine Lone Pine
District Klondyke
Subject:

Date Sept 27th, 1943
Engineer A. Macfarlane

Dept. Of Mineral Resources;
Phoenix, Arizona.



Gentlemen;

✓ About two weeks ago, I mailed to you report and sketch of C.W. Cassidy's Lone Pine mine.

This Gentleman mailed his application into the R.F.C. office but did not do as I told him, that is get a copy of the report and sketch from you and attach same to his application and hand the completed matter into the R.F.C.

Will you please look into the matter and see that the documents are all attached and again given to the R.F.C.

Tomorrow I am completing my examination of the Manganese up on Cherry Creek for Hutchinson, and following this have considerable work in office for McFfee of Bisbee, trying for Special premium.

Will not overlook the Council meetings of Winkleman, Ray and Florence, these will slow up the office work, this week.

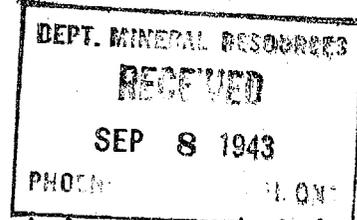
Very truly yours.

A. Macfarlane.

Jed

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine Lone Pine Date Sept. 7th, 1943
District Klondyke, Graham Co. Arizona Engineer A. Macfarlane
Subject: C.W. (Pat) Cassidy and Hale Owners.
Application for an R.F.C. loan



Gentlemen;

Enclosed find report and sketch map pertaining to the Lone Pine Lead group, on which Mr Cassidy is seeking a loan.

Kindly correct the spelling and writing of the report, and copy map, in order that our Department may assist this miner.

Other reports follow.

Very truly Yours.

A. Macfarlane

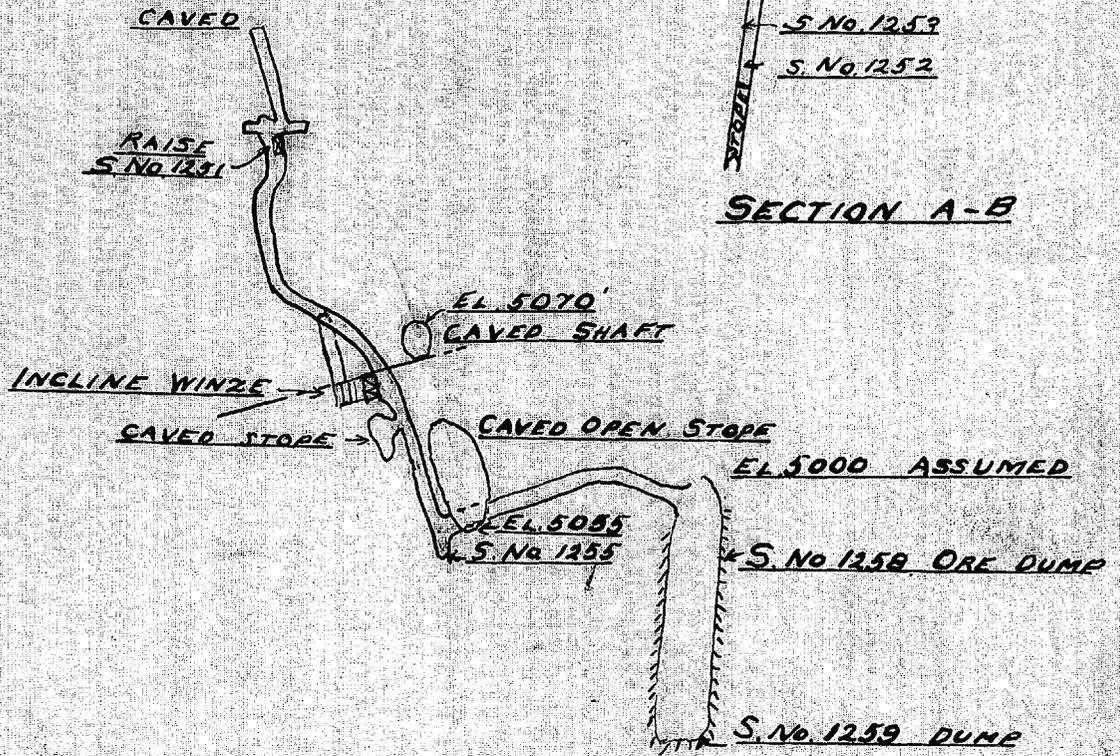
**INCLINE SHAFT INACCESSIBLE
EL. 5134'**



**CAVED CUT & TUNNEL
EL. 5097' ← S. No. 1256**

**S. No. 1257
OPEN CUT STOPE
15' TO 20' DEEP
INCLINES DOWN AT S END
PROBABLY CONNECTED WITH
CAVED END OF TUNNEL.
EL. 5060'**

**EL. 5070'
CAVED SHAFT
S. No. 1254
S. No. 1253
S. No. 1252
SECTION A-B**



S = SAMPLE

PACING SURVEY - TEN STRIKE MINE

SCALE 1" = 100'
TEN STRIKE MINE, GRANT CO., ARIZONA
S. = SAMPLE

Furthermore, unless the exposure in the south tunnel develops into a distinct shoot within a limited lateral distance the project would fail. The reason being that funds would be insufficient to reach the possible downward continuation of the winze shoot. In all, the risk appears greater than conditions or possible production justify.

ARIZONA DEPARTMENT OF MINERAL RESOURCES

Earl F. Hastings
Projects Engineer

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine Ten Strike Mine

Date Feb. 19, 1954

District Aravaipa Mining District, Graham Co.

Engineer Axel L. Johnson

Subject: Field Engineer's Report ---Information from J. F. Rydbom, part owner and operator.

Location ~~Top of San Range 19 Ex~~ Secs. 17, 20 & 29 ----T 6 S ----R 20 E (main workings being in Sec. 20.) Go NW 4 miles on Aravaipa Rd. Go NE 5 miles on mine road (rough)

Number of Claims 5 claims ---unpatented, and 1 patented claim leased from Aravaipa Leasing Co.

Owners 1 Patented claim is owned by Aravaipa Leasing Co., R. E. Calhoun, Mgr., Mills Bldg., El Paso, Texas. The 5 unpatented claims ~~is~~ owned by the Klondyke Mining Co., J. F. Rydbom, and Dale Callihan, Klondyke, Arizona.

Lessees and Operators The Klondyke Mining Co., J. F. Rydbom and Dale Callihan of Klondyke, Ariz. is leasing the 1 patented claim from the Aravaipa Leasing Co., (address above) and owns the 5 unpatented claims. Their shaft is being sunk on this patented mining claim.

Principal Minerals Lead with high Silver values.

Number of Men Employed 2 men

Production Rate No production at present. Operators are doing exploration and development work.

Geology Vein about 10 ft. wide, with a good grade ore streak in same about 6 inches wide. Strike of vein N 10 deg. E, and dip of vein 76 deg. W. Footwall is diorite, and the hanging wall is rhyolite. The shaft followed the footwall down at angle of 76 deg.

Ore Values 2 cars shipped from adit ran 15 and 17.5 % Lead respectively with about 2 oz. of Silver. Most of the ore in the vein is too low a grade for direct shipping. Operators are trying to develop ~~some~~ some ore, which is high enough grade for direct shipping.

Old Mine Workings One old adit, about 600 ft. long, from which the 2 cars of ore were shipped. Operators have now retimbered this old adit, and expect to sink the shaft an additional 50 ft. in order to connect the shaft with this adit. 1 Winze, 125 ft. deep.

New Mine Workings One Inclined Shaft (inclined 76 degrees) sunk by present operators. This shaft is now 155 ft. deep. Also 165 ft. of drifting on the 155 ft. level (75 ft. south and 90 ft. north along the vein)

Present Operations Drifting on the 155ft. level in order to develop ore.

Proposed Plans Continue development in order to find some direct shipping ore. Sink the shaft another 50 ft. to intersect the old adit.

DEPARTMENT OF MINERAL RESOURCES

State of Arizona

MINE OWNER'S REPORT

Date Dec. 10, 1952.

- 1. Mine: Ten Strike Mine (Information from personal inspection & from operators)
- 2. Location: Sec. _____ Twp. 6 S. Range 19 E. Nearest Town Klondyke
 Distance 4 miles Direction north-west Road Condition first 4 miles good
 then 5 miles north-east next 5 miles rough and steep
- 3. Mining District & County: Aravaipa Mining Dist., Graham County.
- 4. Former Name of Mine: none.
- 5. Owner: Klondyke Mining Co., Klondyke, Arizona. holders of company are
 (1) J. C. Anglin, Tucson, Ariz., (2) J. F. Rydbom, Klondyke, Ariz., and (3) Dale
~~xxxxxxx~~ Callihan, Klondyke, Ariz. closed corporation.
- 6. Operator: Klondyke Mining Co., the owners.
 Address: Klondyke, Ariz.
- 7. Principal Minerals: Lead ores---- principally cerussite, but some anglesite & galena.
- 8. Number of Claims: 5 Lode yes Placer _____
 Patented no Unpatented yes
- 9. Type of Surrounding Terrain: Very rough ~~at~~ and mountainous
- 10. Geology & Mineralization: The vein is a fissure vein--- from 1 to 5 ft. wide. The
 strike is N 13 deg. W, and the dip is 75 deg. to SW The vein is principally quartz,
 which contains the ore minerals-- cerussite, anglesite, and galena. The footwall is
 granite, and the hanging wall is rhyolite porphyry. (also some diabase and diorite in
 the footwall of the vein)
- 11. Dimension & Value of Ore Body: Ore vein proved up for 9000 ft. in length by
 tunnels and shallow open cuts. Deepest workiggs is a winze, 125 ft. deep. Width
 of vein 1 to 5 ft.

12. Ore "Blocked Out" or "In Sight": Very little--- just a few tons

Ore Probable: Hard to estimate. May be as much as 5,000 tons.

13. Mine Workings—Amount and Condition:

No.	Feet	Condition
Shafts..... 1	30 ft.	Inclined 75 deg. Condition fair
Boxes Winze 1	125 ft.	Needs repair. Said to contain good ore showings.
Tunnels..... 2	165 ft.	One 40 ft. long, and one 125 ft. long.
Crosscuts..... 1	225 ft.	X cut driven along vein.
Stopes.....		

14. Water Supply: No source of water available on the property.

15. Brief History: 125 ft. tunnel driven by Mr. Dempsey about 1910 or 1915. Since that time, several parties have had leases and have done some work on the property. Mr. Pat Cassidy was one leaser, and Mr. Rubal another. Mr. Rubal had a lease in 1923 and 1924. Stone and Dempsey also operated property, and is said to have shipped 200 tons of ore averaging 30 % lead, and yielding \$15 per ton net.

The present owners took over the property in Jan. 1952, Mr. Rydbom working alone, until Mr. Callihan joined him 3 months ago. Present operators have built 4 1/2 miles of road, drove tunnel ahead 10 ft., and stoped and shipped 90 tons of ore, since taking over the property.

One carload of ore averaged 17 % lead, and the other carload averaged 14.5 % lead, and about 2 oz. of Silver. This ore (total 90 tons) was shipped to the A. S. & R. Co. at El Paso, Texas.

Operators now working 2 men cleaning out drift. After the cleaning out work is finished, they expect to repair the 125 ft. winze, and after that stoppe some more ore out.

16. Signature: April L. Johnson, Field Engineer

17. If Property for Sale, List Approximate Price and Terms: Operators expect to work the mine themselves, but will consider sale of the mine on favorable terms.

LEAD-ZINC QUESTIONNAIRE

October 14, 1957.

TEN STRIKE GROUP
ARIZONA MINING
CORPORATION
COPPER COUNTY, ARIZ.
1957

PH. DEPT. Do you approve of the Emergency Lead-Zinc Committee's seeking relief for the lead-zinc industry and has it your authorization to speak for you? YES

What Arizona Mines and Mills in the lead-zinc class do you control?

1) CLAIMS - AMERICA, 123 + ARAVAIPA, EXTENSION, (TEN STRIKE) MICKLEY No 1

Which ones are operating? (1) NONE (2) _____

If not operating, when shut down? (1) JULY 1954 (2) _____

Number employed, prior to shut-down, in mine, mill or sections thereof producing lead or zinc ores? (1) TWO (2) _____

Number so employed on January 1, 1957? (1) NONE (2) _____

Number so employed on October 1, 1957? (1) NONE (2) _____

Remarks FORCED TO CEASE OPERATIONS ON ACCOUNT OF HIGH COSTS OF MATERIALS, WAGES + TAXES AND LOW PRICE OF METALS HIGHER PRICES FOR GOLD + SILVER AND LESS TAXES WILL HELP

Mr. J. F. Rydbom, Manager
Klenzle Mining Company
Klenzle, Arizona

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine Ten Strike Mine

Date Oct. 14, 1954.

District Aravaipa Dist., Graham Co.

Engineer Axel L. Johnson

Subject: Present Status. Information from Elton J. Kidd.

Note:- For information on location, ownership, minerals, geology, mine workings, and additional information -----see my report of this property under date of Feb. 19, 1954.

Present Status Mine is now closed down. Mine ~~is~~ closed down a short time ago.

Reasons for closing were:

- (1) Insufficient ore reserves of direct shipping ore.
- (2) Lack of finances to carry on additional exploration work.

FIELD ENGINEERS REPORT

May 6, 1953

Axel L. Johnson

The Ten Strike mine owned by Klondyke Mining Co., composed of J. C. Anglin, Tucson, Arizona, J. F. Rydbom, Klondyke, Arizona and Dale Callihan, Klondyke, Arizona. Operators now working 2 men and sinking a new shaft on the property. This shaft is down to a depth of 85 ft. Operators expect to continue the shaft to a depth of about 120 feet, the level of the 125 ft. tunnel on the property. Shaft is being sunk in the ore vein. No shipments are being made.



NAME OF MINE: LONE PINE (TINSTRIKE)

COUNTY: GRAHAM E

DISTRICT: GRAHAM E

METALS: PB

OPERATOR AND ADDRESS:

MINE STATUS

DATE:

DATE:

C.W.Cassidy, Rt. 1, Box 72-C 2/44 Idle
Globe, Arizona

DEPARTMENT OF MINERAL RESOURCES

News Items

Date, June 6, 1940.

Mine Ten Strike Group

Location 3 Mi. NW of Klondyke

Owner Aravaipa Leasing Co.

Address

Under lease and option to

Operating Co. "Ole" Dempsey & associates.

Address Klondyke, Arizona.

Pres.

Genl. Mgr.

Mine Supt.

Mill Supt.

