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Arizona Geological Survey
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Arizona Department of Mines and Mineral Resources Mining Collection

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PRINTED: 09-19-2012

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES AZMILS DATA

PRIMARY NAME: ESPERANZA MINE

ALTERNATE NAMES:
WEST ESPERANZA MINE
ESPERANZA OPEN PIT
OCOTILLO
CALMANIA GROUP

PIMA COUNTY MILS NUMBER: 864

LOCATION: TOWNSHIP 18 S RANGE 12 E SECTION 16 QUARTER NW
LATITUDE: N 31DEG 52MIN 17SEC LONGITUDE: W 111DEG 07MIN 37SEC
TOPO MAP NAME: BATAMOTE HILLS - 7.5 MIN

CURRENT STATUS: PAST PRODUCER

COMMODITY:
COPPER SULFIDE
COPPER OXIDE
MOLYBDENUM SULFIDE
SILVER
RHENIUM

BIBLIOGRAPHY:
CO PROSPECTUS 1970, (TONS & GRADE-CU & MO)
ADMMR STORIES OF DUVAL'S ESPARANZA MINE, DEC. 1961
BENNETT, H.J., L. MOORE, L.E. WELBORN & J.E. TOLAND, AN ECONOMIC APPRAISAL OF THE SUPPLY OF COPPER FROM PRIMARY DOMESTIC SOURCES, USBM IC 8598, 1973, P. 156
ADMMR ESPERANZA MINE FILE
CURTIS, C.H., THE ESPARANZA CONCENTRATER, PUBLISHED IN MINING ENGINEERING, NOV. 1961, P 1234-1239
LYNCH, D.W., THE ECON GEOL ESPERANZA MINE & VICIN, 1966, GEOL PORPHYRY CU DPSTS, TITLEY & HICKS
ADMMR 1 PLAN MAP (INCLUDED IN FILE)

08/20/86

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES FILE DATA

PRIMARY NAME: ESPERANZA MILL

ALTERNATE NAMES:

PIMA COUNTY MILS NUMBER: 444

LOCATION: TOWNSHIP 18 S RANGE 12 E SECTION 15 QUARTER NE
LATITUDE: N 31DEG 50MIN 33SEC LONGITUDE: W 111DEG 07MIN 42SEC
TOPO MAP NAME: ESPERANZA MILL - 7.5 MIN

CURRENT STATUS: PRODUCER

COMMODITY:
COPPER

BIBLIOGRAPHY:
ADMMR ESPERANZA MINE FILE

Esperanza Mill
7.5'

BATAMOTE HILLS QUADRANGLE
ARIZONA–PIMA CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
SW/4 TWIN BUTTES 15' QUADRANGLE

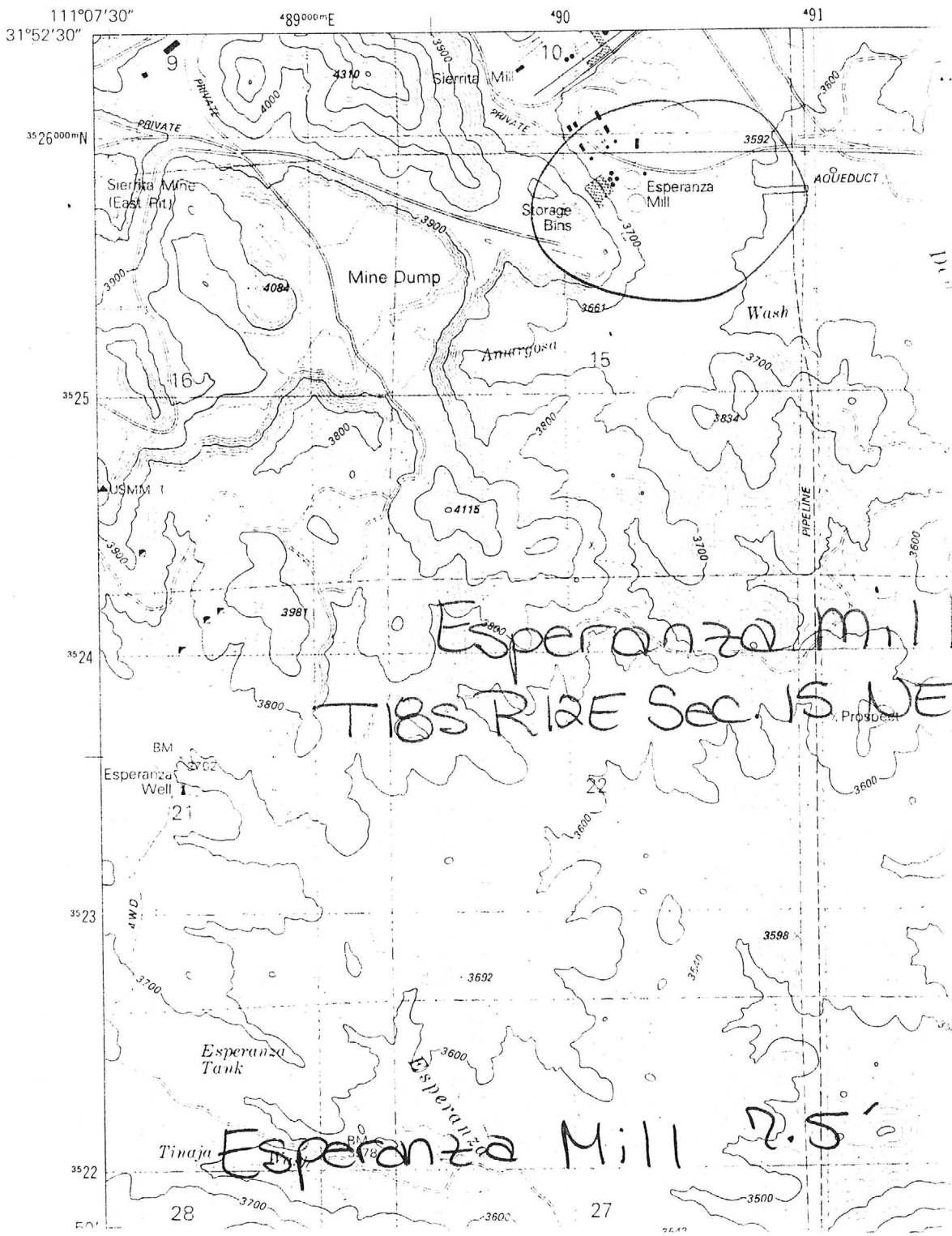
UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Esperanza Mine
T18S. R12E Sec. 16 NW

Esperanza Mill 7.5'

3741 I NW
(SAMANIEGO PEAK)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY



Esperanza Mill
T18S R12E Sec. 15 NE
Esperanza Mill 7.5'

ESPERANZA MINE

PIMA COUNTY

Mining World April 1957 p. 57
Mining World June 1957 p. 93
Mining World March 1958 p. 70
Mining World Sept. 1962 p. 67
Mining World Dec. 1962 p. 36
Mining World May 1963 p. 38
Mining World April 1963 p. 78
Mining World Nov. 1963 p. 37
Mining World July 1962 p. 43

Mining Congress Journal April 1962 p. 62

E&MJ Jan. 1963 p. 83
July 1973, p. 123, 124

Metal Mining & Processing July 1964 p. 44

Skillings Mining Review July 1966 p. 12
Skillings Mining Review Oct. 29, 1966 p. 12
Skillings Mining Review May 20, 1967 p. 8
Skillings Mining Review Jan. 20, 1968 p. 18

Economic Geology of the Esperanza Mine & Vicinity
see Geology of The Porphyry Copper Deposits - Southwestern North America p. 9-21

"Stories of Arizona Copper Mines"

Abstracts from Symposium on Arizona Geology p. 7
(Geology file)

E/MJ February 1972

Skillings Mining Review 1/1/72, p. 4

GJBX 143 1981 Radioactive Occurrences and Uranium Production in Arizona p. 231 + p 233
ABG&MT Report

Metals Week, February 24, 1975, p. 7 (prod. cutbacks)

Maps in the top shelf of the flat map storage (Esperanza and New Years Eve Mine)

USGS Bull. 1112-C
USGS Bull. 1182-E p. E12

USBM RI 4016 (1947)

IC 8341 p. 6, 10, 14

Skillings Mining Review 6/2/73, p. 6

Mining Congress Journal 6/73, p. 7

Skillings Mining Review, 7/13/74, p. 1, 16-20 (mine blasting)

Mining Magazine, June, 1974, p. 469 (personne

Mining Annual Review 1974, p. 307

Mining Journal, February 21, 1975, p. 140 (change in prod. schedules)

ESPERANZA

E/MJ, March, 1973, p. 87
" July, 1973, p. 123

Mining Engineering, Feb., 1973, p. 51
" " April, 1973, p. 42

Mining Congress Journal, January, 1973, p. 5

SKILLINGS Mining Review, March 23, 1974, p. 19

Field Trip Oct 16, 1979
Annual SME-AIME meeting
AB
1C

DUVAL CORPORATION

OPERATING DATA

SIERRITA/ESPERANZA/CLEAR COMPLEX

Photocopies and slides filed

There are three separate facilities - they are Sierrita mine and mill - Esperanza mine and mill and the CLEAR facility. These operations are all interrelated for materials flow and supervisory control. Within the last year, Sierrita and Esperanza mines have been combined for operating purposes.

Some of the concentrate from Sierrita is used to feed the newly developed CLEAR Plant which then produces about 100 MTD of copper in the form of high grade crystals - about 99.5 Cu. The bulk of concentrate produced, in excess of 25,000 short tons per month, is shipped to custom smelters, mainly ASARCO.

About 25,000 lbs. of copper per day is produced by dump leaching of oxide type ore at Esperanza.

Following are some operating statistics:

TOTAL EMPLOYEES - complex - 2,600

MONTHLY PAYROLL - $5.0 million approximately, including 39% benefits costs

MONTHLY POWER COSTS - $3.0 million approximately

TOTAL MONTHLY OPERATING COSTS - $15 million approximately

PRODUCTION MONTHLY:

Copper - approximately 19,000,000 lbs. contained in concentrates at 25% Cu. and as precip. at 75% Cu.

Molybdenum - approximately 1,600,000 lbs.

Silver - get credit for about 100,000 ozs. of silver per month contained in the copper concentrates.

Operating Data - Cont'd.

The beginning wage, inexperienced laborer, is $8.15 per hour.

Benefits paid for by the Company include basic life insurance, medical care insurance, retirement programs, disability leave benefits and dental care benefits. All of these medical or dental plans apply to employees and their dependents. The total benefits package amounts to 39% of salaries and wages.

Ours is an experienced, mature work force with a termination ratio less than 1% per month. All are recruited from the Tucson area.

Our supervisory group is mature and experienced with about one supervisor for each twelve employees.

October 3, 1979

H. L. Shively

LAW OFFICES OF
FICKETT & DUNIPACE
SUITE I TUCSON TITLE INSURANCE BUILDING
80 NORTH CHURCH STREET
TUCSON, ARIZONA

FRED W. FICKETT
WILLIAM S. DUNIPACE

MAIN 2-4649
POST OFFICE BOX 2568

February 19, 1958

Arizona Department of Mineral Resources
Mineral Building, Fairgrounds
Phoenix, Arizona

Re: Frazier River Mining Claim
in Pima Mining District in
Pima County, Arizona.

Gentlemen:

Thanks for sending me the enclosed inquiry about this property. It has been sold to Duval and you can therefore delete it from your listing.

Yours very truly,

Fred W. Fickett

FWF:s

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

~~December 10,~~ 1957

February 18, 1958

To the Owner or Operator of the Arizona Mining Property named below:

FRAZIER RIVER (Property) _____ (ore)

We have an old listing of the above property which we would like to have brought up to date.

Please fill out the enclosed Mine Owner's Report form with as complete detail as possible and attach copies of reports, maps, assay returns, shipment returns or other data which you have not sent us before and which might interest a prospective buyer in looking at the property.

FRANK P. KNIGHT,
Director.

Enc: Mine Owner's Report

Fine in Esperanza as per Ltr

April 14, 1949

Judge Fred W. Fickett,
140 North Church Street,
Tucson, Arizona.

Dear Judge Fickett:

I have your letter of April 12 regarding your Frazier River patented mining claim.

I am turning this letter over to the Department of Mineral Resources, C.H. Dunning, director, Mineral Building, Fairgrounds, Phoenix, Arizona, as they serve as the clearing house in bringing together those who are looking for mining properties and those who have claims available for sale or leasing.

