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PRINTED: 11/19/2001

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES AZMILS DATA

PRIMARY NAME: LIME CAP

ALTERNATE NAMES:

GREENLEE COUNTY MILS NUMBER: 23

LOCATION: TOWNSHIP 3 S RANGE 29 E SECTION 6 QUARTER SE
LATITUDE: N 33DEG 11MIN 55SEC LONGITUDE: W 109DEG 23MIN 40SEC
TOPO MAP NAME: CLIFTON - 15 MIN

CURRENT STATUS: PAST PRODUCER

COMMODITY:
- ZINC CARBONATE
- LEAD CARBONATE
- VANADIUM
- GOLD
- SILVER
- MOLYBDENUM

BIBLIOGRAPHY:

ADMMR LIME CAP MINE FILE
ADMMR INFO
UNPAT. CLAIMS EXTEND THRU SEC. 8-17 &
SEC. 18-T2S-R29E

LIME CAP MINE GREENLEE COUNTY

A. L. Flagg vanadium report - V-II

DEPARTMENT OF MINERAL RESOURCES.

News Items

Date 6/6/39

Mine Lime Cap Claims

Location West side of Chase Creek at Granville.

Owner Damenhauer & Murillo

Address Cliflin

Operating Co.

Address

Pres.

Genl. Mgr.

Mine Supt.

Mill Supt.

Principal Metals Vanadium, silver, gold.

Men Employed 4

Production Rate None.

Mill, Type & Capacity

Power, Amt. & Type

Signed Newt Wolcott

(Over)

6/6/39 P. 2

Present Operations

Men employed on assessment work.

New Work Planned

Miscl. Notes Matt Dannenhauer reports recent discovery of additional vanadium ore on property. Extent is yet is undetermined.

DEPARTMENT OF MINERAL RESOURCES

News Items

Date 10/11/39

Mine Lime Cap Group

Location 1½ Miles Northwest of Granville

Owner Danenhauer Bros. & S.G. Murillo

Address Clifton, Arizona.

Taken under bond and lease by

Operating Co. Daniel Bruce Leake

Address Hanover, N.M.

Pres.

Genl. Mgr.

Mine Supt.

Mill Supt.

Principal Metals Lead and zinc.

Men Employed 7 or 8

Production Rate None yet

Mill, Type & Capacity

Power, Amt. & Type

Signed [illegible]

(Over)

10/11/39 P.2

Present Operations: Have bulldozer and grading equipment on ground and are starting to build 1½ mile road in to property.

New Work Planned. Will start immediately on development work, and will ship lead-zinc ore on a sizeable scale.

Miscl. Notes Mr. Leake was formerly connected with the Callahan Lead-Zinc Co. (I suspect that the connection still exists, although this should not be mentioned.) This is a new operation by outside capital, and it looks as though they intend to really get down to business. The road itself is over very difficult country, and is an expensive undertaking. They plan to have it completed by November first.

DEPARTMENT OF MINERAL RESOURCES

News Items

Date December 6, 1939.

Mine Lime Cap Group

Location Approx. 10 miles north of Clifton

Owner Danenhauer Bros. & S.G. Murillo

Address Clifton, Arizona.

Under bond & lease to

Operating Co. Bruce Leake

Address Clifton, Arizona.

Pres.

Genl. Mgr.

Mine Supt.

Mill Supt.

Principal Metals Lead and zinc

Men Employed 7

Production Rate Just started, not established

Mill, Type & Capacity

Power, Amt. & Type

Signed [illegible]

(Over)

Present Operations Have completed new road in to property and started mining and shipping. Ore going to Ozark Mining, Smelting & Ref. Co. at Coffeyville, Kan. Several cars are already on the road.

New Work Planned.

Mining grade seems to be holding up to expectations, and it is planned to do considerable development work for the purpose of improving extraction facilities.

Miscl. Notes

This looks like a real bona fide piece of new mining.

12/6/39 P. 2

Greenlee Co.

Huber, Mr. L. E. H.
Box 638
Clifton, Arizona

See H File - re geological help N. of Morenci 8-1-47
See "Lime Cap Mine" Oct. 10, 1951- Greenlee Co.

MIN JOUR 6/15/41

NAME OF MINE: LIME CAP

COUNTY: GREENLEE
DISTRICT:
METALS: PB,ZN

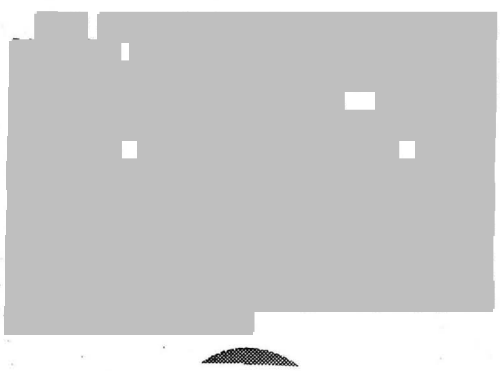
OPERATOR AND ADDRESS: DATE:		MINE STATUS DATE:	
5/1/44	M. Dannenhauer, Clifton (Matt)	5/1/44	Developing
		12/44	Idle
6/13/42	RFC Loan $20,000		
2/44	Developing		

~~LIME CAP~~

Zn, Pb, Vanadium, Molybdenum

Greenlee 6 - Sec. 8, 17, 18, T 2 S, R 29 E

Danenhauer Bros. & S. G. Murillo, Box 638 Clifton '40 '46



Mining Journal 9/42

Tucson, Arizona
June 15th, 1942

Mr. G. Donald Emigh
United States Vanadium Corporation
Agents for Metals Reserve Company
68 E. Congress St.
Tucson, Arizona

Dear Mr. Emigh:
Subject: LIME CAP GROUP

The following is a report on the Lime Cap Group, owned by Mr. M. Dannerhauer of Clifton, Arizona.

The Lime Cap Mines are located in Greenlee County, Arizona at an altitude of 7,000 feet, and are fifteen miles north of Clifton, the nearest railroad point. Maintained gravel roads lead to within one mile of the mine. The nearest water for milling is the Gila River at Clifton.

The property consists of 21 claims, none of which are patented. Ore has been developed by two tunnels, 320 feet and 200 feet. The 320' tunnel was driven on ore which dropped 60' through a raise to the 200 foot tunnel driven for haulage purposes.

The ore deposits (3' wide) occur in bedded sedimentaries and are mined for lead / zinc values. 450 tons shipped to smelter averaged 20% zinc and 12% lead. On close examination of the ore's foot and hanging wall occasional showing of lead vanadates were found. The owner is hand sorting the best vanadate ores, which had a Hawley & Hawley assay return of .63%.

For a distance of 300 feet, the ore occurs between limestone. From this point it enters bedded sandstone with no apparent change in ore proper; however, in the hanging wall in the various bedding and cleavage planes a pale yellow to bright red crystal growth was very apparent. Under the violet-ray light the crystals were fluorescent. Apparently they are zincite surrounded by minute wulfenite crystals. The 200 foot tunnel is in sandstone, no showings.

Submitted by,

Dan Harris, M.E.

Examination made June 10th, 1942

Owner: Lime Cap Mining Co., Clifton, Arizona

The following samples were taken August 9th, 1942:

#269 – ten inches of yellow gouge-like material laying above the lead-zinc ore body (see map) ..... 0.04% V_2O_5

#270 – conglomerate at portal, lower tunnel ..... 0.03% V_2O_5

#271 – shale at portal, lower tunnel ..... 0.04% V_2O_5

#272 – five feet of quartzite at top of raise ..... 0.15% V_2O_5

#273 – sandstone from back above Harris sample ..... 0.08% V_2O_5

Transcribed by Jim Christensen, June 2006

FLAGG VANADIUM RERTS
BOOK VII

C

January 20, 1943

Mr. H. DeWitt Smith
Metals Reserve Company
RFC Building
Washington, D. C.

Dear Henry:

Here is another problem that I believe can easily be answered. The Lime Cap mine, Mat Dantzbauer, Clifton, Arizona, has been operating on an RFC development loan for $20,000. The mine is located 15 miles from Clifton.

Prior to getting this development loan the mine shipped 9 cars in late 1941. It was a 30 per cent combined zinc-lead oxide and was shipped to the Ozark Mining and Smelting Company, Coffeyville, Kansas.

Under the provisions of the development loan production was stopped and all efforts aimed toward development. Although they have not fully expended their loan, they have reached a point where they can start to profitably ship ore and not alone get production of zinc and lead but begin to repay the loan from the proceeds of ore already developed.

Now that they have the mine ready to ship, they find that the Ozark Mining and Smelting Company, which is their only market for this type of ore, cannot take it. It is understood that this is due to the fact that they are only operating at about one-third capacity due to manpower problems and the fact that they cannot afford to stockpile ores beyond their capacity to handle. This attitude is further evidenced by the fact that last summer their schedule stated that they would take any ores that run over 20 per cent combined zinc-lead and at that time they would take ore about .15 per cent copper. It is apparent that in order to reduce the tonnage being taken they have changed their specifications to take only higher grade ores and now say they will not take anything containing over a trace in copper.

With this situation at the Ozark plant it would strike me that it would be a proper function of Metals Reserve Company to arrange with the Ozark people to stockpile ore at their plant on Metals Reserve account taking all ores offered with normal specifications similar to what was done at Dumas, Texas, with American Zinc-Lead.

It is a shame to open up mines with government funds and then find no market for the product even though a market existed at the time the development

work was started. Of course, a stockpile could be established anywhere within reasonable distance but a stockpile at the Coffeyville plant would be a more logical thing to do as this is the plant that will ultimately use the product and therefore would have no material rehandling charges.

The Lime Cap mine probably can ship from 3 to 5 cars of ore per month running from 10 to 14 per cent lead and 16 to 20 per cent zinc. If normal specifications were used, that is, accepting anything over 20 per cent lead-zinc they could ship more.

It is understandable, of course, that the Ozark people would not want to stockpile on their own account when they are curtailed in capacity with an uncertain future and it also is understandable that if they cut down their capacity that would tend to increase the specifications, but nevertheless this attitude is not helpful to the war effort.

This situation requires early action as the Lime Cap mine is ready to begin shipping and anticipated, of course, that they would find the usual market.

If you desire further information on this you might communicate with Bill Gohring as he referred it to me with the recommendation which is included within this letter. He, of course, is anxious to see one of his mine loans make good rather than flop because of a market that has been lost while the loan was being expended.

Trusting that you can help us out in this situation and that we can get early action, I am

Yours very truly,

CHARLES F. WILLIS, Consultant
Metals Reserve Company

CFW:MH

14 December 1940

Mr. Matt Danenhauer,
Clifton,
Arizona.

My dear Matt:

Complying with your request of a few days ago, I am enclosing herewith a copy of Field Engineers Report on the LIME CAP GROUP as prepared by Mr. Newton Wolcott.

I trust that this report may be helpful to you.

With best wishes, I am

Yours very truly,

J. S. Coupal
Director

JSC-jrf
encl.