Principal Metals Lead, silver, gold.

Men Employed 3

Production Rate

Mill, Type & Capacity

Power, Amt. & Type

Signed

W. J. ...

(Over)

Present Operations

Drifting ahead on ore at bottom of winze
on level 85 feet below tunnel level.

New Work Planned

Expect to install tigger hoist and continue
drift for another 75 feet in order to get
under the shoot of ore which has been stop-
ed on higher levels.

Misc. Notes

A quantity of gob has been cleaned out of
the winze and the old drift off the bottom,
and the face of the previous workings has
been exposed. This shows an eighteen inch
streak of rich lead-silver ore along with
a wider width of lower grade milling ore.
The vein width is shown by various cross-
cuts to be eleven feet and more. Difficult-
ies due to bad air in the workings are ex-
pected to be overcome shortly, and the
operators hope to make a shipment of the
higher grade ore in the near future.

DEPARTMENT OF MINERAL RESOURCES

STATE OF ARIZONA

FIELD ENGINEERS REPORT

Mine Ten Strike Mine

Date Oct. 14, 1954.

District Aravaipa Dist., Graham Co.

Engineer Axel L. Johnson

Subject: Present Status. Information from Elton J. Kidd.

Note:- For information on location, ownership, minerals, geology, mine workings, and additional information -----see my report of this property ynder date of Feb. 19, 1954.

Present Status Mine is now closed down. Mine ~~is~~ closed down a short time ago.

Reasons for closing were:

- (1) Insufficient ore reserves of direct shipping ore.
- (2) Lack of finances to carry on additional exploration work.

DEPARTMENT OF MINERAL RESOURCES

STATE OF ARIZONA

FIELD ENGINEERS REPORT

Mine Ten Strike Mine Date Feb. 19, 1954
District Aravaipa Mining District, Graham Co. Engineer Axel L. Johnson
Subject: Field Engineer's Report ---Information from J. F. Rydbom, part owner and operator.

Location ~~Approx. Sec. 19~~ Secs. 17, 20 & 29 ---T 6 S ---R 20 E (main workings being in Sec. 20.) Go NW 1/4 miles on Aravaipa Rd. Go NE 5 miles on mine road (rough)

Number of Claims 5 claims ---unpatented, and 1 patented claim leased from Aravaipa Leasing Co.

Owners 1 Patented claim is owned by Aravaipa Leasing Co., R. E. Calhoun, Mgr., Mills Bldg., El Paso, Texas. The 5 unpatented claims ^{are} owned by the Klondyke Mining Co., J. F. Rydbom, and Dale Callihan, Klondyke, Arizona.

Lessees and Operators The Klondyke Mining Co., J. F. Rydbom and Dale Callihan of Klondyke, Ariz. is leasing the 1 patented claim from the Aravaipa Leasing Co., (address above) and owns the 5 unpatented claims. Their shaft is being sunk on this patented mining claim.

Principal Minerals Lead with high Silver values.

Number of Men Employed 2 men

Production Rate No production at present. Operators are doing exploration and development work.

Geology Vein about 10 ft. wide, with a good grade ore streak in same about 6 inches wide. Strike of vein N 10 deg. E, and dip of vein 76 deg. W. Footwall is diorite, and the hanging wall is rhyolite. The shaft followed the footwall down at angle of 76 deg.

Ore Values 2 cars shipped from adit ran 15 and 17.5 % Lead respectively with about 2 oz. of Silver. Most of the ore in the vein is too low a grade for direct shipping. Operators are trying to develop ~~more~~ some ore, which is high enough grade for direct shipping.

Old Mine Workings One old adit, about 600 ft. long, from which the 2 cars of ore were shipped. Operators have now retimbered this old adit, and expect to sink the shaft an additional 50 ft. in order to connect the shaft with this adit. 1 Winze, 125 ft. deep.

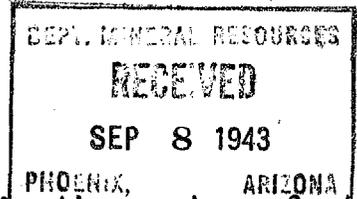
New Mine Workings One Inclined Shaft (inclined 76 degrees) sunk by present operators. This shaft is now 155 ft. deep. Also 165 ft. of drifting on the 155 ft. level (75 ft. south and 90 ft. north along the vein)

Present Operations Drifting on the 155ft. level in order to develop ore.

Proposed Plans Continue development in order to find some direct shipping ore. Sink the shaft another 50 ft. to intersect the old adit.

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine LONE PINE LEAD Date August 4th, 1943
District Klondyke, Graham County, Arizona. Engineer A. Macfarlane
Subject: Examination.



LOCATION

The Lone Pine Lead mine is situated in the western foothills of the Santa Teresa Mtns. approximately 8 miles by winding road northerly from the store and Post Office of Klondyke, Graham county, Arizona.

The mining claims four in all, are a link along the north to west course of the big dyke and lode system called the Grand-Reef, and are about half way between Grand Reef mine and the large group and mine workings of the Arivapa, now controlled by the Atheletic Mining and Smelting Co.

Drainage of the sharply incised gullies and wash is towards Arivapa creek a distance of 6 miles southwest of the Lone Pine claims.

PROPERTY

Consists of four unpatented claims, located and held for many years by James Quinn of Klondyke, under the name of the Ten - Strike group and only within the past few years, these claims were transferred to Cassidy and Hale, also formerly of the Klondyke district, and now of Globe, Arizona.

PAST PRODUCTION

No record of the ores mined and sold from this mine, are in the possession of the present active owner Pat) C.W. Cassidy of Route 1 Box 72 C Globe, Arizona, although several hundred tons have been extracted, during several past active working periods.

This statement is born out by the stoping both above and below the working Adit, these stopes are gobbed and I could only roughly estimate the limits of this mined area.

During former years the stoping along the tunnel back and from sub-levels and underhand stopes, for about 100' along the vein course is evident now; the width stoped being from 3' to over 6'.

Lessees during part of last year and early in 1943 again from a depth of 125' in the Common winze, mined and shipped 4 or 5 carlots; therefore in order to determine the grade tenor of the ores, I took 6 samples and recorded the results on attached map.

The past low and erratic price for lead and the usual heavy smelter deductions for lead ores, when added to a trucking cost to rail switch of about \$5.00 per ton plus a rail freight of \$2.00 to \$3.00 per ton, only lead ores of a value in excess of \$20. could be mined and marketed from this locality.

MINE DEVELOPMENT

Principal mine workings are an adit tunnel fully 150' driven from just above the gulch floor and the eastern toe of the sharp ridge, formed by the Reef croppings and dyke matter. This adit cut the lode, thence drifted in a general north 24 degree west course on the vein, for 115' to the end line of the Lone Pine property.

Here at the end line a 2 compartment winze has been sunk, to a depth of more than 125' on the vein and drifting and stoping to some extent, carried towards the south back into Lone Pine ground.

It is stated that this winze is half on Lone Pine ground and half on the Arivapa claim owned by the Grand Reef Company and has been used by both Parties, in the mining operations below the tunnel level.

/a

The drift towards the north continues on into the Arivapa claim, evidencing the joint use of the Ten Strike tunnel, in the mining work conducted by the Grand Reef within that part of their ground contiguous to the Lone Pine on the north.

Southerly some 600' from the portal of the Ten Strike tunnel the portal of the South tunnel is located, this near the junction of the Cabin gulch and the main south gulch. The South tunnel has been advanced about 40' on the vein, which has a width of 3' to 4' in this sector.

In all there has been about 700' of mine development and exploration openings made on the Lone Pine property.

VEIN OCCURRENCE

As stated the Lone Pine is a 4 claim link in the long chain of claims covering the Grand Reef formation.

The bold dyke striking from the Laurel Canyon Grand Reef workings, along a course of North 20 degrees west for 11 miles the northern end of this dyke and the vein system accompanying, together with several parallel veins and others of a different strike, compose the Arivapa group.

Apparently this big dyke is mostly a rhyolite intrusive which thru superior force, broke the older stratified rocks along a nearly constant course, forming a major fault.

Along this fault line and on the east side of the main dyke body, vein or ore shoots containing the lead mineralization have been formed, probably contemporaneous with the dyke intrusive formation.

Here in the Lone Pine ground, this mineralization of lead occurs in a vein of 18" to over 6' in width, in fact, violent vein swells are common along the mineralization of the Reef; the profundity of the ore shoots yet quite undetermined.

RECOMMENDED DEVELOPMENT

Lone Pine Page 3

The South tunnel heading has exposed the vein to have a width of 4' between well defined walls; a fair sample taken here assayed 7.62% Pb. all in anglesite and cerrusite form.

This tunnel has better dumping space below its floor and head room sufficient for large ore bin, the road within 60' of the portal, and this south level is fully 30' lower than the Ten Strike adit.

For the above reasons, I recommend a shaft to be sunk to 100' depth below the floor of the tunnel and from the bottom of the shaft, a drift extended along the vein, for the development of ore bodies and the ultimate connection with the end line winze.

This proposed exploration consisting of 100' of shaft sunk on vein, thence 700' of drifting, should place in sight a substantial tonnage of lead ore, and it seems fair to assume that the average grade of the ore shoots would range from 7 to 12% lead content.

The present adit and end line winze, to serve now in the production of the ores found to the south of the winze.

Geologic Features

Ore deposits in this region appear to have been formed after the intrusion of the batholith, probably beginning in the Eocene and extending into the Miocene ages; The rock movements taking place during these changing ages and specifically the upheaval or formation of the Grand Reef dyke, provided the elements suitable to the subsequent ore depositions.

Of course the ore agencies along the big dyke were very variable, the explorations of the past 50 years penetrating the Reef croppings, exposes mineralized sectors and other's sectors of the formation to be almost void of mineral or ores.

The casing rock of the east wall of the vein within Lone Pine workings, is apparently a brecciated Calcite, while the intrusive rhyolite and other igneous materials forming the Dyke proper, provided the west wall of the mineralization.

More or less selected or sorted ores of the Laurel Canyon or southern exposures of the Grand Reef, contained several ounces of silver in addition to the lead.

The assays of the oxidized vein matter of the Lone Pine group do not show, pay value in silver.

Structural conditions of the mineral deposits along the Reef, indicate deep fissuring, but erratic in length and subject to violent swells and pinches affecting the ore shoots, making for breaks in their continuity.

Ingress-Egress

The Lone Pine mine is now reached by Auto from the Jct. of the Fort Grant road with highway #70 about 25 miles west of Safford,

Lone Pine Page 4

, thence south to Arivapa creek 35 miles, thence westerly to the Store and Post Office of Klondyke a distance of about 10 miles west of the Jct of the Fort Grant and the Wilcox roads, in the Arivapa valley.

All this distance from the Klonyke store to the main paved highway, is over dirt road but maintained, over part rolling terrain and some steep grades, following the road north from the valley.

The Lone Pine workings are still about 8 miles northerly from the store, the stub or mine road enters into broken terrain where stiff grades are encountered, both entering the mine and returning therefrom; However the road is practical for loaded trucks and subject to some improvement.

This whole Klondyke Arivapa district, wherein are known sizable bodies of low grade lead ores and zinc, should be connected to the main #70 highway at a point about 10 miles east of the Coolidge dam and at an Indian village a few miles west of the railroad switch of Calva.

A rough and poorly constructed road now extends from this San Carlos reservation village, in an almost due south direction to end at the Princess Pat mine, a distance from the paved highway of 10 or 12 miles.

Improving and continuing this road for 4 miles further south, would end at Arivapa village and the important Arivapa mines.

This road would pass near by potential copper claims and would be a most direct route for ores to the International Smelter and a utility for livestock interest, in reaching the Globe-Miami and western cattle markets, by truck or train.

The distance from the Arivapa mines to rail switch near Ft. Thomas, is more than 50 miles, while over the route herein proposed, the rail facilities would be reached within 25 miles.

Prior to the establishment of premiums on lead and zinc, these types of ore could not be worked in this remote area, except at decided loss to the operator.

Bulletin #763 U.S.G.S. by Clyde P. Ross, published during 1925 gives an approximate production for this entire district for a 40 year period of only 35,000 tons.

Since 1925 it is probable that another 5,000 to 10,000 tons have been mined hand dressed and shipped to the lead smelter at El Paso.

All this is logical, as only ores of more than 25% lead sold on the general prevailing low lead market, would leave some net smelter returns, with which the miner could at least pay some part of the mining cost. The mineral exposures of this district can be important if price and transportation factors are improved.

It is stated that this winze is half on Lone Pine ground and half on the Arivapa claim owned by the Grand Reef Company and has been used by both parties in the mining operations below the tunnel level.

The drift towards the north continues on into the Arivapa claim, evidencing the joint use of the Ten Strike tunnel in the mining work conducted by the Grand Reef within that part of their ground contiguous to the Lone Pine on the north.

Southerly some 600' from the portal of the Ten Strike tunnel the portal of the South tunnel is located, this near the junction of the Cabin gulch and the main south gulch. The South tunnel has been advanced about 40' on the vein, which has a width of 3' to 4' in this sector.

In all there has been about 700' of mine development and exploration openings made on the Lone Pine property.

VEIN OCCURRENCE: As stated the Lone Pine is a 4 claim link in the long chain of claims covering the Grand Reef formation.

The bold dyke striking from the Laurel Canyon Grand Reef workings, along a course of north 20 degrees west for 11 miles the northern end of this dyke and the vein system accompanying, together with several parallel veins and others of a different strike, compose the Arivapa group.

Apparently this big dyke is mostly a rhyolite intrusive which thru superior force, broke the older stratified rocks along a nearly constant course, forming a major fault.

Along this fault line and on the east side of the main dyke body, vein or ore shoots containing the lead mineralization have been formed, probably contemporaneous with the dyke intrusive formation.

Here in the Lone Pine ground this mineralization of lead occurs in a vein of 18" to over 6' in width, in fact, violent vein swells are common along the mineralization of the Reef, the profundity of the ore shoots yet quite undetermined.

RECOMMENDED DEVELOPMENT: The South tunnel heading has exposed the vein to have a width of 4' between well defined walls. A fair sample taken here assayed 7.62% pb. all in anglesite and cerussite form.

This tunnel has better dumping space below its floor and head room sufficient for large ore bin, the road within 60' of the portal, and this south level is fully 30' lower than the Ten Strike adit.

For the above reasons, I recommend a shaft to be sunk to 100' depth below the floor of the tunnel and from the bottom of the shaft, a drift extended along the vein, for the development of ore bodies and the ultimate connection with the end line winze.