It is probable that at some time in the near future they will have one of their field engineers give your property the "once over" so that they may have more complete information available for any one who may be looking for a good place to lease.

When people write to us, looking for mining properties, we refer them to the Department.

With kindest regards, I am

Very sincerely yours,

Charles F. Willis
State Secretary

CFW: VW

File in Espinaza
as per L.P.

ASSOCIATES
WILLIAM S. DUNIPACE
ROBERT S. TULLAR

LAW OFFICES OF
FRED W. FICKETT
140 NORTH CHURCH STREET
POST OFFICE BOX 2568
TUCSON, ARIZONA
PHONES 2065-2066

2 A 6 A 9

April 12, 1949

Arizona Small Mine Owners Association
528 Title & Trust Building
Phoenix, Arizona

In re Frazier River Patented Mining Claim Orem

Gentlemen:

I own the above named patented mining claim in the Pima Mining District in Pima County, Arizona, which was patented in about 1880 and lies about 5 miles southwest of Twin Buttes.

This claim adjoins on the east the famous patented Esperanza claim from which so much rich ore was shipped in days gone by. The Frazier River has a very strong lead-zinc-silver vein exposed on the surface and in my opinion affords an excellent prospect for anyone who wants to do a little speculative work on this type of property.

A good road goes to within 200 yards of the main working on the property.

This claim is not for sale or option, but I will lease it to anyone on a 40 shift per month minimum work basis, without any minimum royalty requirements and on a straight 5% royalty on all ore shipped or milled.

I have no engineering reports and no extensive assay data, but if you know of anyone who is interested in this type of a situation and wants to take about three hours for a hasty preliminary examination, I will be glad to take them out to the property at almost any time.

Please place this in your file for future reference.

Yours very truly,

Fred W. Fickett

Fred W. Fickett

FWF:s

Amargosa Molybdenum and Copper Corp.

P. O. Box 1463 Tucson, Arizona

February 9, 1944

Mr. J. S. Coupal, Director
Department of Mineral Resources
State of Arizona
416 Home Builders Bldg
Phoenix, Arizona

Dear Mr. Coupal:-

Thanks for your letter of the 2nd. I note that you were in Denver some days ago and you called on Mr. Potter. Since then, I received a letter from Mr. Potter stating that he would like to know more about our property. This letter I am answering. He is interested in getting some information on what we have, and I thought as long as Mr. Vanderwilt made an examination of our property and reported on same, I would ask him to get in touch with Mr. Potter.

I certainly appreciate your interest in the matter. I am leaving for the East the end of this week, but I expect to be back in a couple of months and hope to arrange to see you.

Sincerely yours,

J. Isermann

SI/ne

Febraury 2, 1944

Mr. S. Iserman
Armagosa Molybdenum and Copper Corp.
P. O. Box 1463
Tucson, Arizona

Dear Mr. Iserman:

Many thanks for your letter of January 28 and I note you have written to Mr. Potter.

While in Denver last week, I called on Mr. Potter and discussed with him his desire for investigating a good molybdenum property. Mr. Potter and the Shattuck Chemical Company use about 200,000 pounds of MOS2 per month and is looking to acquire a property which can produce this tonnage at a low cost. If such a property is found, I believe they would be willing to buy and operate the property themselves. I would suggest that you send him full information.

Very truly yours,

J. S. Coupal
Director

JSC:JES

Amargosa Molybdenum and Copper Corp.

P. O. Box 1463 Tucson, Arizona

January 28, 1944

Mr. J. S. Coupal
Director, Dept. of Mineral Resources
413 Home Builders Bldg
Phoenix, Ariz.

Dear Mr. Coupal:-

This will acknowledge your letter of the 15th, which I was delayed in answering due to the fact that I was away for a while, and then I had considerable sickness in my family.

Today I am writing Mr. Potter and as soon as I hear from him, will let you know.

I have a complete report on the mine from Mr. Vanderwilt, but before sending Mr. Potter that report, I am going to take it up with Mr. Vanderwilt first. Of course, while it is my property as I paid for the work, at the same time, I would like to consult him about it.

I appreciate your interest in this matter.

Yours sincerely,

S. Isermann

will keep in touch with you.

SI/pa

January 15, 1944

Mr. Sam Iserman
Box 1463
Tucson, Arizona

Dear Mr. Iserman:

I have a letter dated January 5 from J. Seward Potter, of the S. W. Shattuck Chemical Co, 1805 South Bannock Street, Denver 10, Colorado.

He writes as follows:

"We are in a rather unfortunate position in regard to Molybdenum inasmuch as we are a middle man manufacturer and as such are sort of a thorn in the side of the large Molybdenum Companies and after the war they are going to make it difficult for us to compete in the market with them. Therefore, if it were possible for us to secure the right kind of Molybdenite Mining property we would be very much interested.

"However, in no case do we wish it generally known that we are looking for a Molybdenite Mine."

I have written to Mr. Potter and have mentioned to him your property the Armagosa Molybdenum and Copper Corporation. I suggest that you write Mr. Potter and give him full details of your property and he will undoubtedly reply to you regarding it.

Very truly yours,

J. S. Coupal
Director

JSC:JES

April 23, 1943

Mr. W. B. Gohring
325 Heard Building
Phoenix, Arizona

Dear Bill:

I am enclosing a copy of a memorandum received from George A. Ballam regarding Mr. Miller of the Esperanza Mine at Twin Buttes.

This is something we can do nothing about but I believe it should be called to your attention.

With best wishes and kindest regards, I am

Very truly yours,

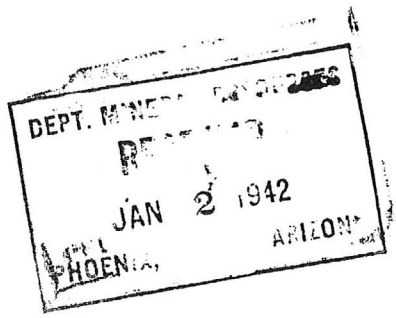
J. S. Coupal, Director

JSC:kk
Enclosure

WENDELL P. HUBBARD
ATTORNEY AT LAW
510 SOUTH SPRING STREET
LOS ANGELES, CAL.

MIchigan 5649

December 30, 1942



H.
C.

Department of Mineral Resources
State of Arizona
413 Home Builders Building
Phoenix Arizona

ATTENTION: MR. EARL F. HASTINGS, Ass't Director and Projects Engineer

RE: NEW YEAR'S EVE CLAIMS

Dear Mr. Hastings:

I must apologize for not having answered your letter of December 16 earlier but your letter came when I was involved in a matter outside the office and the Holidays intervened after the completion thereof. I am therefore writing to give you my opinion of our position in the matter.

I do not know when the Armagasa Molybdenum Corporation acquired any interest in the property but the information received was that its contract with the owners, Ramon Sanders and A. J. Simmons, was of somewhat recent date and considerably after our lease and contracts with the owners.

I will therefore begin at the beginning so that you may get a clear picture of the situation.

Mr. A. M. Phippen, a mining engineer, who was acquainted with Sanders, approached Sanders and Simmons with the object of obtaining a lease and option agreement. He stated he had in mind to be connected with the development of the property a man by the name of Fred Adams, who is a metallurgical chemist of considerable note, and who was capable of working out processes for plants for the handling of many types of ore. Apparently, an agreement was reached and as a result the lease of which you have received a copy was entered into on the 16th day of March, 1942, for the three New Year's Eve claims.

Paragraph 2 provided that the lessee, A. M. Phippen, should have three weeks to make preliminary inspection of the

property and upon the termination he should pay $500.00 to the lessors, otherwise the agreement would become null and void. Mr. Phippen, together with Mr. Haussler and Mr. Adams, went down to examine the property and took samples from the various stockpiles so that Mr. Adams could test them out in a laboratory in Los Angeles. After this was done, the $500.00 was paid within the three weeks' time.

With the materials taken back, we started building a plant in Los Angeles to test out the various types of ores and the various types of chemicals to arrive at the most economical method of leaching. This plant was in effect completed except that certain electrical equipment could not be obtained without obtaining priorities. In the meantime, Mr. Phippen made several trips to the property and advised Sanders what was being done, and Sanders told him not to worry because no default would ever be declared. After all our scientific work had been completed here, I wrote first to Mr. Holt in order to see if a loan could be obtained and was advised that possibly a preliminary loan could be obtained so the application was thereupon filed. After it was filed, Mr. Phippen and Mr. Adams went down to the property again and ascertained that Sanders had made a deal with somebody by the name of Iserman who might be doing business under the name of Armagasa Molybdenum Corporation. Sanders, however, stated he would be out very shortly because he was unable to make much progress on the property. He (Phippen) advised Sanders at that time that we were going ahead with the property. Shortly thereafter I received letters from the attorney representing both Sanders and Iserman and alsoa letter from the attorney for Simmons. I am enclosing copies of these letters. Outside of these letters, no notice of default has ever been declared on the lease. The tenth paragraph of the lease requires a 60 day notice before cancellation can be made and allows curing of any default within the 60 day period. No such notices as I stated above, have ever been given either by Sanders or by Simmons or by anyone representing them. The letters of the two attorneys, which I am enclosing, are insufficient in my opinion to constitute such a notice because they attempt to regard the lease as already cancelled and they do not fix a time within which the lease may be cancelled by failure to carry out the provisions. Moreover, in my opinion, there has been a waiver of any default, if there were a default, by one of the owners, and, I believe, the principal owners, since he was the one who conducted all negotiations on the contract originally.

Paragraph 11 also states that the obligations of second party shall be suspended where performance is pre-

vented by priorities and other causes beyond the control of second party. Certainly the lack of priorities in connection with the plant was a sufficient excuse for non-performance. I believe that we will be able to get this priority if the preliminary loan is granted and the property can be sufficiently opened up so that it can be determined that there will be sufficient copper and molybdenum to run through the plant.

The notice of the original lease was recorded right after the payment of the original $500.00 so that there was constructive notice to all parties of our rights. Despite this fact, no one ever communicated with us to find out if the lease were in full force and effect and it would seem that the action of the Armagasa Molybdenum Corporation was made with definite knowledge of our rights in the matter.

In conclusion therefore, may I state that we have an absolute and incontestable right under our lease and are prepared to take the matter to court against the Amagasa Molybdenum Corporation and against the owners if it becomes necessary to protect these rights.

I would appreciate it if you would advise me when the Armagasa Molybdenum Corporation claims to have acquired an interest in the property and when it filed its application, if you give such information without violating any rules and regulations.

Thanking you, I remain,

Very truly yours,

Wendell P. Hubbard

wph:lw

WENDELL P. HUBBARD
ATTORNEY AT LAW
510 SOUTH SPRING STREET
LOS ANGELES, CAL.

MIchigan 5649

December 14, 1942

Department of Mineral Resources
413 Home Builders Building
Phoenix, Arizona

ATTENTION: MR. EARL F. HASTINGS

RE: NEW YEAR'S EVE MINING CLAIMS

Dear Mr. Hastings:

Some time ago at your request I sent you further information in connection with the application filed by the New Year's Eve Mining Co., a co-partnership, for a preliminary loan. To date I have heard nothing further from you.

Will you please advise me what progress is being made on the loan and whether or not any further information is required to expedite matters? If you require further information, I will do my best to furnish it although I have given you all the information at our disposal.

Very truly yours,

Wendell P. Hubbard

wph:lw

WENDELL P. HUBBARD
ATTORNEY AT LAW
510 SOUTH SPRING STREET
LOS ANGELES, CAL.
XXXXXX
MIchigan 5649

November 20, 1942

Department of Mineral Resources
413 Home Builders Building
Phoenix, Arizona

ATTENTION: MR. EARL V. HASTINGS, Assistant Director and Projects Engineer

RE: NEW YEAR'S EVE MINE

Dear Sir:

I was unable to answer your letter of November 13 completely until Mr. Phippen and Mr. Adams, who were in Arizona, returned to this city. They attempted to contact you while in Phoenix but were advised that you would be out of the city until late in the week.

Before the lease was originally obtained, Mr. Phippen was contacted in Los Angeles by Mr. Joe Guterrez who gave him the information concerning the work that was done while he (Guterrez) was employed on the property. Mr. Phippen took him down to Arizona to get in touch with one of the owners of the property, Ramon Sanders, and the information which has been set forth in Mr. Phippen's report was obtained from Joe Guterrez and Ramon Sanders.