County of Greenlee

STATE OF ARIZONA

CLIFTON

TREASURER'S OFFICE

JULY 16TH, 1940.

MR. J. S. COUPAL, DIRECTOR,
DEPARTMENT OF MINERAL RESOURCES,
STATE OF ARIZONA,
PHOENIX, ARIZONA.

DEAR SAM:

I HAVE COMPLETED THE MINE OWNERS' REPORT AS BEST I CAN ON THE LEAD-ZINC OXIDE PROPERTY WHICH I HAVE TALKED TO YOU ABOUT. I SINCERELY TRUST THAT WITH THIS INFORMATION YOU MIGHT BE ABLE TO INTEREST SOMEONE IN THIS PROPERTY.

WITH REFERENCE TO THE CALIFORNIA SPRAY CHEMICAL COMPANY, RICHMOND, CALIFORNIA, AS A POSSIBLE PURCHASER OF OUR ORE, I AM PLEASED TO ADVISE THAT I HAVE FORWARDED THEM SAMPLES OF OUR ORE, BUT AT THIS WRITING HAVE NOT HAD TIME TO HEAR FROM THEM. IF OUR RESULTS ARE SUCCESSFUL ON THIS, I WILL LET YOU KNOW THE OUTCOME.

THANKING YOU FOR PAST FAVORS AND WITH KINDEST PERSONAL REGARDS, I AM,

YOURS VERY SINCERELY,

MD:

MATT DANENHAUER, COUNTY TREAS.

W

ML-32

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA

FIELD ENGINEERS REPORT

Date October 18, 1940.

Mine Lime Cap Group

Engineer Newton Wolcott

District Granville Mining District

Location Approximately 12 miles north of Clifton. Greenlee County.

Former name

Owner Danenhauer Bros. & S.G. Murillo

Address Clifton, Arizona.

Operator

Address

President

Gen. Mgr.

Mine Supt.

Mill Supt.

Principal Metals Zinc, lead, vanadium, molybdenum, also some gold and silver.

Men Employed

Production Rate

Mill: Type & Cap.

Power: Amt. & Type

Operations: Present

Property not being worked at present.

Operations Planned

Owners plan to operate and ship when they can get a market for lead-zinc carbonate ore.

Number Claims, Title, etc.

Ten unpatented claims. Approximately two-thirds of this ground lies within the boundaries of the Crook National Forest, the balance upon public domain.

Description: Topog. & Geog. The property is situated in the rugged, mountainous country on the western slope of Chase Creek, approximately 12 miles north of Clifton. Slopes are steep and the general topography is typical of this region. The main workings on the property are at an elevation of about 5600 feet above sea level. Vegetation consists mainly of scrub-oak and juniper, with walnuts and sycamores in the canyon bottoms. Growth of all sorts is fairly heavy.

Mine Workings: Amt. & Condition

The ore bed has been opened by approximately 550 feet of drifting and three raises totalling 100 feet in length.
All workings are open and accessible.

(over)

Geology & Mineralization

The claims in this group cover an area of sedimentaries, part of which are overlain by a thick flow of rhyolite and basalt. The entire series is exposed for a long distance along the steep canyon sides. The ore occurs as a more or less continuous bed, apparently as the result of mineralization which has followed the contact between the overlying limestone and an underlying series of shales, sandstones and quartzites. Faulting in this area is minor in character, consisting of a few breaks with comparatively little vertical displacement. There is however, evidence of horizontal movement of considerable magnitude along the bedding planes particularly at the horizon at which the ore bodies have been formed. (See appended sheet for additional data on geology and mineralization.)

Ore: Positive & Probable, Ore Dumps, Tailings

No estimate of tonnage or grade of ore is possible without further development work. However, from the work already done and the numerous exposures along a great length of the outcrop, there would appear to be an excellent chance for a very large potential tonnage. This of course would have to be proven by systematic development.

Mine, Mill Equipment & Flow Sheet

There is no equipment on the property at present.

Road Conditions, Route

Good road all the way in to main workings. Take Coronado Trail (U.S. Route 666) north from Clifton for approximately 11 miles. Turn left to low saddle and continue one mile on road to mine. A few grades on this last mile of road are somewhat steep, but they are short and will not interfere with ordinary travel or truck haulage. This road has been built within the past year.

Water Supply

No attempt has ever been made to develop any water supply on this property, but the presence of springs in nearby canyons would indicate that a reasonably large supply could be developed without too large an expenditure.

Brief History

Because of the rugged character of the country, it has been impossible until the past year to ship any ore from the property. With the completion of the new road, between 350 and 400 tons of lead-zinc carbonate ore were shipped before the market was lost. The present owners have held the property since 1932 and have done most of the development work thereon.

Special Problems, Reports Filed

Because of the lack of facilities for other treatment, the owners are forced to sell their ore for pigment purposes, shipping it to Coffeyville, Kansas. They thereby lose all values contained as vanadium, molybdenum, gold and silver; and the total of these values is considerable. Transportation charges are also excessive. Adequate financing for reasonably large scale operation is needed here.

Remarks

Because of the apparently excellent chance for developing this property into a large producer of medium grade lead-zinc ore, as well as an equally good chance for the recovery of worth-while amounts of vanadium, molybdenum, gold and silver, this property certainly appears to merit careful and intensive examination by anyone capable of properly financing such an operation.

If property for sale: Price, terms and address to negotiate.

The property is for sale or lease. For price and terms, communicate with

Matt Danenhauer, Clifton, Arizona.

Signed Newton Wolcott

Use additional sheets if necessary. Separate sheets on each problem.

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine Lime Cap Group Date October 18, 1940.

District Granville Mining District Engineer Newton Wolcott

Subject:

"Geology and Mineralization" ---- Continued from Page 1.

The sedimentary beds dip gently to the west and northwest, the dip varying from almost flat to a maximum of about 20 degrees where exposed in underground workings. The mineralized bed varies in thickness from 3 to 10 feet, with a considerable penetration into the walls in places. This is particularly noticeable with the vanadinite, crystals of which may be found well above the hanging wall slip and in the hanging wall gouge itself. Present workings have opened the ore for a distance of approximately 160 feet into the bed from its surface outcrop. Lateral work consists mostly of stoping off one side of the main entry. No trace of sulphides has been encountered as yet.

The ore minerals consist principally of lead and zinc carbonates, through which are distributed considerable amounts of vanadinite and wulfenite. Gold and silver values in ore shipped are reported to have averaged 4 ozs. of silver and approximately $1.50 in gold. The owners report that a sample taken approximately 75 feet inside the portal of the main tunnel ran 0.69% V_2O_5 and 0.29% MoO_3. The ore at the face of the workings appears to contain a considerably higher content of vanadinite.

The gold and silver values appear to remain fairly constant with depth, but the lead and zinc values show a steady increase. From a value of 3% Pb and 7% Zn on the surface outcrop, there is an increase to 10% Pb and 25% Zn at the deepest point in the workings.

Numerous outcrops along the limestone-shale contact on this property have had no investigation whatever. At one of these points, the owners report a strong showing of vanadinite; but lack of time prevented an inspection of this showing.

ML-32

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
OWNERS MINE REPORT

Date JULY16th, 1940

1. Mine LIME CAP MINE

2. Mining District & County Grandville Mining district, Greenlee County, Arizona.

3. Former name

4. Location About six miles north of Metcalf & Morenci, Ariz. In section 17, T. 38., Range 29 East.

5. Owner S. G. Murillo, Matt, Ed, And George Danenhauer.

6. Address (Owner) P. O. Box 546, Clifton, Arizona.

7. Operator

8. Address (Operator)

9. President

10. Gen. Mgr.

11. Mine Supt.

12. Mill Supt.

13. Principal Metals Lead-zinc oxides

14. Men Employed During past production about eight men regularly Employed during shipping program.

15. Production Rate With present development 100 tons per week.

16. Mill: Type & Cap. NONE

17. Power: Amt. & Type NONE

18. Operations: Present This operation was opened up for production in August 1939, when good roadway was built to mine from main highway (Coronado Trail). At that time shipments of this ore were made to the Ozark Smelting & Mining Company at Coffeyville, Kansas. Operations were stopped in January 1940, in view of the fact this company stopped purchasing ore. This property has considerable ore reserves from present development, with better values indicated. It can be opened up at any time a market can be secured and shipments immediately started. Smelter returns are available with the owners covering these shipments.

19. Operations Planned

20. Number Claims, Title, etc. Ten unpatented claims, known as the LIME CAP NO. 1 to NO. 10 incl., of record in the office of the County Recorder, Greenlee County, Arizona. Owners, as listed above, each own a one-quarter interest. Title clear and in good condition.

21. Description: Topography & Geography Elevation of main workings are approximately at 6500 feet, possible high elevation on property is 7500 feet, topography is rugged and steep in portions. Property is situated on the West side of Chase Creek, which Creek heads on property. Chase flows into San Francisco River at Clifton, Arizona, and passes through Metcalf, Arizona, and near Morenci, Arizona.

22. Mine Workings: Amt. & Condition Property is developed with approximately 600 feet of drift, with about 300 feet on the blanket bedded deposit, all in ore, and with a lower haulage tunnel of about 300 feet under the bedded deposit (in shale) -- bedded deposit workings are in Limestone, ~~above the shale bed, the~~ ore deposit being formed in the Limestone above the shale bed. The condition of these workings are in excellent condition, are clean and accessable for examination and sampling.

(over)

23. Geology & Mineralization .e ore deposit is formed in the perModoc Limestonesof the Clifton-Morenci Mining District. This Limestone lies upon a large shale deposit. The Limestone is very extensive on the property; however portions have been covered by a basalt and rhyolite capping.

24. Ore: Positive & Probable, Ore Dumps, Tailings Ore on dumps from development has been shipped. Ore in Place in mine approximately 2000 tons (in sight); However bedded deposit has not been prospected much on sides -- upper workings in deposit has been done entirely in ore with face of bed at end ofworkings being approximately six feet thick. It is here where best values have been found. Assays having averaged 25% zinc and I0% lead.

24-A Vein Width, Length, Value, etc. Shipments of ore from this deposit have netted a return of approximately$6.00 per ton after paying all treatment and freight charges(shipments to Coffeyville, Kansas) -- mining costs are not over $2.00 per ton, and trucking costs from mine to rail head at Clifton a $I.00 perton. Several shipments of this ore have been mined for $I.00 per ton.

25. Mine, Mill Equipment & Flow Sheet Mine is equipped with track and ore car in the lower haulage tunnel, has ore shoots and truck loading bin.

26. Road Conditions, Route Road conditions very good. Leave Clifton on the Coronado Trail to Grandville about twelve miles north of Clifton. Recently constructed good road on property from Coronado Trail to main workings, This road is about one mile distance.

27. Water Supply Ample spring and creek water in rainy seasons.

28. Brief History Claims were filed upon by the owners in the year I932, and some development work has been done, with assessment work. No ore was shipped from this property until shipments were made to Coffeyville, Kansas.When they start purchasing ore again or if another market can be found, shipments can be resumed immediately. We are endeavoring at the present time to find another market, and while we would sell, bond, or lease this property to some reliable operator for development or production, we would prefer to make sale of our ore to users or purchasers.