This proposed exploration consisting of 100' of shaft sunk on vein, thence 700' of drifting, should place in sight a substantial tonnage of lead ore, and it seems fair to assume that the average grade of the ore shoots would range from 7 to 12% lead content.

The present adit and end line winze to serve now in the production of the ores found to the south of the winze.

GEOLOGIC FEATURES: Ore deposits in this region appear to have been formed after the intrusion of the batholith, probably beginning in the Eocene and extending into the Miocene ages. The rock movements taking place during these changing ages and specifically the upheaval or formation of the Grand Reef dyke provided the elements suitable to the subsequent ore depositions.

Of course, the ore agencies along the big dyke were very variable. The explorations of the past 50 years penetrating the Reef croppings expose mineralized sectors and other sectors of the formation to be almost void of mineral or ores.

The casing rock of the east wall of the vein within Lone Pine workings is apparently a brecciated calcite, while the intrusive rhyolite and other igneous materials forming the dyke proper provided the west wall of the mineralization.

More or less selected or sorted ores of the Laurel Canyon or southern exposures of the Grand Reef contained several ounces of silver in addition to the lead.

The assays of the oxidized vein matter of the Lone Pine group do not show pay value in silver.

Structural conditions of the mineral deposits along the Reef indicate deep fissuring, but erratic in length and subject to violent swells and pinches affecting the ore shoots, making for breaks in their continuity.

INGRESS-EGRESS: The Lone Pine mine is now reached by auto from the Jct. of the Fort Grant road with Highway #70 about 25 miles west of Safford, thence south to Arivaps creek 35 miles, thence westerly to the store and Post Office of Klondyke, a distance of about 10 miles west of the Jct. of the Fort Grant and the Wilcox roads in the Arivaps valley.

All this distance from the Klondyke store to the main paved highway is over dirt road but maintained over part rolling terrain and some steep grades following the road north from the valley.

The Lone Pine workings are still about 8 miles northerly from the store; the stub or mine road enters into broken terrain where stiff grades are encountered, both entering the mine and returning therefrom. However, the road is practical for loaded trucks and subject to some improvement.

This whole Klondyke Aravaipa district, wherein are known sizeable bodies of low grade lead ores and zinc, should be connected to the main #70 highway at a point about 10 miles east of the Coolidge dam and at an Indian village a few miles west of the railroad switch of Calva.

A rough and poorly constructed road now extends from this San Carlos reservation village in an almost due south direction to end at the Princess Pat mine, a distance from the paved highway of 10 or 12 miles.

Improving and continuing this road for 4 miles further south would end at Aravaipa village and the important Aravaipa mines.

This road would pass nearby potential copper claims and would be a most direct route for ores to the International Smelter and a utility for livestock interest in reaching the Globe-Miami and western cattle markets by truck or train.

The distance from the Aravaipa mines to rail switch near Ft. Thomas is more than 50 miles, while over the route herein proposed the rail facilities would be reached within 25 miles.

Prior to the establishment of premiums on lead and zinc these types of ore could not be worked in this remote area except at decided loss to the operator.

Bulletin #763 U.S.G.S. by Clyde P. Ross, published during 1925, gives an approximate production for this entire district for a 40-year period of only 35,000 tons.

Since 1925 it is probable that another 5,000 to 10,000 tons have been mined hand dressed and shipped to the lead smelter at El Paso.

All this is logical as only ores of more than 25% lead sold on the general prevailing low lead market would leave some net smelter returns with which the miner could at least pay some part of the mining cost. The mineral exposures of this district can be important if price and transportation factors are improved.

PROPOSAL TO JOINT VENTURE

WE SUBMIT HEREWITH A PROPOSAL TO JOINT VENTURE THE KLONDYKE BARITE PROPERTY SUBJECT TO THE FOLLOWING TERMS.

1) \$250,000 FOR A 40% INTEREST IN PRODUCTION OF BARITE FROM THE KLONDYKE BARITE PROPERTY.

2) THE \$250,000 WILL BE PAID BACK IN APPROXIMATELY 10 MONTHS FROM 100% OF THE NET CASH FLOW FROM THE PROPERTY AS INDICATED IN APPENDIX VII OF THE ATTACHED REPORT.

3) UPON COMPLETING PAY BACK OF THE \$200,000 CAPITAL INVESTMENT 60% OF THE NET CASH FLOW WILL REMAIN IN THE ^{ACCOUNT} CASSANDRA RESOURCES INC., AND 40% OF THE NET CASH FLOW WILL BE PAID TO THE ^{ACCOUNT OF} JOINT VENTURE PARTNER.

4) CASSANDRA RESOURCES INC. WILL ^{RETAIN} TITLE AND CONTROL OF ALL CAPITAL EQUIPMENT PURCHASED DURING THIS AGREEMENT.

5) THIS AGREEMENT TERMINATES UPON TERMINATION OF MINING ACTIVITIES ON THE KLONDYKE BARITE PROPERTY.

PROPOSAL TO SELL

WE SUBMIT HEREWITH TO SELL THE
KLONDYKE BARITE PROPERTY FOR A SUM OF
\$150,000 AND A \$2 PER OUNCE ROYALTY DUE AS FOLLOWS

- 1) \$10,000 FOR AN OPTION TO PURCHASE IN 6 MONTHS.
- 2) \$40,000 TO EXERCISE THE OPTION TO PURCHASE
- 3) \$100,000 DUE ONE YEAR FROM DATE OF OPTION
TO PURCHASE.
- 4) \$2 PER TON FOR BARITE ORE REMOVED FROM
PROPERTY FOR A PERIOD OF 10 YEARS FROM DATE
OF OPTION TO PURCHASE.
- 5) 10% NET REFINED RETURNS OF ANY OTHER MINERAL
PRODUCED FROM THE PROPERTY.

KLONDYKE BARITE PROPERTY

CASSANDRA RESOURCES INC.

720 N. MANN AVE

TUCSON ARIZONA, 85710

KLONDYKE BRUTE PROPERTY
CASSANDRA RESOURCES INC

TABLE OF CONTENTS

INTRODUCTION:

LOCATION AND ACCESSIBILITY

CLIMATE ~~AND~~

HISTORY

PROPERTY

GEOLOGY

LITHOLOGY

STRUCTURE

MINERALIZATION

ORE RESERVES

MINE FEASIBILITY

MINE DEVELOPMENT PROGRAM

MINE METHOD

MILL PROCESS

ECONOMICS

CAPITAL INVESTMENT

KLONDYKE BARITE PROPERTY
CASSANDRA RESOURCES INC

APPENDICIES

- 1 ASSAY RESULTS
- 2 DEVELOPMENT PROGRAM
- 3 MINING PARAMETERS
- 4 ~~FOR~~ MILL FLOW SHEET
- 5 MONTHLY COSTS
- 6 LETTER OF INTENT TO PURCHASE
- 7 CASH FLOW ANALYSIS
- 8 HISTORICAL INFORMATION ON PROPERTY
- 9 BARITE MARKET INFORMATION

KLONDYKE BARITE PROPERTY

INTRODUCTION

LOCATION AND ACCESSIBILITY

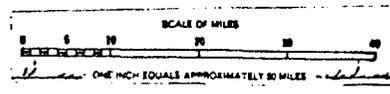
THE KLONDYKE BARITE PROPERTY IS LOCATED IN GRAHAM COUNTY, ARIZONA, ABOUT 65 MILES NORTH-EAST OF TUCSON AND 60 MILES SOUTHEAST OF GLOBE. IT IS ACCESSIBLE FROM U.S. HIGHWAY NO. 70 ON THE KLONDYKE - BONITA ROAD, ABOUT 14 MILES NORTHWEST OF SAFFORD. THE ROAD IS A COUNTY MAINTAINED DIRT ROAD, BUT IS ~~HE~~ KEPT WELL GRADED. TURN SOUTH AT THE JUNCTION AND TRAVEL 6 MILES TOWARD BONITA TO SHEEP WASH, THEN NORTHEAST UP SHEEP WASH FOR FOUR MILES (FIGURE 1). ←

NO PARAGRAPH

THE PROPERTY IS LOCATED IN TOWNSHIP 8 SOUTH, RANGE 21 EAST IN SECTIONS 11, 12, 13, AND 14 (FIGURE 2).

CLIMATE ~~AND VEGETATION~~

THE KLONDYKE REGION HAS THE DRY WARM CLIMATE TYPICAL OF THE SOUTHEAST ARIZONA. PRECIPITATION AT KLONDYKE RANGES FROM 14-17 INCHES. NEARLY HALF THE RAIN OCCURS DURING JULY, AUGUST, AND SEPTEMBER. THE REMAINDER OCCURS DURING DECEMBER, JANUARY, AND FEBRUARY. TEMPERATURES RANGE FROM MODERATE DURING THE WINTER TO VERY HIGH DURING THE SUMMER. HIGH SUMMER TEMPERATURES OF 110°-116° ARE NOT UNCOMMON. THE LOW WINTER TEMPERATURES OF 25°-32° ARE ABOUT NORMAL.



HISTORY

PART OF THE PROPERT WAS ORIGINALL LOCATED ABOUT 1900. THE SHAFT ON THE PROPERTY WAS REPORTED SUNK IN 1904 BY EASTERN CAPITAL AND THAT SOME BORITE WAS SHIPPED TO AN EASTERN MARKET. THE PROPERTY WAS RELOCATED IN 1934 BY J.D. MATHEWS, OF THATCHER, ARIZONA. THE PROPERTY WAS AGAIN RELOCATED IN 1956 BY A. J. MARCOTTE WHO LEASE THE PROPERTY TO GUMMINS-ROBERTS COMPANY IN 1958. GUMMINS-ROBERTS COMPANY REJUVINATED THE OLD SHAFT AND FOUND IT TO BE 125' DEEP INSTEAD OF THE PREVIOUSLY REPORTED 300'-425" DEEP. (SEE APPENDIX ON ARIZONA DEPARTMENT OF MINERAL RESOURCES).

THE ARIZONA STATE LAND DEPARTMENT SHOWS NUMEROUS MINERAL LEASES HAVE BEEN TAKEN OUT ON THE PROPERT IN RECENT YEARS BY SUCH COMPANIES AS ABBARCO, AND CITIES SERVICES.

PROPERTY

THE KLONDYKE BARITE PROPERTY IS LOCATED ON ARIZONA STATE LAND WITH ARIZONA STATE MINERALS. THE PROPERTY CONSISTS OF ALL OF SECTION 13, THE SOUTHWEST CORNER OF SECTION 12, THE SOUTHEAST CORNER SECTION 11, AND THE NORTHWEST CORNER OF SECTION 14, ALL IN TOWNSHIP 8 SOUTH, RANGE 21 EAST OF THE GILE AND SALT RIVER MERIDIAN. THE PROPERTY CONSISTS OF 1120 ACRES.

THE PROPERTY IS CURRENTLY HELD BY APPLICATIONS FOR PROSPECTING PERMITS WHICH WILL BE CONVERTED TO MINERAL LEASES AT THE APPROPRIATE TIME.

578 10'

579

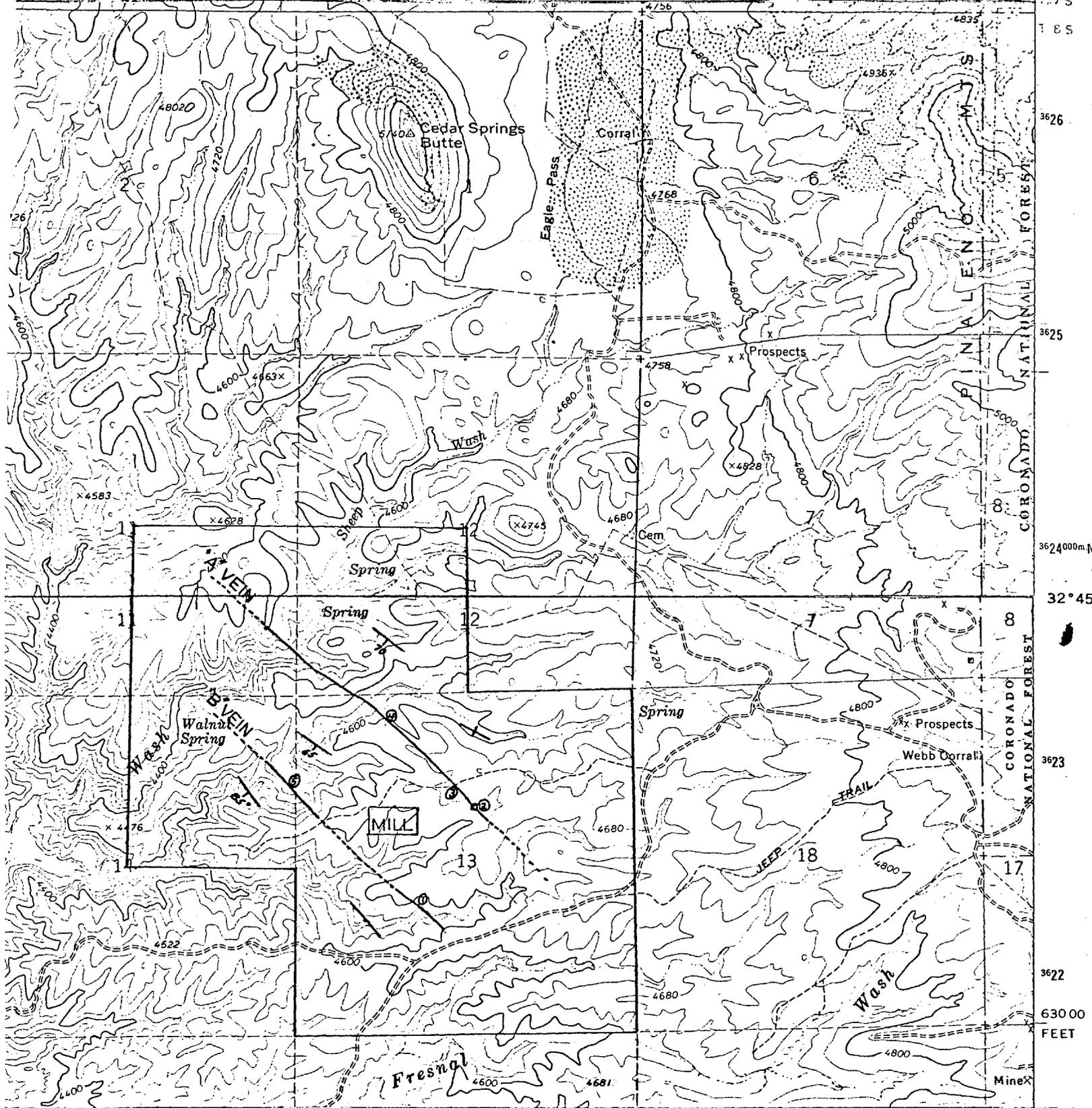
R. 21 E.