When Mr. Adams was down on the property with Mr. Haussler, one of the members of the co-partnership applying for the loan, he likewise talked to Mr. Ramon Sanders, and part of the information in his report was obtained from Ramon Sanders. Mr. Haussler not only talked to Mr. Ramon Sanders but also considerable to the oldest boy of Sanders whose name he does not remember. The son of Sanders told Mr. Haussler about the workings in the mine and confirmed the information in the reports of Adams and Phippen.

This property is of particular interest to us because of the fact that Mr. Adams has taken samples of the ore

and has worked out a leaching process that is more economical and effective, in our opinion, than other methods now in vogue. Mr. Adams's long experience and research in chemical metallurgy has qualified him to handle the leaching problems in connection with the ores to be found upon the property. We believe that after the mine is unwatered so that the workings can be examined, the property will fully justify the granting of this loan. We also believe that your investigators will confirm this opinion and that eventually both an A and B loan on the property will be granted.

Trusting that this satisfactorily answers your inquiry, I remain,

Very truly yours,

Kendell P. Hubbard

wph:lw

H.

WENDELL P. HUBBARD
ATTORNEY AT LAW
510 SOUTH SPRING STREET
LOS ANGELES, CAL.
~~XXXXXX~~
MIchigan 5649

November 2, 1942

Mr. J. S. Coupal, Director
Department of Mineral Resources
413 Home Builders Building
Phoenix, Arizona

Dear Mr. Coupal:

This day I have forwarded to the Reconstruction Finance Corporation an application for a preliminary development loan on the property mentioned in my previous letters to you and Mr. Elgin B. Holt.

I am enclosing a copy of the letter which I sent to the Reconstruction Finance Corporation of this date enclosing the application in duplicate. I trust that the loan will be granted because from the information we have concerning the mine, we believe it to be a very good molybdenum, as well as copper mine.

May I thank you for the interest you have shown in our prospective enterprise and would appreciate your cooperation in the securing of the loan for us, as well as for a later loan when the property is sufficient opened up to warrant the same.

Very truly yours,

Wendell P. Hubbard

wph:lw

WENDELL P. HUBBARD
ATTORNEY AT LAW
510 SOUTH SPRING STREET
LOS ANGELES, CAL.
XXXXX
MIchigan 5649

November 2, 1942

Mr. Elgin B. Holt
P. O. Box 188
Kingman, Arizona

Dear Mr. Holt:

I am enclosing a copy of the letter which I am writing to the Reconstruction Finance Corporation at Phoenix.

I have sent in an application for a $5,000.00 preliminary loan today with maps, reports and other exhibits attached. I trust that the loan will receive favorable consideration for we believe we have a very good molybdenum and copper mine and believe it will only require opening up and development to produce considerable quantities of those strategic materials.

I wish to thank you for the interest you have shown in our enterprise. I trust that you may be able to render some assistance and cooperation in securing for us not only the $5,000.00 loan but the larger loan, if, as I confidently expect, an examination of the property will warrant.

With kindest personal regards to you, I remain,

Very truly yours,

Wendell P. Hubbard

wph:lw

WENDELL P. HUBBARD
Attorney-at-Law
510 South Spring St.
Los Angeles, Calif.
MIchigan 5649

November 2, 1942

Reconstruction Finance Corporation
325 Heard Building
Phoenix, Arizona

Gentlemen:

I am enclosing in duplicate an application for a preliminary development loan for $5,000.00 on behalf of a co-partnership consisting of the undersigned, Wendell P. Hubbard, Walter F. Haussler, Fred E. Adams and A. M. Phippen.

We have attempted to give all the information available in the application and in the exhibits attached. I trust that these will be sufficient for your requirements.

With respect to the partners, I wish to give you the following information:

1. I, Wendell P. Hubbard, am an attorney in good standing in Los Angeles, California, and have practiced in Los Angeles for fourteen years. My work during the past two or three years has been particularly concerned with representation of those interested in oil and mining and in such work I have had to sit in on the working out of various mining problems.

2. Walter F. Haussler has been a resident ofLos Angeles for many years and during the late Twenties and for several years up to 1937 was a contractor and builder. Since that time, his work has been more in the mining field and he has had considerable practical experience in mining.

3. Fred E. Adams is a metallurgical chemist and holds a degree from a university. His work during the last few years has given him a great practical knowledge of mining inasmuch as he has had to work out mining problems for a number of mining companies, as he is familiar with the treatment of ores as well as the practical phases of mining operations.

4. A. M. Phippen is a mining engineer and has had many years experience in that profession. He has acted as consultant for many mining companies and is thoroughly familiar with the various phases of mining operations.

COPY

Mr. Adams, Mr. Knippen and Mr. Haussler will spend most of their time at the property and their past experience will assure the operations being carried on in a good and minerlike manner. Because of their experience, they will be able to make the very most out of the mine leased to the partnership.

Trusting that the enclosed application will receive your early and favorable attention, I remain,

Very truly yours,

wph:lw

C
Dft.

WENDELL P. HUBBARD
ATTORNEY AT LAW
510 SOUTH SPRING STREET
LOS ANGELES, CAL.
~~MICHIGAN~~
MIchigan 5649

October 6, 1942

Mr. J. C. Coupal, Director
Department of Mineral Resources
413 Home Builders Building
Phoenix, Arizona

Dear Mr. Coupal:

Your letter of September 29 has been received and the matter has been discussed between my associates and me and we appreciate your suggestion as to the application for a Class "C" preliminary loan. I might state that one of my associates has been a contractor and has also had practical mining experience. The other associate is a mining engineer and chemist of considerable standing and is thoroughly conversant with the various methods of treating copper and molybdenum.

Pursuant to your suggestion, I am writing to the R.F.C. Mine Loan Division in Phoenix to obtain the necessary application blanks so that we may commence operations. We are very desirous of opening this property up and entering upon operations but have lacked the necessary capital to do so. With, however, the assistance of certain persons who are associated with us and with the assistance of Government loans, I am sure we will make this property a paying proposition.

In his letter, Mr. Elgin Holt considered the property a low grade property. However, information concerning certain of the veins on the property indicates that there is a large amount of high grade copper ore as well as some high grade molybdenum ore thereon and that it can be very profitably mined with a 50-ton operation.

Thanking you for your kindness and assuring you that I would appreciate any assistance you can give to us in this matter, I remain,

Very truly yours,

Wendell P. Hubbard

wph:lw

WENDELL P. HUBBARD
ATTORNEY AT LAW
510 SOUTH SPRING STREET
LOS ANGELES, CAL.
MIchigan 5649

September 17, 1942

Elgin Bryce Holt
P. O. Box 783
Phoenix, Arizona

Dear Mr. Holt:

You may remember me from my association with Mr. Carleton Graeme. I met you a number of years ago on various matters.

A group, of which I am a member, have a lease on a copper mine in Pima County, Arizona. This property was opened up originally some thirty-five years ago and considerable tonnage was blocked out. I am enclosing a very brief report by a Mr. Phippen, an engineer, as well as a recommendation as to the plant, etc., made by Walter F. Haussler, of Western Pacific Laboratories, one of the three mem owning the lease on the property.

While it is not mentioned in either report, since the report was concerned primarily with copper, there are around 2500 tons of ore on one of the stockpiles containing a fairly high molybdenum content. In fact, the samples taken from the stockpile leached more than $20.00 per ton in molybdenum. It is our intention to have a concentrating unit to concentrate the molybdenum along with the handling of the copper.

We have maps of the underground workings and a very lengthy report of some twenty-two pages made by C. J. Sarle, geologist, on December 18, 1939. This report is being at the present time recopied and, of course, will be available. In the lengthy report there are shown to be 25,000 tons of good milling grade copper ore, as well as a detailed report on the structures and a description of the underground workings.

At the present time, the mine is filled with water and we did not want to pump the water out before putting up some sort of a leaching plant because the water will undoubtedly contain a high impregnation of copper and it would be too bad to waste the copper content of the water by merely pumping it out. Moreover, the water could be used from the plant

in leaching the material on the stockpiles.

I understand that additional water is available for at least a 50-ton plant and enough could be developed to handle a 100 ton plant with very little expense.

I understand from Mr. Graeme that Mr. Willis is in charge of Federal loans. We are desirous of making a loan for the erection of a plant in the sum of $20,000.00. We would also like a loan of $5,000.00 to further develop the property and to open up the molybdenum veins on the property, as well as a tungsten vein which outcrops thereon. This money could also be used for dewatering the plant after the leaching plant had been erected so as to make the best use thereof.

Mr. Graeme suggested that I write to you in connection with this matter to get your advice. We would be willing to work out something with you to compensate you for anything that you might do for us.

The property at the present time is known as the "New Year's Eve" group and was originally opened up by the Calumet and Arizona Copper Company. Perhaps through your records in Arizona, you can determine the nature and extent of the property.

Trusting that we may hear from you at your earliest convenience and with kindest personal regards both from Mr. Graeme and from me, I remain,

Very truly yours,

Kendall P. Hubbard

wph:lw
Airmail

COPY *********

REC. OCT. 26, 1940

A very promising molybdenum property has recently been brought to my attention. I have studied over a reconnaissance report on the property followed by a brief personal inspection and am sufficiently impressed with its possibilities to submit the following summarized prospectus for your consideration.

The property is located about 32 miles south of Tucson, near the old Twin Buttes mining district and consists of 42 claims, most of which are at present held under option.

The principal mineral showing on the property occurs on three claims within the group and has been quite extensively prospected and explored. The Calumet and Arizona Co. did comparatively considerable work on these claims in 1907 in an effort to develop some copper ore. This work consisted of a 200 foot vertical two-compartment shaft, a 200 foot raise and extensive lateral workings on 50 ft., 100 ft., and 200 ft. levels totaling some 3500 feet. This work, though disappointing from the standpoint of developing ore, has revealed a zone of molybdenite mineralization of major importance.

The surface outcrop is a quartz blow-out which has been partially obliterated by a "glory hole" from which a considerable tonnage of copper ore is said to have been removed in the early workings of the property. This out-crop is on the side of a hill about 100 ft. above a wash. A tunnel driven into the side of the hill connects with a raise in themidst of the quartz intrusive. Explanatory workings in the quartz mass were driven from the raise 50 and 100 ft. below the tunnel level. These workings have been inspected and sampled within the last six months and are covered in the report referred to above. In addition, there are even more extensive workings in the altered country rock lying below the quartz mass on the 200 ft. level which were under water at the time of the above inspection.

The upper workings in the quartz mass define it to be an intrusive mass about 100 ft. in width with practically vertical lateral contacts. Its lower or bottom contact intersects the raise about 10 ft. below the 100 ft. level in a fault dipping 30 degrees from the horozontal.

At a point approximately 15 ft. below the tunnel level the molybdenite mineralization abruptly appears in the quartz. My personal inspection of the 50 ft. level,(the 100 ft. level is now underwater) revealed a remarkable uniformly distributed molybdenite mineralization in the quartz throughout the workings. Both the 50 ft. and 100 ft. levels were sampled and an average of 0.8% was recorded in the report cited above.

The contact zones where the workings left the quartz and penetrated the granite country rock showed intense alterations significant of the mineralogical importance of the quartz intrusion.

Near the collar of the shaft there is a large dump of altered granite rock which shows strong molydbenite mineralization. Samples of this assayed 0.5% MoS^2 according to the report. The amount and nature of thematerial on this dump indicated that it must have come from the 200 ft. level workings immediately below the quartz mass. This suggests that the contact zone along the bottom of the quartz intrusive is well mineralized and constitutes a locus of ore in addition to the quartz itself.

It may be said that extensive prospecting has been done and a remarkable showing of molybdenite mineralization developed. The massive quartz intrusive, apparently some 100 ft. in width, together with the adjacent intensely altered contact

areas denote a zone of major mineralization and certainly justify a thorough inspection, including the at present inaccessable workings on the lower levels.

A grab sample of broken material taken from a drift on the 50 ft. level during my visit assayed 0.47% MoS^2. A single laboratory flotation test on the material yielded a concentrate, after only one Re-cleaning, of 89.5% and 0.7% Cu., and containing 86% of the original MoS^2 in the feed. The tailing after 10 minutes flotation was 0.015% MoS^2. This indicates how readily the ore from the quartz intrusive responds to concentration by flotation.