29. Special Problems, Reports Filed

30. Remarks

31. If property for sale: Price, terms and address to negotiate. See above.

32. Signed Matt Danenhauer

33. Use additional sheets if necessary.

46.

DEPARTMENT OF MINERAL RESOURCES
State of Arizona
MINE OWNER'S REPORT

DEPT. MINERAL RESOURCES
RECEIVED
OCT 24 1946
PHOENIX, ARIZONA

Date October 22, 1946

1. Mine: LIME CAP
2. Location: Sec. 8, 17, 18 Twp. 2 S Range 29 E Nearest Town Clifton
   Distance 16 miles Direction north Road Condition Good
3. Mining District & County: Grandville Mining District, Greenlee County
4. Former Name of Mine: None
5. Owner: Matt Danenhauer, Ed Danenhauer, George Danenhauer, S. G. Murillo, Chas. K. Barnes, and L. E. H. Huber
   Address: Box 638, Clifton, Arizona
6. Operator: Not operated at present time
   Address:
7. Principal Minerals: Lead-zinc carbonates
8. Number of Claims: 20 Lode x Placer
   Patented Unpatented x
9. Type of Surrounding Terrain: rather high mountains

10. Geology & Mineralization:

11. Dimension & Value of Ore Body: undetermined.

12. Ore "Blocked Out" or "In Sight": undetermined

Ore Probable: ----

13. Mine Workings—Amount and Condition:

No.	Feet	Condition
Shafts		
Raises		
Tunnels		
Crosscuts		
Stopes		

14. Water Supply: none at present

15. Brief History: Ore is in a blanket form and last worked in 1941. About 12 cars of lead zinc carbonates where shipped. See attached

16. Signature: [illegible]

17. If Property for Sale, List Approximate Price and Terms: property is open for sale or lease. No price set and open for suggestions or recommendations.

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
MINE OWNER'S REPORT

Date JULY 16TH, 1940

1. Mine LIME CAP MINE

2. Location ABOUT SIX MILES NORTH OF METCALF AND MORENCI, ARIZONA. IN SECTION 17, T. 3S., RANGE 29 EAST.

3. Mining District & County GRANDVILLE MINING DIST., GREENLEE COUNTY, ARIZONA

4. Former name

5. Owner CO-PARTNERSHIP - S. G. MURILLO, MATT ED., AND GEORGE DANENHAUER

6. Address (Owner) P. O. BOX 546, CLIFTON, ARIZONA

7. Operator NOT OPERATING AT PRESENT PAST OPERATION INTERMITTENT.

8. Address (Operator)

9. President, Owning Co.

9A. President, Operating Co.

10. Gen. Mgr.

14. Principal Minerals LEAD-ZINC OXIDES (PAST SHIPMENTS AVERAGED BETWEEN 25% AND 30% COMBINED MTL

11. Mine Supt.

15. Production Rate WITH PRESENT DEVELOPMENT 100 TONS PER WEEK.

12. Mill Supt.

16. Mill: Type & Cap. NONE

13. Men Employed DURING PAST PRODUCTION ABOUT EIGHT MEN REGULARLY EMPLOYED DURING SHIPPING PROGRAM

17. Power: Amt. & Type NONE

18. Operations: Present

THIS OPERATION WAS OPENED UP FOR PRODUCTION IN AUGUST 1939, WHEN GOOD ROADWAY WAS BUILD TO MINE FROM MAIN HIGHWAY (CORONADO TRAIL. AT THAT TIME SHIPMENTS OF THIS ORE WERE MADE TO THE OZARK SMELTING AND MINING COMPANY AT COFFEYVILLE, KANSAS. OPERATIONS WERE STOPPED IN JANUARY 1940, IN VIEW OF THE FACT THIS COMPANY STOPPED PURCHASING ORE. THIS PROPERTY HAS CONSIDERABLE ORE RESERVES FROM PRESENT DEVELOPMENT, WITH BETTER VALUES INDICATED. IT CAN BE OPENED UP AT ANY TIME A MARKET CAN BE SECURED AND SHIPMENTS IMMEDIATELY STARTED. SMELTER RETURNS ARE AVAILABLE WITH THE OWNERS COVERING THESE SHIPMENTS.

19. Operations: Planned

20. Number Claims, Title, etc.

TEN UNPATENTED CLAIMS, KNOWN AS LIME CAP NO 1 TO NO. 10 INCL., OF RECORD IN THE OFFICE OF THE COUNTY RECORDER, GREENLEE COUNTY, ARIZONA. OWNERS AS LISTED ABOVE EACH OWN A ONE-QUARTER INTEREST. TITLE CLEAR AND IN GOOD CONDITION.

21. Description: Topography & Geography

ELEVATION OF MAIN WORKINGS ARE APPROXIMATELY AT 6500 FEET, POSSIBLE HIGH ELEVATION ON PROPERTY IS 7500 FEET, TOPOGRAPHY IS RUGGED AND STEEP IN PORTIONS. PROPERTY IS SITUATED ON THE WEST SIDE OF CHASE CREEK, WHICH CREEK HEADS ON PROPERTY. CHASE CREEK FLOWS INTO SAN FRANCISCO RIVER AT CLIFTON, ARIZONA, AND PASSES THROUGH METCALF, ARIZONA, AND NEAR MORENCI, ARIZONA.

22. Mine Workings: Amt. & Condition

PROPERTY IS DEVELOPED WITH APPROXIMATELY 600 FEET OF DRIFT, WITH ABOUT 300 FEET ON THE BLANKET BEDDED DEPOSIT, ALL IN ORE, AND WITH A LOWER HAULAGE TUNNEL OF ABOUT 300 FEET UNDER THE BEDDED DEPOSIT (IN SHALE) -- BEDDED DEPOSIT WORKINGS ARE IN LIMESTONE, THE ORE DEPOSIT BEING FORMED IN THE LIMESTONE ABOVE THE SHALE BED. THE CONDITION OF THESE WORKINGS ARE IN EXCELLENT CONDITION, ARE CLEAN AND ACCESSABLE FOR EXAMINATION AND SAMPLING.

23. Geology & Mineralization THE ORE DEPOSIT IS FORMED IN THE UPPER MODOC LIMESTONES OF THE CLIFTON-MORENCI MINING DISTRICT. THIS LIMESTONE LIES UPON A LARGE SHALE DEPOSIT. THE LIMESTONE IS VERY EXTENSIVE ON THE PROPERTY; HOWEVER PORTIONS HAVE BEEN COVERED BY A BASALT AND RHYOLITE CAPPING.

24. Ore: Positive & Probable, Ore Dumps, Tailings ORE ON DUMPS FROM DEVELOPMENT HAS BEEN SHIPPED. ORE IN PLACE IN MINE APPROXIMATELY 2000 TONS (IN SIGHT); HOWEVER BEDDED DEPOSIT HAS NOT BEEN PROSPECTED MUCH ON SIDES -- UPPER WORKINGS IN DEPOSTT HAS BEEN DONE ENTIRELY IN ORE WITH FACE OF BED AT END OR WORKINGS BEING APPROXIMATELY SIX FEET THICK. IT IS HERE WHERE BEST VALUES HAVE BEEN FOUND, ASSAYS HAVING AVERAGED 25% ZINC AND 10% LEAD.

24A. Dimensions and Value of Ore body SHIPMENTS OF ORE FROM THIS DEPOSIT HAVE NETTED A RETURN OF APPROXIMATELY $6.00 PER TON AFTER PAYING ALL TREATMENT AND FREIGHT CHARGES (SHIPMENTS TO COFFEYVILLE, KANSAS) -- MINING COSTS ARE NOT OVER $2.00 PER TON, AND TRUCKING COSTS FROM MINE TO RAIL HEAD AT CLIFTON $1.00 PER TON. SEVERAL SHIPMENTS OF THIS ORE HAVE BEEN MINED FOR $1.00 PER TON.

25. Mine, Mill Equipment & Flow-Sheet
MINE IS EQUIPPED WITH TRACK AND ORE CAR IN THE LOWER HAULAGE TUNNEL, HAS ORE SHOOTS AND TRUCK LOADING BIN.

26. Road Conditions, Route ROAD CONDITIONS VERY GOOD. LEAVE CLIFTON ON THE CORONADO TRAIL TO GRANDVILLE ABOUT TWELVE MILES NORTH OF CLIFTON. RECENTLY CONSTRUCTED GOOD ROAD ON PROPERTY FROM CORONADO TRAIL TO MAIN WORKINGS, THIS ROAD ABOUT ONE MILES DISTANCE.

27. Water Supply GOOD, AMPLE SPRING AND CREEK WATER IN RAINY SEASONS

28. Brief History CLAIMS WERE FILED UPON BY THE OWNERS IN THE YEAR 1932, AND SOME DEVELOPMENT WORK HAS BEEN DONE, WITH ASSESSMENT WORK. NO ORE WAS SHIPPED FROM THIS PROPERTY UNTIL SHIPMENTS WERE MADE TO COFFEYVILLE, KANSAS. WHEN THEY START PURCHASING ORE AGAIN OR IF ANOTHER MARKET CAN BE FOUND, SHIPMENTS CAN BE RESUMED IMMEDIATELY. WE ARE ENDEAVORING AT THE PRESENT TIME TO FIND ANOTHER MARKET, AND WHILE WE WOULD SELL, BOND OR LEASE THIS PROPERTY TO SOME RELIABLE OPERATOR FOR DEVELOPMENT OR PRODUCTION, WE WOULD PREFER TO MAKE SALE OF OUR ORE TO USERS OR PURCHASERS.

29. Special Problems, Reports Filed

30. Remarks

31. If property for sale: Price, terms and address to negotiate. SEE ABOVE.

32. Signature Matt Danenhauer
MATT DANENHAUER.

33. Use additional sheets if necessary.

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine: Lime Cap Mine

Date: September 12, 1957

District: Greenlee County

Engineer: Lewis A. Smith

Subject:

Number of Claims: 2

Location: Three miles northwest of Garfield - Sec. 6, T3S, R29E

Owners: Matt & Ed Danenhauer

Workings: One long tunnel with several crosscuts and a few raises and winzes.

Geology: The deposit is a replacement of a dolomitic limestone bed near the middle of the Longfellow Limestone (Ordovician). The ore consists of anglesite and calamine, with local higher grade pockets of galena, some sphalerite, and cerussite. The mining was largely done during the two World Wars, and much of the oxidized ore went into the paint industry. The mine is inactive at present. Future development lies within the dolomitic bed and ore concentrations appear to be localized by fractures or fracture intersections.

A. L. Flagg vanadium report - V-11

NEWS ITEM

Oct. 10, 1951.
By Axel L. Johnson.

SOURCE OF INFORMATION -- Matt Danenhauer, part owner.
MINE -- Lime Cap Mine.
DISTRICT -- Metcalf Mining District.