R. 22 E.

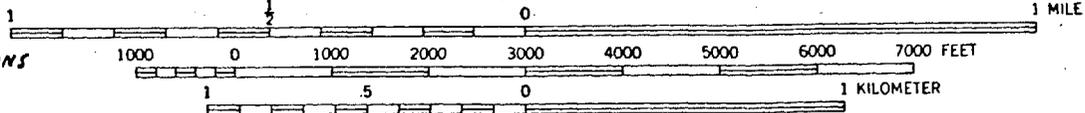
581

510 000 FEET

110°07'30"



SCALE 1:24 000



① SAMPLE LOCATIONS

CONTOUR INTERVAL 40 FEET
 DOTTED LINES REPRESENT 20-FOOT CONTOURS
 NATIONAL GEODETIC VERTICAL DATUM OF 1929

3

AS THE PROPERTY IS ON STATE LAND, WITH STATE MINERALS, THE STATE OF ARIZONA RECEIVES A ROYALTY OF 5 PERCENT OF THE NET VALUE OF THE MINERALS PRODUCED FROM THE PROPERTY.

GEOLOGY

LITHOLOGY

ALL THE ROCKS IN THE IMMEDIATE VICINITY OF THE KENDRYKE GARINE PROPERTY ARE CLASSIFIED TERTIARY ANDESITE AND CONSIST OF VOLCANIC AGGLOMERATES AND INTERCALATED TUFFS AND SANDSTONE. THE FORMATION IS COMPOSED OF REDDISH-PURPLE, ROUNDED ANDESITE FRAGMENTS WHICH RANGE IN SIZE FROM 1/2" TO SEVERAL FEET IN DIAMETER, THE AVERAGE SIZE BEING ABOUT ONE TO TWO INCHES. THE FORMATION IS GENERALLY WELL INDURATED AND WEATER RATHER SUBDUED LOW ROUNDED OUTCROPS.

THE FORMATION HAS NOT BEEN GIVEN A NAME IN ANY OF THE LITERATURE, HOWEVER IT APPEARS TO BE SEVERAL THOUSAND FEET THICK AND COVERS APPROXIMATELY 20 SQUARE MILES. THE MOST DISTINGUISHING FEATURE IS THE INCLUDED FRAGMENTS OF "TURKEY TRACK" ANDESITE FROM THE CRETACEOUS-TERTIARY HORSE MOUNTAIN VOLCANIC FORMATION.

STRUCTURE

THE PREDOMINATE STRUCTURAL FEATURES ON THE PROPERTY IS THE BEDDING OF THE FORMATION AND TWO LARGE NORTHWESTERY TRENDING FAULTS.

THE VOLCANIC AGGLOMERATE STRIKES GENERALLY N60°W TO N65°W. LOCALLY CLOSER TO THE FAULTS THE BEDDING TRENDS MORE NORTHERLY TO ABOUT N35°W, INDICATING DRAG ALONG THE FAULT. THE DIP OF THE BEDDING VARIES FROM VERTICAL TO 65° TO THE SOUTHWEST (FIGURE 2).

THE TWO MAJOR FAULTS GENERALLY COINCIDE WITH THE BARITE VEINS "A" AND "B" (FIGURE 2). THE FAULTS STRIKE N45°W AND ARE VERTICAL. THE FAULT ZONES ARE 40'-50' THICK AND LOCALLY EXHIBIT SLICKENSIDES.

MINERALIZATION

AS PREVIOUSLY STATED THE BARITE VEIN OCCUR WITHIN THE PREDOMINATE NORTHWEST TRENING FAULTS.

~~THE WIDTH OF THE VEINS VARY FROM 15 INCHES~~

~~TO 6 FEET.~~ THE STRIKE OF THE OUTCROPS OF BOTH MAJOR VEINS ARE REMARKABLY PERSISTENT, AND EXCEPT FOR OCCASIONAL PATCHES OF OVERBURDEN, EACH CAN BE TRACED FOR A LENGTH OF ABOUT 5000 FEET (FIGURE 2). THE VEINS LOCALLY CONTAIN VARIOUS-SIZED FRAGMENTS OF WALL ROCK, BUT ARE GENERALLY VEINS OF PURE BARITE. THE WIDTH OF THE VEINS VARY FROM 15 INCHES TO 6 FEET. AT THE LOCATION OF THE NARROW VEINS THERE ARE USUALLY SEVERAL WITH A MINERALIZED ZONE OF ABOUT 6 FEET WIDE.

THE VEIN, EXPOSED ON THE NORTHWEST SIDE OF THE SHAFT DIPS 85° NORTHEAST. AT THE SURFACE VEINS 14 AND 30 INCHES WIDE ARE SEPARATED BY 18 INCHES OF WASTE, BUT JOIN TOGETHER ABOUT 30 FEET DOWN THE SHAFT TO FORM A 4 FOOT VEIN. OLD REPORTS INDICATE AT 50 FEET DOWN THE SHAFT THE VEIN BEGINS TO SHOW FLOURITE. OLD ASSAYS ALSO INDICATE $\frac{1}{2}$ 32.00 IN GOLD (1958)

IN A QUARTZ VEIN 8" TO 18" WIDE IN THE FOOTWALL OF THE VEIN AT THE BOTTOM OF THE SHAFT. THE OLD ASSAYS ALSO INDICATE THE BARITE IN THE TOP 50 FEET RUNS 97% BaSO₄ AND A 4.25 SPECIFIC GRAVITY.

APPROXIMATELY 500 FEET NORTHWEST OF THE SHAFT, SAMPLE #3, (FIGURE 2) THE VEIN IS FOUR FEET WIDE AND ASSAYS 69.5% BaSO₄ AND A 4.2 SPECIFIC GRAVITY.

SAMPLE NUMBER 4 IS ABOUT 2000 NORTHWEST OF THE SHAFT. IT WAS TAKEN ACROSS THE FACE OF AN OLD CUT. AT THE SURFACE THE VEIN IS ABOUT 2 FEET WIDE. SIX FEET DEEP THE VEIN WIDENS TO ABOUT SIX FEET WIDE. THE SAMPLE ASSAYS 77% BaSO₄ AND A 4.1 SPECIFIC GRAVITY.

SAMPLE NUMBER 5 WAS TAKEN ON THE NORTHWEST END OF THE "B" VEIN. THE SAMPLE WAS TAKEN FROM A CUT WHICH WAS ABOUT 20 FEET LONG. THE CUT CROSSES SEVERAL IRREGULAR VEINS 12-18 WIDE AND A 6 FOOT VEIN OF BARITE. THE BARITE OCCURS IN LARGE PLATES. IT WAS TEST BY THE METHOD THIS SHOULD HAVE BEEN THE BEST SAMPLE

HOWEVER, IT ASSAYS 77% BaSO₄ AND A 3.9 SPECIFIC GRAVITY. MORE SAMPLES WILL BE ASSAYED FROM THIS LOCATION.

SAMPLE NUMBER 1 WAS TAKEN FROM THE SOUTHWEST END OF THE "B" VEIN. IT WAS TAKEN FROM AN OLD LOCATION CUT ACROSS THE VEIN ABOUT 2 FEET WIDE. THE SAMPLE ASSAYS 78.8% BaSO₄ AND A 4.5 SPECIFIC GRAVITY.

APPENDIX 1 CONTAINS THE CHEMICAL ANALYSIS OF THE SAMPLES. THE FIRST SET OF SPECIFIC GRAVITY RESULTS APPEAR LOW IN REACTION TO THE PERCENT BaSO₄. A SECOND TEST ON THE SPECIFIC GRAVITY

(a)

IMPROVED THE RESULTS. THERE DOES STILL APPEAR TO BE SOME DISCREPANCIES WHEN THE % BaSO₄ AND THE SPECIFIC GRAVITIES OF THE SAMPLES COMPARED. MORE SAMPLES WILL BE ~~TAKE~~TAKEN AND SENT TO ~~ANOTHER~~ ANOTHER LAB.

ORE RESERVES

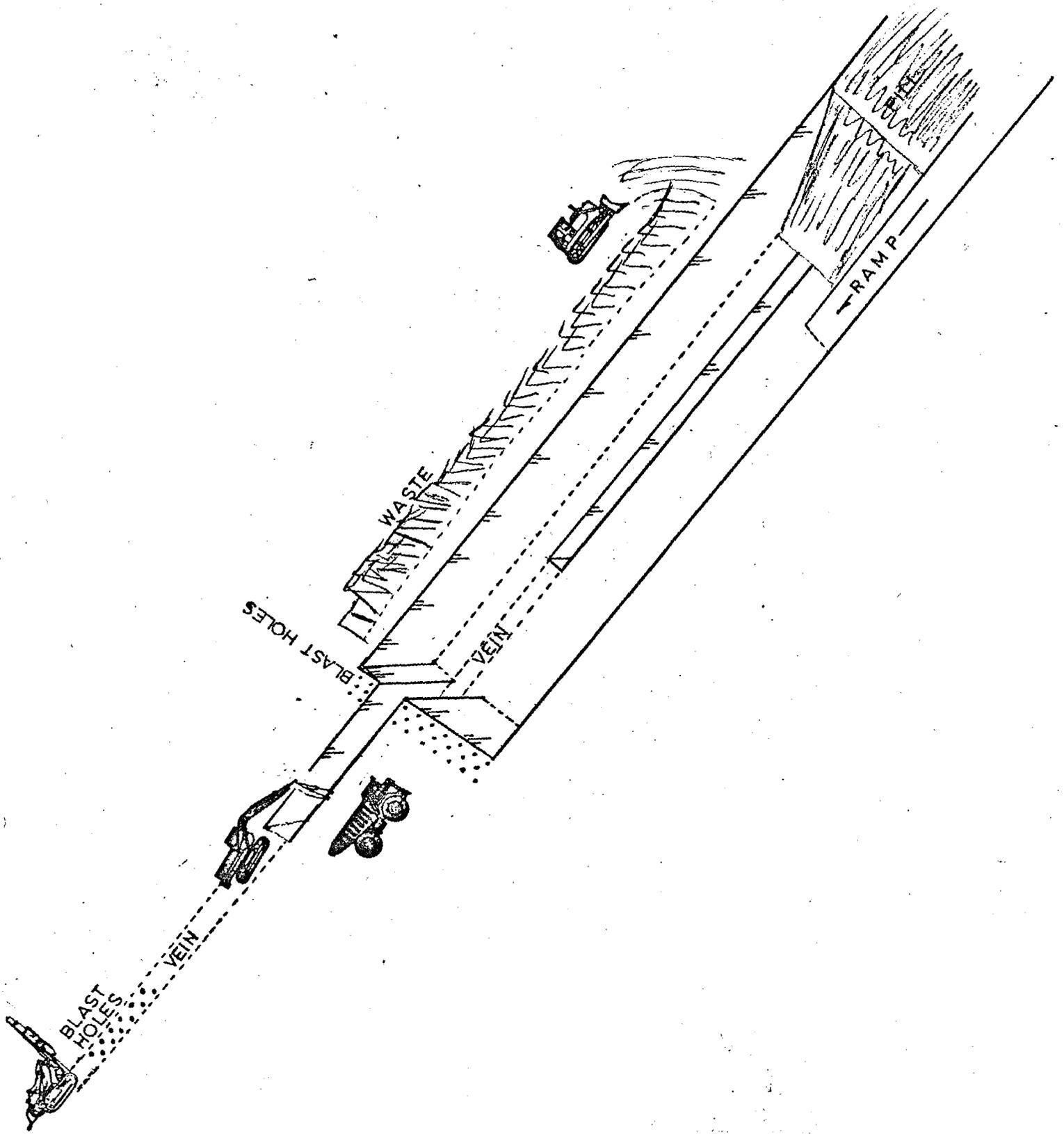
ORE RESERVES WERE CALCULATED FOR THE TWO MAJOR VEINS. A SPECIFIC GRAVITY OF 4.2 WAS USED FOR THE ORE WHICH CALCULATED TO A DENSITY OF 7.6 t^3/TON . TO BE CONSERVATIVE A STRIKE LENGTH OF THE "A" VEIN OF 4000 FEET WAS USED, AND A STRIKE LENGTH OF 3600 FEET WAS USED FOR THE "B" VEIN. AN AVERAGE WIDTH OF THE VEINS IS ESTIMATED TO BE 3 FEET. THE VEINS PROBABLY EXTEND SEVERAL HUNDRED FEET DEEP, HOWEVER OLD REPORTS INDICATE INCREASING FLUORITE BELOW 50 FEET. ALSO 50 FEET IS ABOUT THE LIMIT OF OPEN TRENCHING.

ASSUMING A TOTAL STRIKE LENGTH OF 7600 FEET, A WIDTH OF 3 FEET, AND A DEPTH OF 50 FEET THERE IS 1,140,000 CUBIC FEET OF BARITE OR 150,000 TONS BARITE.

MINE FEASIBILITY.

* MINE DEVELOPMENT PROGRAM (- OUT OF SEQUENCE)
MINE METHOD — — — PAGE 66

AN OPEN TRENCH MINING METHOD IS ENVISIONED TO MINE THE BARITE VEINS (FIGURE 3). A LARGE TRACK TYPE EXCAVATOR WILL MINE DOWN THE LENGTH OF THE VEIN FOR THE FIRST MINING PHASE. THE SECOND MINING PHASE WILL BE TO OPEN THE TRENCH SO THE MINING



MINE DEVELOPMENT PROGRAM (INSERT ON PAGE 6)

BEFORE MINING ACTIVITIES COMMENCE IT WILL BE NECESSARY TO CONFIRM THE ESTIMATED TONNAGE AND GRADE OF THE ORE; OR AT LEAST ENOUGH TO RECOVER THE CAPITAL EXPENCE REQUIRE TO PUT THE PROPERTY INTO PRODUCTION. FIFTEEN DRILL HOLES WILL BE DRILL APPROXIMATELY EVERY HUNDRED FEET ALONG THE ^{VEIN} NORTHWEST OF THE SHAFT. APPENDIX II DETAILS THE PROGRAM, BUT BRIEFLY IT WILL REQUIRE ABOUT TWO WEEKS AND \$12,000 TO COMPLETE.