COPY

REPORT OF A RECONNAISSANCE OF THE NEW YEAR'S EVE LODE CLAIMS

PIMA MINING DISTRICT

PIMA COUNTY, ARIZONA

BY:

C. J. SARLE
GEOLOGIST

TUCSON, ARIZONA .
DECEMBER 18, 1939

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REPORT OF A RECONNAISSANCE

OF THE

NEW YEAR'S EVE LODE CLAIMS

Pima Mining District
Pima County, Arizona

By:

C. J. Sarle, Ph. D.
Geologist

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SUMMARY and CONCLUSION:

The property of the Southern Arizona Molybdenum Corporation is located in the Pima Mining District, Pima County, Southern Arizona, about 33 miles southerly by good roads from Tucson. These holdings comprise 42 unpatented lode claims, owned by the Corporation by right of location and the remainder held under lease and option. Together these claims form an unbroken tract of about 840 acres, which lies across a low, hilly, east-west extending granitic ridge exposed by deep erosional stripping, which for a length of 2 miles or more and a width of nearly a mile constitures a bolt of persistent molybdenite chalcopyrite mineralization.

The three claims, New Year's Eve Nos. 1-2-3- with which this reconnaissance report is concerned, are among the northermost of the group, and were selected for initial development and operation because of the existence of more than 3500 feet of mine workings. These workings represent an attempt by the Calumet and Arizona Copper Company in 1906-7 to prove up a large tonnage of siliceous copper ore for smelting. Although the results obtained were disappointing to the Company, they have revealed the possibilities for profitable mining of the alloy metal, molybdenum.

As shown on the accompanying assay map of the upper workings in the New Year's Eve mine there is an unmined block of ore, part of a large quartz displacement mass lying between the 50 and 100 feet levels, estimated to contain not less than 25,000 tons of good milling grade. Besides this partially developed tonnage of ore there is an estimated additional 10,000 tons at least in the undeveloped portion of the quartz mass. Also there are 2400 tons of milling grade ore on the point of the main dump, quite different in character from that of the quartz mass, definitely indicating the occurrence of a large body of ore of milling grade at some point on the 200 foot, or lower, level of the mine, which is now under water. Moreover, there are several other promising ore showings on the property meriting the expense of investigation. These facts give reasonable assurance of ample tonnage for a two years operation of a 50 ton mill.

The delimitation of the 25,250 ton block of ore in the quartz displacement was based on values shown by 21 samples, the average assay value of which gives 0.820% MoS^2 and 1.013% Cu. This, assuming a gross value of 40 cents per pound of MoS^2 and 10 cents per pound of Cu. would give a total gross value per ton of $8.59. The calculated cost of mining and milling, given in this report as $4.35 per ton would leave a net profit per ton of $3.38 or a total net profit of $85,345 for the partially developed ore en-block, allowing for a 10% loss in recovery.

The 2400 tons of ore on the point of the dump, from 4 samples taken in a reconnaissance sampling, runs 0.56% Mos^2 and 0.30% Cu., making the gross value per ton of this ore $5.08. Figuring cost of moving this already mined ore from dump to bin at 30 cents per ton, the cost of treatment would be $2.20 per ton--leaving

$2.37 net profit per ton after allowing for a 10% extraction loss, or a total profit of $5,688 for ore on dump.

These figures show a total net profit of $91,033 for commercial ores as indicated by sampling.

The cos t of putting this property into production, including road repair, establishing a camp, unwatering and reconditioning the mine, the cost of mining equipment, erection of a 50 ton flotation plant and the development of a water supply would be $22,447, or in round figures $25,000. To this should be added the sum of $15,000 for the operation of the plant for the first three months, which means that $40,000 will be needed to put the New Year's Eve mine on a paying basis.

In conclusion it may be said that the several ore showings together with ore sufficient to maintain a 50 ton operation for a period of two years, place this property out of the prospect class. However, it must be remembered that explanatory work on this property should be pushed vigorously, and such ore bodies as may be encountered should be developed as rapidly as practicable. Likewise, the study and development of ore resources of the other 39 contiguous claims should go forward with a view to increased production with lowered costs and assurance of a long period of operation. If this program is adopted and adhered to and provisions made for the financing of this larger exploratory work, this mining undertaking is considered to be of more than usual merit and to fully warrant the expenditure of the initial $40,000 required.

LOCATION:

The New Year's Eve lode claims are located in the Pima Mining District, Pima County, Arizona: in Township 16 south Range 12, East, in Sections 9 and 16--Gila and Salt River Meridian.

This places the claims in Amargosa Gulch, at an approximate altitude of 4000 ft., in the southern part of the Sierrita Mountains--about 28 miles airline distance and a little west of south of Tucson and 4½ miles a little south of west from the old mining camp of Twin Buttes.

The city of Tucson, on the Southern Pacific Railway, is the nearest supply and shipping point. From the mine to Tucson by road is 33.5 miles. All but the first 2.3 miles of this distance, which is a ranch and mine road some short rather steep grades is over graded and well maintained highway--5.5 miles eastward to Twin Buttes, thence 27 miles northward to Tucson, the last 9 miles paved. From the junction of the mine road with the Twin Butte road there is a descent of over 1600 ft. by well distributed grades into Tucson. Trucking time from the mine to Tucson is about one hour.

PROPERTY HOLDINGS:

The New Year's Eve claims, with which this report is mainly concerned, comprise three of the most northerly of the 42 unpatented lode claims, a group held by the Southern Arizona Molybdenum Corporation. Of these claims 19 (White Tiger 1-3 inclusive and Molly Bell 1-16 inclusive) are owned by right of location, and 23 claims (Esperanza 1-8, Amargosa 1-4, Ballota 1-8, and New Year's Eve 1-3) are held under option, or bond and lease. All are reported duly recorded in the office of the County Recorders office at Tucson, together with an affidavit of annual assessment work performed.

Record of the New Year's Eve claoms are found in the record of Mines, in the office of the County Recorder at the County Seat, Tucson, as follows:

Book-R.M.	Page	Locator	Claim Name	Min. Dist.	Date Located
69--QQQQ	259	Raf. M. Robles	New Year's Eve #1	M Pima	1-1-33
" "	260	" " "	" " " #2	"	1-1-33
" "	261	" " "	" " " #3	"	1-1-33

As recorded each of these claims is given the standard width of 600 feet and length of 1500 feet, approximately 20 acres, long axis entending east and west and claims lying side by side.

In the field it was found, however, the work of location of these claims had been very roughly done and the measuring of distances very inaccurate. Thus, as shown in the Reconnaissance Map accompanying this report, the claims instead of lying easterly and westerly have their long axes running approximately north-east and southwest. Their western bounding and monuments are well alligned and in good condition, but those demarking their easterly ends are either down and confused with other monuments in like condition, or poorly alligned. Moreover, New Year's Eve Claim Number 1, the southern most of the three, and NewYear's claim number 2 are short in both dimensions.

While New Year's Eve claim number 3, the northernmost is slightly oversized in both.

It would seem advisable therefore, in order to safeguard against future possible conflictions of boundary to re-survey these claims, making such corrections as found possible, repair the monuments, and then to make record of amended locations.

GEOLOGY*SIERRITA MOUNTAINS:

The Sierrita Mountains are a short, north-south lying range, located a few miles to the south of Tucson; similar in origin and general structure to some 120 or more northerly to northwesterly trnding, barren-flanked, deeply eroded, fault-block mountains, which collectively dominate the landscope of the southwestern half of Arizona.

The Sierrita Mountains as viewed today are little more than a remnant of their former mass. Long continued work of the agencies of weathering and erosion have removed thousands of feet of rock from their surface and cut back their flanks far beyond their former limits. The only ruggedly mountainous portion remaining is a deeply dissected, north-south extending ridge, roughly cross-shaped in plan, some eight or ten miles in length and perhaps six miles in greatest breadth--a few higher points on its crest reaching elevations approximating 6500 feet above tide. Encircling this axial ridge is a broad, outwardly-sloping, rock floored plain, or pedimentary area, concordant with the gradings of the beds of the intermittant streams which are relieving the area of its constantly forming rock litter.

Centrally, the rocks flooring the pediment are but imperfectly veneered with rock wastage, and between drainage lines are extensively exposed. Outwardly, however, they are lost to view as the pedimentary plain passes beneath a deepening alluvial mantel which continues in long, gentle slope to merge with the floor of the broad Santa Cruz Valley on the east and that of the Avra on the west. Rising out of the alluvial slope occasional rocky buttes or ridges, left by circumerosion, give proof of the continuance of the mountain pediment beneath, and of the former much greater extent of the Sierrita Range.

The erosional stripping of many cubic miles of rock from the surface of The Sierrita Range has brought much of its innermost structure to view. A widely exposed porphyritic, biotite granite forms the core of the range. This granite, Mid-Tertiary in age, is the result of the slow cooling and consequent coarse crystallization of an enormous body of fluid acidic-lava under a thick covering of rock. Its emplacement was an essential factor in the formation of the range. The

lava, slowly ascending--possibly in compensating adjustment with the crustial settlings under the adjacent Santa Cruz and Avra Valley area--is seen to have lifted and shouldered aside, by magmatic wedging, great masses of Pre-Cambrian basement rocks (grabites, gneisses and pegmatites, schists, etc.). In this same upward movement of the lava a great series of sedimentary rocks, Paleozoic and Mesozoic in age, and their covering of Older Tertiary lavas which together rested upon the ancient peni-planed surface of the Pre-Cambrian formations, was thrust upward some thousands of feet; and by stresses produced by intrusion and foldings was broken into countless great blocks; which by normal and reversed fault movements were lowered or raised, rotated, tilted, even overturned; and frequently wedged apart basely by intruding tongues of the lava or forced downward to form roof-pendants in the lava.

The exposed portion of the biotite granite core covers an area estimated at 70 square miles--centering upon the common corner of a group of four townships, of which it surfaces about half. The encountering of this granite in two wells on the Santa Cruz side of the pedimentary slope beneath forty feet of alluvium, distant three miles northeasterly from the nearest granite out-crop, indicates that its erosional stripping is of much greater extent than the present surface exposure would indicate. The difference in elevation on the eroded surface of the granite in the wells and at its highest point on the central ridge, 8 or 9 miles to the southwestward, is approximately 3000 feet.

The granite at most points examined is quite consistently porphyritic, and its groundmass of average granitic texture. Often, however, in marginal positions, the feldspar--phenocrysts become few and smaller, or are lacking; the texture becomes finer; small phenosyrysts of quartz show up prominently on weathered surfaces, and the interstitial quartz increases. In several instances a marked increase in biotite is noted together with an absence of the feldspar phenocrysts. Variations suggestive of monzonitic gradations are also noted occasionally.

Numerous dikes, finer textured and in appearance generally more siliceous, cut the grabite. These dikes apparently represent later differentiates formed in the still molten heart of the acidic magma, forced upward through fissures produced by stresses in the already congealed outer portion of the granite mass, and sometimes into the older covering rocks.

Fault-block remnants of the various rock formations, once completely covering the Tertiary granite, now from an encircling, interrupted belt lying between the centrally outcropping granite and the outwardly deepening mantle of alluvium. The blocks of this belt, often discordant in dip and mixed as to geologic horizon, owe their survival to all combination of factors, namely: circum-erosion, pendant position in the granite mass, and to the superior resistance to weathering of the rocks composing them to that of the granite.

The belt of residual roof-rocks along the eastern and western sides of the range varies up to about a mile in width, and is composed of stratified rocks of Paleozoic and Mesozic ages. The Paleozoic series, incompletely reconstructed from various fault-blocks, comprises limestones of Upper-Cambrian, Devonian, Mississippian, Pennsylvanian and Permo-Carboniferous ages, with an Upper-Cambrian quartzite at the base of the series. The Mesozoic strata consists of a repition of beds of arkosic conglomerates, arkosic grits and fine grained sandstones, beds of mud-rock and varicolored shales, and some limestone, or their metamorphosed equivalents--probably all of Cretaceous age--which represent parts of a series originally several thousands of feet in thickness.

On the northward slope of the range the belt of exposed remnant roof-rock is represented by an outcrop, about a township in area, of Pre-Cambrian basement rocks (Granite, gneiss and pegmatite, schist, etc.). On the southern end of the range this belt is composed of Older Tertiary volcanic rocks. These abut the south end of the

grabite and comprise two southward extending lobes, which outwardly disappear beneath the surface of the alluvial slope. The westerly of these two lobes forms the southern half of the high north-south extending ridge, which forms the axis of the range. These volcanic rocks are minor intrusives acidic and sub-acidic in composition, varying texturally from felsitic to granitic and are older than the grabite as proved by intrusions of the granite into them.