Location Located at Granville, 6 miles north of Metcalf, and 14 miles north of Clifton. It is one mile west of the Coronado Trail Highway, and has road to property.

Number of claims 10 unpatented claims.

Owners Matt Danenhauer, Ed Danenhauer, George Danenhauer, Ernest Foote, and L. E. H. Huber of Phoenix, Ariz.

Officers Matt Danenhauer, Gen. Mgr., P. O. Box 422, Clifton, Ariz.

Metals Present Zinc and Lead.

Men Employed None. Mine is idle.

Milling Facilities Ore can not be milled, as it is a carbonate ore. Must be sent to smelter, and smelter will not pay for Zinc content, which is over 60 % of the total value. See ''Special Difficulties''.

Ore Values. Average of 9 carloads shipped in 1944--- Zinc 20.44 %, Lead 12.73 %. Average of samples---one set 15.5 % Zinc & 6.95 % Lead-- one set 15.9% Zn, 10.00 % Pb.

Geology A replacement in limestone. A flat tabular deposit, lying at the bottom of the Modoc Limestone formation, and above the top of the Morenci Shale formation.

Past Production About 300 tons of ore was mined by a leaser in 1937 and shipped to smelter at Coffeyville, Kans. 9 carloads of ore was mined by present owners in 1944, and shipped to the Ozark Smelting and Mining Co. of Coffeyville, Kan. to be used in the manufacture of chemical pigments. These 9 carloads amounted to 148 tons.

Proposed Plans No future plans can be made for mining the ore on account of not getting paid for the zinc by the smelters. Will start operations as soon as the smelting companies will pay them for the zinc values as well as the lead. Can start stoping operations at any time, as the development work is completed.

Special Difficulties Marketing.

American Smelting and Refining Co. at El Paso will pay only for the Lead content, but will pay nothing for the Zinc, although the ore is about 60 % Zinc and only 40 % lead, and they can now recover the zinc by means of their fuming plant. Lead is paid for only at 2 cents below market price.

American Smelting and Refining Co. at Amarillo, Tex. will accept zinc ores. These ores must not contain over 1 % of Lead, and they want ores running over 30% Zn.

It is a shame that, during this present scarcity of lead and zinc, that an ore which contains over 20 % of Zinc and over 12 % of lead can not be mined on account of there being no market for the product.

PRODUCTION RECORD OF THE LIME CAP MINE
CLIFTON, GREENLEE COUNTY, ARIZONA
FOR YEAR 1941

(Shipments made to Ozark Smelting & Mining Company)
Coffeyville, Kansas

Settlement Date	Car No.	Smelter Weight Pounds	Zinc Metal		Lead Metal		Total Pounds Metal
			% Zinc	Pounds Zinc	% Lead	Pounds Lead	
5-27-41	619371	87,787	22.0	19,313	11.8	10,359	29,672
6-4-41	91849	87,037	22.8	19,844	12.2	10,619	30,463
6-14-41	169247	93,124	20.9	19,463	11.4	10,616	30,079
6-26-41	46224	106,349	20.7	22,014	11.0	11,698	33,712
7-22-41	169411	101,935	18.6	18,960	15.8	16,106	35,066
8-11-41	44232	101,506	17.27	17,530	11.6	11,775	29,305
8-18-41	92012	112,622	20.4	22,975	12.5	14,078	37,053
9-9-41	91589	110,684	18.3	20,255	16.0	17,709	37,964
10-14-41	91714	92,661	23.0	21,312	12.3	11,397	32,709
Total		893,705		181,666		114,357	296,023
Average % Shipping Values			20.44		12.73		

(Type of ore shipped - Carbonate for Pigment Purposes)

PRODUCTION RECORD OF THE LITTLE CAP MINE
CLIFTON, GREENLEE COUNTY, ARIZONA
FOR YEAR 1941

(Shipments made to Ozark Smelting & Mining Company)
Coffeyville, Kansas

Settlement Date	Car No.	Smelter Weight Pounds	Zinc Metal		Lead Metal		Total Pounds Metal
			% Zinc	Pounds Zinc	% Lead	Pounds Lead	
5-27-41	619371	87,787	22.0	19,313	11.8	10,359	29,672
6-4-41	91849	87,037	22.8	19,844	12.2	10,619	30,463
6-14-41	169247	93,124	20.9	19,463	11.4	10,616	30,079
6-26-41	46224	106,349	20.7	22,014	11.0	11,698	33,712
7-22-41	169411	101,935	18.6	18,960	15.8	16,106	35,066
8-11-41	44232	101,506	17.27	17,530	11.6	11,775	29,305
8-18-41	92012	112,622	20.4	22,975	12.5	14,078	37,053
9-9-41	91589	110,634	18.3	20,255	16.0	17,709	37,964
10-14-41	91714	92,661	23.0	21,312	12.3	11,397	32,709
Total		893,705		181,666		114,357	296,023
Average % Shipping Values			20.44		12.73		

(Type of ore shipped - Carbonate for Pigment Purposes)

History and Management:

The original discovery of ore outcrops and location of several mining claims was made in 1916 by Manuel Calderon. Through lack of work and abandonment, these claims reverted to public domain in 1923. In 1933 a group of 10 claims (Lime-Cap Nos. 1 to 10) were located by S. G. Murillo, who transferred equal interests to Matt Danenhauer, George Danenhauer, and Ed Danenhauer. During the next twelve months, in addition to rehabilitating 50 feet of original tunnel, called upper tunnel, about 150 feet additional was driven at this point.

A crosscut 50 feet long, called lower or haulage tunnel, in the footwall shale, was located 52 feet below the level of the upper working. This crosscut was carried forward 280 feet.

The following year two short drifts were made, 10 feet each in upper tunnel, to explore ore showings. Balance of assessment work was done on other claims.

From this time on only required assessment work was done each year, until moratorium of assessment work went into effect.

During 1939, from September to December, 10 claims were leased to D. B. Leake, who shipped about 250 tons of ore from the dump and from exposed ores in the mine. A record of only the last two cars is available. Very little underground development was done, although one mile of good truck road was built from the highway to present workings. The lease was cancelled, for non-compliance of conditions by lessee, in December, 1939, the owners taking possession.

During June, 1940, Mr. Charles K. Barnes became associated as an equal partner, and has since been active in the management and operation.

In November, 1940, under adverse weather conditions, underground work was started with Matt Danenhauer in charge.

By May, 1941, an additional 80 feet of tunnel was added to the lower crosscut tunnel, and a raise 31 feet finished to connect with the upper tunnel workings.

Arrangements were made with the Ozark Smelting and Mining Company, Coffeyville, Kansas, for receiving ore shipments. The first car was shipped May 15th, 1941.

During February, 1941, a group of 10 claims (Snyder Nos. 1 to 10) were located by Matt Danenhauer on extensions south and west of the Lime-Cap group. During March, 1941, Louis Huber of Phoenix, Arizona, became interested with Matt Danenhauer, and a consolidation of the two groups was made in September, 1941, with the six individuals

listed as equal owners of the entire group of 20 claims.

Active work was continued and from May to September, 1941, shipment of nine cars of high grade Lead-Zinc ore was made to the smelter in Kansas. A record of these shipments and settlement return is attached.

From May to September, 130 feet of drift southwest, extending the upper tunnel, was completed. From this area the nine cars of ore were extracted. Also 30 feet of cross drifting was done to explore ore southeast in upper tunnel.

During this period we had no housing facilities. The miners were carried by truck each day from Clifton and return. To conserve capital, most of the equipment and the air compressor were either leased or borrowed.

On October 1st, due to approaching winter and lack of housing at the mine, work was suspended until such time as necessary buildings and new equipment could be secured.

The entire property, consisting of 20 unpatented mining claims, is free and clear of any debt or incumbrance, and is owned by the following individuals, each holding an equal one-sixth share: Now has R.F.C Loan. Against Production

Matt Danenhauer, Ed Danenhauer, George Danenhauer, S. G. Murillo, Charles K. Barnes, and Louis Huber.

This property, producing lead and zinc ores, comes within the purview of the Act, as these metals are now classed as strategic minerals. Although the class of ore produced will not lend itself to direct reduction to pig lead or spelter, every ton produced will release an equal amount of other or sulphide ore that is now required to produce paint pigment.

Management of property has been and will be under direction of:

GENERAL MANAGER: Charles K. Barnes.

American, White, Married, Age 69, Residence, Duncan, Arizona.

Over 40 years experience in active mine operation and development.

General Manager, Brockman and Commonwealth Mines, Pierce, Arizona, 1902-1910.

General Manager, Yellow Pine Mine, Goodsprings, Nevada, 1912-1938.

Assaying and Chemical Analysis, Duncan Assay Office and Mine Examination, Duncan, Arizona, 1939 to date.

SECRETARY-TREASURER: Matt Danenhauer.

American, White, Married, Age 32, Residence, Clifton, Arizona.
Accountant, Bechtel and Co., Morenci, Arizona.
Formerly County Treasurer, Greenlee County.
Former Member Arizona State Legislature.
Eight years part time experience developing mine prospects.

No claim filed under War Minerals Relief Act.

Location - Greenlee County, Arizona. Sections 8-17 and 18, Township 2 South, Range 29 East. See Map attached.

Mining Property - List of Claims, all unpatented.

Claim		Located	Recorded	Book	Page	Mining Records
Lime-Cap	No. 1	10/1/33	10/3/33	4	489	Greenlee Co.
"	No. 2	"	"	4	489	Clifton, Ariz.
"	No. 3	"	"	4	490	Located by
"	No. 4	"	"	4	491	S. G. Murillo
"	No. 5	"	"	4	491	
"	No. 6	"	"	4	492	
"	No. 7	"	"	4	493	
"	No. 8	"	"	4	493	
"	No. 9	"	"	4	494	
"	No. 10	"	"	4	495	
Snyder	No. 1	2/20/41	2/24/21	5	455	Located by
"	No. 2	"	"	5	455	Matt Danenhauer
"	No. 3	"	"	5	456	
"	No. 4	"	"	5	457	
"	No. 5	"	"	5	457	
"	No. 6	"	"	5	458	
"	no. 7	"	"	5	459	
"	No. 8	"	"	5	459	
"	No. 9	"	"	5	460	
"	No. 10	"	"	5	461	

Note: Abstract of Title attached.

Lime-Cap Mine
Property & Location:

The Lime-Cap Mining property consists of 20 unpatented mining claims, Grandville Mining District, Sec. 8-17 & 18, T. 2 S., R. 29 E., Greenlee County, Arizona, 16 miles northwest of Clifton and 8 miles north of Morenci, Arizona, in the Crook National Forest Reserve; elevation 6000 feet. State Highway No. 75, the Coronado Trail, crosses the east end of the property approximately 15 miles from Clifton. One mile of fair trucking road connects present workings with the Highway. Weather and road conditions permit year round operation. Reference is made to U.S.G.S. Folio No. 129, Clifton-Morenci Quadrangle, for location and general geology compiled by Mr. Lindgren, U.S.G.S.