EQUIPMENT CAN GET DOWN ON THE VEIN AGAIN. THE THIRD MINING PHASE WILL BE TO MINE THE BARITE VEIN FROM A LOWER DEPTH. AN EXCAVATOR CAN MINE EFFECTIVELY TO A DEPTH OF TWENTY FIVE FEET. THE COMBINATION THREE PHASE MINE WILL PRODUCE BARITE ORE TO A DEPTH OF FIFTY FEET. IF SUFFICIENT QUANTITY AN GRADE OF ORE IS ENCOUNTERED AT ~~50~~ FIFTY FEET IT MAY BE ECONOMICALLY FEASIBLE TO GO DEEPER. FOR THIS MINE FEASIBILITY STUDY HOWEVER, ONLY MINING TO FIFTY FEET IS CONSIDERED. THE FINAL PHASE OF MINING IS FOR A DOZER TO PUSH THE WASTE BACK INTO THE TRENCH TO RECLAIM THE LAND.

APPENDIX III DETAILS THE MINING PARAMETERS. TO BRIEFLY SUMMARIZE THE EXCAVATOR WILL MINE ORE ABOUT 3 HOURS PER DAY AND WASTE FOR FOUR HOURS PER DAY. IT WILL PRODUCE ABOUT 600 TONS OF WASTE PER DAY AND 200 TONS OF ORE PER DAY. THE MINE WILL PRODUCE 4,400 TONS OF BARITE ORE PER MONTH. THE LIFE OF THE MINE IS 36 MONTHS.

MILL PROCESS

A GRAVITY CONCENTRATION WILL BE UTILIZED TO UPGRADE THE BARITE ORE. THE ORE WILL BE HAULED FROM THE MINE ~~AND~~ TO THE MILL AT THE MINE SITE AND DUMPED INTO A COARSE ORE STORAGE BIN. THE COARSE ORE WILL GO THROUGH A PRIMARY JAW CRUSHER THEN THROUGH A SECONDARY CONE CRUSHER. THE ORE IS THEN SIZED WITH THE -3/8" TO 10 MESH ORE GOING TO ONE DEVER DUPLEX MINERAL JIG,

AND THE -10 MESH ORE GOING TO ANOTHER
DENVER DUPLEX MINERAL J.B. APPENDIX III
PROVIDES A MORE DETAILED EXPLANATION
OF THE GRAVITY CONCENTRATION PROCESS.

ECONOMICS

APPENDIX V PROVIDES A DETAILED
BREAKDOWN OF THE MONTHLY COSTS. THE
MINE EQUIPMENT IS BASED ON CURRENT
COSTS FROM LOCAL DEALERS, HOWEVER
IT MAY BE POSSIBLE TO LEASE ALL THE
EQUIPMENT AS A PACKAGE FROM A DEPRESSED
CONTRACTOR AT CONSIDERABLE SAVINGS. ALSO
ONCE IN PRODUCTION IT MAY BE POSSIBLE
TO GRADUALLY PURCHASE USED EQUIPMENT.
ALL THE COST ARE BASED ON LIBERAL
ESTIMATES OF WHAT IS ACTUALLY REQUIRED
TO START PRODUCING BRARITE ORE. IT IS
MORE THAN CONCEIVABLE THE COSTS CAN
BE REDUCED, BUT FOR PLANNING THESE LIBERAL
COSTS WILL BE USED.

THE TOTAL MONTHLY COSTS ARE
\$214,870 TO PRODUCE AND SHIP 4,400 TONS
OF ORE. THAT AMOUNTS TO \$48.83 PER TON.
APPENDIX VI IS A LETTER FROM GEO DRILLING
EVIDS INDICATING THEY WILL PURCHASE THE ORE
AT THE OILBAR MILL FOR \$5.00 PER TON

APPENDIX VII IS A MONTHLY CASH FLOW

ANALYSIS WITH WHICH INCLUDES DEPLETION, DEPRECIATION,

INCOME TAX AND ARIZONA STATE ROYALTIES.

THE NET MONTHLY FLOW IS \$26,903. THE NET
PROPERTY VALUE OF THE ~~PROPERTY~~ IS \$968,580.

CAPITAL INVESTMENT

IT IS ESTIMATED AN INITIAL CAPITAL INVESTMENT OF \$200,000 IS REQUIRED TO PLACE THE PROPERTY INTO PRODUCTION. THE FIRST \$100,000 WOULD BE USED TO PURCHASE AND ERECT THE GRAVITY CONCENTRATOR. THE REMAINING \$100,000 WOULD BE REQUIRED TO ~~MEET~~ ^{MONTHLY} THE INITIAL PAYMENTS ON THE MINE EQUIPMENT, SALARIES, CONSUMABLES, AND GENERAL ADMINISTRATION COSTS.

APPROXIMATELY ONE MONTH WILL BE REQUIRED TO PLACE THE PROPERTY INTO PRODUCTION AND DEVELOP A CASH FLOW.

APPENDIX 1

ASSAY REPORTS

KLONDYKE BARITE PROPERTY

CASSANDRA RESOURCES INC.

COPPER STATE ANALYTICAL LAB., INC.

DNYANENDRA A. SHAH
ARIZONA REG. NO. 8888

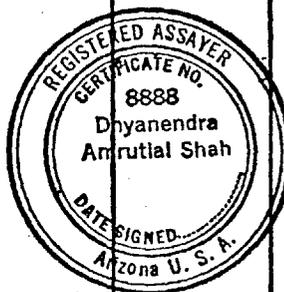
REGISTERED ASSAYER
P. O. BOX 7517
TUCSON, ARIZONA 85725

710 E. EVANS BLVD
PHONE 602-884-5811
884-5812

James G. Jones
720 N. Mann Ave.
Tucson, Az. 85710

JOB # 000876
RECEIVED 2/8/82
REPORTED 2/18/82
INVOICE # C 1112

SAMPLE NUMBER	Pb %	CaO%	SiO ₂ %	F %	Fe ₂ O ₃ %	
Klondyke						
1	0.10	1.58	2.8	1.80	2.48	
2	0.20	2.29	3.2	3.24	1.24	
3	0.14	2.48	5.2	1.38	1.44	
4	0.12	5.3	3.6	3.78	1.20	
5	0.12	2.04	2.4	1.24	1.18	
Sample #	Spec. Grav.	Solu Salts	BaSo ₄	SrSo ₄		
Klondyke						
1	4.2	9.3	78.8	1.72		
2	4.1	16.3	68.4	1.22		
3	3.9	12.1	69.5	2.52		
4	3.4	18.3	77.0	1.12		
5	3.1	5.2	71.1	1.15		



1 ppm = 0.0001% 1 troy oz./ton = 34.286 ppm 1 ppm = 0.0292 troy oz./ton
* Gold and Silver reported in troy oz. per 2,000 lb. ton.

COPPER STATE ANALYTICAL LAB., INC.

DNYANENDRA A. SHAH
ARIZONA REG. NO. 8888

REGISTERED ASSAYER
P. O. BOX 7517
TUCSON, ARIZONA 85725

710 E. EVANS BLVD
PHONE 602-884-5811
884-5812

James G. Jones
720 N. Mann Ave.
Tucson, Az. 85710

JOB # 000876 Repeat
RECEIVED 2/8/82
REPORTED 2.19.82
INVOICE # _____

SAMPLE NUMBER	Spec. Grav.					
Klondyke						
1	4.5					
2	4.2					
3	4.2					
4	4.1					
5	3.9					


REGISTERED ASSAYER
CERTIFICATE NO. 8888
Dnyanendra
Shah
Arizona U.S.A.
DATE SIGNED
2-19-82

1 ppm = 0.0001% 1 troy oz./ton = 34.286 ppm 1 ppm = 0.0292 troy oz./ton
* Gold and Silver reported in troy oz. per 2,000 lb. ton.

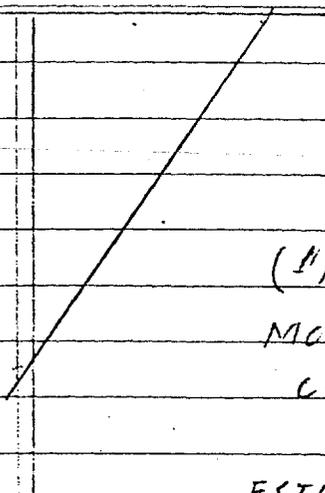
APPENDIX II

DEVELOPMENT PROGRAM

KLONDYKE BARITE PROPERTY

CASSANDRA RESOURCES INC.

DEVELOPMENT PROGRAM



15 DRILL HOLES
50 FEET DEEP HOLES

\$10/FOOT DRILL COST
 $(\$10/\text{FT} \times 50/\text{HOLE})(15 \text{ HOLES}) = \$7,500$
 MOBILIZATION OF EQUIP. \$1,000
 COST OF DRILLING \$8,500

ESTIMATE 2 WEEKS DRILL TIME

GEOLOGIST \$200/DAY X 10 DAYS \$2,000
 EXPENCES \$70/DAY X 10 DAYS 700
 TOTAL \$2,700

ASSAYING 15 SAMPLES

% D ₂ SO ₄	\$13.00
SPECIFIC GRAVITY	4.00
SOLUBLE SALTS	<u>5.00</u>
	\$22.00 X 15 = <u>\$330.00</u>

COST OF DEVELOPMENT PROGRAM

DRILLING	\$8,500
GEOLOGIST	2,700
ASSAYING	<u>330</u>
TOTAL	\$11,530 ROUND OFF TO <u>\$12,000</u>

APPENDIX III

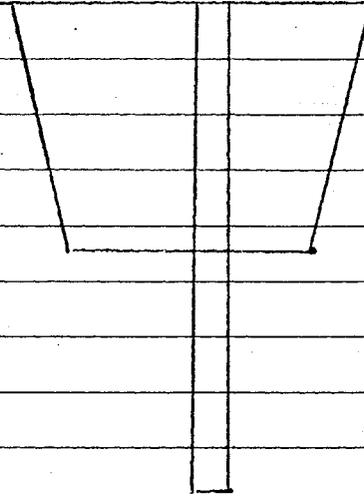
MINING PARAMETERS

KLONDYKE BARIITE PROPERTY

CASSANDRA RESOURCES INC

MINING PARAMETERS

CROSS SECTION OF VIEN



1420
1

150 FT³ ORE
706.25 FT³ WASTE
PER LINEAR FOOT OF
STRIKE LENGTH

MINING RATE

WORKING DAYS PER WEEK = 5	TOTAL TONS ORE RESERVES 150,000
WEEKS PER YEAR = 52	TONS ORE PER YEAR 51,000
HOLIDAYS PER YEAR 5	TONS ORE PER MONTH 4,400
WORKING DAYS PER YEAR 255	TONS ORE PER DAY 200

SPECIFIC GRAVITY ORE = 4.2 = 7.6 FT³/TON = 0.281 yd³/TON = 3.55 TON/yd³
 SPECIFIC GRAVITY WASTE = 2.65 = 12 FT³/TON = 0.444 yd³/TON = 2.55 TON/yd³

OVERALL MINING PLAN @ 200 TON PER DAY MILL FEED ORE

$$\frac{150 \text{ FT}^3 \text{ ORE/FOOT}}{7.6 \text{ FT}^3/\text{TON}} = 19.7 \text{ TONS ORE/FOOT}$$

$$\frac{200 \text{ TON/DAY MILL FEED}}{19.7 \text{ TON ORE/FOOT}} = 10.15 \text{ FEET/DAY, REQUIRED ADVANCE}$$

WASTE

$$(10.15 \text{ FT/DAY ADVANCE})(706.25 \text{ FT}^3/\text{FT WASTE}) = 7166 \text{ FT}^3 \text{ WASTE/DAY}$$

$$\frac{7166 \text{ FT}^3 \text{ WASTE/DAY}}{12 \text{ FT}^3/\text{TON WASTE}} = 597 \text{ TONS WASTE/DAY}$$

PRODUCTION ESTIMATES

EXCAVATOR PRODUCTION

BUCKET SIZE	36"
BUCKET CAPACITY	1.25 yd ³
FILL FACTOR	50%
PAY LOAD	.625 yd ³
CYCLE TIME	20 SEC.
HOURLY PRODUCTION	

$$\frac{(.625 \text{ yd}^3/\text{CYCLE})(60 \text{ SEC/HR.})(60 \text{ MIN/HR.})}{20 \text{ SEC./CYCLE}} = 112.5 \text{ yd}^3/\text{HR.}$$

$$(112.5 \text{ yd}^3/\text{HR.})(2.25 \text{ TONS/yd}^3) = 253.12 \text{ TONS/HR.}$$

OPERATING PRODUCTION WASTE

$$(80\% \text{ EFFICIENCY})(253.15 \text{ TONS/HR.}) = 202.52 \text{ TONS/OP. HR.}$$

$$\frac{600 \text{ TONS WASTE/DAY}}{202.52 \text{ TONS/OP. HR.}} = 2.96 \text{ HRS. TO MINE WASTE}$$

OPERATING PRODUCTION ORE

6.5 OP HRS. / SHIFT

- 2.96 OP HRS. / SHIFT TO MINE WASTE

3.54 OP HRS. / SHIFT TO MINE ORE

$$\frac{200 \text{ TONS ORE REQUIRED/DAY}}{3.54 \text{ OP HRS. TO MINE ORE}} = 56.5 \text{ TONS ORE/OP. HR.}$$

APPENDIX ~~III~~ IV

MILL FLOW SHEET

KLONDYKE BARITE PROPERTY

CASSANDRA RESOURCES INC

APPENDIX ~~IV~~ V

MONTHLY COSTS

KLONDYKE BARITE PROPERTY

CASSANDRA RESOURCES INC

MONTHLY PRODUCTION COSTS

MINE EQUIPMENT

TRACK DOZER	\$12,000
TRACK EXCAVATOR	6,000
TRACK DRILL & COMPRESSOR	3,200
MINE TRUCKS (2 @ \$4,000/ML.)	8,000
TIRE LOADER	7,000
TOTAL	\$36,200

MILL EQUIPMENT

\$150,000 CAPITAL EQUIP. REQUIRED

INCLUDES \$150,000 FOR A RAILHEAD

$$\frac{\$150,000}{150,000 \text{ TONS}} = \$1/\text{TON} \times 4400 \text{ TONS/MO}$$

\$4,400

LABOR

MINE	PER HR	+15%	
1 ENGINEER	\$22.00/MO	\$25.30	\$2530.00
1 MECHANIC	9.50	10.92	1922.80
1 DOZER OPERATOR	6.50	7.47	1315.60
1 EXCAVATOR OPERATOR	6.50	7.47	1315.60
1 DRILLER	6.50	7.47	1315.60
1 DRILL HELPER	4.50	5.17	910.80
2 TRUCK DRIVERS	5.75	6.61	2327.60
1 LOADER OPERATOR	6.50	7.47	1315.60
2 POWDER MEN	\$5.00	\$5.75	\$2024.00

MILL

3 OPERATOR/CLEAN UP \$6.00 \$6.90 \$13643.20

TOTAL LABOR

\$18,620.80

MINE CONSUMABLES

FUEL	\$ 9,000
EXPLOSIVES	5,000
TIRE	1,000
DRILL BITS, CUTTING EDGES	500
TOTAL	\$ 15,500

GENERAL ADMINISTRATION

MANAGER	\$ 4,000
ASSISTANT MANAGER	4,000
SEC./BOOKKEEPER	1,000
OFFICE RENT	800
OFFICE COSTS	1,700
TOTAL	\$ 11,500

MISCELLANEOUS

FIELD OFFICE/HOUSE TRAILER	\$ 550
FIELD VEHICLE, W/GAS	500
TOTAL	\$ 1,050

TRUCK TRANSPORTATION TO RAILHEAD

CONTRACT @ \$5.00/TON X 4,400 TON/MO \$ 22,000

RAIL TRANSPORTATION TO OLANCHA, CA

SOUTHERN PACIFIC RR @ \$22/TON X 4,400 TON/MO \$ 96,800

ROYALTY

\$2/TON X 4,400 TONS/MO. \$ 8,800

TOTAL MONTHLY PRODUCTION COSTS \$ 214,870.80

APPENDIX VI

LETTER OF INTENT TO PURCHASE

KLONDIKE BARITE PROPERTY

CASSANDRA RESOURCES INC.