Productive mining in the Sierrita Mountains, since its beginning in 1857 to the present, has been confined to ores occurring in the old residual roof-rocks which form the broken belt above described. The earliest mining was for rich silver-lead ores. After the demonitization of silver in 1893 attention was directed more particularly to the mining of copper, which was carried on with varying success until 1914, when with the beginning of the World War mining in the Sierritas experienced several years of great activity. Not only many copper mines, but also silver-lead, silver-lead-zinc, and silver-lead-zinc, copper mines which had long been closed down were reopened. These included the mines in and about the Mineral Hill-San Xavier-Olive Camps at the northern end of the eastern strip of Paleozoic and Mesozoic formations, and those in and about Twin Buttes at its southern end; also the mines on the western side of the range, in these sedimentary rocks, as for example in the Sunshine and Banner Camps; and on the south, in the Older Tertiary volcanics, including the Esperanza and High-Hill Camps.

With the possible exception of some of the ore occurrences found in the Older Tertiary volcanic formations at the southern end of the Sierritas--in which gold constitutes the principle value, or is present in appreciable amount, and may date back in orgin to this earlier period of igneous activity--in major part of the ore bodies observed, appear to have been formed by mineralizers emanating directly from the surface of the great mass of acidic lava at an early stage of its crystallization into grabite. In other cases they appear to have been formed later from more vaporous and gaseous elements expelled from deeper portions of the magma through fissures formed in the already lithified outer portions of the granite--identified with the later magmation which produced the acidic-dikes, previously described, and still later through fissures and planes of fault movement, in some instances indicated by displacements of the dikes.

The above described relations, of course, are often obscured and perforce inferential. But in the case of the occurrence of mixed garnet-copper sulphide ores, a typical product of contact-metamorphism, by metasomatic alteration of limestone, as shown by their persistant occurrence in limestone on the granite contact, or within a few score feet of the contact, as observed in the Glance, Queen, King, Minnie and other mines at Twin Buttes and in the South San Xavier and Vulcan Mines to the north where such ores have been extensively mined, precludes any doubt as to the direct genetic relationship between granite intrusive and these ores occurrences. Again the shoot of copper-lead-zinc-silver sulphide ores developed in the south-tilting bedding planes of Carboniferous limestone in the San Xavier mine, formed by a replacement of the lime, although not affording evidence so directly connecting their origin with the granite intrusive, yet it must be conceded that the tilting, of the great block of limestone in which this mine is located and the invading mineralizers, utilizing fissures and bedding planes as controls, resulted from emplacement of the granite--the youngest igneous rock present.

Collectively the ores of the Sierritas including many of the deposits of the Older Tertiary volcanics, are complex ores in which copper preponderates. In the contact meta orphic garnet sulphide ores, the copper is often associated with objectionable amounts of zinc; and in other cases cupriferous zinc-lead is a common combination, zomc-lead-silver not unusual and silver-lead, All are combinations so linked together or overlapping in their occurrences as to indicate their origin in a common magmatic source, that represented by the granite. Such differences, moreover, may well be interpreted as indicating a tendency on the part of the metals to occur separately, or in

zones, based upon an adjustment to gradations in terperatu. and pressure; copper and deepest seated, near the source of mineralization and having the greatest vertical range or zonal thickness. It is predictated that many ore bodies in the Sierritas will, before mining has extended to the full depth of the roof-rocks in which the ore body may be confined, will have changed to the sulphides of copper--and may in exceptional cases be found to continue downward into the mother granite.

That the greater part of the broadly exposed granite core of the Range should be devoid of ore occurrences except for the occasional finding of copper-oxides, usually little more than stainings of the rock, associated with fault-fissurings, is believed due to erosional stripping haging bottomed the zone of ores over most of the area. There is one notable exception, however, this is the occurrence of a wide diffusion of molybdenite associated with the primary copper mineral, chalcopyrite, in a roughly east-west extending ridge--bounded on the south by the area of Older Tertiary volcanic rocks--which forms a part of the eastern arm of the high, cross shaped, axial ridge of the Sierritas. This occurrence has a length of over 2 miles and a breadth varying up to nearly a mile. Its delimitation is based on a partial reconnaissance of the area, supplemented by information supplied by persons who have extensively prospected the region.

The Tertiary granite comprises the bulk of this ridge and includes large masses of a holo-crystalline, rather finely granular, dark to sage gray weathering rock, which from field determination may be called a diorite known to be older than the granite because of minor projections of the latter into it. There is also an exceedingly fine grained massive quartzite occurring in large masses which because of its more effective resistance to weathering forms the cap rock of some of the higher hills, and by the inclination of its basal plane, is seen to have a southerly dip. Occasional smaller masses of this quartzite form inclusions in the granite, as in the case of the diorite. The diorite, while older than the granite is younger than the bulk of the Older Tertiary volcanic-series as shown by dikes and other less regular intrusions of it into the volcanics.

Numerous dikes, representing later, apparently more acidic phases of the magma from which the granite formed, cut the granite. These dikes in some instances, appear to have been instrumental in bringing mineralizers outward, and in one dike molybdenite appears disseminated interstially with the rock forming minerals. Fissure, both earlier and later than these dikes, formed pathways for mineral diffusion and deposition.

Finer textured, more siliceous phases of the granite, suggestive of maginal chilling and differentiation, are common in this belt, are common in this belt. These are often sheared and brecciated and are seamed with innumerable quartz veinlets--the fracurings, collectively constituting pathways of mineral diffusion and zones of molydenite-chalcopyrite deposition.

Aside from the occurrence of these ore minerals in the more siliceous areas, molybdenite-chalcopyrite deposition is often found in other brecciations, zones and fissurings in fault gouges and in relation to quartz displacements.

Many showings of these minerals are encountered in shallow prospect shafts and slso in deeper workings, made in an attempt in earlier years to develop copper ores of shipping grade. Other occurrences of molyddenite are indicated by stains of yello ochre or molybdite on steeper outcroppings on hillsides and on the walls of disecting canyons.

With all of these persistently reoccurring surface showings of molybdenite and chalcopyrite it seems very reasonable to expect that commercial bodies of these minerals will be found, once the geolocical structures and relations of the area are better understood.

The New Year's Eve group of 3 claims, and the 39 other claims held by the Southern Arizona Molybdenum Corporation, form an unterrupted blanket of 840 acres, more or less, which lies across this ridge in a general northeast-southwest direction and in an east-central prositon in the molybdenite belt.

GEOLOGY, NEW YEAR'S EVE GROUP:

The three claims comprising the New Year's Eve group have a combined area of about 60 acres, and form a square, about 1500 feet on a side, which lies in a diagonal nrotheast-southwest position--covering in part the floor of a basin-like widening of Amargosa Gulch--which occurs above the confluence with it of a large tributary from the north, and of smaller tributaries to both from the west--and covering in part, the northwestern face of a steep, out-jutting shoulder, or hill, forming the southern flank of the valley at this point, around which the Amargoso channel makes a northward turn, swings back, and then resumes its general easterly course. (See Plate of Panoramic Views appended.)

To the east and to the northwest of this valley widening lie hills with summits of 4300 and 4400 feet (See Reconnaisance Map accompanying report.) The crest of the above mentioned out-jutting shoulder, situated a little south of the center of the property, is approximately 4300; the top of a small hill located in the western part of the claims area has an elevation of alittle over 4100 feet; and the elevation of the channel of the Amargoso wash, at the center of the property is approximately 3975 feet above the tide.

The Tertiary, porphritic biotite-granite flanks this basin, on all sides and forms its southeasterly-sloping bottom, except for a roughly triangular area which is underlain by a rather fine grained diorite, lying in the angle between the Amargoso and its tributary from the north. This diorite mass, older than the granite, as proved by penetrating tongues of the latter, is believed to be an inclusion in the granite.

A massive, very fine-grained quartzite, probably Pre-Cambrian in age, forms the top of Mexican Peak (See Position on above cited Map) and there capping the granite isextensively exposed on the crest of the ridge to the eastward and along down its southern slope. A small tabular mass of this quartzite, lying in the granite, outcrops on the property, on the northern face of the abovementioned shoulder.

A rather superficial study of rock jointages at points of best exposure, as in the beds and along the sides of stream channels, showed a preponde rance of planes with angles of from 40 to 45 degrees from the horiaontal, indicative of strong comprehensive action, repeated from many quarters. There also occurs less numerous but more persistent north-south vertical joints in conjugate system with weaker transecting planes interpreted as due to tensional stresses.

Examination of a number of dikes, cutting the granite in areas contiguous to the property, show faulting to be rare and generally of small displacement. On the property a thrust, or reversed fault, occurs in the granite on the east side of Amargoso Gulch about 250 feet southwest of the portal of the lower tunnel. (See Reconnaissance Map) Its strike is east and west and dip south 45 degrees from horizontal, and its plane, if continued, would pass under the large quartz outcrop.

Three normal faults were observed, Two have roughly east-westerly trend and form shear zones containing quartz leaves showing comb-structure and accompanying ore deposition. The third located in the northwest corner of New Years Eve claim No. 3, strikes roughly north and south and cuts oneof the former ore-bearing faults or veins, causing a throw of 30 to 40 feet--as indicated on Map No. 2.

Two outcroppings of quartz occur, both lying in the granite. One is located

on the south side of Amargoso Gulch, on the northern face of the outjutting shoulder described above, its height above the atream channel ranging from about 80 to 150 feet--the higher end to the southwest. Referring to the Reconnaissance Map it will be seen that this places it in the northwest-southeast position across the northeast-southwest extending sideline between New Year's Eve claim No. 1 and No. 2. Though its limits are partially obscured by talus around its lower and and one side, the outcrop appears to be about 175 feet in length by 70 feet in width. The other quartz body, possibly 35 feet by 18 feet in extent, outcrops on the floor of the basin about 600 feet to the northwest of the former. (See Reconnaissance Map and Panoramic View--Photo No. 2.)

The quartz in these occurrances is massively crystal-line in testure and, in the larger one, ofteh noticeably viterous. In this respect it is in marked contrast to quartzes formed from aqueous solutions, whicn are characterized by such structural features as banding, laminations, comb-structures and druse-lined vugs; and is believed to have been produced by an injection of silica gel into the granite--in other words, a displacement by igneous intrusion.

DEVELOPMENT--NEW YEAR'S EVE GROUP:

The three claims which comprise the New Year's Eve group are a relocation made by Rafeal Robles in 1933, of the nuclear part of a larger group located and recorded by P. H. Chambers in 1895 which under various changes in ownership had come to be known as the Snyder Group.

The Snyder Group is located because of various showings of oxide ores of copper, was centered upon the large quartz "blow out" described above as outcropping on the out jutting shoulder on the south side of Amargoso Gulch, some 150 feet above its bottom. All subsequent mining on this property centered about this quartz outcrop--amounting all told to about 3500 linear feet.

Earlier operations appear to have been interrupted and spread over an interval of several years; and confined mainly to mining oxidized copper ore of shipping grade in the eastern end of the blowout. A cave-in some 40 to 50 feet across, locally known as the "Gloty Hole", marks the site of the earlier work. (See Reconnaissance Map of New Year's Eve Claims -- No. 1) Remnants of a dump give indication of a short tunnel, or open cut, driven from the north outer slope into the quartz mass near its top. A second tunnel, located some 40 feet lower and 40 feet to the west, started in granite, cuts the northern face of the quartz just inside of its portal, where it dips little south from vertical. About 25 feetwithin there is a badly caved winze. This tunnel about 65 feet in length, was driven apparently to get under the ore, Later a third tunnel located some 70 or 80 feet lower and about 25 feet above the floor of the wash on the northwest side of the outjutting shoulder, was driven southeasterly some 230 feet where, at the end of a 50 foot cross-cut tothe right, a raise was made to connect with the above-mentioned winze--now badly caved, but not completely closed. Approximately 100 feet from its portal the tunnel, leaving the granite, cuts the southwest side of the quartz mass, which at this point strikes north 30 degrees west with a dip south 53 degrees from the horizontal and crosses it obliquely emerging from its north 10 degrees west striking face, exposing the granite at a point about 8 feet beyond the drift.