Truck haul 16 miles terminates at Clifton, Arizona, for rail transportation by Southern Pacific Railway.

Natural gas lines from New Mexico terminate at Morenci, No power lines are at present available.

Water supply for limited domestic use at the mine is available, with ample supply assured after further development. Water for mining use is available in the workings, which at present produces a limited amount. No water problem in underground workings is anticipated, until sinking below the tunnel level is found advisable. The present program is for tunnel operation only.

A limited amount of timber can be obtained from the Forest Reserve, which can be used for mining timbers and fuel.

Nearly all necessary mining supplies can be obtained from Clifton or Phoenix, Arizona, and El Paso, Texas. Some equipment may have to be shipped from Pacific Coast points.

Metal or Mineral: Lead-Zinc Carbonate Ore

Shipping ore is a Lead-Zinc Carbonate.

Lead	8 to 16%
Zinc	16 to 23%
Manganese	8 to 20%
Copper	trace to 0.35%
Gold & Silver	" to $3.00
Gangue	mainly lime, with low silica.

By selective mining, a combined Lead-Zinc content of 30% or better can be produced, which is very desirable for paint pigment manufacture.

The commercial ore so far developed ranges from 2 to 5 feet in thickness along the bedding plane of the limestone, in the ore shoot now opened. The character of the deposit warrants the assumption that heavier replacement will be encountered with depth and further lateral developing. Along the outcrop values in lead and zinc have been found at many places for a distance of over one mile. Samples taken from exposures 2 to 9 feet thick range from 2% to 9" combined metal. As depth was gained in the present workings the Lead-Zinc content increased and we can assume that the same condition will exist at other exposures.

A firm market for this ore is assured. The nearest market, The Ozark Smelting & Mining Company, Coffeyville, Kansas, can absorb a carload per day or more. We were advised through Sherwin-Williams, Los Angeles, that the requirement for paint manufacture on the Pacific Coast alone would absorb the finished product of over a car per day. Based on a shipping grade of 30% combined metals, we can expect a net smelter return of 3¢ per pound, after deduction for freight charges.

Other markets are available, but freight haul would be higher. If sufficient ore reserves are developed, we can anticipate reduction works either in Arizona or in the Los Angeles area, which will eliminate a part of the high freight charges at present required.

At present no feasible method of milling to separate the Zinc and Lead has been developed. Future research may enable us to profitably treat the lower grade ore which now cannot be shipped.

Geology:

The property is near the summit of Enebro Mountain, 7 miles north of Morenci, Arizona. Elevation 5500 to 7000 feet above Sea Level.

Formation in locality determined by Mr. Lindgren:

Top - Rhyolite
Basalt
Limestone (carboniferous) Modoc
- - - - - - -
Shales (Morenci)
Limestone (Longfellow)
Quartzite (Coronado)
Base - Granite

Ore formation is at contact of Morenci Shales and Modoc Limestone, and replacement deposits in upper sections of limestone beds. Several vertical faults cut both shale and lime. The present workings are along one of these faults. The strike of the lime beds is approximately east and west. A general dip of approximately 10 to the north is observed.

The source of the mineral solutions is not definitely determined, but may be related to mineral-bearing intrusives noted elsewhere in the district, but not uncovered as yet in the immediate locality. To date no minerals have been found either in the footwall shales or in the basalt capping over the lime.

The lime outcrop on the property has been traced for a distance of over one mile. Eight locations on the outcrop show values in lead and zinc.

One Lime-Cap Claim No. 5 the upper tunnel immediately above the shale follows along a fault for its entire distance of 375 feet, all in ore. For the first 200 feet the ore appears to be confined to the line of fissure. From the 200 foot station the ore is making into the limestone walls, and has been crosscut for from 5 to 15 feet still showing ore, with shipping grade from 2 to 5 feet thick. Practically all of the material broken during the last 150 feet has been shipped.

The ore body here appears to be a lens roughly following the bedding of the lime with high grade ore exposed, continuing ahead and with depth.

Existing Development:

(1) Other than location cuts and prospect tunnels, the only development to date is on Lime-Cap Claims No. 5 and No. 9, total 891 feet.

On Lime-Cap No. 5, the upper tunnel has 375 feet of development, all in ore. The first 80 feet developed only low grade. High grade ore was encountered as depth into the mountain was gained, and all ore shipped was extracted from the balance of 295 ft. tunneling.

The lower or haulage tunnel is entirely in the footwall shale; has 410 ft. tunnel and 31 ft. raise. A 50 foot incline raise was made by lessee Leake but this work is not of use in further operation. The claim has 866 feet existing development.

On Lime-Cap No. 9 a tunnel 25 feet is in ore.

(2) A map of the workings on Lime-Cap Claim No. 5 is attached, numbered to correspond with Assay Sheet following: Samples taken from channel cuts in ore face or side of tunnel. Samples Nos. 1 to 5 were cut to ascertain ore of shipping grade in upper tunnel from 80' station to 190' station, approximately 25 foot intervals. Samples 6-7-8 were cut in wall and face at 200' station, prior to extending the tunnel. Samples 9 to 20 are channel cuts, low grade ore top and bottom.

From the 200 ft. station control samples were cut to identify shipping ore: 9 carload lots were extracted; check samples on carload lots, taken by Mr. Matt Danenhauer and analyzed by Mr. C. K. Barnes, were so close to smelter samples, that no Umpire sampling was had except on Car Lot No. 6.

The Car Lot samples are marked to correspond to the area extracted.

Area marked O shows location where the 2 last cars shipped by D. B. Leake were extracted. Settlement sheets on prior lessee shipments were destroyed by the lessee.

(3) For the present all mining will be by tunnel. From the present tunnel to the surface, ranging from 25' to 100', no great amount of shipping ore can be expected and no further exploration is contemplated. Proposed development will be all below level of present upper tunnel.

(4) Equipment on Hand: A list of equipment now on hand is attached.

Production: (The following does not include production during operation by Lessee D. B. Leake.)

From May to Sept. 1941 we extracted and shipped 9 carloads of high grade zinc-lead carbonate ore, 480 tons, containing 296,025 pounds combined Lead and Zinc metal total value F. O. B. smelter $8807.49; deduction for freight @ $6.95 per ton and one umpire charge $4449.36. Net return $5468.13. This approximates $10.00 per ton from which is deducted $1.50 per ton Truck Haul and the cost of mining, which under the adverse conditions of operating was nearly $7.35 per ton.

The proposed development will enable us to cut our cost per ton of ore to at least one-half of this figure. With the 2 stoping areas projected, and with no addition to the proposed operating force and equipment we expect to reach a production of at least 3 cars of shipping grade per month. We estimate approximately 4 months will be required to install buildings, machinery, and drive the crosscut tunnel 100 feet further. This will open an ore area 100 ft. on the dip below the present workings. We can expect to block out within a short period of drifting an area 100x100 feet, containing shipping ore that should equal the value and quantity exposed and extracted above. Based on the average obtained already, we can predict at least 2500 tons of ore can be extracted from the area. Should the ore shoot widen and continue to the 200 foot lower point, production during the proposed year's development may be sufficient to amortize a large portion of the requested loan.

Very little water has been encountered and we do not anticipate necessity for pumping unless it is found advisable later to sink an incline tunnel directly on the dip of the formation.

Marketing:

Arrangement was made to ship any ore, containing 30% or more combined Zinc-Lead, to the Ozark Smelting & Mining Co. reduction works at Coffeyville, Kansas. Freight per ton, from Clifton, Arizona, via S. F. Ry. $6.95. Truck haul from Mine to Clifton, $1.50.

We are assured of a firm market of 3¢ per pound combined metal for all the 30% ore we can ship to this point, which is the nearest market at this time.

Water Supply:

Ample water for domestic and mining needs can be secured from the headwaters of Knight Creek on the property. Two good springs are available.

There is no water supply for milling closer than the San Francisco or Gila River 15 to 20 miles distant.

Power:

Source of power will be gasoline or oil operated engines.

Costs:

(1) Due to nature of previous work, which would be classed as prospecting, the cost of mining, per ton, has been excessive and has been about $7.35. Future cost is estimated at $3.75 per

ton mamimum. Tunnel and drifting cost estimated $10.00 per foot maximum.

(2) No milling is contemplated under proposed development.

ASSAY MAP DETAIL

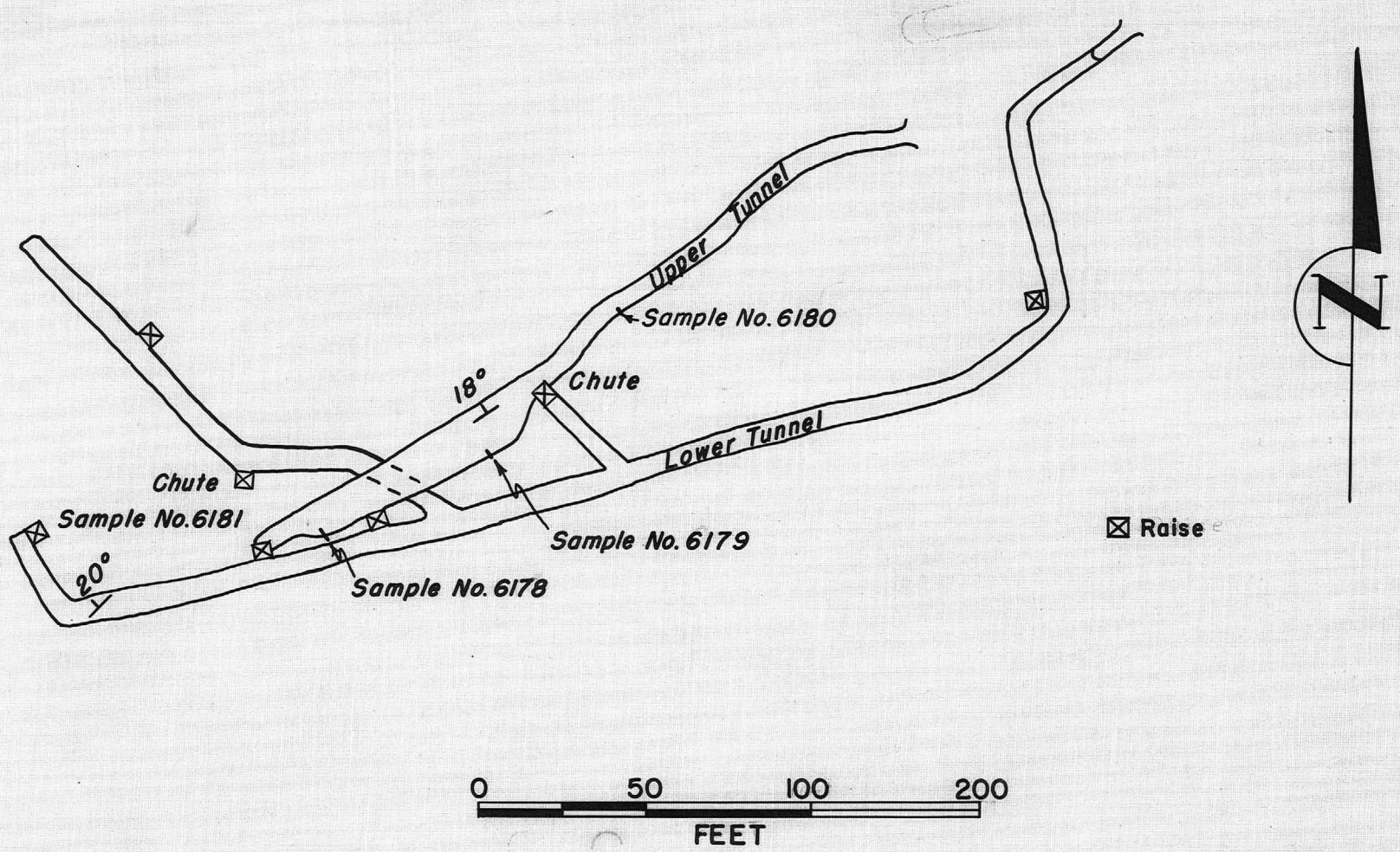
			Zn.	Pb.	
1.	Channel Sample,	Vein 3'	24.2	10.23	25 ft. Intervals
2.	"		24.1	6.00	"
3.	"		24.2	11.2	"
4.	"		21.45	7.2	"
5.	"		6.6	7.0	"
6.	Channel Sample,	Wall 2 ft.R	27.5	19.8	
7.	"	Face 5 ft.	13.2	8.5	
8.	"	Wall 2 ft. L	25.8	10.23	
9.	Drill Hole "	Top 2 ft.	9.7	6.0	
10.	Channel Sample	Bottom 30"	10.1	6.5	
11.	"	Top 12"	8.2	7.4	
12.	"	Bottom 30"	6.9	4.65	
13.	"	Top 12"	8.0	8.2	
14.	"	Bottom 36"	9.8	7.7	
15.	"	Top 12"	4.0	11.6	
16.	"	Bottom 12"	3.94	7.44	
17.	"	Top 6"	15.92		
18.	"	Bottom 24"	11.2	11.26	
19.	"	Top 12"	4.1	4.65	
20.	"	Bottom 24"	8.2	16.7	