Drilling Fluids

January 29, 1982

Mr. Jim Jones
720 North Mann Avenue
Tucson, Arizona 85710

Dear Jim:

Thank you for calling GEO about your barite property. I have checked our records and found that we have not looked at that property. If the property develops into something more than the very narrow veins you described, we would be interested in looking at it.

We are interested in buying barite that is 4.20 specific gravity or higher. We will buy all that you can produce and ship. The current price is \$57.00 per ton of dry barite delivered to our mill in Olancha, California. While we do not wish to purchase anything below 4.20 S.G., we will pay 50¢ a point for material delivered over 4.20 S.G. For example, ore averaging 4.27 S.G. will be paid for at the rate of \$60.50 per short dry ton.

Payment will be based on dry tons and on assay results (on the crushed and mixed ore) at the mill in Olancha.

We will require notification as to the size and expected time of arrival of any shipments, prior to actual shipment.

Thanks again. If we can be of any further assistance, please let us know.

Sincerely,

A handwritten signature in dark ink, appearing to read "William H. Listerud". The signature is fluid and cursive, with a large, stylized "L" and "D" at the end.

William H. Listerud
Senior Geologist

WHL/tb

APPENDIX VII

CASH FLOW ANALYSIS

KLONDYKE BARITE PROPERTY

CASSANDRA RESOURCES INC.

MONTHLY CASH FLOW

REVENUE	\$ 250,800
OPERATING COST	- 214,870
OPERATING INCOME	35,930
DEPRECIATION	- 4,400
NET BEFORE DEPLETION	31,530
DEPLETION ALLOWANCE	- 15,765
TAXABLE INCOME	15,765
INCOME TAX	- 8,671
INCOME FOR STATE ROYALTY	7,094
ARIZON STATE ROYALTY	- 354

NET INCOME	\$ 6,740
ADD DEPRECIATION	4,400
ADD DEPLETION	15,765
MONTHLY CASH FLOW	\$ 26,905

APPENDIX VIII

HISTORICAL INFORMATION ON PROPERTY

KLONDYKE BARITE PROPERTY

CASSANDRA RESOURCES INC.

DEPARTMENT OF MINERAL RESOURCES

STATE OF ARIZONA

FIELD ENGINEERS REPORT

mine Marcotte Barite

Date November 27, 1957

District Araviapa District near Klondyke

Engineer Lewis A. Smith

Subject Reported by Mr. Dale Hutchinson

Location: Sec. 13, 14, 24, T8S, R21 E

Owner A. J. Marcotte, Klondyke, Graham County

Property: 12 claims (2 groups of 5 each and 2 connecting claims)

Work: 430' shaft, (6'x11') on vein and assessment cuts and pits.

Present Status: W. Dale Hutchinson, 4691 North Central Ave., Phoenix, Arizona, is negotiating an option for a California firm.

Geology: The deposit consists of two barite veins in granite. The veins are parallel and are called No. 1 & No. 2. The No.1 vein is 6' wide and 4500 feet long. Its width is consistent to the bottom of the shaft. Hutchinson, if he obtains the property, plans to drill at least two core-drill holes along the strike of the vein so as to prove tonnage. He stated that he was sure of at least 500,000 tons, but would have to prove it. The barite runs between 4.1 and 4.45 gravity and 96.3% of BaSO_4 . The vein strike N 40 - 55°W and dip from vertical to NE, steeply. The No. 2 vein appears to be similar to No. 1, but has been little developed.

Access: 6 miles of country road and 16 miles of county graded road to railroad, both now being in good condition.

Market: The market is assured.

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

ine Marcotte Gypsum Claims

Date November 27, 1957

District Near Klondyke Arizona Graham County

Engineer Lewis A. Smith

Subject: Reported by R. Dale Huchinson

Location: Sec. 13, 14, 24 T8S R21E

Owner: A. J. Marcotte

2 groups of 5 claims and two connecting ones, a total of 12 claims acquired by Marcotte in December 1956.

Two parallel veins striking N 45°W and dip steeply to the northeast, but many vary to vertical. The main, or No.2 vein is of most importance and has been developed over the length of 3 claims (4500 feet). The lesser, or parallel branching vein has been located but little prospected. The main vein has a 6x11 foot shaft which is down over 430'. The width of the vein, is 6' and it is consistant in width to the bottom of the shaft. The indicated grade, as established by shaft samples, is 4.3-4.45 Gravity and 95% BaSO₄. It carries a little silver. Huchinson's people have offered a royalty proposition for the property of 35-40¢ per ton and he states that two holes placed along the ~~stab~~^{strike} for 2000 feet would show at least 1,000,000 tons if it proves out as far as grade and consistancy ore ~~conceived~~ is concerned. The firm has a big market for the material if proper terms are reached.

DEPARTMENT OF MINERAL RESOURCES

STATE OF ARIZONA

FIELD ENGINEERS REPORT

Marcotte Barite

Date Mar. 5, 1958

District Clark Mining District - Graham Co.

Engineer Axel L. Johnson

Subject: Field Engineers Report -- Personal Visit and Information from A.J. Marcotte

Location Sec. 13 -- T 8 S -- R 21 E Starting from Klondyke, drive 8.0 miles to the junction of Bonita-Willcox and Safford Roads. Continue on Bonita-Willcox Road for an additional 6.0 miles, turn left, (NE) and drive up Sheep Wash for 4.0 miles to the property.

Alternate route -- starting from Klondyke, drive 8.0 miles to the junction of the Bonita-Willcox and Safford Roads, turn left and drive on Safford Road for a distance of 10.0 miles, turn right (SE) and drive an additional 10.0 miles to the property. Roads are unimproved dirt roads and bad in places.

Number of Claims 12 claims on State land (Type A)

Owners A.J. Marcotte, Box 52, Klondyke H.R. Bogan, 326 West Mitchell Drive
Scottsdale, Arizona

Option to Purchase A.J. Marcotte and Harold Bogan to Dale Hutchison
Purchase price \$75,000.00 to be paid out of a royalty of 55¢ per ton. Option made
November 30, 1957, ends March 22, 1958.

Principal Minerals Barite Ore

Present Mining Activities None

Geology The country rock is a volcanic conglomerate, which contains large fragments of rock which appear to be Andesite. Three veins of Barite outcropping at the surface was noticed on the property. These veins were vertical and from 2½ to 4 feet in width. The Barite ore appeared to be of medium grade quality.

Ore in Sight and Probable Ore in sight is negligible due to lack of development. Probable ore appears to be considerable. If may be as much as 75,000 to 100,000 to each 100 feet of depth.

Milling and Mining Facilities No mill on the property. Owners expect to make arrangements with Athletic Mining Company for the milling of the Barite at the Klondyke Mill at Klondyke. This mill is now idle. Distance of haul mine to mill is about 20.0 miles. Concentrates would be hauled to Cork Siding for shipment. Distance of haul mill to shipping point about 36.0 miles. Material would be shipped to Barite producers principally in Texas.

Past History and Production A 300 ft. shaft was sunk many years ago, probably in search of other minerals. No ore shipments are indicated.

Old Mine Workings 1 - 300 ft. vertical shaft, open but appears to be in bad shape.

Low Mine Workings Limited to location work and a few small open cuts.

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

one Marcotte Barite (continued)

Date Mar. 5, 1958

District Clark Mining District - Graham Co.

Engineer Alex L. Johnson

Subject: Field Engineers Report -- Personal Visit and Information from A.J. Marcotte

Proposed Plans If the present option by Dale Hutchison is not exercised, the owner plans on selling or leasing the property to some other company for the milling of the ore at the Klondyke Mill and shipping of the concentrates as described above.

Special Difficulties Underground operation will be required with relatively high mining costs. Long haul of the ore to the mill (and concentrates to loading ramp) plus high freight rates to Texas and California Barite users.

Recommendations

- (1.) Exploration Recommend doing considerable surface exploration work by open cutting, trenching, and sampling to determine average grade of the ore, and mill tests to determine milling technique and recovery. Also recommend some diamond drill holes be put down to intersect the veins in a number of places.
- (2) Development If the above exploration shows favorable results, recommend to repair and timber the present 300 ft. vertical shaft and drifting on the ore vein in order to develop the ore body.

MEMO

May 8, 1958

Marcotte Barite

Not for Publication

Inf. Coloman O'Shea

Ref. Report of 3/5/58

Owner A. J. Marcotte & H.R. Bogan

Lessees A California Company

Mr. O'Shea did not remember name.

Present Mining Activities Retimbering
the 300' vert. shaft. 8 men working.
Down 50' in the shaft now.

Additional Info.

✓ Leasing company has leased the
Athletic mill at Klondyke, to be used
for the milling of the barite.

Company has also leased the old
vacant S. P. depot at Ft. Thomas. This
is to be used for the drying and the
sacking of the barite (drying & sacking
plant).

✓ Bob Bush, Pima, Ariz. is reported
to be working for the Calif. Co.

Proposed Plans Haul the ore to Klondyke
for milling at the Athletic Mill.

Haul the concentrates to Ft. Thomas
for drying and sacking.

Ship the dried & sacked conc. to a
large Calif. oil company.

Remarks Visit will be made, letter with
report of same.

AXEL L. JOHNSON

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

ne Marcotte Barite

Date June 11, 1958

District Clark Mining District, Graham County

Engineer Axel L. Johnson

Subject: Field Engineer's Report. Information from A.J. Marcotte and Bob Bush.

References: Report of March 5, 1958.

Location: Sec. 13 -- T 8 S -- R 21 E. For directions see report of March 5, 1958.

No. of Claims: 12 claims on State land. (type "a")

Owners: A. J. Marcotte, Box 52, Klondyke, Arizona, and H. R. Bogan, 326 W. Mitchell Drive, Scottsdale, Arizona.

Purchasers: Cummins-Roberts Company (part of Roberts & Associates), L. E. Broadhurst, Pres., 2037 East Rancho Drive, Phoenix, Arizona, Bob Bush, Field Representative, Thatcher, Arizona.

Price of sale was reported by Mr. Marcotte to be \$120,000.00 payable out of royalties of 50¢ per gross ton of minerals produced.

Principal Minerals: Barite ore.

Present Mining Activity: None. Work was discontinued on June 4, 1958 after five weeks of operation.

Geology: See report of March 5, 1958.

Milling and Mining Facilities: No mill on the property. Purchasers are reported to have an option on the Klondyke mill to be used for milling of the barite ore. Purchasers also are reported as having taken out a lease on the old Fort Thomas Depot to be used for the drying and sacking of the barite.

Old Mine Workings: The vertical shaft, which was reported previously as being 300' in depth, was found to be only about 125' deep.

New Mining Operations: Purchasers started operations on the property about 6 weeks ago. Since that time they have constructed a new road into the property for a distance of about 4 miles and also graded about 10 miles of old road. They have also retimbered the vertical shaft (8' x 15', 3 compartment) down to the 110' level.

Note: The old vertical shaft was found to be about 125' in depth instead of the depth previously reported.

Present Mining Operations: None.

Proposed Plans: Mr. Marcotte did not have any definite information regarding further operating plans of the purchasing company.

Bob Bush, the field representative of the company, reports running out of barite at from 60-65', but that below this depth there is fluor spar and some fairly good values in gold and silver. He states that the company is at present making samples and tests to determine the value of these minerals.



STATE OF ARIZONA
DEPARTMENT OF MINERAL RESOURCES
MINERAL BUILDING, FAIRGROUNDS
PHOENIX, ARIZONA



June 16, 1958

Information came to the attention of this Department re:

MINE: Marcotte - Aravapai District
Operating Company: Roberts & Associates
Agent: Bob Bush, P. O. Box 404
Thatcher, Arizona

Cleaning shaft now down 137' and this is believed to be bottom
New work in progress repairing and cleaning 138' shaft
Assays on quartz footwall of the vein, which is about 8" to 18"
wide, indicate \$32.00 in gold and $\frac{1}{4}$ oz of silver per ton. The
vein, otherwise, consists of 3-5' of barite down to 50' of depth
where the barite is beginning to show fluorite. The fluorite
is increasing with depth. The barite in the top 50' runs 97%
BaSO₄ and 4.25 gravity.

This group, consisting of 12 contiguous unpatented claims (Marcotte Nos. 1 through 12), was located by A. J. Marcotte in December 1956. The claims are largely in sec. 13, T. 8 S., R. 21 E., with slight overlaps into secs. 11, 12 and 14, all on State land (fig. 5). The property is accessible from U.S. Highway No. 70 by the following log:

0.0 Turn southward onto Klondyke-Bonita Road at 6.4 miles west of Pima.

17.6 Turn left on Cedar Camp Road.

19.5 Pass through gate and turn left.

(For an alternate road, keep straight ahead at the gate. This road is about a mile shorter to Cedar Camp, but was badly eroded at the time of the examination in March 1957.)