The only other woek ascribable to this earlier period of mining appears to have been the sinking of a shaft on the westerly-trending hillside-vein at a point about 700 feet north west from the portal of the lower tunnel. Judging by the aize of the dump and from soundings made with stones this shaft could not have been less than 80 feet deep; and there may have been some lateral workings. Altogether the workin gs of this earlier period probably totaled close to 500 feet.

During 1906-7 the Calumet and Arizona Company, securing a lease and option from the late Fred Snyder made an extensive exploration of the property in hopes of proving the existence of a large body of siliceous copper ore of commercial grade. After doing about 3000 linear feet of development work and spending many thousands of dollars the company abandoned the undertaking.

A double compartment shaft--located a little south of center New Year's Eve claim No. 2, on the south side of Amargoso Gulch, at the base of the slope below the quartz blowout, some 350 feet outward from the Glory Hole, and 280 feet from the portal of the lower tunnel-was sunk in granite to the depth of 200 feet with an added 20 feet for a sump. From the foot of this shaft two long drifts with lateral workings were run--one to the south, the other to the northwest.

The 200 foot level is now under water, a sounding showing water at 194 feet below the collar of the shaft. The information concerning this level comes from a generalized tracing of the plan of this level shown on an Exploration Map of the Calumet and Arizona Co. (See reproduction on accompanying Map No. 2 of the New Year's Eve Mine Workings.); and from information supplied by Antonic Zambonini, foreman in charge when the Arizona Molybdenum Corporation unwatered and examined the property in 1936. (See plan of 200 ft. level on above cited map No. 2).

The south drift passing under the east end of the quartz displacement is reported open for 530 feet and caved for an unknown distance beyond. From this drift a second one, started some 250 feet from the station and driven to the southeast is reported open from 300 feet and gobbed beyond. Several short crosscuts were driven, most of them to the west from the main drift; two of them ending in winzes 70 feet deep. The workings open in the south drift total 1400 feet and so far as accessible, are in the Tertiary granite. The major part of these drifts were retimbered by the Arizona Molybdenum Corporation while making their investigations.

From a point in the south drift, 320 feet from the foot of the shaft, a 200 foot raise was made, opening into the crosscut from the end of the lower tunnel, and some 15 feet distant from the bottom of the old raise to the Glory Hole. The first forty feet of the raise is said to be partly filled with muck and for 90 feet in need of retimbering. The remaining 110 feet of the raise was retimbered in 1938 and is in excellent condition. Of this 200 feet the first 90 to 95 feet are in the granite, the remainder in the large quartz displacement. The contact between the quartz and granite is a fault plane striking east and west and dipping south about 30 degrees from the horizontal. (See Vertical Projection in Plane of Shaft and Raise on above cited map No. 2.)

At the 100 foot level in the raise a drift was run 63 feet to the southwest--the first 43 feet in quartz and the remaining 20 in granite. The plane of contact between the quartz and granite is essentially vertical and strikes north 30 degrees west. In the drift, 40 fet from the raise a crosscut was driven 56 feet southwesterly paralleling the contact between the quartz and granite, On the other side of the drift there appears to be a second crosscut, opposite the first, and alligning with it, but which is now bulkheaded off. The workings open to inspection on this level approximate 120 ft. (See Assay Map No. 3)

A 50 foot level in the raise has a total footage of 262 ft. in drifts and crosscuts. This includes a 53 ft. drift to the northeast, which passes from the quartz displacement to the granite at 48 feet--the contact between granite and quartz vertical and striking north about 30 degrees west. And, a 60 ft. drift to the west south passing from the quartz at a 51ft.--the contact vertical and striking north 15 degrees west. These figures show the quartz to have a width of almost 100 ft. on the 50 foot level. In the northeast drift some 18 ft. from the quartz-granite contact is a 22 ft. crosscut to the southeast, and 12 feet nearer the shaft another running southwest from the drift 34 ft. In the southwest drift, 18 ft. beyond the Raise, a crosscut

45 ft. in length runs to the southeast, and 13 feet beyond is a crosscut extending 24 feet north and 24 feet south from the drift. This level together with 100 ft. level and the 200 ft. Raise represent 582 ft. of the development work done by the C. and A. Company.

Resuming the discussion of the 200 ft. level--the northwest drift, as indicated on the map No. 2 of New Year's Eve group-mine workings, is somewhere between 720 and 740 ft. in length with a few short crosscuts at the far end. This should place the breast of the northwest drift about 100 feet north of the old shaft on the hillside vein, mentioned above. As near as can be ascertained, this drift and crosscut have a combined footage of 835 feet, all in granite, which with the 220 feet represented by the main shaft and sump, would account for 1055 linear feet of the 3000 odd feet of development work done by the Calumet and Arizona Co., and that with the estimated 450 to 500 feet of older workings makes a grand total of over 3500 feet of open workings on the three New Year's Eve claims.

ORE OCCURRENCES AND VALUES:

From the above description the development of the New Year's Eve property, it will be seen that the only parts of the mine workings, at present open to investigation of ore occurrences are: the lower-tunnel level and crosscut at its end, amounting to approximately 270 linear feet; the upper 110 feet of the raise from the 200 foot level to Tunnel-level; and the drifts and crosscuts at the 50-foot and 100-foot levels in that raise , amounting respectively to 262 feet and120 linear feet--together totaling 770 feet on development. It likewise shows that the first 100 feet of the lower tunnel is in the granite; as is also about 20 feet at the ends of the northeast and southwest drifts on the 50 foot level; and 20 feet at the end of the southwest-extending drifts on the 100 foot leveland that the balance, 630 feet, lies in the eastern end of the large quartz displacement. (See above cited map--No. 3.)

As to ore occurrences:- The granite exposed in the lower tunnel is barren of ore minerals; and only occasional traces of them are to be found in the quartz. In the raise, however, about 15 feet below the crosscut from the lower tunnel, molybdenite and chalcopyrite appear abruptly in the quartz and the sides of the raise for several feet down are coated with copper-sulphate--from oxidation of the chalcopyrite. From this point on, the molybdenite and chalcopyrite persist wherever the quartz has been opened up.

A study of the manner in which the molybdenite and chalcopyrite occur in the quartz indicates that the deposition of these ore minerals took place in two stages. The first occurred while the silica was still in the condition of a jell; the second, , after its congealation into the massive crystallinebody of quartz--the deposition taking place in this instance along planes of shearing and crashing. Connected with the first stage was the deposition of the tungsten mineral hubnerite (maganese tungstate.) Whether or not the occurrence of tungsten in the ore will prove of importance can be established only through further investigation.

Assays of 21 of the samples taken in a reconnaissance sampling of the 50 foot and the 100 foot levels and the connecting raise, roughly demark a block of partially developed molybdenite-chalcopyrite ore of good milling grade. This block, lying between the 100 foot level and the lower tunnel level and pierced by the raise has an estimated thickness of sixty feet, a north-south length of 75 feet and a breadth of 70 feet; and a contained tonnage of 25,250 tons allowance being made for ore removed in development, amounting to a little over 1000 tons. (See above cited map-No. 3)

An average of the value shown by these 21 samples calculated on the basis of footage represented by each, shows the above cited block or ore to contain a general average of 0.820% of MOS2 and 1.013% copper. This gives a computed content of 414,100 pounds of MoS^2 (207 tons) and 511,565 pounds of copper (256 tons). Assuming a gross

value of 40 cents per pound for MoS^2 and of 10 cents per pound for copper, would make the total gross value of the ore en-block $216,797.00.

Any estimate made as to the amount of ore of commercial milling grade which could be developed within this quartz mass by further exploration must of course be largely confectural. However, based upon the manner of occurrence of the ore minerals; and the proportion of milling grade ore to low grade which development has thus far shown; and the relative amount of explored to unexplored quartz should enable one to conservatively estimate a tonnage of milling ore which can be added to that already roughly proved up.

The observed occurrence of the ore minerals in the quartz while variable within narrow limits, has proved to maintain consistent averages of commercial grade throughout large areas, and it is reasoned, therefore, that other bodies of commercial grade will be found with development.

Referring to the plan showing the lower tunnel and lateral workings in the Raise, it will be seen that the quartz has a width of a little less than 100 feet on the 50 foot level and that its lateral limits have been established at other points. From this it may be concluded that the average width of the lower part of the quartz displacement is close to 100 feet. Its length, however, is somewhat problematical but by projecting the outcrop of the quartz upon the plan of the workings together with the outline of the Glory Hole, which indicate caved-in workings of the quartz, it will be seen that this mass is 200 feet or more in length.

Using the above dimensions of the quartz mass as a basis for calculation and taking 80,000 tons as representing that portion of its easterly end lying below the upper plane of the block of ore, then the 25,000 odd tons of partially developed ore would be equivalent to a little less than one half that mass; and therefrom it is reasonable to assume that one third of the mass of quartz will prove commercial grade ore.

With this ratio as the basis for an estimate of the commercial ore at this horizon, in the northwestern or undeveloped portion of the quartz block, and allowing for the 30 degrees northward and upward level of its lower surface and figuring 30,000 tons of quartz as the amount in the northwestern half of the block at the horizon of the blocked ore, there should be in addition 10,000 tons of commercial molybdenite-chalcopyrite ore.

As to the existence of ore above the lower tunnel level in this part of the quartz-displacement, nothing, of course, is known at present; but this could easily be determined by exploratory work carried on from the tunnel level.

While that part of the quartz mass lying below the block of commercial ore, averaging 30 feet in thickness, and opened up on the 100 foot level, was classed as low grade from a single sample taken lengthwise of the 45 foot drift, there are indications pointing to the existence of a considerable tonnage of milling ore which might be developed and selectively mined in this block with but little exploratory work.

From the foregoing facts it seems reasonably certain that this quartz mass, when it has been thoroughly exploited, will have yielded ore for a two year operation on a 50 ton per diem basis.

Aside from the occurrence of ores in the quartz displacement, just discussed there are 2400 tons of ore of milling grade on the extreme point of the main dump. An average of 4 samples taken of the dump show it to contain 0.56% of MoS^2 and 0.30% of Cu. This gives a total content of 26,880 pounds of MoS^2 (13 tons) and 14,000 pounds of Cu. (7 tons) for the 2400 tons of ore on the dump, or a gross value of $12,192, based on metal values given above.

This ore differs markedly in character from the former in that the gangue is a massively felsitic pegmatite, laced with many quartz veinlets. Moreover, the ore minerals are distributed through themass by innumerable fissurings, the molybdenite is more usually crystalline and the copper content is much lower. Many of the later formed fracture planes in the feldspar ground mass are coated with the secondary mica, Sericite, and the presence of sizable plates of micaseous gypsum, selenite, representing the effect of permeating metoric waters are among other contrasting features. In mining this mass of ore on the dump would represent the material extracted from about 500 or 600 feet of linear development work. This is too much to be accounted for by assuming that it came from the lower 90 feet of the raise, or from the 100 foot level where, it should be noted the presence of some feldspar in the quartz showing along the floor of the drift and in gob partly filling the southeast crosscut apparently coming from the opposite bulk head at crosscut, are indicative of a tendency to pegmatization.

As shown in the discussion of development, all of the workings on the 200 foot level are, according to report, in the granite, The only remaining portions of the workings from which this ore could have been mined, would lie in the caved portion of the main shuth drift and the far end of the southeasterly branch-drift, now gobbed. Assuming that the pegmatite ore comes from this quarter it could well fall into aligment with the 30 degree south-pitching fault plane bottoming the quartz displacement just below the 100 level in the raise. Should this prove to be the case it seems highly probablethat development along this plane would open up a large tonnage of ore.

Referring to the map No. 2 of the 200 foot level, reconstructed from information supplied by Mr. Zambonini, it will be observed that molybdenite occurs at several points in crosscuts to the west of the main south drift and at one point a short distance west of the main shaft in the northwest drift. From this limited information it would appear that the ground lying to the west of the south drift is another favorable quarter for exploration.

On the surface there are afew ore showings deserving of investigation. One of these is the occurrence of ore on the plane of the east-west striking thrust-fault described in discussing the geology of the property as cutting under the quartz "blowout." Openings on this plane a little above the Amargoso channel show five or six feet of the hanging wall to be impregnated with molybdenite and chalcopyrite. Development work at this point would soon establish its value as an ore horizon, and its relation to the structure upon which the large quartz displacement rests.