CAR LOT SAMPLES

A to X	Car load	No. 1	Zn 22.0	Pb.11.8	Ore 2' to 4'	Drifting	25'
A to B	"	No. 2	22.8	12.2	Ore 2' to 5'	"	25'
B to C	"	No. 3	20.9	11.4	Ore 2' to 5'	"	25'
C to D	"	No. 4	20.7	11.0	Ore 2' to 5'	"	25'
D to E	"	No. 5	18.6	15.8	Ore 2' to 5'	"	25'
E 2	"	No. 6	17.27	11.6	Ore Av. 5'	from 3 stopes	
E to F	"	No. 7	20.4	12.5	Ore 2' to 5'	Drifting	25'
F 2	"	No. 8	18.3	16.0	Ore 2' to 5'	from 2 Stopes	
Mixed	"	No. 9	23.0	12.3	Ore above 5 stopes		

G 2 Carloads shipped by Lessee D.B. Leake Ore averaged about 3' in tunnel and stopes

18.2	8.7
18.5	7.8



BRUNTON AND PACE SURVEY OF LIME CAP MINE,
GREENLEE CO., ARIZONA. MAY 8, 1946

LIME CAP MINE

ZINC LEAD

(Carbonate Ore)

NOTE: the operation herein described was undertaken at a period when the lead market was 4¢ per pound.

Leave Highway 70 at Safford or at Duncan, the distance to Clifton being 35 and 30 miles respectively.

This property comprises a large blanket of carbonate oxide ore, 8 to 20 feet thick, of unknown width and length, but outcroppings indicate possibly a half to 3/4 of a mile wide, and length unknown. The ore is high grade and can either be smelted, concentrated or possibly shipped, though it is questionable if the latter would be practical.

LOCATION: This mine is in southeastern Arizona, 16 miles from railroad on paved highway, at an elevation of 6,000 feet, North of Clifton Arizona, Greenlee County.

TITLE: On public domain and forest reserve held by mineral location.

FACILITIES: Mine portal is on road 3/4 mile off paved highway. Domestic water from springs. Water for mining purposes can be developed with apparent ease. Timber can be had from the forest in vicinity. Mining supplies available in district.

TOPOGRAPHY: The general area is a complex series of canyons and ridges comprising a rough terrain. There are small streams of water in the deeper canyons with scattered springs. Area covered with considerable timber and other growth. Mine located near maximum elevation of the particular area.

NATURAL AND PHYSICAL RESOURCES: Three-fourths of a mile off of paved highway. Present development located in side of mountain with a 1000 or 1500 feet back, with a ratio of about 1 - 1/2 feet back for each foot driven forward. Permanent springs, indicating ample water if developed. Plenty of timber. Large mill, cabin and dump-site.

GEOLOGY: Formation in locality: TOP - Rhyolite, Limestone (Carboniferous) Medoc, Shales - Limestone - Quartzite.

BASE - Granite.

Ore formation is at contact of Shales and Modoc Limestone, and replacement deposits in upper sections of limestone beds. Several vertical faults cut both shale and lime. The present workings are along one of these faults. The strike of the lime beds is approximately east and west. A general dip of approximately 10 degrees to the north is observed.

The source of the mineral solutions is not definitely determined, but may be related to mineral-bearing intrusives noted elsewhere in the district, but not uncovered as yet in the immediate locality.

The lime outcrop on the property has been traced for a distance of over one mile. The outcrop shows values in lead and zinc.

There is not sufficient development on the property to make it possible to ascertain the source of the mineralization. But, it is most evident that there is a large fissure deposit of sulfide ore that was pressed through the floor of shale, and between this and the lime, forming a great blanket of ore. The only way of definitely proving the extent of this ore body would be to drill the lime. The general character of the ore deposit opened up warrants the assumption that the heavier replacements will be encountered with depth by further lateral developing. As the depth was gained in the present workings, the lead-zinc content rapidly increased, and it is assumed that the same condition will exist at other exposures.

ROCKS: The principal rock is limestone (Mississippian series). This limestone is considerably exposed covering an area north and south of over a mile, extending from paved highway southwest beyond the mine itself a considerable distance. Underlying this limestone is a red shale between which two formations are the ore deposits in varying thicknesses.

THE MINES: Tunnel portal is sufficiently above canyon to permit good dumping facilities. All ore and rock is removed thru the haulage tunnel directly underneath tunnel into the ore. Ore is delivered thru a series of chutes into mine cars, by stoping.

MILL SITE: Very favorable mill-site directly in front of mine, permitting haulage tunnel to deliver from track into concentrator or smelter.

DEVELOPMENT : The ore is opened up by 500-ft. tunnel, and in addition including upraises, q winzes and crosscuts driven into the ore, passing thru a vein of 8 to 20 feet in thickness.

ORE BODY: The ore body is exposed by a 500 ft. tunnel driven directly into the blanket, from which stopes have been cut to a haulage tunnel 35 ft. below in red shale, which exposes an ore body totalling 20 or more feet, assaying from 15 to 60 per cent lead-zinc carbonate-oxide ore. And, an unknown body of 5% metal in sand stone, some indications that sulfides are coming in, in the face of the tunnel, which has some 6 ft. of 35% ore.

MINERALIZATION: Outcroppings extend in all directions from the present development, which terminal was commenced on one of these outcrops, carrying one 2 or 3% metal, because of extensive leaching. Values have steadily increased during the 500 feet that depth has been obtained, all of which tunnel has been subjected to extensive leaching processes. The same outcrops appear 1/4 mile north and south from the tunnel, and a mile to the west, and two miles further, galena boulders freely scattered about, were picked up and carried off on pack animals.

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The same surface mineralization continues for over a mile. The definite width being undetermined because of limestone and other capping. Mineralization in the tunnel has a maximum thickness to 20 feet and narrows in places to about 8 ft. and value varying from 4 to 20 percent zinc-lead, but the richer strata is 2 to 5 feet thick, being high grade shipping ore, the average value of which, without sorting or grading, has averaged in shipments over 30% zinc and lead, being approximately 2 parts zinc to one of lead. The entire vein is milling and smelting ore, which includes stopes and crosscuts in the 500 ft. tunnel, if, concentrating facilities were available at mine. In the face of the tunnel at 500 ft. the high grade center is 6 ft. thick. There the lead ore is changing in character with considerable indication of possible encounter sulphide ores. The maximum width of vein of the lower value ore is undetermined.

The commercial ore so far developed ranges from 2 to 5 ft. in thickness along the bedding plane of the limestone, in the ore now opened. The character of the deposit warrants the assumption that heavier replacement will be encountered with depth and further lateral developing. Along the outcrop values in lead and zinc have been found at many places for a distance of over one mile. Samples taken from exposures on the surface 2 to 9 feet thick range from 2% to 9% combined metal. As depth was gained in the present workings the lead-zinc content rapidly increased and we can assume that the same condition will exist at other exposures.

ORE VALUES: The values in the ore blanket of a width of 2 to 5 feet average from 30% to 40% of the two metals, and ore carries other metals. Streaks of galena are to be found and occasionally pockets of much higher ore than the average, reaching above 50% zinc and lead. The ore on and near the surface was low grade, and has continuously improved as depth was attained by the tunnel. Some of the red shale has been impregnated and carries 4% to 5% principally lead. There are indications of sulphide ores, but none has yet been found, the present ore being a carbonate. Ore lies in a north-south direction, and ore blanket evidently having been pushed up causing considerable variation. There is no large tonnage of ore blocked out, but from all indications a very large ore tonnage exists, which conclusion it is believed will be most apparent to any competent engineer examining the property.

SHIPPING ORE is a LEAD-ZINC Carbonate:

Lead	8 to 16%	Copper	trace to 0.35%
Zinc	16 " 23%	Gold & Silver	" " $3.00
Manganese	8 " 20%	Gangue	mainly lime, with low silica.

By selective mining (not ore sorting) a combined Lead-Zinc content of over 30% can be produced.

EXPLORATION: It would be practical to horizontally core drill from the face of the tunnel, which should be undertaken in all directions in order to further block out ore deposits and attempt to locate sulphides and the possible source of the ore, and further to accomplish this same purpose, surface, vertical and slant drilling would be advisable. Continuing the development by driving the tunnel forward, which would obtain the same results as core drilling, but would be much slower and far more expensive.

POSSIBLE PROGRAM: In the past the difficulty has been in securing a market for the carbonate ore. El Paso, using their fume process of saving zinc, did not pay for the zinc, and it being approximately 2 to 1, and 65% of the value of the ore was not paid for; therefore, not permitting profitable operation. Other smelting operations are being constructed in the southwest, as well as concentrating facilities for carbonate ores. Operations might be conducted under several programs, but the following might be considered.