25.8 Keep straight ahead.

26.0 Turn right (left fork goes to Graham prospect).

26.6 Arrive at claim No. 1.

Part of the property, at least, originally was located about 1900, and soon thereafter considerable work was done on what is now claim 1. J. D. Mathews, of Thatcher, Ariz., relocated the group about 1934 and sometime later allowed it to revert to public domain. It has been reported that a shaft, said to be 300 feet or more deep, was sunk in 1904 by Eastern capital and that some barite was shipped to an eastern market.

In this area several barite-bearing veins occur in relatively parallel fault fractures traversing a volcanic agglomerate formation. The claims are arranged in a pattern five tiers wide, covering two major and several minor veins. The courses of the outcrops of both major veins are remarkably persistent, and except for occasional patches of overburden, each can be traced for a length of four claims. Two northeasterly trending, postmineral faults have offset the veins. The relative movement of the central segment is reflected in alinement of the claims. The strike of the veins varies locally from approximately N. 45°-65° W.; they are either vertical or dip steeply to the northeast.

The barite veins usually contain various-sized fragments of wallrock. A small amount of green fluorspar and copper oxide staining was noted locally. Lead did not appear to be associated with the mineralization. Location cuts or shafts were relatively near the center of each claim.

Typical samples of each exposure examined were composited into one sample, which assayed the following percentages: 71.1 BaSO₄, 6.4 CaF₂, and 1.3 CaCO₃. As it had been reported that the deposit had a slight gold content, this combined sample was assayed; its content was 0.80 ounce silver and 0.08 ounce gold per ton.

The collar timbers of the old shaft on claim 1 have caved for about 30 feet down, exposing the shaft walls, but below this point timbering appears to be in fair condition. The vein, exposed on the northwest side of the shaft, dips 85° NE. At the surface veins 14 and 30 inches wide are separated by 18 inches of waste (fig. 6) but join together about 30 feet down the shaft to form a 4-foot vein. On the opposite side there is less barite, distributed in thinner zones across an 8-foot face.

50 years ago, was 420 feet deep with two drifts at unknown depths and that there is barite 4 to 6 feet wide all the way down the shaft. Across the gulch to the southeast, a shallow cut shows an 8-inch vein of relatively pure barite and numerous smaller stringers across a 4-foot zone. This zone continues to the southeast but was not investigated. Following the vein to the northwest, 200 feet from the shaft, two pits show a single vein 6 to 8 inches wide. The 10-foot-deep location cut on claim 2 exposed 4 feet of barite at the surface, increasing to 5 feet at the bottom. In a draw about 75 feet northwest of the No. 2 location cut, the vein is 20 inches wide. The work on claim 3 exposed 3 feet of solid barite with few rock inclusions; on claim 4 the vein is 2 feet wide.

The other major occurrence, extending the length of four claims, shows the vein trending through claims 6, 7, and 8 varying from 8 inches to 2 feet wide. The cut on claim 9, which is about 20 feet long, crosses several irregular veins 12 to 18 inches wide and a 6-foot mass of barite, which decreases to 3 feet at floor level. The barite in this cut occurs in large plates, with included rock fragments of several inches in size. Immediately ahead of the face, several additional 1-foot veins appear in surface outcrops. On the crest of the hill on claim 10 the cut shows a 3-foot vein, and near the top of a knoll at the southeast end of claim 11 a similar vein is exposed.

In the cut on claim 12, two narrow veins separated by a 15-inch rock band at the surface, join together near the bottom of the cut to form 14 inches of solid barite.

Claim 5 was not investigated, as it was located to consolidate contiguous claims.

The property is at an average altitude of 4,500 feet. The nearest rail point is Cork, a siding on the Southern Pacific Railway, one-half mile north of the junction of the Klondyke-Bonita Road with U.S. Highway No. 70.

Metallurgical Tests

A 175-pound grab sample was taken from an ore pile at the deep shaft for metallurgical testing. This sample assayed 69.6 percent BaSO_4 , 11.7 percent CaF_2 and 0.6 percent CaCO_3 . Tests employing the lignin-fluoride method of flotation yielded a fluorspar product assaying 99.7 percent CaF_2 . Fluorspar recovery was 50.3 percent. The lignin-fluoride method of flotation consisted of wet-grinding the ore to pass a 200-mesh sieve in the presence of soda ash, sodium fluoride, and lignin sulfonate at a pH of about 9. The fluorspar then was floated selectively with a minimum amount of oleic acid collector and cleaned four times with small quantities of lignin sulfonate to depress the barite activated during the rougher flotation step. Subsequent flotation of the barite from the fluorspar tailing at a pH of about 10, using oleic acid collector, also was successful. Seventy-five percent of the barite was recovered in a product that assayed 94.0 percent BaSO_4 and had a specific gravity of 4.40.

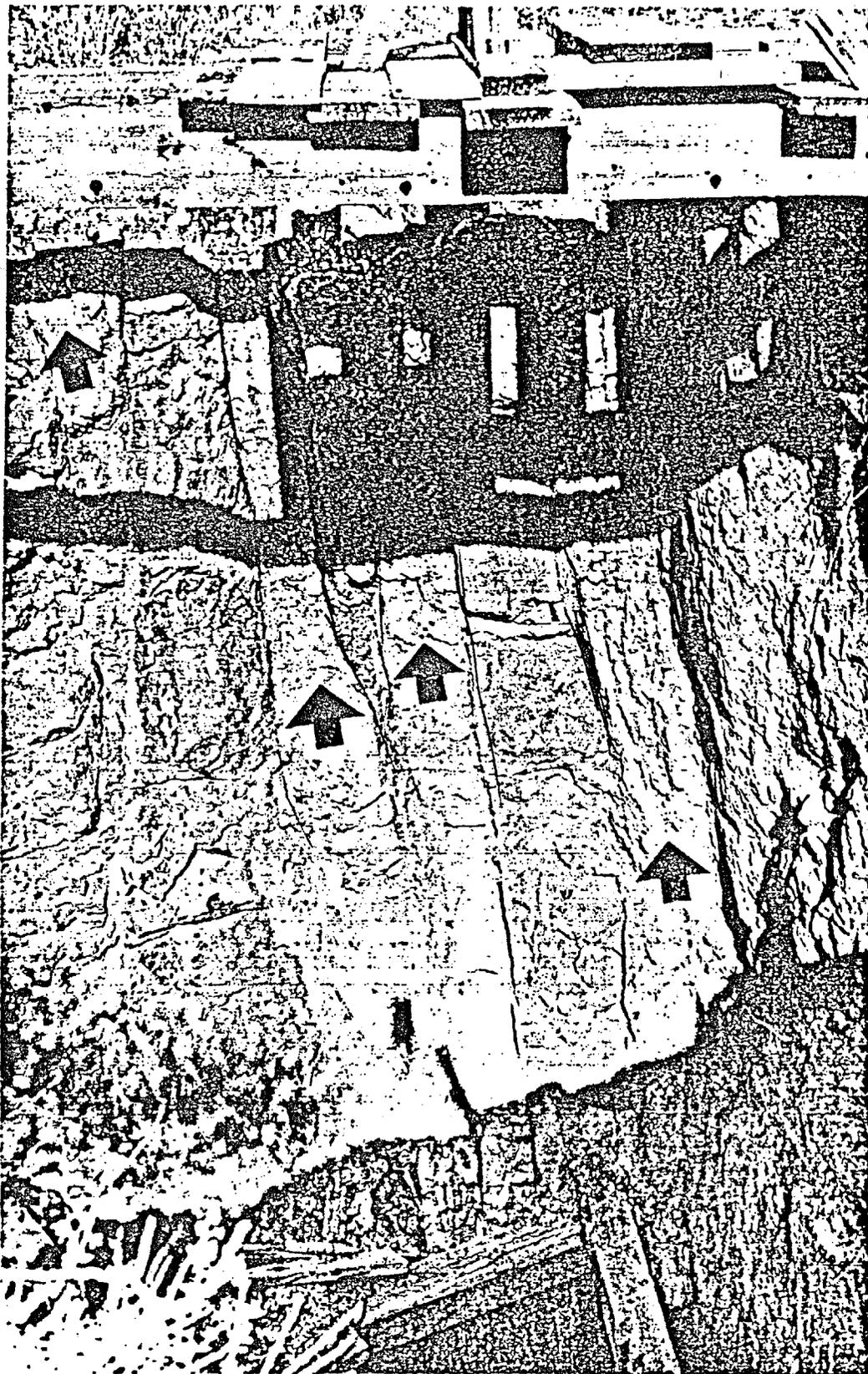


FIGURE 6. - Arrows Point to Barite Veins in Northwest Side of Marcotte Shaft.

551

P. 5651

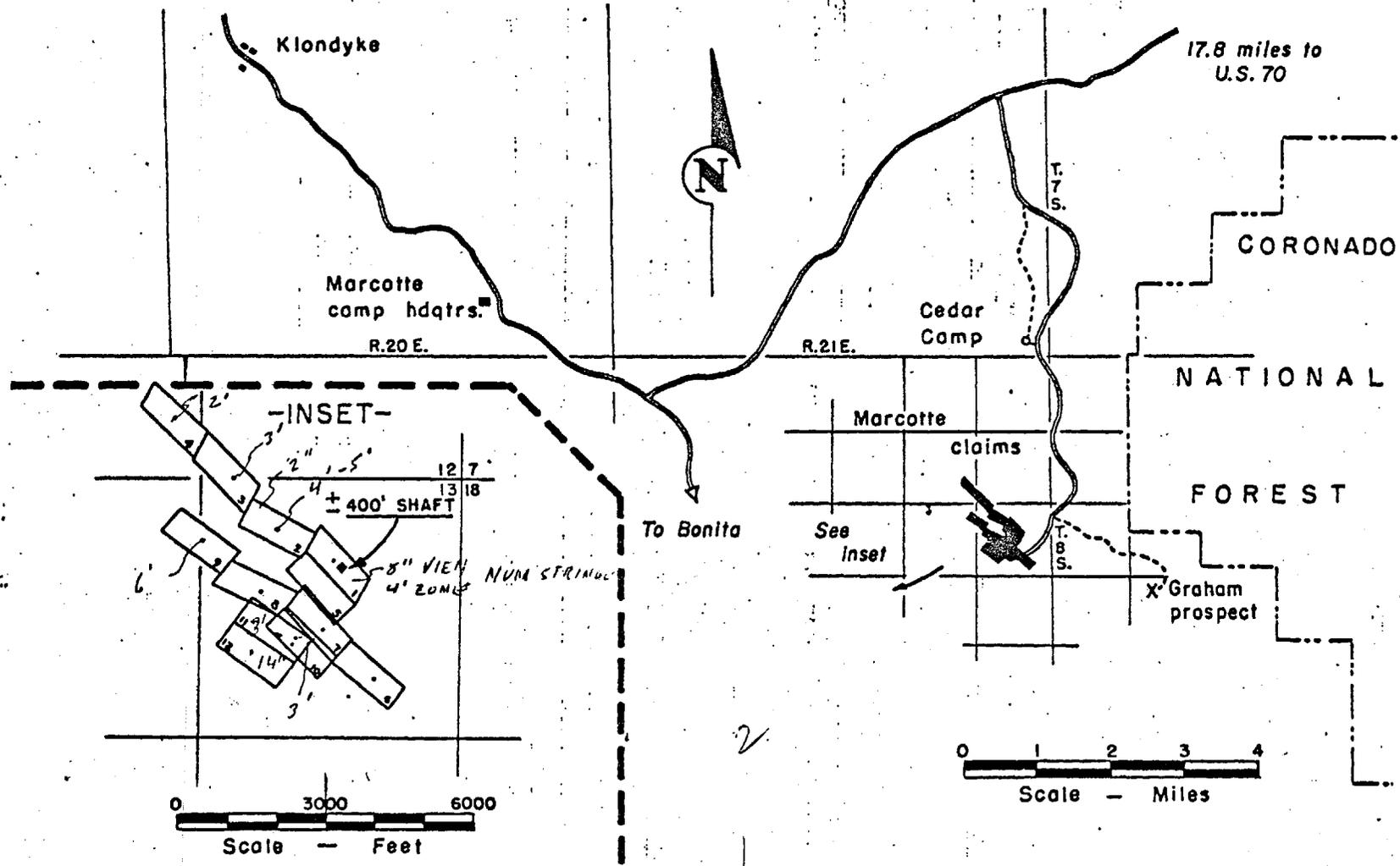


FIGURE 5. - Location and Claim Map, Marcotte Group.

Roland B. Mulchay
Consulting Geologist
2732 Wren Road
Salt Lake City, Utah 84117

March 17, 1982

Mr. V. F. Ostler
Rocky Mountain Refractories
2436 W. Andrew Ave.
Salt Lake City, Utah 84104

Dear Mr. Ostler:

Following a request by Ms. Teiko Yoshizawa by telephone, I discussed the Klondyke Barite Prospect with Mr. James Jones in Tucson on February 25, 1982. I received a copy of a report Mr. Jones had prepared, but not typed, describing the property, and this report accompanies this letter.

On March 3rd I drove to Globe in the afternoon, and visited the prospect with Mr. Jones the following day. On March 5th, I returned to Phoenix. Ownership and similar data have been obtained from Mr. Jones.

LOCATION AND PHYSICAL FEATURES

The property is located on Arizona State land in Sections 11, 12, 13, and 14, Township 8 South, Range 21 East in Graham County. State mineral prospecting permits are held in the name of Cassandra Resources, Inc., 720 N. Mann Avenue, Tucson, Arizona, 85710. This company is controlled by Mr. James G. Jones and Mr. Larry Goletz, who can be reached at the above address. The mineral prospecting permits can be later converted to state mineral leases.

The permits cover an area of 1120 acres at the lower northwest end of the Graham Mountains, and can be reached over about 27 miles of county maintained, graded road which extends westerly from Highway 70 about 14 miles north of Safford. The Southern Pacific Railroad parallels Highway 70, and

Pima station is about 6.5 miles southeast of the Klondyke turnoff.

Numerous arroyos extend westerly across the area to Aravaipa Canyon which drains northerly and westerly to the San Pedro River. There is no water or power source available near the permit area. Vegetation is of typical desert type; temperatures are hot during the summer and cool in winter. Average rainfall is about 14 - 17 inches; the climate can be termed moderate, and year round operations could be planned. There is no equipment on the property.

GEOLOGY

The prospecting permits are within a large surface area of volcanic rocks, chiefly coarse agglomerates, with a few andesitic tuffs and latitic flows. The volcanics are generally fresh and unaltered with very little alteration near the vein structures. Large granite masses are found to the southeast near the main Graham Mountains and to the north.