A second point of importance is the old shaft on the hillside vein, some 700 feet northwest of the main shaft. A later and smaller lobe of the dump is a compound of quartzose ore containing molybdenite and chalcopyrite. While a sample taken assayed only 0.30% MoS^2 it warrants exploratory work. Should it prove up on development, it could be mined from a crosscut and raise driven from the northwest drift on the 200 foot level. (See Map No. 2)

The dump of a shallow shaft on a second vein which has been mentioned earlier also shows molybdenite and chalcopyrite. This showing also merits investigation.

The smaller of the quartz "blowouts", previously described has only been shallowly prospected; but that is mineralized is shown by a copper oxide stainings. Possibly with depth this may enlarge, and like the larger quartz displacement, be the locus of another ore body. This could be investigated from the 200 foot level, the northwest drift of which passes within 100 feet q judged by the position of the quartz ~~out~~ outcrop.

TABULATION OF ASSAYS:

Samples from block of 25,250 tons and averages of values based upon length of samples in feet:

Sample No.	MoS^2	Cu.	Length of Sample Feet
1	1.47	0.71	18
2	0.32	1.80	12
3	4.20	0.57	12
4	0.93	0.76	30
5	0.90	0.38	4
6	1.15	0.95	8
7	0.51	1.09	8
8	0.37	2.61	12
9	0.26	0.81	34
10	0.50	1.19	6
11	0.44	1.20	6
12	1.57	1.09	6
13	0.30	0.43	18
14B	0.54	---	12
15	0.26	2.28	15
20	0.72	0.56	6
21	1.56	1.35	5
22	3.00	1.33	5
23	0.61	0.72	6
17 **	0.27	0.47	25
18 ***	0.70	1.10	30
Average	0.820	1.013	278

Numbers on assay map accompanying report correspond to those of assays above and show where samples were taken.

** Number 17 sample covering upper 25 feet in raise, between 100 and 50 feet levels.

*** Number 18 sample covering first 30 feet in raise above 50 foot level.

SAMPLES OF 2400 TONS OF ORE ON DUMP.

Sample No.	MoS^2	Cu.	
Sp. 1	0.67	0.42	
Sp. 2	0.65	0.38	
Sp. 3	0.59	0.25	
Sp. 4	0.33	0.15	
Average	0.56	0.30	
			Length of Sample Feet.
14	0.21	0.95	24
15	0.24	0.76	43

CAMP AND ROAD COSTS:

The masonry foundations of three large adobe buildings--walls of two, in part, still standing--makr the former compsite occupied by the Calumet and Arizona Company while exploring the property for copper. These foundations can be used again should the time come requiring the establishment of a large and permanent camp.

In the first stage of development of the property, however, considering the mild, open winters, a few tent houses--each requiring about $12 worth of canvas

and perhaps $40 in lumber--would probably suffice--entailing an outlay of about $300.00.

Water, assured for domestic use, is discussed later in conjunction with that od supply for mill.

The camp and mine road described under "Location," though in fair condition as a mountain road, could begreatly improved for trucking by an expenditure of $150 in grading.

RECONDITIONING MINE AND COSTS:

The mine workings are apparently in good condition and their repair will entail only a few comparatively small expenditures. This is due to the fact that the main shaft and 200 foot level were retimbered as late as 1936 and the main shaft repaired 1938--and at the same time the inner raise retimbered down to the 100 ft. level.

The lower 100 ft. of this raise will have to be retimbered after removal of about 50 ft. of muck from the bottom--estimated cost $750, which includes rental of necessary mining equipment. Preparatory to this work will,ofcourse, be the reconditioning of the 200 foot level. Estimating from previous experience this would require about 3 weeks time and cost approximately $300, including labor, rental of equipment and fuel. The total cost of reconditioning the mine would therefore approximate $1050.

MINE EQUIPMENT AND COST:

The usual mine equipment including such items as compressor, hoist, headframe, mine cars, jack-hammers and other accessories, can be installed for about $1500, considering that much of this will be reconditioned machinery.

MILL EQUIPMENT AND COST:

Because costs have been figured with the idea of using reconditioned machinery, the price of which fluctuates widely, only an estimate can be given. The latest prices for machinery for a 50 ton mill, including a 125 H.P. oil engine and generator, ore bins, crusher, ball mill, classifier, flotation cells, and accessory equipment, supplied by a reliable machinery company, indicates that a complete mill can be erected on the property for $16,500.

WATER AND COSTS:

Water sufficient for camp purposes can be siphoned from an old well, lying some 1500 feet to the westward, as was done by the Calumet and Arizona Company during their exploration of the property in 190607.

The cleaning and curbing of the well, pipe line and tank should cost some $300. Owner's charge for the water would probably not exceed $15 per month.

About 1000 gallons of water, per ton of ore are required for the operation of a flotation mill. With plans for installation of a 50 ton mill provision must be made for 50,000 gallons per operating day of 24 hours.

Investigation has shown the impossibility of securing sufficient water within the short upper drainage of Amargoso Gulch. But a promising site has been found in Esperanza Wash, a short 3/4 mile to the westward of the mill-site. This wash, through many tributaries, receives the run-off from a large part of the southeastern slope of the Sierritas. The site selected for the well is at the side of the wash in the edge of a large area of diorite, enclosed by the younger Tertiary granite. This diorite has been proven by local mine shafts and other workings to contain much more water than other

rocks of the area. Moreover, a shaft some 16 feet deep, located nearby, stands nearly full of w ater throughout the year. An aneroid reading indicates a lift of approximately 180 feet will place the water on the divide heading Amargosa Gulch, some 1100 feet away. From this point over a favorable terrain, there is a crop of about 200 feet to the millsite.

An 8 inch cased well, sunk to a depth of 100 feet, at a quoted price of $750 would, it is believed, furnish the required water. An electrically driven turbine pump, capacity 50 gallons per minute, or 72,000 per 24 hours, together with the necessary pipe and labor of installation has been quoted at $1509.

A 25,000 gallon storage tank, located above the mill, and costing about $400 would receive this water together with water from the mine workings and reclaimed water from tailings ponds.

Information gained in unwatering the mine in 1938 indicates that the mine probably makes about 4500 gallons per 24 hours. Reclaimed water from tailings dams can conservatively be estimated at 50% of total used, taking this 25,000 gallons of new water to be supplied daily.

Should it become necessary through future development of the property as a whole, to enlarge the capacity of the plant, a larger but unknown supply of water reported from an old mine workings, distante about 2½ miles from the New Year's Eve property, would be available.

SUMMATION OF COST OF EQUIPMENT:

Road Repair	$150.00	$
Camp	300.00	
Unwatering Mine		
Rental of equipment and labor	333.00	
Reconditioning Mine		
Equipment (small compressor, jack hammers, steel, etc.) for reconditioning mine are available and can be rented for possibly $25.00 per day -- 10 days	250.00	
Contract price for cleaning and timbering ore chute $12.00 per foot	500.00	
	$1,533.00	$ 1,533.00
Mine Equipment		
Compressor and motor	425.00	
Receiver	25.00	
Air Line (1 1/2 pipe 400 feet)	60.00	
Jack Hammers, steel, tools	150.00	
Grizzly	15.00	
Mine cars (3)	75.00	
Hoist and motor	400.00	
Headframe	300.00	
Total	$1,450.00	1,450.00
Mill		
Because costs have been figured with the idea of using reconditioning equipment, the price of which is variable, only an estimate can be given. The latest price furnished by a reliable firm, indicates that a 50 ton flotation plant with a 125 H.P. oil engine and generator can be erected on the property for	16,500.00	16,500.00
Water Supply		
Camp Supply		
Cleaning and curbing well	50.00	
Pipe	215.00	
Tank	25.00	
Rent of well	15.00	
	$305.00	305.00
Mill and Plant Supply		
100 ft.--8 inch well--cased	750.00	
Pump, pipe and labor	1,509.00	
25,000 gal, tank	400.00	
	$2,659.00	2,659.00
Total cost of equipment		$22,447.00

MINING COSTS:

Probably the cheapest and most practicable method of mining the known body of commercial ore, lying between the 50 and 100 foot levels, and pierced by the raise, or south shaft, would be by stoping qoek being carried outward from the shaft, starting work at a point 75 feet below the level of the lower tunnel. The plan would be to drop the ore through the shaft to a chute on the 200 foot level--where by car it can be trammed to the main shaft and hoisted to the surface. This method of procedure would permit of the mining of all ore from shaft outward; whereas, if ore as mined were raised to the level of the lower tunnel and trammed to the surface, Federal law would not permit the mining of ore close to the shaft.

Another advantage growing out of the plan for removal of ore by way of the 200 foot level would result from the unwatering of the mine, thus permitting of a thorough investigation of the ore showing and structures on the 200 foot level and the development of possible ore from the depth, or lower,

The homogenity of the ore mass, the great mining width, the fact that the ground stands well, permitting of wide stopes with a minimum of timbering and that the ground has already been extensively opened should make for a very low mining cost, not to exceed $1.25 a ton placed in the skip. To this should be added the cost of powder, fuse, caps and timber; power for air and hoisting and complementary labor amounting to approximately $1.20 per ton, making a total mining cost of $2.45 for ore placed in bin. Details of this cost estimate will be found under "Summation of Costs" appearing later in this report.

MILLING COSTS:

The treatment of this ore by differential flotation, a standarized process, involves no costly experimental features. The ore crushes easily with a minimum of slimes and is very amenable to flotation because of the clean crystalline texture of the ore minerals.

Cost per ton for treating this ore at the rate of 50 tons per 24 hours should not exceed $1.90. This allows for an operating crew of 10 men, power and water, reagents, superintendence, etc. Details of this cost estimate are given in "Summation of Operating Costs."

SUMMATION OF OPERATING COSTS - ON A BASIS OF 50 TONS PER DAY:

	Per 24 Hours		
Power	$		
9 gals. fuel oil at 9 cents per gal.	19.44		
81 cents per hr.			
3 operators at $4.50	13.50		
oil	0.75		
repairs	2.00		
	$35.69		
Per ton	0.72		

In the costs below, one third of the power cost has been allocated to the mine and two thirds to the mill or $0.24 to the mine and $0.48 to the mill.

Mill			
Labor	5.00		
Superintendence	5.00		
3 operators at $4.50	13.50		
3 oilers at $3.50	10.50		
1 crusherman at $4.00	4.00		
1 swamper at $3.00	3.00		
1 engine man and mechanic at $4.50	4.50		
	$40.50	$40.50	
Power at 48 cents per ton (includes water costs)	24.00	24.00	
Reagents (details undetermined)	7.00	7.00	
Repairs and replacements at 30 cents per ton	15.00	15.00	
		$86.50	
Taxes and incidentals (10%)		8.65	
		$95.15	
Per ton	1.90		$ 1.90
Mine			
Ore in skip at $1.25 per ton	62.50		
1 hoistman at $4.50	4.50		
1 topman at $3.50	3.50		
1 skoptender at $3.50	3.50		
Caps, fuse, timbers at 50 cents per ton	25.00		
Power (hoist and air) at 24 cents per ton	12.00		
	$ 111.00		
Taxes and incidentals (10%)	11.10		
	$122.10	$122.10	
Per ton	2.45		2.45
Total for mining and milling			$ 4.35

ESTIMATED PROFITS:

With the cost of mining and milling established at $4.35 per ton, the profit to be derived from treatment of the 25,250 tons of partially developed ore, which has a gross value of $8.59 per ton, would be $3.38 per ton, allowing for a 10% loss in recovery. This would make the total net profit $85,345.

Since the 2400 tons of ore on the dump are already mined, the only expense aside from milling would be an estimated 30 cents per ton for moving it from dump to ore bin. The cost of milling has been given as $1.90 per ton making a total cost for treating the ore on the dump of $2.20 per ton. The gross value of this ore is $5.08 per ton, and the net profit per ton, allowing for a 10% extraction loss would be $2.37 or a total net profit of $5,688 for ore on dump.

These figures show a total net profit of $91,033 for commercial ores as indicated by sampling.

OPERATING CAPITAL:

Capital also should be provided to cover operating expenses for the first three months following completion of the plant, or until returns from the first carload lot of concentrates has been received. On the basis of a 25 day month, this would amount to the cost of mining and milling of 3,750 tons of ore, which at the estimated cost of production would amount to $15,000.

(Signed) C. J. Sarle
C. J. Sarle
Geologist

Report of a Reconnaissance
of the
New Year's Eve Lode Claims
Pima Mining District
Pima County, Arizona
Tucson, December 18, 1939.