1. Shipment of the ores to one of the several new sources for smelting or concentrating and smelting.

2. Concentrating the ores by either electrolysis or flotation and shipping the concentrates.

3. Smelting the ore at the mine and shipping the combined metal, for paint manufacturing purposes.

4. Jigging the low grade oxide ores. This method has not been investigated because of lback of facilities.

IMPROVING POTENTIAL: With availability of only a nominal development financing a large additional tonnage of ore should be opened up. The conclusion is that in the immediate deposits adjoining the workings there is a very large tonnage of milling and smelting ores and the same mineralization is indicated to continue over a large area, but there has been insufficient exploration to prove this. A program of further development could possibly develop an ore source for the larger operators in the country. It is important to try and ascertain the ore source and to encounter the sulphide, which it is believed would contain still higher percentages of the already high grade zinc and lead. This same mineralization can be followed for a considerable distance in either direction from the present development. The present workings are not a localized deposit of zinc and lead, but a part of an extensive mineralized area. Nor is there anything to indicate that the present workings are the center of the property's mineralization.

SHALE OXIDE ORES: Also oxide ores are encountered in the red shale, being the formation on which the mineralization lies. A 4% or 5% lead-zinc content, largely lead in the shale, should be possible to concentrate by jigging.

EXISTING POSSIBILITIES: The blanket ore that has been cut by the 500 ft tunnel has proven the existence of a large body of ore. If an operator should care to continue mining and shipping, and by this open up further ore tonnage rather than to undertake exploration by core drilling, depends upon the accomplishment desired and available finances. Certainly, to have definite and substantiating proof of the approximate entire tonnage would be of advantage in planning the future operations, but to acquire this information in its most complete form will necessarily entail a very considerable cash outlay. This program would be a most interesting and valuable one.

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The property, even in its present development, is ready for a very simple operation.

EXISTING DEVELOPMENT: (See map)

(1) other than location cuts and prospect tunnels, the only development to date is on Lime-Cap Claims, No. 5. and 9, total 891 feet. On Lime-Cap Claim No. 5. the upper tunnel immediately above the shale follows along a fault for its entire distance of 375 feet, all in ore. For the first 200 feet the ore appears to be confined to the line of the fissure. From the 200 feet station the ore is making into the limestone walls, and has been crosscut for from 5 to 15 feet still showing ore, with shipping grade from 2 to 5 feet thick. Practically all of the material broken during the last 150 feet has been shipped.

The lower or haulage tunnel is entirely in the footwall shale; is a 410 feet tunnel and 31 feet raise. The 50 ft. incline raise is not of use in further operation. The claim has 866 feet existing development.

On Lime-Cap No. 9 a tunnel 25 ft. is in ore.

(2) A map of the workings on Lime-Cap No. 5 is attached, numbered to correspond with Assay Sheet following: Samples taken from channel cuts in ore face or side of tunnel. Samples Nos. 1 to 5 were cut to ascertain ore of shipping grade in upper tunnel from 80' station to 190' station, approximately 25 foot intervals. Samples 6 - 7 - 8 were cut in wall and face at 200' station prior to extending the tunnel. Samples 9 to 20 are channel cuts, low grade ore top and bottom.

From the 200 ft. station control samples were cut to identify shipping ore; 9 carload lots were extracted' check samples on carload lots were so close to smelter samples, that no Umpire sampling was had except on Car Lot No. 6. The Car Lot samples are marked to correspond to the area extracted. Area marked G shows location where the 2 last cars shipped were extracted.

ORE SHIPMENTS : Arrangements were made with the Ozark Smelting and Mining Company, Coffeyville, Kansas, for receiving ore shipments. The first care was shipped May 15, 1941. From May to September 1941 9 carloads of high-grade zinc-lead carbonate ore were extracted and shipped, 480 tons containing 296 025 pounds combined lead and zinc metal, total value F.O.B. smelter, $8807.49; deduction for freight at $6.95 per ton and one umpire charge $4449.36. Net return $5468.13. This approximates $10.00 per ton from which is deducted $1.50 per ton truck haul and the cost of mining, which under the adverse conditions of operating was nearly $7.35 per ton.

To drive the crosscut tunnel 100 ft. further will open an ore area on the dip below the present workings, blocking out an area 100 x 100 feet, containing shipping ore that should equal the value and quantity exposed and expracted above. Based on the average obtained already, estimated at at least 2500 tons of ore that can be extracted from the area. Should the ore sheet widen and continue to the 200 foot lower point, production may be very greatly increased. Very little water has been encountered and we do not anticipate necessity for pumping unless it is found advisable later to sink an incline tunnel on the dip of the formation.

SHIPMENTS MADE TO OZARK SMELTING
AND MINING COMPANY, COFFEYVILLE, KANSAS.

Settlement Date	Car Number	Smelter Weight Pounds	Zinc Metal %Zinc	Zinc Metal Pounds Zinc	Lead Metal %Lead.	Lead Metal Pounds Lead	Pounds Total Metal
5.27.41	619371	87.787	22.0	19,313	11.8	10,359	29.672
6. 4.41	91849	87,037	22.8	19,844	12.2	10,619	30,463
6. 14.41	169247	93,124	20.9	19,463	11.4	10,616	30 ,079
6.26.41	46224	106,349	20.7	22,014	11.0	11,698	33,712
7.22.41	169411	101,935	18.6	18,960	15.8	16,106	35,066
8.11.41	44232	101,506	17.27	17,530	11.6	11,775	29,305
8.19.41	920112	112,622	20.4	22,975	12.5	14,078	37,053
9. 9.41	91589	110,684	18.3	20,255	16.0	17,709	37,964
10.14.41	91714	92,661	23.0	21,312	12.3	11,397	32,709
Totals.		893,705		181,666		114,357	296.023
Average % shipping values.			20.44		12.73		

(Type of o re shipped - Carbonate)

COSTS OF MINING:- Due to nature of previous work, which would be classed as prospecting, the cost of mining per ton, has been excessive and has been about $7.35. Future cost is estimated at $3.75 per ton maximum. Tunnel and drifting cost estimated $10.00 per foot maximum.

ASSAY MAP DETAIL.

		Zinc	Pb	Intvls
1.	C.S. Vein 3'	24.2	10.23	25'
2.		24.1	6.00	
3.		24.2	11.2	
4.		21.45	7.2	
5.		6.6	7.0	
6.	Wall 2'	27.5	19.8	
7.	Face 5'	13.2	8.5	
8.	Wall 2'	25.0	10.23	
9.	Top 2'	9.7	6.0	
10.	Bottom 30"	10.1	6.5	
11.	Top 12"	8.2	7.4	
12.	Bottom 30"	6.9	4.65	
13.	Top 12"	8.0	8.2	
14.	Bottom 36"	9.8	7.7	
15.	Top 12"	4.0	11.6	
16.	Bottom 12"	3.94	7.44	
17.	Top 6"	15.92		
18.	Bottom 24"	11.2	11.26	
19.	Top 12"	4.1	4.65	
20.	Bottom 24"	8.2	16.7	

Car Lot Samples.

		Zn	Pb	
A to X	Car #1	22.0	11.8	2' - 4'
A to B	#2	22.8	12.2	2' - 5'
B to C	#3	20.9	11.4	2' - 5'
C to D	#4	20. 7	11.0	2' - 5'
D to E	#5	18.6	15.8	2' to5'
E2	#6	17.27	11.6	5' 3 stopes
E to F	#7	20.4	12.5	2' - 5'
F2	#8	18.3	16.0	2'-5' from 3 stopes
Mixed	#9	23.0	12.3	above 5 st.

G 2 carloads shipped - Ore averaged about 3' in tunnel and stopes.

	18.2	8.7
	18.5	7.8

PAST OPERATION INEFFICIENT AND IMPRACTICAL:

The past operations were only of a prospecting character, it being most evident that successful operations were not possible when a near $7.00 freight charge was incurred, and a $10.00 cost per ton of mining, with other operating costs accordingly. Instead of mining of only high grade ores, either concentrating or smelting facilities must be available at the mine to permit realizing on all ores mined that carry good commercial values. This will greatly reduce the cost of mining, increase the tonnage and the amount of the refined metal. Assuming that the ore body, without selective mining, contains only 15% of the two metals, instead of over 30 as formerly realized from the shipments, then estimated results of operation at the mine with appropriate facilities would be as follows:-

Based upon operation of 30 tons per operative day:

15% combined metals 15¢ lb	1450.00	
Mining and Smelting Charge $10.00 ton		300.00
Int. Deprec. & Misc. Costs.		200.00
Total operation		500.00
NET Cost of 7500 lbs metal at mill	952.00	
Freight to market .04 per lb.		300.00
NET daily return from operation.	652.00	

Instead of reducing the ore to metal, and instead of concentrating and separating at the mine, net results would also be very favorable, depending upon problems involved in concentration and other factors to be determined. The object being to save the freight and handling charges on the gross material.

Here, in the foregoing, is an illustration of efficient and practical operation, as compared with a prospecting and exploration program and marketing of such ores under very unfavorable circumstances to try and meet expences of such prospecting that has occurred in the past. The high grade zinc-lead ores increase the net, but obtaining these by selective mining, bringing about a 300% increase in mining costs, and transporting these ores half way across the nation to be refined, sacrifices the greatest part of the profit possible from the operation of the mine. Instead of such a program, the operator must avail himself of the additional large tonnage of good concentrating or smelting area ores that are wasted to secure the higher grade shipping ore, which is only the facilities for handling.

In the past operations values that in ordinary zinc-lead mining would be considered good pay ores had to either be discarded, or could not be worked, resulting i in sacrificing a greater part of the potential of the mine, because of the fact of not being able to realize the possibilities actually existing, due to inadequate financing, facilities and market.

Proceeding blindly with the property should not be continued. To make a reasonable estimate of the future and reserve, the many outcrops over the entire property that have the same surface appearances as the one that has developed the present ore body, should be core-drilled to ascertain if the low-grade surface ore quickly changes in shallow depth to high grade ores. Such an exploration program would and could probably disclose a vast amount of valuable information, at a comparatively low cost.

This property is now sufficiently developed that prospecting methods of operation are no longer practical. A program should be inaugurated in accordance with the existing showings that have been developed, which necessarily will require a considerable financial investment for equipment and operating expense.

Prior to proceeding with any program, a considerbble period of investigation would be advisable. But, in the interim, immediate mining and shipping of ore could be undertaken, if it should be so desired.

Combined Metal as Paint Pigment Base: A survey has been conducted of a dozen large paint manufacturers in the Los Angeles area with regard to the possibility of obtaining a market for a combined zinc-lead metal product for use as an ingredient in paint pigment.

The survey revealed the following facts:-

Paint manufacturers employ zinc and lead in pigments in the percentages of from 15% lead to 85% zinc; to 50 % lead to 50% zinc. We were told unequivocably that a zinc-lead product of 65% zinc to 35% lead, such as the metal combination of the property here described would be entirely acceptable. In fact the percentage ratio does not matter greatly so long as the paint manufacturer knows the correct ratio and can add the necessary amounts of zinc or lead as required by the various manufacturers' formulations.