Two weakly mineralized, persistent vein structures, steeply dipping and with N 30° - 50° W strikes, have been prospected. The most easterly "A" vein is reported to have been followed in cuts and outcrops for a distance of more than 5000 ft. During our reconnaissance we traced it for about 2500 ft.; the southerly part of the vein is shown on the sketch map which accompanies this letter.

Near the southern end of the "A" vein exposures, a shaft, now caved at the collar, is reported to have been reopened to a depth of 138 ft. and some drifting done at that level in 1958. Barite is reported to a depth of 50 ft. with increasing fluorite below. Some gold assays are reported from the bottom, presumably in quartz material similar to a few pieces seen in the shaft dump. As shown on the map, narrow barite stringers are exposed in

the shaft cut on the southeast end with stronger narrow veins in a 6.0 ft. zone at the northwest end. Sample #1 was taken as a grab from about 3 tons of sorted barite located about 40 ft. southeast of the shaft. The attached map shows the general strike of the vein, and separate 1 in. = 20 ft. sketches of several cuts show the narrow vein widths and stringery type of mineralized zones.

The "A" vein can be described as a remarkably persistent, steep dipping, northwest trending fracture with little movement. Barite stringers from an inch to two feet in thickness occur along the fracture in a zone from 1.0 to 6.0 ft. in width. As shown on the map, sample #2 was taken from a small pile of sorted barite at a cut about 200 ft. northwest of the shaft.

About 1800 ft. to the west a similar weak but persistent structure, called the "B" vein, is exposed at surface but has been little prospected. It generally is parallel to the "A" vein, and weak stringery barite can be traced in scattered outcrops for several thousand feet. We traced it for about 1500 ft., and a sketch of a shallow cut about 900 ft. north of the road is shown on the map. The structure is of the same type as the "A" vein, but barite exposures are weaker than those of that vein.

Sorted barite at the various cuts shows few specks of galena, little hematite and limonite, and possibly some fluorite through massive barite. Samples taken by Mr. Jones are reported to have shown high gravity barite. It might be expected from the trace lead content at surface that the base metal content would increase with depth.

CONCLUSIONS

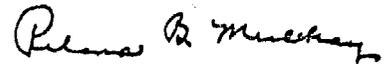
The irregular, narrow barite stringers on the vein structures at the Klondyke Prospect do not indicate that large barite ore tonnages could be developed by additional work. There is no positive ore reserve developed,

(4)

and it is very doubtful that the prospective 150,000 tons of reserve, envisioned by Mr. Jones, could be found by drilling. The vein fractures are weak, but remarkably persistent along strike in the volcanic rocks. Whether or not these structures, appearing at surface over considerable distances, might contain important base metal zones at great depth can only be conjectured.

The Klondyke prospect cannot be recommended as an attractive barite mining venture.

Yours very truly,



Roland B. Mulchay

RBM/lh
Encl.

COPY OF ATTACHED
SLIDE
IN REPORT TO OSTLER

Roland B. Mulchay
Consulting Geologist
2732 Wren Road
Salt Lake City, Utah 84117

March 17, 1982

Mr. V. F. Ostler
Rocky Mountain Refractories
2436 W. Andrew Ave.
Salt Lake City, Utah 84104

Dear Mr. Ostler:

Following a request by Ms. Teiko Yoshizawa by telephone, I discussed the Klondyke Barite Prospect with Mr. James Jones in Tucson on February 25, 1982. I received a copy of a report Mr. Jones had prepared, but not typed, describing the property, and this report accompanies this letter.

On March 3rd I drove to Globe in the afternoon, and visited the prospect with Mr. Jones the following day. On March 5th, I returned to Phoenix. Ownership and similar data have been obtained from Mr. Jones.

LOCATION AND PHYSICAL FEATURES

The property is located on Arizona State land in Sections 11, 12, 13, and 14, Township 8 South, Range 21 East in Graham County. State mineral prospecting permits are held in the name of Cassandra Resources, Inc., 720 N. Mann Avenue, Tucson, Arizona, 85710. This company is controlled by Mr. James G. Jones and Mr. Larry Goletz, who can be reached at the above address. The mineral prospecting permits can be later converted to state mineral leases.

The permits cover an area of 1120 acres at the lower northwest end of the Graham Mountains, and can be reached over about 27 miles of county maintained, graded road which extends westerly from Highway 70 about 14 miles north of Safford. The Southern Pacific Railroad parallels Highway 70, and

Pima station is about 6.5 miles southeast of the Klondyke turnoff.

Numerous arroyos extend westerly across the area to Aravaipa Canyon which drains northerly and westerly to the San Pedro River. There is no water or power source available near the permit area. Vegetation is of typical desert type; temperatures are hot during the summer and cool in winter. Average rainfall is about 14 - 17 inches; the climate can be termed moderate, and year round operations could be planned. There is no equipment on the property.

GEOLOGY

The prospecting permits are within a large surface area of volcanic rocks, chiefly coarse agglomerates, with a few andesitic tuffs and latitic flows. The volcanics are generally fresh and unaltered with very little alteration near the vein structures. Large granite masses are found to the southeast near the main Graham Mountains and to the north.

Two weakly mineralized, persistent vein structures, steeply dipping and with N 30° - 50° W strikes, have been prospected. The most easterly "A" vein is reported to have been followed in cuts and outcrops for a distance of more than 5000 ft. During our reconnaissance we traced it for about 2500 ft.; the southerly part of the vein is shown on the sketch map which accompanies this letter.

Near the southern end of the "A" vein exposures, a shaft, now caved at the collar, is reported to have been reopened to a depth of 138 ft. and some drifting done at that level in 1958. Barite is reported to a depth of 50 ft. with increasing fluorite below. Some gold assays are reported from the bottom, presumably in quartz material similar to a few pieces seen in the shaft dump. As shown on the map, narrow barite stringers are exposed in

the shaft cut on the southeast end with stronger narrow veins in a 6.0 ft. zone at the northwest end. Sample #1 was taken as a grab from about 3 tons of sorted barite located about 40 ft. southeast of the shaft. The attached map shows the general strike of the vein, and separate 1 in. = 20 ft. sketches of several cuts show the narrow vein widths and stringery type of mineralized zones.

The "A" vein can be described as a remarkably persistent, steep dipping, northwest trending fracture with little movement. Barite stringers from an inch to two feet in thickness occur along the fracture in a zone from 1.0 to 6.0 ft. in width. As shown on the map, sample #2 was taken from a small pile of sorted barite at a cut about 200 ft. northwest of the shaft.

About 1800 ft. to the west a similar weak but persistent structure, called the "B" vein, is exposed at surface but has been little prospected. It generally is parallel to the "A" vein, and weak stringery barite can be traced in scattered outcrops for several thousand feet. We traced it for about 1500 ft., and a sketch of a shallow cut about 900 ft. north of the road is shown on the map. The structure is of the same type as the "A" vein, but barite exposures are weaker than those of that vein.

Sorted barite at the various cuts shows few specks of galena, little hematite and limonite, and possibly some fluorite through massive barite. Samples taken by Mr. Jones are reported to have shown high gravity barite. It might be expected from the trace lead content at surface that the base metal content would increase with depth.

CONCLUSIONS

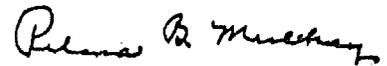
The irregular, narrow barite stringers on the vein structures at the Klondyke Prospect do not indicate that large barite ore tonnages could be developed by additional work. There is no positive ore reserve developed,

(4)

and it is very doubtful that the prospective 150,000 tons of reserve, envisioned by Mr. Jones, could be found by drilling. The vein fractures are weak, but remarkably persistent along strike in the volcanic rocks. Whether or not these structures, appearing at surface over considerable distances, might contain important base metal zones at great depth can only be conjectured.

The Klondyke prospect cannot be recommended as an attractive barite mining venture.

Yours very truly,



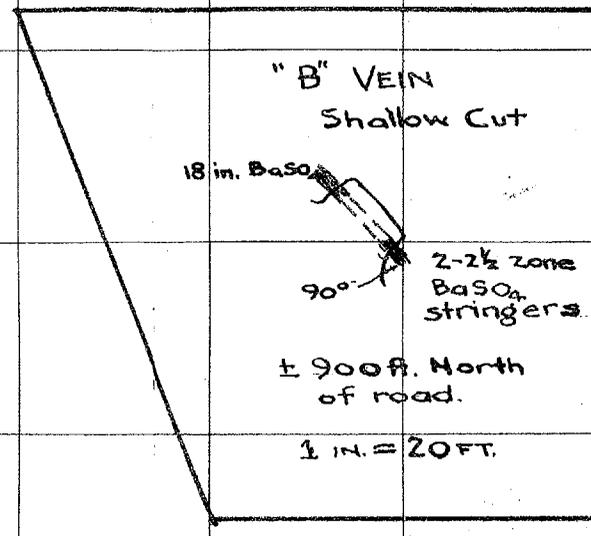
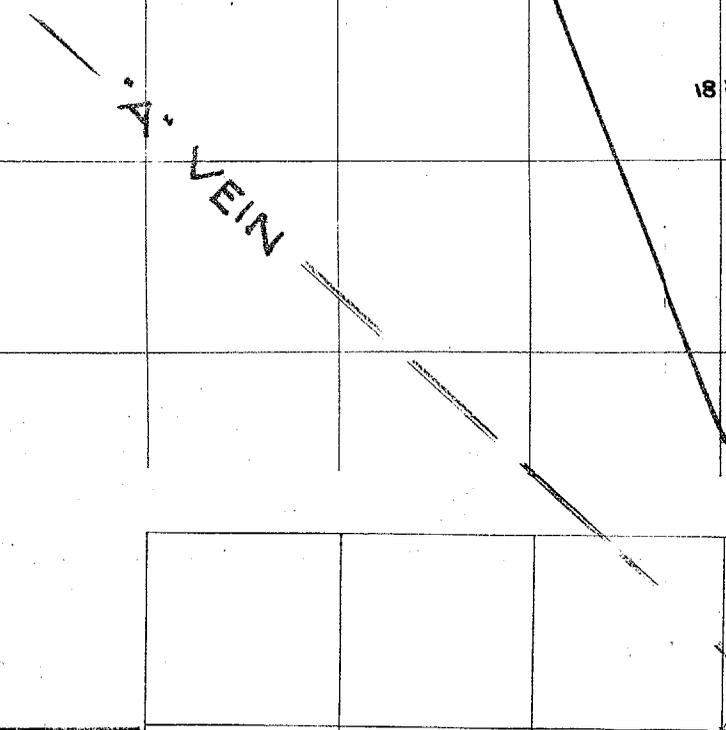
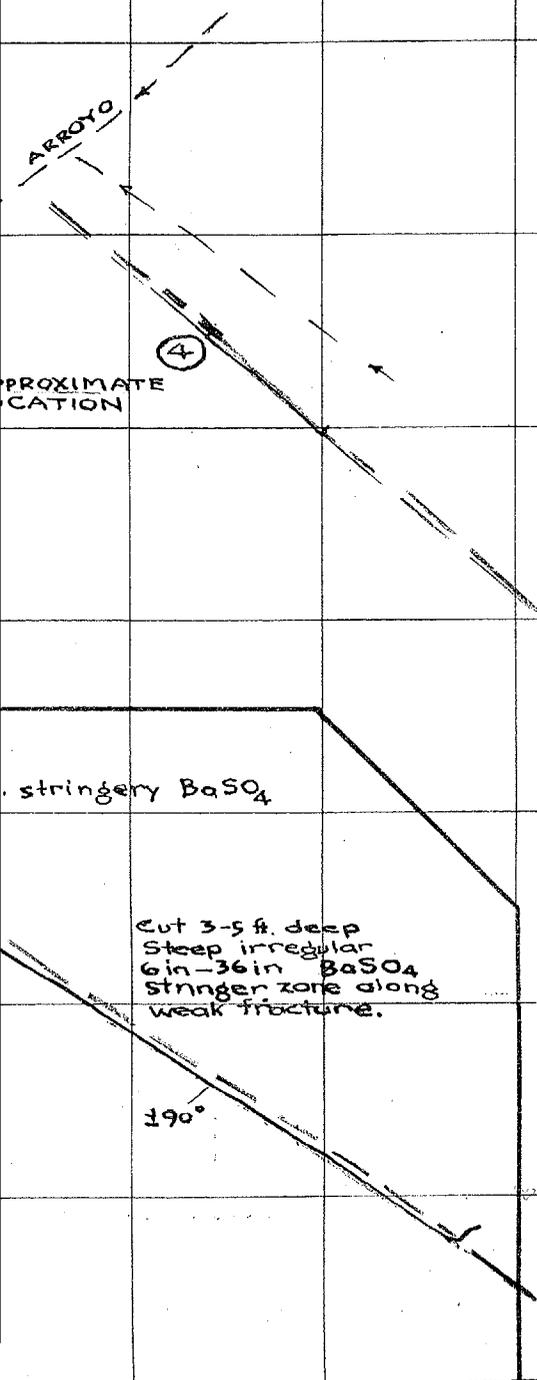
Roland B. Mulchay

RBM/lh
Encl.

SKETCH MAP
KLONDYKE PROSPECT
GRAHAM COUNTY
ARIZONA

1 IN. = 100 FT.

MAR. 17, 1982



1 IN. = 20 FT.

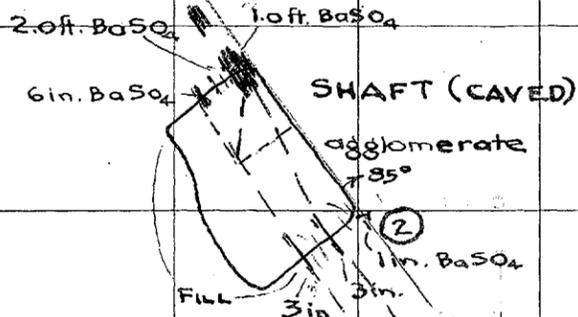
Cut 3-5 ft. deep
Steep irregular
6 in - 36 in BaSO₄
stringer zone along
weak fracture.

± 90°

± 90° off. North
of road.

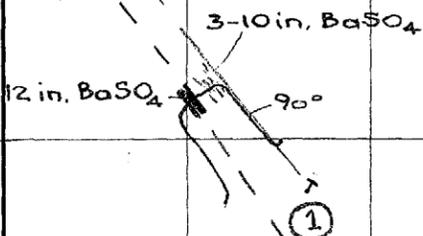
1 IN. = 20 FT.

I. S. & R. FORM 161G



1 IN. = 20 FT.

SAMPLE #1
13 TONS



1 IN. = 20 FT.



SAMPLE #2

1 IN. = 20 FT.

"A" VEIN

Weak stringers