EXPLANATION OF PANORAMIC VIEWS

LOCATION-SOUTH CENTRAL SIERRITA MOUNTAINS

VIEW A.

Camera facing a little west of south down northerly tributary to Amargoso Gulch, Mine road lies to left of camera.

a. Dump of New Year's Eve mine, seen on far, or south side of Amargoso Gulch - far center field. The Amargoso Wash drains from right to left around point of dump and earthward.

b. "Glory Hole" just above and beyond.

c. Dump of lower tunnel - lower and a little to the right.

g. Mexican Peak, in foreground, on left.
Sahura (Giant Cactus) to left of automobile, in line with Mexican Peak.
Octoillo, or Cat's Claw, thorny shrub on left.

VIEW B.

Camera facing southeast from dump of Old Shaft on Hillside Vein * New Year's Eve claim #3. The Amargoso channel swings left around the dump and then away eastward - See f. and f.

a. New Year's Eve mine dump - Dark point, Molybdenite ore.

b. "Glory Hole".

c. Lower tunnel and dump.

d. Collar of main shaft near back of main dump - above letter "d".

e. The out crop of smaller quartz displacement mass, in foreground.

g. Mexican Peak.

h. Road to Tucson.

i. Trees with heavy folliage are oaks (Spanish Ballota) pronounced Bi-yo-tah). The Ballota above letter "i" fronts thrust fault described in report. Steep face of bluff to the left stained yellow with oxide of molybdenum, or molybdite.

Copy

A very promising molybedenum property has recently been brought to my attention. I have studied over a reconnaissance report on the property followed by a brief personal inspection and am sufficiently impressed with its possibilities to submit the following summarized prospectus for your consideration.

The property is located about 32 miles south of Tucson, near the old Twin Buttes mining district and consists of 42 claims, most of which are at present held under option.

The principal mineral showing on the property occurs on three claims within the group and has been quite extensively prospected and explored. The Calmut and Arizona Co. did comparatively considerable work on these claims in 1907 in an effort to develop some copper ore. This work consisted of a 200 foot verticle two-compartment shaft, a 200 foot raise and extensive lateral workings on 50 ft., 100 ft., and 200 ft. levels totaling some 3500 feet. This work, though disappointing from the standpoint of developing ore, has revealed a zone of molybdenite mineralization of major importance.

The surface outcrop is a quartz blow-out which has been partially obliterated by a "glory hole" from which a considerable tonnage of copper ore is said to have been removed in the early workings of the property. This out-crop is on the side of a hill about 100 ft. above a wash. A tunnel driven into the side of the hill connects with a raise in the midst of the quartz intrusive. Explanatory workings in the quartz mass were driven from the raise 50 and 100 ft. below the tunnel level. These workings have been inspected and sampled within the last six months and are covered in the report referred to above. In addition, there are even more extensive workings in the altered country rock lying below the quartz mass on the 200 ft. level which were under water at the time of the above inspection.

The upper workings in the quartz mass define it to be an intrusive mass about 100 ft. in width with practically vertical lateral contacts. Its lower or bottom contact intersects the raise about 10 ft. below the 100 ft. level in a fault dipping 30 degrees from the horozontal.

At a point approximately 15 ft. below the tunnel level the molybdenite mineralization abruptly appears in the quartz. My personal inspection of the 50 ft. level, (the 100 ft. level is now under water) revealed a remarkably uniformly distributed molybdenite mineralization in the quartz throughout the workings. Both the 50 ft. and 100 ft. levels were sampled and an average of 0.8% was recorded in the report cited above.

The contact zones where the workings left the quartz and penetrated the granite country rock showed intense alterations significant of the mineralogical importance of the quartz intrusion.

Near the collar of the shaft there is a large dump of altered granite rock which shows strong molybdenite mineralization. Samples of this assayed 0.5% MoS_2 according to the report. The amount and nature of the material on this dump indicated that it must have come from the 200 ft. level workings immediately below the quartz mass. This suggests that the contact zone along the bottom of the quartz intrusive is well mineralized and constitutes a locus of ore in addition to the quartz, itself.

It may be said that extensive prospecting has been done and a remarkable showing of molybdenite mineralization developed. The massive quartz intrusive, apparently some 100 ft. in width, together with the adjacent intensely altered contact areas denote a zone of major mineralization and certainly justify a thorough inspection, including the at present inaccessable workings on the lower levels.

A grab sample of broken material taken from a drift on the 50 ft. level during my visit assayed 0.47% MoS_2. A single laboratory flotation test on the material yielded a concentrate, after only one Re-cleaning, of 89.5% and 0.7% Cu, and containing 86% of the original MoS_2 in the feed. The tailing after 10 minutes flotation was 0.015% MoS_2. This indicates how readily the ore from the quartz intrusive reponds to concentration by flotation.

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

~~December 10, 1957~~

February 7, 1958

To the Owner or Operator of the Arizona Mining Property named below:

Calamina Group	Copper Silver Gold
(Property)	(ore)

We have an old listing of the above property which we would like to have brought up to date.

Please fill out the enclosed Mine Owner's Report form with as complete detail as possible and attach copies of reports, maps, assay returns, shipment returns or other data which you have not sent us before and which might interest a prospective buyer in looking at the property.

FRANK P. KNIGHT,
Director.

Enc: Mine Owner's Report

CALAMINA

Pb, Zn, Cu, Au, Ag

Pima 10 - 6

A. Zombanini, Ruby Star Rte., Box 8, Tucson '42

November 28, 1942

MEMORANDUM

Calamina Group
(Anton Zambonini)

To: Director, Dept. Mineral Resources
From: George A. Ballam

I had a talk with this man as per your request. It was difficult to understand him, but i gathered the following information:

This will be in the nature of a "B" loan for $5000. The property is now known as the Calamina. Originally located by Allison, Sr. and later held as the Magnet Group by one Dyer. A drill hole of 182 ft. (150ft vertical) cut 12 ft of copper, lead, and zinc sulfides at 170 ft. This hole was drilled at the convergence of three veins.

There is a 40' shaft in porphyry. Only 18 tons of ore have been shipped which ran Pb 24%, Cu 3.6%, 28-30 ozs. Ag, and $3.00 in gold.

Zambonini and his brother have a 15 HP hoist, 300 ft. 1½" pipe, air pipe, blower, car and track.

This is a "B" loan.

G A Ballam

1949

1. Calamina Mines
2. Pima County, Arizona
3. Gerold Brothers, Owners
4. W. B. Loring
5. Visited August 1, 1949
6. Low values in silver, lead, zinc and copper; none commercial.
7. "Narrow lenses of ore do occur in the veins, but they are too few and too small to be of value. The veins on the Calamina property seem to be persistent for considerable lengths. These veins, or others in the same zone, were mined at the Esperanza property. On the Calamina ground, they carry traces of ore in the shaft. It seems, therefore, that a detailed examination of the surface might disclose more favorable areas, which should then be tested by inclined diamond drilling. This detailed work should take at least a week."
8. ———

Dear Sir:

Being as I didn't exactly know how to fill out this blank, I thought it would be best if I just wrote the facts down. My brother and I own these 9 mining claims called the Calamina group. They adjoin the old Esperanza mine Patent claims. The present shaft is in slight need of repair. It is a vertical shaft. Diamond drilling drilled through 12 ft. of vein at 170 ft. Being as it was so soft, augers had to be used, so no core was available. However, the foam was analyzed yielding $1.00+ in gold, 3% lead, 3% zinc, and about 2% copper. There is plenty of water for every purpose right at hand.

The old Esperanza mine, by records, from 1866 to 1878 shipped $300 000 to England. From 1907 to 1909 about the same amount was shipped. The average valuation of the ore was 44% lead, 14% zinc, $2.60 in gold, and 3½% copper. We have shipped about 3 carloads which on an average gave 25% lead, 2% copper, 8% zinc, and $2.60 in gold, and 40 ounces in silver. This was shipped to the Douglas and El Paso smelters.

We have all the necessary equipment for the property such as hoists, machines,

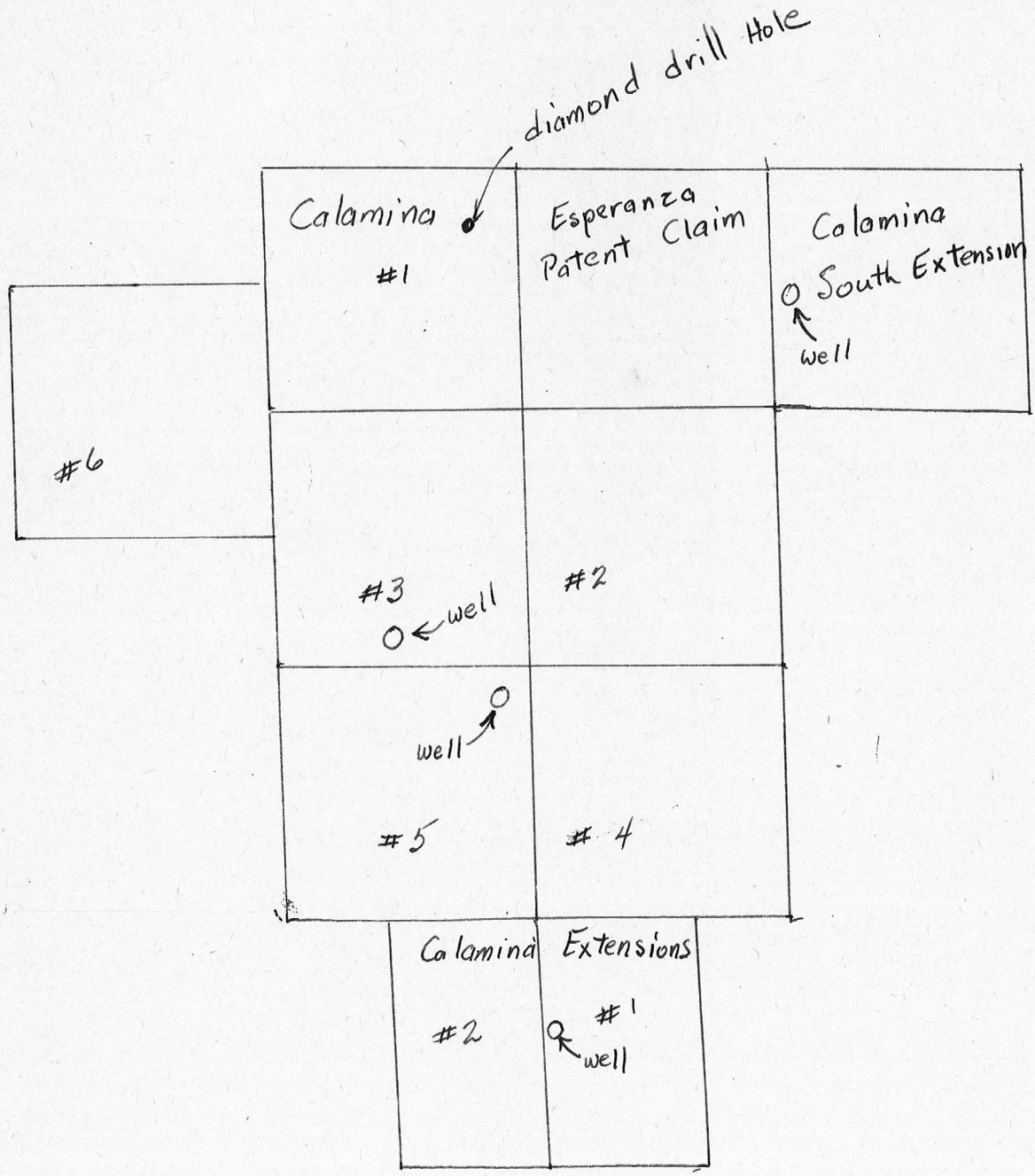
drills etc This applicat. n would be for a $5000 loan to produce the following metals: Lead, zinc, copper mainly, and gold and silver also.

We would appreciate your helping on the filling out of the application blank etc.

Thanking you
I remain - Truly yours
Anton Zamboni
Box 8 - Ruby Star Route
Tucson, Ariz.

By: Reno Zamboni

P.S. Enclosed is a sketch of the claims. The calamina ore that has been shipped from the surface ran 18% lead, 10 ounces in silver, 3% copper, and $3.00 in gold.


diamond drill Hole
Calamina
#1
Esperanza
Patent Claim
Calamina
South Extension
well
#6
#3
well
#2
well
#5
#4
Calamina
Extensions
#2
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well