Marketing the product in this manner has two distinct advantages: First, it avoids the costly expense encountered when serparation of the zinc from lead is attempted in a carbonate one. Second, by smelting the ore at the mine you will avoid the high expense of paying freight upon the gross material from the mine to the smelter.

This local market is so large and continuing that a maximum production of the property herein involved could not of itself supply anything like an adequate supply even for the Los Angeles paint manufacturers alone. Most of the competitive products in this line are made east of the Mississippi, even as far east as Pennsylvania and New Jersey. So there does exist a continually growing market on the West Coast which could absorb all the production the property is capable of giving, with saving of the high freight from the east.

CONCENTRATING OXIDE ORES IN SHALE:- The extent that mineralization has penetrated the shale as heretofore stated, is undetermined. But there are reasons to believe that there is a very large tonnage of 4% to 5% oxides in the shale which is recoverable by jigging. The costs for a crushing and concentrating unit for this purpose would be relatively small. The shale ore is easily broken, and much of it could be handled by stoping directly into the haulage cars. This operation should be considered as secondary to the high grade ores, and merely as a supplemental income.

Added to the shale ore tonnage could possibly be the 8 to 20 ft. blanket of 4% to 20% carbonate and oxide ores and what success would be had in concentrating this ore in the same process would have to be determined. Nevertheless,

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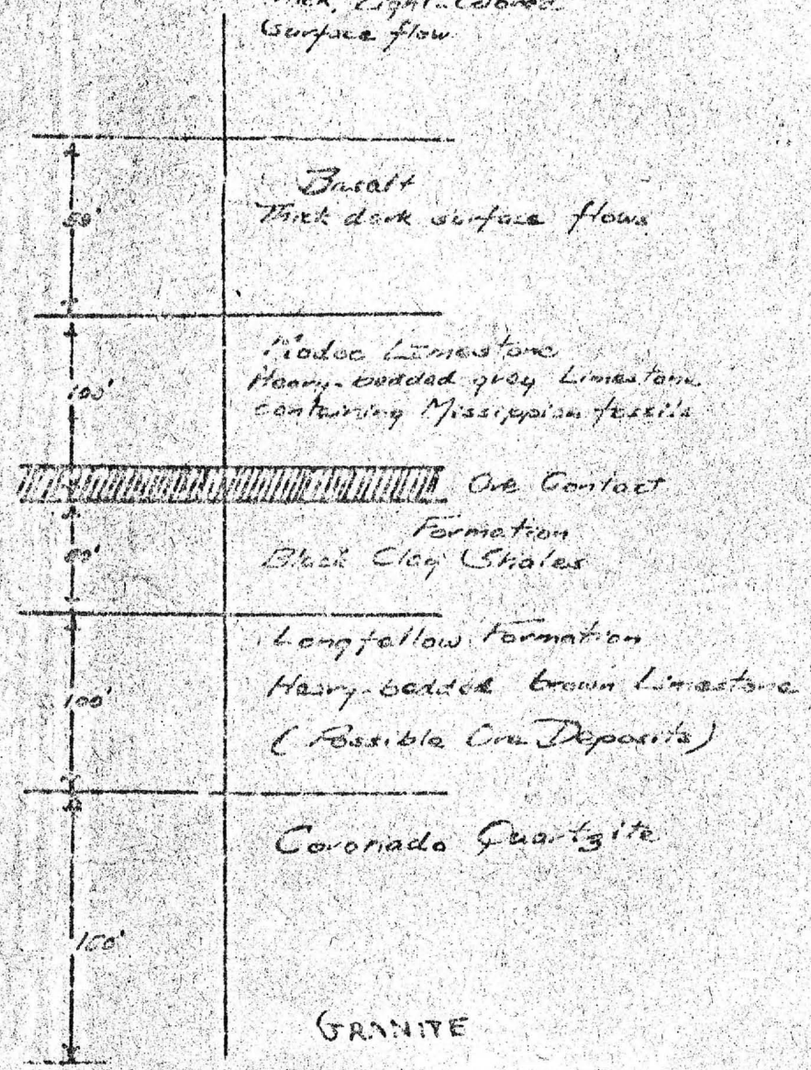
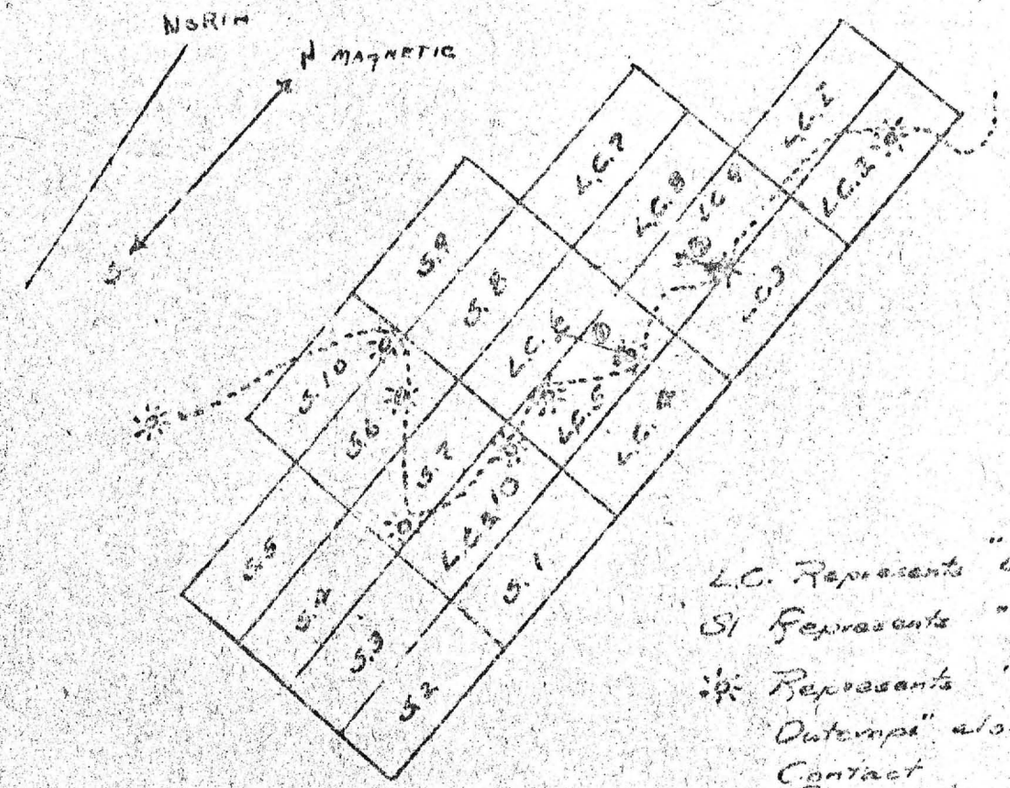
Geology





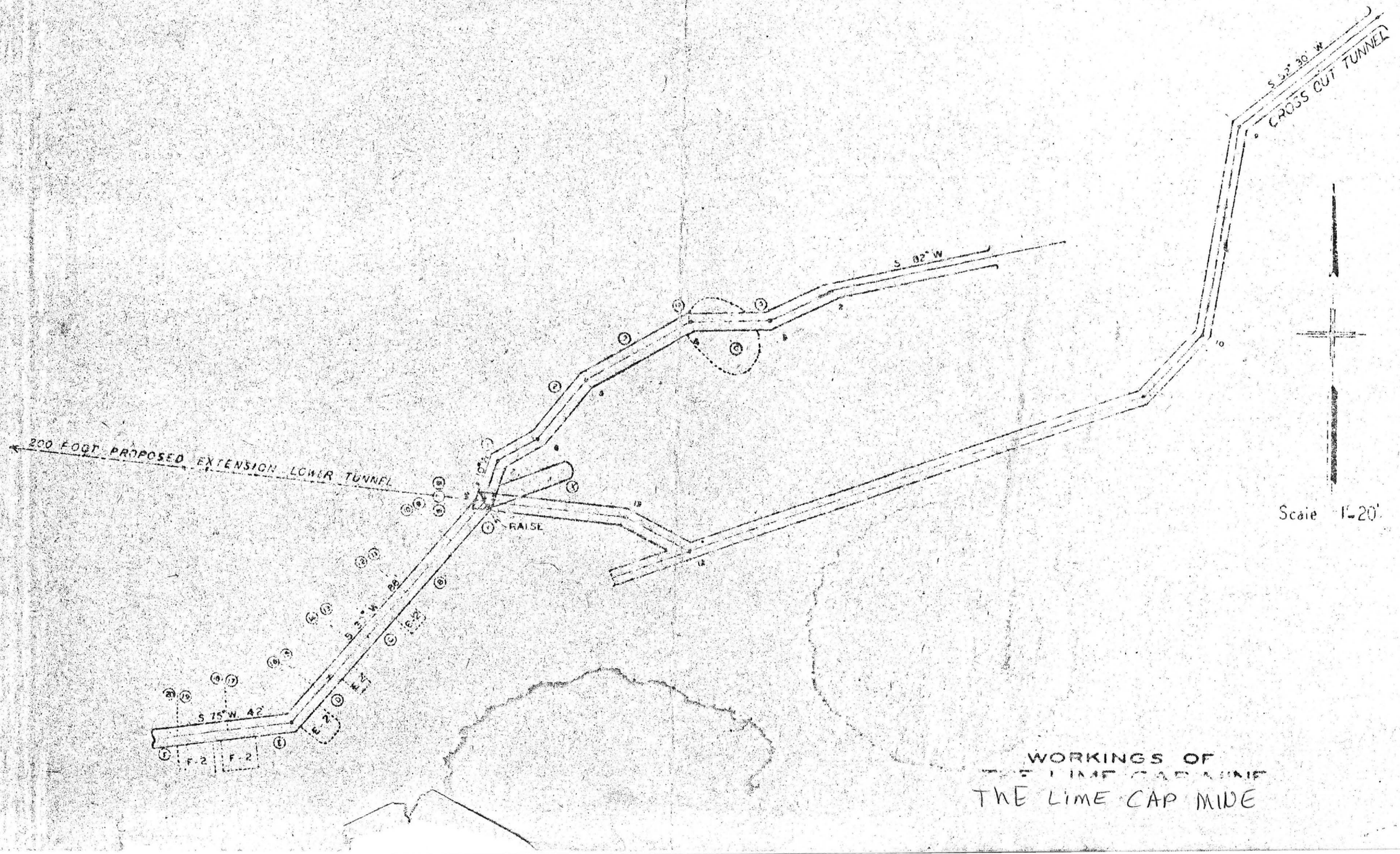
L.C. Represents "LIME CAP"

S1 Represents "Snyder"

Represents "Ore Outcrops" along Lime-Shale Contact

..... Represents Lime-Shale Contact

Represents Workings - Approximately 1000' of development where production is coming from - Developed for only about 25'. Values - Surface 6% to 19% on face.



WORKINGS OF
THE LIME CAP MINE